

**25-11 & 25-17 38<sup>TH</sup> AVENUE**  
**QUEENS, NEW YORK**

---

# **Remedial Action Work Plan**

**NYC VCP Site Number: 14CVCP251Q**

**NYC E-Designation Site Number: 14HAZ313Q**

**Prepared for:**

**TAMARES DEVELOPMENT I, LLC**

1500 Broadway 24<sup>th</sup> Floor

New York, NY 10036

For Site located at 25-11 & 25-17 38<sup>th</sup> Avenue

Borough of Queens

Long Island City, NY 11101

**Prepared by:**

**Galli Engineering, P.C.**

35 Pinelawn Road, Ste 209E

Melville, NY 11747

MAY 2014  
REVISED JUNE 2014

# REMEDIAL ACTION WORK PLAN

## TABLE OF CONTENTS

TABLE OF CONTENTS.....	ii
FIGURES .....	v
TABLES .....	vi
APPENDICES .....	vii
LIST OF ACRONYMS .....	viii
CERTIFICATION .....	1
EXECUTIVE SUMMARY .....	2
Community Protection Statement.....	6
REMEDIAL ACTION WORK PLAN.....	11
1.0    SITE BACKGROUND.....	11
1.1    Site Location and Current Usage .....	11
1.2    Proposed Redevelopment Plan .....	11
1.3    Description of Surrounding Property.....	12
1.4    Remedial investigation.....	12
2.0    REMEDIAL ACTION OBJECTIVES.....	16
Groundwater .....	16
Soil.....	16
Soil Vapor.....	16
3.0    REMEDIAL ALTERNATIVES ANALYSIS.....	17
3.1 THRESHOLD CRITERIA .....	19
3.2. BALANCING CRITERIA .....	20
4.0    REMEDIAL ACTION .....	26
4.1    Summary of Preferred Remedial Action.....	26
4.2    Soil Cleanup Objectives and soil/Fill management .....	29
Estimated Soil/Fill Removal Quantities .....	29

End-Point Sampling.....	30
Quality Assurance/Quality Control .....	31
Import and Reuse of Soils.....	32
4.3 Engineering Controls .....	33
Composite Cover System .....	33
4.4 Institutional Controls .....	35
4.5 Site Management plan.....	36
4.6 Qualitative Human Health Exposure Assessment .....	37
5.0 REMEDIAL ACTION MANAGEMENT.....	42
5.1 Project Organization and oversight.....	42
5.2 Site Security .....	42
5.3 Work Hours.....	42
5.4 Construction Health and Safety Plan (CHASP).....	42
5.5 Community Air Monitoring Plan.....	43
VOC Monitoring, Response Levels, and Actions .....	44
Particulate Monitoring, Response Levels, and Actions.....	45
5.6 Agency Approvals .....	45
5.7 Site Preparation.....	46
Pre-Construction Meeting.....	46
Mobilization.....	46
Utility Marker Layouts, Easement Layouts.....	46
Equipment and Material Staging .....	47
Stabilized Construction Entrance .....	47
Truck Inspection Station.....	47
Extreme Storm Preparedness and Response Contingency Plan .....	47
5.8 Traffic Control .....	49
5.9 Demobilization.....	50
5.10 Reporting and Record Keeping.....	51
Daily Reports .....	51
Record Keeping and Photo-Documentation .....	52
5.11 Complaint Management.....	52
5.12 Deviations from the Remedial Action Work Plan .....	52

6.0	REMEDIAL ACTION REPORT .....	53
7.0	SCHEDULE .....	56
	Appendixttachment 1A Citizen Participation Plan .....	57
	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.....	60
	Appendix 2ttachment B Sustainability statement .....	61
	Attachment Cppendix 3 .....	65
	SOIL/MATERIALS MANAGEMENT PLAN .....	65
1.1	Soil Screening Methods .....	65
1.2	Stockpile Methods .....	65
1.3	Characterization of Excavated Materials .....	66
1.4	Materials Excavation, Load-Out and Departure .....	66
1.5	Off-Site Materials Transport.....	67
1.6	Materials Disposal Off-Site .....	68
1.7	Materials Reuse On-Site .....	69
1.8	Demarcation .....	70
1.9	Import of Backfill Soil from Off-Site Sources .....	70
	Source Screening and Testing .....	71
1.10	Fluids Management.....	72
1.11	Storm-water Pollution Prevention.....	73
1.12	Contingency Plan .....	73
1.13	Odor, Dust and Nuisance Control.....	74
	Appendixttachment 4D .....	76
	Health and Safety Plan.....	76

# FIGURES

Figure 1 - Site Location Map

Figure 2 - Site Location Plan

Figure 3 – Layout of Proposed Site Development

Figure 4 – Surrounding Land Usage

# **TABLES**

Table 1 – Imported Backfill and Clean Soil Limits

Table 2 - Analytical Results for Soil and Groundwater

Table 3 - Analytical Results for Soil Vapor

# **ATTACHMENTS**

Attachment A - Citizen Participation Plan

Attachment B - Sustainability Statement

Attachment C - Soil/Materials Management Plan

Attachment D - Construction Health and Safety Plan

Attachment E - Proposed Development Plans

## LIST OF ACRONYMS

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

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

# CERTIFICATION

I, Richard D. Galli, am a Professional Engineer licensed in the State of New York. I have primary direct responsibility for implementation of the remedial action for the 25-11 & 25-17 38<sup>th</sup> Avenue: VCP Site # 14CVCP251Q and OER Project number 14HAZ313Q.

I, Richard D. Galli am a Qualified Environmental Professional as defined in §43-140. I have primary direct responsibility for implementation of the remedial action for the 25-11 & 25-17 38<sup>th</sup> Avenue: VCP Site # 14CVCP251Q and OER Project number 14HAZ313Q.

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

\_\_\_\_\_  
Name

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

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date



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

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

\_\_\_\_\_  
Date

## **EXECUTIVE SUMMARY**

Tamare Development I, LLC has enrolled in the New York City Voluntary Brownfield Cleanup Program (NYC VCP) to investigate and remediate a 7,450-square foot site located at 25-11 & 25-17 38<sup>th</sup> Avenue in Queens, New York. A remedial investigation (RI) was performed to compile and evaluate data and information necessary to develop this Remedial Action Work Plan (RAWP). The remedial action described in this document provides for the protection of public health and the environment consistent with the intended property use; complies with applicable environmental standards, criteria and guidance; and conforms to applicable laws and regulations.

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

The Site is located at 25-11 and 25-17 38<sup>th</sup> Avenue in the Long Island City section in Queens, New York and is identified as Block 368, Lots 34 and 36 on the New York City Tax Map. Figure 1 shows the Site location. The Site measures 7,450 square feet and is bounded by Crescent Street to the northwest, 38<sup>th</sup> Avenue to the southwest, 27<sup>th</sup> Street to the southeast, and 37<sup>th</sup> Avenue to the northeast. A map of the site boundary is shown in Figure 1. Currently, the Site is used as a 2-story residential building and a 1-story commercial building which is partially vacant. Lot 34 (which is the northeast corner of the Site) is a 1-story commercial building occupying the entire lot is currently used as an auto repair shop. Lot 36 is improved with a 2-story residential building occupying the majority of Lot 36. The remainder of the lot is occupied by a concrete patio.

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

The proposed development project consists of a new 7-story building with a cellar. The cellar will include a parking lot, a gym, storage rooms and mechanical rooms. The building will consist of mixed use with a light manufacturing office that will cover the ground floor and residential space for the remaining upper six floors. The building will occupy the entire site and have no setback elements. The building will also include a full cellar with no grade-level open space areas. There will be a private terrace on the 2<sup>nd</sup> and 6<sup>th</sup> floors only.

Depth of excavation will range from 14-16 feet. Excavation for the elevator pit will be at 16-18 feet. Footings, a basement slab, and elevator vaults will be part of construction. As part of development, the referenced lot(s) are tentatively expected to be consolidated into a single lot.

### **Summary of the Remedy**

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

The proposed remedial action will consist of:

1. Preparation of a Community Protection Statement and performance of all required NYC VCP citizen participation activities according to an approved Citizen Participation Plan;
2. Performance of a Community Air Monitoring Program for particulates and volatile organic carbon compounds;
3. Establishment of Unrestricted Use (Track 1) Soil Cleanup Objectives (SCOs);
4. Site mobilization involving Site security setup, equipment mobilization, utility mark outs and marking and staking excavation areas;
5. Excavation and removal of soil/fill exceeding Unrestricted SCOs. For development purposes, entire footprint of the property will be excavated to a depth ranging from 14-16 feet for the new building's cellar, footings, and foundation. The elevator pit will be excavated to a depth of 16-18 feet. Approximately 4,023 tons of soil will be removed;
6. Screening of excavated soil/fill during intrusive work for indications of contamination by visual means, odor, and monitoring with a PID. Appropriate segregation of excavated media on-Site;

7. 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;
8. Transportation and off-Site disposal of all soil/fill material at permitted facilities in accordance with applicable laws and regulations for handling, transport, and disposal, and this plan. Sampling and analysis of excavated media as required by disposal facilities. Appropriate segregation of excavated media onsite;
9. Collection and analysis of end point samples to determine the performance of the remedy with respect to attainment of SCOs;
10. Import of materials to be used for backfill and cover in compliance with this plan and in accordance with applicable laws and regulations;
11. Implementation of storm-water pollution prevention measures in compliance with applicable laws and regulations;
12. Performance of all activities required for the remedial action, including permitting requirements, in compliance with applicable laws and regulations;
13. Submission of a Remedial Action Report (RAR) that describes the remedial activities, certifies that the remedial requirements have been achieved, defines the Site boundaries, lists any changes from this RAWP, and if Track 1 SCOs are not achieved, describes all Engineering and Institutional Controls to be implemented at the Site.

If Track 1 SCOs are not achieved, the following construction elements will constitute Engineering and Institutional Controls:

14. As part of development, construction and maintenance of an engineered composite cover consisting of a structural 3-foot thick mat slab foundation resting on a 3-inch mud slab beneath the building footprint to prevent human exposure to residual soil/fill remaining under the Site.
15. Installation of a waterproofing/vapor barrier system beneath the building sub-grade foundations and along the side foundation walls to grade, as part of standard building construction;

16. Installation of subgrade ventilated parking system as part of NYC Building Department's codes and regulations;
17. 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.
18. The property will continue to be registered with an E-Designation at the NYC Buildings Department. Establishment of Engineering Controls and Institutional Controls; a requirement that management of these controls must be in compliance with an approved SMP. Institutional Controls 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 Office of Environmental Remediation created the New York City Voluntary Cleanup Program (NYC VCP) to provide governmental oversight for the cleanup of contaminated property in NYC. This Remedial Action Work Plan (“cleanup plan”) describes the findings of prior environmental studies that show the location of contamination at the site, and describes the plans to clean up the site to protect public health and the environment.

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

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

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

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

for people to come in contact with this contamination. All identified public exposures will be addressed under this cleanup plan.

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

**Site Safety Coordinator.** This project has a designated Site safety coordinator to implement the Health and Safety Plan. The safety coordinator maintains an emergency contact sheet and protocol for management of emergencies. The Site safety coordinator is **TBD** and can be reached at (631) 271-9292.

**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 or CAMP. Results will be regularly reported to the NYC Office of Environmental Remediation. 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 NYC noise control standards. If you observe problems in these areas, please contact the onsite Project Manager Richard D. Galli (631) 271-9292 or NYC Office of Environmental Remediation Project Manager Alysha Alfieri (212) 676-0459.

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

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

**Hours of Operation.** The hours for operation of cleanup will comply with the NYC Department of Buildings construction code requirements or according to specific variances issued by that agency. For this cleanup project, the hours of operation are 8am to 7pm Monday – Friday.

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

**Complaint Management.** The contractor performing this cleanup is required to address all complaints. If you have any complaints, you can call the facility Project Manager **TBD** at **TBD**, the NYC Office of Environmental Remediation Project Manager Alysha Alfieri at (212) 676-0459, or call 311 and mention the Site is in the NYC Voluntary Cleanup Program.

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

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

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

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

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

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

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

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

**Truck Routing.** Truck routes have been selected to: (a) limit transport through residential areas and past sensitive nearby properties; (b) maximize use of city-mapped truck routes; (c) limit total distance to major highways; (d) promote safety in entry to highways; (e) promote overall safety in trucking; and (f) minimize off-Site line-ups (queuing) of trucks

entering the property. Operators of loaded trucks leaving the Site will be instructed not to stop or idle in the local neighborhood.

**Final Report.** The results of all cleanup work will be fully documented in a final report (called a Remedial Action Report) that will be available for you to review in the public document repositories located at Long Island City Library.

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

# **REMEDIAL ACTION WORK PLAN**

## **1.0 SITE BACKGROUND**

Tamares Development I, LLC has applied to enroll in the New York City Voluntary Cleanup Program (NYC VCP) to investigate and remediate a property located at 25-11 & 25-17 38<sup>th</sup> Avenue in the Long Island City section of Queens, New York (the “Site”). A Remedial Investigation (RI) was performed to compile and evaluate data and information necessary to develop this Remedial Action Work Plan (RAWP) in a manner that will render the Site protective of public health and the environment consistent with the contemplated end use. This RAWP establishes remedial action objectives, provides remedial alternatives analysis that includes consideration of a permanent cleanup, and provides a description of the selected remedial action. The remedial action described in this document provides for the protection of public health and the environment, complies with applicable environmental standards, criteria and guidance and applicable laws and regulations.

### **1.1 SITE LOCATION AND CURRENT USAGE**

The Site is located at 25-11 and 25-17 38<sup>th</sup> Avenue in the Long Island City section in Queens, New York and is identified as Block 368, Lots 34 and 36 on the New York City Tax Map. Figure 1 shows the Site location. The Site measures 7,450 square feet and is bounded by Crescent Street to the northwest, 38<sup>th</sup> Avenue to the southwest, 27<sup>th</sup> Street to the southeast, and 37<sup>th</sup> Avenue to the northeast. A map of the site boundary is shown in Figure 1. Currently, the Site is used as a 2-story residential building and a 1-story commercial building which is partially vacant. Lot 34 (which is the northeast corner of the Site) is a 1-story commercial building occupying the entire lot is currently used as an auto repair shop. Lot 36 is improved with a 2-story residential building occupying the majority of Lot 36. The remainder of the lot is occupied by a concrete patio.

### **1.2 PROPOSED REDEVELOPMENT PLAN**

The proposed future use of the Site will include a new 7-story building with a cellar. The cellar will include a parking lot, a gym, storage rooms and mechanical rooms. The building will

consist of mixed residential and manufacturing, with a light manufacturing office that will cover the ground floor and residential space for the remaining upper six floors. The proposed tentative merged lot will include a building that will occupy the entire site and have no setback elements. The building will also include a cellar with no grade-level open space areas. There will be some private terraces on the 2<sup>nd</sup> and 6<sup>th</sup> floors. Depth of excavation will range from 14-16 feet and have no pile caps. The elevator pit area will be excavated at approximately 16-18 feet. There will be footings, a basement slab, and elevator vaults. As part of development, the referenced lot(s) are expected to be merged into a tentative lot.

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

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

The surrounding property consists of mostly residential and manufacturing. . To the northeast of the Site is Dutch Kills Playground off of 37<sup>th</sup> Avenue. Across the street from the playground is a school southeast from the subject site. Located opposite the Site, along 38<sup>th</sup> Avenue, property uses include an electrical and elevator supply warehouse, a scooter parts and accessories shop, and residential units in the area of Long Island City.

Figure 4 shows the surrounding land usage.

### **1.4 REMEDIAL INVESTIGATION**

A remedial investigation was performed and the results are documented in a companion document called “*Remedial Investigation Report, 25-11 & 25-17 38<sup>th</sup> Avenue*” (RIR), dated and revised April/May, 2014.

## **Summary of Past Uses of Site and Areas of Concern**

Lot 34 was mixed use residential and commercial prior to redevelopment as a commercial property around 1968. According to NYC Department of Building (NYCDOB) records for that year; the building use is identified as a sheet metal factory. In 1983 the building use is identified as a motor vehicle repair shop including body and fender work, paint spraying and oxy-acetylene welding. Additional uses are identified as a machinery rental and repair establishment and automobile sales lot. The City Directory listings for 25-17 38th Ave. indicate that from 1962 to at least 1991 the building was occupied by various commercial uses such as a crating and delivery company, steel equipment company, contractors and an environmental firm. From at least 2000 to 2012 MJ Ecuia Auto Repair/Picasso Auto Repair occupied the building. The northeast corner of the building is identified as 37-38 27th St. and was part of the steel equipment company until at least 1976. In 1983 this portion of the building was occupied by an auto body shop and from at least 1991 to 2012 by G&T Service Station, also an auto body shop.

Lot 36 was initially developed with a store from 1898 to 1970 when it was replaced with a dwelling. The property has remained a dwelling since that time. The City Directory listings for 25-11 38th Ave. indicate that the property was residential in 1934 and occupied by Blue Jay Printing Co. from 1962 to at least 1983. From 2005 to 2007 the site was occupied by H&D Maintenance Contracting Co.

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

Galli Engineering, PC performed the following scope of work:

1. Conducted a Site inspection to identify AOCs and physical obstructions (i.e. structures, buildings, etc.);
2. Installed eight (8) soil borings across the entire Site, and collected 14 soil samples for chemical analysis from the soil borings to evaluate soil quality;
3. Installed one (1) temporary groundwater well to evaluate groundwater quality;
4. Installed four (4) soil vapor probes around the Site perimeter and collected four samples for chemical analysis;

### **Summary of Environmental Findings**

1. Elevation of the property is 41 feet above mean sea level.
2. Depth to groundwater ranges from 39 to 43 feet bgs at the Site.
3. Groundwater flow is generally southwest beneath the Site towards the East River.
4. Depth to bedrock is approximately 45 feet at the Site.
5. The stratigraphy of the site, from the surface down, includes five feet of coarse sands underlain by ten feet of fine sands.
6. Laboratory results were compared to NYSDEC Unrestricted Use Soil Cleanup Objectives and Restricted Residential Use Soil Cleanup Objectives as presented in 6NYCRR Part 375-6.8 and CP51. One VOC, tetrachloroethene (11 µg/Kg), was found well below Unrestricted Use SCOs. Eight SVOCs, including benz(a)anthracene (maximum of 31,000 µg/Kg), benzo(a)pyrene (maximum of 25,000 µg/Kg), benzo(b)fluoranthene (maximum of 31,000 µg/Kg), benzo(k)fluoranthene (maximum of 9,800 µg/Kg) chrysene (maximum of 32,000 µg/Kg), dibenz(a,h)anthracene (maximum of 370 µg/Kg), indeno(1,2,3-cd)pyrene (maximum of 13,000 µg/Kg), and phenanthrene (maximum 130,000 µg/Kg) were detected above Restricted Residential Use SCOs in all shallow soil samples. Metals including chromium (maximum of 26 mg/Kg), copper (maximum of 61.2 mg/Kg), lead (maximum of 393 mg/Kg), mercury (maximum of 0.41 mg/Kg), and zinc (maximum of 264 mg/Kg) were detected above Unrestricted Use SCOs. Chromium was also detected above Unrestricted Use SCOs within one of the deep samples. None of metals exceeded Restricted Residential Use SCOs. One PCB, PCB 1260 (maximum of 190 µg/Kg) was detected above Unrestricted Use SCOs. Three pesticides 4,4'-DDD (max. of 18 ppb); 4,4'-DDE (max. of 4.3 ppb); and 4,4'-DDT (max. of 9 ppb) were detected above Unrestricted Use SCOs in shallow soil samples. Dieldrin at 11 ppb was also detected in one soil sample. Overall, the soil chemistry is unremarkable and does not indicate any disposal situation.
7. Groundwater samples were compared to New York State 6NYCRR Part 703.5 Class GA Groundwater Quality Standards (GQS). Groundwater collected during the RI showed no detectable concentrations of PCBs. One VOC, chloroform (maximum of 8.3µg/L) was detected above its respective GQS. Four SVOCs, including benzo(a)anthracene

(maximum of 0.1 µg/L), benzo(a)pyrene (maximum of 0.05 µg/L), benzo(b)fluoranthene (maximum of 0.9 µg/L), and chrysene (maximum of 0.11 µg/L), were detected above GQS. One pesticide, dieldrin (maximum of 0.22 µg/L), was detected above GQS. Several metals were present in groundwater, but only aluminum, iron, manganese, and sodium exceeded their respective GQSS.

8. Soil vapor samples collected during the RI indicated petroleum related VOCs were present at moderate concentrations and chlorinated VOCs were present at low concentrations. Petroleum-related VOCs (BTEX) were detected in range from 27 to 396 µg/m<sup>3</sup>. Overall the highest reported concentrations were for acetone (maximum of 536 µg/m<sup>3</sup>), propylene (maximum of 42.8 µg/m<sup>3</sup>) and ethanol (maximum of 582 µg/m<sup>3</sup>). Chlorinated VOCs, 1,1,1-Trichloroethylene was not detected in any of the four soil gas samples. Carbon Tetrachloride was detected in all four gas samples at a maximum concentration of 0.692 µg/m<sup>3</sup>. Tetrachloroethylene was detected all four soil gas samples and ranged in concentration from 1.22 to 16.4 µg/m<sup>3</sup>. Trichloroethylene was detected in two of the soil gas samples at a maximum concentration of 1.5 µg/m<sup>3</sup>. All chlorinated VOC concentrations are below the monitoring level ranges established within the NYSDOH Final Guidance on Soil Vapor Intrusion.

## **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**

- Remove contaminant sources causing impact to groundwater.
- Prevent exposure to contaminants volatilizing from contaminated groundwater.

### **Soil**

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

### **Soil Vapor**

- Prevent exposure to contaminants in soil vapor.
- Prevent migration of soil vapor into dwelling and other occupied structures.

### 3.0 REMEDIAL ALTERNATIVES ANALYSIS

The goal of the remedy selection process below is to select a remedy that is protective of human health and the environment taking into consideration the current, intended and reasonably anticipated future use of the property. The remedy selection process begins by establishing RAOs for media on 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 of Remedy

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:

1. Establishment of Unrestricted Use (Track 1) Soil Cleanup Objectives (SCOs).
2. 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. If soil/fill containing analytes at concentrations above

Unrestricted Use SCOs is still present at the base of the excavation, after removal of all soil required for construction of the proposed development is complete, additional excavation will be performed to ensure complete removal of soil that does not meet Track 1 Unrestricted Use SCOs.

3. No Engineering or Institutional Controls are required for a Track 1 cleanup, but a Vapor Block Plus 20-mil waterproof vapor barrier would be installed beneath the cellar foundation and behind foundation sidewalls of the new building as a part of development to prevent any potential future exposures from on and off-Site soil vapor.
4. Placement of a final cover over the entire Site as part of new development.

Alternative 2 (Track 4) Restricted Residential Soil Cleanup Objectives (SCOs):

1. Establishment of Site Specific (Track 4) Soil Cleanup Objectives (SCOs).
2. Removal of all soils exceeding Track 4 SCOs and confirmation that Track 4 has been achieved with post-excavation end-point sampling. Based on the results of the remedial investigation, it is expected that this alternative would require excavation to a minimum depth of 5 feet to remove all historic fill. Excavation for construction of the new building's cellar level would take place of a depth of approximately 14-16 feet for the footprint of the property and approximately 16-18 feet for the elevator pit. If soil/fill containing analytes at concentrations above Track 4 Site-Specific SCOs is still present at the base of the excavation after removal of all soil required for construction of the new building is complete, additional excavation will be performed to meet Track 4 Site-Specific SCOS.
3. Placement of a final cover over the entire Site to prevent exposure to remaining soil/fill.
4. Installation of a waterproofing/vapor barrier system beneath the building slab and along the foundation side walls to prevent any potential future exposures from one and off-Site soil vapor;

5. A basement garage ventilation system installed per NYC Building's codes will act as an engineering control and will prevent vapors entering the new development.
6. Establishment of use restrictions including prohibitions on the use of groundwater from the Site; prohibitions of sensitive Site uses, such as farming or vegetable gardening, to prevent future exposure pathways; and prohibitions of a higher level of land use without OER approval;
7. Establishment of an approved Site Management Plan (SMP) to ensure long-term management of these Engineering and Institutional Controls including the performance of periodic inspections and certification that the controls are performing as they were intended; and
8. Continued registration as an E-designated property to memorialize the remedial action and the Engineering and Institutional Controls required by the RAWP.

### **3.1 THRESHOLD CRITERIA**

#### **Protection of Public Health and the Environment**

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

**Alternative 1** would be protective of human health and the environment by removing contaminated soil/fill exceeding Track 1 Unrestricted Use SCOs, thus eliminating potential for direct contact with contaminated soil/fill once construction is complete and eliminating the risk of contaminants leaching into groundwater. Additionally, installation of a vapor barrier and a parking ventilation system as part of the new construction would prevent any potential vapor intrusion.

**Alternative 2** would achieve comparable protections of human health and the environment 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 vapor barrier, parking ventilation system and composite cover system. The composite cover system would prevent direct contact with any remaining on-Site soil/fill. Implementing Institutional Controls including a Site Management Plan and continued “E” designation of property would ensure that the composite cover system remains intact and protective.

For both Alternatives, potential exposure to the contaminated soils or groundwater during construction would be minimized by implementing a Construction Health and Safety Plan Hazardous Material Remedial Action Plan (CHASP), a Soil and Materials Management Plan, and Community Air Monitoring Plan (CAMP). Potential use of contact with contaminated groundwater for potable supply would be prevented as its use is prohibited by city laws and regulations. Potential future migration of off-Site soil vapors into the new building would be prevented by the new building’s basement slab, vapor barrier, and parking ventilation system.

### **3.2. BALANCING CRITERIA**

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

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

**Alternative 1** would achieve compliance with the remedial goals, chemical-specific SCGs and RAOs for soil through removal of soil to meet Track 1 Unrestricted Use SCOs. Compliance with SCGs for soil vapor would also be achieved by sub grade ventilated parking garage and by installing a vapor barrier system below the new building’s basement and around sub-grade foundation walls, as part of development.

**Alternative 2** would achieve compliance with remedial goals, SCGs, and RAOs for soil through the removal of soil/fill to Track 4 SCOs and groundwater protection standards and capping the Site with a composite cover. Compliance with SCGs for soil vapor could be achieved by ventilated parking system and by installing a vapor barrier below the new buildings the new building’s basement slab and continuing the vapor barrier around foundation walls. A site management plan would ensure that these engineering controls remain protective for the long term.

Health and safety measures contained in the CHASP and Community Air Monitoring Plan (CAMP) that comply with the applicable SCGs shall be implemented during Site redevelopment under this RAWP. For both Alternatives, focused attention on means and methods employed during the remedial action would ensure that handling and management of contaminated material would be in compliance with the applicable SCGs.

### **Short-term effectiveness and impacts**

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

Both Alternatives 1 and 2 have similar short-term effectiveness during their respective implementations, as each requires excavation of soil/fill material. Alternative 1 would eliminate and Alternative 2 would reduce exposure to contaminant sources. Both alternatives would result in short-term dust generation impacts associated with excavation, handling, load out of materials, and truck traffic. Short term impacts could potentially be higher for Alternative 1 if excavation of greater amounts of historical fill material is encountered below the excavation depth of the proposed building. 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.

An additional short-term adverse impact and risks to the community associated with both remedial alternatives is increased truck traffic. Approximately 22, 25-ton capacity truck trips would be necessary to transport fill and soil excavated during Site development. Truck traffic will be routed on the most direct course using major thoroughfares where possible and flaggers will be used to protect pedestrians at Site entrances and exits.

Both alternatives would employ appropriate measures to prevent short-term impacts, including a Community Air Monitoring Plan (CAMP) and a Soil/Materials Management Plan (SMMP), during all on-Site soil disturbance activities and would effectively prevent the release

of significant 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 Engineering Controls/Institutional Controls (EC/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 long-term effectiveness and permanence related to on-Site contamination by permanently removing all impacted soil/fill and enabling unrestricted usage of the property. Potential sources of soil vapor contamination would also be eliminated as part of the Track 1 remedy.

**Alternative 2** would provide long-term effectiveness by removing most on-site contamination and attaining Track 4 SCOs, establishing engineering controls including a composite cover system across the entire site, establishing institutional controls to ensure long-term management including use restrictions, a Site Management Plan, and continued registration as an E-designated property to memorialize these controls for the long term. The Site Management Plan would ensure long-term effectiveness of all engineering controls and institutional controls by requiring periodic inspection and certification that these controls and restrictions continue to be in place and are functioning as they were intended to and assuring that protections designed in the remedy would provide continued high levels of protection, in perpetuity.

Both alternatives would result in removal of soil contamination exceeding the SCOs providing the highest level, most effective and permanent remedy over the long-term with respect to a remedy for contaminated soil, which will eliminate any migration to groundwater. A vapor barrier as part of the remedy would also eliminate potential sources of soil vapor and groundwater contamination. If on-site sources are removed, soil vapor impacts would be expected to dissipate.

### **Reduction of toxicity, mobility, or volume of contaminated material**

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

Both alternatives would permanently eliminate the toxicity, mobility, and volume of contaminants from on-Site soil by removing all soil in excess of Track 1 - Unrestricted Use SCOs or Track 4 SCOs.

### **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 the proposed Alternatives, 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. The reliability of each remedy is also high. There are no special difficulties associated with any of the activities proposed.

### **Cost effectiveness**

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

Since historic fill at the Site was found during the RI to only extend to a depth of up to 6 feet below grade, and the new building requires excavation of the entire Site to a depth of 14ft, the costs associated with both Alternative 1 and Alternative 2 will likely be the comparable.

Costs associated with Alternative 1 could potentially be higher than Alternative 2 if soil with analytes above Unrestricted Use SCOs is encountered below the excavation depth required for development. Additional costs would include excavation and disposal of additional soil, and import of clean soil for backfill. However, long-term costs for Alternative 2 are likely higher than Alternative 1 based on implementation of a Site Management Plan as part of Alternative 2.

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

## **Community Acceptance**

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

Based on the overall goals of the remedial program and initial observations by the project team, both of the alternatives are expected to be acceptable to the community. This RAWP will be subject to a public review under the NYC VCP and will provide the opportunity for detailed public input on the remedial alternatives and the selected remedial action. This public comment related to site remediation will be considered by OER prior to approval of this plan. The Citizen Participation Plan for the project is provided in Attachment A.

## **Land Use**

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

Alternatives 1 and 2 are appropriate with respect to the proposed residential and retail land use, and land uses in the vicinity of the Site. Both cleanup alternatives provide comprehensive protection of public health and the environment for the anticipated mixed residential/commercial uses, with the Alternative 1 (Track 1) providing the highest level of cleanup and Alternative 2 (Track 2), providing the second highest level of cleanup for the proposed use. Improvements in

the current condition of the Site achieved by Alternative 1 are also consistent with the City's goals for cleanup of contaminated land, bringing such properties to productive reuse, and making such properties protective of natural and cultural resources.

### **Sustainability of the Remedial Action**

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

Both remedial alternatives are comparable with respect to the opportunity to achieve sustainable remedial action. Both alternatives achieve cleanup of impacts on the site and are equally capable of utilizing green remedial methods. A complete list of green remedial activities considered as part of the NYC VCP is included in the Sustainability Statement, included as Attachment B.

## **4.0 REMEDIAL ACTION**

### **4.1 SUMMARY OF PREFERRED REMEDIAL ACTION**

The preferred remedial action alternative is Alternative 1, the Track 1 Alternative. The preferred remedial action alternative achieves protection of public health and the environment for the intended use of the property. The preferred remedial action alternative will achieve all of the remedial action objectives established for the project and addresses applicable SCGs. The preferred remedial action alternative is effective in both the short-term and long-term and reduces mobility, toxicity and volume of contaminants. The preferred remedial action alternative is cost effective and implementable and uses standards methods that are well established in the industry.

The proposed remedial action will consist of:

1. Preparation of a Community Protection Statement and performance of all required NYC VCP citizen participation activities according to an approved Citizen Participation Plan;
2. Performance of a Community Air Monitoring Program for particulates and volatile organic carbon compounds;
3. Establishment of Unrestricted Use (Track 1) Soil Cleanup Objectives (SCOs);
4. Site mobilization involving Site security setup, equipment mobilization, utility mark outs and marking and staking excavation areas;
5. Excavation and removal of soil/fill exceeding Unrestricted SCOs. For development purposes, entire footprint of the property will be excavated to a depth ranging from 14-16 feet for the new building's cellar, footings, and foundation. The elevator pit will be excavated to a depth of 16-18 feet. Approximately 4,000 tons of soil will be removed;
6. Screening of excavated soil/fill during intrusive work for indications of contamination by visual means, odor, and monitoring with a PID. Appropriate segregation of excavated media on-Site;
7. 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;
8. Transportation and off-Site disposal of all soil/fill material at permitted facilities in accordance with applicable laws and regulations for handling, transport, and disposal, and this plan. Sampling and analysis of excavated media as required by disposal facilities. Appropriate segregation of excavated media onsite;
9. Collection and analysis of end point samples to determine the performance of the remedy with respect to attainment of SCOs;
10. Import of materials to be used for backfill and cover in compliance with this plan and in accordance with applicable laws and regulations;
11. Implementation of storm-water pollution prevention measures in compliance with applicable laws and regulations;
12. Performance of all activities required for the remedial action, including permitting requirements, in compliance with applicable laws and regulations;

13. Submission of a Remedial Action Report (RAR) that describes the remedial activities, certifies that the remedial requirements have been achieved, defines the Site boundaries, lists any changes from this RAWP, and if Track 1 SCOs are not achieved, describes all Engineering and Institutional Controls to be implemented at the Site.

If Track 1 SCOs are not achieved, the following construction elements will constitute Engineering and Institutional Controls:

14. As part of development, construction and maintenance of an engineered composite cover consisting of a structural 3-foot thick mat slab foundation resting on a 3-inch mud slab beneath the building footprint to prevent human exposure to residual soil/fill remaining under the Site.
15. Installation of a waterproofing/vapor barrier system beneath the building sub-grade foundations and along the side foundation walls to grade, as part of standard building construction;
16. Installation of subgrade ventilated parking system as part of NYC Building Department's codes and regulations;
17. 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.
18. The property will continue to be registered with an E-Designation at the NYC Buildings Department. Establishment of Engineering Controls and Institutional Controls; a requirement that management of these controls must be in compliance with an approved SMP. Institutional Controls 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. The SCOs for this Site are listed in Table 1.1. If Track 1 is not achieved, the following Track 4 Site-Specific SCOs will be used:

<u>Contaminant</u>	<u>Track 4 SCOs</u>
SVOCs	250 ppm
Lead	800 ppm
Mercury	1.5 ppm

Soil and materials management on-Site and off-Site, including excavation, handling and disposal, will be conducted in accordance with the Soil/Materials Management Plan in Attachment C.

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.

**Estimated Soil/Fill Removal Quantities**

The total quantity of soil/fill expected to be excavated and disposed off-Site is 4,414 yd<sup>3</sup> or approximately 4,023 tons.

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

<u>Disposal Facility</u>	<u>Waste Type</u>	<u>Estimated Quantities</u>
Permitted facility to be named	Historic Fill	4,023 tons

## End-Point Sampling

Removal actions for development purposes under this plan will be performed in conjunction with confirmation soil sampling. Six end point samples will be collected at the time of excavation. The base of excavation at locations will be determined by OER. For comparison to Track 1 SCOs, analytes will include VOCs, SVOCs, pesticides, PCBs and metals according to analytical methods described below. For comparison to Track 4 SCOs, analytes will only include trigger compounds and elements established on the Track 4 SCO list.

Hot-spot removal actions, whether established under this RAWP or identified during the remedial program, will be performed in conjunction with post remedial end-point samples to ensure that hot-spots are fully removed. Analytes for end-point sampling will be those parameters that are driving the hot-spot removal action and will be approved by OER. Frequency for hot-spot end-point sample collection is as follows:

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 should be taken within 24 hours of excavation, and should be taken from the zero to six-inch interval at the excavation floor. Samples taken after 24 hours should be taken at six to twelve inches.
4. For contaminated soil removal, post remediation soil samples for laboratory analysis should be taken immediately after contaminated soil removal. If the excavation is enlarged horizontally, additional soil samples will be taken pursuant to bullets 1-3 above.

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

New York State ELAP certified labs will be used for all confirmation and end-point sample analyses. Labs performing confirmation and end-point sample analyses will be reported in the RAR. The RAR will provide a tabular and map summary of all confirmation and end-point sample results and will include all data including non-detects and applicable standards and/or guidance values. End-point samples will be Confirmation samples will be analyzed for compounds and elements as described above utilizing the following methodology:

Soil analytical methods will include:

- Volatile organic compounds by EPA Method 8260;
- Semi-volatile organic compounds by EPA Method 8270;
- Target Analyte List metals; and
- Pesticides/PCBs by EPA Method 8081/8082.

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

### **Quality Assurance/Quality Control**

Field QA/QC will include the following procedures:

- Calibration of field equipment, including PID, on a daily basis;
- Analysis of one (1) duplicate sample per twenty (20) samples collected;
- Analysis of one (1) field blank sample;
- Analysis of one (1) laboratory blank sample;

- Use of dedicated and/or disposable field sampling equipment;
- Proper sample handling and preservation;
- Proper sample chain of custody documentation; and
- Completion of report logs.

The above procedures will be executed as follows:

- One (1) duplicate end-point soil sample will be collected to evaluate field sampling precision or reproducibility of measurements of the same parameter under the given set of conditions;
- Disposable sampling equipment will be used to minimize cross-contamination between samples;
- For each of the parameters analyzed, a sufficient sample volume will be collected to adhere to the specific analytical protocol, and provide sufficient sample for reanalysis if necessary;
- Because plasticizers and other organic compounds inherent in plastic containers may contaminate samples requiring organic analysis, samples will be collected in glass containers;
- Appropriate sample preservation techniques, including cold temperature storage at 4° C, will be utilized to ensure that the analytical parameters concentrations do not change between the time of sample collection and analysis; and
- Samples will be analyzed prior to the expiration of the respective holding time for each analytical parameter to ensure the integrity of the analytical results.

Import of soils onto the property and reuse of soils already onsite will be performed in conformance with the Soil/Materials Management Plan in Appendix 3 Attachment C. The estimated quantity of soil to be imported into the Site for backfill and cover soil is 2,800 cubic yards. The estimated quantity of onsite soil/fill expected to be reused/relocated on Site is zero tons.

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

Import of soils onto the property and reuse of soils already onsite will be performed in conformance with the Soil/Materials Management Plan in Attachment C. There will be no need

for imported soil to the Site, therefore the estimated quantity of soil to be imported into the Site for backfill and cover soil is 0 tons. The estimated quantity of onsite soil/fill expected to be reused/relocated on Site is 0 tons.

### **4.3 ENGINEERING CONTROLS**

The excavation required for the proposed Site development will achieve Track 1 Unrestricted Use SCOs. No Engineering Controls are required to address residual contamination at the Site. However, the following elements will be incorporated into the foundation design as part of the development: (1) composite cover system; (2) vapor barrier; and (3) ventilated parking system. If Track 1 is not achieved, these elements will constitute Engineering Controls that will be employed in the remedial action to address residual contamination remaining at the Site.

#### **Composite Cover System**

Exposure to residual soil/fill will be prevented by an engineered, composite cover system to be built on the Site. This composite cover system is comprised of:

- Structural 3-foot thick mat slab foundation resting on a 3-inch mud slab beneath the building footprint

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

#### **Vapor Barrier**

As part of development, migration of potential soil vapor from offsite in the future will be achieved with a combination of building slab and ventilated garage and a waterproofing/vapor barrier system.

The vapor barrier will consist of a 20-mil polyethylene and EVOH resin vapor barrier liner

(Vapor Block Plus 20). Vapor Block Plus 20 consists of seven-layer co-extruded barriers that is a highly resilient underslab and vertical wall barrier that is designed to restrict gases such as Radon and Methane from migrating through the ground and concrete slab.

The vapor barrier system design and installation will include an OER approved plastic membrane placed above the gravel layer and immediately below the floor slab. This membrane, when used in conjunction with products (tape and mastic) specifically designed for this function, will create a seal against the vapor pathway, preventing vapor permeation into occupied spaces.

Drawings detailing the design of this installation will be stamped and submitted to OER prior to construction. Manufacturer details are included in the appendix.

Vapor Block Plus 20-mil Vapor Barrier is designed to meet or exceed the following standards:

- ASTM E 1745 - Standard Specification for Water Vapor Retarders Used in Contact with Soil or Granular Fill Under Concrete Slabs
- ASTM D 882 - Test Methods for Tensile Properties of Thin Plastic Sheeting
- ASTM D 1709 - Test Methods for Impact Resistance of Plastic Film by Free-Falling Dart Method
- ASTM E 96 - Test Methods for Water Vapor Transmission of Materials
- ASTM E 154 - Test Methods for Water Vapor Retarders Used in Contact with Earth under Concrete Slabs, on Walls, or as Ground Cover
- ASTM E 631 - Terminology of Building Constructions
- ASTM F 1249 - Test Method for Water Vapor Transmission Rate Through Plastic Film and Sheeting Using a Modulated Infrared Sensor
- ASTM E 1643 - Standard Practice for Installation of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs

The project's Professional Engineer licensed by the State of New York will have primary direct responsibility for overseeing the implementation of the vapor barrier. The Remedial Action Report will include photographs (maximum of two photos per page) of the installation process, PE/RA certified letter (on company letterhead) from primary contractor responsible for installation oversight and field inspections, and a copy of the manufacturers certificate of warranty.

#### 4.4 INSTITUTIONAL CONTROLS

Institutional Controls are not required on sites that achieve Track 1 Remedial Action. If Track 1 SCOs are not achieved, Institutional Controls (IC) will be utilized in this remedial action to manage residual soil/fill and other media and render the Site protective of public health and the environment. Institutional Controls are listed below. Long-term employment of EC/ICs will be implemented under a site-specific Site Management Plan (SMP) that will be included in the RAR..

Institutional Controls for this remedial action are:

- The property will continue to be registered with an E-Designation at the NYC Buildings Department. This RAWP includes a description of all ECs and ICs and summarizes the requirements of the Site Management Plan which will note that the property owner and property owner's successors and assigns must comply with the approved SMP;
- 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 at a frequency to be determined by OER in the SMP and will comply with RCNY §43-1407(1)(3).
- Vegetable gardens and farming on the Site are prohibited in contact with residual soil materials;
- 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 mixed residential and manufacturing purposes and will not be used for a higher level of use without prior approval by OER.

#### **4.5 SITE MANAGEMENT PLAN**

Site Management is not required for Track 1 remedial actions. However, if Track 1 SCOs are not achieved, Site Management will be the last phase of remediation and begins with the approval of the Remedial Action Report and issuance of the Notice of Completion (NOC) for the Remedial Action. The Site Management Plan (SMP) describes appropriate methods and procedures to ensure implementation of all ECs and ICs that are required by this RAWP. The Site Management Plan is submitted as part of the RAR but will be written in a manner that allows its use as an independent document. Site Management continues until terminated in writing by OER. The property owner is responsible to ensure that all Site Management responsibilities defined in the Site Management Plan are implemented.

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

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

#### **4.6 QUALITATIVE HUMAN HEALTH EXPOSURE ASSESSMENT**

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

Investigations reported in the Remedial Investigation Report (RIR) are sufficient to complete a Qualitative Human Health Exposure Assessment (QHHEA). As part of the VCP process, a QHHEA was performed to determine whether the Site poses an existing or future health hazard to the Site's exposed or potentially exposed population. The sampling data from the RI were evaluated to determine whether there is any health risk by characterizing the exposure setting, identifying exposure pathways, and evaluating contaminant fate and transport. This QHHEA was prepared in accordance with Attachment C and Section 3.3 (b) 8 of the NYS DEC Draft DER-10 Technical Guidance for Site Investigation and Remediation.

## **Known and Potential Sources**

Historic fill material is present at the Site from grade to approximately 2 feet below grade. Based on the results of the Remedial Investigation Report, the contaminants of concern found are:

### Soil

- SVOCs including benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene, indeno(1,2,3-cd)pyrene, and phenanthrene exceeded Track 2 Restricted Residential SCOs.
- Metals including chromium, copper, lead, mercury and zinc were detected above Unrestricted Use SCOs. Chromium was also detected above Unrestricted Use SCOs within one of the deep samples.

### Groundwater

- One VOC; chloroform exceeded Groundwater Quality Standards (GQS) in one sample;
- SVOCs, benz(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene and chrysene exceeded GQS;
- Metals, including aluminum, iron, manganese, and sodium exceeded GQS;

### Soil Vapor

- One chlorinated VOC; Tetrachloroethylene was above NYS DOH monitoring thresholds; and
- Petroleum VOCs detected at low concentrations.

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

SVOCs and low levels of metals are present in the historic fill materials throughout the Site. Groundwater is more than 39 feet deep. SVOCs and metals were detected in groundwater above their respective GQS. Soil vapors detected low levels of petroleum related and chlorinated

compounds. The chlorinated VOCs in soil vapor were not detected or were well below guidance issued by New York State DOH and were not found in any of the on-Site soil or groundwater samples collected.

### **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 and soil.

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

An exposure pathway begins with a source and a mechanism of contaminant release, resulting in the contamination of a received matrix (environmental medium). A complete exposure pathway also requires a point of potential contact with the contaminated matrix (i.e. exposure point), an exposure route (i.e. inhalation, ingestion, or dermal contact), and a receptor population. If an exposure pathway is not complete because it does not include a contaminated matrix, a point of potential contact, an exposure route, or a receptor, then no risk exists.

## **Existing**

The Site is developed with a two story residential building on lot 36 and a one story commercial building which is fully vacant on lot 34. Groundwater is not marginally contaminated but IS NOT exposed at the Site, and because the Site is served by the public water supply, groundwater is not used at the Site. There are structures on Site where soil vapor could accumulate.

## **Construction/ Remediation Activities**

Once redevelopment activities begin, construction workers will come into direct contact with surface and subsurface soils and groundwater (if dewatering is required) as a result of on-Site construction/excavation activities. Similarly, off-Site receptors could be exposed to dust from onsite activities. During construction, on-Site and off-Site exposures to contaminated dust from on-Site will be addressed through dust controls, and through the implementation of the Community Air Monitoring Plan and a Construction Health and Safety Plan. Groundwater is not anticipated to be encountered at the lowest excavation elevation (elevator pits).

## **Proposed Future Conditions**

Once the remedial actions and redevelopment of the Site have been completed, there will be no potential onsite exposure pathways. Not only will historic fill be removed, but the Site will also be fully capped with the concrete building slab, which will prevent contact with any residual soils. Any exposures to vapors from off-site sources will be prevented by installation of a vapor barrier, the building foundation slab, and two sub-grade levels of parking with a ventilation system.

## **Receptor Populations**

The immediate area surrounding the Site is mixed use residential and commercial, and is anticipated to remain as such. The new building at the site will be utilized as a mixed use commercial and residential facility. Potential receptor populations are as follows:

- On-Site Receptors - The Site is currently partially vacant and developed. Therefore, the only potential on-Site receptors are Site Representatives and trespassers. During

redevelopment of the Site, the on-Site potential receptors will include construction workers, site representatives, and visitors. Once the Site is redeveloped, the on-Site potential sensitive receptors will include adult and child building residents, workers, and visitors.

- Off-Site Receptors - Potential offsite 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. Bosnian Hercegovinian Islamic Center (37-42 Crescent Street)
  2. I.S. 204 Oliver W. Holmes (36-41 28<sup>th</sup> Street)

### **Overall Human Health Exposure Assessment**

Based upon this analysis, complete on-site exposure pathways appear to be present only during the remedial action phase. Under current conditions, preventing access to the Site and the paved cap minimize on-Site exposure pathways. During the remedial action, on-site exposure pathways will be eliminated by preventing access to the Site, through implementation of soil/materials management, storm water pollution prevention, dust controls, employment of a community air monitoring plan, and implementation of 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 that exceeds Unrestricted Use Track 1 SCOs will have been removed, and the vapor barrier and concrete building slabs will interrupt potential for soil vapor intrusion. This assessment takes into consideration the reasonably anticipated use of the site, which includes a residential structure, site-wide impervious surface cover cap, and a subsurface vapor barrier system for the building. Potential post-construction use of groundwater is not considered an option because groundwater in this area of New York City is not used as a potable water source. There are no surface waters in close proximity to the Site that could be impacted or threatened.

## **5.0 REMEDIAL ACTION MANAGEMENT**

### **5.1 PROJECT ORGANIZATION AND OVERSIGHT**

Principal personnel who will participate in the remedial action include **TBD**. The Professional Engineer (PE) and Qualified Environmental Professional (QEP) for this project is Richard D. Galli, P.E.

### **5.2 SITE SECURITY**

Site access will be controlled by gated entrances. Barriers will be installed around work areas as needed to delineate and restrict access to the work area.

### **5.3 WORK HOURS**

The hours for operation of remedial construction will be from 8am to 7pm. These hours conform to the New York City Department of Buildings construction code requirements.

### **5.4 CONSTRUCTION HEALTH AND SAFETY PLAN**

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

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

Personnel entering any exclusion zone will be trained in the provisions of the HASP and be required to sign an HASP acknowledgment. Site-specific training will be provided to field personnel. Additional safety training may be added depending on the tasks performed. Emergency telephone numbers will be posted at the site location before any remedial work begins. A safety meeting will be conducted before each shift begins. Topics to be discussed include task hazards and protective measures (physical, chemical, environmental); emergency procedures; PPE levels and other relevant safety topics. Meetings will be documented in a log book or specific form.

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

## **5.5 COMMUNITY AIR MONITORING PLAN**

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

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

of the Community Air Monitoring Plan (CAMP) will be reported to the OER Project Manager and included in the Daily Report.

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

Volatile organic compounds (VOCs) will be monitored at the downwind perimeter of the immediate work area (i.e., the exclusion zone) on a continuous basis during invasive work. Upwind concentrations will be measured at the start of each workday and periodically thereafter to establish background conditions. The monitoring work will be performed using equipment appropriate to measure the types of contaminants known or suspected to be present. The equipment will be calibrated at least daily for the contaminant(s) of concern or for an appropriate surrogate. The equipment will be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below.

- If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 parts per million (ppm) above background for the 15-minute average, work activities will be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities will resume with continued monitoring.
- If total organic vapor levels at the downwind perimeter of the work area or exclusion zone persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities will be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities will resume provided that the total organic vapor level 200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less - but in no case less than 20 feet, is below 5 ppm over background for the 15-minute average.
- If the organic vapor level is above 25 ppm at the perimeter of the work area, activities will be shutdown.

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

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

Particulate concentrations will be monitored continuously at the upwind and downwind perimeters of the exclusion zone at temporary particulate monitoring stations. The particulate monitoring will be performed using real-time monitoring equipment capable of measuring particulate matter less than 10 micrometers in size (PM-10) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level. The equipment will be equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration should be visually assessed during all work activities.

- If the downwind PM-10 particulate level is 100 micrograms per cubic meter ( $\text{mcg}/\text{m}^3$ ) 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 re-evaluation of activities initiated. Work will resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within  $150 \text{ mcg}/\text{m}^3$  of the upwind level and in preventing visible dust migration.

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

## **5.6 AGENCY APPROVALS**

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

## **5.7 SITE PREPARATION**

### **Pre-Construction Meeting**

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

### **Mobilization**

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

### **Utility Marker Layouts, Easement Layouts**

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

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

### **Equipment and Material Staging**

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

### **Stabilized Construction Entrance**

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

### **Truck Inspection Station**

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

### **Extreme Storm Preparedness and Response Contingency Plan**

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

### **Storm Preparedness**

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

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

### **Storm Response**

At the conclusion of an extreme storm event, as soon as it is safe to access the property, a complete inspection of the property will be performed. A site inspection report will be submitted to OER at the completion of site inspection and after the site security is assessed. Site conditions will be compared to the inventory of site conditions and material performed prior to the storm event and significant differences will be noted. Damage from storm conditions that result in acute public safety threats, such as downed power lines or imminent collapse of buildings, structures or equipment will be reported to public safety authorities via appropriate means such as calling 911. Petroleum spills will be reported to NYS DEC within 2 hours of identification and consistent with State regulations. Emergency and spill conditions will also be reported to OER. Public safety structures, such as construction security fences will be repaired promptly to eliminate public safety threats. Debris will be collected and removed. Dewatering will not be necessary for this site since excavation will at most go to 18 feet and groundwater is at approximately at 39 feet. Eroded areas of soil including unsafe slopes will be stabilized and fortified. Dislocated materials will be collected and appropriately managed. Support of excavation structure will be inspected and fortified as necessary. Since there will be no stockpiles, there will be no impacted stockpiles that will need to be contained and/or any damaged stockpile covers that would need to be replaced. Storm-water control systems and structures will be inspected and maintained as necessary. If soil or fill materials are discharged off site to adjacent properties, property owners and OER will be notified and corrective measure plans designed to remove and clean dislocated material will be submitted to OER and

implemented following approval by OER and granting of site access by the property owner. Impacted offsite areas may require characterization based on site conditions, at the discretion of OER. If onsite petroleum spills are identified, a qualified environmental professional will determine the nature and extent of the spill and report to NYS DEC's spill hotline at DEC 800-457-7362. If the source of the spill is ongoing and can be identified, it should be stopped if this can be done safely. Potential hazards will be addressed immediately, consistent with guidance issued by NYS DEC.

### **Storm Response Reporting**

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

### **5.8 TRAFFIC CONTROL**

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

Trucks departing the site to the west will take the Lincoln Tunnel (13' limit) via the Queens-Midtown Tunnel. Trucks will follow 38<sup>th</sup> Avenue to the west and turn left (south) onto 21<sup>st</sup> Street. Trucks will follow 21<sup>st</sup> Street until they reach I-495. Trucks will enter I-495 via the I-495W ramp, taking it through the Queens-Midtown Tunnel, into Midtown Manhattan. At the end of the tunnel trucks will be directed south, to 34<sup>th</sup> Street. Trucks will make a right on 34<sup>th</sup> Street and drive across town, following signs for the Lincoln Tunnel.

Trucks departing the site to the north-west will take the George Washington Bridge (13'-6" limit) via the RFK Bridge. Trucks will follow 38<sup>th</sup> Avenue to the west and turn right (north) onto 21<sup>st</sup> Street. Trucks will follow 21<sup>st</sup> Street until they reach I-278. Trucks will enter I-278 via the 29<sup>th</sup> Street entrance ramp. Trucks continue on 21<sup>st</sup> Street, below I-278, and make a right onto 24<sup>th</sup> Avenue. At 29<sup>th</sup> Street, trucks will turn right and see the entrance ramp ahead. Trucks will cross Randall's Island and enter the Bronx. Trucks continuing to the west will take I-87 and follow signs for the George Washington Bridge.

Trucks departing the site to the north-east will take the Whitestone Bridge to the Bronx. Trucks will follow 38<sup>th</sup> Avenue to the west and turn left (south) onto 21<sup>st</sup> Street. Trucks will follow 21<sup>st</sup> Street until they reach I-495. Trucks will enter I-495 via the I-495E ramp, taking it to I-678N and over the Whitestone Bridge. Alternatively, trucks may take I-495E to the Clearview Expressway, following that north to the Throgs Neck Bridge.

## **5.9 DEMOBILIZATION**

Demobilization will include:

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

- General refuse disposal.

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

## **5.10 REPORTING AND RECORD KEEPING**

### **Daily Reports**

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

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

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

communicated directly to the OER project manager by personal communication. Daily reports will be included as an Appendix in the Remedial Action Report.

### **Record Keeping and Photo-Documentation**

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

### **5.11 COMPLAINT MANAGEMENT**

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

### **5.12 DEVIATIONS FROM THE REMEDIAL ACTION WORK PLAN**

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

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

## 6.0 REMEDIAL ACTION REPORT

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

- Information required by this RAWP;
- As-built drawings for all constructed remedial elements, required certifications, manifests and other written and photographic documentation of remedial work performed under this remedy;
- Site Management Plan (if Track 1 is not achieved);
- 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.
- Continue registration of the property with an E-Designation by the NYC Department of Buildings.

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

## **Remedial Action Report Certification**

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

*I, Richard D. Galli, 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 25-11 & 25-17 38<sup>th</sup> Avenue Site Site number 14HAZ313Q.*

*I, Richard D. Galli, am a qualified Environmental Professional. I had primary direct responsibility for implementation remedial program for the 25-11 & 25-17 38<sup>th</sup> Avenue Site*

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

## 7.0 SCHEDULE

The table below presents a schedule for the proposed remedial action and reporting. If the schedule for remediation and development activities changes, it will be updated and submitted to OER. Currently, a 12-15 day removal 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	4	4
Remedial Excavation	4	6
Demobilization	20	4
Submit Remedial Action Report	40	

## ATTACHMENT A

### CITIZEN PARTICIPATION PLAN

The NYC Office of Environmental Remediation and [Tamares Development I, LLC](#) has established this Citizen Participation Plan because the opportunity for citizen participation is an important component of the NYC Voluntary Cleanup Program. This Citizen Participation Plan describes how information about the project will be disseminated to the Community during the remedial process. As part of its obligations under the NYC VCP, [Tamares Development I, LLC](#) will maintain a repository for project documents and provide public notice at specified times throughout the remedial program. This Plan also takes into account potential environmental justice concerns in the community that surrounds the project Site. Under this Citizen Participation Plan, project documents and work plans are made available to the public in a timely manner. Public comment on work plans is strongly encouraged during public comment periods. Work plans are not approved by the NYC Office of Environmental Remediation (OER) until public comment periods have expired and all comments are formally reviewed. An explanation of cleanup plans in the form of a public meeting or informational session is available upon request to OER's project manager assigned to this Site, [Alysha Alfieri](#), who can be contacted about these issues or any other questions, comments or concerns that arise during the remedial process at [\(212\) 676-0459](tel:2126760459).

#### **Project Contact List**

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

member of the public or organization will be added to the Site Contact List on request. A copy of the Site Contact List is maintained by OER's project manager. If you would like to be added to the Project Contact List, contact NYC OER at (212) 788-8841 or by email at [brownfields@cityhall.nyc.gov](mailto:brownfields@cityhall.nyc.gov).

## **Repositories**

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

[Long Island City Library](#)

[37-44 21<sup>st</sup> Street](#)

[\(718\) 752-3700](#)

[Monday: 9am-8pm](#)

[Tuesday: 2pm-7pm](#)

[Wednesday, Thursday, Friday: 11am-7pm](#)

[Saturday: 10am-5:30pm](#)

[Sunday: Closed](#)

## **Digital Documentation**

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

## **Identify Issues of Public Concern**

The major issues of concern to the public will be potential impacts of nuisance odors and dust during the disturbance of historic fill soils at the Site. This work will be performed in accordance with procedures which will be specified under a detailed Remedial Program which considers and takes preventive measures for exposures to future residents of the property and those on adjacent properties during construction. Detailed plans to monitor the potential for exposure including a Construction Health and Safety Plan and a Community Air Monitoring Plan are required components of the remedial program.

Implementation of these plans will be under the direct oversight of the New York City Office of Environmental Remediation (NYC OER). These plans will specify the following worker and community health and safety activities during remedial activity at the Site:

- On-Site air monitoring for worker protection,
- Perimeter air monitoring for community protection.

The Health and Safety Plan and the Community Air Monitoring Plan prepared as part of the Remedial Action Work Plan will be available for public review at the document repository.

## **Public Notice and Public Comment**

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

## **Citizen Participation Milestones**

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

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

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

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

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

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

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

## **ATTACHMENT B**

### **SUSTAINABILITY STATEMENT**

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

#### **Reuse of Clean, Recyclable Materials**

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

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

#### **Reduce Consumption of Virgin and Non-Renewable Resources**

Reduced consumption of virgin and non-renewable resources lowers the overall environmental impact of the project on the region by conserving these resources.

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

#### **Reduced Energy Consumption and Promotion of Greater Energy Efficiency**

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

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

### **Conversion to Clean Fuels**

Use of clean fuel improves NYC's air quality by reducing harmful emissions.

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

### **Recontamination Control**

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

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

### **Storm-water Retention**

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

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

### **Linkage with Green Building**

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

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

### **Paperless Brownfield Cleanup Program**

[Tamares Development I, LLC](#) is participating in OER's Paperless Brownfield Cleanup Program. Under this program, submission of electronic documents will replace submission of hard copies for the review of project documents, communications and milestone reports.

### **Low-Energy Project Management Program**

[Tamares Development I, LLC](#) is participating in OER's low-energy project management program. Under this program, whenever possible, meetings are held using remote communication technologies, such as videoconferencing and teleconferencing to reduce energy consumption and traffic congestion associated with personal transportation.

## **Trees and Plantings**

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

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

## **ATTACHMENT C**

### **SOIL/MATERIALS MANAGEMENT PLAN**

#### **1.1 SOIL SCREENING METHODS**

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

#### **1.2 STOCKPILE METHODS**

Excavated soil from suspected areas of contamination (e.g., hot spots, USTs, drains, etc.) will be stockpiled separately and will be segregated from clean soil and construction materials. Stockpiles will be used only when necessary and will be removed as soon as practicable. While stockpiles are in place, they will be inspected daily, and before and after every storm event. Results of inspections will be recorded in a logbook and maintained at the Site and available for inspection by OER. Excavated soils will be stockpiled on, at minimum, double layers of 8-mil minimum sheeting, will be kept covered at all times with appropriately anchored plastic tarps, and will be routinely inspected. Broken or ripped tarps will be promptly replaced.

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

### **1.3 CHARACTERIZATION OF EXCAVATED MATERIALS**

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

### **1.4 MATERIALS EXCAVATION, LOAD-OUT AND DEPARTURE**

The PE/QEP overseeing the remedial action will:

- oversee remedial work and the excavation and load-out of excavated material;
- ensure that there is a party responsible for the safe execution of invasive and other work performed under this work plan;
- ensure that Site development activities and development-related grading cuts will not interfere with, or otherwise impair or compromise the remedial activities proposed in this RAWP;
- ensure that the presence of utilities and easements on the Site has been investigated and that any identified risks from work proposed under this plan are properly addressed by appropriate parties;
- ensure that all loaded outbound trucks are inspected and cleaned if necessary before leaving the Site;
- 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 6NYCRR 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.

Trucks departing the site to the west will take the Lincoln Tunnel (13' limit) via the Queens-Midtown Tunnel. Trucks will follow 38<sup>th</sup> Avenue to the west and turn left (south) onto 21<sup>st</sup> Street. Trucks will follow 21<sup>st</sup> Street until they reach I-495. Trucks will enter I-495 via the I-495W ramp, taking it through the Queens-Midtown Tunnel, into Midtown Manhattan. At the end of the tunnel trucks will be directed south, to 34<sup>th</sup> Street. Trucks will make a right on 34<sup>th</sup> Street and drive across town, following signs for the Lincoln Tunnel.

Trucks departing the site to the north-west will take the George Washington Bridge (13'-6" limit) via the RFK Bridge. Trucks will follow 38<sup>th</sup> Avenue to the west and turn right (north) onto 21<sup>st</sup> Street. Trucks will follow 21<sup>st</sup> Street until they reach I-278. Trucks will enter I-278 via the 29<sup>th</sup> Street entrance ramp. Trucks continue on 21<sup>st</sup> Street, below I-278, and make a right onto 24<sup>th</sup> Avenue. At 29<sup>th</sup> Street, trucks will turn right and see the entrance ramp ahead. Trucks will cross Randall's Island and enter the Bronx. Trucks continuing to the west will take I-87 and follow signs for the George Washington Bridge.

Trucks departing the site to the north-east will take the Whitestone Bridge to the Bronx. Trucks will follow 38<sup>th</sup> Avenue to the west and turn left (south) onto 21<sup>st</sup> Street. Trucks will follow 21<sup>st</sup> Street until they reach I-495. Trucks will enter I-495 via the I-495E ramp, taking it to I-678N and over the Whitestone Bridge. Alternatively, trucks may take I-495E to the Clearview Expressway, following that north to the Throgs Neck Bridge.

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

## **1.6 MATERIALS DISPOSAL OFF-SITE**

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

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

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

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

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

### **1.7 MATERIALS REUSE ON-SITE**

Soil and fill that is derived from the property that meets the soil cleanup objectives established in this plan may be reused on-Site. The soil cleanup objectives for on-Site reuse are listed in Table 375(a). ‘Reuse on-Site’ means material that is excavated during the remedy or development, does not leave the property, and is relocated within the same property and on comparable soil/fill material, and addressed pursuant to the NYC VCP agreement subject to Engineering and Institutional Controls. The PE/QEP will ensure that reused materials are segregated from other materials to be exported from the Site and that procedures defined for material reuse in this RAWP are followed. The reuse of soil is not planned for the Site.

There will be no stockpiles or re-use of materials on-site. All soil will be loaded onto trucks and exported to appropriate facilities.

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 RAR.

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

## **1.9 IMPORT OF BACKFILL SOIL FROM OFF-SITE SOURCES**

This Section presents the requirements for imported fill materials to be used below the cover layer and within the clean soil cover layer. All imported soils will meet OER-approved backfill and cover soil quality objectives for this Site. The backfill and cover soil quality objectives are listed in Table 2.

A process will be established to evaluate sources of backfill and cover soil to be imported to the Site, and will include an examination of source location, current and historical use(s), and any

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

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

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

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

### **Source Screening and Testing**

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

- Trucks with imported fill material will be in compliance with applicable laws and regulations and will enter the Site at designated locations;
- The PE/QEP is responsible to ensure that every truck load of imported material is inspected for evidence of contamination; and

- Fill material will be free of solid waste including pavement materials, debris, stumps, roots, and other organic matter, as well as ashes, oil, perishables or foreign matter.

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

Recycled concrete aggregate (RCA) will be imported from facilities permitted or registered by NYS DEC. Facilities will be identified in the RAR. A PE/QEP is responsible to ensure that the facility is compliant with 6NYCRR Part 360 registration and permitting requirements for the period of acquisition of RCA. RCA imported from compliant facilities will not require additional testing, unless required by NYS DEC under its terms for operation of the facility. RCA imported to the Site must be derived from recognizable and uncontaminated concrete. RCA material is not acceptable for, and will not be used as cover material.

#### **1.10 FLUIDS MANAGEMENT**

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

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

### **1.11 STORM-WATER POLLUTION PREVENTION**

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

### **1.12 CONTINGENCY PLAN**

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

## **1.13 ODOR, DUST AND NUISANCE CONTROL**

### **Odor Control**

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

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

### **Dust Control**

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

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

This dust control plan is capable of controlling emissions of dust. If nuisance dust emissions are identified, work will be halted and the source of dusts will be identified and corrected. Work will not resume until all nuisance dust emissions have been abated. OER will be notified of all

dust complaint events. Implementation of all dust controls, including halt of work, will be the responsibility of the PE/QEP's responsible for certifying the Remedial Action Report.

**Other Nuisances**

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

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

**ATTACHMENT D**

**HEALTH AND SAFETY PLAN**