

98-102 STEUBEN STREET

BROOKLYN, NEW YORK

Remedial Action Work Plan

NYC VCP Number: 15CVCP090K

OER Project Number: 15EH-N053K

Prepared for:

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REMEDIAL ACTION WORK PLAN

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LIST OF ACRONYMS

Acronym	Definition
AOC	Area of Concern
BOA	Brownfield Opportunity Area
CAMP	Community Air Monitoring Plan
C/D	Construction/Demolition
COC	Certificate of Completion
DCR	Declaration of Covenants and Restrictions
ECs/ICs	Engineering and Institutional Controls
HASP	Health and Safety Plan
IRM	Interim Remedial Measure
VCA	Voluntary Cleanup Agreement
NOC	Notice of Completion
NYC VCP	New York City Voluntary Cleanup Program
NYC DEP	New York City Department of Environmental Protection
NYC DOHMH	New York State Department of Health and Mental Hygiene
NYCRR	New York Codes Rules and Regulations
NYC OER	New York City Office of Environmental Remediation
NYS DEC	New York State Department of Environmental Conservation
NYS DEC DER	New York State Department of Environmental Conservation Division of Environmental Remediation
NYS DOH	New York State Department of Health
NYS DOT	New York State Department of Transportation
ORC	Oxygen-Release Compound
OSHA	United States Occupational Health and Safety Administration
PE	Professional Engineer
PID	Photo Ionization Detector
QEP	Qualified Environmental Professional
QHHEA	Qualitative Human Health Exposure Assessment
RAOs	Remedial Action Objectives

Acronym	Definition
RAR	Remedial Action Report
RAWP	Remedial Action Work Plan or Plan
RCA	Recycled Concrete Aggregate
RD	Remedial Design
RI	Remedial Investigation
SCOs	Soil Cleanup Objectives
SCG	Standards, Criteria and Guidance
SMP	Site Management Plan
SPDES	State Pollutant Discharge Elimination System
SVOC	Semi-Volatile Organic Compound
USGS	United States Geological Survey
UST	Underground Storage Tank
VOC	Volatile Organic Compound

CERTIFICATION

I, Robert B. Simpson, am a Professional Engineer licensed in the State of New York. I have primary direct responsibility for implementation of the remedial action for the 98-102 Steuben Street Site with Site number 15EH-N053K.

I, Meredith R. Anke, am a Qualified Environmental Professional as defined in §43-140. I have primary direct responsibility for implementation of the remedial action for the 98-102 Steuben Street Site with Site number 15EH-N053K.

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.

Robert B. Simpson, P.E.
Name

081840
NYS PE License Number

Robert Simpson
Signature

3/6/15
Date



Meredith R. Anke, P.E.
QEP Name

M. Anke
QEP Signature

3/6/15
Date

EXECUTIVE SUMMARY

Clinton Hill Development II LLC has applied to enroll in the New York City Voluntary Brownfield Cleanup Program (NYC VCP) to investigate and remediate a 7,500-square foot site located at 98-102 Steuben Street in Brooklyn, New York. A remedial investigation (RI) was performed to compile and evaluate data and information necessary to develop this Remedial Action Work Plan (RAWP). The remedial action described in this document provides for the protection of public health and the environment consistent with the intended property use, complies with applicable environmental standards, criteria and guidance and conforms to applicable laws and regulations.

Site Location and Current Usage

The Site is located at 98-102 Steuben Street in the Clinton Hill section in Brooklyn, New York and is identified as Block 1893 and Lot 47 on the New York City Tax Map. Figure 1 shows the Site location. The Site is 7,500-square feet and is bounded by Steuben Street to the east, residential properties to the south, and multi-family residential properties to the north and west. A map of the site boundary is shown in Figure 2. Currently, the Site is vacant but was recently used for residential use and storage. The site contains two residential two-story buildings with basements. There is also a yard to the west of the buildings, undeveloped space in the northern portion of the property, and a small dilapidated structure in the northwest corner of the Site.

Summary of Proposed Redevelopment Plan

The proposed future use of the Site will consist of a new 8-story multi-family residential building with a cellar. The existing Site buildings will be demolished in order to re-develop the property. The proposed building will have 39 residential units and will be approximately 4,500 square feet in area. The structure will be situated in the eastern portion (front) of the property. An excavation depth of approximately 10 feet is anticipated in the proposed building area. There will also be an open space area at the rear yard, approximately 3,000 square feet in area, which will be partially excavated to the cellar level and may not be covered with concrete or asphalt. Layout of the proposed site development is presented in Figure 2. The current zoning designation is R7A. The proposed use is consistent with existing zoning for the property.

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

Summary of Environmental Findings

1. Elevation of the property ranges from approximately 42 to 44 feet.
2. Depth to groundwater ranges from 37.5 to 38.4 feet at the Site.
3. Groundwater flow is generally from south to north beneath the Site.
4. Depth to bedrock is greater than 102 feet at the Site.
5. The stratigraphy of the site, from the surface down, consists of 2 to 5 feet of existing fill material (Class 7) that is underlain by medium dense to dense Sand, Silty Sand, or Sandy Silt, with trace to little Gravel (Class 3a or 3b).
6. Twelve soil/fill samples collected during the investigations were compared to New York State Department of Environmental Conservation (NYSDEC) Part 375, Table 375-6.8 Unrestricted Use (Track 1) and Restricted Residential Use (Track 2) Soil Cleanup Objectives (SCOs). The samples results showed that VOCs, pesticides, and PCBs were not detected in any of soil samples. Several SVOCs including benzo(a)anthracene (max. of 6.8 mg/kg), benzo(a)pyrene (max. of 5.4 mg/kg), benzo(b)fluoranthene (max 6.8 mg/kg), benzo(k)fluoranthene (max 2.6 mg/kg), chrysene (max 7.3 mg/kg), dibenz(a,h)anthracene (max 1.4 mg/kg), and indeno(1,2,3-c,d)pyrene (max 5.1 mg/kg), were detected above Restricted Residential Use SCOs in four shallow (0 to 2') samples. The detected SVOCs are all in a class of compounds known as polycyclic aromatic hydrocarbons (PAHs). Metals including arsenic (max of 32.9 mg.kg), barium (max of 646 mg/kg), cadmium (max 3.7 mg/kg), copper (max 550 mg/kg), lead (max of 1580 mg/kg), and mercury (max 1.5 mg/kg) exceeded Restricted Residential Use SCOs in one or more shallow soil samples. Nickel, silver, and zinc also exceeded Unrestricted Use SCOs. Only iron exceeded Restricted Residential Use SCOs in deeper soil samples. The data indicates that the PAHs and metals, which are typical constituents of historic fill material, are widespread in the upper 2 to 5 feet across the site at varying concentrations.

7. Three groundwater samples collected during the investigations were compared to the NYSDEC Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards (GQS) for Class GA (drinking water). Groundwater samples collected during the RI showed that SVOCs, pesticides, and PCBs were not detected in groundwater. Three VOCs including chloroform, tetrachloroethene (PCE), and trichloroethene were detected in groundwater samples. Only PCE at 28 ug/L exceeded its GQS in one of three groundwater samples. Several metals were identified in groundwater, but only sodium exceeded its GQS. The RI data indicates that there is no widespread impact to the groundwater below the Site as a result of the historic fill material or the identified AOCs. Based on the Groundwater Flow Map, the PCE appears to be from an unknown upgradient source to the south of the Site.
8. Four soil vapor samples collected during the 2014 RI were compared Table 3.1 Air Guideline Values derived by the NYSDOH located in the New York State Department of Health (NYSDOH) Final Guidance for Evaluating Soil Vapor Intrusion. Soil vapor samples showed moderate levels of petroleum related and chlorinated VOCs in all soil vapor samples. Most contaminant concentrations were below 20 ug/m³ except for 2,2,4-trimethylpentane (max of 8100 ug/m³), acetone (max of 210 ug/m³), cyclohexane (max of 950 ug/m³), and hexane (max of 2800 ug/m³). Petroleum related compounds (BTEX) were detected at a maximum concentration of 169 ug/m³. Chlorinated VOC, tetrachloroethylene (PCE) was detected in all four samples at a maximum concentration of 26 ug/m³. Trichloroethylene (TCE) was detected in three samples at a maximum concentration of 1.3 ug/m³. Carbon tetrachloride was not detected in any samples. The TCE and PCE concentrations are below the monitoring level ranges established within the State NYS DOH soil vapor guidance matrix.

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. Perform a Community Air Monitoring Program (CAMP) for particulates and volatile organic carbon compounds.
3. Selection of 6NYCRR Part 375 Table 6.8 (a) Unrestricted Use (Track 1) Soil Cleanup Objectives (SCOs).
4. Site mobilization involving Site security setup, equipment mobilization, utility mark outs and marking & staking excavation areas.
5. Completion of a Waste Characterization Study prior to excavation activities. Waste characterization soil samples will be collected at a frequency dictated by the selected disposal facility(s) acceptance criteria. Waste characterization results will be provided to OER prior to construction start.
6. Excavation and removal of soil/fill exceeding Unrestricted Use SCOs. Excavation for construction of the new building's cellar level would take place to a depth of approximately 10 feet for the future building's footprint. Approximately, 730 cubic yards (1,250 tons) of historic fill and approximately 1,520 cubic yards (2,580 tons) of virgin soil will be removed. If soil/fill containing analytes at concentrations above Track 1 Unrestricted Use SCOs is still present at the base of the excavation after removal of all soil required for construction of the new building is complete, additional excavation will be performed to meet Track 1 Site-Specific SCOs.
7. Screening of excavated soil/fill during intrusive work for indications of contamination by visual means, odor, and monitoring with a PID.
8. Management of excavated materials including temporarily stockpiling and segregating to prevent co-mingling of contaminated material and non-contaminated materials.

9. Removal of underground storage tanks (USTs) (if encountered) and closure of petroleum spills (if evidence of a spill/leak is encountered during Site excavation) in compliance with applicable local, State and Federal laws and regulations.
10. Transportation and off-Site disposal of all soil/fill material at permitted facilities in accordance with applicable laws and regulations for handling, transport, and disposal, and this plan. Sampling and analysis of excavated media as required by disposal facilities. Appropriate segregation of excavated media onsite.
11. Collection and analysis of nine end-point samples to determine the performance of the remedy with respect to attainment of SCOs.
12. Import of materials to be used for backfill and cover in compliance with this plan and in accordance with applicable laws and regulations.
13. Performance of all activities required for the remedial action, including permitting requirements and pretreatment requirements, in compliance with applicable laws and regulations.
14. Implementation of storm-water pollution prevention measures in compliance with applicable laws and regulations.
15. 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 if Track 1 SCOs are not achieved, describes all Engineering and Institutional Controls to be implemented at the Site.

If Unrestricted Use SCOs are not achieved, the following construction elements will be implemented and will constitute Engineering and Institutional controls:

16. As part of new development, installation of a vapor barrier below the cellar slab, as well as behind subgrade portions of foundation walls of the proposed building. The vapor barrier will consist of a 20 mil polyethylene vapor barrier liner;
17. As part of new development, construction and maintenance of an engineered composite cover consisting of the building's 6 inch thick concrete slab to prevent human exposure to residual soil/fill remaining under the Site;

18. If Track 1 is not achieved, submission of an approved Site Management Plan (SMP) in the RAR for long-term management of residual materials, including plans for operation, maintenance, inspection and certification of Engineering and Institutional Controls and reporting at a specified frequency;
19. If Track 1 is not achieved, 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 Office of Environmental Remediation created the New York City Voluntary Cleanup Program (NYC VCP) to provide governmental oversight for the cleanup of contaminated property in NYC. This Remedial Action Work Plan (“cleanup plan”) describes the findings of prior environmental studies that show the location of contamination at the site, and describes the plans to clean up the site to protect public health and the environment.

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

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

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

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

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

Site Safety Coordinator. This project has a designated Site safety coordinator to implement the Health and Safety Plan. The safety coordinator maintains an emergency contact sheet and protocol for management of emergencies. The Site safety coordinator is Meredith R. Anke and can be reached at 732-432-5757.

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 NYC noise control standards. If you observe problems in these areas, please contact the Project Manager Thomas Ryan or NYC Office of Environmental Remediation Project Manager Eric Ilijevich at 212.341.2034.

Quality Assurance. This cleanup plan requires that evidence be provided to illustrate that all cleanup work required under the plan has been completed properly. This evidence will be

summarized in the final report, called the Remedial Action Report. This report will be submitted to the NYC Office of Environmental Remediation and will be thoroughly reviewed.

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

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

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

Complaint Management. The contractor performing this cleanup is required to address all complaints. If you have any complaints, you can call the facility Project Manager Thomas Ryan at (212) 649-9700, the NYC Office of Environmental Remediation Project Manager Eric Ilijevich at 212.341.2034, or call 311 and mention the Site is in the NYC Voluntary Cleanup Program.

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

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

Soil Chemical Testing and Screening. All excavations will be supervised by a trained and properly qualified environmental professional. In addition to extensive sampling and chemical testing of soils on the Site, excavated soil will be screened continuously using hand-held

instruments, by sight, and by smell to ensure proper material handling and management, and community protection.

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

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

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

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

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

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

Final Report. The results of all cleanup work will be fully documented in a final report (called a Remedial Action Report) that will be available for you to review in the public document repositories located at Brooklyn Public Library, 380 Washington Avenue, Brooklyn, NY 11238.

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

Clinton Hill Development II LLC has applied to enroll in the New York City Voluntary Cleanup Program (NYC VCP) to investigate and remediate a property located at 98-102 Steuben Street in the Clinton Hill section of Brooklyn, New York (the “Site”). A Remedial Investigation (RI) was performed to compile and evaluate data and information necessary to develop this Remedial Action Work Plan (RAWP) in a manner that will render the Site protective of public health and the environment consistent with the contemplated end use. This RAWP establishes remedial action objectives, provides a remedial alternatives analysis that includes consideration of a permanent cleanup, and provides a description of the selected remedial action. The remedial action described in this document provides for the protection of public health and the environment, complies with applicable environmental standards, criteria and guidance and applicable laws and regulations.

1.1 SITE LOCATION AND CURRENT USAGE

The Site is located at 98-102 Steuben Street in the Clinton Hill section in Brooklyn, New York and is identified as Block 1893 and Lot 47 on the New York City Tax Map. Figure 1 shows the Site location. The Site is 7,500-square feet and is bounded by Steuben Street to the east, residential properties to the south, and multi-family residential properties to the north and west. A map of the site boundary is shown in Figure 2. Currently, the Site is vacant but was recently used for residential use and storage. The site contains two residential two-story buildings with basements. There is also a yard to the west of the buildings, undeveloped space in the northern portion of the property, and a small dilapidated structure in the northwest corner of the Site.

1.2 PROPOSED REDEVELOPMENT PLAN

The proposed future use of the Site will consist of a new 8-story multi-family residential building with a cellar. The existing Site buildings will be demolished in order to re-develop the property. The proposed building will have 39 residential units and will be approximately 4,500

square feet in area. The structure will be situated in the eastern portion (front) of the property. An excavation depth of approximately 10 feet is anticipated in the proposed building area. There will also be an open space area at the rear yard, approximately 3,000 square feet in area, which will also be excavated to the cellar level and may not be covered with concrete or asphalt. Layout of the proposed site development is presented in Figure 3. The current zoning designation is R7A. The proposed use is consistent with existing zoning for the property.

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

1.3 DESCRIPTION OF SURROUNDING PROPERTY

The area surrounding the Site consists of residential and commercial properties. To the immediate north of the Site is a 7-story multi-family residential building that was recently completed in 2014. To the west is another 7-story multi-family residential building on Grand Avenue. To the east is Steuben Street followed by commercial buildings. To the south of the Site are three (3) 4-story residential buildings followed by commercial properties along Myrtle Avenue. Figure 1 shows the surrounding land usage.

1.4 REMEDIAL INVESTIGATION

A remedial investigation was performed and the results are documented in a companion document called “*Remedial Investigation Report, 98-102 Steuben Street, Brooklyn, NY*”, dated February 2015 (RIR).

Summary of Past Uses of Site and Areas of Concern

At the time of a Phase I Environmental Site Assessment (ESA) in February 2014, the northern Site building and the first floor of the southern Site building were being used for storage. The second floor of the southern building was occupied by residential tenants. The exterior of the site was also being used for storage.

According to the Phase I ESA Report, the southern portion of the Site has been occupied with the present day two-story structure since 1887. The two-story structure has been primarily occupied by residential tenants from 1887 to 2007 with the exception of a brief period from 1969

to 1977 when it was occupied by an office. From 2007 to the present day, the two-story structure has been occupied by both residential and commercial tenants. A varying level lumber shed was located to the west of the structure from 1915 to 1938 and a single-story shed was located to the west from 1938 to 1969.

The Phase I ESA Report also indicates that the northern portion of the Site has been occupied with the present day two-story structure since 1887. The two-story structure has been occupied by both residential and commercial tenants from 1887 to the present day. Commercial tenants including offices, a storage company, a coal company, and a setting controls company have occupied the northern portion of the site from 1934 to the present day. A stable was located to the north and west of this structure from 1887 to 1904 and a lumber storage building was located to the north from 1904 to 1938. Additionally, a lumber shed was located to the west of the structure from 1915 to 1938. In the period from 1938 to 1969, a contractor's storage facility was located to the north of the structure. From 1977 to 2007, a single-story auto repair facility was located in the northwest portion of the Site.

Based on the Phase I Environmental Site Assessment (ESA) that was performed by Environmental Business Consultants (EBC) in February 2014, the areas of concern (AOCs) identified for this site are as follows:

1. There is a 275-gallon heating oil aboveground storage tank (AST) (installation date unknown) in the basement of 102 Steuben Street located on the southern portion of the Site. The heating oil fill pipe and vent pipe for the AST in the basement were observed on the east side of the Site. The AST is connected to a boiler. The oil supply line from the AST to the boiler was buried and was most likely repaired at some point as holes in the concrete indicated. Surficial staining was noted on top of the AST and on the concrete floor in the area of the boiler. The presence of the staining represents a recognized environmental concern as it is indicative of a release of heating oil from the oil supply line which may have impacted the subsurface at the Site.
2. Based on a review of historical records, a single-story commercial building used for auto repair operations was located on the northwest portion of the Site from approximately 1977 to circa 2007. Auto repair facilities typically store and utilize solvents and petroleum products on-site including oil, waste oil, antifreeze, battery acid, grease,

antifreeze, and solvent parts washers. The former occupancy of the auto repair facility on the northwest side of the Site represents a recognized environmental condition.

The scope of work for the RI was developed in response to the proposed development project and took into consideration the AOCs listed above. An investigation of soil, soil vapor, and groundwater was performed to characterize the entire Site for potential environmental contamination from historic on-site uses, operations, etc.

Summary of the Work Performed under the Remedial Investigation

As part of this investigation, Carlin-Simpson & Associates performed the following scope of work:

1. Installed 7 soil borings across the entire project Site, and collected 12 soil samples for chemical analysis from the soil borings to evaluate soil quality;
2. Installed 3 groundwater monitoring wells throughout the Site to establish groundwater flow and collected 3 groundwater samples for chemical analysis to evaluate groundwater quality;

In addition, Environmental Maintenance Contractors, Inc. (EMC) performed the following scope of work:

1. Installed 4 soil vapor probes across the project Site and collected 4 samples for chemical analysis.

Summary of Environmental Findings

1. Elevation of the property ranges from approximately 42 to 44 feet.
2. Depth to groundwater ranges from 37.5 to 38.4 feet at the Site.
3. Groundwater flow is generally from south to north beneath the Site.
4. Depth to bedrock is greater than 102 feet at the Site.
5. The stratigraphy of the site, from the surface down, consists of 2 to 5 feet of existing fill material (Class 7) that is underlain by medium dense to dense Sand, Silty Sand, or Sandy Silt, with trace to little Gravel (Class 3a or 3b).

6. Twelve soil/fill samples collected during the investigations were compared to New York State Department of Environmental Conservation (NYSDEC) Part 375, Table 375-6.8 Unrestricted Use (Track 1) and Restricted Residential Use (Track 2) Soil Cleanup Objectives (SCOs). The samples results showed that VOCs, pesticides, and PCBs were not detected in any of soil samples. Several SVOCs including benzo(a)anthracene (max. of 6.8 mg/kg), benzo(a)pyrene (max. of 5.4 mg/kg), benzo(b)fluoranthene (max 6.8 mg/kg), benzo(k)fluoranthene (max 2.6 mg/kg), chrysene (max 7.3 mg/kg), dibenz(a,h)anthracene (max 1.4 mg/kg), and indeno(1,2,3-c,d)pyrene (max 5.1 mg/kg), were detected above Restricted Residential Use SCOs in four shallow (0 to 2') samples. The detected SVOCs are all in a class of compounds known as polycyclic aromatic hydrocarbons (PAHs). Metals including arsenic (max of 32.9 mg.kg), barium (max of 646 mg/kg), cadmium (max 3.7 mg/kg), copper (max 550 mg/kg), lead (max of 1580 mg/kg), and mercury (max 1.5 mg/kg) exceeded Restricted Residential Use SCOs in one or more shallow soil samples. Nickel, silver, and zinc also exceeded Unrestricted Use SCOs. Only iron exceeded Restricted Residential Use SCOs in deeper soil samples. The data indicates that the PAHs and metals, which are typical constituents of historic fill material, are widespread in the upper 2 to 5 feet across the site at varying concentrations.
7. Three groundwater samples collected during the investigations were compared to the NYSDEC Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards (GQS) for Class GA (drinking water). Groundwater samples collected during the RI showed that SVOCs, pesticides, and PCBs were not detected in groundwater. Three VOCs including chloroform, tetrachloroethene (PCE), and trichloroethene were detected in groundwater samples. Only PCE at 28 ug/L exceeded its GQS in one of three groundwater samples. Several metals were identified in groundwater, but only sodium exceeded its GQS. The RI data indicates that there is no widespread impact to the groundwater below the Site as a result of the historic fill material or the identified AOCs. Based on the Groundwater Flow Map, the PCE appears to be from an unknown upgradient source to the south of the Site.
8. Four soil vapor samples collected during the 2014 RI were compared Table 3.1 Air Guideline Values derived by the NYSDOH located in the New York State Department of

Health (NYSDOH) Final Guidance for Evaluating Soil Vapor Intrusion. Soil vapor samples showed moderate levels of petroleum related and chlorinated VOCs in all soil vapor samples. Most contaminant concentrations were below 20 ug/m³ except for 2,2,4-trimethylpentane (max of 8100 ug/m³), acetone (max of 210 ug/m³), cyclohexane (max of 950 ug/m³), and hexane (max of 2800 ug/m³). Petroleum related compounds (BTEX) were detected at a maximum concentration of 169 ug/m³. Chlorinated VOC, tetrachloroethylene (PCE) was detected in all four samples at a maximum concentration of 26 µg/m³. Trichlorethylene (TCE) was detected in three samples at a maximum concentration of 1.3 µg/m³. Carbon tetrachloride was not detected in any samples. The TCE and PCE concentrations are below the monitoring level ranges established within the State NYS DOH soil vapor guidance matrix.

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

2.0 REMEDIAL ACTION OBJECTIVES

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

Groundwater

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

Soil

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

Soil Vapor

- Prevent exposure to contaminants in soil vapor.
- Prevent migration of soil vapor into the occupied structure.

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 Remedial Action Objectives (RAOs) for media in which chemical constituents were found in exceedance of applicable standards, criteria and guidance values (SCGs). A remedy is then developed based on the following ten criteria:

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

The following is a detailed description of the alternatives analysis and remedy selection to address impacted media at the Site. As required, a minimum of two (2) remedial alternatives (including a Track 1 scenario) are evaluated, as follows:

Remedial Alternative 1 (Track 1 Cleanup) involves:

1. Selection of 6NYCRR Part 375 Table 6.8 (a) Unrestricted Use (Track 1) Soil Cleanup Objectives (SCOs).
2. Removal of all soil/fill exceeding Track 1 Unrestricted Use SCOs throughout the Site and confirmation that Track 1 Unrestricted Use SCOs have been achieved with post-excavation endpoint sampling. The Remedial Investigation indicated that the historic fill material extends to depths ranging from 2 to 5 feet throughout the property. If

soil/fill containing analytes at concentrations above Unrestricted Use SCOs were still present at the base of the excavation, additional excavation would be performed to ensure complete removal of soil that does not meet Track 1 Unrestricted Use SCOs.

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

Remedial Alternative 2 (Track 4 Cleanup) involves:

1. Establishment of Track 4 Site-Specific SCOs.
2. Removal of all shallow soil/fill exceeding Track 4 Site-Specific SCOs. The entire property, including the rear yard area, will be excavated to depths of 10 feet below grade for development purposes. The limits of soil/fill exceeding the Track 4 SCOs would be determined by pre-delineation sampling prior to excavation. If soil/fill containing analytes at concentrations above Track 4 Site-Specific SCOs is still present at the base of the excavation after removal of all soil required for construction of the new buildings is complete, additional excavation will be performed to meet Track 4 Site-Specific SCOs.
3. Placement of a composite cover consisting of concrete slabs and two feet of clean fill in landscaped areas over the entire Site to prevent exposure to remaining soil/fill.
4. Installation of a vapor barrier beneath the building slabs and behind foundation sidewalls for the new structure as a part of development.
5. Establishment of use restrictions including prohibitions on the use of groundwater from the site and prohibitions on sensitive site uses, such as farming or vegetable gardening, to prevent future exposure pathways.

6. Establishment of an approved Site Management Plan (SMP) to ensure long-term management of these Engineering and Institutional Controls including the performance of periodic inspections and certification that the controls are performing as they were intended.
7. Establishment of common ownership of the land within the project area and continuous management of Site Management requirements by this owner to ensure that engineering controls and institutional controls remain in place. The RAR will provide satisfactory evidence that requirements for maintenance, inspection and certification of engineering and institutional controls will be implemented by the owner.
8. Continued registration as an E-designated property with the NYC Department of Buildings to memorialize the remedial action and the Engineering and Institutional Controls to ensure that future owners of the Site continue to maintain these controls as required by the RAWP.

3.1 THRESHOLD CRITERIA

Protection of Public Health and the Environment

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

Alternative 1 would be protective of human health and the environment by removing all contaminated soil/fill exceeding Track 1 SCOs, 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 removing soil/fill from areas that exceed the Track 4 SCOs and 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. Establishment of Track 4 Site-Specific SCOs would minimize the risk of contamination leaching into groundwater. Implementing institutional controls including registration of the site with an E-designation with the NYC Building Department would ensure that the composite cover system remains intact and protective.

For both Alternatives, potential exposure to contaminated soils or groundwater during construction would be minimized by implementing a Construction Health and Safety Plan (CHASP), an approved Soil/Materials Management Plan, and a Community Air Monitoring Plan (CAMP). Potential contact with contaminated groundwater would be prevented as its use would be prohibited by the city laws and regulations. An E-designation would be maintained on the property. Potential future migration of off-Site soil vapors into the new building would be prevented by installing a vapor barrier below the new building's basement slab and continuing the vapor barrier around foundation 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 to Track 1 Unrestricted Use SCOs and Groundwater Protection Standards. Compliance with SCGs for soil vapor would also be achieved by installing a vapor barrier below the new residential buildings 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 shallow soil to meet Track 4 Site-Specific SCOs. Compliance with SCGs for soil vapor would also be achieved by installing a vapor barrier below the new building's basement slab and continuing the vapor barrier around foundation walls. A Site Management Plan (SMP) would ensure that 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 will 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.

Both alternatives would employ appropriate measures to prevent short term impacts, including a Construction Health and Safety Plan (CHASP), a Community Air Monitoring Plan (CAMP), and a Soil/Materials Management Plan (SMMP) during all on-Site soil disturbance activities and would minimize the release of contaminants into the environment. Both alternatives provide short term effectiveness in protecting the surrounding community by decreasing the risk of contact with on-Site contaminants. Construction workers operating under appropriate management procedures and a Health and Safety Plan (CHASP) will be protected from on-Site contaminants (personal protective equipment would be worn consistent with the documented risks within the respective work zones).

Long-term effectiveness and permanence

This evaluation criterion addresses the results of a remedial action in terms of its permanence and quantity/nature of waste or residual contamination remaining at the Site after

response objectives have been met, such as permanence of the remedial alternative, magnitude of remaining contamination, adequacy of controls including the adequacy and suitability of ECs/ICs that may be used to manage contaminant residuals that remain at the Site and assessment of containment systems and ICs that are designed to eliminate exposures to contaminants, and long-term reliability of Engineering Controls.

Alternative 1 would achieve long-term effectiveness and permanence related to on-Site contamination by permanently removing all impacted soil/fill and enabling unrestricted usage of the property. Removal of on-Site contaminant sources will prevent future groundwater contamination.

Alternative 2 would provide long-term effectiveness by removing some on-Site contamination and generally attaining Track 4 Site-Specific SCOs, establishing Engineering Controls including a composite cover system across the Site, establishing Institutional Controls to ensure long-term management including use restrictions, a Site Management Plan (SMP), and registration of the site with a RE designation to memorialize these controls for the long term. The SMP will ensure long-term effectiveness of all ECs and ICs by requiring periodic inspection and certification that these controls and restrictions continue to be in place and are functioning as they were intended assuring that protections designed into the remedy will provide a continuous high level of protection in perpetuity.

Both alternatives would result in removal of soil contamination exceeding the SCOs providing a high level, effective, and permanent remedy over the long-term and would address contaminated soil and eliminate or minimize any leaching to groundwater.

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 some of the impacted soil present on the Site and remaining shallow soil beneath the composite cover would 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 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. The reliability of both alternatives is high.

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.

Costs associated with Alternative 1 would be higher than Alternative 2 based on the volume of soil/fill that requires excavation and off-Site disposal. The long-term costs for Alternative 2 are higher than Alternative 1 based on implementation of a Site Management Plan as part of Alternative 2.

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.

Both remedial actions provide for protection of public health and the environment and minimize potential contaminant exposures. 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 (CPP) for the project is provided in Appendix A. 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 proposed redevelopment of the Site is compatible with its current zoning and is consistent with recent development patterns. Following remediation, the Site will meet either Track 1 Unrestricted Use SCOs or Track 4 Site-Specific SCOs, both of which are appropriate for its planned residential use. 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, making them safer and bringing such properties into productive reuse. Both alternatives are equally protective of natural resources and cultural resources.

Sustainability of the Remedial Action

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

Alternative 1 would result in more energy consumption and greenhouse gas emissions than Alternative 2 because a larger volume of soil/fill material would have to be excavated and transported off-Site.

Alternative 2 is a better alternative with respect to sustainable remedial action because of the reduced volume of soil/fill material to be excavated and transported off-Site.

4.0 REMEDIAL ACTION

4.1 SUMMARY OF PREFERRED REMEDIAL ACTION

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

The proposed remedial action will consist of:

1. Preparation of a Community Protection Statement and performance of all required NYC VCP Citizen Participation activities according to an approved Citizen Participation Plan.
2. Perform a Community Air Monitoring Program (CAMP) for particulates and volatile organic carbon compounds.
3. Selection of 6NYCRR Part 375 Table 6.8 (a) Unrestricted Use (Track 1) Soil Cleanup Objectives (SCOs).
4. Site mobilization involving Site security setup, equipment mobilization, utility mark outs and marking & staking excavation areas.
5. Completion of a Waste Characterization Study prior to excavation activities. Waste characterization soil samples will be collected at a frequency dictated by the selected disposal facility(s) acceptance criteria. Waste characterization results will be provided to OER prior to construction start.
6. Excavation and removal of soil/fill exceeding Unrestricted Use SCOs. Excavation for construction of the new building's cellar level would take place to a depth of approximately 10 feet for the future building's footprint. Approximately, 730 cubic yards (1,250 tons) of historic fill and approximately 1,520 cubic yards (2,580 tons) of

virgin soil will be removed. If soil/fill containing analytes at concentrations above Track 1 Unrestricted Use SCOs is still present at the base of the excavation after removal of all soil required for construction of the new building is complete, additional excavation will be performed to meet Track 1 Site-Specific SCOs.

7. Screening of excavated soil/fill during intrusive work for indications of contamination by visual means, odor, and monitoring with a PID.
8. Management of excavated materials including temporarily stockpiling and segregating to prevent co-mingling of contaminated material and non-contaminated materials.
9. Removal of underground storage tanks (USTs) (if encountered) and closure of petroleum spills (if evidence of a spill/leak is encountered during Site excavation) in compliance with applicable local, State and Federal laws and regulations.
10. Transportation and off-Site disposal of all soil/fill material at permitted facilities in accordance with applicable laws and regulations for handling, transport, and disposal, and this plan. Sampling and analysis of excavated media as required by disposal facilities. Appropriate segregation of excavated media onsite.
11. Collection and analysis of nine end-point samples to determine the performance of the remedy with respect to attainment of SCOs.
12. Import of materials to be used for backfill and cover in compliance with this plan and in accordance with applicable laws and regulations.
13. Performance of all activities required for the remedial action, including permitting requirements and pretreatment requirements, in compliance with applicable laws and regulations.
14. Implementation of storm-water pollution prevention measures in compliance with applicable laws and regulations.
15. 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 if Track 1 SCOs are not achieved, describes all Engineering and Institutional Controls to be implemented at the Site.

If Unrestricted Use SCOs are not achieved, the following construction elements will be implemented and will constitute Engineering and Institutional controls:

16. As part of new development, installation of a vapor barrier below the cellar slab, as well as behind subgrade portions of foundation walls of the proposed building. The vapor barrier will consist of a 20 mil polyethylene vapor barrier liner;
17. As part of new development, construction and maintenance of an engineered composite cover consisting of the building's 6 inch thick concrete slab to prevent human exposure to residual soil/fill remaining under the Site;
18. If Track 1 is not achieved, submission of an approved Site Management Plan (SMP) in the RAR for long-term management of residual materials, including plans for operation, maintenance, inspection and certification of Engineering and Institutional Controls and reporting at a specified frequency;
19. If Track 1 is not achieved, 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 1 Unrestricted Use Soil Cleanup Objectives (SCOs) are proposed for this project. If 6NYCRR Part 375, Table 6.8(a) Track 1 Unrestricted Use is not achieved, the 6 NYCRR Part 375, Table 6.8(b) Track 2 Restricted Residential SCOs will be used as amended by the following Site-Specific Track 4 SCOs:

Total SVOCs	100 ppb
Arsenic	23 ppm
Mercury	1.5 ppm
Lead	1,000 ppm

The Track 2 Restricted Residential SCOs are also listed in Table 2.

Soil and materials management on-Site and off-Site, including excavation, handling and disposal, will be conducted in accordance with the Soil/Materials Management Plan in Appendix C. The location of planned excavations is shown in Figure 4.

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

Estimated Soil/Fill Removal Quantities

The total quantity of historic fill material expected to be excavated and disposed off-Site is 730 cubic yards. The total quantity of virgin soil material expected to be excavated and reused as new fill material on-Site is 50 cubic yards. The total quantity of virgin soil material expected to be excavated and reused as new fill material off-Site or disposed of off-Site is 1,520 cubic yards.

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

End-Point Sampling

Removal actions for development purposes under this plan will be performed in conjunction with confirmation soil sampling. Nine (9) confirmation samples will be collected from the base of the excavation at locations to be determined by OER. For comparison to Track 1 SCOs, analytes will include VOCs, SVOC, pesticides, PCBs, and metals according to analytical methods described below. For comparison to Track 4 SCOs, analytes will only include trigger compounds and elements established on the Track 4 SCO list.

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

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

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

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

Soil analytical methods will include:

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

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

Quality Assurance/Quality Control

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.

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 4°C.

Dedicated disposable sampling equipment will be used for the collection of 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 one (1) for every ten (10) samples collected. Decontamination of non-dedicated sampling equipment will consist of the following:

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

Prepare field blanks by pouring distilled or deionized water over decontaminated equipment and collecting the water in laboratory provided containers. Trip blanks will be used whenever samples are transported to the laboratory for analysis of VOCs. Trip blanks will not be used for samples to be analyzed for metals, SVOCs, or pesticides. One (1) blind duplicate sample will be prepared and submitted for analysis every 20 samples.

Import and Reuse of Soils

Import of soils onto the property and reuse of soils already onsite will be performed in conformance with the Soil/Materials Management Plan in Appendix C. No soil is to be imported into the Site for backfill and cover soil. The estimated quantity of on-Site soil expected to be reused/relocated on-Site is 50 cubic yards. The estimated quantity of on-Site soil expected to be reused/relocated off-Site is 1,520 cubic yards.

4.3 ENGINEERING CONTROLS

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

Composite Cover System

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

- Five (5) inches of concrete slab in the building areas; and
- Two (2) feet of clean cover soil in the open space or landscape areas.

The composite cover system is a permanent engineering control for the Site. The system will be inspected and reported at specified intervals as required by this RAWP and the SMP. A Soil Management Plan will be included in the Site Management Plan and will outline the

procedures to be followed in the event that the composite cover system and underlying residual soil/fill is disturbed after the remedial action is complete. Maintenance of this composite cover system will be described in the Site Management Plan in the RAR.

Vapor Barrier

Migration of potential soil vapor will be mitigated with a combination of building slab and vapor barrier. The vapor barrier will consist of a 20 mil polyethylene vapor barrier liner or OER approved equivalent. The vapor barrier will be installed beneath the new building's basement slab and continue around the foundation walls. The specifications for installation will be provided to the construction management company and the foundation contractor or installer of the liner. The specifications state that all vapor barrier seams, penetrations, and repairs will be sealed either by the tape method or weld method, according to the manufacturer's recommendations and instructions.

The PE certifying this Remedial Action will ensure that there is staff under his/her supervision that will provide oversight of installation of the vapor barrier and seals under this cleanup plan to ensure that this work is properly performed.

The Remedial Action Report will include photographs (maximum of two photos per page) of the installation process, PE certified letter (on company letterhead) from primary contractor responsible for installation oversight and field inspections, and a copy of the manufacturer's certificate of warranty.

4.4 INSTITUTIONAL CONTROLS

Track 1 remedial actions do not require Engineering Controls. If Track 1 SCOs are not achieved, Institutional Controls (IC) will be utilized in this remedial action to manage residual soil/fill and other media and render the Site protective of public health and the environment. Institutional Controls are listed below. Long-term employment of EC/ICs will be implemented under a site-specific Site Management Plan (SMP) that will be included in the RAR. The property will continue to be registered with an E-Designation by the NYC Buildings Department.

In the event that Track 1 SCOs are not achieved, the Institutional Controls for this remedial action are as follows:

- The property will continue to be registered with an E-Designation at the NYC Buildings Department. This RAWP will include a description of all ECs and ICs, will summarize the requirements of the Site Management Plan, and will note that the property owner and property owner's successors and assigns must comply with this RAWP and the approved SMP;
- Submittal of a Site Management Plan in the RAR for approval by OER that provides procedures for appropriate operation, maintenance, monitoring, inspection, reporting and certification of ECs. SMP will require that the property owner and property owner's successors and assigns will submit to OER a periodic written statement that certifies that: (1) controls employed at the Site are unchanged from the previous certification or that any changes to the controls were approved by OER; and, (2) nothing has occurred that impairs the ability of the controls to protect public health and environment or that constitute a violation or failure to comply with the SMP. OER retains the right to enter the Site in order to evaluate the continued maintenance of any controls. This certification shall be submitted at a frequency to be determine by OER in the SMP and will comply with RCNY §43-1407(1)(3).
- Vegetable gardens and farming on the Site are prohibited in contact with residual soil materials;
- Use of groundwater underlying the Site is prohibited without treatment rendering it safe for its intended use;
- All future activities on the Site that will disturb residual material must be conducted pursuant to the soil management provisions in an approved SMP;
- The Site will be used for 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 not required for Track 1 remedial actions. However, if Track 1 SCOs are not achieved, Site Management will be the last phase of remediation and begins with the approval of the Remedial Action Report and issuance of the Notice of Completion (NOC) for the

Remedial Action. The Site Management Plan (SMP) describes appropriate methods and procedures to ensure implementation of all ECs and ICs that are required by this RAWP. The Site Management Plan is submitted as part of the RAR but will be written in a manner that allows its use as an independent document. Site Management continues until terminated in writing by OER. The property owner is responsible to ensure that all Site Management responsibilities defined in the Site Management Plan are implemented.

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

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

Investigations reported in the Remedial Investigation Report (RIR) are sufficient to complete a Qualitative Human Health Exposure Assessment (QHHEA). As part of the VCP process, a QHHEA was performed to determine whether the Site poses an existing or future health hazard to the Site's exposed or potentially exposed population. The sampling data from the RI were evaluated to determine whether there is any health risk by characterizing the exposure setting, identifying exposure pathways, and evaluating contaminant fate and transport. This QHHEA was prepared in accordance with Appendix 3B and Section 3.3 (b) 8 of the NYSDEC Draft DER-10 Technical Guidance for Site Investigation and Remediation.

Known and Potential Sources

Historic fill material is present at the Site from grade to depths ranging from approximately 2 feet to 5 feet below grade. Based on the results of the Remedial Investigation Report, the contaminants of concern found are as follows:

Soil - Soil/fill samples collected during the RI showed that there is historic fill material present throughout the Site and that the fill material contains SVOCs and metals at concentrations that exceed the Track 1 Unrestricted Use SCOs and the Track 2 Residential Use SCOs. The detected SVOCs are all in a class of compounds known as polycyclic aromatic hydrocarbons (PAHs). The data indicates that the PAHs and metals, which are typical constituents of historic fill material, are widespread across the site at concentrations typical for this material.

Groundwater - Groundwater samples collected during the RI showed that three VOCs including chloroform, tetrachloroethene (PCE), and trichloroethene were detected at the site. Only PCE exceeded its GQS in one of three groundwater samples. Several metals were also identified in groundwater, but only sodium exceeded its GQS.

Soil vapor - Soil vapor samples collected during the RI showed moderate levels of petroleum related and chlorinated VOCs in all soil vapor samples. Most contaminant concentrations were below 20 ug/m³ except for 2,2,4-trimethylpentane, acetone, cyclohexane, and hexane. Petroleum related compounds (BTEX) were detected at a maximum concentration of 169 ug/m³. Chlorinated VOC, tetrachloroethylene (PCE) was detected in all four samples, while trichloroethylene (TCE) was detected in three samples.

Nature, Extent, Fate and Transport of Contaminants

The soil/fill material at the site contains concentrations of SVOCs and metals above applicable standards. The elevated constituents are associated with historic fill, which is present throughout the full extent of the property and ranges from approximately 2 feet to 5 feet in thickness.

Potential Routes of Exposure

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

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

Existence of Human Health Exposure

On-Site Receptors – The Site is currently vacant. Access to the area is limited by a chain link fence, existing buildings, and exterior walls. Potential receptors include site representatives and trespassers. During redevelopment of the Site, the on-Site potential receptors will include construction workers, site representatives, and visitors. Once the Site is redeveloped, the on-Site potential sensitive receptors will include adult and child residents and visitors.

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

1. Residential Buildings (up to 0.25 mile) – existing and future
2. Commercial Businesses (up to 0.25 mile) – existing and future
3. Pedestrians, Trespassers, Cyclists (up to 0.25 mile) – existing and future

Receptor Populations

Current Conditions: There is a potential for exposure to historic fill in the northern portion of the property since this area of the Site is currently uncapped. 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. There are two (2) vacant structures on-Site where soil vapor could potentially accumulate.

Construction/ Remediation Activities: Once redevelopment activities begin, construction workers will come into direct contact with surface and subsurface soils, as a result of on-Site construction and excavation activities. On-Site construction workers potentially could ingest, inhale, or have dermal contact with any exposed impacted soil and fill. Similarly, off-Site receptors could be exposed to dust 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, there will be no potential on-Site or off-Site exposure points. The historic fill material will be completely removed from the Site, so there will be no potential exposure to contaminated soil. The Site is served by a public water supply, and groundwater is not used at the Site for potable supply. A Vapor Barrier System will prevent migration of soil vapors into the future structure.

Overall Human Health Exposure Assessment

Based upon this analysis, complete on-Site exposure pathways appear to be present only during the current un-remediated state and the construction/remedial action phase. Under current conditions, on-Site exposure is limited by preventing access to the Site and limiting Site activity. 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 for the building. Potential post-construction use of groundwater is not considered an option because groundwater is 37 feet deep, and in this area of New York City is not used as a potable water source. Surface waters in close proximity to the Site will not be impacted by future site conditions.

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 (CAMP), the Soil/Materials Management Plan (SMMP), and a Construction Health and Safety Plan (CHASP). After the remedial action is complete, there will be no remaining exposure pathways to identified contaminants. No contaminated soil will remain on the Site and a Vapor Barrier System will prevent migration of soil vapors into the occupied structure.

5.0 REMEDIAL ACTION MANAGEMENT

5.1 PROJECT ORGANIZATION AND OVERSIGHT

Principal personnel who will participate in the remedial action include Meredith R. Anke, P.E., who is the Project Manager for Carlin-Simpson & Associates and Thomas Ryan, who is the Project Manager for Clinton Hill Development II LLC. The Professional Engineer (PE) and Qualified Environmental Professionals (QEP) for this project are Robert B. Simpson, P.E. and Meredith R Anke, respectively.

5.2 SITE SECURITY

Site access will be controlled by gated entrances to the fenced property.

5.3 WORK HOURS

The hours for operation of remedial construction will be from 7:00 am to 5:00 pm Monday through Friday, or as approved by the New York City Department of Buildings. These hours conform to the New York City Department of Buildings construction code requirements.

5.4 CONSTRUCTION HEALTH AND SAFETY PLAN

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

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

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

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

5.5 COMMUNITY AIR MONITORING PLAN

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

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

VOC Monitoring, Response Levels, and Actions

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

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

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

Particulate Monitoring, Response Levels, and Actions

Particulate concentrations will be monitored continuously at the upwind and downwind perimeters of the exclusion zone at temporary particulate monitoring stations. The particulate

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

- If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/m^3) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques will be employed. Work will continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed $150 \text{ mcg}/\text{m}^3$ above the upwind level and provided that no visible dust is migrating from the work area.
- If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than $150 \text{ mcg}/\text{m}^3$ above the upwind level, work will be stopped and a re-evaluation of activities initiated. Work will resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within $150 \text{ mcg}/\text{m}^3$ of the upwind level and in preventing visible dust migration.

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

5.6 AGENCY APPROVALS

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

5.7 SITE PREPARATION

Pre-Construction Meeting

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

Mobilization

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

Utility Marker Layouts, Easement Layouts

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

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

Equipment and Material Staging

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

Stabilized Construction Entrance

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

Truck Inspection Station

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

Extreme Storm Preparedness and Response Contingency Plan

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

Storm Preparedness

Preparations in advance of an extreme storm event will include the following: containerized hazardous materials and fuels will be removed from the property; loose materials will be secured to prevent dislocation and blowing by wind or water; heavy equipment such as excavators and generators will be removed from holes, trenches and depressions on the property to high ground or removed from the property; an inventory of the property with photographs will be performed to establish conditions for the site and equipment prior to the event; stockpile covers for soil and fill will be secured by adding weights such as sandbags for added security and worn or ripped

stockpile covers will be replaced with competent covers; stockpiled hazardous wastes will be removed from the property; stormwater management systems will be inspected and fortified, including, as necessary: clean and reposition silt fences, haybales; clean storm sewer filters and traps; and secure and protect pumps and hosing.

Storm Response

At the conclusion of an extreme storm event, as soon as it is safe to access the property, a complete inspection of the property will be performed. A site inspection report will be submitted to OER at the completion of site inspection and after the site security is assessed. Site conditions will be compared to the inventory of site conditions and material performed prior to the storm event and significant differences will be noted. Damage from storm conditions that result in acute public safety threats, such as downed power lines or imminent collapse of buildings, structures or equipment will be reported to public safety authorities via appropriate means such as calling 911. Petroleum spills will be reported to NYS DEC within 2 hours of identification and consistent with State regulations. Emergency and spill conditions will also be reported to OER. Public safety structures, such as construction security fences will be repaired promptly to eliminate public safety threats. Debris will be collected and removed. Dewatering will be performed in compliance with existing laws and regulations and consistent with emergency notifications, if any, from proper authorities. Eroded areas of soil including unsafe slopes will be stabilized and fortified. Dislocated materials will be collected and appropriately managed. Support of excavation structure will be inspected and fortified as necessary. Impacted stockpiles will be contained and damaged stockpile covers will be replaced. Storm-water control systems and structures will be inspected and maintained as necessary. If soil or fill materials are discharged off site to adjacent properties, property owners and OER will be notified and corrective measure plan designed to remove and clean dislocated material will be submitted to OER and implemented following approval by OER and granting of site access by the property owner. Impacted offsite areas may require characterization based on site conditions, at the discretion of OER. If onsite petroleum spills are identified, a qualified environmental professional will determine the nature and extent of the spill and report to NYS DEC's spill hotline at DEC 800-457-7362. If the source of the spill is ongoing and can be identified, it should be stopped if this can be done safely. Potential hazards will be addressed immediately, consistent with guidance issued by NYS DEC.

Storm Response Reporting

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

5.8 TRAFFIC CONTROL

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

To I-278 West:

- From the Site, turn LEFT onto Steuben Street.
- Turn RIGHT onto Park Avenue and in 0.1 miles, turn LEFT onto Classon Avenue.
- In 0.1 miles, turn LEFT onto Flushing Avenue and then immediately turn LEFT onto Williamsburg Place.
- Take the ramp on the LEFT for I-278 West.

To I-278 East:

- From the Site, turn LEFT onto Steuben Street.
- Turn RIGHT onto Park Avenue and in 0.1 miles, turn LEFT onto Classon Avenue.
- In 0.2 miles, turn LEFT onto Kent Avenue and then immediately turn RIGHT onto Williamsburg Street East.
- Take the ramp on the LEFT for I-278 East.

5.9 DEMOBILIZATION

Demobilization will include:

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

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

5.10 REPORTING AND RECORD KEEPING

Daily Reports

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

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

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

Record Keeping and Photo-Documentation

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

5.11 COMPLAINT MANAGEMENT

All complaints from citizens will be promptly reported to OER. Complaints will be addressed and outcomes will also be reported to OER in daily reports. Notices to OER will

include the nature of the complaint, the party providing the complaint, and the actions taken to resolve any problems.

5.12 DEVIATIONS FROM THE REMEDIAL ACTION WORK PLAN

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

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

6.0 REMEDIAL ACTION REPORT

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

- Information required by this RAWP;
- As-built drawings for all constructed remedial elements, required certifications, manifests and other written and photographic documentation of remedial work performed under this remedy;
- Site Management Plan (if Track 1 is not achieved);
- Description of any changes in the remedial action from the elements provided in this RAWP and associated design documents;
- Tabular summary of all end point sampling results and all material characterization results, QA/QC results for end-point sampling, and other sampling and chemical analysis performed as part of the remedial action and DUSR;
- Test results or other evidence demonstrating that remedial systems are functioning properly;
- Account of the source area locations and characteristics of all contaminated material removed from the Site including a map showing source areas;
- Account of the disposal destination of all contaminated material removed from the Site. Documentation associated with disposal of all material will include transportation and disposal records, and letters approving receipt of the material.
- Account of the origin and required chemical quality testing for soil imported to 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, Robert B. Simpson, am currently a professional engineer licensed by the State of New York. I had primary direct responsibility for implementation of the remedial program for the 98-102 Steuben Street Site with Site number 15EH-N053K.

I, Meredith R. Anke, am a qualified Environmental Professional. I had primary direct responsibility for implementation remedial program for the 98-102 Steuben Street Site with Site number 15EH-N053K.

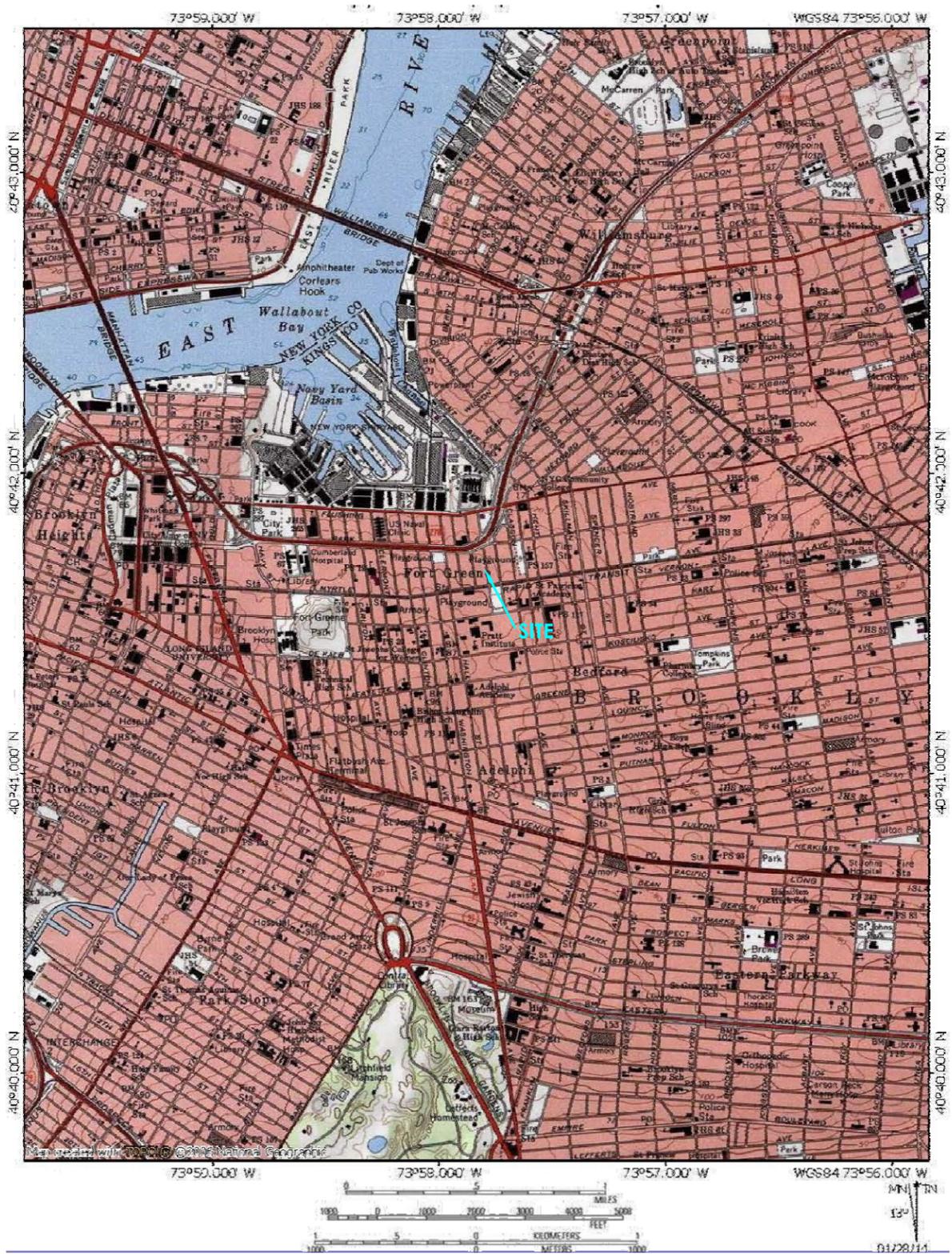
I certify that the OER-approved Remedial Action Work Plan dated February 2015 and Stipulations in a letter dated month, year (TBD) were implemented and that all requirements in those documents have been substantively complied with. I certify that contaminated soil, fill, liquids or other material from the property were taken to facilities licensed to accept this material in full compliance with applicable laws and regulations.

7.0 SCHEDULE

The table below presents a schedule for the proposed remedial action and reporting. If the schedule for remediation and development activities changes, it will be updated and submitted to OER. Currently, a six (6) month remediation period is anticipated.

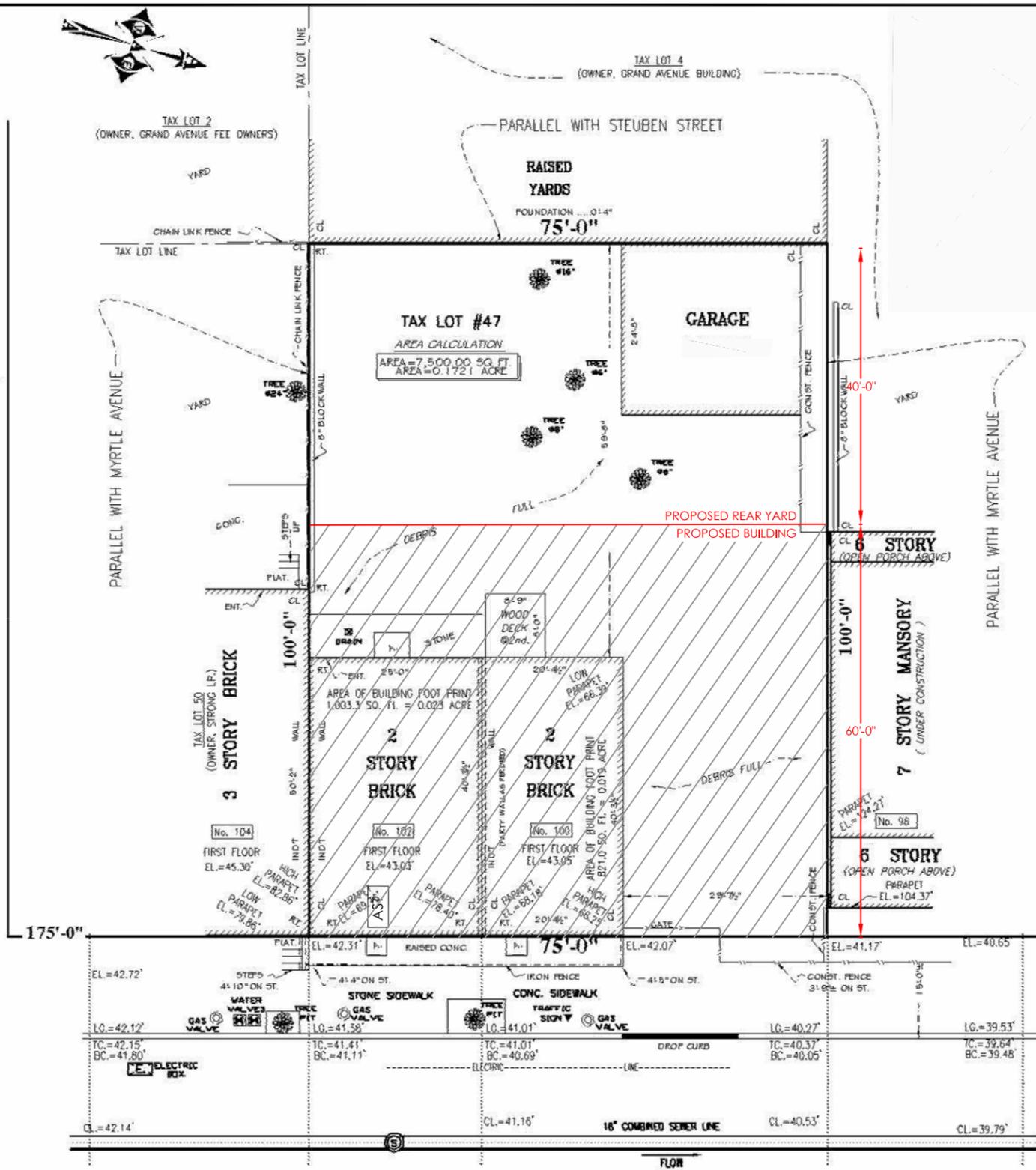
Schedule Milestone	Weeks from Remedial Action Start	Duration (weeks)
OER Approval of RAWP	0	-
Fact Sheet 2 announcing start of remedy	0	-
Mobilization	4	1
Remedial Excavation	5	2
Backfill in rear yard	7	1
Installation of foundation system, walls, floor slab, and vapor barrier	8	12
Demobilization of earthwork equipment	20	1
Submit Remedial Action (RA) Report	24	-

FIGURES



ROBERT B. SIMPSON, P.E. PROFESSIONAL ENGINEER		
_____ LICENSE NO.	_____ SIGNATURE	_____ DATE
SITE LOCATION MAP		
98-102 STEUBEN STREET BROOKLYN, NEW YORK		
DRAWN MRA	SCALE NONE	CARLIN-SIMPSON AND ASSOCIATES 61 Main Street Sayreville, NJ 08872  Consulting Geotechnical and Environmental Engineers
CHECKED RBS	DATE 02.11.15	
PROJECT NO. 14-131A	DWG NO. FIG -1	
APPROVED		

MYRTLE (100' WIDE) AVENUE



GENERAL NOTES:

1. GENERAL LAYOUT WAS OBTAINED FROM A DRAWING THAT WAS PREPARED BY AAA GROUP LAND SURVEYING SERVICES, ENTITLED "ALTA/ACSM LAND TITLE SURVEY - 100/102 STEUBEN STREET, BROOKLYN, NEW YORK 11205", DATED 18 SEPTEMBER 2014.

ROBERT B. SIMPSON, P.E.
 PROFESSIONAL ENGINEER

LICENSE NO. SIGNATURE DATE

SITE PLAN

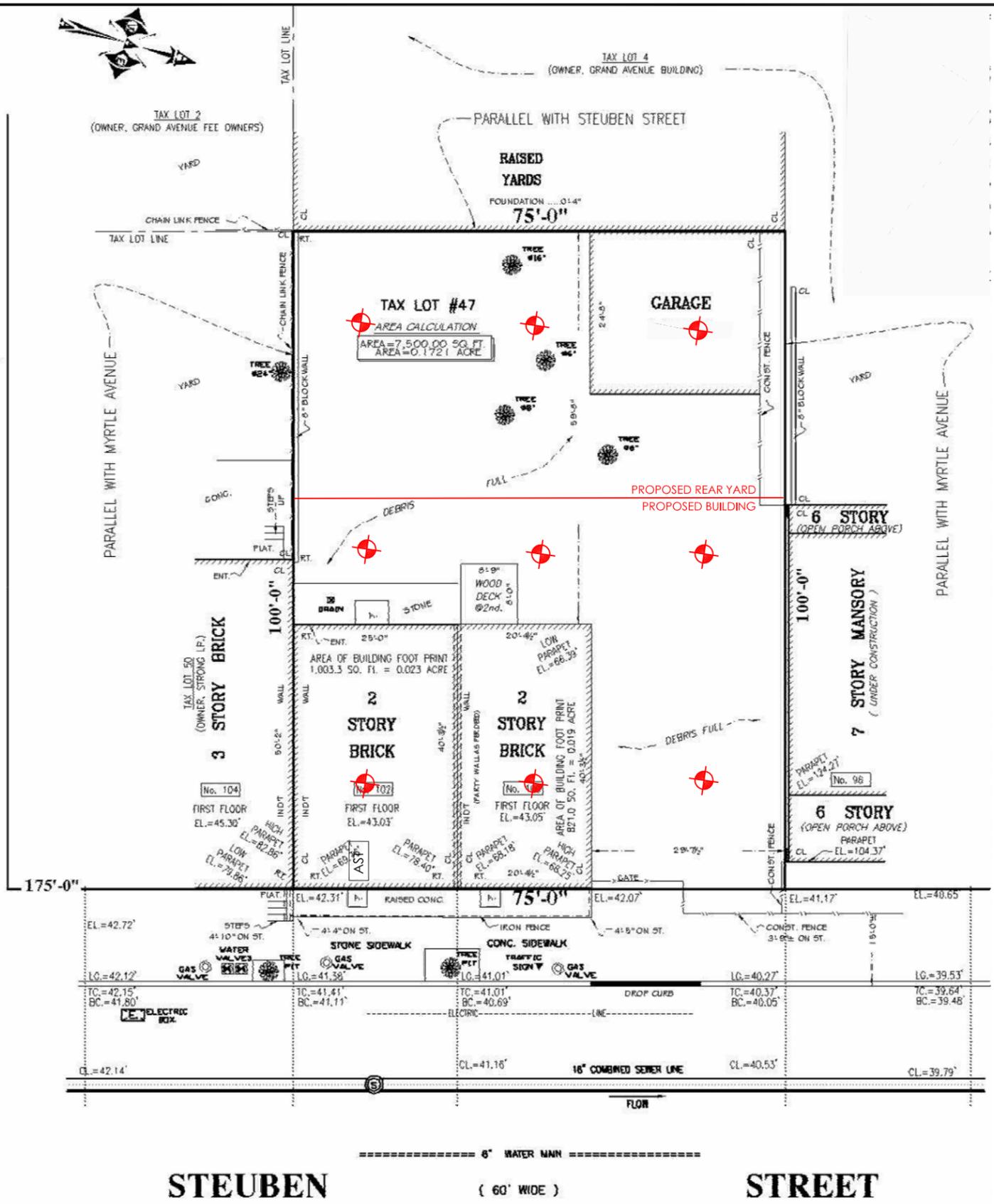
98-102 STEUBEN STREET
 BROOKLYN, NEW YORK

DRAWN	MRA	SCALE	1" = 20'
CHECKED	RBS	DATE	02.11.15
PROJECT NO.	14-131A	DWG. NO.	FIG -2
APPROVED			

CARLIN-SIMPSON AND ASSOCIATES
 61 Main Street
 Sayreville, NJ 08872
 Consulting Geotechnical and
 Environmental Engineers



MYRTLE (100' WIDE) AVENUE



GENERAL NOTES:

- GENERAL LAYOUT WAS OBTAINED FROM A DRAWING THAT WAS PREPARED BY AAA GROUP LAND SURVEYING SERVICES, ENTITLED "ALTA/ACSM LAND TITLE SURVEY - 100/102 STEUBEN STREET, BROOKLYN, NEW YORK 11205", DATED 18 SEPTEMBER 2014.

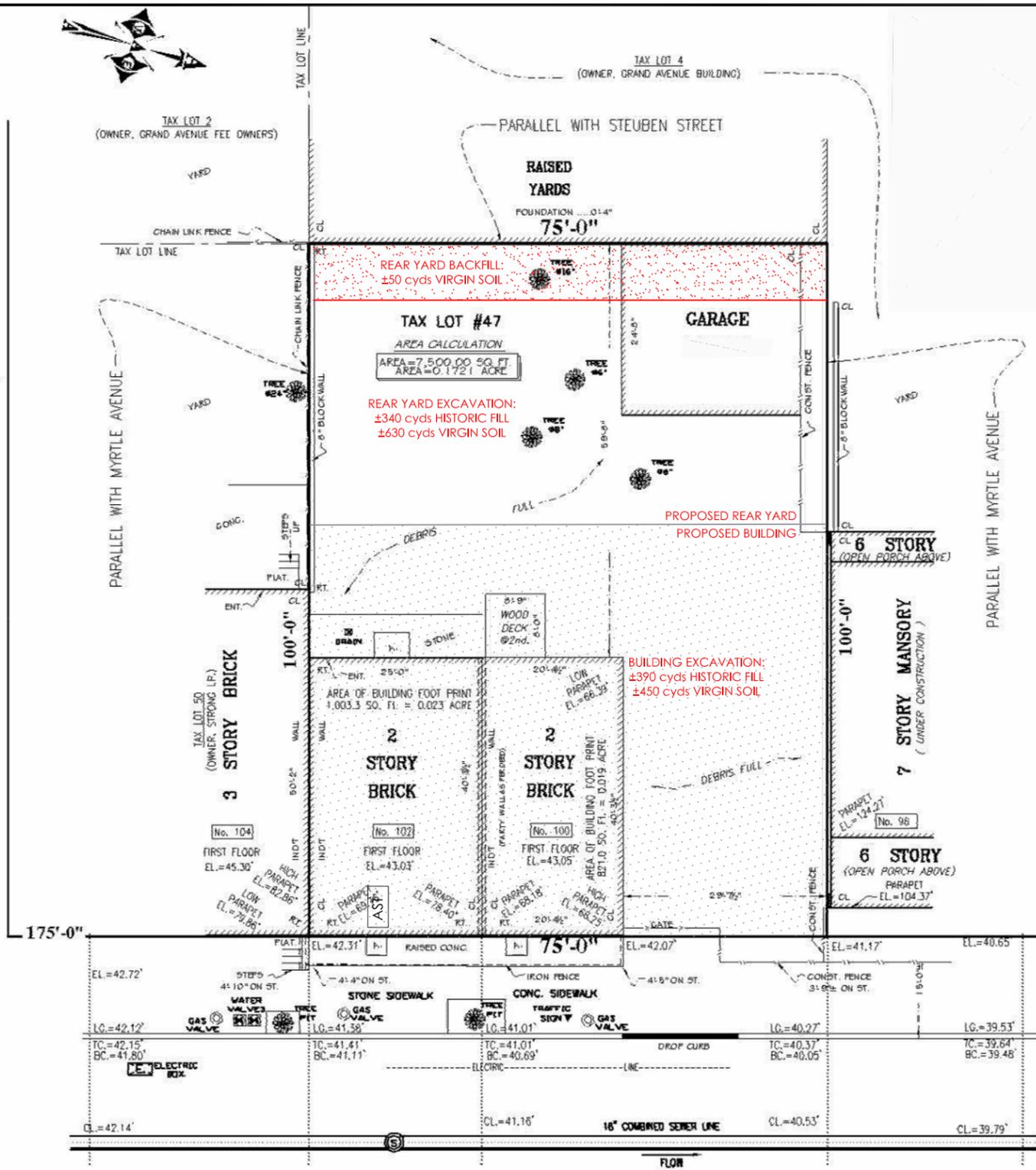
LEGEND:

- PROPOSED END-POINT SAMPLE LOCATION

ROBERT B. SIMPSON, P.E. PROFESSIONAL ENGINEER		
LICENSE NO.	SIGNATURE	DATE
MAP OF END-POINT SAMPLE LOCATIONS		
98-102 STEUBEN STREET BROOKLYN, NEW YORK		
DRAWN MRA	SCALE 1" = 20'	CARLIN-SIMPSON AND ASSOCIATES 61 Main Street Sayreville, NJ 08872 Consulting Geotechnical and Environmental Engineers
CHECKED RBS	DATE 02.11.15	
PROJECT NO. 14-131A	DWG. NO. FIG -4	
APPROVED		



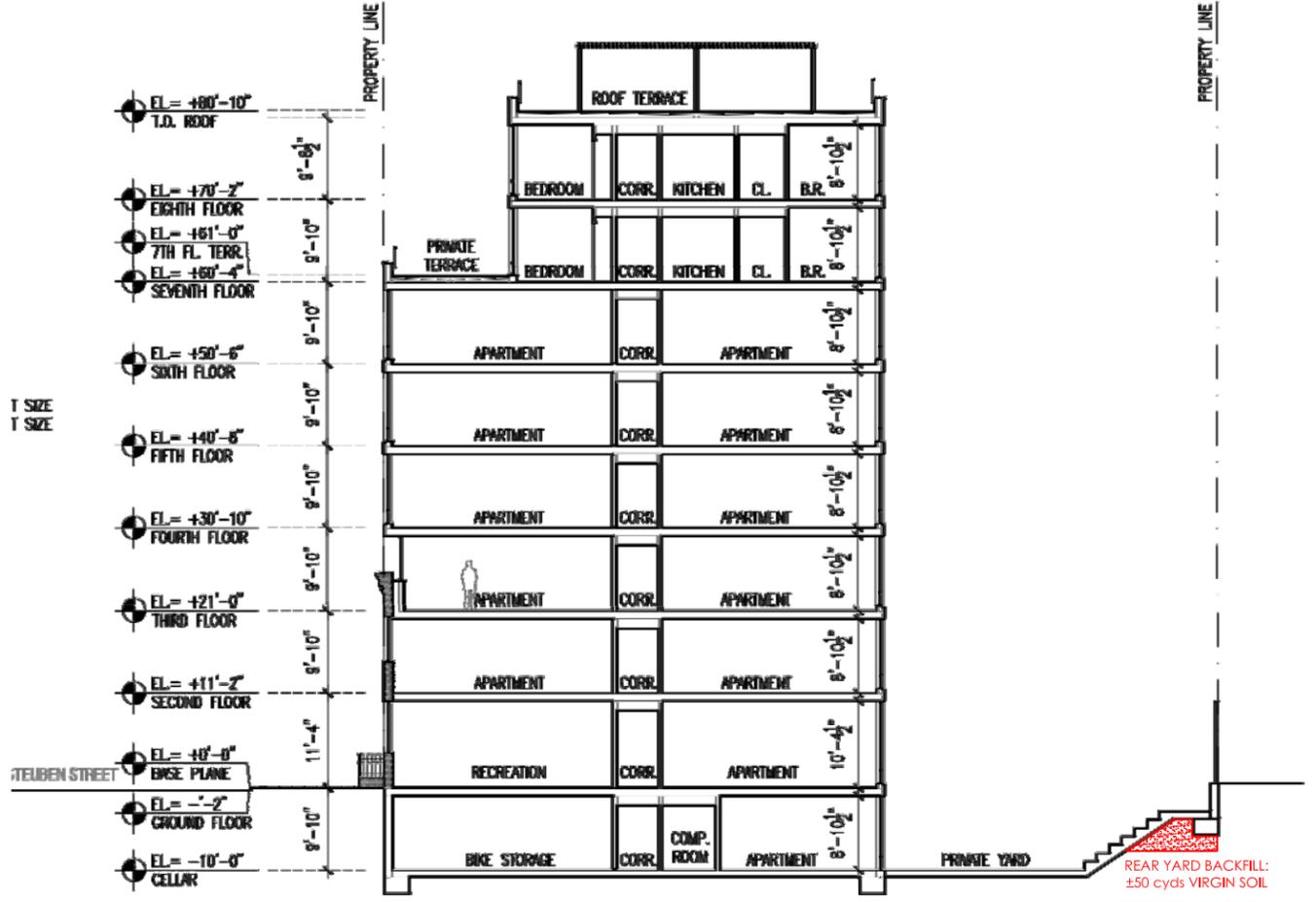
MYRTLE AVENUE (100' WIDE)



STEUBEN STREET (60' WIDE)

STREET

SCALE: 1" = 20'



3 ZONING SECTION A
NO SCALE

ROBERT B. SIMPSON, P.E.
PROFESSIONAL ENGINEER

LICENSE NO. SIGNATURE DATE

MAP OF SOIL REUSE AND BACKFILL PLACEMENT LOCATIONS

98-102 STEUBEN STREET
BROOKLYN, NEW YORK

DRAWN	MRA	SCALE	AS SHOWN
CHECKED	RBS	DATE	02.11.15
PROJECT NO.	14-131A	DWG. NO.	FIG -5
APPROVED			

CARLIN-SIMPSON AND ASSOCIATES
61 Main Street
Sayreville, NJ 08872
Consulting Geotechnical and Environmental Engineers



- GENERAL NOTES:**
- GENERAL LAYOUT WAS OBTAINED FROM A DRAWING THAT WAS PREPARED BY AAA GROUP LAND SURVEYING SERVICES, ENTITLED "ALTA/ACSM LAND TITLE SURVEY - 100/102 STEUBEN STREET, BROOKLYN, NEW YORK 11205", DATED 18 SEPTEMBER 2014.

TABLES

Table 1

Track 1 Unrestricted Use SCOs (ppm)

Metals	
Arsenic	13
Barium	350
Beryllium	7.2
Cadmium	2.5
Chromium, hexavalent	1
Chromium, trivalent	30
Copper	50
Total Cyanide	27
Lead	63
Manganese	1,600
Total Mercury	0.18
Nickel	30
Selenium	3.9
Silver	2
Zinc	109

Pesticides/PCBs	
2,4,5-TP Acid (Silvex)	3.8
4,4'-DDE	0.0033
4,4'-DDT	0.0033
4,4'-DDD	0.0033
Aldrin	0.005
alpha-BHC	0.02
beta-BHC	0.036
Chlordane (alpha)	0.094
delta-BHC	0.04
Dibenzofuran	7
Dieldrin	0.005
Endosulfan I	2.4
Endosulfan II	2.4
Endosulfan sulfate	2.4
Endrin	0.014
Heptachlor	0.042
Lindane	0.1
Polychlorinated biphenyls	0.1

Table 1 (Cont.)**Track 1 Unrestricted Use SCOs (ppm)**

Semi-Volatile Organic Compounds (SVOCs)	
Acenaphthene	20
Acenaphthylene	100
Anthracene	100
Benzo(a)anthracene	1
Benzo(a)pyrene	1
Benzo(b)fluoranthene	1
Benzo(g,h,i)perylene	100
Benzo(k)fluoranthene	0.8
Chrysene	1
Dibenz(a,h)anthracene	0.33
Fluoranthene	100
Fluorene	30
Indeno(1,2,3-cd)pyrene	0.5
m-Cresol	0.33
Naphthalene	12
o-Cresol	0.33
p-Cresol	0.33
Pentachlorophenol	0.8
Phenanthrene	100
Phenol	0.33
Pyrene	100

Volatile Organic Compounds (VOCs)	
1,1,1-Trichloroethane	0.68
1,1-Dichloroethane	0.27
1,1-Dichloroethene	0.33
1,2-Dichlorobenzene	1.1
1,2-Dichloroethane	0.02
cis-1,2-Dichloroethene	0.25
trans-1,2-Dichloroethene	0.19
1,3-Dichlorobenzene	2.4
1,4-Dichlorobenzene	1.9
1,4-Dioxane	0.1
Acetone	0.05
Benzene	0.06
n-Butylbenzene	12
Carbon tetrachloride	0.76
Chlorobenzene	1.1
Chloroform	0.37
Ethylbenzene	1
Hexachlorobenzene	0.33
Methyl ethyl ketone	0.12
MTBE	0.93
Methylene chloride	0.05
n-Propylbenzene	3.9
sec-Butylbenzene	11
tert-Butylbenzene	5.9
Tetrachloroethene	1.3
Toluene	0.7
Trichloroethene	0.47
1,2,4-Trimethylbenzene	3.6
1,3,5- Trimethylbenzene	8.4
Vinyl chloride	0.02
Xylene (mixed)	0.26

Table 2

Track 4 Site-Specific Soil Cleanup Objectives (SCOs)

Parameter	Track 4 SCOs
Arsenic	23 ppm
Lead	1,000 ppm
Total Mercury	1.5 ppm
Total SVOCs	100 ppb

Table 3

Imported Backfill Limits Unrestricted Use SCOs (ppm)

Metals	
Arsenic	13
Barium	350
Beryllium	7.2
Cadmium	2.5
Chromium, hexavalent	1
Chromium, trivalent	30
Copper	50
Total Cyanide	27
Lead	63
Manganese	1,600
Total Mercury	0.18
Nickel	30
Selenium	3.9
Silver	2
Zinc	109

Pesticides/PCBs	
2,4,5-TP Acid (Silvex)	3.8
4,4'-DDE	0.0033
4,4'-DDT	0.0033
4,4'-DDD	0.0033
Aldrin	0.005
alpha-BHC	0.02
beta-BHC	0.036
Chlordane (alpha)	0.094
delta-BHC	0.04
Dibenzofuran	7
Dieldrin	0.005
Endosulfan I	2.4
Endosulfan II	2.4
Endosulfan sulfate	2.4
Endrin	0.014
Heptachlor	0.042
Lindane	0.1
Polychlorinated biphenyls	0.1

Table 3 (Cont.)

Imported Backfill Limits

Unrestricted Use SCOs (ppm)

Semi-Volatile Organic Compounds (SVOCs)	
Acenaphthene	20
Acenaphthylene	100
Anthracene	100
Benz(a)anthracene	1
Benzo(a)pyrene	1
Benzo(b)fluoranthene	1
Benzo(g,h,i)perylene	100
Benzo(k)fluoranthene	0.8
Chrysene	1
Dibenz(a,h)anthracene	0.33
Fluoranthene	100
Fluorene	30
Indeno(1,2,3-cd)pyrene	0.5
m-Cresol	0.33
Naphthalene	12
o-Cresol	0.33
p-Cresol	0.33
Pentachlorophenol	0.8
Phenanthrene	100
Phenol	0.33
Pyrene	100

Volatile Organic Compounds (VOCs)	
1,1,1-Trichloroethane	0.68
1,1-Dichloroethane	0.27
1,1-Dichloroethene	0.33
1,2-Dichlorobenzene	1.1
1,2-Dichloroethane	0.02
cis-1,2-Dichloroethene	0.25
trans-1,2-Dichloroethene	0.19
1,3-Dichlorobenzene	2.4
1,4-Dichlorobenzene	1.9
1,4-Dioxane	0.1
Acetone	0.05
Benzene	0.06
n-Butylbenzene	12
Carbon tetrachloride	0.76
Chlorobenzene	1.1
Chloroform	0.37
Ethylbenzene	1
Hexachlorobenzene	0.33
Methyl ethyl ketone	0.12
MTBE	0.93
Methylene chloride	0.05
n-Propylbenzene	3.9
sec-Butylbenzene	11
tert-Butylbenzene	5.9
Tetrachloroethene	1.3
Toluene	0.7
Trichloroethene	0.47
1,2,4-Trimethylbenzene	3.6
1,3,5- Trimethylbenzene	8.4
Vinyl chloride	0.02
Xylene (mixed)	0.26

APPENDIX A

CITIZEN PARTICIPATION PLAN

The NYC Office of Environmental Remediation and Clinton Hill Development II 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, Clinton Hill Development II 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, Eric Ilijevich, who can be contacted about these issues or any others questions, comments or concerns that arise during the remedial process at (212) 788-8841

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

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

Brooklyn Public Library

380 Washington Avenue, Brooklyn, NY 11238

(Tel) 718-398-8713

Mon, Thurs, Fri – 10 am to 6 pm

Tues, Wed – 1 pm to 8 pm

Sat – 10 am to 5 pm

Sun - Closed

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

Identify Issues of Public Concern. There are no specific issues of concern to stakeholders proximate to the project site.

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

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

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

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

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

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

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

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

APPENDIX B

SUSTAINABILITY STATEMENT

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

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

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

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

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

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

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

APPENDIX C

SOIL/MATERIALS MANAGEMENT PLAN

1.1 SOIL SCREENING METHODS

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

1.2 STOCKPILE METHODS

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

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

1.3 CHARACTERIZATION OF EXCAVATED MATERIALS

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

1.4 MATERIALS EXCAVATION, LOAD-OUT AND DEPARTURE

The PE/QEP overseeing the remedial action will:

- oversee remedial work and the excavation and load-out of excavated material;
- ensure that there is a party responsible for the safe execution of invasive and other work performed under this work plan;
- ensure that Site development activities and development-related grading cuts will not interfere with, or otherwise impair or compromise the remedial activities proposed in this RAWP;
- ensure that the presence of utilities and easements on the Site has been investigated and that any identified risks from work proposed under this plan are properly addressed by appropriate parties;
- ensure that all loaded outbound trucks are inspected and cleaned if necessary before leaving the Site;
- 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 from Steuben Street to Park Avenue to Classon Avenue and then following local roads to either I-278 East or I-278 West. The total travel distance from the site to I-278 is less than 3/4-mile. 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 Brooklyn, New York under a governmental remediation program. The letter will provide the project identity and the name and phone number of the PE/QEP or Enrollee. The letter will include as an attachment a summary of all chemical data for the material being transported; and (2) a letter from each disposal facility stating it is in receipt of the correspondence (1, above) and is approved to accept the material. These documents will be included in the RAR.

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

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

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

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

1.7 MATERIALS REUSE ON-SITE

Soil and fill that is derived from the property that meets the soil cleanup objectives established in this plan may be reused on-Site. The soil cleanup objectives for on-Site reuse are listed in Table 1. '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. It is expected that approximately 820 cubic yards of on-site virgin soil material will be excavated from the proposed building area of the Site and approximately 750 cubic yards of virgin soil will be excavated from the rear yard of the site. Approximately 50 cubic yards of virgin soil will be reused as new compacted fill in the eastern portion of the property.

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

In the event that Track 1 SCOs are not achieved, and prior to backfilling, the top of the residual soil/fill will be defined by one of three methods: (1) placement of a demarcation layer. The demarcation layer will consist of geosynthetic fencing or equivalent material to be placed on the surface of residual soil/fill to provide an observable reference layer. A description or map of the approximate depth of the demarcation layer will be provided in the SMP; or (2) a land survey of the top elevation of residual soil/fill before the placement of cover soils, pavement and associated sub-soils, or other materials or structures or, (3) all materials beneath the approved cover will be considered impacted and subject to site management after the remedy is complete. Demarcation may be established by one or any combination of these three methods. As appropriate, a map showing the method of demarcation for the Site and all associated documentation will be presented in the RAR.

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

1.9 IMPORT OF BACKFILL SOIL FROM OFF-SITE SOURCES

This Section presents the requirements for imported fill materials to be used below the cover layer and within the clean soil cover layer. All imported soils will meet OER-approved backfill and cover soil quality objectives for this Site. The backfill and cover soil quality objectives are listed in Table 3.

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

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

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

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

Source Screening and Testing

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

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

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

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

1.10 FLUIDS MANAGEMENT

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

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

1.11 STORM-WATER POLLUTION PREVENTION

Applicable laws and regulations pertaining to storm-water pollution prevention will be addressed during the remedial program. Erosion and sediment control measures identified in this RAWP (silt fences and barriers, and hay bale checks) will be installed around the entire perimeter of the remedial construction area and inspected once a week and after every storm event to ensure that they are operating appropriately. Discharge locations will be inspected to determine whether erosion control measures are effective in preventing significant impacts to receptors. Results of inspections will be recorded in a logbook and maintained at the Site and

available for inspection by OER. All necessary repairs shall be made immediately. Accumulated sediments will be removed as required to keep the barrier and hay bale check functional. Undercutting or erosion of the silt fence toe anchor will be repaired immediately with appropriate backfill materials. Manufacturer's recommendations will be followed for replacing silt fencing damaged due to weathering.

1.12 CONTINGENCY PLAN

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

1.13 ODOR, DUST AND NUISANCE CONTROL

Odor Control

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

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

Dust Control

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

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

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

Other Nuisances

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

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

APPENDIX D

HEALTH AND SAFETY PLAN