Office of Environmental Remediation

Remedial Action Work Plan Template

Version 1.3

207 N 8TH STREET

BROOKLYN, NEW YORK

Remedial Action Work Plan

NYC VCP Number: 15CVCP008K

OER Project Number: 14HAZ095K

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REMEDIAL ACTION WORK PLAN
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LIST OF ACRONYMS

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

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

CERTIFICATION

I, PAUL K. BOYCE, am a Professional Engineer licensed in the State of New York. I have primary direct responsibility for implementation of the remedial action for the 207 N 8th Street Site OER Project Number 15CVCP008K.

I, Jennifer Lewis am a Qualified Environmental Professional as defined in §43-140. I have primary direct responsibility for implementation of the remedial action for the 207 N 8th Street Site OER Project Number 15CVCP008K.

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.

PAUL K. BOYCE, P.E.

Name

074640

NYS PE License Number

Signature

07.23.14

Date

STATE OF NEW YORK
PAUL KENNETH BOYCE
074604
LICENSED PROFESSIONAL ENGINEER

Jennifer Lewis

QEP Name

QEP Signature

7/23/14

Date

EXECUTIVE SUMMARY

207 North Eight NY, LLC has applied to enroll in the New York City Voluntary Cleanup Program (NYC VCP) to investigate and remediate a 2,500-square foot site located at 207 N 8th 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 with applicable laws and regulations.

Site Location and Current Usage

The Site is located at 207 N 8th Street in the Williamsburg section in Brooklyn, New York and is identified as Block 2313 and Lot 27 on the New York City Tax Map. **Figure 1** shows the Site location. The Site is 2,500 square feet in area and is bounded by a construction site to the north, N 8th Street to the south, a residential building to the east, and a residential building to the west. A map of the Site boundary is shown in **Figure 2**. Currently, the Site is vacant.

Summary of Proposed Redevelopment Plan

The proposed future use of the Site will consist of a six story, 10,000 square foot residential building with a cellar. Layout of the proposed Site development is presented in **Figure 3**. The current zoning designation is M1-2/R6A which allows for the mixture of residential use and commercial, community facility, or light manufacturing uses. The proposed use is consistent with existing zoning for the property.

The lot size of the property is 25 feet by 100 feet and the first through six floors of the building will occupy the south 25 feet by approximately 55 feet. The first floor will be underlain by the cellar which will extend an additional approximate 15 feet north into an open air "areaway" and sump pump room. The remaining 30 feet north of the cellar will remain near sidewalk grade and will exist as a concrete paved courtyard. The cellar level will consist of utility rooms, a laundry room, a boiler room, the areaway, and an accessory room to a first floor

dwelling unit. The Site will be excavated to a maximum depth of approximately 15 feet below sidewalk level for the installation of the elevator pit and step footings beneath the cellar for an approximate 850 cubic yards of off-site soil removal. Groundwater is estimated at approximately 7 to 11 feet below grade and excavation for the cellar will require excavation into the groundwater. Development plans are included as **Appendix A**.

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

Summary of the Remedy

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

The proposed remedial action will consist of:

1. Preparation of a Community Protection Statement and performance of all required NYC VCP Citizen Participation activities according to an approved Citizen Participation Plan.
2. Performance a Community Air Monitoring Program for particulates and volatile organic carbon compounds.
3. Establishment of Restricted Residential Use (Track 4) SCOs.
4. Site mobilization involving Site security setup, equipment mobilization, utility mark outs, and marking and staking excavation areas.
5. Excavation and removal of soil/fill exceeding SCOs. For development purposes, the new building footprint will be excavated to depths of 15 feet below sidewalk grade in the western 70 feet of the Site. The rear yard area (northern 30 feet of the Site) will be excavated approximately 0.5 feet below sidewalk grade for the installation of the concrete patio. Approximately, 1,000 tons of soil will be excavated and removed from this Site.

6. Screening of excavated soil/fill during intrusive work for indications of contamination by visual means, odor, and monitoring with a PID. Appropriate segregation of excavated media on-Site.

7. Removal of underground storage tanks (if encountered) and closure of petroleum spills (if evidence of a spill/leak is encountered during Site excavation) in compliance with applicable local, State and Federal laws and regulations.

8. Transportation and off-Site disposal of all soil/fill material at permitted facilities in accordance with applicable laws and regulations for handling, transport, and disposal, and this plan. Sampling and analysis of excavated media as required by disposal facilities. Appropriate segregation of excavated media on-Site.

9. Collection and analysis of end-point samples to determine the performance of the remedy with respect to attainment of SCOs.

10. Performance of all activities required for the remedial action, including permitting requirements and pretreatment requirements, in compliance with applicable laws and regulations.

11. As part of construction, dewatering is anticipated. Proper permits will be obtained prior to dewatering and water will be treated, if required, and discharged into the municipal sewer system.

12. Demarcation of residual soil/fill in the rear yard areas.

13. Import of materials to be used for backfill and cover, if applicable, in compliance with this plan and in accordance with applicable laws and regulations.

14. Implementation of storm-water pollution prevention measures in compliance with applicable laws and regulations.

15. Installation of a vapor barrier system beneath the building slab and outside foundation sidewalls below grade. The vapor barrier will consist of a combination of Grace Construction Products Preprufe 300R for horizontal applications and Preprufe 160R for vertical applications.

16. Construction and maintenance of an engineered composite cover consisting of a 4 inch thick concrete slab across the southern 70 feet of the Site and a 4 inch thick concrete patio across the northern 30 feet of the Site to prevent human exposure to residual soil/fill remaining under the Site. The entire Site will be capped, there will be no exposed soils, vegetation, or landscaping;

17. Submission of a Remedial Action Report (RAR) that describes the remedial activities, certifies that the remedial requirements have been achieved, defines the Site boundaries, lists any changes from this RAWP, and describes all ECs and ICs to be implemented at the Site.

18. Submission of an approved Site Management Plan (SMP) in the RAR for long-term management of residual contamination, including plans for operation, maintenance, monitoring, inspection and certification of ECs and ICs, and reporting at a specified frequency.

19. The property will continue to be registered with an E-Designation at the NYC Buildings Department. Establishment of Engineering Controls and Institutional Controls; a requirement that management of these controls must be in compliance with an approved SMP. Institutional Controls 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 Jennifer Lewis and can be reached at 631-589-6353.

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 Jennifer Lewis at 631-589-6353 or NYC Office of Environmental Remediation Project Manager Ms. Samantha Morris at (212) 341-2082.

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 anticipated to be Monday through Friday from 7am to 5pm.

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 Project Manager Jennifer Lewis at (631) 589-6353, the NYC Office of Environmental Remediation Project Manager Samantha Morris at (212) 788-8841, 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: Leonard.

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

REMEDIAL ACTION WORK PLAN

1.0 SITE BACKGROUND

North Eighth NY, LLC has applied to enroll in the New York City Voluntary Cleanup Program (NYC VCP) to investigate and remediate a property located at 207 N 8th Street in the Williamsburg 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 207 N 8th Street in the Williamsburg section in Brooklyn, New York and is identified as Block 2313 and Lot 27 on the New York City Tax Map. **Figure 1** shows the Site location. The Site is 2,500 square feet in area and is bounded by a construction site to the north, N 8th Street to the south, a residential building to the east, and a residential building to the west. A map of the Site boundary is shown in **Figure 2**. Currently, the Site is vacant.

1.2 PROPOSED REDEVELOPMENT PLAN

The proposed future use of the Site will consist of a six story, 10,000 square foot residential building with a cellar. Layout of the proposed Site development is presented in **Figure 3**. The current zoning designation is M1-2/R6A which allows for the mixture of residential use and commercial, community facility, or light manufacturing uses. The proposed use is consistent with existing zoning for the property.

The lot size of the property is 25 feet by 100 feet and the first through six floors of the building will occupy the south 25 feet by approximately 55 feet. The first floor will be underlain

by the cellar which will extend an additional approximate 15 feet north into an open air "areaway" and sump pump room. The remaining 30 feet north of the cellar will remain near sidewalk grade and will exist as a concrete paved courtyard. The cellar level will consist of utility rooms, a laundry room, a boiler room, the areaway, and an accessory room to a first floor dwelling unit. The Site will be excavated to a maximum depth of approximately 15 feet below sidewalk level for the installation of the elevator pit and step footings beneath the cellar for an approximate 850 cubic yards of off-site soil removal. Groundwater is estimated at approximately 7 to 11 feet below grade and excavation for the cellar will require excavation into the groundwater. Development plans are included as **Appendix A**.

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

1.3 DESCRIPTION OF SURROUNDING PROPERTY

Current neighboring properties largely consist of residential buildings and a construction site. Historic neighboring properties consisted of residential, commercial, and industrial uses. Historic industrial uses included painting, dyeing, whiting, and metal working. Other properties hydraulically up-gradient of the subject site contained gasoline tanks which have the potential to leak.

A review of the NYCOER SPEED application did not identify sensitive receptors, such as schools, hospitals, or day care facilities, within a 500 foot radius of the Site.

Figure 4 shows the surrounding land usage.

1.4 REMEDIAL INVESTIGATION

A remedial investigation was performed and the results are documented in a companion document called "*Remedial Investigation Report, 207 N 8th Street*", dated May 2014 (RIR).

Summary of Past Uses of Site and Areas of Concern

A site report was obtained from Environmental Data Resources, Inc (EDR) of Southport CT which included a review of governmental databases, Sanborn maps, historic aerial pictures, and phone directories. Review of the historical information for the subject property indicates that the

site has been developed since at least 1887. Historic use of the property included a three story residential dwelling with a wagon house/hat sorting building up to at least 1916, then a two story residential dwelling replaced the structures between 1916 and 1942 which was demolished between 2007 and 2009 at which time the Site has remained a vacant lot. The site has been labeled with the E-Designation #E-138 as a result of Community Environmental Quality Review (CEQR) #04DCP003K.

A New York City Department of Buildings (NYCDOB) plumbing permit was issued in 1992 for the site to convert from oil to natural gas and the permit stated that the work would be conducted in the basement of the building. There was no indication or documentation that the oil tank was properly abandoned or removed from the site or where the tank was located.

According to the above mentioned NYCDOB plumbing permit, the site contained a basement and the building demolition permit issued in 2005 stated that off-site fill material would be used. Confirmation of the importation of off-site fill or the potential source of that fill material has not been provided.

Summary of the Work Performed under the Remedial Investigation

1. Conducted a Site inspection to identify AOCs and physical obstructions (i.e. structures, buildings, etc.);
2. Performed a geophysical investigation across the entire project Site and the sidewalk in front of the site;
3. Installed five soil borings across the entire project Site, and collected eleven soil samples for chemical analysis from the soil borings to evaluate soil quality;
4. Installed three groundwater monitoring wells throughout the Site to establish groundwater flow and collected three groundwater samples for chemical analysis to evaluate groundwater quality;
5. Installed five soil vapor probes around Site perimeter and collected three samples for chemical analysis.

Summary of Environmental Findings

1. Elevation of the property is approximately 26 feet above mean sea level and level.

2. Depth to groundwater in the area has been reported from 4 feet to 27 feet below sidewalk grade, although recently installed monitoring wells have shown the depth to groundwater to be from 7 to 11 feet below sidewalk grade. Based upon the tight geologic formation and/or potential for a perched water table, the groundwater level data is questionable. A Remedial Investigation Report for an adjacent site has measured groundwater at 4 feet below grade.

3. Regional groundwater flow is generally from the southeast towards the northwest beneath the Site in the direction of the East River.

4. Depth to bedrock is approximately 100 feet at the Site.

5. The stratigraphy of the site, from the surface down, consists of 3 to 10 feet of historic fill material underlain by a layer of sandy clay.

6. Laboratory results were compared to NYSDEC Unrestricted Use Soil Cleanup Objectives (SCOs) and Restricted Residential Use SCOs as presented in 6NYCRR Part 375-6.8 and CP51. PCBs were not detected in any of the soil samples exceeding Unrestricted Use SCOs. Two VOCs, including acetone (at 280 µg/Kg) and xylene (at 460 µg/Kg) were detected at concentrations slightly exceeding Unrestricted Use SCOs and significantly less than their respective Restricted Residential Use SCOs. Six SVOCs, including benzo (a)anthracene (max 20,000 µg/Kg), benzo(a) pyrene(max 20,000 µg/Kg), benzo(b) flouranthene (max 18,000 µg/Kg), benzo(k) flouranthracene (max 10,000 µg/Kg), ideno (1,2,3-cd)pyrene (max 10,000 µg/Kg), and Chrysene (max 35,000 µg/Kg) were detected exceeding Restricted Residential SCOs in four of the five shallow samples. Four pesticides including 4,4'-DDE (at 14.8 µg/Kg); 4,4'-DDT (at 62.7 µg/Kg); chlorodane (at 1,040 µg/Kg) and dieldrin (at 123 µg/Kg) were detected at concentrations greater than Unrestricted Use SCOs in one shallow soil sample. Four metals, including chromium, lead, mercury and zinc, exceeded Unrestricted Use SCOs; of these, only mercury (max 1.1 mg/Kg) exceeded Restricted Residential SCOs. The chromium exceedance (38 mg/Kg) occurred in the deep sample from the proposed rear yard area. Overall, soil

chemistry showed impact consistent with historic fill material in the shallow soils across the Site.

7. Groundwater samples were compared to New York State 6NYCRR Part 703.5 Class GA Groundwater Quality Standards (GQS). Groundwater results showed several petroleum related VOCs exceeding their respective GQS. These included naphthalene (max of 250 µg/L), 1,2,4-trimethylbenzene (max of 53 µg/L), ethylbenzene (max of 31 µg/L), isopropylbenzene (max of 76 µg/L), and n-propylbenzene (max of 11 µg/L), and o-xylene (max of 11 µg/L). Chlorinated tetrachloroethene (PCE) and trichloroethene (TCE) were not detected in groundwater. Several SVOCs, mostly PAH compounds, exceeded their respective GQSs. Several metals were identified, but only antimony, iron, manganese, and sodium exceeded their respective GQSs. There were no Pesticides or PCBs detected in groundwater samples. Groundwater results indicated impact consistent with a petroleum spill. Based upon the location of the impact and the lack of an identifiable source on the subject Site, the spill source is likely up-gradient of the subject Site. Additional impact to the groundwater may be the result of the placement of historic fill material at the Site.

8. Soil vapor samples collected during the RI were compared to the compounds listed in Table 3.1 Air Guideline Values Derived by the NYSDOH located in the New York State Department of Health (NYSDOH) Final Guidance for Evaluating Soil Vapor Intrusion. Soil vapor results indicated petroleum related VOCs were present at moderate concentrations and chlorinated VOCs were present at low concentrations. Petroleum-related VOCs (BTEX) were detected at concentrations ranging from 27 to 308 $\mu g/m^3$. TCE was not detected in the soil vapor samples, but PCE was detected in one of the samples at 15 $\mu g/m^3$. The PCE concentrations are all below the monitoring level ranges established within the NYSDOH soil vapor guidance matrix. TCE, 1,1,1-TCA and carbon tetrachloride were not detected in any of soil vapor samples.

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 dwelling and other occupied structures.

3.0 REMEDIAL ALTERNATIVES ANALYSIS

The goal of the remedy selection process is to select a remedy that is protective of human health and the environment and takes into consideration the current, intended, and reasonably anticipated future use of the property. The remedy selection process begins by establishing RAOs for media in which chemical constituents were found to exceed applicable standards, criteria, and guidance values (SCGs), as detailed in Section 2.0. A remedy is then developed based on the following ten criteria:

1. Protection of human health and the environment;
2. Compliance with SCGs;
3. Short-term effectiveness and impacts;
4. Long-term effectiveness and permanence;
5. Reduction of toxicity, mobility, or volume of contaminated material;
6. Implementability;
7. Cost effectiveness;
8. Community Acceptance;
9. Land use; and
10. Sustainability of the remedial action.

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

Two remedial action alternatives are considered in this alternatives analysis. Alternative 1 is a Track 1 alternative that involves removal of all soil impacted above Track 1 Unrestricted Use soil cleanup objectives (SCOs) from below the proposed building footprint. Alternative 2 removes all impacted soil above Track 4 Site-Specific SCOs from below the proposed building footprint.

Alternative 1 involves:

- Establishment of 6 NYCRR Part 375 Unrestricted Use (Track 1) Soil Cleanup Objectives (SCOs);
- Removal of all soil and fill exceeding Unrestricted Use SCOs and confirmation that Track 1 has been achieved with post-excavation endpoint sampling.. If additional soil/fill containing analytes at concentrations greater than Unrestricted Use SCOs are still present at the base of the excavations after removal of all soil, additional excavations would be performed to ensure complete removal of soil that does not meet Track 1 Unrestricted Use SCOs;
- No Engineering or Institutional Controls are required for a Track 1 cleanup, but a vapor barrier/waterproofing system would be installed beneath the cellar foundation slab and on the exterior of the foundation walls as part of construction to prevent any potential future exposures from off-Site soil vapor; and
- As part of new development, placement of a final composite cover system consisting of a 4 inch thick concrete slab beneath the entire cellar and a 4 inch thick concrete slab on grade patio in the northern section of the Site.

Alternative 2 involves:

- Establishment of 6 NYCRR Part 375 Restricted Residential Use (Track 4) SCOs;
- Removal of soil and fill exceeding the Restricted Residential SCOs from the proposed building footprint. For development, the new building footprint will be excavated to depths of 15 feet below sidewalk grade in the western 70 feet of the Site. The rear yard area (northern 30 feet of the Site) will be excavated approximately 0.5 feet below sidewalk grade for the installation of the concrete patio. If soil and fill containing analytes at concentrations greater than Restricted Residential Use SCOs are 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 Restricted Residential Use SCOs.

- Placement of a final composite cover system (concrete slab) over the building footprint and concrete slab in rear yard area to eliminate exposure to remaining soil and fill;
- Installation of a vapor barrier beneath the cellar foundation slab and along foundation side walls to prevent any potential future exposures from off-Site soil vapor;
- Establishment of use restrictions including prohibitions on the use of groundwater from the Site and prohibitions on sensitive site uses, such as farming or vegetable gardening, to eliminate future exposure pathways;
- Establishment of an approved Site Management Plan (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. SMP will note that the property owner and property owner's successors and assignees must comply with the approved SMP; and
- The property will continue to be registered with an E-Designation at the NYC Buildings Department.

3.1 THRESHOLD CRITERIA

Protection of Public Health and the Environment

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

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

Alternative 2 would achieve comparable protections of human health and the environment by ensuring that remaining soil and fill on-Site meets Restricted Residential Use SCOs, as well as by placement of institutional controls, including a vapor barrier and a composite cover system (4 inch thick concrete slab). The composite cover system would prevent direct contact with any remaining on-Site soil/fill. Implementing institutional controls including a SMP and continued "E" designation of property would ensure that the composite cover system remains intact and protective.

For both Alternatives, potential exposure to the contaminated soils or groundwater during construction would be minimized by implementing a Health and Safety Plan (HASP), a Soil and Materials Management Plan, and Community Air Monitoring Plan (CAMP). Potential contact with contaminated groundwater would be prevented as its use is prohibited by city laws and regulations. Potential future migration of on and off-Site soil vapors into the building would be prevented by installing a vapor/waterproofing barrier system below the building's basement slab and continuing the vapor barrier along the foundation walls to grade.

3.2. BALANCING CRITERIA

Compliance with Standards, Criteria, and Guidance (SCGs)

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

Alternative 1 would achieve compliance with the remedial goals, chemical-specific SCGs, and RAOs for soil through removal of soil to achieve Track 1 Unrestricted Use SCOs and Groundwater Protection Standards. Compliance with SCGs for soil vapor would also be achieved by installing a vapor barrier system below the building's slab and along foundation walls, as part of development.

Alternative 2 would achieve compliance with the remedial goals, chemical-specific SCGs, and RAOs for soil through removal of soil to meet Restricted Residential Use SCOs. Compliance with SCGs for soil vapor would also be achieved by installing a vapor barrier system below the building's slab and along foundation walls. A SMP would ensure that these controls remained protective for the long term.

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

Short-term effectiveness and impacts

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

Both Alternatives 1 and 2 have similar short-term effectiveness during their respective implementations, as each requires excavation of historic fill material. Both alternatives would result in short-term dust generation impacts associated with excavation, handling, load out of materials, and truck traffic. Short-term impacts could potentially be for a longer time period for Alternative 1 if excavation of greater amounts of soil/fill material is needed beneath the proposed building foundation. However, focused attention to means and methods during the remedial action, including community air monitoring and appropriate truck routing, would minimize or negate the overall impact of these activities.

Additional short-term adverse impact and risks to the community associated with both remedial alternatives is increased truck traffic. Truck traffic would be routed on the most direct course using major thoroughfares where possible and flaggers will be used to protect pedestrians at Site entrances and exits. Both alternatives would employ appropriate measures to prevent short-term impacts, including a CAMP and a Soil/Materials Management Plan (SMMP), during all on-Site soil disturbance activities and would minimize the release of significant contaminants into the environment. Both alternatives provide short-term effectiveness in protecting the surrounding community by decreasing the risk of contact with on-Site contaminants. Construction workers operating under appropriate management procedures and a Construction Health and Safety Plan (CHASP) would be protected from on-site contaminants (personal

protective equipment would be worn consistent with the documented risks within the respective work zones).

Long-term effectiveness and permanence

This evaluation criterion addresses the results of a remedial action in terms of its permanence and quantity/nature of waste or residual contamination remaining at the Site after response objectives have been met, such as permanence of the remedial alternative, magnitude of remaining contamination, adequacy of controls including the adequacy and suitability of 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 with the exception of the New York City imposed general restrictions on groundwater usage.

Alternative 2 would provide long-term effectiveness by removing most on-site contamination and attaining Restricted Residential Use SCOs, establishing ECs, such as a composite cover system (4 inch thick concrete building slab) across the entire Site and establishing ICs, such as ensuring long-term management including use restrictions, a SMP, and continued registration as an E-designated property. The SMP would ensure long-term effectiveness of all ECs and ICs by requiring periodic inspection and certification that these controls and restrictions continue to be in place and are functioning as they were intended assuring that protections designed into the remedy will provide a continued high level of protection in perpetuity.

Reduction of toxicity, mobility, or volume of contaminated material

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

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

Alternative 2 would remove the toxicity, mobility, and volume of contaminants from on-Site soil by removing soil in excess of Restricted Residential Use SCOs, and remaining soil/fill would be capped with a vapor barrier and composite cover.

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 proposed remedial action is both feasible and implementable. 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, services, and well-established technology. The reliability of these remedies is also high. There are no specific difficulties associated with any of the activities proposed.

Cost effectiveness

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

The remedial plan creates an approach that combines the remedial action with the redevelopment of the Site, including the construction of the building foundation. The remedial plan is also cost effective in that it will take into consideration the selection of the closest and

most appropriate disposal facilities to reduce transportation and disposal costs during the excavation of historic fill and other soils during the redevelopment of the Site.

The costs associated with the Track 1 alternative are higher than the Track 4 alternative because a higher volume of soil/fill will be excavated for off-Site disposal to achieve a Track 1 status over the entire Site. In both cases, appropriate public health and environmental protections are achieved. However, long-term costs for site management are eliminated for the Track 1 alternative and may be required for the Track 4 alternative.

Community Acceptance

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

Based on the overall goals of the remedial program and initial permitting associated with the proposed site development, no adverse community opinion is anticipated for either alternative. This RAWP would be subject to public review under the NYC VCP and will provide the opportunity for detailed public input on the remedial alternatives and the selected remedial action. This public comment related to site remediation will be considered by OER prior to approval of this plan. The Citizen Participation Plan is provided in **Appendix 1**.

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.

Both alternatives for remedial action at the Site are comparable with respect to the proposed use and to land uses in the vicinity of the Site. The proposed use is consistent with the existing zoning designation for the property and is consistent with recent development patterns. The Site is surrounded by commercial and residential properties and both alternatives provide comprehensive protection of public health and the environment for these uses. Improvements in the current environmental condition of the Site achieved by both alternatives are also consistent with the City's goals for cleanup of contaminated land and bringing such properties into productive reuse. Both alternatives are equally protective of natural resources and cultural resources. This RAWP will be subject to public review under the NYC VCP and will provide the opportunity for detailed public input on the land use factors described in this section. This public comment will be considered by OER prior to approval of this plan.

Sustainability of the Remedial Action

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

Track 1 remediation would use the most energy and produce the most greenhouse gasses, as it would have the largest volume of material to truck off-Site. While Alternative 2 would result in lower energy use based on reducing the volume of material transported off-Site, both remedial alternatives are comparable with respect to the opportunity to achieve sustainable remedial action.

The remedial plan of both alternatives would take into consideration the shortest trucking routes during off-Site disposal of historic fill and other soils, which would reduce greenhouse gas emissions and conserve energy used to fuel trucks. The Clean Soil Bank may be used for the import of clean backfill material. To the extent practicable, energy efficient building materials, appliances, and equipment will be utilized to complete the development. A complete list of green

remedial activities considered as part of the NYC VCP is included in the Sustainability Statement, included as **Appendix 2**.

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 standard methods that are well established in the industry.

The proposed remedial action will consist of:

1. Preparation of a Community Protection Statement and performance of all required NYC VCP Citizen Participation activities according to an approved Citizen Participation Plan.
2. Performance a Community Air Monitoring Program for particulates and volatile organic carbon compounds.
3. Establishment of Restricted Residential Use (Track 4) SCOs.
4. Site mobilization involving Site security setup, equipment mobilization, utility mark outs, and marking and staking excavation areas.
5. Excavation and removal of soil/fill exceeding SCOs. For development purposes, the new building footprint will be excavated to depths of 15 feet below sidewalk grade in the western 70 feet of the Site. The rear yard area (northern 30 feet of the Site) will be excavated a minimum of approximately 0.5 feet below sidewalk grade for the installation of the concrete patio. Approximately, 1,000 tons of soil will be excavated and removed from this Site.
6. Screening of excavated soil/fill during intrusive work for indications of contamination by visual means, odor, and monitoring with a PID. Appropriate segregation of excavated media on-Site.

7. Removal of underground storage tanks (if encountered) and closure of petroleum spills (if evidence of a spill/leak is encountered during Site excavation) in compliance with applicable local, State and Federal laws and regulations.

8. Transportation and off-Site disposal of all soil/fill material at permitted facilities in accordance with applicable laws and regulations for handling, transport, and disposal, and this plan. Sampling and analysis of excavated media as required by disposal facilities. Appropriate segregation of excavated media on-Site.

9. Collection and analysis of end-point samples to determine the performance of the remedy with respect to attainment of SCOs.

10. Performance of all activities required for the remedial action, including permitting requirements and pretreatment requirements, in compliance with applicable laws and regulations.

11. As part of construction, dewatering is anticipated. Proper permits will be obtained prior to dewatering and water will be treated, if required, and discharged into the municipal sewer system.

12. Demarcation of residual soil/fill in the rear yard areas.

13. Import of materials to be used for backfill and cover, if applicable, in compliance with this plan and in accordance with applicable laws and regulations.

14. Implementation of storm-water pollution prevention measures in compliance with applicable laws and regulations.

15. Installation of a vapor barrier system beneath the building slab and outside foundation sidewalls below grade. The vapor barrier will consist of a combination of Grace Construction Products Preprufe 300R for horizontal applications and Preprufe 160R for vertical applications.

16. Construction and maintenance of an engineered composite cover consisting of a 4 inch thick concrete slab across the southern 70 feet of the Site and a 4 inch thick concrete patio across the northern 30 feet of the Site to prevent human exposure to residual

soil/fill remaining under the Site. The entire Site will be capped, there will be no exposed soils, vegetation, or landscaping;

17. Submission of a Remedial Action Report (RAR) that describes the remedial activities, certifies that the remedial requirements have been achieved, defines the Site boundaries, lists any changes from this RAWP, and describes all ECs and ICs to be implemented at the Site.

18. Submission of an approved Site Management Plan (SMP) in the RAR for long-term management of residual contamination, including plans for operation, maintenance, monitoring, inspection and certification of ECs and ICs, and reporting at a specified frequency.

19. The property will continue to be registered with an E-Designation at the NYC Buildings Department. Establishment of Engineering Controls and Institutional Controls; a requirement that management of these controls must be in compliance with an approved SMP. Institutional Controls 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

Site-specific (Track 4) Soil Cleanup Objectives (SCOs) are proposed for this project. The SCOs for this Site are the Restricted Residential SCOs listed in Table 1 as amended by the following site specific SCOs:

Contaminant	Track 4 SCOs
Total SVOCs	250 ppm
Mercury	1.5 ppm
Lead	800 ppm

Soil and materials management on-Site and off-Site, including excavation, handling, and disposal, will be conducted in accordance with the Soil/Materials Management Plan in **Appendix 3**. The location of planned excavations is shown in **Figure 5**.

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

Estimated Soil/Fill Removal Quantities

The total quantity of soil/fill expected to be excavated and disposed off-Site is approximately 1,000 tons.

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. Three confirmation samples will be collected from the base of the excavation at locations to be determined by OER. For comparison to Track 4 Site-Specific SCOs, analytes will only include trigger compounds and elements established on the Track 4 Site-Specific SCO list. The approximate collection location of the three endpoint soil samples is shown on **Figure** 5. The end-point sampling and testing will be performed promptly following excavation and be completed prior to any site development activities. For comparison to Track 1 SCOs, all three samples will be analyzed for:

- 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.

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 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 quality assurance (QA) objective with respect to accuracy, precision, and sensitivity of analysis for laboratory analytical data is to achieve the quality control (QC) acceptance of the analytical protocol. The laboratory will address the accuracy, precision, and completeness requirements for all data generated.

One duplicate sample and one matrix spike / matrix spike duplicate (MS/MSD) sample for every 20 samples collected will be submitted to the approved laboratory for analysis of the same parameters. One trip blank will be submitted to the laboratory with each shipment of soil samples.

Collected samples will be appropriately packaged, placed in coolers, and transferred under proper chain of custody to a New York State Department of Health (NYSDOH) Environmental Laboratory Approval Program (ELAP) certified analytical laboratory. Samples will be containerized in appropriate laboratory provided glassware and shipped in plastic coolers. Samples will be preserved through the use of ice or "cold-paks" to maintain a temperature of 4ºC.

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

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

- Rinse with tap water
- Rinse with distilled or deionized water

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

Import and Reuse of Soils

Import of soils onto the property and reuse of soils already onsite will be performed in conformance with the Soil/Materials Management Plan in **Appendix 3**. The estimated quantity of soil to be imported into the Site for backfill and cover soil is 0 tons. The estimated quantity of on-Site soil/fill expected to be reused/relocated on Site is 100 tons.

4.3 ENGINEERING CONTROLS

The excavation required for the proposed Site development will achieve Track 4 Site Specific Use SCOs. Engineering Controls are required to address residual contamination at the Site. The following construction elements will constitute Engineering Controls that will be employed in the remedial action to address residual contamination remaining at the Site.

- A composite cover system consisting of a concrete building slab and a concrete patio;
- A vapor barrier.

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 a 4 inch thick concrete building slab and a 4 inch thick concrete patio. **Figure 6** shows the location of each cover type built at the Site.

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

Vapor Barrier

Migration of soil vapor will be mitigated with a combination of building slab and vapor barrier. The vapor barrier will be installed to form a continuous layer of protection along the exterior sub-grade portions of the building. The vapor barrier will be installed beneath the concrete building slab, including the elevator pit and sumps, on a substrate free of sharp rocks or gaps and along the exterior of the sub-grade foundation walls in accordance with manufacturer's specifications.

The vapor barrier will consist of a combination of Grace Construction Products Preprufe 300R for horizontal applications and Preprufe 160R for vertical applications. Both vapor barriers are constructed of a high density polyethylene film; Preprufe 300R is 46 mils thick and Preprufe 160R is 32 mils thick. A letter from the manufacturer stating the compatibility of the vapor barrier with observed on-Site contaminants and manufacturer's cut sheets for the vapor barrier are included in **Appendix B**.

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

4.4 INSTITUTIONAL CONTROLS

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

Institutional Controls for this remedial action are:

- The property will continue to be registered with an E-Designation by the NYC Buildings Department. If the remedial action achieves Track 1 SCOs, the NYC Buildings Department will be petitioned for the removal of the E-Designation. This RAWP includes a description of all ECs and ICs and summarizes the requirements of the SMP which will

note that the property owner and property owner's successors and assigns must comply with the approved SMP;

- Submittal of a SMP in the RAR for approval by OER that provides procedures for appropriate operation, maintenance, inspection, and certification of EC's and IC's. SMP will require that the property owner and property owner's successors and assigns will submit to OER a periodic written statement that certifies that: (1) controls employed at the Site are unchanged from the previous certification or that any changes to the controls were approved by OER; and, (2) nothing has occurred that impairs the ability of the controls to protect public health and environment or that constitute a violation or failure to comply with the SMP. OER retains the right to enter the Site in order to evaluate the continued maintenance of any controls. This certification shall be submitted at a frequency to be determine by OER in the SMP and will comply with RCNY §43-1407(l)(3).
- Vegetable gardens and farming on the Site are prohibited in contact with residual soil materials;
- Use of groundwater underlying the Site is prohibited without treatment rendering it safe for its intended use;
- All future activities on the Site that will disturb residual material must be conducted pursuant to the soil management provisions in an approved SMP;
- The Site will be used for residential use and will not be used for a higher level of use without prior approval by OER.

4.5 SITE MANAGEMENT PLAN

Site Management is 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 RAR and issuance of the Notice of Completion (NOC) for the Remedial Action. The SMP describes appropriate methods and procedures to ensure implementation of all ECs and ICs that are required by the DCR and this RAWP. The SMP is submitted as part of the RAR but will be written in a manner that allows its use as an independent document. Site Management

continues until terminated in writing by OER. The property owner is responsible to ensure that all Site Management responsibilities defined in the DCR and the SMP are implemented.

The SMP will provide a detailed description of the procedures required to manage residual soil/fill left in place following completion of the remedial action in accordance with the Brownfield Cleanup Agreement with OER. This includes a plan for: (1) implementation of 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 SMP will be based on a calendar year and certification reports will be due for submission to OER by March 31 of the year following the reporting period.

4.6 QUALITATIVE HUMAN HEALTH EXPOSURE ASSESSMENT

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 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

Impacted soil/fill has been identified at the Site from grade to up to 10 feet below grade. Additional impact has been observed at deeper depths beneath the groundwater table.

Contaminants observed in the soil at concentrations greater than Unrestricted Use SCOs include:

- SVOCs – benzo(a)anthracene, benzo(b)pyrene, benzo(b)fluoranthene, benzo(k)flouranthene, chrysene, and indeno(1,2,3-cd)pyrene exceeding Restricted Residential Use SCOs;
- Several metals including chromium, lead, mercury, and zinc were identified, but only mercury exceeded Restricted Residential Use SCOs;
- Pesticides including 4,4'-DDE, 4,4'-DDT, chlordane, and dieldrin were identified , but none exceeded Restricted Residential Use SCOs.

Contaminants observed in the groundwater at concentrations greater than NYSDEC Class GA Standars include:

- VOCs – 1,3,5-trimethylbenzene, benzene, ethylbenzene, isopropylbenzene, n-propylbenzene, naphthalene, and xylene;
- SVOCs – bis(2-ethylhexyl)phthalate, acenaphthene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, fluorine, naphthalene, and phenathrene;
- Metals – antimony, iron, manganese, and sodium;
- Pesticides – dieldrin.

There were no VOCs observed in the soil vapor at concentrations greater than NYSDOH guidelines; however, there were low levels of chlorinated solvents and moderate levels of petroleum related compounds detected.

Nature, Extent, Fate and Transport of Contaminants

Historic fill material with elevated concentrations of SVOCs and metals have been observed in shallow soils across the entire site. Pesticides were also observed in shallow soils and in groundwater. Xylene was identified in a deep soil sample; however, the sample was collected below the water table. The highest concentrations of VOCs detected in the groundwater were detected in the southern section of the Site and were not detected in the shallow soils on-Site indicating that the source of VOC groundwater contaminants is up-gradient of the subject Site.

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

Potential Routes of Exposure

The five elements of an exposure pathway are: the source of contamination, the environmental media and transport mechanisms, the point of exposure, the route of exposure, and the receptor population.

These elements of an exposure pathway may be based on past, present, or future events. 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 not 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

Current Conditions: There is a potential for dermal contact, ingestion, or inhalation of soil and fill currently at the Site due to the Site's current condition as a vacant undeveloped property. There is no surface water at the Site and groundwater is not exposed at the Site. Since the Site is served by the public water supply and groundwater use for potable supply is prohibited by NYC, groundwater is not used at the Site and there is no potential for exposure. There is no potential for soil vapors to accumulate as the Site is currently a vacant property.

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 exposed impacted soil and fill, as well as can come in contact

with groundwater. Similarly, off-Site receptors could be exposed to dust and vapors from on-Site activities. During construction, on-Site and off-Site exposures to contaminated dust from on-Site will be addressed through the SMMP, dust controls, and through the implementation of a Community Air Monitoring Plan (CAMP) and a HASP.

Proposed Future Conditions: Under future remediated conditions, most or all soils in excess of Restricted Residential SCOs will be removed and the site will meet, at minimum, Track 4 SCOs. The Site will be fully capped with a concrete building slab and concrete patio limiting potential direct exposure to soil and groundwater remaining in place and engineering controls including a vapor barrier system will prevent potential for inhalation via soil vapor intrusion. The Site is served by a public water supply and groundwater use at the Site is prohibited by NYC. There will be no off-Site pathways for ingestion, inhalation, or dermal exposure to contaminants derived from the Site.

Receptor Populations

On-Site Receptors – The Site is currently vacant and uncapped. Onsite receptors are trespassers and site representatives and visitors to the property. During redevelopment of the Site, the on-Site potential receptors will include construction workers, site representatives, and visitors. Once the Site is redeveloped, the on-Site potential sensitive receptors will include adult and child building residents, workers and visitors.

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

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

Overall Human Health Exposure Assessment

There are potential complete exposure pathways for the current site condition. There is a potential complete exposure pathway that requires mitigation during implementation of the remedy. There is no complete exposure pathway under future conditions after the site is developed. This assessment takes into consideration the reasonably anticipated use of the site, which includes a residential structure, site-wide impervious surface cover cap, and a subsurface vapor barrier system for the building. Potential post-construction use of groundwater is not considered an option because groundwater in this area of New York City is not used as a potable water source. There are no surface waters in close proximity to the Site that could be impacted or threatened.

During remedial construction, on-Site and off-Site exposures to contaminated dust from historic fill material will be addressed through dust mitigation activities and through the implementation of the Community Air Monitoring Program, the Soil/Materials Management Plan, and a Construction Health and Safety Plan. After the remedial action is complete, there will be no remaining exposure pathways to on-Site soil/fill, as all soil above Restricted Residential SCOs will have been removed and a vapor barrier system will have been installed as part of development. Continued protection after the remedial action will be achieved by the implementation of a SMP, including periodic inspection and certification of the performance of remedial controls.

5.0 REMEDIAL ACTION MANAGEMENT

5.1 PROJECT ORGANIZATION AND OVERSIGHT

Principal personnel who will participate in the remedial action include Jennifer Lewis (Project Manager) and Kris Almskog (Vice President). The Professional Engineer (PE) and Qualified Environmental Professionals (QEP) for this project are Paul Boyce and Jennifer Lewis, respectively.

5.2 SITE SECURITY

Site access will be controlled by the presence of a gated fence. The fence will be kept closed during remedial activities and locked when no one is on-Site.

5.3 WORK HOURS

The hours for operation of remedial construction will be from approximately 7am to 5pm. These hours conform to the New York City Department of Buildings construction code requirements.

5.4 CONSTRUCTION HEALTH AND SAFETY PLAN

The HASP is included in **Appendix 4**. The Site Safety Coordinator will be Jennifer Lewis. 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. The Site Safety Officer will be responsible for maintaining workers training records.

Personnel entering any exclusion zone will be trained in the provisions of the HASP and be required to sign a HASP acknowledgment form. 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 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 CAMP will be reported to the OER Project Manager and included in the Daily Report.

VOC Monitoring, Response Levels, and Actions

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 mcg/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 mcg/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 mcg/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 incompliance with applicable laws and regulations to assure safety. Utility companies and other responsible authorities will be contacted to locate and mark the locations, and a copy of the Markout Ticket will be retained by the contractor prior to the start of drilling, excavation or other invasive subsurface operations. Overhead utilities may also be present within the anticipated work zones. Electrical hazards associated with drilling in the vicinity of overhead utilities will be prevented by maintaining a safe distance between overhead power lines and drill rig masts.

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

Dewatering

As dewatering will be anticipated for this project, a State Pollutant Discharge Elimination System (SPDES) permit will be obtained from the New York City Department of Environmental Protection. Water will be treated, if necessary, and discharged into the municipal sewer system.

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; lose 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 by collected and appropriately managed. Support of excavation structure will be inspected and fortified as necessary. Impacted stockpiles will be contained and damaged stockpile covers will be replaced. 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 on-Site petroleum spills are identified, a qualified environmental professional will determine the nature and extent of the spill and report to NYSDEC'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 NYSDEC.

Storm Response Reporting

A Site inspection report will be submitted to OER at the completion of the 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 NYSDEC; 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 to proceed west on N 8th Street, make a left on Driggs Avenue, make a left on Metropolitan Avenue, make a right on Marcy Avenue and proceed onto the Brooklyn Queens Expressway.

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 RAR.

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 RAR. 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 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;
- A SMP (if Track 1 is not achieved);
- Description of any changes in the remedial action from the elements provided in this RAWP and associated design documents;
- Tabular summary of all end point sampling results and all material characterization results, QA/QC results for end point sampling, and other sampling and chemical analysis performed as part of the remedial action and DUSR;
- Test results or other evidence demonstrating that remedial systems are functioning properly;
- Account of the source area locations and characteristics of all contaminated material removed from the Site including a map showing source areas;
- Account of the disposal destination of all contaminated material removed from the Site. Documentation associated with disposal of all material will include transportation and disposal records, and letters approving receipt of the material.
- Account of the origin and required chemical quality testing for material imported onto the Site.
- Continue registration of the property with an E-Designation by the NYC Department of Buildings, unless Track 1 SCOs are achieved.
- 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, _____, am currently a professional engineer licensed by the State of New York. I had primary direct responsibility for implementation of the remedial program for the Site name Site Site number.

I, _____, am a qualified Environmental Professional. I had primary direct responsibility for implementation remedial program for the Site name Site Site number . (Optional)

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

Figures

PWGC

Strategic Environmental and Engineering Solutions

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E-mail: INFO@PWGROSSER.COM

SUBJECT SITE VICINITY

207 NORTH 8TH STREET
BROOKLYN, NY

0 ¼ ½ ¾ 1 Miles

Project:	NEN1301
Date:	05/27/2014
Designed by:	BB
Drawn by:	BB
Approved by:	JLL
Figure No:	1

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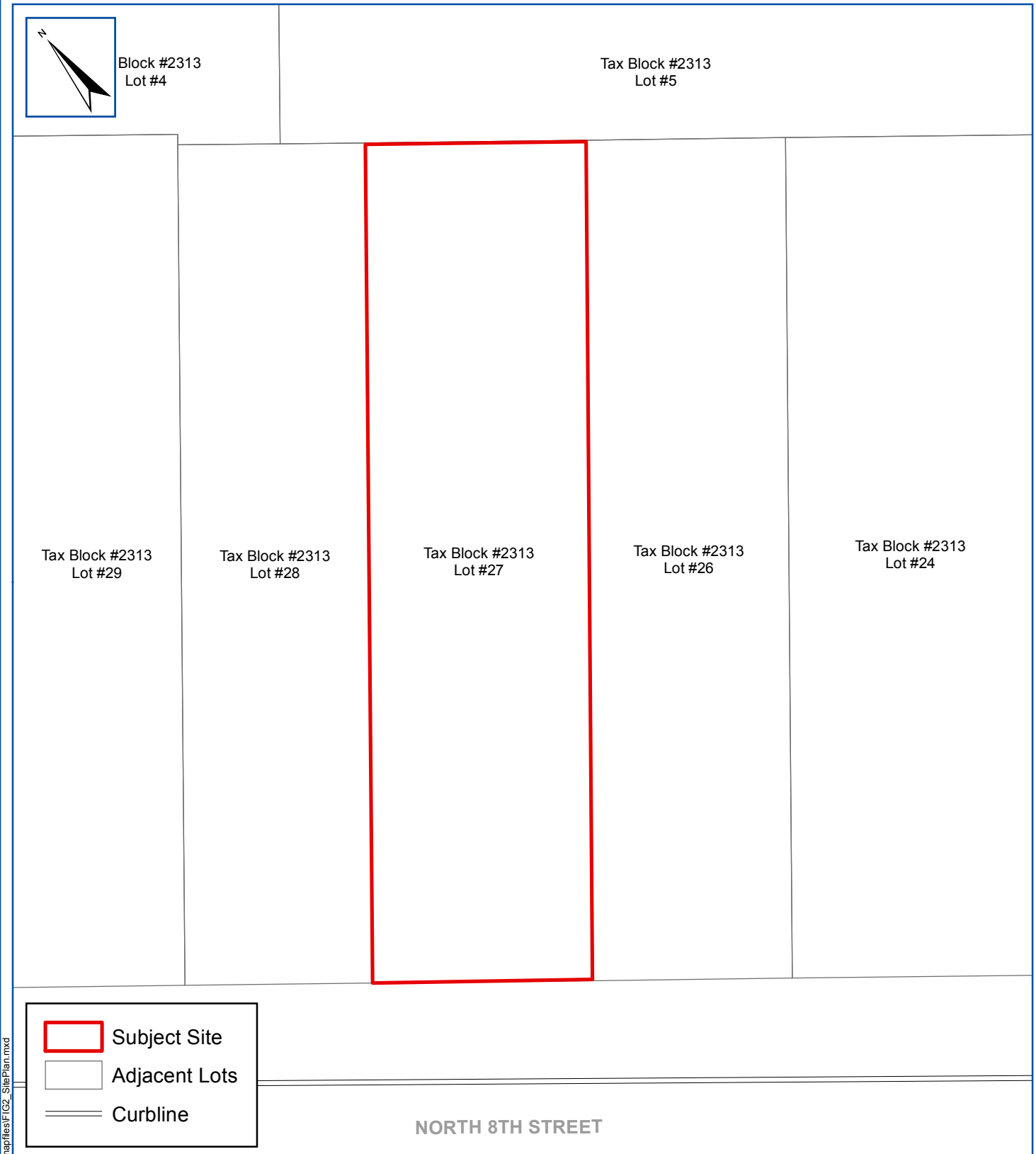

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SITE PLAN

207 NORTH 8TH STREET
BROOKLYN, NY

0 8 16 24 32 Feet

Project:	NEN1301
Date:	05/30/2014
Designed by:	BB
Drawn by:	BB
Approved by:	JLL
Figure No:	2

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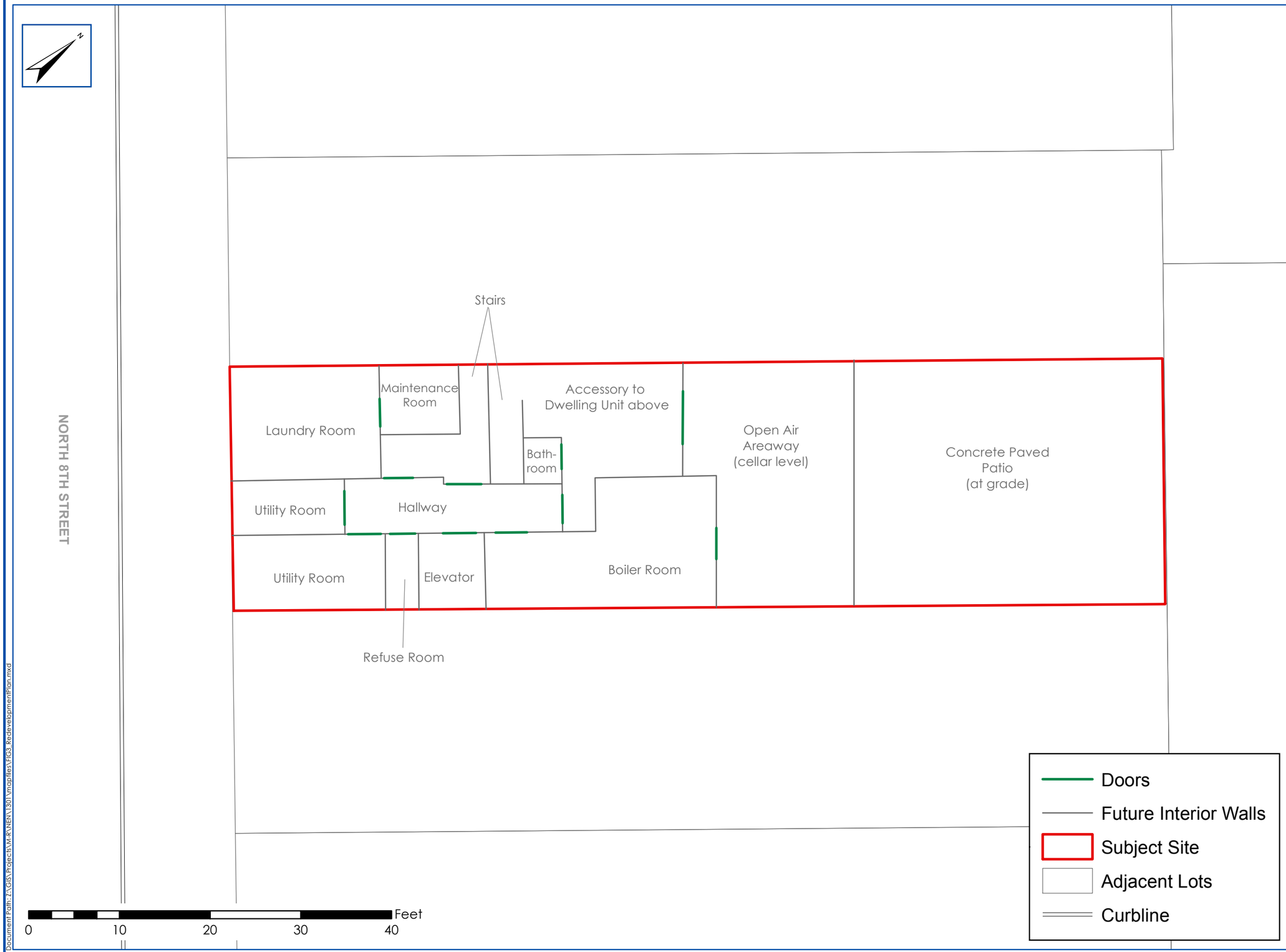

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REVISION	DATE	INITIAL	COMMENTS

DRAWING INFORMATION:

Project:	NEN1301	Designed by:	BB
Date:	06/24/2014	Drawn by:	JCG
Scale:	AS SHOWN	Approved by:	JLL

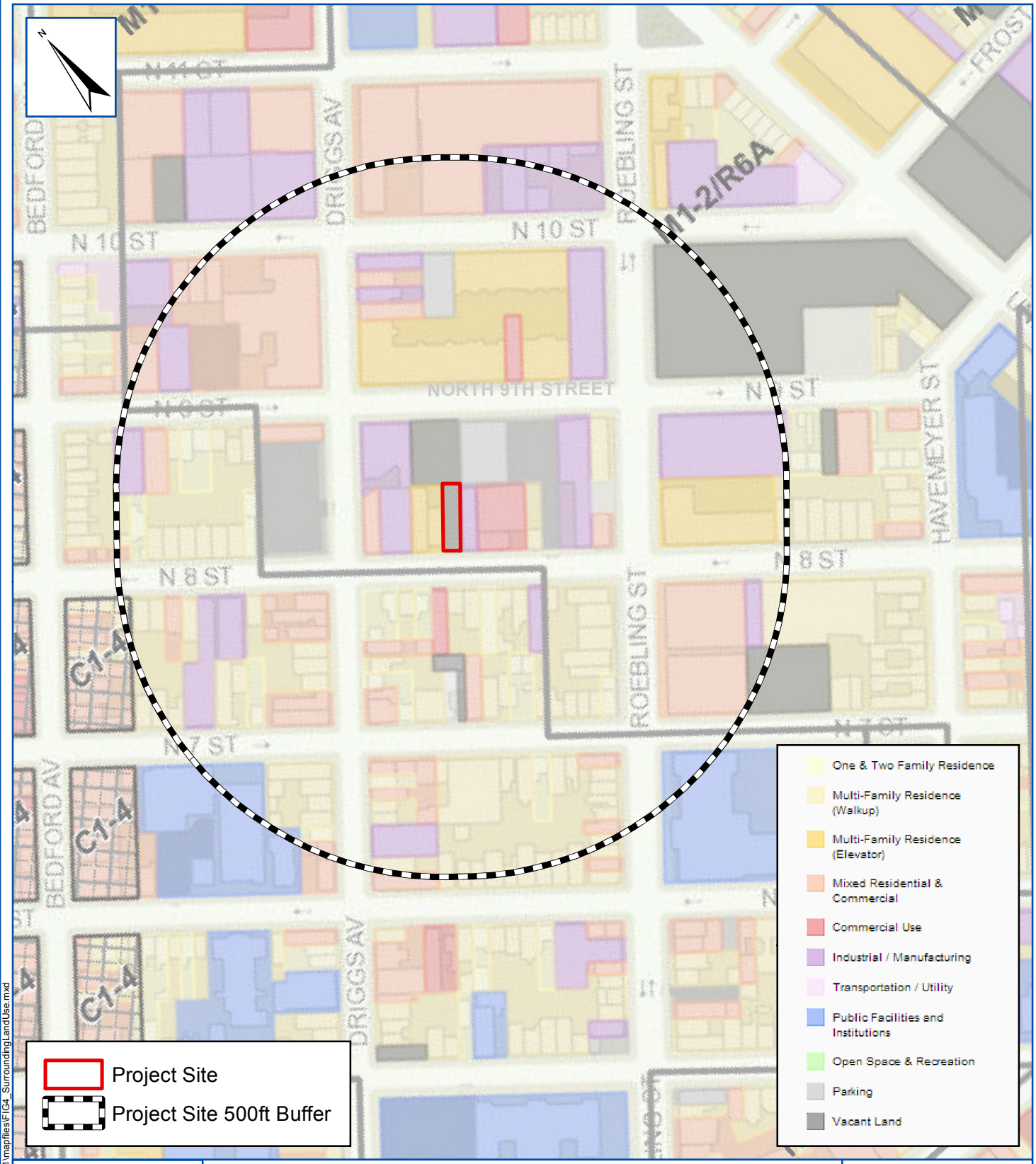
REDEVELOPMENT PLAN PROPOSED CELLAR LEVEL

207 NORTH 8TH ST
BROOKLYN, NY

FIGURE NO:
3

SHEET:

Document Path: Z:\GIS\Projects\M-R\NEN\1301\mapfiles\FIG3_RedevelopmentPlan.mxd



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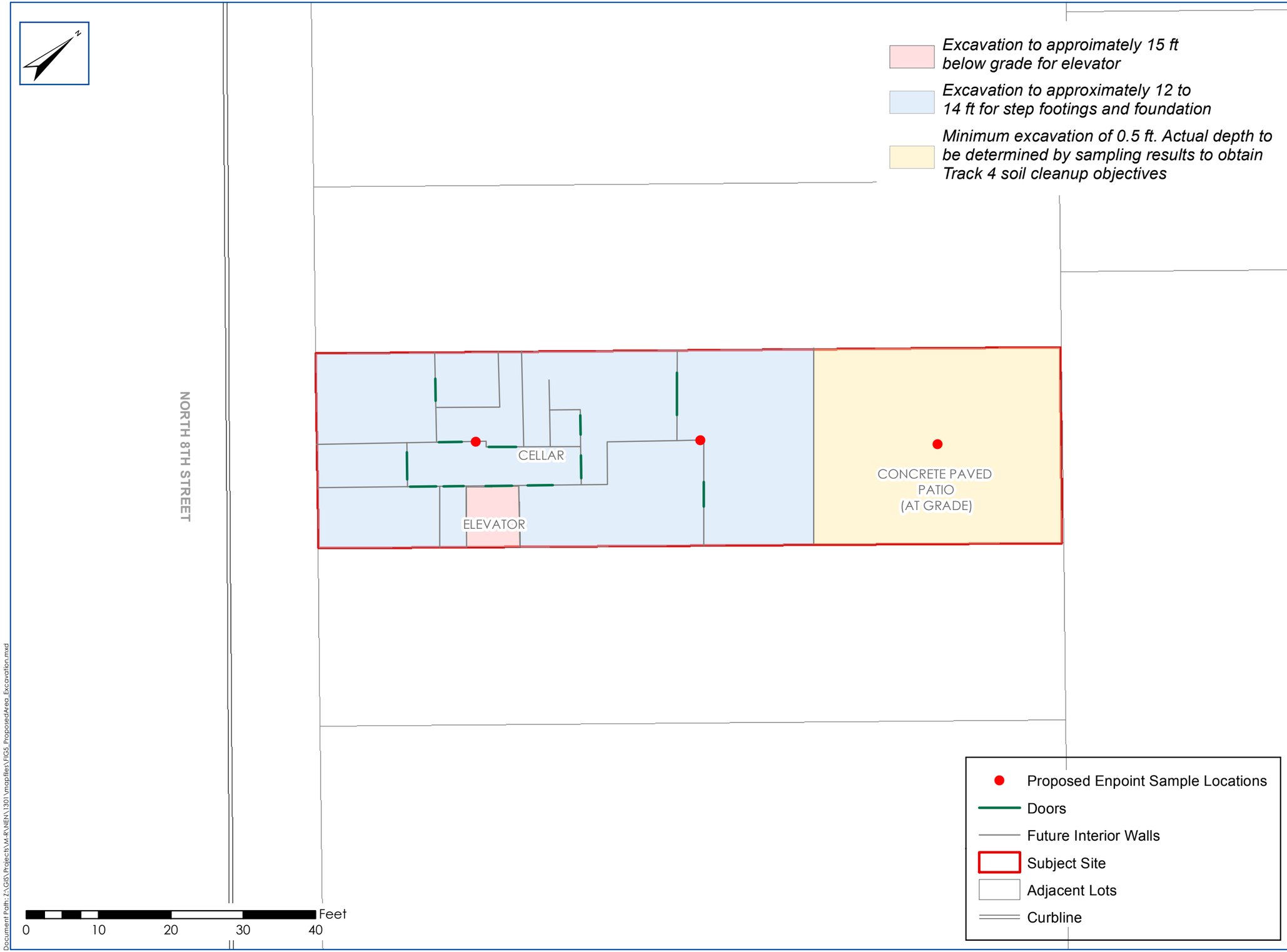
SURROUNDING LAND USE

207 NORTH 8TH STREET
BROOKLYN, NY

0 125 250 375 500 Feet

Project:	NEN1301
Date:	05/27/2014
Designed by:	BB
Drawn by:	JCG
Approved by:	JLL
Figure No:	4



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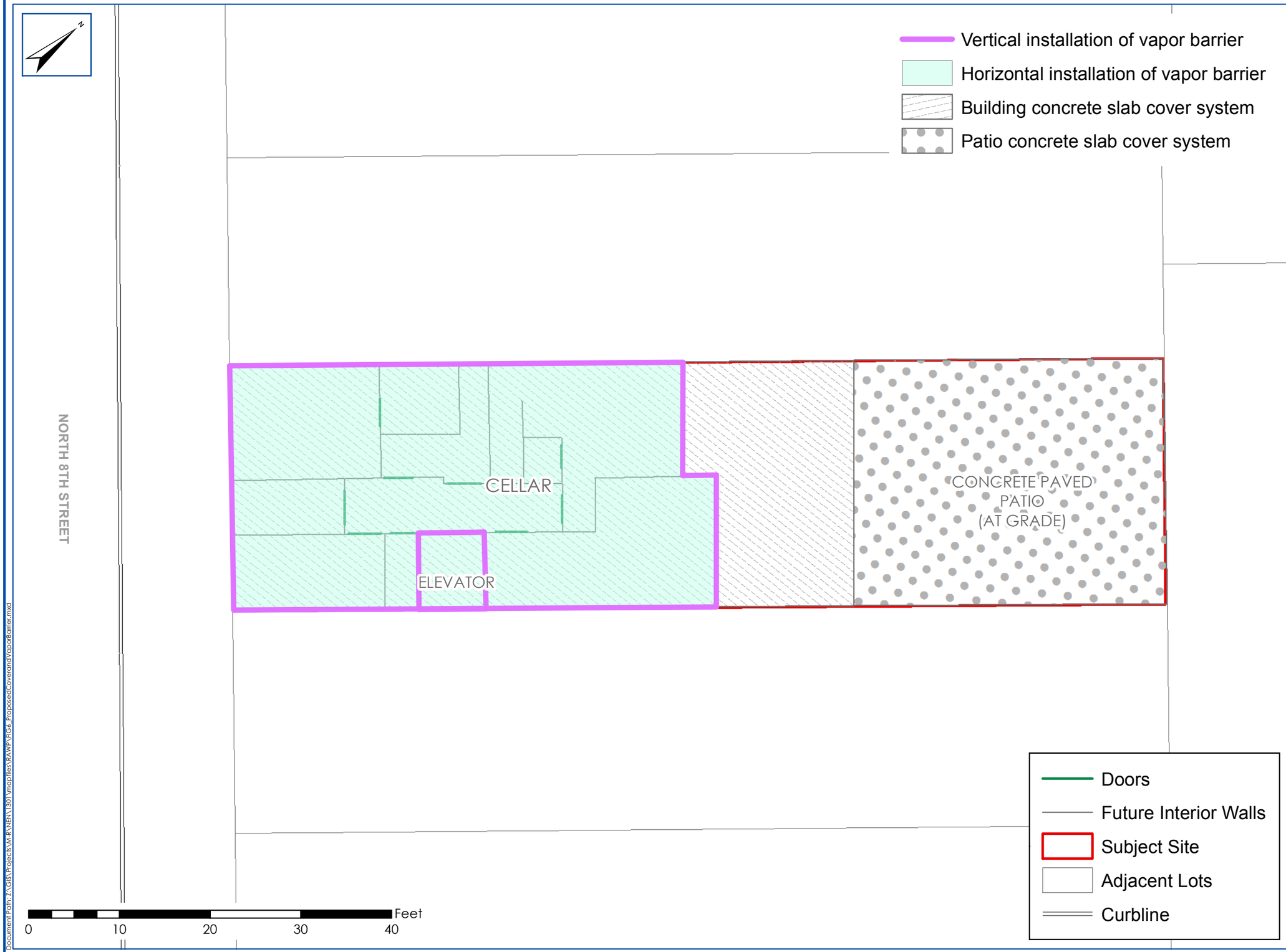
Project:	NEN1301	Designed by:	BB
Date:	07/22/2014	Drawn by:	ANM
Scale:	AS SHOWN	Approved by:	JLL

PROPOSED AREA OF EXCAVATION AND ENDPOINT SAMPLE LOCATIONS

207 NORTH 8TH ST
BROOKLYN, NY

FIGURE NO:
5

SHEET:



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DRAWING PREPARED FOR:

REVISION	DATE	INITIAL	COMMENTS

DRAWING INFORMATION:

Project:	NEN1301	Designed by:	BB
Date:	06/24/2014	Drawn by:	JCG
Scale:	AS SHOWN	Approved by:	JLL

PROPOSED COMPOSITE COVER SYSTEM AND VAPOR BARRIER INSTALLATION

207 NORTH 8TH ST
BROOKLYN, NY

FIGURE NO: 6

SHEET:

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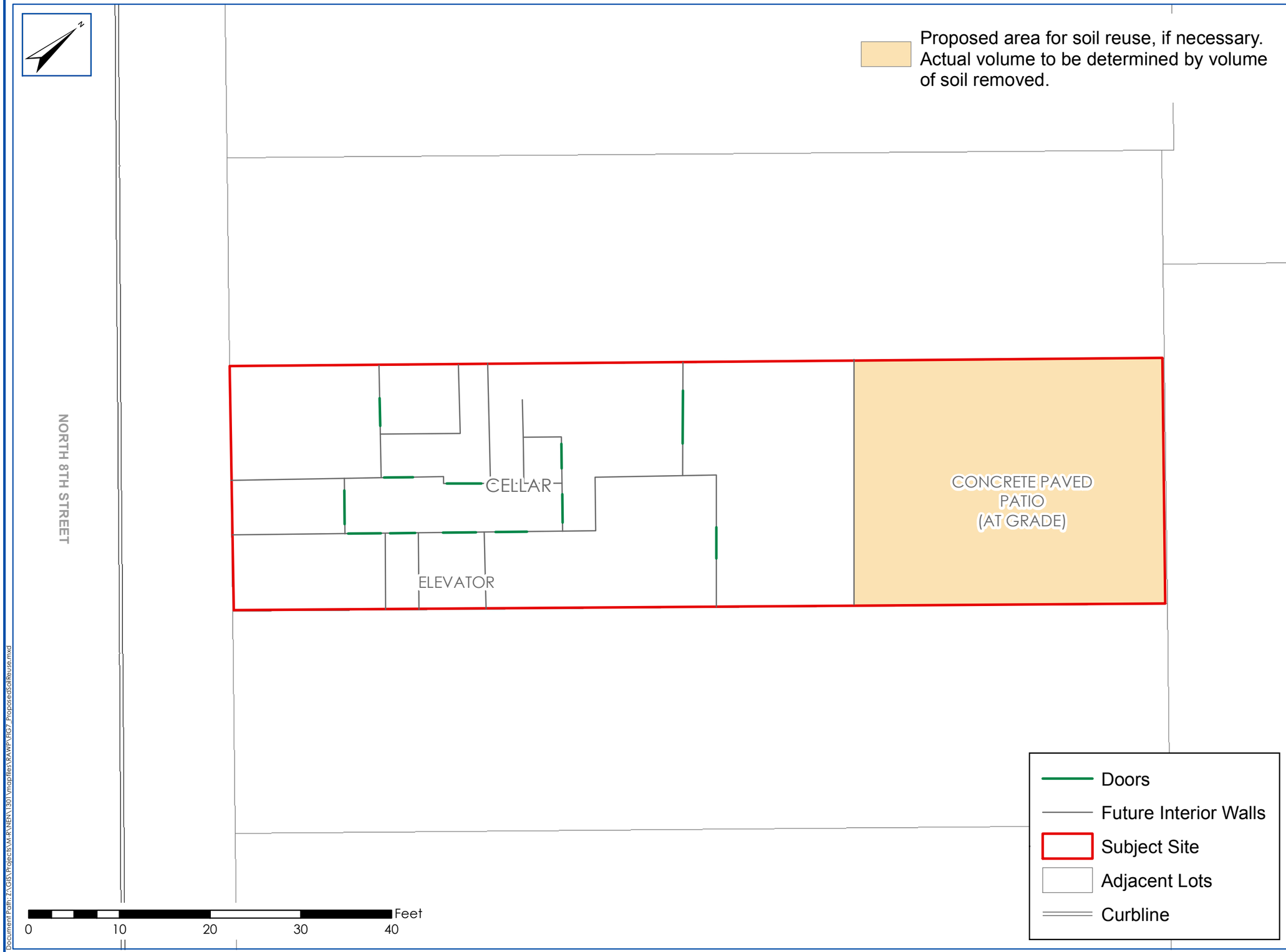

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REVISION	DATE	INITIAL	COMMENTS

DRAWING INFORMATION:

Project:	NEN1301	Designed by:	BB
Date:	06/24/2014	Drawn by:	JCG
Scale:	AS SHOWN	Approved by:	JLL

PROPOSED AREA FOR SOIL RE-USE

207 NORTH 8TH ST
BROOKLYN, NY

FIGURE NO: 7

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Tables

Table 2

Soil Cleanup Objectives for Imported Fill Material
3140 Coney Island Avenue, Brooklyn, New York

	NYSDEC (1) Soil Cleanup Objectives Unrestricted Use	NYSDEC (2) SCOs Restricted Residential
Volatile Organic Compounds in µg/kg		
1,1,1,2-Tetrachloroethane	NS	NS
1,1,1-Trichloroethane	680	100,000[a]
1,1,2,2-Tetrachloroethane	NS	NS
1,1,2 Trichloroethane	NS	NS
1,1 Dichloroethane	270	26,000
1,1 Dichloroethene	330	100,000[a]
1,1-Dichloropropene	NS	NS
1,2,3-Trichlorobenzene	NS	NS
1,2,3-Trichloropropane	NS	NS
1,2,4,5-Tetramethylbenzene	NS	NS
1,2,4-Trichlorobenzene	NS	NS
1,2,4-Trimethylbenzene	3,600	52,000
1,2 Dibromo 3 chloropropane	NS	NS
1,2 Dibromoethane	NS	NS
1,2 Dichlorobenzene	1,100	100,000[a]
1,2 Dichloroethane	20[c]	3,100
1,2 Dichloropropane	NS	NS
1,3,5-Trimethylbenzene	8,400	52,000
1,3 Dichlorobenzene	2,400	49,000
1,3-Dichloropropane	NS	NS
1,4 Dichlorobenzene	1,800	13,000
1,4-Diethylbenzene	NS	NS
2,2-Dichloropropane	NS	NS
2-Butanone / Methyl Ethyl Ketone	120	100,000[a]
2-Hexanone	NS	NS
4-Ethyltoluene	NS	NS
4-Methyl-2-pentanone	NS	NS
Acetone	50	100,000[a]
Acrylonitrile	NS	NS
Benzene	60	4,800
Bromobenzene	NS	NS
Bromochloromethane	NS	NS
Bromodichloromethane	NS	NS
Bromoform	NS	NS
Bromomethane	NS	NS
Carbon Disulfide	NS	NS
Carbon Tetrachloride	760	2,400
Chlorobenzene	1,100	100,000[a]
Chloroethane	NS	NS
Chloroform	370	49,000
Chloromethane	NS	NS
c-1,2-Dichloroethene	250	100,000[a]
c-1,3-Dichloropropene	NS	NS
Dibromochloromethane	NS	NS
Dibromoethane	NS	NS
Dichlordifluoromethane	NS	NS
Diethy ether	NS	NS
Ethyl Benzene	1,000	41,000
Hexachlorobutadiene	NS	NS
Isopropylbenzene	2,300	NS
Methyl tert butyl ether	930	100,000[a]
Methylene Chloride	50	100,000[a]
n-Butylbenzene	12,000	NS
n-Propylbenzene	3,900	100,000[a]
Naphthalene	12,000	NS
o-Chlorotoluene	NS	NS
o Xylene	260	100,000[a]
p/m-Xylene	260	100,000[a]
p-Chlorotoluene	NS	NS
p-Isopropyltoluene	10,000	NS
sec-Butylbenzene	11,000	100,000[a]
Styrene	NS	NS
tert-Butylbenzene	5,900	100,000[a]
Tetrachloroethene	1,300	19,000
Toluene	700	100,000[a]
t-1,2-Dichloroethene	190	100,000[a]
t-1,3-Dichloropropene	NS	NS
trans-1,4-Dichloro-2-butene	NS	NS
Trichloroethene	470	21,000
Trichlorofluoromethane	NS	NS
Vinyl acetate	NS	NS
Vinyl Chloride	20	900

	NYSDEC (1) Soil Cleanup Objectives Unrestricted Use
Semivolatile Organics in µg/kg by EPA 8270C	
1,2,4,5-Tetrachlorobenzene	NS
1,2,4-Trichlorobenzene	NS
1,2-Dichlorobenzene	NS
1,3-Dichlorobenzene	NS
1,4-Dichlorobenzene	NS
2,4,5-Trichlorophenol	NS
2,4,6-Trichlorophenol	NS
2,4-Dichlorophenol	NS
2,4-Dimethylphenol	NS
2,4-Dinitrophenol	NS
2,4-Dinitrotoluene	NS
2,6-Dinitrotoluene	NS
2-Chlorophenol	NS
2-Methylphenol	NS
2-Nitroaniline	NS
2-Nitrophenol	NS
3,3'-Dichlorobenzidine	NS
3-Methylphenol/4-Methylphenol	NS
3-Nitroaniline	NS
4,6-Dinitro-o-cresol	NS
4-Bromophenyl phenyl ether	NS
4-Chloroaniline	NS
4-Chlorophenyl phenyl ether	NS
4-Nitroaniline	NS
4-Nitrophenol	NS
Acetophenone	NS
Benzoic Acid	NS
Benzyl Alcohol	NS
Biphenyl	NS
Bis(2-chloroethoxy)methane	NS
Bis(2-chloroethyl)ether	NS
Bis(2-chloroisopropyl)ether	NS
Bis(2-Ethylhexyl)phthalate	NS
Butyl benzyl phthalate	NS
Carbazole	NS
Dibenzofuran	NS
Diethyl phthalate	NS
Dimethyl phthalate	NS
Di-n-butylphthalate	NS
Di-n-octylphthalate	NS
Hexachlorocyclopentadiene	NS
Isophorone	NS
Nitrobenzene	NS
NitrosoDiPhenylAmine(NDPA)/DPA	NS
n-Nitrosodi-n-propylamine	NS
P-Chloro-M-Cresol	NS
Phenol	330
Semivolatile Organics in µg/kg by EPA 8270C-SIM	
2-Chloronaphthalene	NS
2-Methylnaphthalene	NS
Acenaphthene	20,000
Acenaphthylene	100,000
Anthracene	100,000
Benzo(a)anthracene	1,000
Benzo(a)pyrene	1,000
Benzo(b)fluoranthene	1,000
Benzo(ghi)perylene	100,000
Benzo(k)fluoranthene	800
Chrysene	1,000
Dibenzo(a,h)anthracene	330
Fluoranthene	100,000
Fluorene	30,000
Hexachlorobenzene	NS
Hexachlorobutadiene	NS
Hexachloroethane	NS
Indeno(1,2,3-cd)Pyrene	500
Naphthalene	12,000
Pentachlorophenol	800
Phenanthrene	100,000
Pyrene	100,000
Total SVOCs (Track 4 SCO)	250,000

	NYSDEC (1) Soil Cleanup Objectives Unrestricted Use	NYSDEC (2) SCOs Restricted Residential
Pesticides in µg/kg by EPA 8081A		
4,4'-DDD	3.3	13,000
4,4'-DDE	3.3	8,900
4,4'-DDT	3.3	7,900
Aldrin	5	97
Alpha-BHC	20	480
Beta-BHC	36	360
Chlordane	94	4,200
cis-Chlordane	NS	NS
Delta-BHC	40	100,000
Dieldrin	5	200
Endosulfan I	2,400	24,000
Endosulfan II	2,400	24,000
Endosulfan sulfate	2,400	24,000
Endrin	14	11,000
Endrin ketone	NS	NS
Heptachlor	42	2,100
Heptachlor epoxide	NS	NS
Lindane	100	1,300
Methoxychlor	NS	NS
Toxaphene	NS	NS
trans-Chlordane	NS	NS
Total Metals in mg/kg		
Aluminum	NS	NS
Antimony	NS	NS
Arsenic	13	16
Barium	350	400
Beryllium	7.2	72
Cadmium	2.5	4.3
Calcium	NS	NS
Chromium	30	180
Cobalt	NS	NS
Copper	50	270
Iron	NS	NS
Lead (Site Specific SCO)	63	800
Magnesium	NS	NS
Manganese	1600	2,000
Mercury (Site Specific SCO)	0.18	1.5
Nickel	30	310
Potassium	NS	NS
Selenium	3.9	180
Silver	2	180
Sodium	NS	NS
Thallium	NS	NS
Vanadium	NS	NS
Zinc	109	10,000

(2) NYSDEC 6 NYCRR Environmental Remediation Programs Part 375 Restriced Use of Soil Cleanup Objective Table 375-6.8b 12/06

NS - No Standard

b - For constituents where the calculated SCO was lower than the contract required quantitation limit (CRQL), the CRQL is used as the Track 1 SCO.

APPENDIX 1

CITIZEN PARTICIPATION PLAN

The NYC Office of Environmental Remediation and 207 North Eight NY, 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, 207 North Eight NY, 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, Ms. Samantha Morris, 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. 207 North Eight NY, LLC will inspect the repositories to ensure that they are fully populated with project information. The repository for this project is:

Brooklyn Public Library: Leonard

81 Devoe Street

Brooklyn, NY 11211

718-486-3365

Mon	10:00 AM - 6:00 PM
Tue	1:00 PM - 8:00 PM
Wed	10:00 AM - 6:00 PM
Thu	10:00 AM - 6:00 PM
Fri	10:00 AM - 6:00 PM
Sat	10:00 AM - 5:00 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. No issues of public concern have been identified for this 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 207 North Eight NY, LLC, reviewed and approved by OER prior to distribution and mailed by 207 North Eight NY, 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. 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 2
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.

In order to achieve a minimum of Restricted Residential SCOs, soils outside of the scope of construction activities may be excavated. To replenish these soils and any soils removed as potential hot-spot soil excavations, an evaluation will be made to potentially reuse on-Site soils that meet Restricted Residential SCOs or to import soils from the NYC Clean Soil Bank or another off-Site source of recycled concrete aggregate (RCA) or virgin stone material.

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.

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

In an effort to reduce energy consumption via trucking, consideration will be given to reusing on-Site soils for backfill or importing soils from nearby sites enrolled in the NYC Clean Soil Bank. Specific and direct truck routes will also be developed to reduce energy consumption.

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

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

The former building was reportedly heated with fuel oil. The future building will be heated by a natural gas system which burns cleaner than fuel oil.

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

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

Part of the redevelopment of the property includes use of natural gas to heat the building eliminating the need for fuel oil tanks on-Site which have the potential to leak. A vapor barrier and a composite cover system will be installed to prevent soil vapor intrusion from off-Site sources or from residual soil/fill left in-place, if applicable.

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

Paperless Brownfield Cleanup Program. 207 North Eight NY, 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. 207 North Eight NY, 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 3

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 to proceed west on N 8th Street, make a left on Driggs Avenue, make a left on Metropolitan Avenue, make a right on Marcy Avenue and proceed onto the Brooklyn Queens Expressway. 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.

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. The expected location for placement of reused material is shown in **Figure 7**.

If on-Site materials will be reused, they will be placed directly on the area requiring reuse. Stockpiling of soils for reuse is not anticipated; however, if stockpiles are required, they will be constructed no higher than the construction fencing or neighboring fencing and will be placed on and covered with plastic sheeting.

Organic matter (wood, roots, stumps, etc.) or other waste derived from clearing and grubbing of the Site will not be buried on-Site. Soil or fill excavated from the site for grading or other purposes will not be reused within a cover soil layer or within landscaping berms.

1.8 Demarcation

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

methods. As appropriate, a map showing the method of demarcation for the Site and all associated documentation will be presented in the RAR.

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

1.9 Import of Backfill Soil from Off-Site Sources

This Section presents the requirements for imported fill materials to be used below the cover layer and within the clean soil cover layer. All imported soils will meet OER-approved backfill and cover soil quality objectives for this Site. The backfill and cover soil quality objectives are listed in **Table 1**; based upon the Site's ability to achieve Track 1 SCOs, any imported material will meet either Unrestricted Use SCOs or Restricted Residential SCOs.

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 4

HEALTH AND SAFETY PLAN

REDEVELOPMENT PROJECT
207 N 8TH STREET (BLOCK 2313, LOT 27)
BROOKLYN, NEW YORK 11211
NYCOER NO. 14EHAZ095K

REMEDIAL ACTION WORK PLAN
HEALTH & SAFETY PLAN

SUBMITTED TO:

New York City Office of Environmental Remediation
E-Designation Program
100 Gold Street, 2nd Floor
New York, New York 10038

PREPARED FOR:

North Eight NY, LLC
900 Grant Avenue
Brooklyn, New York 11211

PREPARED BY:

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PWGC Project Number: NEN1301

JULY, 2014

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1.0 STATEMENT OF COMMITMENT

On-site employees may be exposed to risks from hazardous conditions related to the Subsurface Investigation activities to be performed on the 207 N 8th Street site in Brooklyn, New York project site. P.W. Grosser Consulting Inc.'s (PWGC's) policy is to minimize the possibility of work-related injury through awareness and qualified supervision, health and safety training, medical monitoring, use of appropriate personal protective equipment, and the following activity specific safety protocols contained in this Health and Safety Plan (HASP). PWGC has established a guidance program to implement this policy in a manner that protects personnel to the maximum reasonable extent.

This HASP, which applies to PWGC personnel actually or potentially exposed to safety or health hazards, describes emergency response procedures for actual and potential physical and chemical hazards. This HASP is also intended to inform and guide personnel entering site work zones. Persons are to acknowledge that they understand the potential hazards and the contents of this Health and Safety policy by signing off on receipt of their individual copy of the document. Contractors and suppliers are retained as independent contractors and are responsible for ensuring the health and safety of their own employees.

PWGC may require that its personnel take certain precautions in accordance with this HASP and PWGC requests that others protect their personnel in a manner that they deem necessary or sufficient.

2.0 INTRODUCTION AND SITE ENTRY REQUIREMENTS

This document describes the health and safety guidelines developed by PWGC at the request of the "Developer" for the proposed Subsurface Investigation to be performed at the 207 N 8th Street site in Brooklyn, New York ("the Site") to protect on-site personnel, visitors, and the public from physical harm and exposure to hazardous materials or wastes. In accordance with the Occupational Safety and Health Administration (OSHA) 29 CFR Part 1910.120 Hazardous Waste Operations and Emergency Response (HAZWOPER) Final rule, this HASP, including the attachments, addresses safety and health hazards relating to each phase of site operations and is based on the best information available. The HASP may be revised by PWGC at the request of the Developer, and/or regulatory agency upon receipt of new information regarding site conditions. Changes will be documented by written amendments signed by PWGC's project director, project manager, and/or site safety officer.

2.1 Training Requirements

Personnel entering the exclusion zone or decontamination zone must meet the training requirements for hazardous waste site operations and emergency response operations in accordance with OSHA 29 CFR 1910.120(e).

Each subcontractor and supplier working on the job must provide the site safety officer with training documentation for its personnel upon request.

2.2 Medical Monitoring Requirements

PWGC personnel and visitors entering the exclusion zone or decontamination zone must have completed appropriate medical monitoring required under OSHA 29 CFR 1910.120(f). Medical monitoring enables a physician to monitor each employee's health, physical condition, and his fitness to wear respiratory protective equipment and carry out on-site tasks.

Evidence of compliance with additional medical monitoring requirements for this site must also be included upon request.

2.3 Fit Test Requirements

Personnel and visitors entering a work zone using a negative pressure air purifying respirator (APR) must have successfully passed a qualitative respirator fit test in accordance with OSHA 29 CFR 1910.134 or the American National Standards Institute (ANSI).

Fit testing documentation is the responsibility of each subcontractor. Documentation of PWGC's personnel fit-testing is maintained on file. PWGC does not anticipate the need for work to be performed using APR's.

2.4 Site Safety Plan Acceptance, Acknowledgement and Amendments

The project superintendent and the site safety officer are responsible for informing personnel (P.W. Grosser employees and/or owner or owner's representatives) entering a work area of the contents of this plan and ensuring that each person signs the safety plan acknowledging the on-site hazards and procedures required to minimize exposure to adverse effects of these hazards. A copy of the Acknowledgement Form is included in **Appendix A**.

Site conditions may warrant an amendment to the HASP. Amendments to the HASP are acknowledged by completing forms included in **Appendix B**.

2.5 Daily Safety Meetings

Each day before work begins; the site safety officer will hold safety (tailgate or tool box) meetings to ensure that on-site personnel understand the site conditions and operating procedures and to address safety questions and concerns. Meeting minutes and attendance will be recorded. Personnel eligible to enter a work zone must attend the meetings. Project staff will discuss and remedy health and safety issues at these meetings.

2.6 Key Personnel – Roles and Responsibilities

The following PWGC key personnel are planned for this project:

- PWGC Project Director — Mr. Andy Lockwood
- PWGC Project Manager — Miss Jennifer Lewis
- PWGC Site Safety Officer — Mr. Ryan Morley, or assignee

The PWGC project manager is responsible for overall project administration and, with guidance from the PWGC site safety officer, for supervising the implementation of this HASP. The site safety officer will conduct daily (tail gate or tool box) safety meetings at the project site and oversee daily safety issues. Each subcontractor and supplier (defined as an OSHA employer) is also responsible for the health and safety of its employees. If there is any dispute about health and safety or project activities, on-site personnel will attempt to resolve the issue. If the issue cannot be resolved at the site, then the project manager will be consulted.

The PWGC site safety officer is also responsible for coordinating and enforcing health and safety activities on-site. The site safety officer must meet the emergency response and hazardous materials training requirements of OSHA 29 CFR Part 1910.120; must have completed OSHA supervisor training, 29 CFR 1910.120 (e) 4; and must have appropriate experience to the related site work. The site safety officer is authorized to suspend the site work based on safety concerns, and is responsible for the following:

1. Educating personnel about information in this HASP and other safety requirements to be observed during site operations, including, but not limited to, decontamination procedures, designation of work zones and levels of protection, air monitoring, fit testing, and emergency procedures dealing with fire and first aid.
2. Coordinating site safety decisions with the project manager.
3. Designating exclusion, decontamination and support zones (work zones) on a daily basis.
4. Monitoring the condition and status of known on-site hazards and maintaining and implementing the air quality monitoring program specified in this HASP.
5. Maintaining the work zone entry/exit log and site entry/exit log.
6. Maintaining records of safety problems, corrective measures and documentation of chemical exposures

or physical injuries (the site safety officer will document these conditions in a bound notebook and maintain a copy of the notebook on-site).

The person who observes safety concerns and potential hazards that have not been addressed in the daily safety meetings should immediately report their observations/concerns to the site safety officer or appropriate key personnel.

3.0 SITE BACKGROUND AND SCOPE OF WORK

The Site is located in the Williamsburg section of the Borough of Brooklyn and is identified as Block 2313 and Lot 27. Currently, the Site is a vacant lot. The site will be redeveloped with a six story residential building with a cellar and a paved courtyard.

(PWGC) performed a Phase I environmental site assessment (ESA) which included a review of the property background and available environmental resources and a site walkthrough. PWGC reviewed an environmental database report provided by Environmental Data Resources, Inc. (EDR) and historical site information (including historical Sanborn fire insurance maps) for the property. Based on the review, PWGC identified the following:

- The Site appears to have been used as a residential dwelling from at least 1887 through 2007 and was identified as a vacant lot from at least 2009.
- The Site and neighboring properties have been assigned an "E" designation for Hazmat. Several neighboring properties have documented environmental concerns.
- An underground storage tank (UST) storing heating oil appears to have been removed from the site around 1992.
- The Site appears to have had a basement; however, the Site is now level with the sidewalk with unknown fill material.

In order to address New York City Office of Environmental Remediation (NYCOER) investigation requirements for satisfaction of the "E" designation program, a Phase II ESA was performed to identify and characterize potential contaminants within the surface/subsurface at the site.

As part of the Phase II ESA, a geophysical investigation was performed; an UST was not located. Soil borings, monitoring wells, and soil vapor implants were installed on the Site; impact to the on-Site soil, groundwater, and soil vapor was identified. Impacts generally included historic fill material (semi-volatile organic compounds [SVOCs] and metals) and minor detections of pesticides, petroleum impact to the groundwater, and elevated concentrations of petroleum related compounds in the soil vapor.

4.0 HAZARD ASSESSMENT

This section identifies the hazards associated with the proposed scope of work, general site operations which may also be conducted at site, and the standard operating procedures (SOPs) that should be implemented to reduce the hazards; identifies general physical hazards that can be expected at most sites; and presents a summary of documented or potential chemical hazards at the site. Every effort must be made to reduce or eliminate these hazards. Those that cannot be eliminated must be guarded against using engineering controls and/or personal protective equipment.

4.1 Activity-Specific Hazards and Standard Operating Procedures

4.1.1 Drilling and Probing Operations

Soil borings and groundwater monitoring wells using Geoprobe® direct push technology (or equivalent) will be installed as part of the proposed subsurface investigation. PWGC and/or subcontractors shall follow the Geoprobe® direct push drill rig Standard Operating Procedures (or equivalent), included as **Appendix C**.

4.1.2 Work in Extreme Temperatures

Work under extremely hot or cold weather conditions requires special protocols to minimize the chance that employees will be affected by heat or cold stress. As necessary, PWGC shall follow the heat and cold stress safety protocols included as **Appendix D**.

4.1.3 Dust Control and Monitoring

Dust generated during work activities may contain contaminants associated with the site characteristics. Dust generation is not anticipated during the subsurface investigation. In the event that fugitive dust is generated, PWGC shall control the dust by wetting the working surface with water, or other approved method of dust suppression.

4.2 Chemical Hazards

Historic environmental investigations at the subject site and throughout the five boroughs of New York City have identified the widespread presence of historic urban fill material, which contains slightly elevated concentrations of SVOCs and metals.

The primary routes of exposure to contaminants in soil are inhalation, ingestion and absorption.

Appendix E includes information sheets for the potential chemicals that may be encountered at the site.

4.2.1 Respirable Dust

The subsurface investigation activities are not anticipated to generate particulate dust; however dust may be generated from vehicular traffic and/or other construction activities. If visible observation detects elevated levels of dust, a program of wetting will be employed by the site safety officer. If elevated dust levels persist, the site safety office will employ dust monitoring using a particulate monitor (MiniRAM or equivalent). If monitoring detects concentrations greater than 150 µg/m^3 over daily background, the site safety officer will take corrective actions as defined herein, including the use of water for dust suppression and if this is not effective, requiring

workers to wear APRs with efficiency particulate air (HEPA) cartridges.

Absorption pathways for dust and direct contact with soils will be mitigated with the implementation of latex gloves, hand washing, and decontamination exercises when necessary.

4.2.2 Organic Vapors

Based upon historical environmental investigations, the potential for isolated areas of VOCs impacts exists. Therefore, drilling/excavation activities may cause the release of organic vapors to the atmosphere. The site safety officer will monitor organic vapors with a Photoionization Detector (PID) during drilling activities to determine whether organic vapor concentrations exceed action levels shown below.

PID Response	Action
Sustained readings of 5 ppm or greater	Shut down drilling equipment and allow area to vent. Resume when readings return to background
Sustained readings of 5 ppm or greater that do not subside after venting	Implement Vapor Release Plan (Section 9.8). Re-evaluate respiratory protection as upgrade may be required.

4.3 General Site Hazards

Applicable OSHA 29 CFR 1910.120(m) standards for illumination shall apply. Work is to be conducted during daylight hours whenever possible.

Electrical power must be provided through a ground fault circuit interrupter. Equipment that will enter an excavation must be suitable and approved (i.e. intrinsically safe) for use in potentially explosive environments. Applicable OSHA 29 CFR 1926 Subpart K standards for use of electricity shall apply.

Work where there is a fall hazard will be performed using appropriate ladders and/or protection (e.g. body harness and lifeline). All work should be conducted at the ground surface or in trench excavations.

In accordance with 29 CFR 1910.151(c), workers involved in operations where there is the risk of eye injury, (chemical splash, etc.), must have ready access to an approved eye wash unit. Protective eye wear shall be donned in Level D, when directed by the site safety officer.

Operations where there is a potential for fire will be conducted in a manner that minimizes risk. Non-sparking tools and fire extinguishers shall be used or available as directed by the site safety officer when work is in potentially explosive atmospheres. Ignition sources shall be removed from work areas. Explosion-proof instruments and/or bonding and grounding will be used to prevent fire or explosion when the site safety officer directs their use.

Overhead and underground utilities shall be identified and/or inspected and appropriate safety precautions taken before conducting operations where there is potential for contact or interference.

5.0 PERSONAL PROTECTIVE EQUIPMENT

Personal protective equipment (PPE) shall be selected in accordance with the site air monitoring program, OSHA 29 CFR 1910.120(c), (g), and 1910.132. Protective equipment shall be NIOSH-approved and respiratory protection shall conform to OSHA 29 CFR Part 1910.133 and 1910.134 specifications; head protection shall conform to 1910.135; eye and face protection shall conform to 1910.133; and foot protection shall conform to 1910.136. The only true difference among the levels of protection from D thru B is the addition of the type of respiratory protection.

PWGC anticipates that work performed under the scope of the proposed Phase II investigation will be conducted in Level D PPE.

5.1 Level D

Level D PPE shall be donned when the atmosphere contains no known hazards and work functions preclude splashes, immersion, or the potential for inhalation of, or contact with, hazardous concentrations of harmful chemicals. Level D PPE consists of:

- standard work uniform, coveralls, or tyvek, as needed;
- steel toe and steel shank work boots;
- hard hat;
- gloves, as needed;
- safety glasses;
- hearing protection;
- equipment replacements are available as needed.

5.2 Level C

Level C PPE shall be donned when the concentrations of measured total organic vapors in the breathing zone exceed background concentrations (using a portable PID, or equivalent), but are less than 5 ppm. The specifications on the APR filters used must be appropriate for contaminants identified or expected to be encountered. Level C PPE shall be donned when the identified contaminants have adequate warning properties and criteria for using APR have been met. Level C PPE consists of:

- chemical resistant or coated tyvek coveralls;
- steel-toe and steel-shank work boots;
- chemical resistant over boots or disposable boot covers;
- disposable inner gloves (surgical gloves);
- disposable outer gloves;
- full-face APR fitted with organic vapor/dust and mist filters or filters appropriate for the identified or expected contaminants;
- hard hat;
- splash shield, as needed; and,
- ankles/wrists taped with duct tape.

The site safety officer will verify if Level C is appropriate by checking organic vapor concentrations using

compound and/or class-specific detector tubes.

5.3 Level B

Level B PPE shall be donned when the contaminants have not been identified and/or the concentrations of unknown measured total organic vapors in the breathing zone exceed 5 ppm (using a portable OVA, or equivalent). Level B PPE shall be donned if the IDLH of a known contaminant is exceeded. If a contaminant is identified or is expected to be encountered for which NIOSH and/or OSHA recommend the use of a positive pressure self-contained breathing apparatus (SCBA) when that contaminant is present, Level B PPE shall be donned even though the total organic vapors in the breathing zone may not exceed 5 ppm. Level B shall be donned for confined space entry, and when the atmosphere is oxygen deficient (oxygen less than 19.5%) or potentially oxygen deficient. If Level B PPE is required for a task, at least three people shall be donned in Level B at any one time during that task. PPE shall only be donned at the direction of the site safety officer. Level B PPE consists of:

- supplied air SCBA or air line system with five minute egress system;
- chemical resistant coveralls;
- steel-toe and steel-shank work boots;
- chemical resistant over boots or disposable boot covers;
- disposable inner gloves;
- disposable outer gloves;
- hard hat; and,
- ankles/wrists taped.

The exact PPE ensemble is decided on a site-by-site basis by the PWGC Health and Safety Officer with the intent to provide the most protective and efficient worker PPE.

5.4 Activity Specific Levels of Personal Protection

The required level of PPE is activity-specific and is based on air monitoring results (Section 7.0) and properties of identified or expected contaminants. It is expected that all site work will be performed in Level D. If air monitoring results indicate the necessity to upgrade the level of protection engineering controls (i.e. Facing equipment away from the wind and placing site personnel upwind of excavations, active venting, etc.) will be implemented before requiring the use of respiratory protection.

6.0 DECONTAMINATION PROCEDURES

Equipment and PPE exiting the exclusion zone must be decontaminated or properly discarded upon exit. Personnel must enter and exit the exclusion zone through the decontamination area. The exclusion and decontamination zones may change depending on the nature of the site work. Plastic bags containing personal protective clothing and equipment will be placed in designated receptacles.

Boots and other potentially contaminated garments that have come in contact with hazardous materials will be cleaned in wash tubs with detergent/water solution and rinsed with water and must remain on site. The wash water, rinse water, and residues will be collected and properly stored until sampling results are received and the final method of disposal can be determined. Disposable PPE, including spent respirator cartridges and canisters, will be properly bagged and disposed. Contaminated boots, clothing, and equipment (e.g. leather boots, equipment carrying straps) that cannot be decontaminated will be disposed of with the disposable garments or left on site in the decontamination trailer.

The ***minimum*** measures for Level B doffing and decontamination are:

- deposit equipment on plastic drop cloths;
- scrub outer boots and gloves with a water and detergent solution and rinse;
- remove outer boots and outer gloves. Discard disposable outer garments in receptacle provided;
- remove SCBA and face piece and place on rack provided;
- remove tyvek/outer garment and place in receptacle provided;
- remove inner gloves and deposit in receptacle provided; and,
- shower/wash face and hands.

The ***minimum*** measures for Level C doffing and decontamination are:

- deposit equipment on plastic drop cloths;
- scrub outer boots and gloves (if worn) with a water and detergent solution and rinse;
- remove outer boots and outer gloves. Discard disposable outer garments in receptacle provided;
- remove tyvek/outer garment and place in receptacle provided;
- remove first pair of inner gloves;
- remove respirator (using "clean" inner gloves) and place on rack provided;
- remove last pair of inner gloves and deposit in receptacle provided; and,
- shower/wash face and hands.

The second to last item to be removed is the APR, and the last item to be removed is the last of several pairs of surgical gloves. Wearing several pairs of inner gloves permits layers to be removed as needed during various stages of the doffing procedure, and if the APR inadvertently becomes contaminated, inner gloves guard against bare hands contacting the APR.

Equipment that comes into contact with site contaminants is decontaminated according to manufacturer specifications. Decontamination is done in the exclusion or decontamination zones. Rented equipment is photographed after decontamination.

7.0 AIR MONITORING AND ACTION LEVELS

29 CFR 1910.120(h) specifies that monitoring shall be performed where there may be a question of employee exposure to hazardous concentrations of hazardous substances in order to assure proper selection of engineering controls, work practices and personal protective equipment so that employees are not exposed to levels which exceed permissible exposure limits, or published exposure levels if there are no permissible exposure limits, for hazardous substances.

7.1 Community Air Monitoring Requirements

If excavation work is performed, fugitive respirable dust will be monitored using a MiniRAM Model PDM-3 aerosol monitor or equivalent and air will be monitored for VOCs with a MiniRAE 2000 PID or the equivalent. If necessary, carbon dioxide and carbon monoxide will be monitored with a three-position analyzer and Lower Explosive Limit (LEL) and oxygen will be monitored with a Combustible Gas Indicator (CGI). Air will be monitored when any of the following conditions apply:

- initial site entry;
- during any work where a potential IDLH condition or flammable atmosphere could develop;
- excavation work begins on another portion of the site;
- contaminants, other than those previously identified, have been discovered;
- each time a different task or activity is initiated;
- during trenching and/or excavation work; or
- before and during entry into confined spaces.

The designated site safety officer will record air monitoring data. PWGC's site safety officer or delegate must ensure that air monitoring instruments are calibrated and maintained in accordance with manufacturer's specifications. Instruments will be zeroed daily and checked for accuracy. A daily log will be kept. Monitoring results will be recorded on the sheets contained in Appendix F.

Below are examples of site specific guidelines and actions which are taken based on routine air monitoring:

- OVA/PID readings for VOCs sustained at background and 5 ppm over the site specific background in breathing zone: continue.
- OVA/PID readings for VOCs sustained between 5 ppm and 25 ppm over the site specific background in breathing zone: Level C PPE. (See Note)
- OVA/PID readings for VOCs sustained >25 ppm over the site specific background in breathing zone: Level B PPE. (See Note)

Note: To ensure that readings are not generated by methane, screen vapors with a PID[1]. If the PID reading is less than 5 ppm, continue work (assume vapors are methane). If PID readings are over 5 ppm allow the work zone to vent. If PID and OVA readings continue to persist over 5 ppm, request PWGC to screen the area with compound specific detector tubes for benzene.

If this compound is not present then level C can be worn.

OVA readings >5 ppm in breathing zone: Level B PPE.

Total Respirable Dust at background in breathing zone: continue.

Total Respirable Dust at 150 mg/m3 in breathing zone: Level C PPE - HEPA filters. Site safety officer can call for upgrades based on visual dust without metering total respirable dust.

Prior to site work, the PWGC site safety officer will compile a list of likely site contaminants, select appropriate air monitoring instrumentation and define action levels.

7.2 Perimeter Air Monitoring

To establish ambient air background concentrations, air will be monitored at several locations around the site perimeter before drilling/excavation activities begin. These points will be monitored periodically in series during the site work. VOCs will be monitored with a MiniRAE 2000 PID or the equivalent. If appropriate, fugitive dust will be monitored using a MiniRAM Model PDM-3 aerosol monitor, or equivalent.

The specific guidelines for actions to be taken based on air monitoring at the site perimeter are listed below:

OVA/PID readings for VOCs less than 5.0 ppm over background: continue.

OVA/PID readings for VOCs greater than 5.0 ppm over background: stop work and implement vapor release contingency plan until readings return to acceptable levels.

Total Respirable Dust below 100 $\mu g/m^3$: continue.

Total Respirable Dust above 100 $\mu g/m^3$ in breathing zone: stop work and implement dust control measures (Section 3.0) until readings return to acceptable levels.

7.3 Activity Specific Air Monitoring

The monitoring of VOC concentrations present in the employees breathing zone will be periodically monitored during drilling/excavation activities using a MiniRAE 2000 PID or the equivalent. Air monitoring results will be recorded in the field log book. No trenches/excavations will be entered until they have been checked for combustible gases, percent oxygen VOCs and carbon dioxide. An MSA Model 361 combustible gas indicator, or the equivalent will be used to monitor trenches/excavations for the above listed compounds. If additional monitoring is required, the protocols will be developed and appended to this plan.

8.0 SITE CONTROL

8.1 Work Zones

The primary purpose of site controls is to establish the perimeter of a hazardous area, to reduce the migration of contaminants into clean areas, and to prevent access or exposure to hazardous materials by unauthorized persons. When operations are to take place involving hazardous materials, the site safety officer will establish an exclusion zone, a decontamination zone, and a support zone. These zones "float" (move around the site) depending on the tasks being performed on any given day. The site safety officer will outline these locations before work begins and when zones change. The site safety officer records this information in the site log book. **It is expected that for subsurface investigation activities, identification of an exclusion zone, decontamination zone, and support zone will not be necessary.**

Tasks requiring OSHA 40-hour Hazardous Waste Operations and Emergency Response Operations training are carried out in the exclusion zone. The exclusion zone is defined by the site safety officer but will typically be a 50-foot area around work activities. Gross decontamination (as determined by the site Health and Safety Officer) is conducted in the exclusion zone; all other decontamination is performed in the decontamination zone or trailer.

Protective equipment is removed in the decontamination zone. Disposable protective equipment is stored in receptacles staged in the decontamination zone, and non-disposable equipment is decontaminated. All personnel and equipment exit the exclusion zone through the decontamination zone. If a decontamination trailer is provided the first aid equipment, an eye wash unit, and drinking water are kept in the decontamination trailer.

The support zone is used for vehicle parking, daily safety meetings, and supply storage. Eating, drinking, and smoking are permitted only in the support zone. When a decontamination trailer is not provided, the eye wash unit, first aid equipment, and drinking water are kept at a central location designated by the site safety officer.

8.2 General Field Safety and Standard Operating Procedures

PWGC's policy is to control hazards at all site areas by limiting entrance to exclusion zones to essential personnel and by implementing the following rules:

- Non-essential (as judged by the site safety officer) personnel and unauthorized persons will not enter the exclusion or decontamination zone.
- Before entering the exclusion or decontamination zones, all personnel must be familiar with emergency response procedures (Section 9.0), site safety locations, first aid and communication equipment, and the location of the map to the hospital and the list of emergency telephone numbers.
- The buddy system will be used at all times by field personnel in the exclusion zone; no one is to perform work within the exclusion zone alone. When in Level D or C, visual contact or radio contact shall be maintained at all times.
- Contact with contaminated and potentially contaminated surfaces should be avoided. Walk around (not through) puddles and discolored surfaces. Do not kneel on the ground or place equipment on the ground. Protect equipment from contamination.

- Eating, drinking, or smoking is permitted only in designated areas in the support zone.

Each worker must be supplied with and maintain his/her own personal protective equipment.

9.0 CONFINED SPACE

OSHA published a Final Rule on permit-required confined spaces on January 14, 1993, for General Industry at 29 CFR 1910.146 et seq., with an implementation date of April 15, 1993. The rule specifically excludes agriculture, construction, or shipyard employment. Confined space entry and work within confined spaces is not anticipated to be performed under the proposed scope of work. However, if confined space work is conducted it will be performed in accordance with the applicable OSHA regulations. OSHA defines confined space as:

1. is large enough and so configured that an employee can bodily enter and perform assigned work;
2. has limited or restricted areas for entry or exit (for example, tanks, vessels, silos, storage bins, hoppers, vaults, and pits are spaces that may have limited entry); and
3. is not designed for continuous worker occupancy.

OSHA further requires that an "entry supervisor" (the site designated safety officer) decide at the time of entry whether the space is permit-required or non-permit required space. The site safety officer will monitor the space two hours prior to entry and continuously during work to ensure that the atmosphere is not hazardous. OSHA defines as hazardous atmosphere as:

1. Flammable gas, vapor, or mist in excess of 10 percent of its lower explosive limit (LEL);
2. Airborne combustible dust at a concentration that meets or exceeds its LEL;NOTE: This concentration may be approximated as a condition in which the dust obscures vision at a distance of 5 feet (1.52 m) or less.
3. Atmospheric oxygen concentration below 19.5 percent or above 23.5 percent;
4. Atmospheric concentration of any substance for which a dose or a permissible exposure limit is published in Subpart G, Occupational Health and Environmental Control, or in Subpart Z. Toxic
5. and Hazardous Substances, of this part and which could result in employee exposure in excess of its dose or permissible exposure limit;
6. Any other atmospheric condition that is immediately dangerous to life or health.

A space is non-permit required if none of the above defined hazardous conditions are present. OSHA requires that an attendant (e.g., an individual stationed outside one or more spaces who monitors the entrants and who performs air monitoring of the space(s)) be assigned to each space. The attendant is not allowed to perform any direct rescue related duties, but is there to communicate with the entrant and call for rescue procedures if required.

The following protocol applies when PWGC employees must enter a confined space:

- The site safety officer evaluates the space and site conditions to determine whether the space must be considered "confined".

- If so, the site safety officer monitors the space for hazardous atmospheres prior to entry and fills out a pre-entry checklist (**Appendix F**) to determine whether an entry-permit is required.
- If there is no hazardous atmosphere, the space will be continuously monitored during the entry to assure that the atmosphere remains non-hazardous.
- If the space contains a hazardous atmosphere, an entry permit (**Appendix F**) will be prepared and the space will only be entered in accordance with 29 CFR 1910.146.

10.0 CONTINGENCY PLAN/EMERGENCY RESPONSE PLAN

Site personnel must be prepared in the event of an emergency. Emergencies can take many forms: illnesses, injuries, chemical exposure, fires, explosions, spills, leaks, releases of harmful contaminants, or sudden changes in the weather.

Emergency telephone numbers and a map to the hospital (Figure 1) will be posted in the command post. Site personnel should be familiar with the emergency procedures, and the locations of site safety, first aid, and communication equipment.

10.1 Emergency Equipment On-site

Private telephones:	Site personnel.
Two-way radios:	Site personnel where necessary.
Emergency Alarms:	On-site vehicle horns*.
First aid kits:	On-site, in vehicles or office.
Fire extinguisher:	On-site, in office or on equipment.

* Horns: Air horns will be supplied to personnel at the discretion of the project manager or site safety officer.

10.2 Emergency Telephone Numbers

General Emergencies - New York City Police/Fire Department/Ambulance	911
Non-Emergency Hotline - New York City Police/Fire Department/Ambulance	311
Local Emergency Medical Center (Mt. Sinai Hospital Queens)	1-718-932-1000
National Response Center	1-800-424-8802
Poison Control	1-212-340-4494
NYSDEC Spills Division	1-800-457-7362
NYSDEC Hazardous Waste Division	1-718-482-4994
NYC Office of Environmental Remediation	1-212-788-8841
NYC Department of Health	1-212-788-4711
PWGC Project Director, Andy Lockwood	1-631-589-6353
PWGC Project Manager, Jennifer Lewis	1-631-589-6353
PWGC Site Safety Officer, Ryan Morley (or assignee)	1-516-424-4603

A copy of this page shall be posted in the office and a copy is provided in **Appendix G**.

10.3 Personnel Responsibilities During an Emergency

The project manager is primarily responsible for responding to and correcting any emergency situations. However, in the absence of the project manager, the site safety officer shall act as the project manager's on-site designee and perform the following tasks:

- Take appropriate measures to protect personnel including: withdrawal from the exclusion zone, evacuate and secure the site, or upgrade/downgrade the level of protective clothing and respiratory protection;
- Ensure that appropriate federal, state, and local agencies are informed and emergency response plans

are coordinated. In the event of fire or explosion, the local fire department should be summoned immediately. If toxic materials are released to the air, the local authorities should be informed in order to assess the need for evacuation;

- Ensure appropriate decontamination, treatment, or testing for exposed or injured personnel;
- Determine the cause of incidents and make recommendations to prevent recurrence; and,
- Ensure that all required reports have been prepared.

The following PWGC key personnel are planned for this project:

- PWGC Project Director Mr. Andy Lockwood
- PWGC Project Manager Mr. Jennifer Lewis
- PWGC Site Safety Officer Mr. Ryan Morley, or assignee

10.4 Medical Emergencies

A person who becomes ill or injured in the exclusion zone will be decontaminated to the maximum extent possible. If the injury or illness is minor, full decontamination will be completed and first aid administered prior to transport. First aid will be administered while waiting for an ambulance or paramedics. A Field Accident Report (**Appendix G**) must be filled out for any injury.

A person transporting an injured/exposed person to a clinic or hospital for treatment will take the directions to the hospital and information on the chemical(s) to which they may have been exposed (**Appendix G**).

10.5 Fire or Explosion

In the event of a fire or explosion, the local fire department will be summoned immediately. The site safety officer or his designated alternate will advise the fire commander of the location, nature and identification of the hazardous materials on-site. If it is safe to do so, site personnel may:

- use firefighting equipment available on site; or,
- remove or isolate flammable or other hazardous materials that may contribute to the fire.

10.6 Evacuation Routes

Evacuation routes established by work area locations for each site will be reviewed prior to commencing site operations. As the work areas change, the evacuation routes will be altered accordingly, and the new route will be reviewed.

Under extreme emergency conditions, evacuation is to be immediate without regard for equipment. The evacuation signal will be a continuous blast of a vehicle horn, if possible, and/or by verbal/radio communication.

- When evacuating the site, personnel will follow these instructions:
- Keep upwind of smoke, vapors, or spill location.
- Exit through the decontamination corridor if possible.

- If evacuation through the decontamination corridor is not possible, personnel should remove contaminated clothing once they are in a safe location and leave it near the exclusion zone or in a safe place.
- The site safety officer will conduct a head count to ensure that all personnel have been evacuated safely. The head count will be correlated to the site and/or exclusion zone entry/exit log.
- If emergency site evacuation is necessary, all personnel are to escape the emergency situation and decontaminate to the maximum extent practical.

10.7 Spill Control Procedures

Spills associated with site activities may be attributed to project specific heavy equipment and include gasoline, diesel and hydraulic oil. In the event of a leak or a release, site personnel will inform their supervisor immediately, locate the source of spillage and stop the flow if it can be done safely. A spill containment kit including absorbent pads, booms and/or granulated speedy dry absorbent material will be available to site personnel to facilitate the immediate recovery of the spilled material. Daily inspections of site equipment components including hydraulic lines, fuel tanks, etc. will be performed by their respective operators as a preventative measure for equipment leaks and to ensure equipment soundness. In the event of a spill, site personnel will immediately notify the NYSDEC (1-800-457-7362), and a spill number will be generated.

10.8 Vapor Release Plan

If work zone organic vapor (excluding methane) exceeds 5 ppm, then a downwind reading will be made either 200 feet from the work zone or at the property line, whichever is closer. If readings at this location exceed 5 ppm over background, the work will be stopped.

If 5 ppm of VOCs are recorded over background on a PID at the property line, then an off-site reading will be taken within 20 feet of the nearest residential or commercial property, whichever is closer. If efforts to mitigate the emission source are unsuccessful for 30 minutes, then the designated site safety officer will:

- contact the local police;
- continue to monitor air every 30 minutes, 20 feet from the closest off-site property. If two successive readings are below 5 ppm (non-methane), off-site air monitoring will be halted.
- All property line and off site air monitoring locations and results associated with vapor releases will be recorded in the site safety log book.

APPENDIX A
SITE SAFETY ACKNOWLEDGMENT FORM

PWGC
Strategic Environmental Engineering Solutions

SITE SAFETY ACKNOWLEDGMENT FORM

This form serves as documentation that field personnel have read, or have been informed of, and understand the provisions of the HASP/EAP. It is maintained on site by the FTL/SHSO as a project record. Each field team member shall sign this section after site-specific training is completed and before being permitted to work on site.

I have read, or have been informed of, the Health and Safety Plan/Emergency Action Plan and understand the information presented. I will comply with the provisions contained therein.

Name (Print and Sign)	Date

APPENDIX B
SITE SAFETY PLAN AMENDMENTS

PWGC
Strategic Environmental Engineering Solutions

SITE SAFETY PLAN AMENDMENT FORM

SITE SAFETY PLAN AMENDMENT NUMBER:_____

SITE NAME:_____

REASON FOR AMENDMENT:_____

_____

_____

_____

_____

ALTERNATIVE PROCEDURES:_____

_____

_____

_____

_____

REQUIRED CHANGES IN PPE:_____

_____

_____

_____

_____

_____ _____
PROJECT DIRECTOR DATE

_____ _____
PROJECT MANAGER DATE

_____ _____
SITE SAFETY OFFICER DATE

APPENDIX C
DRILLING PROTOCOLS

SAFETY PROCEDURES DURING THE OPERATION OF DRILLING/PROBING MACHINESINCLUDE, BUT ARE NOT LIMITED TO THE FOLLOWING:

- All site personnel should know the location of the rig emergency shut-off switch prior to beginning operations.
- The rig should be inspected prior to operation to ensure that it is in proper working condition and that all safety devices are functioning.
- Each rig should have a first-aid kit and fire extinguisher which should be inspected to ensure that they are adequate.
- All operators should wear, at a minimum, hard hats, steel-toe safety shoes or boots, gloves and safety glasses. Additional clothing and protective equipment may be required at sites where hazardous conditions are likely. Clothing must be close fitting, without loose ends, straps, draw strings or belts or other unfastened parts that might catch on moving machinery.
- Work areas should be kept free of materials, debris and obstruction, and substances such as grease or oil that could cause a surface to become slick or otherwise hazardous.
- Prior to drilling, the site must be checked to determine whether it can accommodate the rig and supplies and provide a safe working area.
- The drill rig mast (derrick) must be lowered prior to moving between drilling locations.
- The drill rig masts should not be raised if the rig will not be at least 20 feet away from overhead utilities.
- The location of underground utilities should be determined prior to erecting the rig.
- The drill rigs must be properly erected, leveled and stabilized prior to drilling.
- The operator must shut down the vehicle engine before leaving the vicinity of the machine.
- All personnel not directly involved in operating the rig or in sampling should remain clear of the drilling equipment when it is in operation.
- All unattended boreholes must be adequately covered or otherwise protected to prevent trip and fall hazards. All open boreholes should be covered, protected or backfilled as specified in local or state regulations.
- When climbing to or working on a derrick platform that is higher than 20 feet, a safety climbing device should be used.
- The user of wire line hoists, wire rope and hoisting hardware should be as stipulated by the American Iron and Steel Institute Wire Rope User's Manual.
- The rig should be operated in a manner which is consistent with the manufacturers' ratings of speed, force, torque, pressure, flow, etc. The rig and tools should be used for the purposes for which they were intended.

APPENDIX D
HEAT/COLD STRESS PROTOCOLS

HEAT STRESS

Heat Stress (Hyperthermia)

Heat stress is the body's inability to regulate the core temperature. A worker's susceptibility to heat stress can vary according to his/her physical fitness, degree of acclimation to heat, humidity, age and diet.

1. Prior to site activity, the field team leader may make arrangements for heat stress monitoring (i.e., monitoring heart rate, body temperature, and body water loss) during actual site work if conditions warrant. In addition, the FTL is to ensure that each team member has been acclimatized to the prevailing environmental conditions, that personnel are aware of the signs and symptoms of heat sickness, that they have been adequately trained in first aid procedures, and that there are enough personnel on-site to rotate work assignments and schedule work during hours of reduced temperatures. Personnel should not consume alcoholic or caffeinated beverages but rather drink moderate levels of an electrolyte solution and eat well prior to commencing site work.

2. Although there is no specific test given during a baseline physical that would identify a person's intolerance to heat, some indicators are tobacco or medication use, dietary habits, body weight, and chronic conditions such as high blood pressure or diabetes.

3. *Heat cramps*, caused by profuse perspiration with inadequate fluid intake and salt replacement, most often afflict people in good physical condition who work in high temperature and humidity. Heat cramps usually come on suddenly during vigorous activity. Untreated, heat cramps may progress rapidly to heat exhaustion or heat stroke. First aid treatment: remove victim to a cool place and replace lost fluids with water.

4. Thirst is not an adequate indicator of heat exposure. Drinking fluid by itself does not indicate sufficient water replacement during heat exposure. A general rule, the amount of water administered should replace the amount of water lost, and it should be administered at regular intervals throughout the day. For every half pound of water lost, 8 ounces of water should be ingested. Water should be replaced by drinking 2 – 4 ounce servings during every rest period. A recommended alternative to water is an electrolyte drink split 50/50 with water.

5. Heat exhaustion results from salt and water loss along with peripheral pooling of blood. Like heat cramps, heat exhaustion tends to occur in persons in good physical health who are working in high temperatures and humidity. Heat exhaustion may come on suddenly as dizziness and collapse. Untreated, heat exhaustion may progress to heat stroke.

6. Treatment for heat exhaustion: Move the victim to a cool environment (e.g. air-conditioned room/car), lay victim down and fan him/her. If the air-conditioning is not available, remove the victim to a shaded area, remove shirt, and fan. If symptoms do not subside within an hour, notify 911 to transport to hospital.

7. Heat stroke results from the body's inability to dissipate excess heat. A true medical emergency that requires immediate care, it usually occurs when one ignores the signs of heat exhaustion and continues strenuous activities. Working when the relative humidity exceeds 60% is a particular problem. Workers in the early phase of heat stress may not be coherent of they will be confused, delirious or comatose. Changes in behavior, irritability and combativeness are useful early signs of heat stroke.

8. Treatment of heat stroke: Move the victim to a cool, air-conditioned environment. Place victim in a semi-reclined position with head elevated and strip to underclothing. Cool victim as rapidly as possible, applying ice packs to the arms and legs and massaging the neck and torso. Spray victim with tepid water and constantly fan to promote evaporation. Notify 911 to transport to hospital as soon as possible.

SYMPTOMS OF HEAT STRESS

Heat cramps are caused by heavy sweating with inadequate fluid intake. Symptoms include;

- Muscle cramps
- Cramps in the hands, legs, feet and abdomen

Heat exhaustion occurs when body organs attempt to keep the body cool. Symptoms include;

- Pale, cool moist skin
- Core temperature elevated 1-2o
- Thirst
- Anxiety
- Rapid heart rate
- Heavy sweating
- Dizziness
- Nausea

Heat stroke is the most serious form of heat stress. Immediate action must be taken to cool the body before serious injury and death occur. Symptoms are;

- Red, hot, dry skin
- Lack of perspiration
- Seizures
- Dizziness and confusion
- Strong, rapid pulse
- Core temperature of 104o or above
- Coma

HEAT STRESS INDICATORS

Heat stress indicator:	When to measure:	If Exceeds:	Action:
Heart rate (pulse)	Beginning of rest period	110 beats per minute	Shorten next work period by 33%
Oral temperature	Beginning of rest period	99°F (after thermometer is under tongue for 3 minutes) 100.6°F (after thermometer is under tongue for 3 minutes)	Shorten next work period by 33% Prohibit work in impermeable clothing
Body Weight	1. Before workday begins 2. After workday ends		Increase fluid intake

COLD STRESS

Cold stress (Hypothermia)

In hypothermia the core body temperature drops below 95°F. Hypothermia can be attributed to a decrease in heat production, increased heat loss or both.

Prevention

Institute the following steps to prevent overexposure of workers to cold:

1. Maintain body core temperature at 98.6oF or above by encouraging workers to drink warm liquids during breaks (preferably not coffee) and wear several layers of clothing that can keep the body warm even when the clothing is wet.

2. Avoid frostbite by adequately covering hands, feet and other extremities. Clothing such as insulated gloves or mittens, earmuffs and hat liners should be worn. To prevent contact frostbite (from touching metal and cold surfaces below 20°F), workers should wear gloves. Tool handles should be covered with insulating material.

3. Adjust work schedules to provide adequate rest periods. When feasible, rotate personnel and perform work during the warmer hours of the day.

4. Provide heated shelter. Workers should remove their outer layer(s) of clothing while in the shelter to allow sweat to evaporate.

5. In the event that wind barriers are constructed around an intrusive operation (such as drilling), the enclosure must be properly vented to prevent the buildup of toxic or explosive gases or vapors. Care must be taken to keep a heat source away from flammable substances.

6. Using a wind chill chart such as the one included below, obtain the equivalent chill temperature (ECT) based on actual wind speed and temperature. Refer to the ECT when setting up work warm-up schedules, planning appropriate clothing, etc. Workers should use warming shelters at regular intervals at or below an ECT of 20°F. For exposed skin, continuous exposure should not be permitted at or below an ECT of -25°F.

FROSTBITE

Personnel should be aware of symptoms of frostbite/hypothermia. If the following symptoms are noticed in any worker, he/she should immediately go to a warm shelter.

Condition	Skin Surface	Tissue Under Skin	Skin Color
Frostnip	Soft	Soft	Initially red, then white
Frostbite	Hard	Soft	White and waxy
Freezing	Hard	Hard	Blotchy, white to yellow-grey to grey

1. Frostnip is the incipient stage of frostbite, brought about by direct contact with a cold object or exposure of a body part to cool/cold air. Wind chill or cold water also can be major factors. This condition is not serious. Tissue damage is minor and the response to care is good. The tip of the nose, tips of ears, upper cheeks and fingers (all areas generally exposed) are most susceptible to frostnip.

2. Treatment of frostnip: Care for frostnip by warming affected areas. Usually the worker can apply warmth from his/her bare hands, blow warm air on the site, or, if the fingers are involved, hold them in the armpits. During recovery, the worker may complain of tingling or burning sensation, which is normal. If the condition does not respond to this simple care, begin treatment for frostbite.

3. Frostbite: The skin and subcutaneous layers become involved. If frostnip goes untreated, it becomes superficial frostbite. This condition is serious. Tissue damage may be serious. The worker must be transported to a medical facility for evaluation. The tip of the nose, tips of ears, upper cheeks and fingers (all areas generally exposed) are most susceptible to frostbite. The affected area will feel frozen, but only on the surface. The tissue below the surface must still be soft and have normal response to touch. DO NOT squeeze or poke the tissue. The condition of the deeper tissues can be determined by gently palpating the affected area. The skin will turn mottled or blotchy. It may also be white and then turn grayish-yellow.

4. Treatment of frostbite: When practical, transport victim as soon as possible. Get the worker inside and keep him/her warm. Do not allow any smoking or alcohol consumption. Thaw frozen parts by immersion, re-warming in a 100°F to 106°F water bath. Water temperature will drop rapidly, requiring additional warm water throughout the process. Cover the thawed part with a dry sterile dressing. Do not puncture or drain any blisters. NOTE: Never listen to myths and folk tales about the care of frostbite. Never rub a frostbitten or frozen area. Never rub snow on a frostbitten or frozen area. Rubbing the area may cause serious damage to already injured tissues. Do not attempt to thaw a frozen area if there is any chance it will be re-frozen.

5. General cooling/Hypothermia: General cooling of the body is known as systemic hypothermia. This condition is not a common problem unless workers are exposed to cold for prolonged periods of time without any shelter.

Body Temp (°F)	Body Temp (°C)	Symptoms
99-96	37-35.5	Intense uncontrollable shivering
95-91	35.5-32.7	Violent shivering persists. If victim is conscious, has difficulty speaking.
90-86	32.6-30	Shivering decreases and is replaced by strong muscular rigidity. Muscle coordination is affected. Erratic or jerkey movements are produced. Thinking is less clear. General comprehension is dulled. There may be total amnesia. The worker is generally still able to maintain the appearance of psychological contact with his surroundings.
85-81	29.9-27.2	Victim becomes irrational, loses contact with his environment, and drifts into a stupor. Muscular rigidity continues. Pulse and respirations are slow and the worker may develop cardiac arrhythmias.
80-78	27.1-25.5	Victim becomes unconscious. He does not respond to the spoken word. Most reflexes cease to function. Heartbeat becomes erratic
Below 78	Below 25.5	Cardiac and respiratory centers of the brain fail. Ventricular fibrillation occurs; probably edema and hemorrhage in the lungs; death.

6. Treatment of hypothermia: Keep worker dry. Remove any wet clothing and replace with dry clothes, or wrap person in dry blankets. Keep person at rest. Do not allow him/her to move around. Transport the victim to a medical facility as soon as possible.

COOLING POWER OF WIND ON EXPOSED FLESH EXPRESSED AS AN EQUIVALENT TEMPERATURE (UNDER CALM CONDITIONS)

Estimated wind Speed (in mph)	Actual Temperature Reading (°F)P											
	50	40	30	20	10	0	10	20	30	40	50	60
	Equivalent Chill Temperature (°F)											
Calm	50	40	30	20	10	0	-10	-20	-30	-40	-50	-60
5	48	37	27	16	6	-5	-15	-26	-36	-47	-57	-68
10	40	28	15	4	-9	-24	-33	-46	-58	-70	-83	-95
15	36	22	9	-5	-18	-32	-45	-58	-72	-85	-99	-112
20	32	18	4	-10	-25	-39	-53	-67	-82	-96	-110	-121
25	30	16	0	-15	-29	-44	-59	-74	-88	-104	-118	-133
30	28	13	-2	-18	-33	-48	-63	-79	-94	-109	-125	-140
35	27	11	-4	-20	-35	-51	-67	-82	-98	-113	-129	-145
40	26	10	-6	-21	-37	-53	-69	-85	-100	-116	-132	-146
(Wind speeds greater than 40 mph have little additional effect.)	LITTLE DANGER in < hr with dry skin. Maximum danger of false sense of security.				INCREASING DANGER Danger from freezing of exposed flesh within one minute			GREAT DANGER Flesh may freeze within 30 seconds.				
	Trench foot and imersion foot may occur at any point on this chart											

Developed by U.S. Army Research Institute of Environmental Medicine, Natick, MA.

(1) Reproduced from American Conference of Governmental Industrial Hygienists, Threshold Limit Values and Biological Exposure Indices for 1985-1986, p.01.

APPENDIX E
CHEMICAL HAZARDS

APPENDIX F
CONFINED SPACE ENTRY CHECKLIST/PERMIT

PWGC
Strategic Environmental Engineering Solutions

CONFINED SPACE ENTRY PERMIT

Confined Space ☐	Hazardous Area ☐	Non Permit Required ☐

Notes:
No work will be performed unless the space meets non permit requirements
Permit valid 8 hours only. All copies of permit will remain at this job site until job is completed.
A single entry permit can be filled out prior to start of daily work.
SAFETY STANDBY PERSON IS REQUIRED FOR ALL CONFINED SPACE WORK

Site Location and Description:_____
Purpose of Entry:_____
Supervisior(s) in charge of Crew:_____

Requirements	Date	Time	Requirements	Date	Time
Lock Out/De-energize/try-out			**Full Body Harness w/"D" Ring**		
Line(s) Broken-capped-blanked			**Emergency Escape Retrieval**		
Purged-Flush and Vent			**Lifelines**		
Ventilation			Fire Extinguishers		
Secure Area (Post and Flag)			Lighting (Explosive Proof)		
Breathing Apparatus			Protective Clothing		
Resuscitator-Inhalator			Respirator(s) (Air Purifying)		
Standby Safety Personnel			Burning and Welding Permit		

BOLD DENOTES MINIMUM REQUIREMENTS TO BE COMPLETED & REVIEWED PRIOR TO ENTRY
Items that do not apply enter N/A in the blank

Monitoring Tests	Permissible Entry Levels	Results (record every 30 minutes beginning ½ hour prior to entry)							
Oxygen	19.5 to 23.5%								
LEL	Below 10%								
Hydrogen sulfide (H_2S)	10ppm† 15ppm‡								

†Short term exposure limit (STEL)
‡8 hour Time weighted average (TWA)

Monitoring Equipment

_____
Type Model # Serial #

_____
Type Model # Serial #

Safety standby person(s):_____

Supervisor authorizing entry:_____

APPENDIX G
EMERGENCY INFORMATION

EMERGENCY PHONE NUMBERS

General Emergencies - New York City Police/Fire Department/Ambulance	911
Non-Emergency Hotline - New York City Police/Fire Department/Ambulance	311
Local Emergency Medical Center (Mt. Sinai Hospital Queens)	1-718-932-1000
National Response Center	1-800-424-8802
Poison Control	1-212-340-4494
NYSDEC Spills Division	1-800-457-7362
NYSDEC Hazardous Waste Division	1-718-482-4994
NYC Office of Environmental Remediation	1-212-788-8841
NYC Department of Health	1-212-788-4711
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PWGC
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INCIDENT / NEAR MISS REPORT AND INVESTIGATION - PAGE 1 OF 2			
TYPE OF INCIDENT - CHECK ALL THAT APPLY			
☐ INJURY/ILLNESS	☐ VEHICLE DAMAGE	☐ PROPERTY DAMAGE	☐ FIRE
☐ SPILL/RELEASE	☐ PERMIT EXCEEDENCE	☐ NEAR MISS	☐ OTHER
GENERAL INFORMATION			
PROJECT NAME:	DATE OF REPORT:	REPORT NO.:	
DATE OF INCIDENT:	TIME:	DAY OF WEEK:	
LOCATION OF INCIDENT:			
WEATHER CONDITIONS:	ADEQUATE LIGHTING AT SCENE? ☐ YES ☐ NO ☐ N/A		
DESCRIBE WHAT HAPPENED (STEP BY STEP - USE ADDITIONAL PAGES IF NECESSARY)			
AFFECTED EMPLOYEE INFORMATION			
NAME:	EMPLOYEE: ☐ YES ☐ NO		
HOME ADDRESS:			
SOCIAL SECURITY NO.:	HOME PHONE NO.:		
JOB CLASSIFICATION:	YEARS IN JOB CLASSIFICATION:		
HOURS WORKED ON SHIFT PRIOR TO INCIDENT:	AGE:		
DID INCIDENT RELATE TO ROUTINE TASK FOR JOB CLASSIFICATION? ☐ YES ☐ NO			
INJURY/ILLNESS INFORMATION			
NATURE OF INJURY OR ILLNESS:			
OBJECT/EQUIPMENT/SUBSTANCE CAUSING HARM:			
FIRST AID PROVIDED? ☐ YES ☐ NO			
IF YES, WHERE WAS IT GIVEN: ☐ ON-SITE ☐ OFF-SITE			
IF YES, WHO PROVIDED FIRST AID:			
WILL THE INJURY/ILLNESS RESULT IN: ☐ RESTRICTED DUTY ☐ LOST TIME ☐ UNKNOWN			

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INCIDENT / NEAR MISS REPORT AND INVESTIGATION - PAGE 2 OF 2 REPORT NO.
MEDICAL TREATMENT INFORMATION
WAS MEDICAL TREATMENT PROVIDED? ☐ YES ☐ NO
IF YES, WAS MEDICAL TREATMENT PROVIDED: ☐ ON-SITE ☐ DR.'S OFFICE ☐ HOSPITAL
NAME OF PERSON(S) PROVIDING TREATMENT:
ADDRESS WHERE TREATMENT WAS PROVIDED:
TYPE OF TREATMENT:
VEHICLE AND PROPERTY DAMAGE INFORMATION
VEHICLE/PROPERTY DAMAGED:
DESCRIPTION OF DAMAGE:
SPILL AND AIR EMISSIONS INFORMATION:
SUBSTANCE SPILLED OR RELEASED: FROM WHERE: TO WHERE:
ESTIMATED QUANTITY/DURATION:
CERCLA HAZARDOUS SUBSTANCE? ☐ YES ☐ NO
REPORTABLE TO AGENCY? ☐ YES ☐ NO SPECIFY:
WRITTEN REPORT: ☐ YES ☐ NO TIME FRAME:
RESPONSE ACTION TAKEN:
PERMIT EXCEEDENCE
TYPE OF PERMIT: PERMIT #:
DATE OF EXCEEDENCE: DATE FIRST KNOWLEDGE OF EXCEEDENCE:
PERMITTED LEVEL OR CRITERIA:
EXCEEDENCE LEVEL OR CRITERIA:
REPORTABLE TO AGENCY? ☐ YES ☐ NO SPECIFY:
WRITTEN REPORT: ☐ YES ☐ NO TIME FRAME:
RESPONSE ACTION TAKEN:
NOTIFICATIONS
NAMES OF PERSONNEL NOTIFIED: DATE/TIME:
CLIENT NOTIFIED: DATE/TIME:
AGENCY NOTIFIED: DATE/TIME:
CONTACT NAME:
PERSONS PREPARING REPORT
EMPLOYEE'S NAME:(PRINT) SIGN:
SUPERVISOR'S NAME:(PRINT) SIGN:

PWGC
Strategic Environmental Engineering Solutions

INVESTIGATIVE REPORT		
DATE OF INCIDENT:	DATE OF REPORT:	REPORT NUMBER:
INCIDENT COST: ESTIMATED: $_____	ACTUAL: $_____	
OSHA RECORDABLE(S): ☐ YES ☐ NO # RESTRICTED DAYS ____ # DAYS AWAY FROM WORK ____		
CAUSE ANALYSIS		
IMMEDIATE CAUSES - WHAT ACTIONS AND CONDITIONS CONTRIBUTED TO THIS EVENT?		
BASIC CAUSES - WHAT SPECIFIC PERSONAL OR JOB FACTORS CONTRIBUTED TO THIS EVENT?		
ACTION PLAN		
REMEDIAL ACTIONS - WHAT HAS AND OR SHOULD BE DONE TO CONTROL EACH OF THE CAUSES LISTED?		

ACTION	PERSON RESPONSIBLE	TARGET DATE	COMPLETION DATE

PERSONS PERFORMING INVESTIGATION		
INVESTIGATOR'S NAME: (PRINT)	SIGN:	DATE:
INVESTIGATOR'S NAME: (PRINT)	SIGN:	DATE:
INVESTIGATOR'S NAME: (PRINT)	SIGN:	DATE:
MANAGEMENT REVIEW		
PROJECT MANAGER: (PRINT)	SIGN:	DATE:
COMMENTS:		
H&S MANAGER: (PRINT)	SIGN:	DATE:
COMMENTS:		

EXAMPLES OF IMMEDIATE CAUSES

Substandard Actions

1. Operating equipment without authority
2. Failure to warn
3. Failure to secure
4. Operating at improper speed
5. Making safety devices inoperable
6. Removing safety devices
7. Using defective equipment
8. Failure to use PPE properly
9. Improper loading
10. Improper placement
11. Improper lifting
12. Improper position for task
13. Servicing equipment in operation
14. Under influence of alcohol/drugs
15. Horseplay

Substandard Conditions

1. Guards or barriers
2. Protective equipment
3. Tools, equipment, or materials
4. Congestion
5. Warning system
6. Fire and explosion hazards
7. Poor housekeeping
8. Noise exposure
9. Exposure to hazardous materials
10. Extreme temperature exposure
11. Illumination
12. Ventilation
13. Visibility

EXAMPLES OF BASIC CAUSES

Personal Factors

1. Capability
2. Knowledge
3. Skill
4. Stress
5. Motivation
6. Work Standards
7. Wear and tear
8. Abuse or misuse

Job Factors

1. Supervision
2. Engineering
3. Purchasing
4. Maintenance
5. Tools/equipment

MANAGEMENT PROGRAMS FOR CONTROL OF INCIDENTS

1. Leadership and administration
2. Management training
3. Planned inspections
4. Task analysis and procedures
5. Task observation
6. Emergency preparedness
7. Organizational rules
8. Accident/incident analysis
9. Personal protective equipment
10. Health control
11. Program audits
12. Engineering controls
13. Personal communications
14. Group meetings
15. General promotion
16. Hiring and placement
17. Purchasing controls

Appendix A

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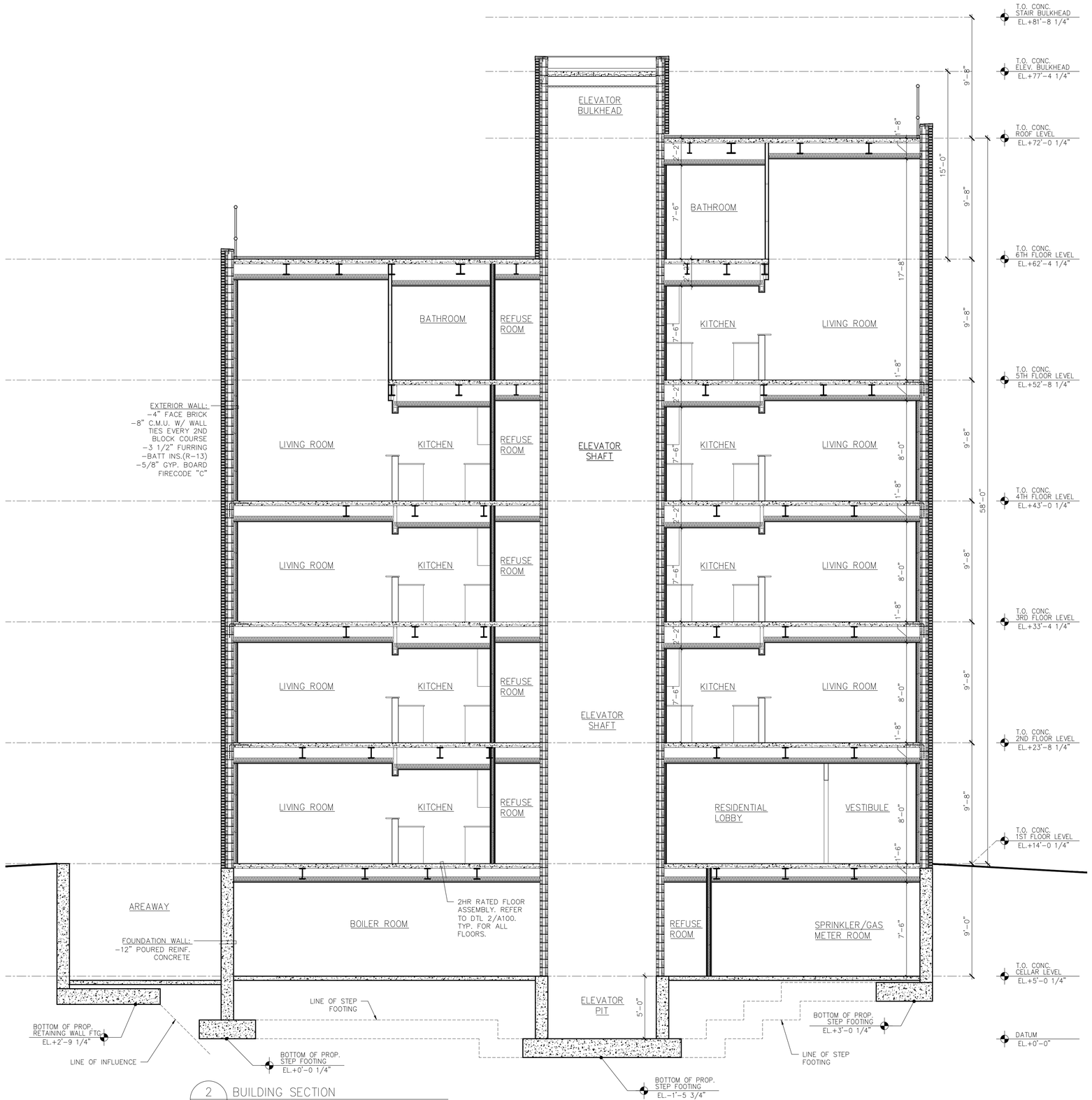
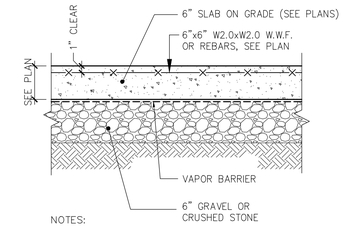


2 A-25 BUILDING SECTION
SCALE: 1/4"=1'-0"



NOTES:

1. SLAB ON GRADE SHALL BE PLACED SUCH THAT EACH SINGLE POUR AREA DOES NOT EXCEED 900 SQUARE FEET AND 30'-0" IN THE LONGEST DIMENSION. EACH PANEL SHALL BE BOUNDED WITH CONSTRUCTION JOINTS.

2. SAWED CONTROL JOINTS ARE AN ALTERNATE AND ARE TO BE LOCATED IN A RECTANGULAR PATTERN WITH A MAXIMUM SPACING OF 30'-0". JOINTS SHALL BE SAWED NO LATER THAN 24 HOURS AFTER CONCRETE IS PLACED. MAXIMUM POUR LENGTH SHALL NOT EXCEED 90'-0".

3. GRAVEL OR CRUSHED STONE SHALL BE PLACED ON UNDISTURBED SOIL OR FILL COMPACTED TO 95% OF MAXIMUM DENSITY AT OPTIMUM MOISTURE CONTENT.

TYPICAL DETAILS OF CONCRETE SLAB ON GRADE
SCALE: 3/4"=1'-0"

Examiner Stamp

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ARCHITECTURE INTERIOR DESIGN CODE CONSULTANT

No	Date	Description
Issued/Revised		

Project:
NORTH EIGHT NY LLC

207 NORTH 8TH STREET
BROOKLYN, NY

Drawing Title
ARCHITECTURAL BUILDING SECTION

Architect Stamp

Sheet No:	OF
Scale	AS NOTED
Date	05-30-13
Project No.	1334
Drawn By:	SP
Drawing No.	A-025.00

DOB Sticker

Cadd File No: X/DRAWING/WA/1230

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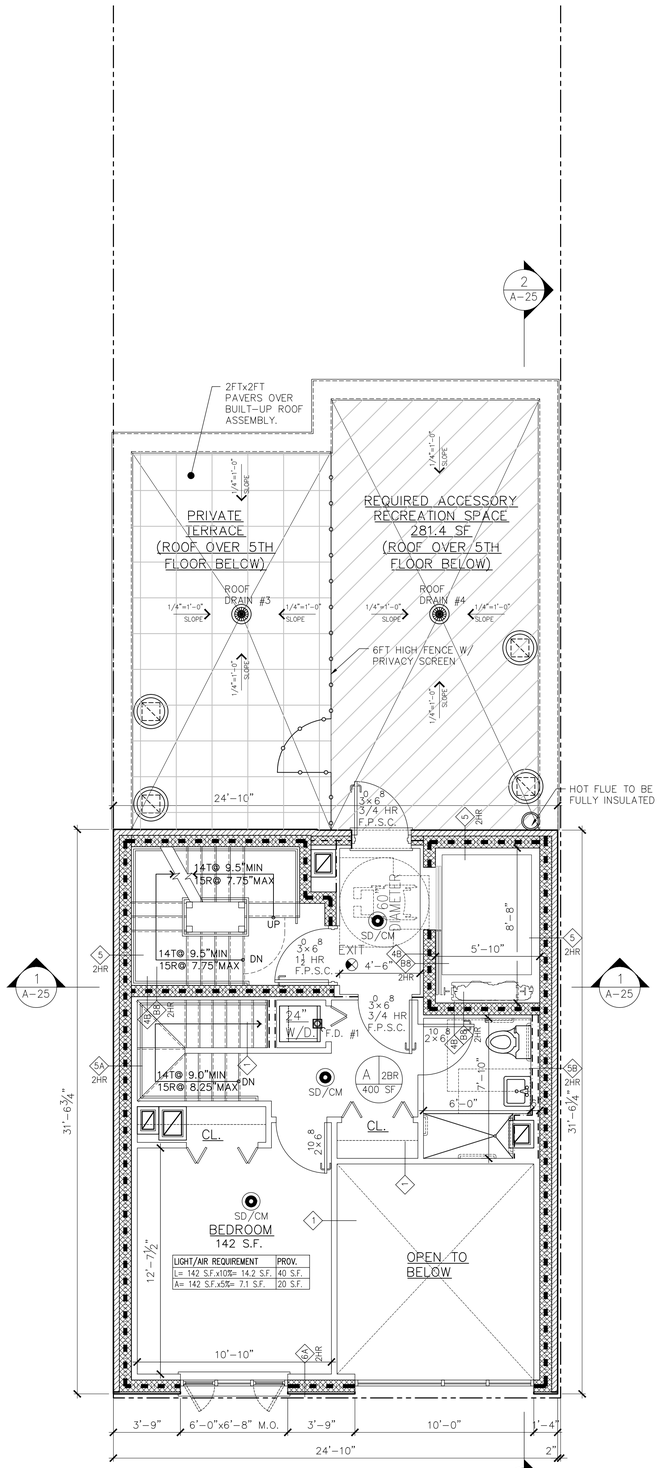
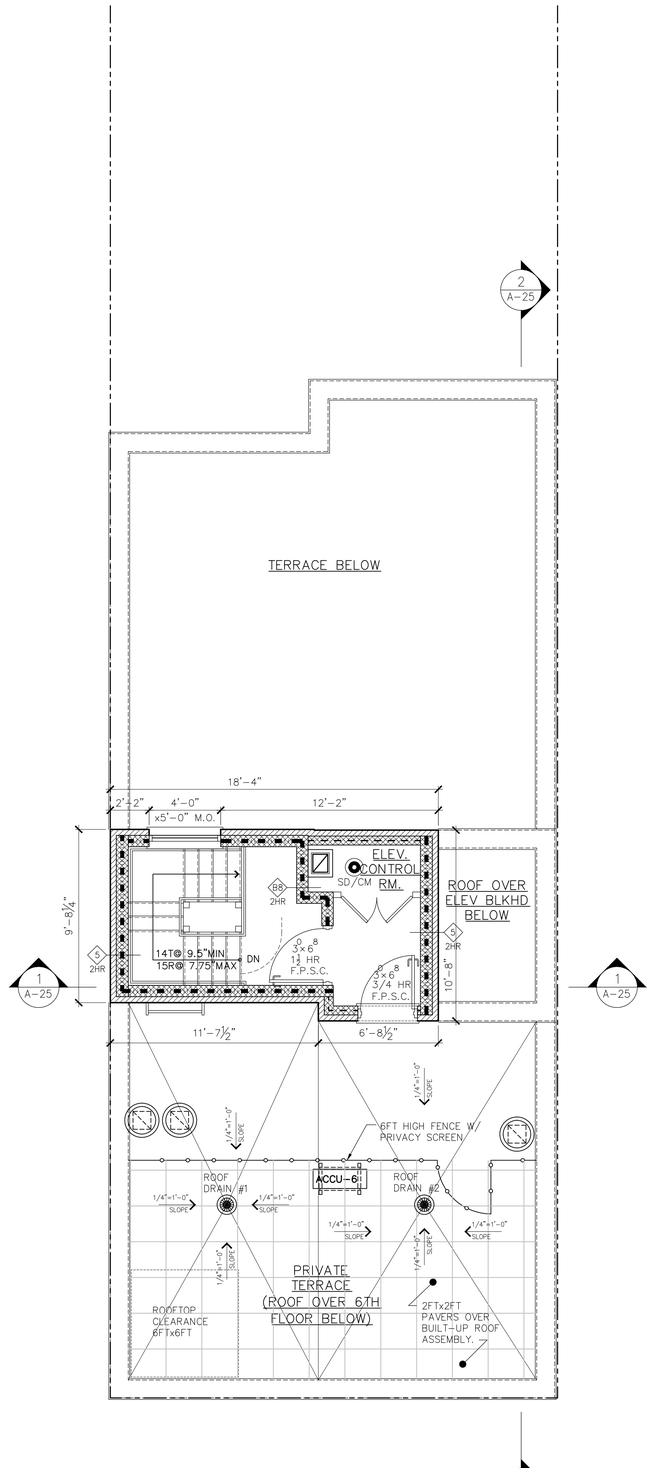
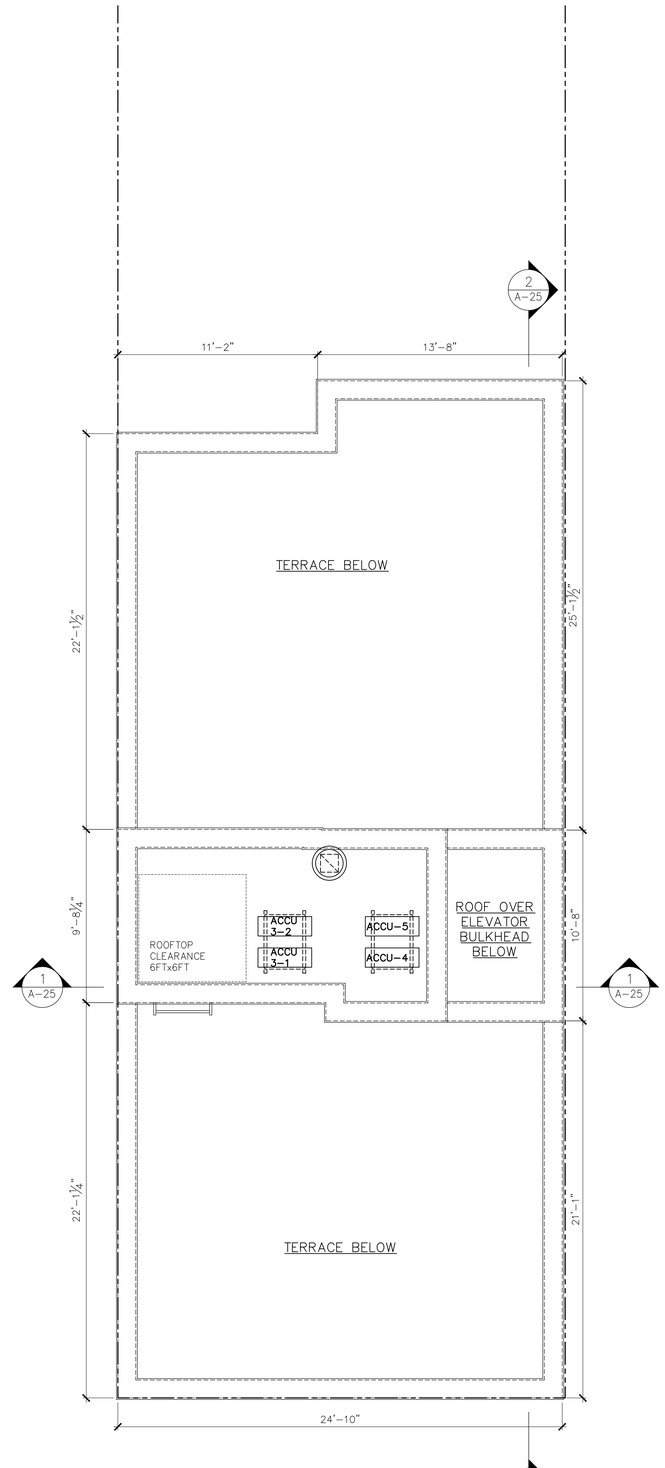


1 A-012 6TH FLOOR PLAN
SCALE: 1/4"=1'-0"



2 A-012 ROOF PLAN
SCALE: 1/4"=1'-0"



3 A-012 BULKHEAD PLAN
SCALE: 1/4"=1'-0"

GENERAL NOTES

CARBON MONOXIDE NOTE

"HARDWIRED CARBON MONOXIDE DETECTORS COMPLYING WITH RS 17-13 SHALL BE INSTALLED IN ACCORDANCE WITH RS 17-14 IN ADDITION TO HARDWIRED SMOKE DETECTORS. THEY SHALL BE PROVIDED IN EVERY DWELLING UNIT WITHIN 15' OF THE PRIMARY ENTRANCE OF EACH BEDROOM. DEVICE MAY BE A COMBINED SMOKE/CARBON MONOXIDE DETECTOR."

SEISMIC NOTES

PLANS FOR BUILDING COMPLY WITH THE SEISMIC CODE REQUIREMENTS OF LOCAL LAW 17/95. BUILDING COMPLIES WITH TPPN 2/96 (1" PER 50FT HEIGHT)

FIRE RATING NOTES

1HR FIRE RATING
2HR FIRE RATING
3HR FIRE RATING

INTERIOR FINISH NOTES

INTERIOR WALL AND CEILING FINISHES TO COMPLY WITH TABLE 803.5 AS PER NYC BUILDING CODE. FINISHES SHALL BE CLASSIFIED IN ACCORDANCE WITH ASTM E 84.

VERTICAL EXITS & EXIT PASSAGEWAYS:	CLASS B
EXIT ACCESS CORRIDORS & OTHER EXITWAYS:	CLASS B
ROOMS & ENCLOSED SPACES:	CLASS C

SOUND TRANSMISSION NOTES

AIR-BORNE NOISE SHALL HAVE A SOUND TRANSMISSION CLASS OF NOT LESS THAN 50 IN ACCORDANCE WITH ASTM E 90 AS PER SECTION 1207.2 NYC BUILDING CODE.

WASHING MACHINE NOTES

WASHING MACHINES TO COMPLY WITH NYC DEPT. OF BUILDINGS MEMORANDUM DATED 12/2/86 AS PER THE USE OF VACUUM BREAKER OF AIR GAP.

REFUSE ROOM NOTES

REFUSE ROOM TO BE EQUIPPED WITH DOOR OPENER PUSH PLATE WITH INTERNATIONAL SYMBOL OF ACCESSIBILITY AND FIRE-RATED DOOR WITH AUTOMATIC DOOR OPENER AND OCCUPANCY SENSOR TO MAINTAIN DOOR IN OPEN POSITION WHILE THE ROOM IS OCCUPIED. DOOR MUST RETURN TO CLOSED POSITION IF THE ROOM IS NOT OCCUPIED OR IN CASE OF POWER FAILURE. THE OCCUPANCY SENSOR MAY BE WEIGHT-SENSITIVE FLOOR MAT, INFRARED SENSOR OR OTHER EQUIVALENT TECHNOLOGY.

HANDICAP ACCESSIBILITY NOTES

ALL OPERABLE PARTS SHALL COMPLY WITH SECTION 309 OF ICC A117.1. REFER TO A-004 FOR ALL OTHER HANDICAP ACCESSIBILITY NOTES AND DETAILS.

Examiner Stamp

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ARCHITECTURE INTERIOR DESIGN CODE CONSULTANT

No	Date	Description

Issued/Revised

Project:
NORTH EIGHT NY LLC

207 NORTH 8TH STREET
BROOKLYN, NY

Drawing Title
ARCHITECTURAL SIXTH & ROOF FLOOR PLANS

Architect Stamp

Sheet No:	OF
Scale	AS NOTED
Date	05-30-13
Project No.	1334
Drawn By:	SP
Drawing No.	A-012.00

DOB Sticker

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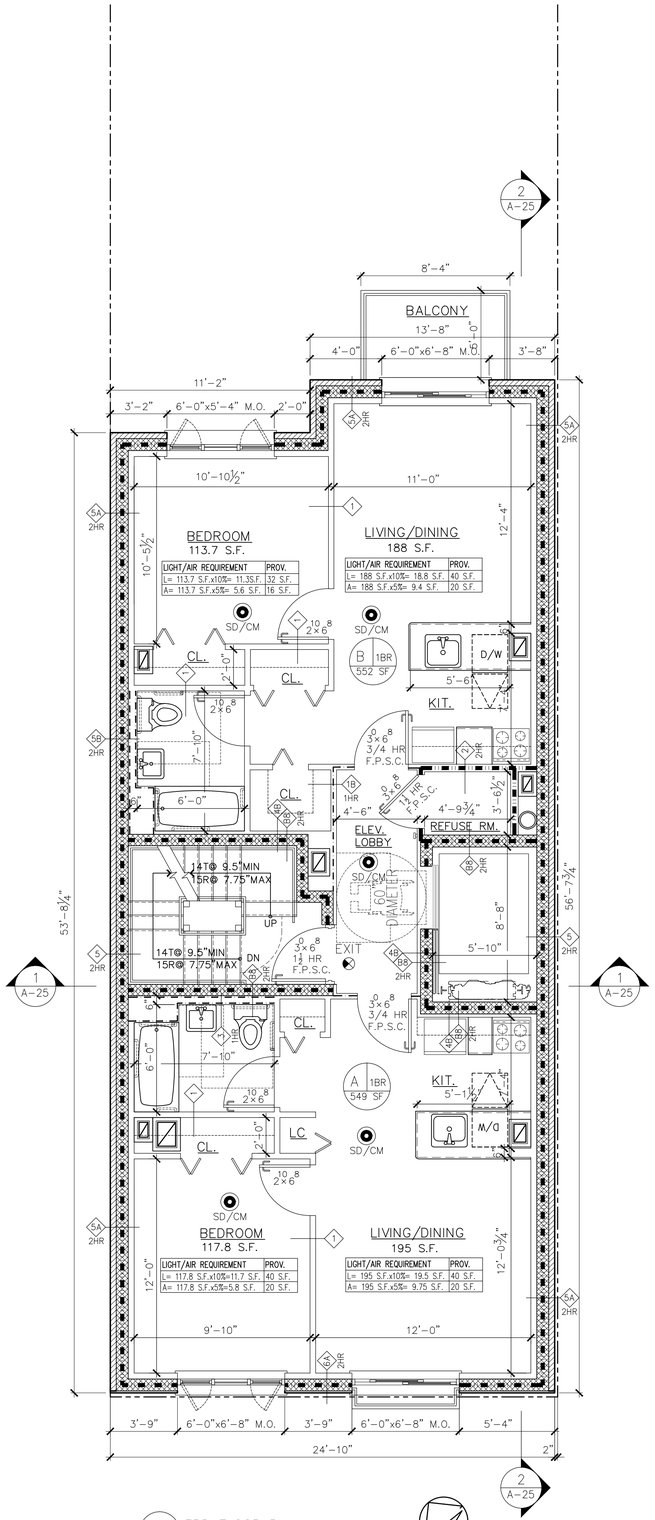
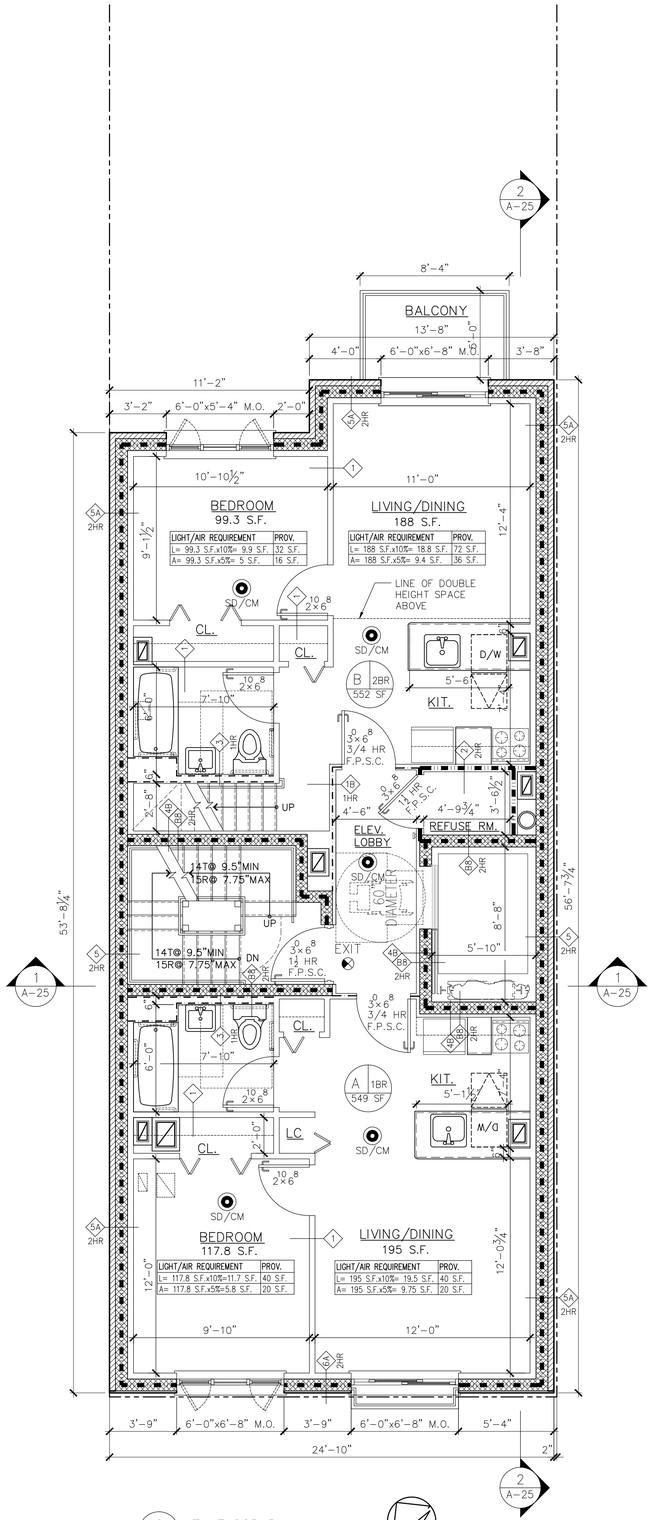
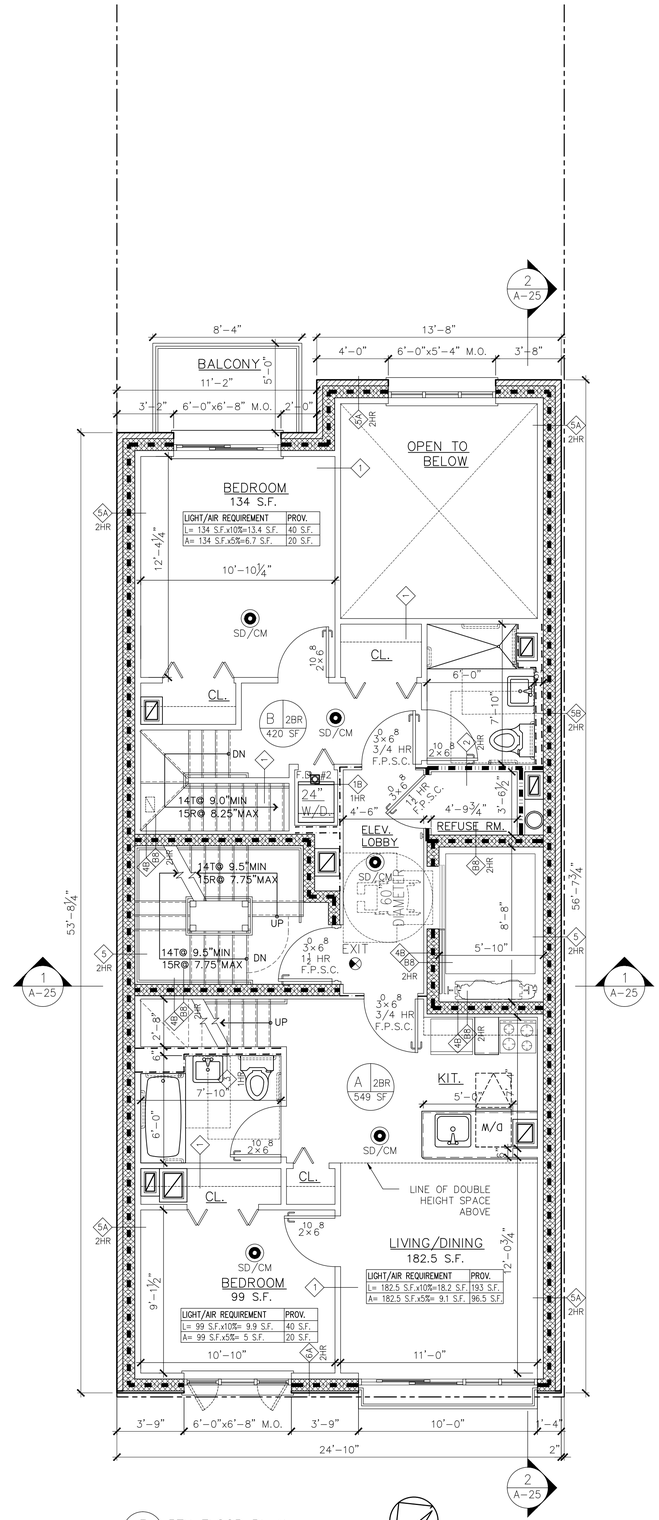


1 3RD FLOOR PLAN
A-011 SCALE: 1/4"=1'-0"



2 4TH FLOOR PLAN
A-011 SCALE: 1/4"=1'-0"



3 5TH FLOOR PLAN
A-011 SCALE: 1/4"=1'-0"

GENERAL NOTES

CARBON MONOXIDE NOTE

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2HR FIRE RATING
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EXIT ACCESS CORRIDORS & OTHER EXITWAYS:	CLASS B
ROOMS & ENCLOSED SPACES:	CLASS C

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HANDICAP ACCESSIBILITY NOTES

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Examiner Stamp

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No	Date	Description
Issued/Revised		

Project:
NORTH EIGHT NY LLC

207 NORTH 8TH STREET
BROOKLYN, NY

Drawing Title
ARCHITECTURAL
THIRD, FOURTH & FIFTH
FLOOR PLANS

Architect Stamp

Sheet No:	OF
Scale	AS NOTED
Date	05-30-13
Project No.	1334
Drawn By:	SP
Drawing No.	A-011.00

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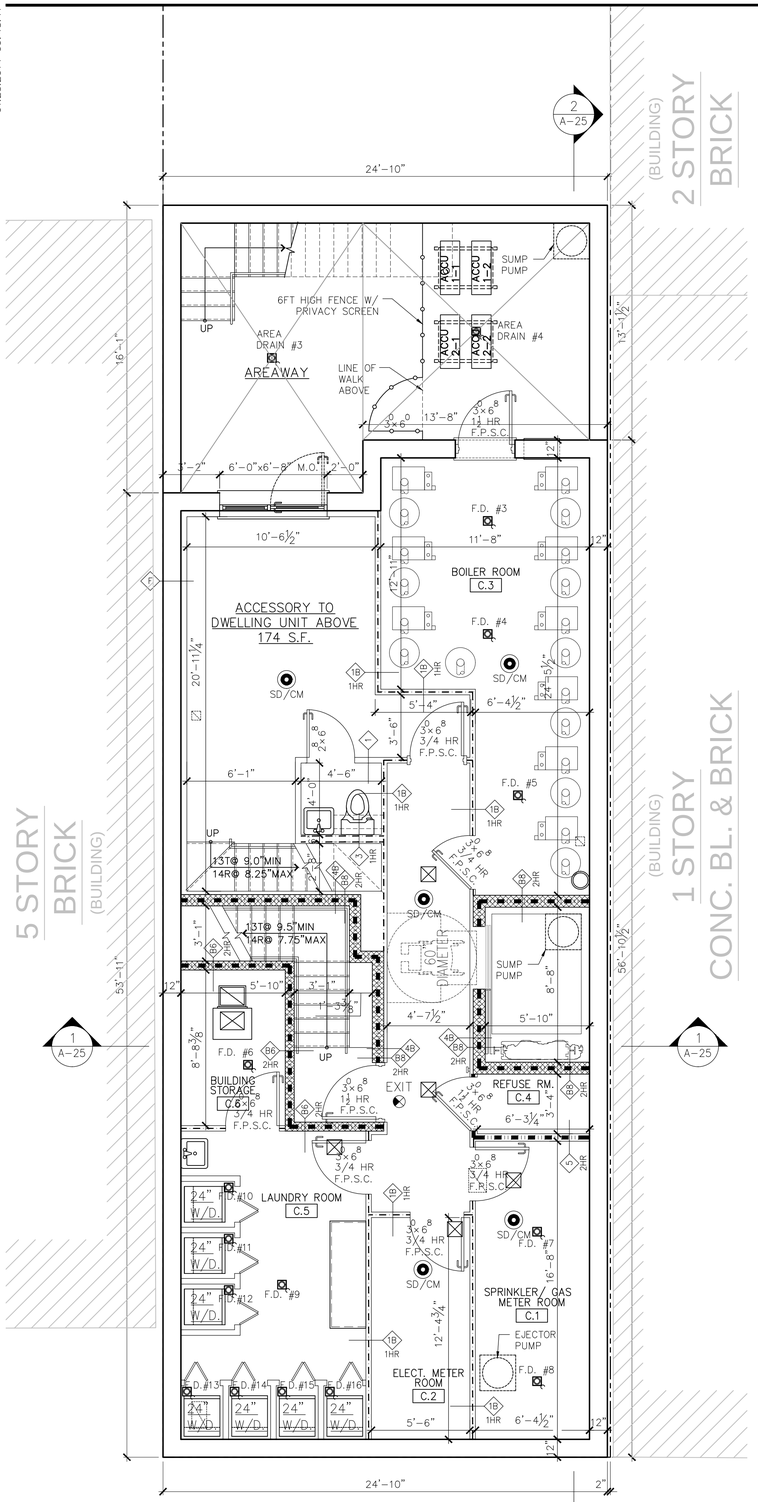
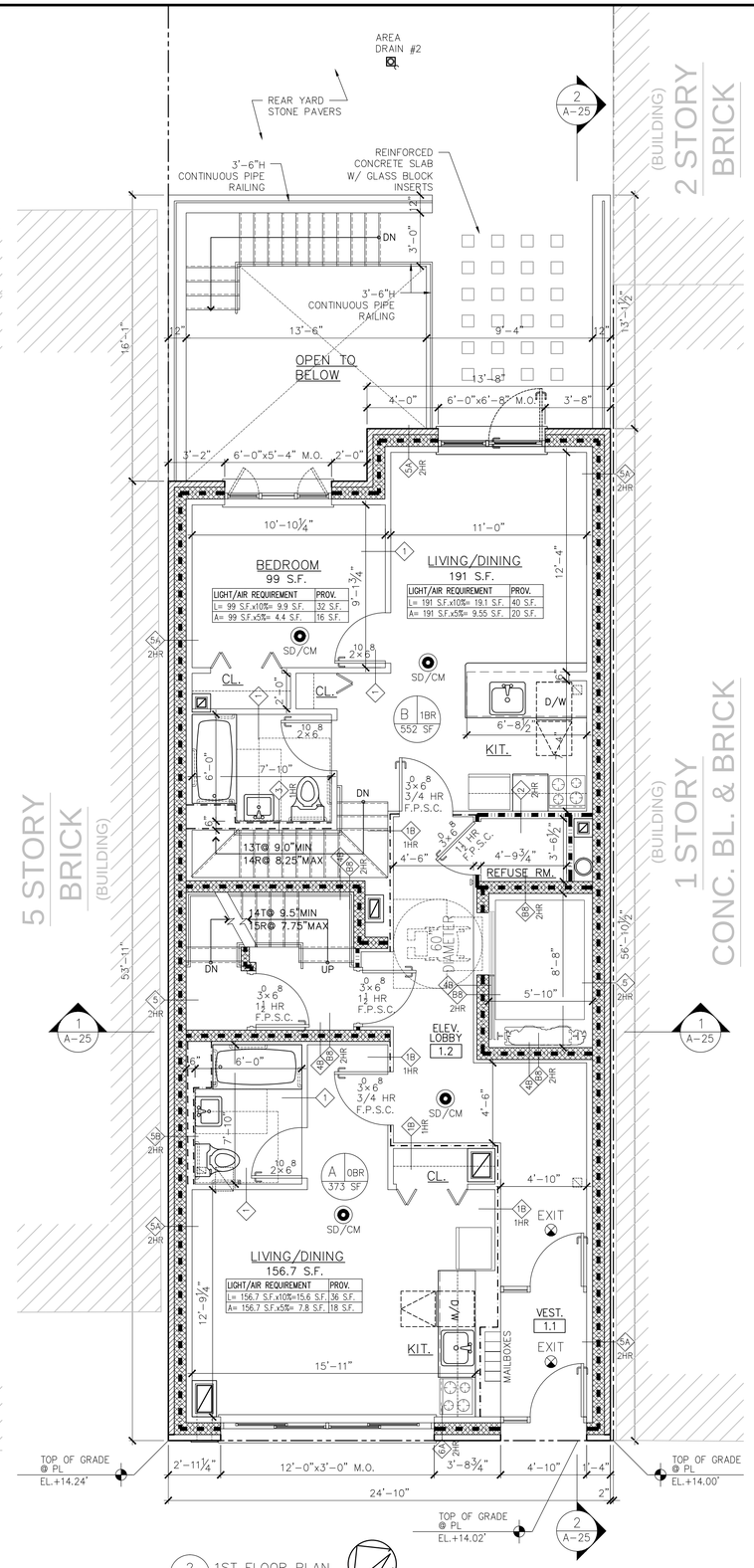


1 A-010 CELLAR PLAN
SCALE: 1/4"=1'-0"



2 A-010 1ST FLOOR PLAN
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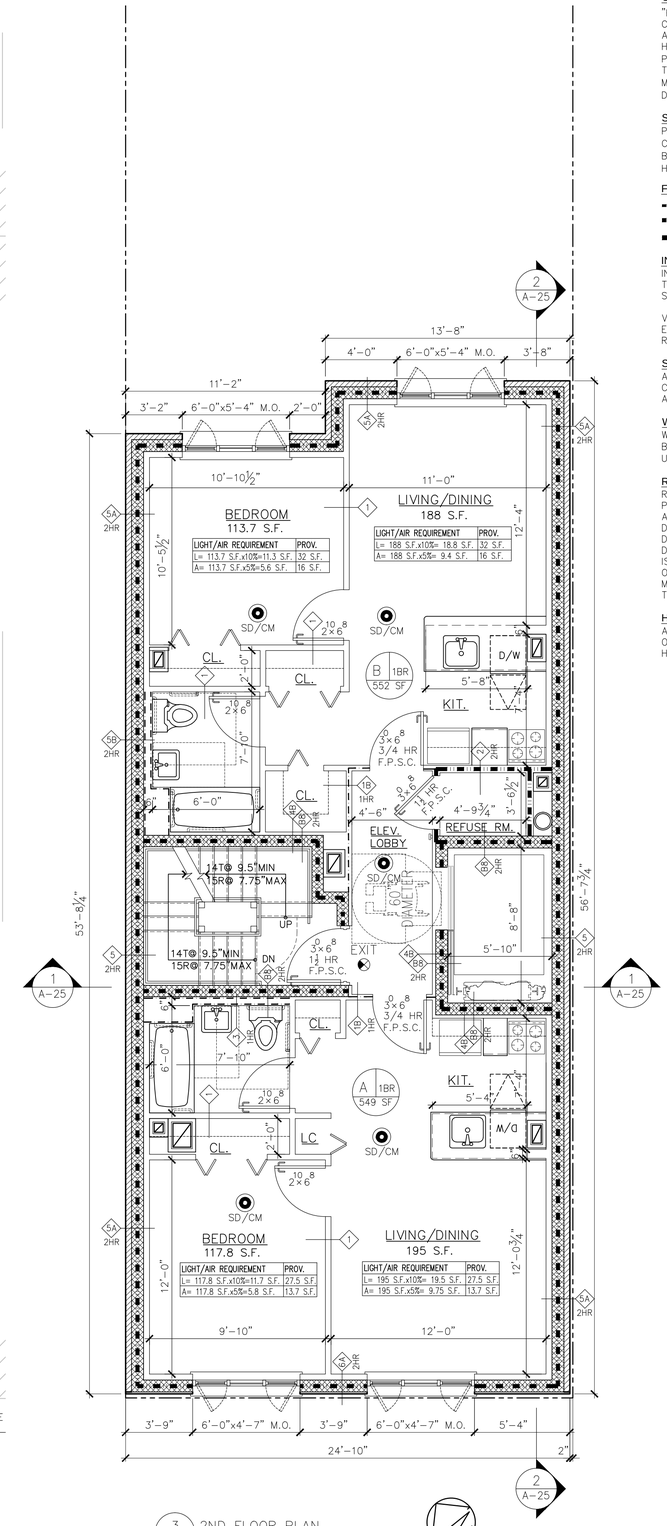

3 A-010 2ND FLOOR PLAN
SCALE: 1/4"=1'-0"

GENERAL NOTES

CARBON MONOXIDE NOTE
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No	Date	Description
Issued/Revised		

Project:
NORTH EIGHT NY LLC

207 NORTH 8TH STREET
BROOKLYN, NY

Drawing Title
ARCHITECTURAL
CELLAR, FIRST & SECOND
FLOOR PLANS

Architect Stamp

Sheet No:	OF
Scale	AS NOTED
Date	05-30-13
Project No.	1334
Drawn By:	SP
Drawing No.	A-010.00

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Appendix B

PREPRUFE® 300R Plus & 160R Plus

Pre-applied waterproofing membranes that bond integrally to poured concrete for use below slabs or behind basement walls on confined sites

Description

Preprufe® 300R Plus & 160R Plus membranes are unique composite sheets comprising, a thick HDPE film, an aggressive pressure sensitive adhesive a weather resistant protective coating and an adhesive to adhesive seam overlap.

Unlike conventional non-adhering membranes, which are vulnerable to water ingress tracking between the unbonded membrane and structure, the unique Preprufe bond to concrete prevents ingress or migration of water around the structure.

The Preprufe R Plus System includes:

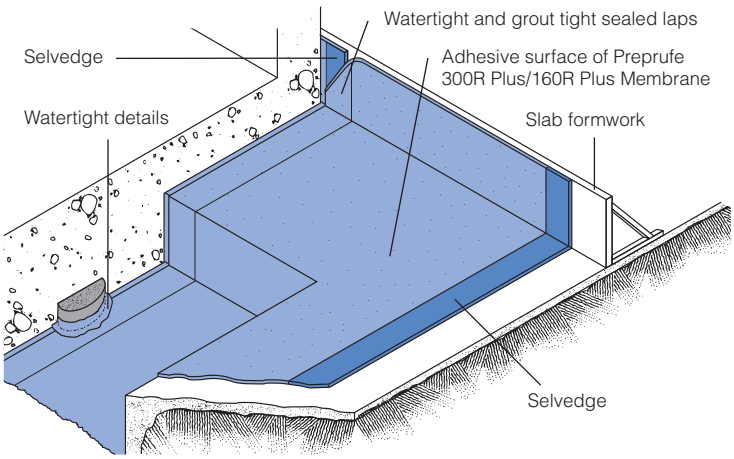
- **Preprufe 300R Plus**—heavy-duty grade for use below slabs and on rafts (i.e. mud slabs). Designed to accept the placing of heavy reinforcement using conventional concrete spacers.
- **Preprufe 160R Plus**—thinner grade for blindside, zero property line applications against soil retention systems.
- **Preprufe Tape LT**—for covering cut edges, roll ends, penetrations and detailing (temperatures between 25°F (-4°C) and 86°F (+30°C)).
- **Preprufe Tape HC**—as above for use in Hot Climates (minimum 50°F (10°C)).
- **Bituthene® Liquid Membrane**—for sealing around penetrations, etc.
- **Adcor™ ES**—waterstop for joints in concrete walls and floors
- **Preprufe Tieback Covers**—preformed cover for soil retention wall tieback heads
- **Preprufe Preformed Corners**—preformed inside and outside corners

Preprufe 300R Plus & 160R Plus membranes are applied either horizontally to smooth prepared concrete, carton forms or well rolled and compacted earth or crushed stone substrate; or vertically to permanent formwork or adjoining structures. Concrete is then cast directly against the adhesive side of the membranes. The specially developed Preprufe adhesive layers work together to form a continuous and integral seal to the structure.

Preprufe can be turned up the inside face of slab formwork but is not recommended for conventional twin-sided formwork on walls, etc. Use Bituthene® self-adhesive membrane or Procor® fluid applied membrane to walls after removal of formwork for a fully bonded system to all structural surfaces.

Advantages

- **Forms a unique continuous adhesive bond to concrete poured against it**—prevents water migration and makes it unaffected by ground settlement beneath slabs
- **Fully-adhered adhesive to adhesive watertight laps** and detailing
- **Provides a barrier to water, moisture and gas**—physically isolates the structure from the surrounding ground
- **Easy roll/kick out installation**—reduces installation time and cost
- **Release Liner free**—expedites installation and reduces construction site waste
- **Solar reflective**—reduced temperature gain
- **Simple and quick to install**—requiring no priming or fillets
- **Can be applied to permanent formwork**—allows maximum use of confined sites
- **Self protecting**—can be trafficked immediately after application and ready for immediate placing of reinforcement
- **Unaffected by wet conditions**—cannot activate prematurely
- **Inherently waterproof, non-reactive system:**
  - not reliant on confining pressures or hydration
  - unaffected by freeze/thaw, wet/dry cycling
- **Chemical resistant**—effective in most types of soils and waters, protects structure from salt or sulphate attack



Drawings are for illustration purposes only.
Please refer to graceconstruction.com for specific application details.

Installation

The most current application instructions, detail drawings and technical letters can be viewed at graceconstruction.com. For other technical information contact your local Grace representative.

Preprufe Plus has colored zip strips at the top and bottom of the seam area on the edge of the roll. Both zip strips cover an aggressive adhesive. Once the yellow zip strip on the top of the membrane and the blue zip strip on the bottom of the membrane are removed, a strong adhesive to adhesive bond is achieved in the overlap area.

Substrate Preparation

All surfaces—It is essential to create a sound and solid substrate to eliminate movement during the concrete pour. Substrates must be regular and smooth with no gaps or voids greater than 0.5 in. (12 mm). Grout around all penetrations such as utility conduits, etc. for stability (see Figure 1).

Horizontal—The substrate must be free of loose aggregate and sharp protrusions. Avoid curved or rounded substrates. When installing over earth or crushed stone, ensure substrate is well compacted to avoid displacement of substrate due to traffic or concrete pour. The surface does not need to be dry, but standing water must be removed.

Vertical—Use concrete, plywood, insulation or other approved facing to sheet piling to provide support to the membrane. Board systems such as timber lagging must be close butted to provide support and not more than 0.5 in. (12 mm) out of alignment.

Membrane Installation

Preprufe can be applied at temperatures of 25°F (-4°C) or above. When installing Preprufe in cold or marginal weather conditions <40°F (<4°C) the use of Preprufe Tape LT is recommended at all laps and detailing. Preprufe Tape LT should be applied to clean, dry surfaces and the release liner must be removed immediately after application. Alternatively, Preprufe Plus Low Temperature (LT) is available for low temperature condition applications. Refer to Preprufe Plus LT data sheet for more information.

Horizontal substrates—Kick out or roll out the membrane HDPE film side to the substrate with the yellow zip strip facing towards the concrete pour. End laps should be staggered to avoid a build up of layers. Leave yellow and blue zip strips on the membrane until overlap procedure is completed.

Accurately position succeeding sheets to overlap the previous sheet 3 in. (75 mm) along the marked selvedge with the blue zip strip on top of the yellow zip strip. Ensure the underside of the succeeding sheet is clean, dry and free from contamination before attempting to overlap. Peel back and remove both the yellow and blue zip strips in the overlap area to achieve an adhesive to adhesive bond at the overlap. Ensure a continuous bond is achieved without creases and roll firmly with a heavy roller.

Refer to Grace Tech Letter 15 for information on suitable rebar chairs for Preprufe.

Vertical substrates—Mechanically fasten the membrane vertically using fasteners appropriate to the substrate with the yellow zip strip facing towards the concrete pour. The membrane may be installed in any convenient length. Fastening can be made through the selvedge using a small and low profile head fastener so that the membrane lays flat and allows firmly rolled overlaps. Accurately position succeeding sheets to overlap the previous sheet 3 in. (75 mm) along the marked selvedge with the blue zip strip on top of the yellow zip strip.

Ensure the underside of the succeeding sheet is clean, dry and free from contamination before attempting to overlap. Peel back and remove both the yellow and blue zip strips in the overlap area to achieve an adhesive to adhesive bond at the overlap. Roll firmly to ensure a watertight seal.

Roll ends and cut edges—Overlap all roll ends and cut edges by a minimum 3 in. (75 mm) and ensure the area is clean and free from contamination, wiping with a damp cloth if necessary. Allow to dry and apply Preprufe Tape LT (or HC in hot climates) centered over the lap edges and roll firmly (see Figure 2). Immediately remove tinted plastic release liner from the tape.

Figure 1

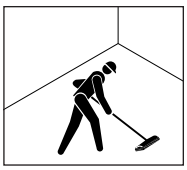
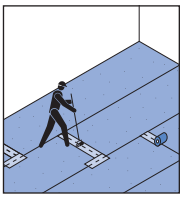


Figure 2



Details

Refer to Preprufe Field Application Manual, Section V Application Instructions or visit graceconstruction.com. This manual gives comprehensive guidance and standard details.

Membrane Repair

Inspect the membrane before installation of reinforcement steel, formwork and final placement of concrete. The membrane can be easily cleaned by power washing if required. Repair damage by wiping the area with a damp cloth to ensure the area is clean and free from dust, and allow to dry. Repair small punctures (0.5 in. (12 mm) or less) and slices by applying Preprufe Tape centered over the damaged area and roll firmly. Remove the release liner from the tape. Repair holes and large punctures by applying a patch of Preprufe membrane, which extends 6 in. (150 mm) beyond the damaged area. Seal all edges of the patch with Preprufe Tape, remove the release liner from the tape and roll firmly. Any areas of damaged adhesive should be covered with Preprufe Tape. Remove tinted plastic release liner from tape. Where exposed selvedge has lost adhesion or laps have not been sealed, ensure the area is clean and dry and cover with fresh Preprufe Tape, rolling firmly. Alternatively, use a hot air gun or similar to activate adhesive and firmly roll lap to achieve continuity.

Pouring of Concrete

Ensure the plastic release liner is removed from all areas of Preprufe Tape.

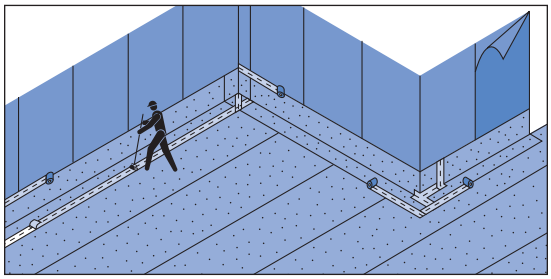
It is recommended that concrete be poured within 56 days (42 days in hot climates) of application of the membrane. Following proper ACI guidelines, concrete must be placed carefully and consolidated properly to avoid damage to the membrane. Never use a sharp object to consolidate the concrete. Provide temporary protection from concrete over splash for areas of the Preprufe membrane that are adjacent to a concrete pour.

Removal of Formwork

Preprufe membranes can be applied to removable formwork, such as slab perimeters, elevator and lift pits, etc. Once the concrete is poured the formwork must remain in place until the concrete has gained sufficient compressive strength to develop the surface bond. Preprufe membranes are not recommended for conventional twin-sided wall forming systems.

A minimum concrete compressive strength of 1500 psi (10 N/mm^2) is recommended prior to stripping formwork supporting Preprufe membranes. Premature stripping may result in displacement of the membrane and/or spalling of the concrete.

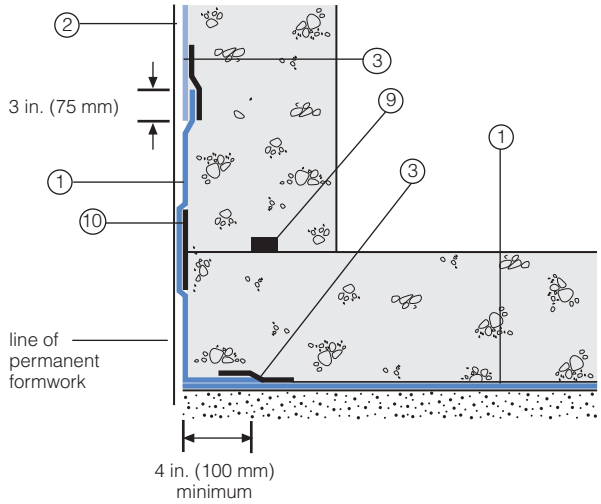
Refer to Grace Tech Letter 17 for information on removal of formwork for Preprufe.



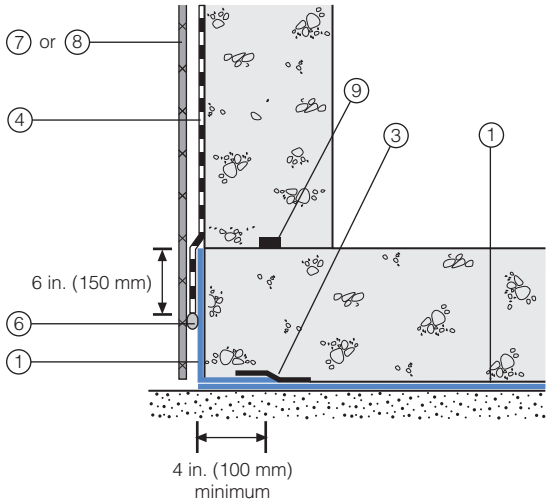
Detail Drawings

Details shown are typical illustrations and not working details. For a list of the most current details, visit us at graceconstruction.com. For technical assistance with detailing and problem solving please call toll free at 866-333-3SBM (3726).

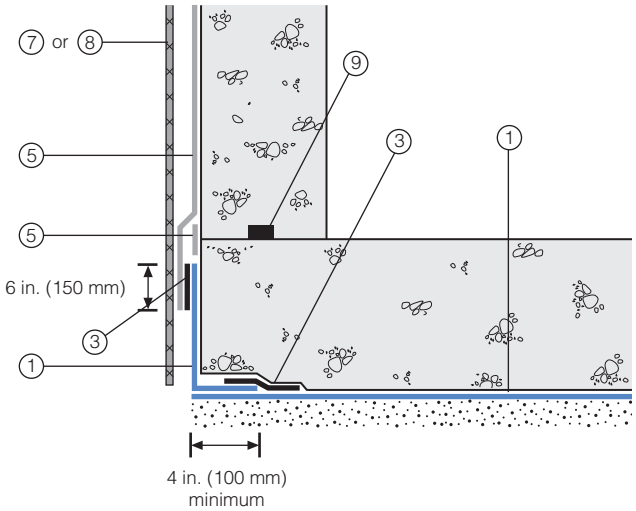
Wall base detail against permanent shutter



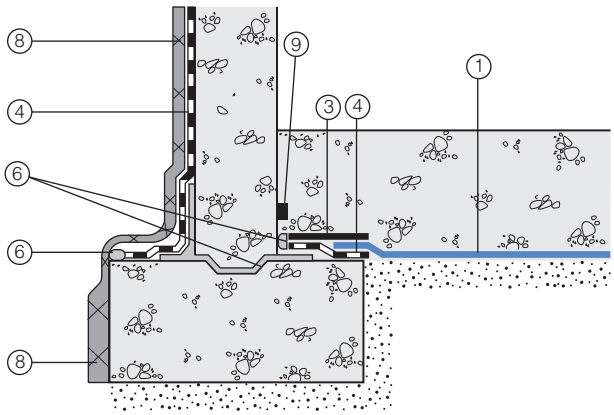
Bituthene wall base detail (Option 1)



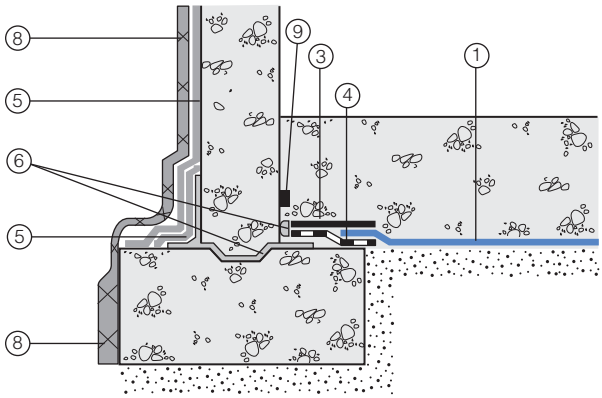
Procor wall base detail (Option 1)



Bituthene wall base detail (Option 2)



Procor wall base detail (Option 2)



1 **Preprufe 300R Plus**
2 **Preprufe 160R Plus**
3 **Preprufe Tape**
4 **Bituthene®**
5 **Procor**
6 **Bituthene Liquid Membrane**
7 **Protection**
8 **Hydroduct®**
9 **Adcor ES**
10 **Preprufe CJ Tape**

Supply

Dimensions (Nominal)	Preprufe 300R Plus Membrane	Preprufe 160R Plus Membrane	Preprufe Tape (LT or HC*)
Thickness	0.046 in. (1.2 mm)	0.032 in. (0.8 mm)	
Roll size	3 ft. 10 in. x 102 ft. (1.17m x 31.15m)	3 ft. 10 in. x 120 ft. (1.17m x 36.6m)	4 in. x 49 ft (100 mm x 15 m)
Roll area	392 ft^2 (36 m^2)	460 ft^2 (42 m^2)	
Roll weight	108 lbs (50 kg)	92 lbs (42 kg)	4.3 lbs (2 kg)
Minimum side/end laps	3 in. (75 mm)	3 in. (75 mm)	3 in. (75 mm)
* LT denotes Low Temperature (between 25°F (-4°C) and 86°F (+30°C)) HC denotes Hot Climate (50°F (>+10°C))			
Ancillary Products			
Bituthene Liquid Membrane—1.5 US gal (5.7 liter) or 4 US gal (15.1 liter)			

Physical Properties

Property	Typical Value 300R Plus	Typical Value 160R Plus	Test Method
Color	white	white	
Thickness	0.046 in. (1.2 mm)	0.032 in. (0.8 mm)	ASTM D3767
Lateral Water Migration Resistance	Pass at 231 ft (71 m) of hydrostatic head pressure	Pass at 231 ft (71 m) of hydrostatic head pressure	ASTM D5385, modified[1]
Low temperature flexibility	Unaffected at -20°F (-29°C)	Unaffected at -20°F (-29°C)	ASTM D1970
Resistance to hydrostatic head	231 ft (71 m)	231 ft (71 m)	ASTM D5385, modified[2]
Elongation	500%	500%	ASTM D412, modified[3]
Tensile strength, film	4000 psi (27.6 MPa)	4000 psi (27.6 MPa)	ASTM D412
Crack cycling at -9.4°F (-23°C), 100 cycles	Unaffected, Pass	Unaffected, Pass	ASTM C836[4]
Puncture resistance	221 lbs (990 N)	100 lbs (445 N)	ASTM E154
Peel adhesion to concrete	5 lbs/in. (880 N/m)	5 lbs/in. (880 N/m)	ASTM D903, modified[5]
Lap peel adhesion at 72°F (22°C)	8 lbs/in. (1408 N/m)	8 lbs/in. (1408 N/m)	ASTM D1876, modified[6]
Lap peel adhesion at 40°F (4°C)	8 lbs/in. (1408 N/m)	8 lbs/in. (1408 N/m)	ASTM D1876, modified[6]
Permeance to water vapor transmission	0.01 perms (0.6 ng/(Pa x s x m^2))	0.01 perms (0.6 ng/(Pa x s x m^2))	ASTM E96, method B

Footnotes:

1. Lateral water migration resistance is tested by casting concrete against membrane with a hole and subjecting the membrane to hydrostatic head pressure with water. The test measures the resistance of lateral water migration between the concrete and the membrane.
2. Hydrostatic head tests of Preprufe Membranes are performed by casting concrete against the membrane with a lap. Before the concrete cures, a 0.125 in. (3 mm) spacer is inserted perpendicular to the membrane to create a gap. The cured block is placed in a chamber where water is introduced to the membrane surface up to the head indicated.
3. Elongation of membrane is run at a rate of 2 in. (50 mm) per minute.
4. Concrete is cast against the Preprufe membrane and allowed to cure (7 days minimum)
5. Concrete is cast against the protective coating surface of the membrane and allowed to properly dry (7 days minimum). Peel adhesion of membrane to concrete is measured at a rate of 2 in. (50 mm) per minute at room temperature.
6. The test is conducted 15 minutes after the lap is formed (per Grace published recommendations) and run at a rate of 2 in. (50 mm) per minute at 72°F (22°C).

Specification Clauses

Preprufe 300R Plus or 160R Plus shall be applied with its adhesive face presented to receive fresh concrete to which it will integrally bond. Only Grace Construction Products approved membranes shall be bonded to Preprufe. All Preprufe system materials shall be supplied by Grace Construction Products, and applied strictly in accordance with their instructions. Specimen performance and formatted clauses are also available.

NOTE: Use Preprufe Tape to tie-in Procor with Preprufe.

Health and Safety

Refer to relevant Material Safety data sheet. Complete rolls should be lifted and carried by a minimum of two persons.

www.graceconstruction.com

For technical assistance call toll free at 866-333-3SBM (3726)

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We hope the information here will be helpful. It is based on data and knowledge considered to be true and accurate and is offered for the users' consideration, investigation and verification, but we do not warrant the results to be obtained. Please read all statements, recommendations or suggestions in conjunction with our conditions of sale, which apply to all goods supplied by us. No statement, recommendation or suggestion is intended for any use which would infringe any patent or copyright. W. R. Grace & Co.–Conn., 62 Whittemore Avenue, Cambridge, MA 02140. In Canada, Grace Canada, Inc., 294 Clements Road, West, Ajax, Ontario, Canada L1S 3C6.

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