45-35 11TH STREET AND 11-22 45TH ROAD
QUEENS, NEW YORK

Remedial Action Work Plan

NYC VCP Project Number 15CVCP065Q
OER Project Number 15EH-A009Q

Prepared For:

GDC LIC Owner LLC
245 Saw Mill River Road
Hawthorne, New York 10532
morlandi@gdcproperties.com

Prepared By:

Ecosystems Strategies, Inc.
24 Davis Avenue
(845) 452-1658
paul@ecosystemsstrategies.com

FEBRUARY 2015

REMEDIAL ACTION WORK PLAN
TABLE OF CONTENTS

LIST OF ACRONYMS **1**

CERTIFICATION **3**

EXECUTIVE SUMMARY **4**

COMMUNITY PROTECTION STATEMENT **10**

REMEDIAL ACTION WORK PLAN **14**

1.0 SITE BACKGROUND **14**
- 1.1 Site Location and Current Usage
- 1.2 Proposed Redevelopment Plan
- 1.3 Description of Surrounding Properties
- 1.4 Remedial Investigation

2.0 REMEDIAL ACTION OBJECTIVES **19**

3.0 REMEDIAL ALTERNATIVES ANALYSIS **20**
- 3.1 Threshold Criteria – Protection of Public Health and the Environment
- 3.2 Balancing Criteria

4.0 REMEDIAL ACTION **29**
- 4.1 Summary of Preferred Remedial Action
- 4.2 Soil Cleanup Objectives and Soil/Fill Management
- 4.3 Engineering Controls
- 4.4 Institutional Controls
- 4.5 Site Management Plan
- 4.6 Qualitative Human Health Exposure Assessment

5.0 REMEDIAL ACTION MANAGEMENT **42**
- 5.1 Project Organization and Oversight
- 5.2 Site Security
- 5.3 Work Hours
- 5.4 Construction Health and Safety Plan
- 5.5 Community Air Monitoring Plan
- 5.6 Agency Approvals
- 5.7 Site Preparation
- 5.8 Traffic Control
- 5.9 Demobilization
- 5.10 Reporting and Record Keeping
- 5.11 Compliant Management
- 5.12 Deviations from the Remedial Action Work Plan

TABLE OF CONTENTS (CONT'D)

6.0 REMEDIAL ACTION REPORT 51

7.0 SCHEDULE 53

FIGURES

- Figure 1: Site Location Map
- Figure 2: Selected Site Features Map
- Figure 3: Proposed Site Development
- Figure 4: Surrounding Land Use
- Figure 5: Surrounding Land Zoning
- Figure 6: Site Investigation Map
- Figure 7: Site Excavation Diagram
- Figure 8: Truck Route Map

TABLE

- Table 1: Land Uses in the Vicinity of the Subject Property

APPENDICES

- Appendix 1: Proposed Development Plans
- Appendix 2: Citizen Participation Plan
- Appendix 3: Sustainability Statement
- Appendix 4: Soil/Materials Management Plan
- Appendix 5: Construction Health and Safety Plan

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 and Demolition
CEQR	City Environmental Quality Review
CFR	Code of Federal Regulations
CHASP	Construction Health and Safety Plan
COC	Certificate of Completion
CQAP	Construction Quality Assurance Plan
CSOP	Contractors Site Operation Plan
DCR	Declaration of Covenants and Restrictions
ECs/ICs	Engineering Controls and Institutional Controls
ELAP	Environmental Laboratory Accreditation Program
HASP	Health and Safety Plan
HAZWOPER	Hazardous Waste Operations Emergency Response
IRM	Interim Remedial Measure
BCA	Brownfield Cleanup Agreement
MNA	Monitored Natural Attenuation
NOC	Notice of Completion
NYS DEC	New York State Department of Environmental Conservation
NYC DEP	New York City Department of Environmental Protection
NYC DOHMH	New York State Department of Health and Mental Hygiene
NYC OER	New York City Office of Environmental Remediation
NYC VCP	New York City Voluntary Cleanup Program
NYCRR	New York Codes Rules and Regulations
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
PCBs	Professional Engineer Polychlorinated Biphenyls
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
SSDS	Sub-Slab Depressurization System
SVOC	Semi-Volatile Organic Compound
TAL	Target Analyte List
TCL	Target Compound List
USGS	United States Geological Survey
UST	Underground Storage Tank
VOC	Volatile Organic Compound

CERTIFICATION

I, Jolanda Jansen, am a Professional Engineer licensed in the State of New York. I have primary direct responsibility for implementation of the remedial action for the 45-35 11th Street and 11-22 45th Road Site (NYC OER Project Number 15EH-A009Q and NYC VCP Project Number 15CVCP065Q).

I, Paul H. Ciminello am a Qualified Environmental Professional as defined in §43-140. I have primary direct responsibility for implementation of the remedial action for the 45-35 11th Street and 11-22 45th Road Site (NYC OER Project Number 15EH-A009Q and NYC VCP Project Number 15CVCP065Q).

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.

Jolanda Jansen
Name

068972-1
NYS PE License Number

Signature

2/6/15
Date

Paul H. Ciminello
QEP Name

QEP Signature

2-6-15
Date

EXECUTIVE SUMMARY

GDC LIC Owner LLC is working with the NYC Office of Environmental Remediation (OER) to investigate and remediate a 50,002-square foot site located at 45-35 11th Street and 11-22 45th Road in Queens, New York. A remedial investigation (RI) was performed to compile and evaluate data and information necessary to develop this Remedial Action Work Plan (RAWP). The remedial action described in this document provides for the protection of public health and the environment consistent with the intended property use, complies with applicable environmental standards, criteria and guidance and conforms with applicable laws and regulations.

Site Location and Current Usage

The Site consists of two contiguous parcels in the Hunters Point section in Queens, New York and is identified as Block 54 and Lot 20, and Block 54 and Lot 13 on the New York City Tax Map. Figure 1 shows the Site location. Lot 20 of the Site is 12,000-square feet and is bounded by 45th Road to the north, 11th Street to the west, 46th Avenue to the south, and Lot 13 to the east. Lot 13 of the Site is 38,000-square feet and is bounded by 45th Road and an adjoining commercial building to the north, Lot 13 to the west, 46th Avenue to the south, and an adjoining commercial building to the east. Figure 2, Site Map, shows the Site boundary. Lot 20 of the Site (currently vacant) was formerly used as a commercial facility by Wayland Industries, Inc. (for storage and distribution of elevator cables) and contains one structure (a high one-story building with small second story office space) that occupies the entire parcel. Lot 13 of the Site (currently vacant) was formerly used as a commercial facility (former Shine Electronics facility) and contains one structure (a high one-story building) that occupies the majority of the parcel, and a small parking lot/loading dock area at the southeastern corner at 46th Avenue.

Summary of Proposed Redevelopment Plan

Preliminary development plans for the Site include the construction of new residential buildings (expected to contain approximately 39, 4-story (+ mezzanine level) 2-family townhouses). As of the date of this report, final development plans have not been determined. Final development plans will be presented to OER as this information becomes available. Total excavation depth has not been determined at this time; the 1st floor of the new on-site townhouse buildings are expected to be raised approximately 4 feet and will include basements. Excavation depth is anticipated to generally be approximately 6 feet below surface grade (bsg). The referenced lots will be sub-divided into smaller lots, each containing a single townhouse, and the New York City Department of Finance has issued an approval of Form RP-602 for tentative tax lot lines for the 46th Avenue and 45th Road frontages. The tentative tax lot lines for the 11th Street frontage has not yet been determined and will be presented to OER as this information becomes available.

Summary of Environmental Findings

1. Elevation of the property is approximately 12 to 14.5 feet.
2. Depth to groundwater at the Site ranges from approximately 8.9 to 10.0 feet below existing building slabs (groundwater elevations of 5.4 to 6.2 feet).
3. Groundwater flow is generally from south-southeast to north-northwest beneath the Site.
4. Depth to bedrock has not been determined (no bedrock was encountered to a maximum depth of 20 feet below the building floor [approximately 17 feet below street level]). The results of structural geotechnical borings will be provided to OER as they become available.
5. The stratigraphy of the site, from the surface (concrete floor of building) down, consists of approximately 10 to 13 feet variable texture sand (likely fill), with masonry debris noted in the 0 to 5 feet interval, underlain by variable texture native sands with weathered rock, silt, clay and limited organic material.
6. Soil/fill samples collected during the RI showed evidence of petroleum contamination at MW-2 10-15', with possible low-level petroleum impacts noted at MW-1 10-15'. No evidence of a petroleum release was observed in the vicinity of on-site storage tanks (an inactive fuel oil tank is located at each building), and soil data from the most proximal borings do not indicate any significant hydrocarbon contamination. A thin veneer of LNAPL is present in one well (MW-4) hydraulically upgradient of both USTs, supporting the conclusion that this product is not related to the storage tanks. A spill event, No. 1409327, was reported to NYSDEC based on the presence of LNAPL.
7. Soil/fill samples collected during the RI were compared to NYSDEC Part 375-6 Unrestricted Use (Track 1) and Restricted Residential Use (Track 2) Soil Cleanup Objectives (SCOs). Five VOCs, acetone (max. of 0.24 mg/kg), 2-butanone (max. of 0.17 mg/kg), benzene (max. of 0.76 mg/kg), and p- & m-xylene (max. of 1.4 mg/kg) were detected above their respective Unrestricted Residential SCOs. Naphthalene (52 mg/kg) was detected in one deep sample at a concentration above Restricted Residential Use SCOs. Seventeen (17) SVOCs were detected above their Restricted Residential SCOs; benzo(a)anthracene (max of 145 mg/kg), benzo(b)fluoranthene (max of 47.5 mg/kg), benzo(a)pyrene (max of 60.3 mg/kg), benzo(k)fluoranthene (max of 71.9 mg/kg),chrysene (max of 171 mg/kg), dibenzo(a,h)anthracene (max of 2.75 mg/kg), and indeno(1,2,3-cd)pyrene (max of 5.09 mg/kg) were identified in deep and shallow samples, and 2-methylnaphthalene (max of 244 mg/kg), acenaphthene (max of 148 mg/kg), acenaphthylene (max of 166 mg/kg), anthracene (max of 266 mg/kg), dibenzofuran (max of 204 mg/kg), fluoranthene (max of 555 mg/kg), fluorene (max of 241 mg/kg), naphthalene (max of 1,290 mg/kg), phenanthrene (max of 919 mg/kg), and pyrene (max of 462 mg/kg) were identified in one deep sample. Highest concentrations of SVOCs were detected in one deeper soil sample (MW-1 (11'-13')), indicating a hot spot location. Metals including arsenic (max of 44.7 mg/kg), barium (max of

557 mg/kg), copper (max of 1,560 mg/kg), lead (max of 889 mg/kg) and mercury (max of 0.983 mg/kg), were detected above Restricted Residential Use SCOs. Chromium, selenium, silver, and zinc also exceeded their Unrestricted Use SCOs. One pesticide, 4,4-DDT (max of 0.0088 mg/kg) was detected above its Unrestricted Use SCOs in one shallow sample.

8. Groundwater samples results were compared to NYSDEC 6NYCRR Part 703.5 Groundwater Quality Standards (GQS). Groundwater samples showed no detected concentrations of pesticides or PCBs. The VOCs, 1,2,4-trimethylbenzene (max of 89 ug/L), 1,2-dichloroethane (max of 6.4 ug/L), 1,3,5-trimethylbenzene (max of 48 ug/L), acetone (max of 57 ug/L), benzene (max of 170 ug/L), chloroform (max of 15 ug/L), ethyl benzene (max of 49 ug/L), isopropylbenzene (max of 5.9 ug/L), naphthalene (max of 1,100 ug/L), and n-propylbenzene (max of 6.4 ug/L) were detected above their respective GQS. SVOCs, including benzo(a)anthracene (max of 0.116 µg/L), benzo-(b)fluoranthene (max of 0.0947 µg/L), benzo(k)fluoranthene (max of 0.0737 µg/L), chrysene (max of 0.0737 µg/L), indeno(1,2,3-cd)pyrene (max of 0.0842 µg/L), 2,4-Dimethylphenol (max of 80.2 µg/L), acenapthene (max of 51.3 µg/L), and naphthalene (max of 622 µg/L) were detected above their GQS. Several metals were present in groundwater, but only arsenic (max of 808 µg/L), magnesium (max of 89,100 µg/L), manganese (max of 2,020 µg/L), selenium (max of 22 µg/L), and sodium (max of 148,000 µg/L) exceeded its GQS. Highest metal concentrations, including for arsenic (total at 1100 µg/L and dissolved at 808 µg/L), were detected in monitoring well MW-04. Groundwater samples collected from five of six monitoring wells during the RI showed significant field evidence of contamination, including odors, PID readings, and/or staining. Significant contamination by BTEX and related compounds has impacted groundwater at MW-4. A significantly elevated level of naphthalene, and elevated levels of 2,4-dimethylphenol were also detected at MW-2 (petroleum odors and organic material were noted at this location).

9. Soil vapor samples collected during the RI were compared to the compounds listed in Table 3.1 Air Guideline Values, provided in the New York State Department of Health (NYSDOH) Final Guidance for Evaluating Soil Vapor Intrusion. Trace to high levels of petroleum related compounds including BTEX (max. of 13,300 ug/m^3), cyclohexane (max of 3,170 ug/m^3), heptane (max of 1,700 ug/m^3), isopropanol (max of 1,820 ug/m^3), n-hexane (max of 75,400 ug/m^3), ethanol (max of 403 ug/m^3), and 4-ethyltoluene (max of 318 ug/m^3) were detected in one soil vapor sample (S-SG-2). Carbon Tetrachloride was not detected in any of the seven soil gas samples. 1,1,1-Trichloroethane was detected in two of the seven samples at a maximum concentration of 7.26 ug/m^3. Tetrachloroethylene (PCE) was detected in three of the seven samples at a maximum concentration of 46 ug/m^3. Trichloroethylene (TCE) was detected in two of the seven samples at a maximum concentration of 661 ug/m^3. Detected concentrations of PCE and TCE were above the monitoring level range established by NYSDOH.

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 all activities required for the remedial action, including permitting requirements and pretreatment requirements, in compliance with applicable laws and regulations.
3. Establishment of Track 4 Site-specific Soil Cleanup Objectives (SCOs).
4. Site mobilization involving Site security setup, equipment mobilization, utility mark outs and marking & staking excavation areas.
5. Perform additional site characterization sampling of soil, groundwater and soil vapor as required by OER in the southern portion of the Site. Five (5) soil borings, two (2) groundwater, and one soil vapor sample will be collected in the southern portion of the Site. A sampling Work Plan as discussed will be included in Stip letter.
6. Completion of a Waste Characterization Study prior to excavation activities. Waste characterization soil samples will be collected at a frequency dictated by disposal facility(s).
7. Excavation and removal of soil/fill exceeding Track 4 Site Specific SCOs. The majority of the Site (all areas with buildings) will be excavated to a depth of approximately 6 feet below grade for development purposes. A small portion of property (by MW-1 and MW-4) will be excavated to depths of approximately 12 feet below grade to remove any “hotspots”. Additional excavation may be required to install utilities. Approximately, 13,000 tons of soils will be excavated and removed from this Site.
8. 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.
9. Management of excavated materials including temporarily stockpiling and segregating in accordance with defined material types and to prevent co-mingling of contaminated material and non-contaminated materials.

10. Removal of two underground storage tanks (USTs) and any additional USTs (if encountered) and closure of petroleum spills (existing Spill number 1409327 and any additional spill reported if evidence of a spill/leak is encountered during Site excavation) in compliance with applicable local, State and Federal laws and regulations.
11. Spill closure and/or groundwater remediation will be managed under NYSDEC authority for Spill 1409327.
12. Transportation and off-Site disposal of all soil/fill material not reused on the Site at permitted facilities in accordance with applicable laws and regulations for handling, transport, and disposal, and this plan. Sampling and analysis of excavated media as required by disposal facilities. Appropriate segregation of excavated media on-Site.
13. Collection and analysis of five end-point samples to determine the performance of the remedy with respect to attainment of SCOs. End point samples will also be obtained for Spill closure.
14. Demarcation of residual soil/fill in landscaped areas.
15. Import of materials to be used for backfill and cover in compliance with this plan and in accordance with applicable laws and regulations. Usable fill soils will remain on-site to increase rear yard elevations; existing data indicate that most fill soils in the upper 6 feet of the site are acceptable for reuse as subgrade (i.e., beneath a cover layer) material.
16. Installation of a vapor barrier system beneath the building slab as well as behind foundation sidewalls of the proposed building below grade. The vapor barrier will consist of a (to-be determined system such as the W.R. Grace & Co. Preprufe Plus waterproofing membrane) with a minimum thickness of 20 mil.
17. Construction and maintenance of an engineered composite cover consisting of 6-inch thick concrete building slab, 12-inch thick concrete or asphalt paved walkways or driveways, and landscaped areas consisting of 2 feet of clean imported soil, to prevent human exposure to residual soil/fill remaining under the Site.
18. Performance of all activities required for the remedial action, including permitting requirements and pretreatment requirements, in compliance with applicable laws and regulations.
19. Implementation of storm-water pollution prevention measures in compliance with applicable laws and regulations.
20. 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 describes all Engineering and Institutional Controls to be implemented at the Site.

21. Submission of an approved Site Management Plan (SMP) in the Remedial Action Plan (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.
22. The property will continue to be registered with an E-Designation at the NYC Buildings Department. Establishment of Engineering Controls and Institutional Controls in this RAWP and a requirement that management of these controls must be in compliance with an approved SMP. Institutional Controls will include prohibition of the following: (1) vegetable gardening and farming; (2) use of groundwater without treatment rendering it safe for the intended use; (3) disturbance of residual contaminated material unless it is conducted in accordance with the SMP; and (4) higher level of land usage without OER-approval.

COMMUNITY PROTECTION STATEMENT

The NYC Office of Environmental Remediation (OER) provides 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.

Project Information:

- Site Address: 45-35 11th Street and 11-22 45th Road, Queens, New York
- NYC Voluntary Cleanup Program Project Number: 15CVCP065Q

Project Contacts:

- OER Project Manager: Alysha Alfieri, 212-676-0459 or OER at 212-788-8841
- Site Project Manager: Scott Spitzer, Ecosystems Strategies, Inc. (ESI), 845-452-1658
- Site Safety Officer: Scott Spitzer, ESI, 845-452-1658
- Online Document Repository: http://www.nyc.gov/html/oer/html/repository/RQueens.shtml
- Library Document Repository: Queens Library, Broadway Branch, 40-20 Broadway, Long Island City, NY 11103, Phone: 718-721-2462

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

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

Qualitative Human Health Exposure Assessment: An important part of the cleanup planning for the Site is the performance of a study to find all of the ways that people might come

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

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

Site Safety Coordinator: This project has a designated Site safety coordinator to implement the CHASP. The safety coordinator maintains an emergency contact sheet and protocol for management of emergencies. The Site safety coordinator is identified at the beginning of the Community Protection Statement.

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 includes steps to be taken if nuisances are detected. Generally, dust is managed by application of physical covers and by water sprays. Odors are controlled by limiting the area of open excavations, physical covers, spray foams and by a series of other actions (called operational measures). The project is also required to comply with applicable NYC noise control standards. If you observe problems in these areas, please contact the onsite Project Manager or NYC Office of Environmental Remediation Project Manager listed on the first page of this Community Protection Statement document.

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.

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

Hours of Operation: The hours for operation of cleanup will comply with the NYC Department of Buildings construction code requirements or according to specific variances issued by that agency. For this cleanup project, the hours of operation will conform to requirements of Department of Buildings and will be conveyed to OER before the start of the remedial action.

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, the NYC Office of Environmental Remediation Project Manager listed on the first page of this Community Protection Statement document, 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, odor 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 applicable 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 the 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 the Remedial Action Report) that will be available for public review online. A link to the online document repository and the public library with Internet access nearest the Site are listed on the first page of this Community Protection Statement document.

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 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

GDC LIC Owner LLC is working with the NYC Office of Environmental Remediation (OER) to investigate and remediate a property located at 45-35 11th Street and 11-22 45th Road in the Hunters Point section of Queens, New York (the "Site"). A Remedial Investigation (RI) was performed to compile and evaluate data and information necessary to develop this Remedial Action Work Plan (RAWP) in a manner that will render the Site protective of public health and the environment consistent with the contemplated end use. This RAWP establishes remedial action objectives, provides a remedial alternatives analysis that includes consideration of a permanent cleanup, and provides a description of the selected remedial action. The remedial action described in this document provides for the protection of public health and the environment, complies with applicable environmental standards, criteria and guidance and applicable laws and regulations.

1.1 Site Location and Current Usage

The Site consists of two contiguous parcels in the Hunters Point section in Queens, New York and is identified as Block 54 and Lot 20, and Block 54 and Lot 13 on the New York City Tax Map. Figure 1 shows the Site location. Lot 20 of the Site is 12,000-square feet and is bounded by 45th Road to the north, 11th Street to the west, 46th Avenue to the south, and Lot 13 to the east. Lot 13 of the Site is 38,000-square feet and is bounded by 45th Road and an adjoining commercial building to the north, Lot 13 to the west, 46th Avenue to the south, and an adjoining commercial building to the east. Figure 2, Site Map, shows the Site boundary. Lot 20 of the Site (currently vacant) was formerly used as a commercial facility by Wayland Industries, Inc. (for storage and distribution of elevator cables) and contains one structure (a high one-story building with small second story office space) that occupies the entire parcel. Lot 13 of the Site (currently vacant) was formerly used as a commercial facility (former Shine Electronics facility) and contains one structure (a high one-story building) that occupies the majority of the parcel, and a small parking lot/loading dock area at the southeastern corner at 46th Avenue.

1.2 Proposed Redevelopment Plan

Preliminary development plans for the Site include the construction of new residential buildings (expected to contain approximately 39, 4-story (+ mezzanine level) 2-family townhouses). As of the date of this report, final development plans have not been determined. Final development plans will be presented to OER as this information becomes available. Total excavation depth has not been determined at this time; the 1st floor of the new on-site townhouse buildings are expected to be raised approximately 4 feet and will include basements. Excavation depth is anticipated to generally be approximately 6 feet below surface grade (bsg). The referenced lots will be sub-divided into smaller lots, each containing a single townhouse, and the New York City

Department of Finance has issued an approval of Form RP-602 for tentative tax lot lines for the 46th Avenue and 45th Road frontages. The tentative tax lot lines for the 11th Street frontage has not yet been determined and will be presented to OER as this information becomes available.

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

1.3 Description of Surrounding Properties

The subject property is located in an urban area comprised primarily of multi-family residential and commercial properties. A description of the adjoining and nearby properties is provided in the Table 1 below.

Table 1: Land Uses in the Vicinity of the Subject Property

Direction	Adjoining Use(s)	Vicinity Use(s)
North	• John F. Murray Playground	• Commercial • Residential
East	• Commercial/Offices	• Commercial
South	• Multi-family residential	• Commercial • Residential
West	• Multi-family residential	• Commercial • Residential

Figure 4 shows the surrounding land usage and Figure 5 shows surrounding land zoning.

1.4 Remedial Investigation

A remedial investigation was performed and the results are documented in a companion document called "Remedial Investigation Report, 45-35 11th Street and 11-22 45th Road", dated December 2014 (RIR). A Site Investigation Map is provided as Figure 6.

Summary of Past Uses of Site and Areas of Concern

Historical records indicate that the Site was developed as early as 1913, and that the on-site buildings, constructed circa 1948 to 1952, have been used for warehousing and manufacturing, including electrical manufacturing and/or repair of electronic equipment (Lot 13).

The AOCs identified for this site include:

- Potential contamination in soil and groundwater near abandoned, fuel oil underground storage tanks.
- Potential releases from historical and current uses of the properties (warehousing and/or manufacturing).
- Potential poor-quality urban fill of unknown volume.

Summary of the Work Performed under the Remedial Investigation

The following scope of work was performed:

1. Conducted a Site inspection to identify AOCs and physical obstructions (i.e. structures, buildings, etc.);
2. Installed seven mechanized and three manual soil borings across the entire project Site at Lot 20, and five mechanized soil borings at Lot 13, and collected 26 soil samples for chemical analysis from the soil borings to evaluate soil quality;
3. Installed six groundwater monitoring wells (three at Lot 20 and three at Lot 13) to establish groundwater flow and collected eight groundwater samples for chemical analysis to evaluate groundwater quality;
4. Installed three temporary soil vapor probes at Lot 20 and four soil vapor probes at Lot 13, and collected seven soil vapor samples for chemical analysis.

Summary of Environmental Findings

1. Elevation of the property is approximately 12 to 14.5 feet.
2. Depth to groundwater at the Site ranges from approximately 8.9 to 10.0 feet below existing building slabs (groundwater elevations of 5.4 to 6.2 feet).
3. Groundwater flow is generally from south-southeast to north-northwest beneath the Site.
4. Depth to bedrock has not been determined (no bedrock was encountered to a maximum depth of 20 feet below the building floor [approximately 17 feet below street level]). The results of structural geotechnical borings will be provided to OER as they become available.
5. The stratigraphy of the site, from the surface (concrete floor of building) down, consists of approximately 10 to 13 feet variable texture sand (likely fill), with masonry debris noted in the 0 to 5 feet interval, underlain by variable texture native sands with weathered rock, silt, clay and limited organic material.
6. Soil/fill samples collected during the RI showed evidence of petroleum contamination at MW-2 10-15', with possible low-level petroleum impacts noted at MW-1 10-15'. No evidence of a petroleum release was observed in the vicinity of on-site storage tanks (an inactive fuel oil tank is located at each building), and soil data from the most proximal borings do not indicate any significant hydrocarbon contamination. A thin veneer of LNAPL is present in one well (MW-4) hydraulically upgradient of both USTs, supporting the conclusion that this product is not related to the storage tanks. A spill event, No. 1409327, was reported to NYSDEC based on the presence of LNAPL.

7. Soil/fill samples collected during the RI were compared to NYSDEC Part 375-6 Unrestricted Use (Track 1) and Restricted Residential Use (Track 2) Soil Cleanup Objectives (SCOs). Five VOCs, acetone (max. of 0.24 mg/kg), 2-butanone (max. of 0.17 mg/kg), benzene (max. of 0.76 mg/kg), and p- & m-xylene (max. of 1.4 mg/kg) were detected above their respective Unrestricted Residential SCOs. Naphthalene (52 mg/kg) was detected in one deep sample at a concentration above Restricted Residential Use SCOs. Seventeen (17) SVOCs were detected above their Restricted Residential SCOs; benzo(a)anthracene (max of 145 mg/kg), benzo(b)fluoranthene (max of 47.5 mg/kg), benzo(a)pyrene (max of 60.3 mg/kg), benzo(k)fluoranthene (max of 71.9 mg/kg),chrysene (max of 171 mg/kg), dibenzo(a,h)anthracene (max of 2.75 mg/kg), and indeno(1,2,3-cd)pyrene (max of 5.09 mg/kg) were identified in deep and shallow samples, and 2-methylnaphthalene (max of 244 mg/kg), acenaphthene (max of 148 mg/kg), acenaphthylene (max of 166 mg/kg), anthracene (max of 266 mg/kg), dibenzofuran (max of 204 mg/kg), fluoranthene (max of 555 mg/kg), fluorene (max of 241 mg/kg), naphthalene (max of 1,290 mg/kg), phenanthrene (max of 919 mg/kg), and pyrene (max of 462 mg/kg) were identified in one deep sample. Highest concentrations of SVOCs were detected in one deeper soil sample (MW-1 (11'-13')), indicating a hot spot location. Metals including arsenic (max of 44.7 mg/kg), barium (max of 557 mg/kg), copper (max of 1,560 mg/kg), lead (max of 889 mg/kg) and mercury (max of 0.983 mg/kg), were detected above Restricted Residential Use SCOs. Chromium, selenium, silver, and zinc also exceeded their Unrestricted Use SCOs. One pesticide, 4,4-DDT (max of 0.0088 mg/kg) was detected above its Unrestricted Use SCOs in one shallow sample.
8. Groundwater samples results were compared to NYSDEC 6NYCRR Part 703.5 Groundwater Quality Standards (GQS). Groundwater samples showed no detected concentrations of pesticides or PCBs. The VOCs, 1,2,4-trimethylbenzene (max of 89 ug/L), 1,2-dichloroethane (max of 6.4 ug/L), 1,3,5-trimethylbenzene (max of 48 ug/L), acetone (max of 57 ug/L), benzene (max of 170 ug/L), chloroform (max of 15 ug/L), ethyl benzene (max of 49 ug/L), isopropylbenzene (max of 5.9 ug/L), naphthalene (max of 1,100 ug/L), and n-propylbenzene (max of 6.4 ug/L) were detected above their respective GQS. SVOCs, including benzo(a)anthracene (max of 0.116 µg/L), benzo-(b)fluoranthene (max of 0.0947 µg/L), benzo(k)fluoranthene (max of 0.0737 µg/L), chrysene (max of 0.0737 µg/L), indeno(1,2,3-cd)pyrene (max of 0.0842 µg/L), 2,4-Dimethylphenol (max of 80.2 µg/L), acenapthene (max of 51.3 µg/L), and naphthalene (max of 622 µg/L) were detected above their GQS. Several metals were present in groundwater, but only arsenic (max of 808 µg/L), magnesium (max of 89,100 µg/L), manganese (max of 2,020 µg/L), selenium (max of 22 µg/L), and sodium (max of 148,000 µg/L) exceeded its GQS. Highest metal concentrations, including for arsenic (total at 1100 µg/L and dissolved at 808 µg/L), were detected in monitoring well MW-04.

Groundwater samples collected from five of six monitoring wells during the RI showed significant field evidence of contamination, including odors, PID readings, and/or staining. Significant contamination by BTEX and related compounds has impacted groundwater at MW-4. A significantly elevated level of naphthalene, and elevated levels of 2,4-dimethylphenol were also detected at MW-2 (petroleum odors and organic material were noted at this location).

9. Soil vapor samples collected during the RI were compared to the compounds listed in Table 3.1 Air Guideline Values, provided in the New York State Department of Health (NYSDOH) Final Guidance for Evaluating Soil Vapor Intrusion. Trace to high levels of petroleum related compounds including BTEX (max. of 13,300 ug/m^3), cyclohexane (max of 3,170 ug/m^3), heptane (max of 1,700 ug/m^3), isopropanol (max of 1,820 ug/m^3), n-hexane (max of 75,400 ug/m^3), ethanol (max of 403 ug/m^3), and 4-ethyltoluene (max of 318 ug/m^3) were detected in one soil vapor sample (S-SG-2). Carbon Tetrachloride was not detected in any of the seven soil gas samples. 1,1,1-Trichloroethane was detected in two of the seven samples at a maximum concentration of 7.26 ug/m^3. Tetrachloroethylene (PCE) was detected in three of the seven samples at a maximum concentration of 46 ug/m^3. Trichloroethylene (TCE) was detected in two of the seven samples at a maximum concentration of 661 ug/m^3. Detected concentrations of PCE and TCE were above the monitoring level range established by NYSDOH.

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

2.0 Remedial Action Objectives

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

Soil

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

Groundwater

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

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

As required, a minimum of two remedial alternatives (including a Track 1 Unrestricted Use scenario) are evaluated. The following is a detailed description of the alternatives analyzed to address impacted media at the Site:

Alternative 1:

- Selection of NYSDEC 6NYCRR Part 375 Section 6.8 Unrestricted Use (Track 1) Soil Cleanup Objectives (SCOs).
- Removal of all soil/fill exceeding Track 1 Unrestricted Use SCOs throughout the Site and confirmation that Track 1 Unrestricted Use SCOs have been achieved with post-excavation endpoint sampling. Based on the results of the Remedial Investigation, it is expected that this alternative would be achieved by excavating all known fill material (anticipated to extend to depths varying between 6 and 11 feet below surface grade) on the Site. The total volume of soil anticipated for removal to achieve a Track 1 cleanup is 19,500 cubic yards. 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 new building's cellar level is complete, additional excavation will be performed to ensure complete removal of soil that does not meet Track 1 Unrestricted Use SCOs.

- No Engineering or Institutional Controls are required for a Track 1 cleanup, but a vapor barrier/ waterproofing membrane would be installed as part of development to prevent potential exposures from soil vapor.

Alternative 2:

- Establishment of Track 4 Site-Specific SCOs.
- Removal of all soil/fill exceeding Track 4 Site-Specific SCOs as defined in Section 4.2 of this RAWP and confirmation that Track 4 Site-Specific SCOs have been achieved with post-excavation endpoint sampling. Based on the results of the Remedial Investigation, it is expected that this alternative would be achieved by excavation and removal of soil/fill exceeding Track 4 Site Specific SCOs. The majority of the Site (all areas with buildings) will be excavated to a depth of approximately 6 feet below grade for development purposes. A small portion of property (hotspot areas) will be excavated to depths of approximately 12 feet below grade to remove soils with elevated SVOCs. Additional excavation may be required to install utilities. Usable fill soils will remain on-site to increase rear yard elevations; existing data indicate that most fill soils in the upper 6 feet of the site are acceptable for reuse as subgrade (i.e., beneath a cover layer) material.
- If soil/fill containing analytes at concentrations above Track 4 Site-Specific SCOs is still present at the base of the excavation, additional excavation would be performed to meet Track 4 Site-Specific SCOs.
- Placement of a cover system over the entire Site, which may include paving, artificial turf and/or 2 feet of clean fill, to prevent exposure to remaining soil/fill;
- Installation of a minimum thickness of 20 mil waterproofing/vapor barrier system beneath the building slab and along foundation side walls to prevent potential exposures from soil vapor;
- 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 prohibition of a higher level of land use without OER approval;
- 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. The SMP will note that the property owner and property owner's successors and assigns must comply with the approved SMP; and
- The property will continue to be registered with an E-Designation at the NYC Buildings Department.

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 and groundwater protection standards, thus eliminating potential for direct contact with contaminated soil/fill once construction is complete and eliminating the risk of contamination leaching into groundwater.

Alternative 2 would achieve comparable protections of human health and the environment by excavating the historic fill at the Site and by ensuring that remaining soil/fill on-Site meets Track 4 Site-Specific SCOs, as well as by placement of Institutional and Engineering controls, including a composite cover system. The composite cover system would prevent direct contact with any remaining on-Site soil/fill. Implementing Institutional Controls including a Site Management Plan and continued "E" designation of property would ensure that the composite cover system remains intact and protective. Establishment of Track 4 Site-Specific SCOs would minimize the risk of contamination leaching into groundwater.

For both Alternatives, potential exposure to contaminated soils or groundwater during construction would be minimized by implementing a Construction Health and Safety Plan, an approved Soil/Materials Management Plan and Community Air Monitoring Plan (CAMP). Potential contact with contaminated groundwater 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 installing a waterproofing/vapor barrier system beneath building slabs and along foundation side walls.

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 achieve Track 1 Unrestricted Use SCOs and Protection of Groundwater SCOs. Compliance with SCGs for soil vapor would also be achieved by installing a waterproofing/vapor barrier system below the new building's basement slab and continuing the vapor barrier around foundation walls, as part of development.

Alternative 2 would achieve compliance with the remedial goals, chemical-specific SCGs and RAOs for soil through removal of soil to meet Track 4 Site-Specific SCOs. Compliance with SCGs for soil vapor would also be achieved by installing a waterproofing/vapor barrier system below the new building's basement slab and continuing the vapor barrier around foundation walls. A Site Management Plan would ensure that these controls remained protective for the long term.

Health and safety measures contained in the CHASP and Community Air Monitoring 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 applicable SCGs. These measures would protect on-site workers and the surrounding community from exposure to Site-related contaminants.

Short-Term Effectiveness and Impacts:

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

Both Alternatives 1 and 2 have similar short-term effectiveness during their respective implementations, as each requires excavation of historic fill material. Both alternatives would result in short-term dust generation impacts associated with excavation, handling, load out of materials, and truck traffic. Short-term impacts 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 500, 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.

The effects of these potential adverse impacts to the community, workers and the environment would be minimized through implementation of corresponding control plans including a Construction Health and Safety Plan, a Community Air Monitoring Plan (CAMP) and a Soil/Materials Management Plan (SMMP), during all on-Site soil disturbance activities and

would minimize the release of contaminants into the environment. Both alternatives provide short-term effectiveness in protecting the surrounding community by decreasing the risk of contact with on-Site contaminants. Construction workers operating under appropriate management procedures and a Construction Health and Safety Plan (CHASP) would 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 (ECs/ICs) that may be used to manage contaminant residuals that remain at the Site and assessment of containment systems and ICs that are designed to eliminate exposures to contaminants, and long-term reliability of ECs.

Alternative 1 would achieve long-term effectiveness and permanence related to on-Site contamination by permanently removing all impacted soil/fill above Track 1 Unrestricted Use SCOs. Removal of on-Site contaminant sources will prevent future groundwater contamination.

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

Both alternatives would result in removal of soil contamination exceeding their respective 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. Potential sources of soil vapor and groundwater contamination will also be eliminated as part of the remedy.

Reduction of toxicity, mobility, or volume of contaminated material

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

exposure. It is preferred to use treatment or removal to eliminate contaminants at a Site, reduce the total mass of toxic contaminants, cause irreversible reduction in contaminants mobility, or reduce of total volume of contaminated media.

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

Alternative 2 would remove most of the historic fill at the Site, and any remaining on-Site soil beneath the new building will meet Track 4 Site-Specific SCOs.

Alternative 1 would eliminate a greater total mass of contaminants on Site.

Implementability

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

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

Cost Effectiveness

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

Historic fill at the Site was found during the RI to extend to a depth of approximately 6 feet below grade, and the footprint of the new townhouses requires excavation to a depth of 6 feet. Under Track 1 remedy, the private backyards and common court yard areas of the Site would be required to remove all historic fill. Alternative 1 would involve substantial additional soil excavation and disposal across the Site, where Track 1 SCOs are currently not achieved. However, the long-term costs are higher for Alternative 2 than Alternative 1 based on implementation of a Site Management Plan and continued “E” designation of property 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 permitting associated with the proposed site development, no adverse community opinion is anticipated for either alternative. This RAWP will be subject to a public review under the NYC VCP and will provide the opportunity for detailed public input on the remedial alternatives and the selected remedy. This public comment will be considered by OER prior to approval of this plan. The Citizen Participation Plan for the project is provided in Appendix 2. Observations here will be supplemented by public comment received on the RAWP.

Land Use

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

The current, intended, and reasonably anticipated future land use of the Site and its surroundings are compatible with the selected remedy of soil remediation. The proposed future use of the Site includes approximately 39, 2-family townhouses. Following remediation, the Site will meet either Track 1 Unrestricted Use or Track 4 Site-Specific SCOs, both of which are appropriate for its planned residential use. The reasonably anticipated future use of the Site and its surroundings will be documented by the applicant in the NYC VCP application, which will include the following conclusions:

The proposed redevelopment of the Site is compatible with its current zoning and is consistent with recent development patterns. The areas surrounding the site are urban and consist of predominantly mixed residential and commercial buildings in zoning districts designated for commercial and residential uses. The development would replace an underutilized site with a modern residential building. The proposed development would create new employment opportunities, living space, and economic and fiscal benefits to the City and State in the form of economic revitalization and tax revenue.

Temporary short-term project impacts are being mitigated through site management controls and truck traffic controls during remediation activities. Following remediation, the Site will meet either Track 1 Unrestricted Use SCOs or Track 4 Site-Specific SCOs, which are appropriate for its planned residential use.

The Site is not in close proximity to important cultural resources, including federal or state historic or heritage sites or Native American religious sites, natural resources, waterways, wildlife refuges, wetlands, or critical habitats of endangered or threatened species. The Site is located in an urban area with limited proximity to fish or wildlife. Both alternatives would prevent any potential exposure pathways of contaminant migration affecting fish or wildlife. Municipal water supply wells are not present in this part of City; therefore, groundwater from the Site cannot affect municipal water supply wells or recharge areas. The Site does not lie in a Federal Emergency Management Agency (FEMA)-designated flood plain. Both alternatives are equally protective of natural resources and cultural resources.

Improvements in the current environmental condition of the property achieved by both alternatives are also consistent with the City's goals for cleanup of contaminated land and bringing such properties into productive reuse.

Sustainability of the Remedial Action

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

While Alternative 2 would potentially result in lower energy usage based on reducing the volume of material transported off-Site, both remedial alternatives are comparable with respect to the opportunity to achieve sustainable remedial action. The remedial plan would take into consideration the shortest trucking routes during off-Site disposal of historic fill and other soils,

which would reduce greenhouse gas emissions and conserve energy used to fuel trucks. The New York City Clean Soil Bank program may be utilized for reuse of native soils. To the extent practicable, energy efficient building materials, appliances, and equipment will be utilized to complete the development. A complete list of green remedial activities considered as part of the NYC VCP is included in the Sustainability Statement, included as Appendix 3.

4.0 Remedial Action

4.1 Summary of Preferred Remedial Action

The preferred remedial action alternative is Alternative 2, the Track 4 Alternative. The preferred remedial action alternative achieves protection of public health and the environment for the intended use of the property. The preferred remedial action alternative will achieve all of the remedial action objectives established for the project and addresses applicable SCGs. The preferred remedial action alternative is effective in both the short-term and long-term and reduces mobility, toxicity and volume of contaminants. The preferred remedial action alternative is cost effective and implementable and uses 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 all activities required for the remedial action, including permitting requirements and pretreatment requirements, in compliance with applicable laws and regulations.
3. Establishment of Track 4 Site-specific Soil Cleanup Objectives (SCOs).
4. Site mobilization involving Site security setup, equipment mobilization, utility mark outs and marking & staking excavation areas.
5. Perform additional site characterization sampling of soil, groundwater or soil vapor (if required by OER), based on the presence of any encountered unknown grossly contaminated media. Five (5) soil borings, two (2) groundwater, and one soil vapor sample will be collected in the southern portion of the Site. A sampling Work Plan as discussed will be included in Stip letter.
6. Completion of a Waste Characterization Study prior to excavation activities. Waste characterization soil samples will be collected at a frequency dictated by disposal facility(s).
7. Excavation and removal of soil/fill exceeding Track 4 Site Specific SCOs. The majority of the Site (all areas with buildings) will be excavated to a depth of approximately 6 feet below grade for development purposes. A small portion of property will be excavated to the depths of approximately 12 feet below grade to remove any hotspots. Additional excavation may be required to install utilities. Usable fill soils will remain on-site to increase rear yard elevations; existing data indicate that most fill soils in the upper 6 feet of the site are acceptable for reuse as subgrade (i.e., beneath a cover layer) material.

8. 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.
9. Management of excavated materials including temporarily stockpiling and segregating in accordance with defined material types and to prevent co-mingling of contaminated material and non-contaminated materials.
10. Removal of two underground storage tanks (USTs) and any additional USTs (if encountered) and closure of petroleum spills (existing Spill number 1409327 and any additional spill reported if evidence of a spill/leak is encountered during Site excavation) in compliance with applicable local, State and Federal laws and regulations.
11. Spill closure and/or groundwater remediation will be managed under NYSDEC authority for Spill 1409327.
12. Transportation and off-Site disposal of all soil/fill material at permitted facilities in accordance with applicable laws and regulations for handling, transport, and disposal, and this plan. Sampling and analysis of excavated media as required by disposal facilities. Appropriate segregation of excavated media on-Site.
13. Collection and analysis of end-point samples to determine the performance of the remedy with respect to attainment of SCOs.
14. Demarcation of residual soil/fill in landscaped areas.
15. Import of materials to be used for backfill and cover in compliance with this plan and in accordance with applicable laws and regulations.
16. Installation of a vapor barrier system beneath the building slab as well as behind foundation sidewalls of the proposed building below grade. The vapor barrier will consist of a to-be determined system such as the W.R. Grace & Co. Preprufe Plus waterproofing membrane.
17. Construction and maintenance of an engineered composite cover consisting of a 6-inch thick concrete building slab, 12-inch thick concrete or asphalt paved walkways or driveways, and landscaped areas consisting of 2 feet of clean imported soil, to prevent human exposure to residual soil/fill remaining under the Site;
18. Performance of all activities required for the remedial action, including permitting requirements and pretreatment requirements, in compliance with applicable laws and regulations.
19. Implementation of storm-water pollution prevention measures in compliance with applicable laws and regulations.

20. Submission of an approved Site Management Plan (SMP) in the Remedial Action Plan (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.
21. Submission of a 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 describes all Engineering and Institutional Controls to be implemented at the Site.
22. The property will continue to be registered with an E-Designation at the NYC Buildings Department. Establishment of Engineering Controls and Institutional Controls in this RAWP and a requirement that management of these controls must be in compliance with an approved SMP. Institutional Controls will include prohibition of the following: (1) vegetable gardening and farming; (2) use of groundwater without treatment rendering it safe for the intended use; (3) disturbance of residual contaminated material unless it is conducted in accordance with the SMP; and (4) higher level of land usage without OER-approval.

4.2 Soil Cleanup Objectives and Soil/ Fill Management

Track 4 SCOs are proposed for this project. The SCOs for this Site are included in the 6NYCRR Part 375, Table 6.8(b) Track 2 Restricted Residential SCOs as amended by the following Site-Specific Track 4 SCOs:

Contaminant	Track 4 SCOs
Total SVOCs	300 ppm
Naphthalene	100 ppm
Arsenic	23 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 Appendix 4. Discrete contaminant sources (such as hotspots) identified during the remedial action will be identified by GPS or surveyed. This information will be provided in the Remedial Action Report.

Soil/Fill Excavation and Removal

Excavation will occur within the footprint of the buildings to a maximum depth of approximately 6 feet below surface grade. The total volume of excavated material for this work is 8,700 cubic

yards (yd^3). Based on chemical data generated by ESI, these fill soils may be reused to raise the elevation of the rear yard by three feet, resulting in an expected re-use of up to 1,000 yd^3.

Material proposed for reuse will meet NYSDEC Part 375 Table 6.8(b) Residential Use SCOs and will be screened with a PID for indications of elevated organic contamination. Soils with PID readings greater than 5 ppm will be considered unacceptable for on-site reuse. These soils will also be evaluated for physical evidence of foreign material (e.g., brick, concrete) and the presence of significant percentages of putrescible material (greater than 15%) will result in the material being determined to be unacceptable for re-use.

Additional soils will be excavated in the vicinity of MW-1 and MW-4 to remove source material (SVOC contaminated soil near MW-1 and soil with a thin veneer of free product near MW-4) in these specific areas. The exact dimensions of excavation will be determined by field observations, with all obvious source material excavated. The anticipated volume expected to be removed for this work is 650 yd^3 (total of both areas). This estimate is based on an excavation area consisting of a 20 foot radius around each well, extending down an additional 7 feet (to a depth of 13 feet below surface grade). Additional soil may also be excavated in the vicinity of the two USTs if significant petroleum contamination is noted. Limited dewatering may be warranted to accomplish this soil removal effort.

Source area material will be managed differently from urban fill soils; source material will be stockpiled separately, will not be comingled with urban fill soils, and will not be acceptable for on-site re-use.

Disposal facilities will be reported to OER when they are identified and prior to the removal of soil from the Site.

Tank Removal Procedures

Two tanks are known to be present on the Site: a vaulted 2,500 gallon fuel oil tank in the southwest corner of the Site and an undetermined size underground tank (assumed to be less than 2,000 gallons) in the north-central portion of the Site. Both tanks will be managed in the following manner:

- All accessible product in the tank will be removed, containerized, and transported off the Site using licensed vehicles for disposition at permitted repositories. Records of proper liquid waste management will be maintained by the Owner and will be provided to OER in the RAR.
- The tank will be removed from the vault and/or the ground and will be visually inspected for evidence of failure. A photographic record of the tanks will be generated.

- The substrate to the tank (beneath the vault as well the soil beneath the underground tank) will be visually inspected and field-screened with a PID for evidence of contamination. If no evidence of contamination is documented, end-point samples will be collected as described below.
- If evidence of contamination is documented, soil excavation will commence until field observations and PID screening indicate likely "clean" margins. Upon reaching these margins, end-point soil sampling (as described below) will commence.
- Documentation of tank and soil removed will be provided in a separate report, if requested by OER and/or the NYSDEC for the purposed of file closure for spill #1409327.

End-point Sampling

Removal actions under this plan will be performed in conjunction with remedial end-point sampling to assess attainment of Track 4 site specific SCOs. Five end-point samples will be obtained for urban fill areas at locations to be determined by OER.

End-point samples will also be collected in the areas designated for source-material removal. One wall sample per wall (4 in total) and one base sample will be collected and analyzed for VOCs (USEPA Method 8260) and SVOCs (USEPA Method 8270, PAHs only). If the floor of the excavation exceeds 1,000 square feet in size, an additional base sample will be collected and analyzed.

New York State ELAP certified labs will be used for all end-point sample analyses. Labs performing end-point sample analyses will be reported in the RAR. The RAR will provide a tabular and map summary of all end-point sample results and will include all data including non-detects and applicable standards and/or guidance values.

Additional Hotspot Sampling

If hotspots are identified during the remedial program, hotspot removal actions will be performed 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. Analysis will be performed according to analytical methods described above. 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 6-inch interval at the excavation floor. Samples taken after 24 hours should be taken at 6 to 12 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.

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

Quality Assurance/Quality Control

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

One blind duplicate sample for every 20 samples collected will be submitted to the approved laboratory for analysis of the same parameters. Trip blanks will be used whenever samples are transported to the laboratory for analysis of VOCs. One trip blank will be submitted to the laboratory with each shipment of soil samples. Trip blanks will not be used for samples to be analyzed for metals, SVOCs or pesticides.

Collected samples will be appropriately packaged, placed in coolers and shipped via overnight courier or delivered directly to the analytical laboratory by field personnel. Samples will be containerized in appropriate laboratory provided glassware and shipped in plastic coolers. Samples will be preserved through the use of ice or "cold-paks" to maintain a temperature of 4oC.

Dedicated disposable sampling materials will be used for the collection endpoint samples, eliminating the need to prepare field equipment (rinsate) blanks. However, if non-disposable equipment is used, (stainless steel scoop, etc.) field rinsate blanks will be prepared at the rate of 1

for every eight samples collected. Decontamination of non-dedicated sampling equipment will consist of the following:

- Gently tap or scrape to remove adhered soil
- Rinse with tap water
- Wash with Alconox® detergent solution and scrub
- Rinse with tap water
- Rinse with distilled or deionized water

Field blanks will be prepared by pouring distilled or deionized water over decontaminated equipment and collecting the water in laboratory provided containers.

Import and Reuse of Soils

Import of soils onto the property and reuse of soils already onsite will be performed in conformance with the Soil/Materials Management Plan in Appendix 4. The estimated quantity of soil to be imported into the Site for backfill and cover soil is 750 cubic yards. Modification to the Site design may serve to reduce this volume. The estimated quantity of onsite soil/fill expected to be reused/relocated on Site is 1,000 cubic yards.

4.3 Engineering Controls

Engineering Controls will be employed in the remedial action to address residual contamination remaining at the site.

The Site will have two primary Engineering Control Systems. These are:

- composite cover system consisting of concrete building slab, asphalt covered roads, concrete covered sidewalks, and clean imported soil in landscaped areas;
- soil vapor barrier.

Composite Cover

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 a 6-inch thick concrete building slab beneath the areas of proposed building, 12-inch thick concrete or asphalt paved walkways or driveways, and 2 feet of clean soils in landscaped areas.

If Track 1 Unrestricted Use SCOs are not achieved at the Site, the composite cover system will be a permanent engineering control. 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 SMP 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 SMP in the RAR.

Vapor Barrier

As part of new development, migration of potential soil vapor from onsite or offsite sources in the future will be mitigated with a combination of building slab and moisture/vapor barrier. The vapor barrier will consist of a to-be determined system such as the W.R. Grace & Co. Preprufe Plus waterproofing membrane (detailed specifications will be provided to OER in a Stipulation Letter). The vapor barrier will extend throughout the area occupied by the footprint of the new building and up the foundation sidewalls in accordance with manufacturer specifications.

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 extent of the proposed vapor barrier membrane is provided in Figure 3. Installation details (engineering cross-sections drawings showing location under the building slab, penetrations, joints, etc.) with respect to the proposed building foundation, footings, slab, and sidewalls will be provided to OER in a Stipulation Letter). 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.

If Track 1 Unrestricted Use SCOs are not achieved at the Site, the vapor barrier system (as part of the composite cover system) will be a permanent engineering control. The composite cover system will be inspected and reported at specified intervals as required by this RAWP and the SMP. A Soil Management Plan will be included in the SMP 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 SMP in the RAR.

4.4 Institutional Controls

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

Institutional Controls for this remedial action are:

- Continued registration of the E-Designation for the property. This RAWP includes a description of all ECs and ICs and summarizes the requirements of the SMP which will note that the property owner and property owner's successors and assigns must comply with the approved SMP;
- Submittal of a SMP in the RAR for approval by OER that provides procedures for appropriate operation, maintenance, inspection, and certification of ECs and IC's. SMP will require that the property owner and property owner's successors and assigns will

submit to OER a periodic written statement that certifies that: (1) controls employed at the Site are unchanged from the previous certification or that any changes to the controls were approved by OER; and, (2) nothing has occurred that impairs the ability of the controls to protect public health and environment or that constitute a violation or failure to comply with the SMP. OER retains the right to enter the Site in order to evaluate the continued maintenance of any controls. This certification shall be submitted at a frequency to be determine by OER in the SMP and will comply with RCNY §43-1407(l)(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 residential use and will not be used for a higher level of use without prior approval by OER.

4.5 Site Management Plan

Site Management is 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 July 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.

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

Known and Potential Contaminant Sources

Both on-site structures are commercial buildings with a history of manufacturing and contain on-site fuel-oil tanks. Areas of concern included impacts from site-wide commercial operations, potential releases from the storage tanks and the quality of subsurface fill materials. Soil in multiple sampling locations (surface and subsurface) is impacted by SVOCs and metals at concentrations above RRUSCOs. Groundwater contamination by PAHs, metals and BTEX and related compounds is present in distinct areas of the Site, and a soil vapor with elevated concentrations of solvents and BTEX and related compounds is present in a single hotspot.

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

Soil:

- VOCs including acetone, 2-butanone, benzene, and p- & m-xylene were detected above their respective Unrestricted Residential SCOs.
- SVOCs including naphthalene, benzo(a)anthracene, benzo(b)fluoranthene, benzo(a)pyrene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene, and indeno(1,2,3-cd)pyrene, 2-methylnapthalene, acenaphthene, acenaphthylene, anthracene, dibenzofuran, fluoranthene, fluorene, naphthalene, phenanthrene, and pyrene exceeded Unrestricted Use SCOs.
- Metals including arsenic, barium, copper, lead, and mercury were detected above Restricted Residential Use SCOs.

Groundwater:

- PAHs (including naphthalene), 2,4-dimethylphenol, BTEX and related compounds, 1,2-dichloroethane exceeding GQSs.
- Several metals were present in groundwater, but only arsenic, magnesium, manganese, selenium, and sodium exceeded its GQS.

Soil Vapor:

- Relatively high concentrations of chlorinated VOCs, TCE (661 $\mu g/m^3$) compared to NYS DOH Soil Vapor Matrix (5 $\mu g/m^3$).
- Elevated levels of petroleum related BTEX and related compounds.

Nature, Extent, Fate and Transport of Contaminants

Impacts by SVOCs and metals, present in multiple areas throughout the site (in both surface and deeper soils), appear to be related to low-level releases from historical operations or (more likely) the presence of poor-quality urban fill materials. Significantly elevated contaminant concentrations in deep soils are limited to only two areas (MW-1 and SB-03). Concurrent groundwater contamination by SVOCs at MW-3, may be related to the presence of impacted soil at nearby boring location SB-03, or may represent contributions from nearby off-site areas. Elevated concentrations of metals in on-site soils may also be contributing to limited areas of dissolved metals contamination in groundwater.

The presence of NAPL in soils is indicated by a thin veneer of free-product observed floating in MW-4 during a site inspection (identified as weathered fuel oil). No evidence of NAPL, or laboratory analyses indicating significant petroleum compounds, were found in the vicinity of the on-site storage tanks, suggesting a likely localized phenomenon potentially related to a limited on-site release from historical Site activities, or possibly contamination originating in off-site areas.

Significant contamination by BTEX and related compounds in groundwater at MW-4 and lower concentrations of these compounds at MW-2, is likely to be directly related to known NAPL contamination in this area of the site. The source of significantly elevated concentrations of naphthalene at MW-2 is unknown at this time, but also appears to be localized to this portion of the Site.

Low levels of dissolved PAHs are present in MW-3, located in the southwest corner of the Site, proximal to a vaulted fuel oil tank. The levels are inconsistent with soil data from this well (collected from the groundwater interface) and therefore may reflect a limited release from this tank.

Elevated dissolved concentrations of sodium and manganese are present in almost every well (MW-5 does not have elevated levels of either constituent). These inorganic compounds are

often associated with road-salting operations, and therefore their presence in monitoring wells extending into shallow groundwater is not surprising. Elevated arsenic is present in MW-4, but no other location, and soil data from that well do not reflect any localized source. Finally, slightly elevated selenium is present in all wells, indicating general water quality degradation.

An elevated level of hexane and other simple aromatics (e.g., heptane) is present at S-SG-2, located in the south-central portion of the Site. The absence of concentrations of hexane, heptane, or ethylbenzene in nearby soil and groundwater samples (e.g., MW-6) supports the conclusion that the source of this contamination is both localized and in soil above the static water level. These soils are proposed to be removed and therefore the source material for these vapors will be eliminated from the Site.

Receptor Populations

On-Site Receptors: Because both on-site buildings are currently vacant, and are secured with locked doors, onsite receptors are limited to trespassers, site representatives and visitors granted access to the property. During construction, potential on-site receptors include construction workers, site representatives, and visitors. Under proposed future conditions, potential on-site receptors include building occupants (adult and child building residents, workers and visitors).

Off-Site Receptors: Potential off-site receptors within a 500 foot radius of the Site include: adult and child residents; commercial and construction workers; pedestrians; and trespassers based on the following land uses within 500 feet of the Site:

1. Commercial Businesses – existing and future
2. Residential Buildings – existing and future
3. Building Construction/ Renovation – existing and future
4. Pedestrians, Trespassers, Cyclists – existing and future
5. Schools – existing and future

Potential Routes of Exposure

Three potential primary routes exist by which chemicals can enter the body: ingestion, inhalation, and dermal absorption. Exposure can occur based on the following potential media:

- Ingestion of groundwater or fill/ soil;
- Inhalation of vapors or particulates; and
- Dermal absorption of groundwater or fill/ soil.

Potential Exposure Points

Current Conditions: The site is currently capped with concrete building foundations and a small asphalt-paved parking lot. Therefore, there are no potential exposure pathways from ingestion,

inhalation, or dermal absorption of soil/ fill. Groundwater is not exposed at the site, and because the site is served by the public water supply, groundwater is not used at the site and there is no potential for exposure. The on-site structures are high, one-story buildings with functional ventilation systems, which can be operated as necessary.

Construction/ Remediation Activities: During the remedial action, onsite workers will come into direct contact with surface soils, subsurface soils, and groundwater, as a result of on-Site construction and excavation activities. Due to the depth of groundwater, contact with groundwater is expected during some excavation activities. On-Site construction workers potentially could ingest, inhale or have dermal contact with any exposed impacted soil, and fill. Similarly, off-Site receptors could be exposed to dust and vapors from on-Site activities. During construction, on-Site and off-Site exposures to contaminated dust from on-Site will be addressed through the Soil/Materials Management Plan, dust controls, and through the implementation of the Community Air-Monitoring Program and a Construction Health and Safety Plan.

Proposed Future Conditions: Under future remediated conditions, all soils in excess of Track 4 SCOs will be removed. The site will be fully capped, limiting potential direct exposure to soil and groundwater remaining in place, and engineering controls (vapor barrier) will prevent any exposure to potential for inhalation via soil vapor intrusion. The site is served by the public water supply, and groundwater is not used at the site. There are no plausible off-site pathways for oral, inhalation, or dermal exposure to contaminants derived from the site.

Overall Human Health Exposure Assessment

There are potential complete exposure pathways for contaminated soil vapor for the current site condition and from soil vapor during implementation of the remedy (which may require mitigation). There is no complete exposure pathway under future conditions after the site is developed. 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. Under current conditions, on-Site exposure pathways exist for those given access to the Site or trespassers. During remedial construction, on-Site and off-Site exposures to contaminated dust from historic fill material will be addressed through dust controls, and through the implementation of the Community Air Monitoring Program, the Soil/Materials Management Plan, and a Construction Health and Safety Plan. 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 Scott Spitzer of ESI. The Professional Engineer (PE) and Qualified Environmental Professionals (QEP) for this project are Jolanda Jansen, PE and Paul Ciminello, QEP, of ESI.

5.2 Site Security

Site access will be controlled by construction fences with gated entrances, to be installed at the start of building demolition.

5.3 Work Hours

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. The hours of operation will be conveyed to OER during the pre-construction meeting.

5.4 Construction Health and Safety Plan

The Health and Safety Plan is included in Appendix 5. The Site Safety Coordinator will be Scott Spitzer of ESI. 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 CHASP. That document will define the specific project contacts for use in case of emergency.

5.5 Community Air Monitoring Plan

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

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

VOC Monitoring, Response Levels, and Actions

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

- If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 parts per million (ppm) above background for the 15-minute average, work activities will be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities will resume with continued monitoring.

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

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

Particulate Monitoring, Response Levels, and Actions

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

- If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/m3) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques will be employed. Work will continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 mcg/m3 above the upwind level and provided that no visible dust is migrating from the work area.
- If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 mcg/m3 above the upwind level, work will be stopped and a re-evaluation of activities initiated. Work will resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 mcg/m3 of the upwind level and in preventing visible dust migration.

All readings will be recorded and be available for 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 incompliance 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 Mark-Out Ticket will be retained by the contractor prior to the start of drilling, excavation or other invasive subsurface operations. Overhead utilities may also be present within the anticipated work zones. Electrical hazards associated with drilling in the vicinity of overhead utilities will be prevented by maintaining a safe distance between overhead power lines and drill rig masts.

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

Dewatering

Dewatering is anticipated during remediation and construction in order to excavate the contaminated soil and fill material below the saturated zone or water table (expected to be 6 to 7 feet below grade). Dewatering for this site will require a pumping system, settling tanks,

possibly a treatment system, and the appropriate NYCDEP permits for discharged the groundwater into the sewer system. The need for a treatment system will be determined in consultation with NYCDEP personnel as part of the permitting process.

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 be performed in compliance with existing laws and regulations and consistent with emergency notifications, if any, from proper authorities. Eroded areas of soil including unsafe slopes will be stabilized and fortified. Dislocated materials will by collected and appropriately managed. Support of excavation structure will be inspected and fortified as necessary. Impacted stockpiles will be contained and damaged stockpile covers will be replaced. Stormwater control systems and structures will be inspected and maintained as necessary. If soil or fill materials are discharged off site to adjacent properties, property owners and OER will be notified and corrective measure plan designed to remove and clean dislocated material will be submitted to OER and implemented following approval by OER and granting of site access by the property owner. Impacted offsite areas may require characterization based on site conditions, at the discretion of OER. If onsite petroleum spills are identified, a qualified environmental professional will determine the nature and extent of the spill and report to NYS DEC's spill hotline at DEC 800-457-7362. If the source of the spill is ongoing and can be identified, it should be stopped it this can be done safely. Potential hazards will be addressed immediately, consistent with guidance issued by NYS DEC.

Storm Response Reporting

A site inspection report will be submitted to OER at the completion of site inspection. An inspection report established by OER is available on OER's website (www.nyc.gov/oer) and will be used for this purpose. Site conditions will be compared to the inventory of site conditions and material performed prior to the storm event and significant differences will be noted. The site inspection report will be sent to the OER project manager and will include the site name,

address, tax block and lot, site primary and alternate contact name and phone number. Damage and soil release assessment will include: whether the project had stockpiles; whether stockpiles were damaged; photographs of damage and notice of plan for repair; report of whether soil from the site was dislocated and whether any of the soil left the site; estimates of the volume of soil that left the site, nature of impact, and photographs; description of erosion damage; description of equipment damage; description of damage to the remedial program or the construction program, such as damage to the support of excavation; presence of onsite or offsite exposure pathways caused by the storm; presence of petroleum or other spills and status of spill reporting to NYS DEC; description of corrective actions; schedule for corrective actions. This report should be completed and submitted to OER project manager with photographs within 24 hours of the time of safe entry to the property after the storm event.

5.8 Traffic Control

Drivers of trucks leaving the NYC VCP Site with soil/fill will be instructed to proceed without stopping in the vicinity of the site to prevent neighborhood impacts. The planned route on local roads for trucks leaving the site is shown on Figure 8.

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.

An alpha-numeric site map will be used to identify locations described in reports submitted to OER and is shown in Figure 7.

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;
- 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, Jolanda Jansen, am a Professional Engineer licensed in the State of New York. I have primary direct responsibility for implementation of the remedial action for the 45-35 11th Street and 11-22 45th Road Site (NYC OER Project Number 15EH-A009Q and NYC VCP Project Number 15CVCP065Q).

I, Paul H. Ciminello am a Qualified Environmental Professional as defined in §43-140. I have primary direct responsibility for implementation of the remedial action for the 45-35 11th Street and 11-22 45th Road Site (NYC OER Project Number 15EH-A009Q and NYC VCP Project Number 15CVCP065Q).

I certify that the OER-approved Remedial Action Work Plan dated MONTH DAY YEAR 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.

Jolanda Jansen
Name

068972-1
NYS PE License Number

Signature

Date

PE Stamp

Paul H. Ciminello
QEP Name

QEP Signature

Date

7.0 Schedule

A schedule for the proposed remedial action and reporting is shown below. If the schedule for remediation and development activities changes, it will be updated and submitted to OER. Currently, a ten month remediation period is anticipated.

Schedule Milestone	Weeks from Remedial Action Start	Duration (weeks)
OER Approval of RAWP	1	1
Fact Sheet 2 announcing start of remedy	2	2
Mobilization	3-5	3-5
Remedial Excavation	6-18	12
Installation of Vapor Barrier	40-43	3
Installation of Cover System	65-75	10
Demobilization	75-80	5
Submit Remedial Action Report	80-84	4

FIGURES

Figure 1: Site Location Map
45-35 11TH Street and 11-22 45th Road
Queens, New York

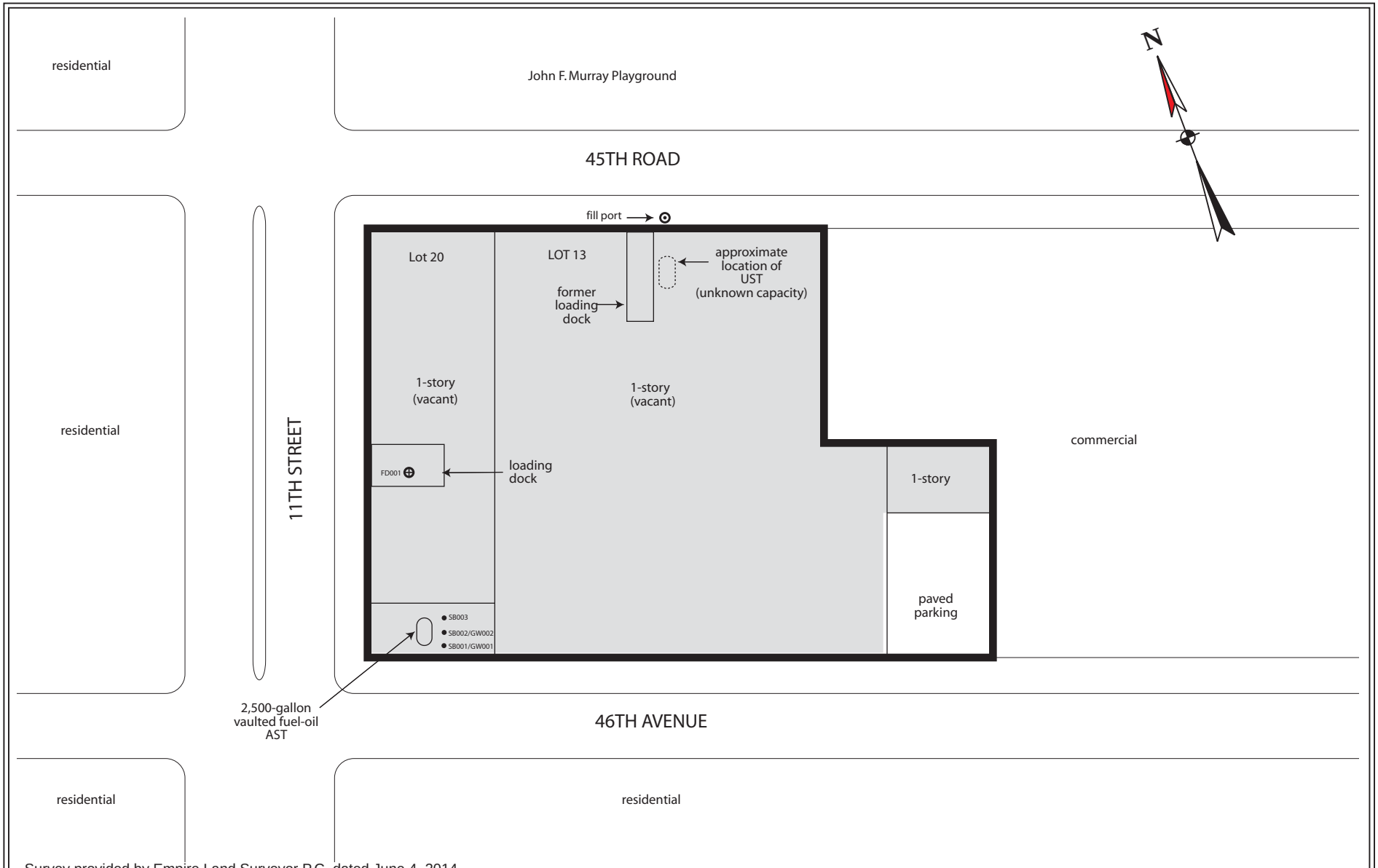
N

ESI File: GQ14076.50

January 2015

Figures

Ecosystems Strategies, Inc.



Survey provided by Empire Land Surveyor P.C. dated June 4, 2014.
All feature locations are approximate. This map is intended as a schematic to be used in conjunction with the associated report, and it should not be relied upon as a survey for planning or other activities.

Figure 2 - Selected Site Features Map

45-35 11th Street and 11-22 45th Road
Long Island City, New York

Legend:

- subject property border
- ⊕ floor drain and previous (PWG) boring location
- ● previous (PWG) boring/groundwater sampling locations

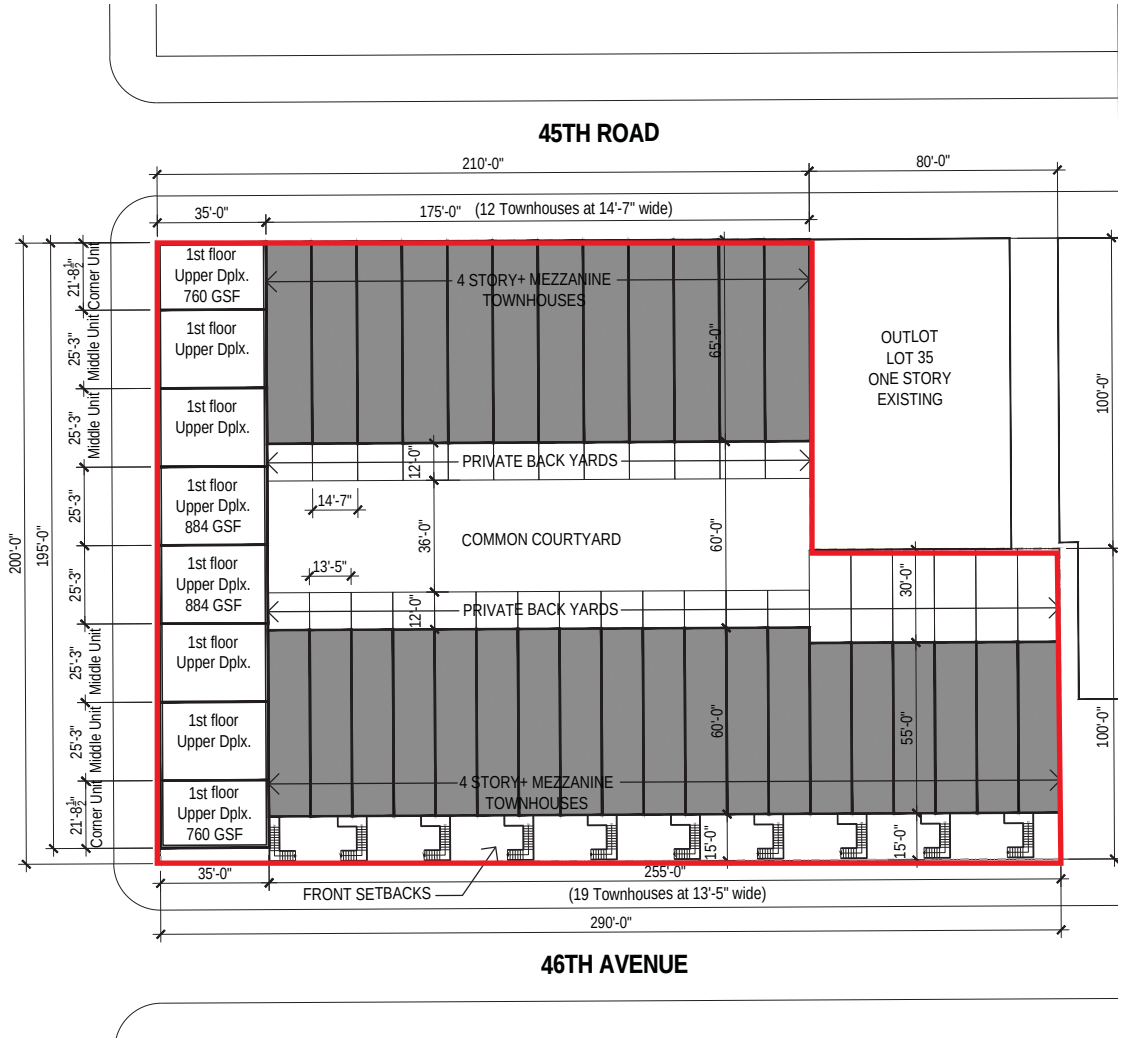
ESI File: GQ14076.50

January 2015

Scale: 1“ = 65’ (approximately)

Figures

Ecosystems Strategies, Inc.



Base map provided by Perkin Eastman dated September 9, 2014. All feature locations are approximate. This map is intended as a schematic to be used in conjunction with the associated report, and it should not be relied upon as a survey for planning or other activities.

Figure 3 - Proposed Site Development

45-35 11th Street and 11-22 45th Road
Queens, New York

Legend:

site border

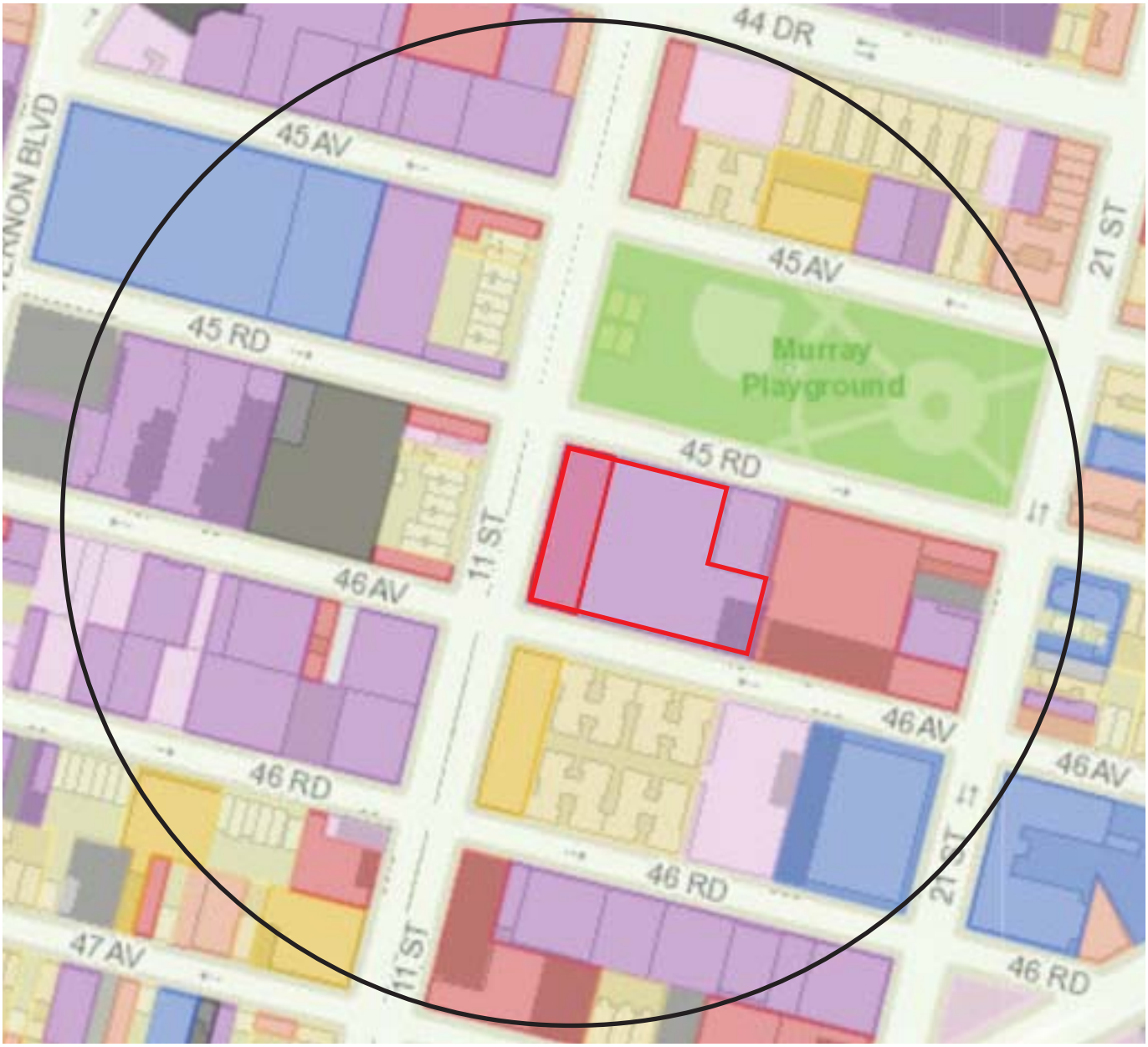
ESI File: GQ14076.50

January 2015

Scale: 1" = 60' approximately

Figures

Ecosystems Strategies, Inc.



Legend:

- One & Two Family Residence
- Multi-Family Residence (Walkup)
- Multi-Family Residence (Elevator)
- Mixed Residential & Commercial
- Commercial Use
- Industrial/Manufacturing
- Transportation/Utility
- Public Facilities and Institutions
- Open Space & Recreation
- Parking
- Vacant Land
- Subject Property
- 400-Foot Radius

Figure 4: Surrounding Land Use

45-35-11th Street and 11-22-45th Road
Queens, New York

ESI File: GQ14076.50

January 2015

Figures

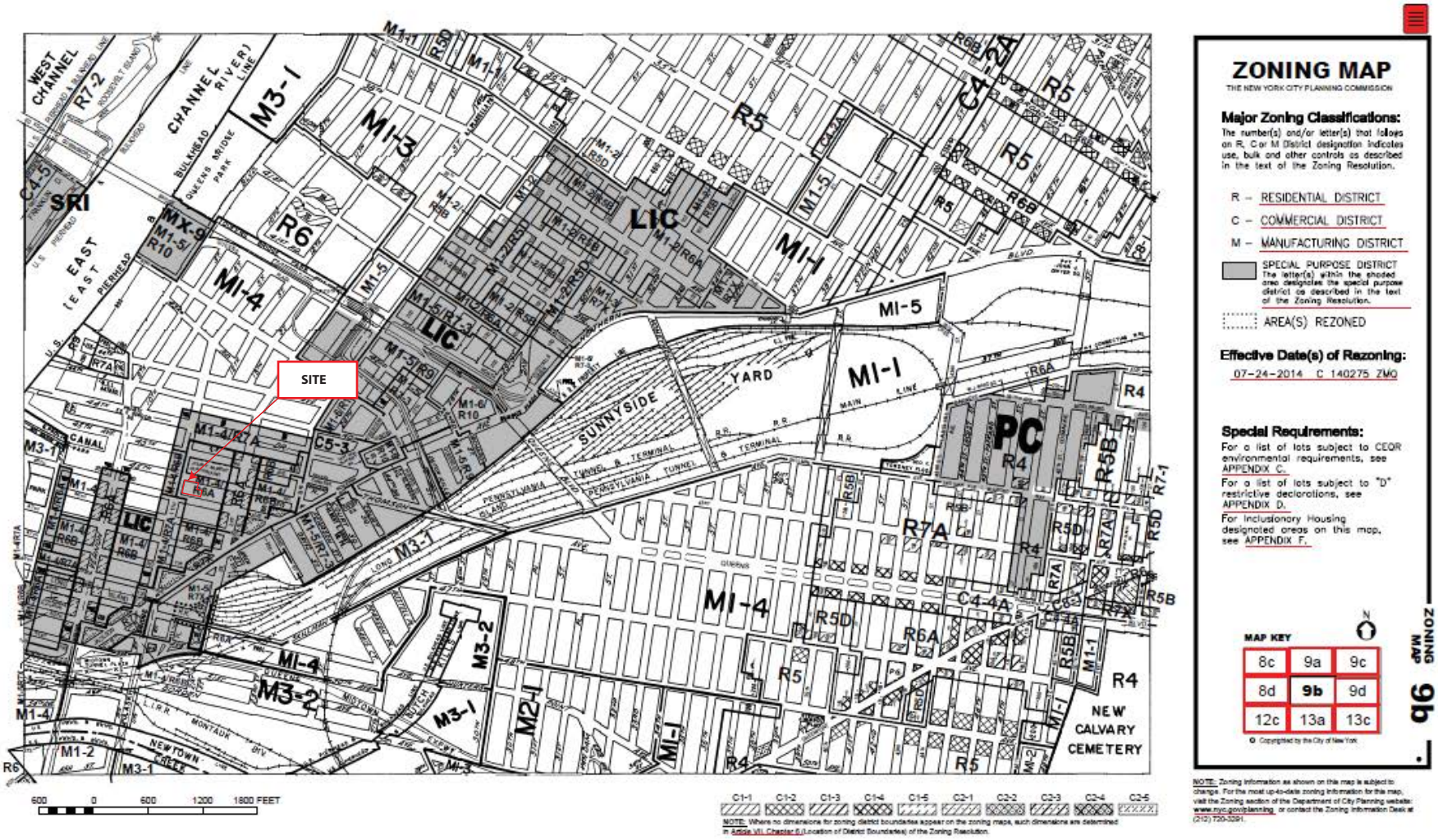


Figure 5: Surrounding Land Zoning

45-35 11th Street and 11-22 45th Road
Queens, New York

Legend:

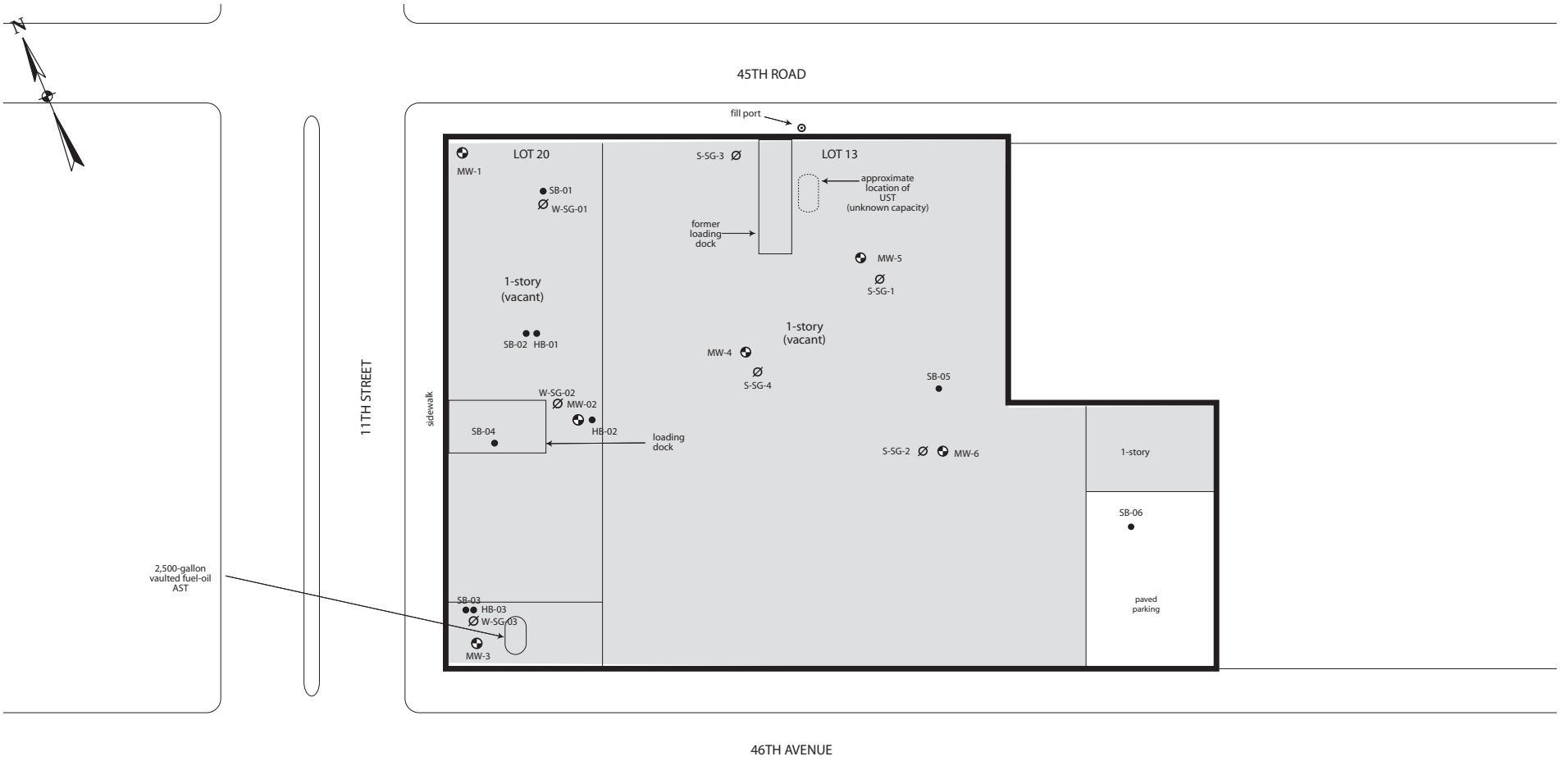
Site

ESI File: GQ14076.50

January 2015

Figures

Ecosystems Strategies, Inc.



Legend:

- subject property border
- soil boring location
- groundwater monitoring well location
- soil gas sampling location

Figure 6 - Site Investigation Map

45-35 11th Street and 11-22 45th Road
Queens, New York

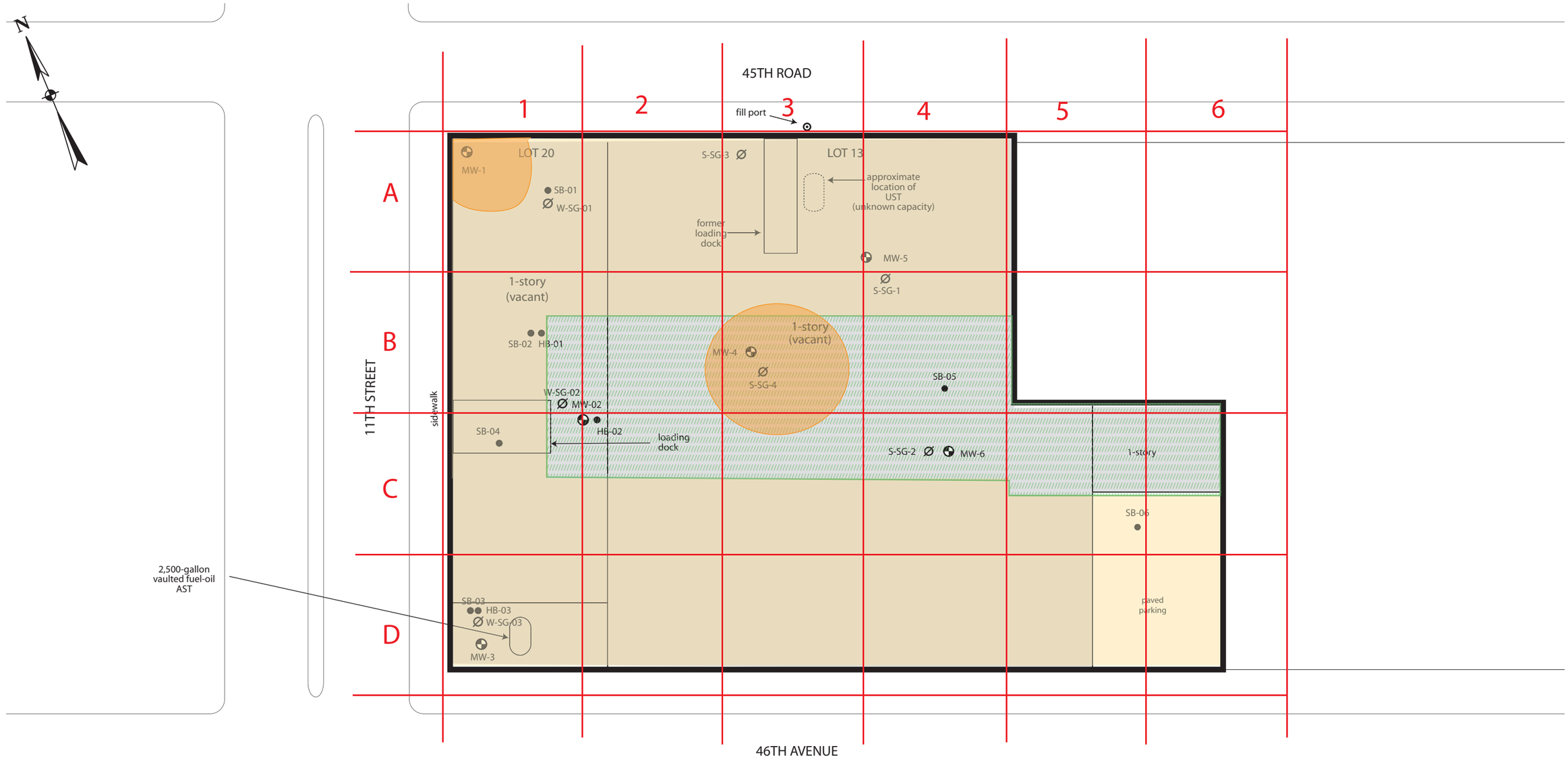
ESI File: GQ14076.50

Scale: 1" = 40' (approximately)

January 2015 | Figures

Survey provided by Empire Land Surveyor P.C. dated June 4, 2014.
All feature locations are approximate. This map is intended as a schematic to be used in conjunction with the associated report, and it should not be relied upon as a survey for planning or other activities.

Ecosystems Strategies, Inc.



Legend:

- subject property border
- soil boring location
- groundwater monitoring well location
- soil gas sampling location
- building area - excavation down to 6 feet
- area of additional excavation (maximum 12 feet)
- yard area - no excavation (soil import area)

Survey pro vied by Empire Land Surveyor P.C. dated June 4, 2014.
All feature locations are approximate. This map is intended as a schematic to be used in conjunction with the associated report, and it should not be relied upon as a survey for planning or other activities.

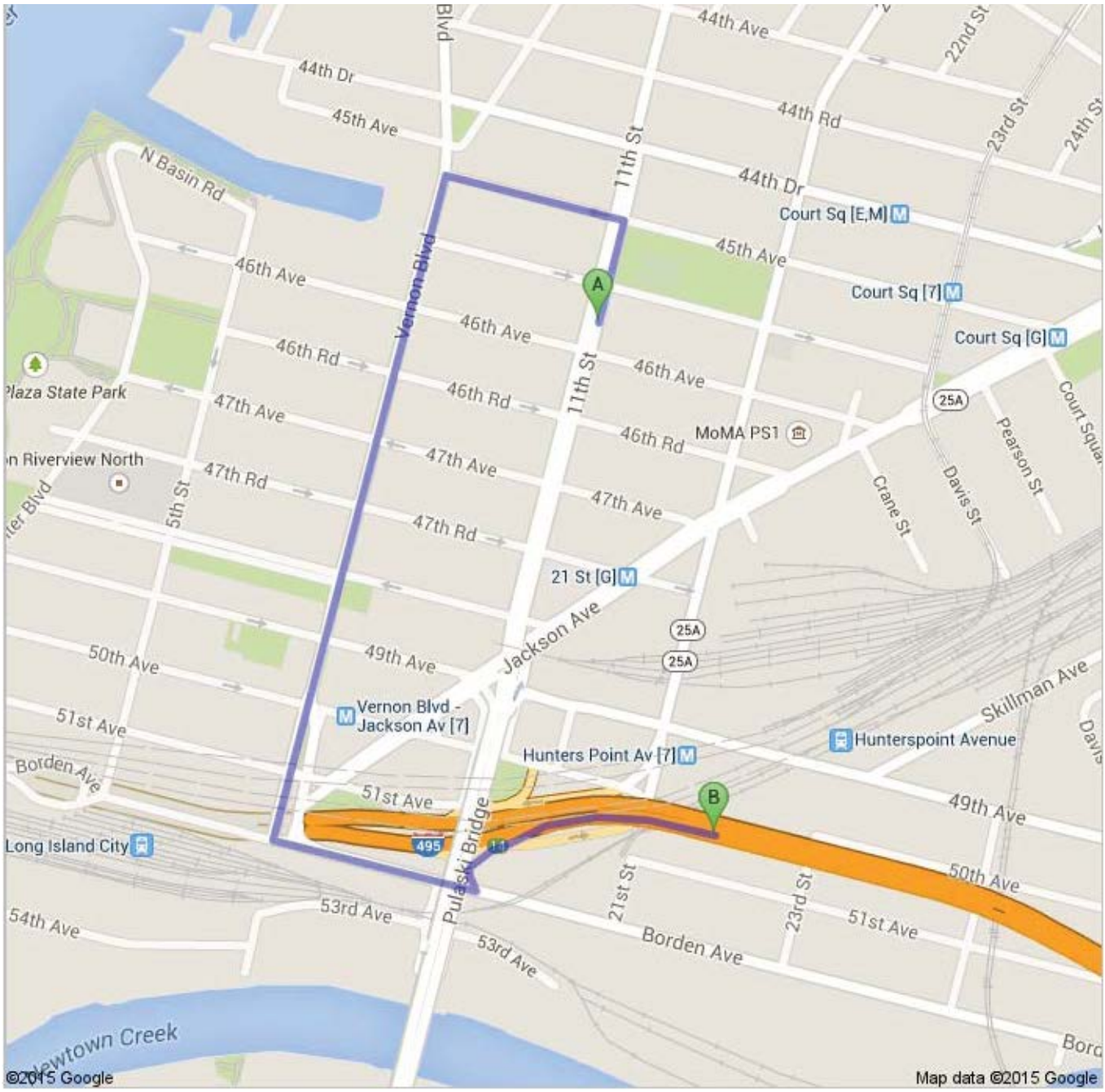
Figure 7 - Site Excavation Diagram

45-35 11th Street and 11-22 45th Road
Queens, New York

ESI File: GQ14076.50

Scale: 1" = 40' (approximately)

January 2015 | Figures



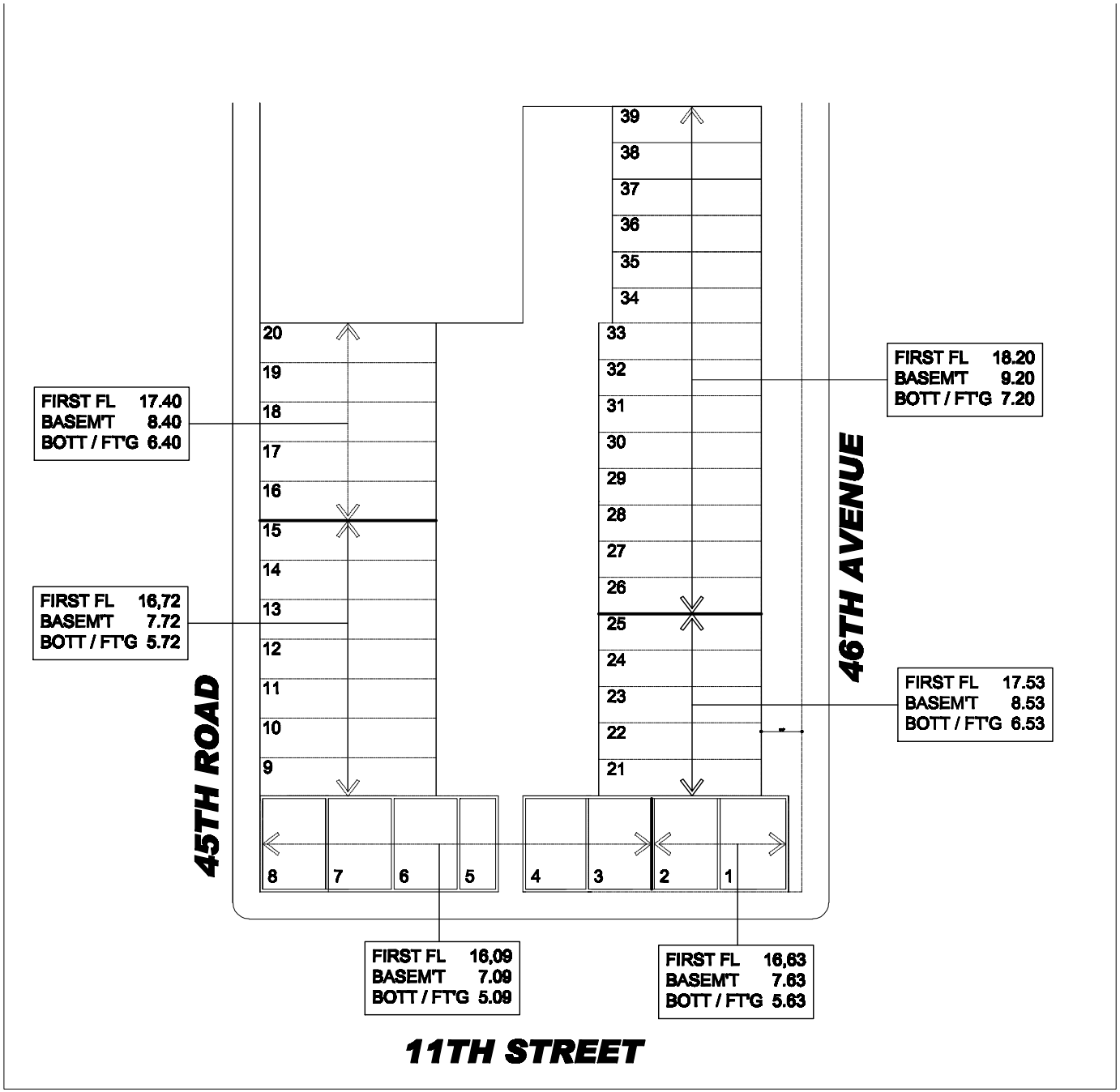
Truck Route:

1. Head north on 11th St toward 45th Rd
2. Turn left at 45th Avenue
3. Turn left onto Vernon Blvd
4. Turn left onto Borden Ave
5. Turn left onto the Interstate 495 East

Figure 8 - Truck Route Map 45-35 11th Street and 11-22 45th Road Long Island City, New York	ESI File: GQ14076.50 January 2015 Figures

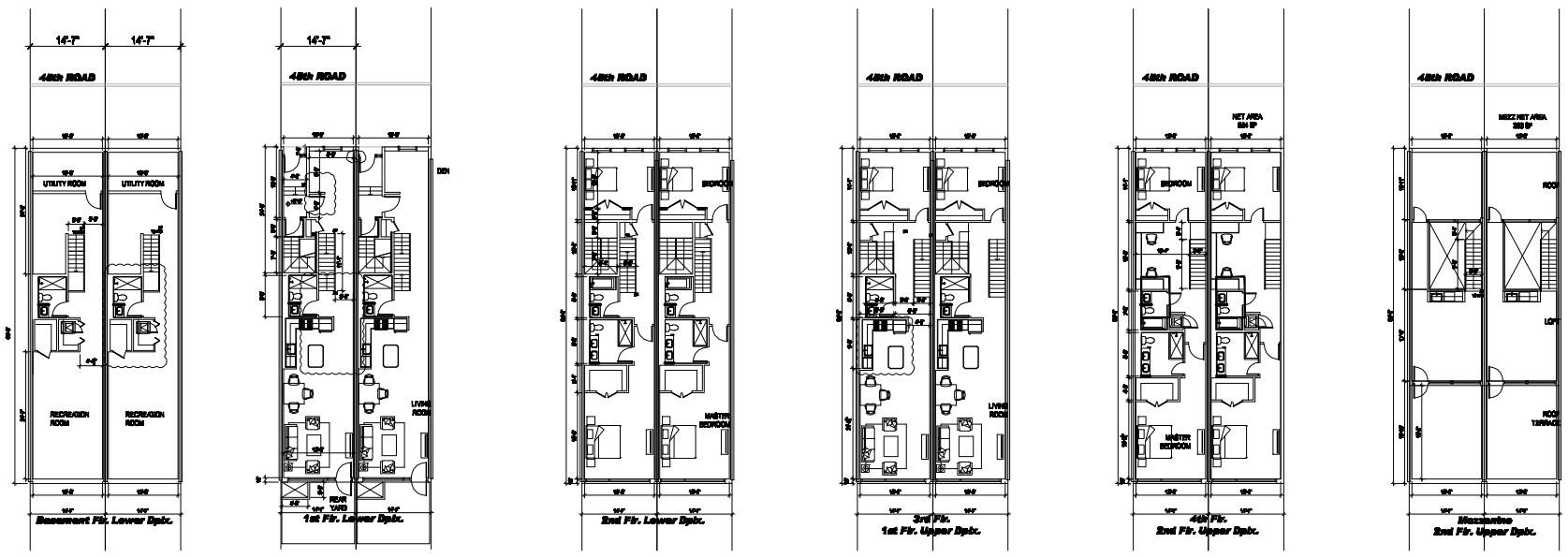
APPENDIX 1

PROPOSED DEVELOPMENT PLANS

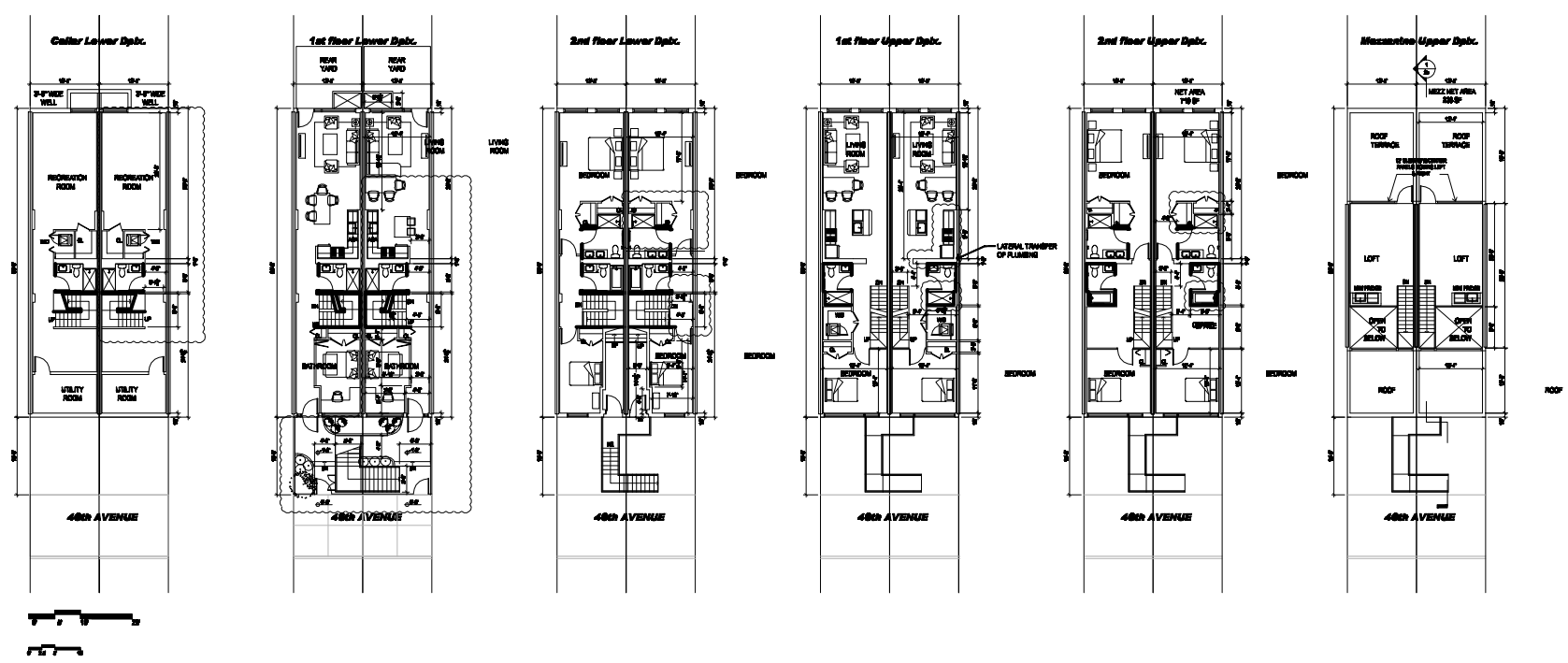


TOWNHOME FIRST FL ELEVATIONS

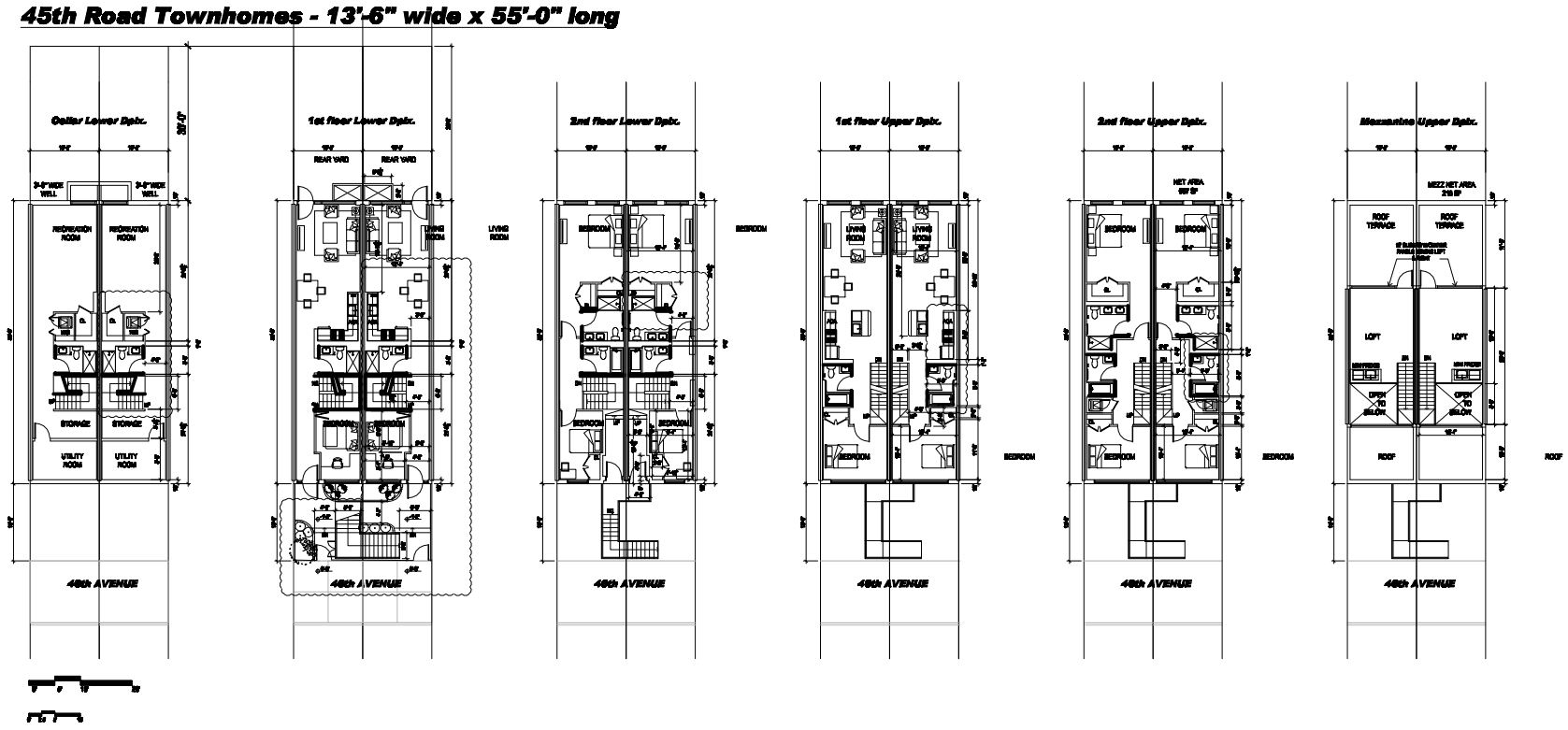
45th Road Townhomes - 14'-7" wide x 65' -0" long



45th Road Townhomes - 13'-6" wide x 60'-0" long

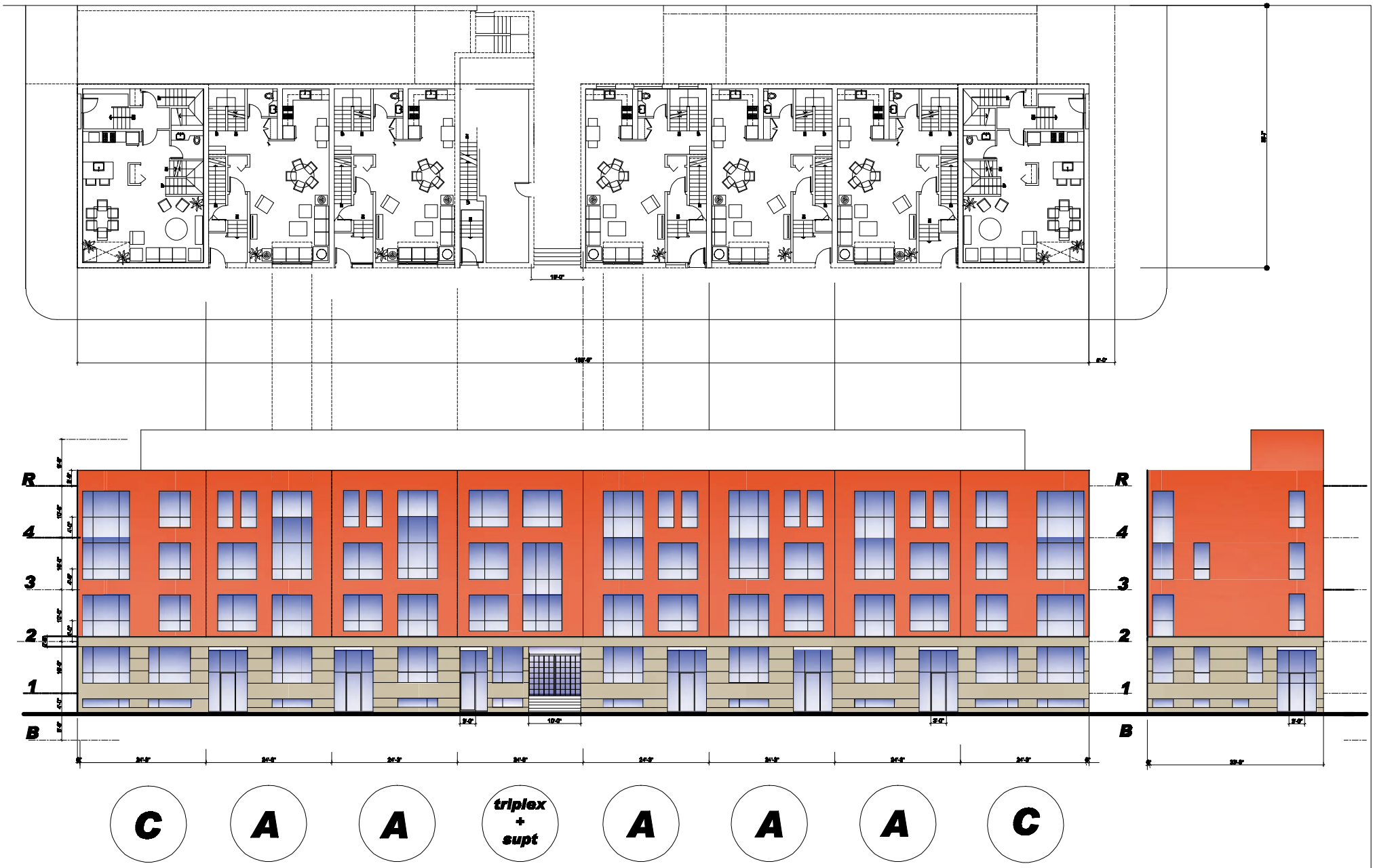


45th Road Townhomes - 13'-6" wide x 55'-0" long



Early Development Plans -
45th Road & 46th Avenue Townhomes

45TH RD ELEVATION AND COLOR STUDY



11TH STREET FINAL ELEVATION AND COLOR STUDY

APPENDIX 2

CITIZEN PARTICIPATION PLAN

The NYC Office of Environmental Remediation and GDC LIC Owner LLC have established this Citizen Participation Plan because the opportunity for citizen participation is an important component of the NYC Voluntary Cleanup Program. This Citizen Participation Plan describes how information about the project will be disseminated to the Community during the remedial process. As part of its obligations under the NYC VCP, GDC LIC Owner 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 others questions, comments or concerns that arise during the remedial process at (212) 788-8841.

Project Contact List: OER has established a Site Contact List for this project to provide public notices in the form of fact sheets to interested members of the Community. Communications will include updates on important information relating to the progress of the cleanup program at the Site as well as to request public comments on the cleanup plan. The Project Contact List includes owners and occupants of adjacent buildings and homes, principal administrators of nearby schools, hospitals and day care centers, the public water supplier that serves the area, established document repositories, the representative Community Board, City Council members, other elected representatives and any local Brownfield Opportunity Area (BOA) grantee organizations. Any member of the public or organization will be added to the Site Contact List on request. A copy of the Site Contact List is maintained by OER's project manager. If you would like to be added to the Project Contact List, contact NYC OER at (212) 788-8841 or by email at brownfields@cityhall.nyc.gov.

Repositories: A document repository is maintained online. Internet access to view OER's document repositories is available at public libraries. 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. The library nearest the Site is:

Queens Library Broadway Branch 40-20 Broadway Long Island City, NY 11103 Phone: 718-721-2462	Hours:	Monday – 9-8 Tuesday – 2-7 Wednesday – Friday – 11-7 Saturday 10-5:30 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.

Issues of Public Concern: GDC LIC Owner LLC is required to identify whether there are specific issues of concern to stakeholders proximate to the project site. Such issues include but are not limited to interests of Environmental Justice communities. No issues of public concern have been identified.

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 reviewed and approved by OER prior to distribution and mailed by the Enrollee. 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.

These steps include:

- **Public Notice of the availability of the Remedial Investigation Report and Remedial Action Work Plan and a 30-day public comment period on the Remedial Action Work Plan:** Public notice in the form of a Fact Sheet is sent to all parties listed on the Site Contact List announcing the availability of the Remedial Investigation Report and Remedial Action Work Plan and the initiation of a 30-day public comment period on the

Remedial Action Work Plan. The Fact Sheet summarizes the findings of the RIR and provides details of the RAWP. The public comment period will be extended an additional 15 days upon public request. A public meeting or informational session will be conducted by OER upon request.

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

APPENDIX 3

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. To the extent feasible, concrete aggregate, stone and masonry derived from the Site, or imported from local sources, will be used as backfill for remedial excavations. 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. The use of concrete aggregate, stone and masonry derived from the Site, or imported from local sources will minimize the use of virgin and non-renewable resources in the selected remedial action and development. 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. The use of concrete aggregate, stone and masonry derived from the Site, or imported from local sources will minimize energy consumption.

Conversion to Clean Fuels: Use of clean fuel improves NYC's air quality by reducing harmful emissions. To the extent feasible clean diesel and low sulfur fuels will be utilized in on-site construction equipment.

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. Recontamination controls for the Site include the installation of building foundations (and cover soils as needed) and building vapor barriers, which will prevent movement of any residual contaminated soils. An estimate of the area of the Site that utilizes recontamination controls under this plan will be reported in the RAR in square feet.

Stormwater Retention: Stormwater retention improves water quality by lowering the rate of combined stormwater and sewer discharges to NYC's sewage treatment plants during periods of precipitation, and reduces the volume of untreated influent to local surface waters. No stormwater retention measures will be installed at the Site.

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. To the extent feasible best practice Green Building design will be incorporated as part of the redevelopment. 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: GDC LIC Owner 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: GDC LIC Owner 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. To the extent feasible native plant species will be utilized in any landscaped areas. An estimate of the land area that will be vegetated, including the number of trees planted or preserved, will be reported in square feet in the RAR.

APPENDIX 4

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

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

1.3 Characterization of Excavated Materials

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

1.4 Materials Excavation, Load-Out, and Departure

The PE/QEP overseeing the remedial action will:

- oversee remedial work and the excavation and load-out of excavated material;
- ensure that there is a party responsible for the safe execution of invasive and other work performed under this work plan;

- ensure that Site development activities and development-related grading cuts will not interfere with, or otherwise impair or compromise the remedial activities proposed in this RAWP;
- ensure that the presence of utilities and easements on the Site has been investigated and that any identified risks from work proposed under this plan are properly addressed by appropriate parties;
- ensure that all loaded outbound trucks are inspected and cleaned if necessary before leaving the Site;
- ensure that all egress points for truck and equipment transport from the Site will be kept clean of Site-derived materials during Site remediation.

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

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

1.5 Off-Site Materials Transport

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

Outbound truck transport routes are shown in Figure 8. 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 (SCOs) established in this plan may be reused on-Site. The SCOs for on-Site reuse are Track 2 Restricted Residential as modified by the Track 4 Site-Specific SCOs listed Section 4.2. ‘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 expected location for placement of reused material is shown in Figure 7.

Excavation will occur within the footprint of the buildings to a maximum depth of approximately 6 feet below surface grade (estimated volume 8,700 yd^3). Based on existing chemical data for these urban fill soils, an estimated 1,000 yd^3 may be reused to raise the elevation of the rear yard by three feet. Material proposed for reuse will be screened with a PID for indications of elevated organic contamination. Soils with PID readings greater than 5 ppm will be considered unacceptable for on-site reuse. These soils will also be evaluated for physical evidence of foreign material (e.g., brick, concrete) and the presence of significant percentages of putrescible material (greater than 15%) will result in the material being determined to be unacceptable for re-use. Additional soils excavated to remove potential source material will be managed differently from urban fill soils; source material will be stockpiled separately, will not be comingled with urban fill soils, and will not be acceptable for on-site re-use.

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 Section 4.2.

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

1.10 Fluids Management

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

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

1.11 Stormwater Pollution Prevention

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

1.12 Contingency Plan

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

1.13 Odor, Dust, and Nuisance Control

Odor Control

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

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

Dust Control

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

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

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

Other Nuisances

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

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

APPENDIX 5

CONSTRUCTION HEALTH AND SAFETY PLAN

1.0 INTRODUCTION

1.1 Purpose

This Construction Health and Safety Plan for Site Remediation (HASP) has been developed to provide the requirements and general procedures to be followed by Ecosystems Strategies, Inc. (ESI) and on-site subcontractors while performing remedial services at the site located at 45-35 11th Street and 11-22 45th Road in Queens, New York

This HASP incorporates policies, guidelines and procedures that have the objective of protecting the public health of the community during the performance of fieldwork activities, and therefore serves as a Community Health and Safety Plan. The objectives of the HASP are met by establishing guidelines to minimize community exposure to hazards during fieldwork, and by planning for and responding to emergencies affecting the public.

This HASP describes the responsibilities, training requirements, protective equipment and standard operating procedures to be utilized by all personnel while on the Site. All on-site personnel and visitors shall follow the guidelines, rules, and procedures contained in this safety plan. The Project Manager or Site Health and Safety Officer (SHSO) may impose any other procedures or prohibitions believed to be necessary for safe operations. This HASP incorporates by reference the applicable Occupational Safety and Health Administration (OSHA) requirements in 29 CFR 1910 and 29 CFR 1926.

The requirements and guidelines in this HASP are based on a review of available information and evaluation of potential on-site hazards. This HASP will be discussed with Site personnel and will be available on-site for review while work is underway. On-site personnel will report to the Site Health and Safety Officer (SHSO) in matters of health and safety. The on-site project supervisor(s) are responsible for enforcement and implementation of this HASP, which is applicable to all field personnel, including contractors and subcontractors.

This HASP is specifically intended for the conduct of activities within the defined scope of work in specified areas of the Site. Changes in site conditions and future actions that may be conducted at the Site may necessitate the modification of the requirements of the HASP. Although this HASP can be made available to interested persons for informational purposes, ESI has no responsibility over the interpretations or activities of any other persons or entities other than employees of ESI or ESI's subcontractors.

1.2 Site Location and Description

The Site as defined in this HASP is the property located at 45-35 11th Street and 11-22 45th Road, Borough of Queens, New York City, New York. A Site Excavation Diagram (illustrating the configuration of the Site as well as the areas of proposed fieldwork activities) is included as an Attachment to this HASP.

1.3 Work Activities

Environmental remediation activities are detailed in the Remedial Action Work Plan (RAWP), dated January 2015. The specific tasks detailed in the RAWP are wholly incorporated by reference into this HASP. The RAWP was prepared to remediate documented soil and soil gas contamination on the property located at 2501 Pitkin Avenue and describes tasks required for remediation and post-remediation documentation and management of on-site environmental conditions.

The Remedial Investigation documented the presence of urban-fill soils containing elevated concentrations of SVOCs, pesticides and metals, groundwater contamination by SVOCs and metals, and low-level soil-vapor contamination by VOCs. Contaminated soil (and any excavated fill materials) will be removed from the Site. The location of known contaminated soils subject to the removal procedures is provided on the attached Excavation Map.

Material removal from the Site will generally be conducted as follows:

Any previously unknown contaminated material(s), USTs, demolition debris or other unknown unidentifiable materials will be handled according to a Contingency Plan.

All soils likely to be contaminant source areas (i.e., grossly contaminated material) will be removed. Grossly contaminated materials will be stockpiled separately from other materials, and will be direct loaded to trucks for off-site disposal if a permitted facility has been previously secured.

Soils not exhibiting significant field evidence of contamination will be segregated, stockpiled, sampled, and characterized prior to final disposition.

Any groundwater entering excavated areas will be handled following the provisions of the RAWP and the Soils/Materials Management Plan.

Confirmatory endpoint sampling will be conducted to document the integrity of remaining soils in excavation areas, and waste materials will be characterized for appropriate off-site disposal. Excavated areas will be back-filled (as required). Following remediation, the Site will meet Track 4 requirements for “Restricted-Residential Use”. Residual contamination will be addressed through the implementation of site restrictions (engineering and institutional controls), and all residual contaminated soil will be covered by a protective barrier layer (clean soil and/or

buildings or impermeable surfaces). A vapor barrier will be installed at all buildings to prevent migration of any significant residual soil vapor.

2.0 HEALTH AND SAFETY HAZARDS

2.1 Hazard Overview for On-Site Personnel

The potential exists for the presence of elevated levels of organic compounds and metals in on-site soils and groundwater, and organic compounds in soil gas. The possibility exists for on-site personnel to have contact with contaminated soils, groundwater and/or vapor during site remediation work. Contact with contaminated substances may present a skin contact, inhalation and/or ingestion hazard. These potential hazards are addressed in Sections 3.0 through 11.0, below.

2.2 Potential Hazards to the Public from Fieldwork Activities

The potential exists for the public to be exposed to contaminated soils, groundwater and/or vapor, which may present a skin contact, inhalation and/or ingestion hazard. Additional potential hazards to the public that are associated with fieldwork activities include mechanical/physical hazards, traffic hazards from fieldwork vehicles, and noise impacts associated with operation of mechanical equipment.

Impacts to public health and safety are expected to be limited to hazards that could directly affect on-site visitors and/or trespassers. These effects will be mitigated through site access and control measures (see Section 6.0, below). Specific actions taken to protect the public health (presented in Sections 3.0 through 11, below) are anticipated to minimize any potential off-site impacts from contaminant migration, noise and traffic hazards.

3.0 PERSONAL PROTECTIVE EQUIPMENT

The levels of protection identified for the services specified in the RIWP represent a best estimate of exposure potential and protective equipment needed for that exposure. Determination of levels was based on data provided by previous studies of the Site and information reviewed on current and past Site usage. The SHSO may recommend revisions to these levels based on an assessment of actual exposures and may at any time require Site workers, supervisors and/or visitors to use specific safety equipment.

The level of protective clothing and equipment selected for this project is Level D. Level D PPE provides minimal skin protection and no respiratory protection, and is used when the atmosphere contains no known hazard, oxygen concentrations are not less than 19.5%, and work activities exclude splashes, immersion or the potential for unexpected inhalation or contact with hazardous levels of chemicals. Workers will wear Level D protective clothing including, but not limited to, a hard hat, steel-toed boots, nitrile gloves (when handling soils and/or groundwater), hearing protection (foam ear plugs or ear muffs, as required), and safety goggles (in areas of exposed

groundwater and when decontaminating equipment). Personal protective equipment (PPE) will be worn at all times, as designated by this HASP.

Disposable gloves will be changed immediately following the handling of contaminated soils, water, or equipment. Tyvek suits will be worn during activities likely to excessively expose work clothing to contaminated dust or soil (chemically-resistant over garments will be required in situations where exposures could lead to penetration of clothing and direct dermal contact by contaminants).

The requirement for the use of PPE by official on-site visitors shall be determined by the SHSO, based on the most restrictive PPE requirement for a particular Work Zones (see Section 6 for Work Zone definitions). All on-site visitors shall, at a minimum, be required to wear an approved hardhat and be provided with appropriate hearing protection as necessary.

The need for an upgrade in PPE will be determined based upon encountered Site conditions, including measurements taken in the breathing zone of the work area using a photo-ionization detector (PID). An upgrade to a higher level of protection (Level C) will begin when specific action levels are reached (see Section 5.0, below), or as otherwise required by the SHSO. Level C PPE includes a full-face or half-mask air-purifying respirator (NIOSH approved for the compound[s] of concern), hooded chemical-resistant clothing, outer and inner chemical-resistant gloves, and (as needed) coveralls, outer boots/boot covers, escape mask, and face shield. Level C PPE may be used only when: oxygen concentrations are not less than 19.5%; contaminant contact will not adversely affect any exposed skin; types of air contaminants have been identified, concentrations measured, and a cartridge or canister is available that can remove the contaminant; atmospheric contaminant concentrations do not exceed immediately dangerous to life or health (IDLH) levels; and job functions do not require self-contained breathing apparatus (SCBAs). The need for Level B or Level A PPE is not anticipated for the planned remedial activities at this Site.

If any equipment fails and/or any employee experiences a failure or other alteration of their protective equipment that may affect its protective ability, that person will immediately leave the work area. The Project Manager and the SHSO will be notified and, after reviewing the situation, determine the effect of the failure on the continuation of on-going operations. If the failure affects the safety of personnel, the work site, or the surrounding environment, personnel will be evacuated until appropriate corrective actions have been taken.

4.0 CONTAMINANT CONTROL

Precautions will be taken during dry weather (e.g., wetting or covering exposed soils) to avoid generating and breathing dust-generated from soils. A PID (or equivalent equipment) will be used to monitor potential contaminant levels. Response to the monitoring will be in accordance with the action levels provided in Section 5.0.

5.0 MONITORING AND ACTION LEVELS

Concentrations of petroleum compounds in the air are expected to be below the OSHA Permissible Exposure Limits (PELs). Air monitoring will be conducted for VOCs and dust according to the NYSDOH Generic Community Air Monitoring Plan (CAMP). Monitoring will be conducted at all times that fieldwork activities which are likely to generate emissions are occurring. PID and dust readings consistently in excess of CAMP limits will be used as an indication of the need to initiate personnel monitoring, increase worker protective measures, and/or modify or cease on-site operations in order to mitigate off-site community exposure.

PID readings that consistently exceed background in the breathing zone (during any of the proposed tasks) will necessitate moving away from the source or implementing a higher PPE level.

6.0 SITE CONTROL/WORK ZONES

Site control procedures will be established to reduce the possibility of worker/visitor contact with compounds present in the soil, to protect the public in the area surrounding the Site and to limit access to the Site to only those persons required to be in the work zone. Notices will be placed near the Site warning the public not to enter fieldwork areas and directing visitors to report to the Project Manager or SHSO. Measures will be taken to limit the entry of unauthorized personnel into the specific areas of field activity and to safely direct and control all vehicular traffic in and near the Site (e.g., placement of traffic cones and warning tape).

The following Work Zone will be established:

Exclusion Zone ("Hot Zone") - The exclusion zone will be that area immediately surrounding the work being performed for remediation purposes (i.e. the area where contaminated media are being handled). It is anticipated that much of the work will be accomplished with heavy equipment in the exclusion zone. Only individuals with appropriate PPE and training are allowed into this zone. It is the responsibility of the Site Health and Safety Officer to prevent unauthorized personnel from entering the exclusion zone. When necessary, such as in high traffic areas, the exclusion zone will be delineated with barricade tape, cones and/or barricades.

Decontamination Area - A decontamination area for personnel and equipment is not anticipated being required during completion of the RAWP; however, care will be taken to remove gloves, excess soil from boots, and soiled clothing (if necessary) before entering the Intermediate Zone.

Contamination Reduction Zone and Support Zone - Not anticipated being required during the completion of the RAWP.

Intermediate Zone (Decontamination Zone) - The intermediate zone, also known as the decontamination zone, is where patient decontamination should take place, if necessary. A

degree of contamination still is found in this zone; thus, some PPE is required, although it is usually of a lesser degree than that required for the hot zone.

Command Zone - The command zone is located outside the decontamination zone. All exposed individuals and equipment from the “hot zone” and decontamination zone should be decontaminated before entering the command zone. Access to all zones must be controlled. Keeping the media and onlookers well away from the Site is critical and will be the responsibility of both the SSHO and the Project Manager, and other Site personnel as appropriate.

7.0 NOISE CONTROL

All fieldwork activities will be conducted in a manner designed to reduce unnecessary noise generation, and to minimize the potential for both on-site and off-site harmful noise levels. The Project Manager and SHSO will establish noise reduction procedures (as appropriate to the Site and the work) to meet these requirements.

8.0 PERSONNEL TRAINING

Work zones that will accomplish the general objective stated above will be established by the Project Manager and the SHSO. Site access will be monitored by the SHSO, who will maintain a log-in sheet for personnel that will include, at the minimum, personnel on the Site, their arrival and departure times and their destination on the Site. All workers will be properly trained in accordance with OSHA requirements (29 CFR 1910). Personnel exiting the work zone(s) will be decontaminated prior to exiting the Site.

Site-specific training will be provided to each employee. Personnel will be briefed by the SHSO as to the potential hazards to be encountered. Topics will include:

Availability of this HASP;

General site hazards and specific hazards in the work areas, including those attributable to known of suspect on-site contaminants;

Selection, use, testing, and care of the body, eye, hand, and foot protection being worn, with the limitations of each;

Decontamination procedures for personnel, their personal protective equipment, and other equipment used on the Site;

Emergency response procedures and requirements;

Emergency alarm systems and other forms of notification, and evacuation routes to be followed; and,

Methods to obtain emergency assistance and medical attention.

9.0 DECONTAMINATION

The SHSO will establish a decontamination system and decontamination procedures (appropriate to the Site and the work) that will prevent potentially hazardous materials from leaving the Site. Trucks will be brushed to remove materials adhering to their surfaces. Sampling equipment will be segregated and, after decontamination, stored separately from splash protection equipment. Decontaminated or clean sampling equipment not in use will be covered with plastic and stored in a designated storage area in the work zone.

10.0 EMERGENCY RESPONSE

10.1 Notification of Site Emergencies

In the event of an emergency, the SHSO will be immediately notified of the nature and extent of the emergency (the names and contact information for key site safety and management personnel, as well as other site safety contact telephone numbers, shall be posted at the Site).

Table 1 in this HASP contains Emergency Response Telephone Numbers, and immediately following is a map detailing the directions to the nearest hospital emergency room. This information will be maintained at the work Site by the SHSO. The location of the nearest telephone will be determined prior to the initiation of on-site activities. In addition to any permanent phone lines, a cellular phone will be in the possession of the SHSO, or an authorized designee, at all times.

10.2 Responsibilities

Prior to the initiation of on-site work activities, the SHSO will:

Notify individuals, authorities and/or health care facilities of the potentially hazardous activities and potential wastes that may develop as a result of the remedial activities.

Confirm that first aid supplies and a fire extinguisher are available on-site.

Have a working knowledge of safety equipment available.

Confirm that a map detailing the most direct route to the hospital is prominently posted with the emergency telephone numbers.

The SHSO will be responsible for directing notification, response and follow-up actions and for contacting outside response personnel (ambulance, fire department, or others). In the case of an evacuation, the SHSO will account for personnel. A log of individuals entering and leaving the Site will be kept so that everyone can be accounted for in an emergency.

Upon notification of an exposure incident, the SHSO will contact the appropriate emergency response personnel for recommended medical diagnosis and, if necessary, treatment. The SHSO

will determine whether and at what levels exposure actually occurred, the cause of such exposure, and the means to prevent similar incidents from occurring.

10.3 Accidents and Injuries

In the event of an accident or injury, measures will be taken to assist those who have been injured or exposed and to protect others from hazards. If an individual is transported to a hospital or doctor, a copy of the HASP will accompany the individual.

The SHSO will be notified and will respond according to the severity of the incident. The SHSO will perform an investigation of the incident and prepare a signed and dated report documenting the investigation. An exposure-incident report will also be completed by the SHSO and the exposed individual. The form will be filed with the employee's medical and safety records to serve as documentation of the incident and the actions taken.

10.4 Communication

No special hand signals will be utilized within the work zone. Field personnel will utilize standard hand signals during the operation of heavy equipment.

10.5 Safe Refuge

Vehicles and on-site structures will serve as the immediate place of refuge in the event of an emergency. If evacuation from the area is necessary, project vehicles will be used to transport on-site personnel to safety.

10.6 Site Security and Control

Site security and control during emergencies, accidents and incidents will be monitored by the SHSO. The SHSO is responsible for limiting access to the Site to authorized personnel and for oversight of reaction activities.

10.7 Emergency Evacuation

In case of an emergency, personnel will evacuate to the safe refuge identified by the SHSO, both for their personal safety and to prevent the hampering of response/rescue efforts.

10.8 Resuming Work

A determination that it is safe to return to work will be made by the SHSO and/or any personnel assisting in the emergency, e.g., fire department, police department, utility company, etc. No personnel will be allowed to return to the work areas until a full determination has been made by the above-identified personnel that all field activities can continue unobstructed. Such a determination will depend upon the nature of the emergency (e.g., downed power lines -- removal of all lines from the property; fire -- extinguished fire; injury -- safe transport of the injured party to a medical facility with either assurance of acceptable medical care present or

completion of medical care; etc.). Before on-site work is resumed following an emergency, necessary emergency equipment will be recharged, refilled or replaced. Government agencies will be notified as appropriate. An Incident Report Form will be filed.

10.9 Fire Fighting Procedures

A fire extinguisher will be available in the work zone during on-site activities. This extinguisher is intended for small fires. When a fire cannot be controlled with the extinguisher, the area will be evacuated immediately. The SHSO will be responsible for directing notification, response and follow-up actions and for contacting ambulance and fire department personnel.

10.10 Emergency Decontamination Procedure

The extent of emergency decontamination depends on the severity of the injury or illness and the nature of the contamination. Whenever possible, minimum decontamination will consist of washing, rinsing and/or removal of contaminated outer clothing and equipment. If time does not permit decontamination, the person will be given first aid treatment and then wrapped in plastic or a blanket prior to transport.

10.11 Emergency Equipment

The following on-site equipment for safety and emergency response will be maintained in the on-site vehicle of the SHSO:

Fire extinguisher;

First-aid kit; and,

Extra copy of this Health and Safety Plan.

11.0 SPECIAL PRECAUTIONS AND PROCEDURES

The activities associated with this remediation may involve potential risks of exposure to both chemical and physical hazards. The 5

11.1 Heat/Cold Stress

Training in prevention of heat/cold stress will be provided as part of the site-specific training. The timing of this project is such that heat/cold stress may pose a threat to the health and safety of personnel. Work/rest regimens will be employed, as necessary, so that personnel do not suffer adverse effects from heat/cold stress. Special clothing and appropriate diet and fluid intake regimens will be recommended to personnel to further reduce this temperature-related hazard. Rest periods will be recommended in the event of high/low temperatures and/or humidity to counter the negative effects of heat/cold stress.

11.2 Heavy Equipment

Working in the vicinity of heavy equipment is the primary safety hazard at the Site. Physical hazards in working near heavy construction equipment include the following: overhead hazards, slips/trip/falls, hand and foot injuries, moving part hazards, improper lifting/back injuries and noise. All workers will be properly trained in accordance with OSHA requirements (29 CFR 1910). No workers will be permitted within any excavated areas without proper personal protective equipment (PPE), including, as warranted, any necessary Level C equipment (e.g., respirators and protective suits). Air monitoring in excavation areas will be conducted for VOCs in accordance with Section 5.0.

11.3 Additional Safety Practices

The following are important safety precautions which will be enforced during the remedial activities:

Medicine and alcohol can aggravate the effect of exposure to certain compounds. Controlled substances and alcoholic beverages will not be consumed during remedial activities. Consumption of prescribed drugs will only be at the discretion of a physician familiar with the person's work.

Eating, drinking, chewing gum or tobacco, smoking, or other practices that increase the probability of hand-to-mouth transfer and ingestion of material is prohibited except in areas designated by the SHSO.

Contact with potentially contaminated surfaces will be avoided whenever possible. Workers will not unnecessarily walk through puddles, mud or other discolored surfaces; kneel on the ground; or lean, sit, or place equipment on drums, containers, vehicles, or the ground.

Personnel and equipment in the work areas will be minimized, consistent with effective site operations.

Unsafe equipment left unattended will be identified by a "DANGER, DO NOT OPERATE" tag.

Work areas for various operational activities will be established.

11.4 Daily Log Contents

The SHSO will establish a system appropriate to the Site, the work and the work zones that will record, at a minimum, the following information:

Personnel on the Site, their arrival and departure times and their destination on the Site.

Incidents and unusual activities that occur on the Site such as, but not limited to, accidents, spills, breaches of security, injuries, equipment failures and weather-related problems.

Changes to the HASP.

Daily information generated such as: changes to work and health and safety plans; work accomplished and the current Site status; and monitoring results.

12.0 TABLE AND FIGURES

Table 1: Emergency Contact Information

Emergency Agencies	Phone Numbers
EMERGENCY	**911**
Wyckoff Hospital/Medical Center 373 Stockholm Street Brooklyn, NY 11237	(718) 963-7272 or 911
NYC Police Department 5-47 50th Ave, Long Island City, NY	(718) 784-5411 or 911
NYC Fire Department	911
City Hall	(212) 788-3000
Main Water and Sewer	(212) 315-2101
Site Health and Safety Officer, Paul Ciminello, ESI	(845) 452-1658
Remedial Engineer, Jolanda G. Jansen, PE	(845) 505-0324
Construction Manager	TBD

Figure 1: Directions to Hospital (approximately 9 to 15 minutes travel time)

Google

Directions to Wyckoff Heights Medical Center
374 Stockholm St, Brooklyn, NY 11237
4.4 mi – about **15 mins**

You can enter notes here.

Save trees. Go green!
Download Google Maps on your phone at google.com/gmm

A 45-35 11th St, Long Island City, NY 11101

1.	Head **north** on **11th St** toward **45th Rd**	go 397 ft total 397 ft
2.	Make a U-turn at **45th Ave** About 1 min	go 0.3 mi total 0.4 mi
3.	Continue onto **Pulaski Bridge** About 1 min	go 0.6 mi total 1.0 mi
4.	Continue onto **McGuinness Blvd** About 3 mins	go 1.1 mi total 2.1 mi
5.	Continue onto **Humboldt St** About 1 min	go 0.4 mi total 2.5 mi
6.	Turn left onto **Metropolitan Ave** About 1 min	go 0.4 mi total 2.9 mi
7.	Turn right onto **Morgan Ave** About 2 mins	go 0.5 mi total 3.4 mi
8.	Turn left onto **Johnson Ave** About 1 min	go 0.4 mi total 3.8 mi
9.	Turn right onto **Gardner Ave**	go 489 ft total 3.9 mi
10.	Turn right onto **Flushing Ave**	go 171 ft total 4.0 mi
11.	Take the 1st left onto **Wyckoff Ave** About 1 min	go 0.4 mi total 4.3 mi
12.	Turn left onto **Stockholm St** Destination will be on the right	go 259 ft total 4.4 mi

B **Wyckoff Heights Medical Center**
374 Stockholm St, Brooklyn, NY 11237

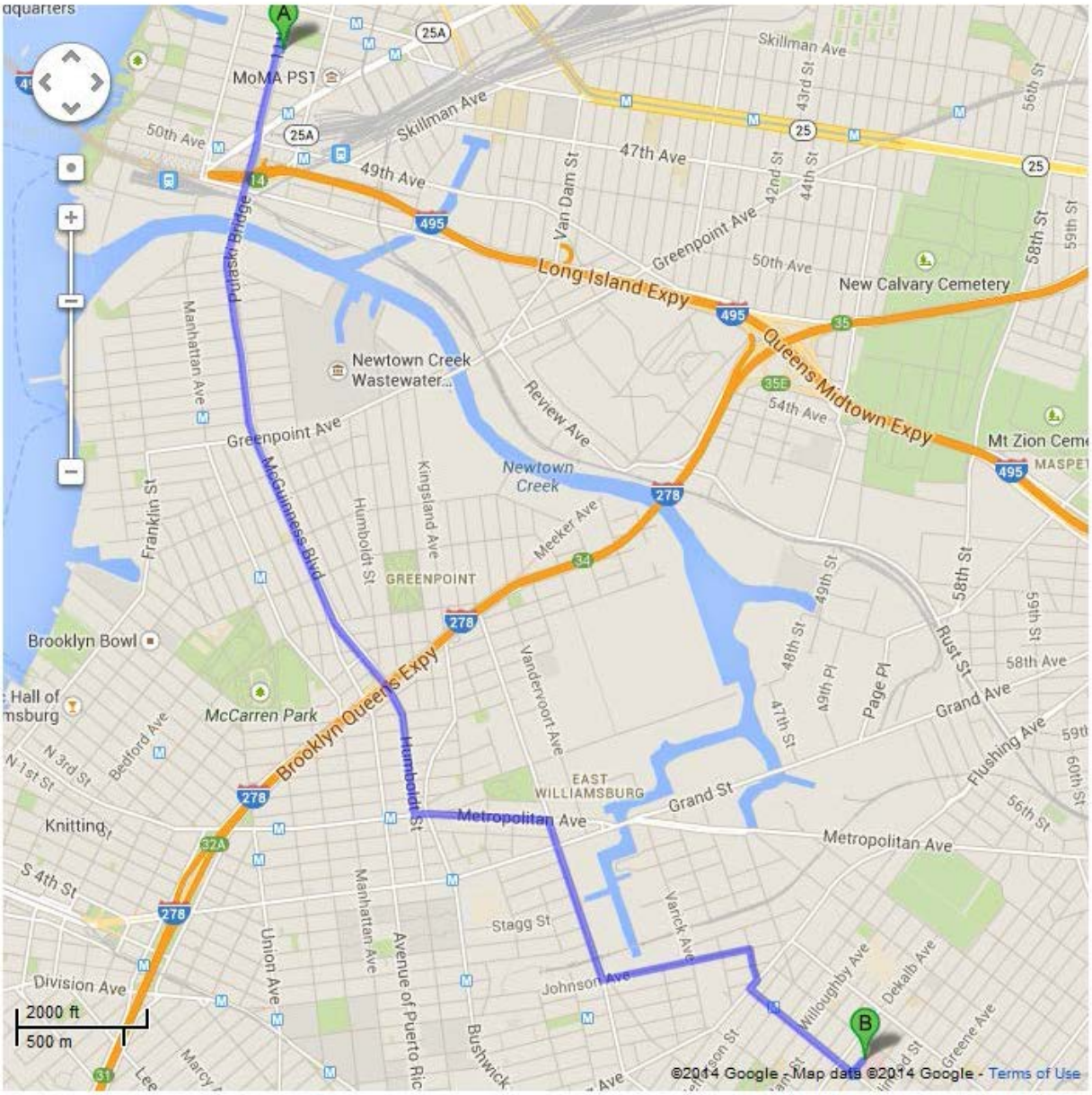



Figure 2: Map to Hospital (overview)