

Mott Hall School, 3458 Third Avenue, Bronx, New York

Remedial Action Work Plan

NYC BCP Number: 14CVCP230X

OER Project Number: 10EHAZ207X

Prepared for:

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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

Acronym	Definition
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, Jolanda G. Jansen, am a Professional Engineer. I have primary direct responsibility for implementation of the remedial action for the Mott Hall School site located at 3458 Third Avenue, Site No. 14CVCP230X.

I, Paul Ciminello, am a Qualified Environmental Professional as defined in §43-140. I have primary direct responsibility for implementation of the remedial action for the Mott Hall School site located at 3458 Third Avenue, Site No. 14CVCP230X.

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

Jolanda G. Jansen

Name

068972-1

NYS PE License Number

Jolanda G. Jansen
Signature

4/4/2014
Date



Paul H. Ciminello

QEP Name

Paul H. Ciminello
QEP Signature

4/7/14
Date



EXECUTIVE SUMMARY

3462 Third Avenue Realty LLC has applied to enroll in the New York City Voluntary Brownfield Cleanup Program (NYC VCP) to investigate and remediate a 7,000-square foot site located at 3458 Third Avenue, Bronx, 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 in the Morrisania section of the Bronx and is identified as Block 2609, Lot 2 (see Figure 2: Site Location Map). Currently, the Site is a paved parking lot used by customers of the supermarket in the adjoining structure to the north.

Summary of Proposed Redevelopment Plan

The development project consists of the construction of a six story building to be used for retail space (1st floor) and a charter school (2nd through 6th floors). The building will have a partial basement (excavated to a depth of ten feet below surface grade) and will have a total height of 92 feet. The entire site will be covered by the building.

Summary of the Remedy

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

The proposed remedial action will consist of:

1. Preparation of a Community Protection Statement and performance of all required NYC VCP Citizen Participation activities according to an approved Citizen Participation Plan.
2. Performance of a Community Air Monitoring Program for particulates and volatile organic carbon compounds.
3. Establishment of Site Specific (Track 4) Soil Cleanup Objectives SCOs for soils proposed to remain on the site.
4. Site mobilization involving Site security setup, equipment mobilization, utility mark outs and marking & staking excavation areas.
5. Excavation and removal of soil/fill exceeding SCOs. Excavation for construction of the new building's partial cellar level would take place to a depth of approximately 10 feet for the western two third of the Site. Eastern one thirds of the Site will be slab on grade construction. Approximately 2500 tons of soil will be removed from property.
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. Installation of active Sub Slab Depressurization system (SSDS) and post-installation testing of this system.
11. Installation of a vapor barrier below the concrete slab underneath the building, as well as behind foundation walls of the proposed building.

12. Construction and maintenance of an engineered composite cover consisting of the building slab composed of about 12” of reinforced concrete over at least 6” of compacted gravel.
13. Implementation of storm-water pollution prevention measures in compliance with applicable laws and regulations.
14. Performance of all activities required for the remedial action, including permitting requirements and pretreatment requirements, in compliance with applicable laws and regulations.
15. Submission of a RAR that describes the remedial activities, certifies that the remedial requirements have been achieved, defines the Site boundaries, lists any changes from this RAWP, and describes all Engineering and Institutional Controls to be implemented at the Site.
16. Submission of an approved Site Management Plan SMP in the RAR for long-term management of residual contamination, including plans for operation, maintenance, inspection and certification of Engineering and Institutional Controls and reporting at a specified frequency.
17. Continued registration with an E-Designation. Additional Institutional Controls will include prohibition of the following: (1) use of groundwater without treatment rendering it safe for the intended use; (2) disturbance of residual contaminated material unless it is conducted in accordance with the SMP; and (2) 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 Paul Ciminello and can be reached at (845) 452-1658.

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 onsite Project Manager Paul Ciminello or NYC Office of Environmental Remediation Project Manager Katherine Glass at (212) 676-4925.

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

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

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

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

Complaint Management. The contractor performing this cleanup is required to address all complaints. If you have any complaints, you can call the facility Project Manager Katherine Glass at (212) 676-4925, the NYC Office of Environmental Remediation Project Manager Paul Ciminello at (845) 452-1658, 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 on-line document repository at the OER website: <http://www.nyc.gov/html/oer/html/document-repository/document-repository.shtml>

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

3462 Third Avenue Realty LLC has applied to enroll in the New York City Voluntary Cleanup Program (NYC VCP) to investigate and remediate a property located at 3458 Third Avenue in the Morrisania section of Bronx, 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 alternative 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 in the Morrisania section of the Bronx and is identified as Block 2609, Lot2 (see Figure 2: Site Location Map). Currently, the Site is a paved parking lot used by customers of the supermarket in the adjoining structure to the north.

1.2 PROPOSED REDEVELOPMENT PLAN

The development project consists of the construction of a six story building to be used for retail space (1st floor) and a charter school (2nd through 6th floors). The building will have a partial basement (excavated to a depth of ten feet below surface grade) and will have a total height of 92 feet. The building will completely cover the site. The remedial action contemplated under this RAWP may be implemented independently of the proposed redevelopment plan.

1.3 DESCRIPTION OF SURROUNDING PROPERTY

The project site is located in a M1-1/ R7-2 zone with an R6 zone to the east and an R7-1 zone to the west. An apartment building with retail facilities on the first floor adjoins to the north and a similar apartment building with a day care center on the first floor adjoins to the northwest. A carwash, which is a registered PBS facility, adjoins to the west, a park adjoins to the south and an unmarked warehouse adjoins to the east. Figure 3 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, 3458 Third Avenue, Bronx, New York*”, dated December, 2013 (RIR).

Summary of Past Uses of Site and Areas of Concern

A Middleton Environmental Phase I Update, dated March 3, 2008 was performed on the adjoining property to the north and the northern half of the subject property. Very little information in the Phase I Update pertains to the subject property; however, the historical presence of numerous industrial processes on the adjoining property to the north are documented. A P.W. Grosser Phase II investigation for the northern adjoining property, dated September 4, 2006, documented the presence of elevated concentrations of chlorinated volatile organic compounds (CVOCs) in the groundwater at well B1/TW-1 located immediately north of the project site. Cis 1,2-dichloroethene was detected at 2,600 ug/L; tetrachloroethene was detected at 1,600 ug/L; trichloroethylene was detected at 680 ug/L and vinyl chloride was detected at 290 ug/L.

Based on a Sanborn map review, the subject property was in use for residential purposes in 1891. By 1909 retail stores are shown as having been present in portions of residential buildings fronting onto Third Avenue. By 1986 the on-site structures had been demolished and the subject property had become vacant.

These findings support the conclusion that there is no history of significant commercial or industrial activity at the site which could have impacted soils, soil vapor and/or groundwater with the documented CVOC contamination, and that the site has likely been impacted by historic uses at the adjoining property to the north.

Summary of the Work Performed under the Remedial Investigation

3462 Third Avenue Realty LLC performed the following scope of work:

1. Conducted a Site inspection to identify AOCs and physical obstructions (i.e. structures, buildings, etc.);
2. Installed 12 soil borings across the entire project Site, and collected 19 soil samples for chemical analysis from the soil borings to evaluate soil quality;
3. Installed 4 groundwater monitoring wells (MW-1, MW-2, 2MW-1 and 2MW-2) throughout the Site (a third well [MW-3] that had been installed by Yu Associates as part of a geotechnical investigation in November 2012 was already present in the southwestern corner of the site) to establish groundwater flow, and collected 5 groundwater samples for chemical analysis to evaluate groundwater quality; and,
4. Installed 4 soil vapor probes around the Site perimeter and collected 4 samples for chemical analysis.

Summary of Environmental Findings

1. Property elevation ranges from 40 feet at the western property line to 51 feet at the eastern property line.
2. Depth to groundwater ranges from between 13.92 feet and 17.10 feet bsg at the Site.
3. Groundwater flow is generally from north to south beneath the Site.
4. Depth to bedrock is approximately 30 feet at the western side of the site and approximately 8 feet at the eastern side of the Site, based on field observations and geotechnical borings extended by Yu Associates as documented in a Geotechnical Report, dated November 9, 2012 (a copy of this document is included as Appendix 6).

5. The stratigraphy of the site, from the surface down, consists of approximately 8 feet of reddish-brown sand underlain by historical fill to 18 feet. The fill is generally coarse to fine sand with varying amounts of silt, and clay and coarse to fine gravel with occasional fragments of brick, concrete, wood, metal and rock. The fill is underlain by various thicknesses of weathered bedrock overlaying competent bedrock.
6. Soil/fill samples collected during the RI showed no field evidence of contamination. VOCs in soil samples were not detected except for trace levels of acetone (61ppb), methylene chloride (64 ppb), naphthalene (6.8 ppb) and tetrachloroethene (PCE), which was detected at a maximum concentration of 21 ppb. Several SVOCs were detected above Unrestricted Use and Restricted Residential SCOs in one soil sample B1 (10'-12'). SVOCs including benzo(a)anthracene (2,080 ppb), benzo(a)pyrene (1,950 ppb), benzo(b)fluoranthene (2,700 ppb), benzo(k)fluoranthene (1,900 ppb), chrysene (2,130 ppb) and indeno(1,2,3-c,d)pyrene (1,130 ppb) exceeded their respective Restricted Residential SCOs. No SVOCs were detected above laboratory minimum detection limits in any other soil samples. Metals including arsenic, barium, iron, lead, and zinc exceeded Unrestricted Use SCOs throughout the site. Of these, arsenic (41.3 mg/Kg), barium (652 mg/Kg) and iron (2,000 mg/Kg) also exceeded Restricted Residential SCOs. PCBs were not detected above laboratory minimum detection limits in any of the samples. Several pesticides including 4,4'-DDD (max. of 247 ppb); 4,4'-DDE (max. of 388 ppb); and 4,4'-DDT (max. of 3,260 ppb); dieldrin (max. of 179 ppb) and chlordane (max. of 874 ppb) were detected in soil borings throughout the site, and of these, 4,4'-DDT and dieldrin also exceeded Restricted Residential SCOs in one soil boring B1 (10-12'). No other pesticides were detected above Restricted Residential SCOs in any of the samples.

7. Groundwater samples collected during the RI showed elevated concentrations of chlorinated solvents were detected in all wells. VOCs including cis-1,2-dichloroethylene (at 12, 13, 4000, 4,500 and 5600 ug/L), tetrachloroethylene (ranging from 22 to 2,200 ug/L), trichloroethylene (ranging from 5.1 to 1,400 ug/L), vinyl chloride (700 ug/L), and trans-1,2-dichloroethylene at maximum concentration of 61 ug/L exceeded their respective NYSDEC Part 703.5 Groundwater Quality Standards (GQS). SVOCs, PCBs or pesticides were detected at concentrations above guidance levels in any of the samples. Metals including aluminum, iron, magnesium, manganese and sodium exceeded GQS. The detected concentrations are consistent with a previous investigation of the adjoining property to the north, where elevated concentrations of chlorinated solvents had been detected in a monitoring well immediately north of the site (see section 2.2 below). Soil borings extended in the vicinity of MW-3 documented the absence of CVOCs at concentrations above laboratory minimum detection limits in on-site soils, supporting the conclusion that an on-site source of the groundwater contamination is unlikely.

8. Soil vapor samples collected during the RI showed petroleum VOCs at low concentrations. Most compounds were detected at concentrations below 20 µg/m³ except for 2-butanone (max. of 110 µg/m³), acetone (max. of 130 µg/m³) and hexane (52 µg/m³). Chlorinated VOCs including 1,1,1 – Trichloroethane (TCA) was not detected. Carbon tetrachloride was reported in three vapor samples at a maximum concentration of 18 µg/m³ and is below the NYSDOH Matrix 2, which warrants “No Further Action”. Tetrachloroethylene (PCE) was reported in all four soil vapor samples and ranged from 3.2 to 1,300 µg/m³. Similarly, Trichloroethylene (TCE) was reported in three soil vapor samples and ranged from 8.5 to 40 µg/m³ respectively. Both PCE and TCE concentrations were above the DOH Matrix 2 and warrants monitoring/mitigation. 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.

Soil Vapor

- Prevent exposure to contaminants in soil vapor.
- Prevent migration of soil vapor into the proposed on-site structure.

3.0 REMEDIAL ALTERNATIVES ANALYSIS

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

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

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

Alternative 1:

- Establishment of Unrestricted Use (Track 1) Soil Cleanup Objectives (SCOs).
- Removal of all soil/fill exceeding Track 1 Unrestricted Use SCOs throughout the Site and confirmation that Track 1 Unrestricted Use SCOs has been achieved with post-excavation endpoint sampling. Based on the results of the Remedial Investigation, it is expected that this alternative would require excavation across the entire Site to a depth of

approximately to 9-12 feet to removal all historic fill. If soil/fill containing analytes at concentrations above Unrestricted Use SCOs is still present at the base of the excavation after removal of all soil, additional excavation will be performed to ensure complete removal of soil that does not meet Track 1 Unrestricted Use SCOs.

- No Engineering or Institutional Controls are required for a Track 1 cleanup, but a final cover over the entire Site will be placed as part of construction.
- Placement of a final cover over the entire Site as part of construction.

Alternative 2

- Establishment of Track 4 Site-Specific SCOs.
- Removal of all soil/fill exceeding Track 4 Site-Specific SCOs and confirmation that Track 4 Site-Specific SCOs have been achieved with post-excavation endpoint sampling. Excavation for construction of the new building's partial cellar level would take place to a depth of approximately 10 feet for the western two thirds of the Site. Eastern one thirds of the Site will be slab on grade construction. Therefore, if soil/fill containing analytes at concentrations above Track 4 Site-Specific SCOs is still present after removal of all soil required for construction of the new building is complete, OER will be consulted and additional excavation may be performed to meet Track 4 Site-Specific SCOs.
- Placement of a final cover over the entire Site to prevent exposure to remaining soil/fill.
- Installation and post installation startup and testing of an active SSDS.
- Establishment of use restrictions including prohibitions on the use of groundwater from the Site; prohibitions of sensitive Site uses, such as farming or vegetable gardening, to prevent future exposure pathways; and prohibition of a higher level of land use without OER approval.

- Establishment of an approved Site Management Plan (SMP) to ensure long-term management of these Engineering and Institutional Controls including the performance of periodic inspections and certification that the controls are performing as they were intended. SMP will note that the property owner and property owner's successors and assigns must comply with the approved SMP.

The property will continue to be registered with an E-Designation at the NYC Buildings Department.

3.1 THRESHOLD CRITERIA

Protection of Public Health and the Environment

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

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

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

For both Alternatives, potential exposure to contaminated soils or groundwater during construction would be minimized by implementing a Construction Health and Safety Plan, an

approved Soil/Materials Management Plan and Community Air Monitoring Plan (CAMP). Potential contact with contaminated groundwater would be prevented as its use is prohibited by city laws and regulations. Potential future migration of off-Site soil vapors into the new building would be prevented by SSDS and by installing a vapor barrier below the new building's basement slab and continuing the vapor barrier around foundation walls.

3.2. BALANCING CRITERIA

Compliance with Standards, Criteria and Guidance (SCGs)

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

Alternative 1 would achieve compliance with the remedial goals, chemical-specific SCGs and RAOs for soil through removal 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 SSDS and a vapor barrier/waterproofing system below the new building's basement slab and continuing the vapor barrier around foundation walls, as part of development.

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

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

Short-Term Effectiveness and Impacts

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

Both Alternative 1 and 2 would result in short-term impacts associated with excavation, handling, load out of materials, and truck traffic. Short term impacts would be higher for Alternative 1 due to greater amounts of historical fill material required to be removed in areas of slab on grade construction. 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.

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

The possibility exists for the Track 1 Alternative to take additional time to implement when compared to the Track 4 Alternative.

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 above Track 1 Unrestricted Use SCOs. Removal of on-Site contaminant sources will prevent future groundwater contamination.

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

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 contaminant mobility, or reduce the total volume of contaminated media.

Both alternatives would result in removal of soil contamination exceeding the SCOs providing the highest level, most effective and permanent remedy over the long-term with respect to a remedy for contaminated soil, which will eliminate any migration to groundwater. Potential sources of soil vapor and groundwater contamination will also be eliminated as part of the remedy.

Alternative 1 would permanently eliminate the toxicity, mobility, and volume of contaminants from on-site soil by removing all soil in excess of UU SCOs. Removal of soil to

depths greater than 11 feet would occur on western portions of the site where bedrock is deep.

Alternative 2 would greatly reduce the toxicity, mobility, and volume of contaminants from on-site soil because it would include removal of as much as 11 feet of soil/fill for development purposes and will achieve site specific SCOs.

Implementability

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

The techniques, materials and equipment to implement both remedial Alternatives 1 and 2 are readily available and have been proven effective in remediating the contaminants associated with the Site. They use standard materials and services that are well established technology. The reliability of each remedy is also high. Alternative 1 would be harder to implement because of the presence of an off-site source of groundwater contamination. Alternative 2, uses standard materials, services, and well-established technology

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 capital costs associated with the Track 1 alternative would be significantly higher than the Track 4 alternative in that a higher volume of soil/fill may need to be excavated beyond the 11 feet needed for development to achieve a Track 4 SCOs status over the entire site. Total costs for the Track 1 Alternative are estimated at \$750,000. Total costs for the Track 4 Alternative are estimated at \$200,000. In both cases, appropriate public health and environmental protections are achieved.

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

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 objections are anticipated for either Track 1 or Track 4 alternatives. The project will provide the community with additional residential and commercial opportunities. The community will have the opportunity to become involved in the project throughout the process of citizen participation in the VCP. The Site went through the New York City Planning Department's Uniform Land Use Review Procedure (ULURP) and has additionally received support from Community Board 10.

Land Use

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

The proposed Track 1 and Track 4 alternatives provide improvement in Site and local area land use by transforming the Site from a contaminated property to a fully remediated residential/commercial development. The Site is in a mixed-use zone (C4-5X) located within a

predominantly residential area (R7-2). The proposed development supports existing community master plan objectives of re-establishing a dynamic, viable community with additional affordable housing, retail, and community space.

No historical, archeological, or natural resources are located within the Site and the Site is not in close proximity to a floodplain (the Harlem River located to the east of the Site is the nearest floodplain). The Site is located adjacent to multi-family residential buildings, Public School 149, mixed-use and institutional structures.

The Site is in the vicinity of several subway stations and bus routes, which are available for the residents of the community. The proposed redevelopment of the Site is compatible with its current zoning and is consistent with recent development patterns. Following remediation, the Site will meet either Track 1 Unrestricted Use or Track 4 Site-Specific SCOs, both of which are appropriate for its planned residential use. Improvements in the current environmental condition of the property achieved by both alternatives are also consistent with the City's goals for cleanup of contaminated land and bringing such properties into productive reuse.

Sustainability of the Remedial Action

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

Both Alternatives have an equal potential to achieve sustainable remedial action goals.

4.0 REMEDIAL ACTION

4.1 SUMMARY OF PREFERRED REMEDIAL ACTION

The preferred remedial action alternative is the Track 4 Alternative. The preferred remedial action alternative achieves protection of public health and the environment for the intended use of the property. The preferred remedial action alternative will achieve all of the remedial action objectives established for the project and addresses applicable SCGs. The preferred remedial action alternative is effective in both the short-term and long-term and reduces mobility, toxicity and volume of contaminants. The preferred remedial action alternative is cost effective and implementable and uses standards methods that are well established in the industry.

The proposed remedial action will consist of:

1. Preparation of a Community Protection Statement and performance of all required NYC VCP Citizen Participation activities according to an approved Citizen Participation Plan.
2. Performance of a Community Air Monitoring Program for particulates and volatile organic carbon compounds.
3. Establishment of Site Specific (Track 4) Soil Cleanup Objectives SCOs for soils proposed to remain on the site.
4. Site mobilization involving Site security setup, equipment mobilization, utility mark outs and marking & staking excavation areas.
5. Excavation and removal of soil/fill exceeding SCOs. Excavation for construction of the new building's partial cellar level would take place to a depth of approximately 11 feet for the western two third of the Site. The eastern one third of the Site will be slab on grade construction requiring excavation of at most 2 feet of soil. Approximately 2100 tons of soil will be removed from property.
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. Installation of active Sub Slab Depressurization system (SSDS) and post-installation testing of this system.
11. Installation of a vapor barrier below the concrete slab underneath the building, as well as behind foundation walls of the proposed building.
12. Construction and maintenance of an engineered composite cover consisting of the building slab composed of about 12” of reinforced concrete over at least 6” of compacted gravel base.
13. Implementation of storm-water pollution prevention measures in compliance with applicable laws and regulations.
14. Performance of all activities required for the remedial action, including permitting requirements and pretreatment requirements, in compliance with applicable laws and regulations.
15. Submission of a RAR that describes the remedial activities, certifies that the remedial requirements have been achieved, defines the Site boundaries, lists any changes from this RAWP, and describes all Engineering and Institutional Controls to be implemented at the Site.

16. Submission of an approved Site Management Plan SMP in the RAR for long-term management of residual contamination, including plans for operation, maintenance, inspection and certification of Engineering and Institutional Controls and reporting at a specified frequency.
17. Continued registration with an E-Designation. Additional Institutional Controls will include prohibition of the following: (1) use of groundwater without treatment rendering it safe for the intended use; (2) disturbance of residual contaminated material unless it is conducted in accordance with the SMP; and (3) higher level of land usage without OER-approval.

4.2 SOIL CLEANUP OBJECTIVES AND SOIL/FILL MANAGEMENT

The following Site Specific Track 4 SCOs are proposed for this project:

<u>Contaminant</u>	<u>Track 4 SCOs</u>
Total SVOCs	250 ppm
Arsenic	23 ppm
Lead	800 ppm
Mercury	2.0 ppm
Barium	750 ppm

Soil and materials management on-Site and off-Site, including excavation, handling and disposal, will be conducted in accordance with the SMMP in Appendix 3. The location of planned excavations is shown in Figure 4.

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

Estimated Soil/Fill Removal Quantities

The total quantity of soil/fill expected to be excavated and disposed of off-Site is 2,100 cubic yards (estimated average excavation of 11 feet over the western two thirds of the entire 7,000 square foot lot will be 1,900 cubic yards and 2 feet over the remaining third for the slab on grade will be 200 cubic yards). The entire volume of excavated material (approximately 2,100 cubic yards is presumed to require management as non-hazardous regulated waste.

The proposed disposal locations for Site-derived impacted materials are listed below. Additional disposal locations established at a later date will be reported promptly to the OER Project Manager.

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. For comparison to Track 4 SCO's, analytes will only include VOCs.

Hot-spot removal actions, whether established under this RAWP or identified during the remedial program, or during the construction phase that may involve subsoil removal to create a suitable foundation for the remainder of the building slab, will be performed in conjunction with post remedial end-point sampling 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 collected within 24 hours of excavation from the zero to six-inch interval at the excavation floor. Samples collected after 24 hours should be from the six to twelve inch interval.

4. For contaminated soil removal, post remediation soil samples for laboratory analysis should be collected immediately after contaminated soil removal. If the excavation is enlarged horizontally, additional soil samples will be collected pursuant to bullets 1-3 above.

Post-remediation end-point sample locations and depth will be based 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 laboratories will be used for all confirmation and end-point sample analyses. Laboratories performing confirmation and end-point sample analyses will be reported in the RAR. The RAR will provide both a tabular and map summary of all confirmation and end-point sample results and will include all data including non-detects and applicable standards and/or guidance values. End-point samples will be confirmation samples and will be analyzed for compounds and elements as described above utilizing the following methodology:

Soil analytical methods will include:

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

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

Quality Assurance/Quality Control

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

One duplicate 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 shipped via overnight courier or delivered directly to the analytical laboratory by field personnel. Samples will be containerized in appropriate laboratory provided glassware and shipped in plastic coolers. Samples will be preserved through the use of ice or “cold-paks” to maintain a temperature of 4°C.

Dedicated disposable sampling 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 withalconox® detergent solution and scrub
- Rinse with tap water
- Rinse with distilled or deionized water

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

Import and Reuse of Soils

Import of soils onto the property and reuse of soils already onsite will be performed in conformance with the Soil/Materials Management Plan in Appendix 3. No soil is planned to be imported into the Site for backfill and cover. Should importation of soil backfill/cover materials be required, only clean soils from a source that is pre-approved by OER will be used.

4.3 ENGINEERING CONTROLS

Engineering Controls will be employed in the remedial action to address residual contamination remaining at the site. The Site has three primary Engineering Control Systems.

Cover System

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

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

Vapor Barrier

Migration of soil vapor will be mitigated with a combination of building slab and vapor barrier. A properly designed vapor barrier will be installed concurrent with the installation of the building foundation. Specifications for the vapor barrier will be determined as part of design of the proposed building. The vapor barrier at the Site will be installed per the manufacturer's recommendations; however, it is anticipated that the vapor barrier installation will include the following:

- A minimum 20 mil high-density polyethylene membrane liner (or equivalent material) will be installed beneath the footprint of the entire building.
- The liner will be installed over a sub-grade free of sharp rocks or other protrusions which may cause puncturing.
- The liner will be sealed at the seams (with at least a 12 inch overlap) and at penetrations (e.g., for pipes).
- The vapor barrier will be inspected to insure that it was installed correctly prior to the pouring of concrete for the building slab.

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.

Sub-Slab Depressurization System (SSDS)

Migration of soil vapor will be mitigated with the construction of an active sub-slab depressurization system.

An active SSDS will be installed beneath the footprint of the building. The expressed purpose of this SSDS is to intercept potential subgrade vapors in order to prevent them from entering the on-site structure.

Three-inch diameter slotted PVC pipes will be installed beneath the concrete slab in the approximate locations as shown on the Proposed SSDS Layout. The piping will be configured to cover all portions of the building; vapors accumulating under the slab will be drawn up the vertical riser and out above the roof line. The discharge pipe will be located at least 20 feet from all the air intakes.

Specifically, the SSDS will be constructed as follows:

- Collection piping will be 3", schedule 40 industrial grade PVC casing with 0.02 slotted openings. Piping will be wrapped in filter fabric.
- Collection piping will be underlain and overlain with 3 inches of gravel (3/4 inch stone).
- All pipe fittings will be properly sealed.
- The PVC piping will be connected to a vertical pipe extending above the roofline of the building. The discharge point will be properly located above the roofline to minimize the likelihood of air emissions deleteriously affecting indoor air quality via any roof-mounted air intakes.

- At this time, it is anticipated that all collection piping will be manifolded and served by one riser. The riser will be connected to a fan as well as a granular activated carbon (GAC) tank, should air quality test data document the need for hydrocarbon removal.

SSDS System Start-up

System start-up and initial testing will occur after the concrete slabs of the on-Site structures have been poured. The following activities will be conducted:

1. Prior to system start-up all visible system components will be visually inspected for verification of proper installation. The system will be temporarily started and all vacuum pumps/fans will be inspected for proper functioning. The system will be shut off and documentation of system conditions will be maintained in field logbooks.
2. Temporary monitoring points will be installed throughout the building by drilling $\frac{1}{4}$ inch – $\frac{1}{2}$ inch diameter holes through the slab. An assessment of sub-slab pressure, both with the system off and with the system temporarily on, will be made at each monitoring point using a digital micro-manometer. A difference in pressure of -0.002 inches of water column at each monitoring point, or a sustained sub-slab pressure of at least -0.01 inches of water column with the system on, will indicate proper system functioning. Observed pressure readings that fall short of these standards may indicate the need for system modification.
3. Carbon filtration will be installed at the system discharge point if field observations indicate the potential for significant vapors in the emission. The system will be operated for a minimum of 12 hours and subsequently, pre- and post-carbon filtration effluent air samples will be collected and analyzed for VOCs (USEPA Method TO-15). These data will be used to determine the need for and extent of an air quality permit (including the need for continued air discharge treatment).
4. The system will be permanently engaged following the completion of system modifications, the addition of any effluent air treatment, and the receipt of any necessary permits.

5. After the system has been permanently engaged the Volunteer will be responsible for inspections of the system's pressure. In addition, the system fans will be inspected periodically for signs of wear and/or failure.

SSDS - Post-Construction Indoor/Outdoor Air Sampling

The Volunteer will conduct post-construction indoor and outdoor air quality sampling to document on-Site air quality both within the on-Site structure(s) and the exterior areas. The Volunteer will consult with OER prior to sampling. Sampling of indoor air quality will be performed in accordance with established NYSDOH protocols, and will include analyses for the VOCs previously detected in on-Site soil.

Three air samples will be collected to determine external air quality. Prior to sample location, meteorological data on wind velocity and direction will be collected to provide quality assurance to the data set. Measurable precipitation and/or average wind speed in excess of ten miles per hour will be conditions which will necessitate rescheduling of outdoor air quality sampling. The sampling event will consist of one upwind location and two downwind locations. Internal air quality will be determined by collecting and analyzing three air samples at locations inside the structure. Samples will be analyzed for VOCs using USEPA Method TO-15. All sample locations will be shown on a Site map to be provided to OER in the Final Report.

4.4 INSTITUTIONAL CONTROLS

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

Institutional Controls for this remedial action are:

- The property will continue to be registered with an E-Designation at the NYC Buildings Department. This RAWP includes a description of all ECs and ICs and summarizes the requirements of the Site Management Plan which will note that the property owner and property owner's successors and assigns must comply with the approved SMP.

- Submittal of the SMP for approval by OER that provides procedures for appropriate operation, maintenance, monitoring, inspection, reporting and certification of ECs. The SMP will require that the property owner and property owner's successors and assigns will submit to OER a periodic written statement that certifies that: (1) controls employed at the Site are unchanged from the previous certification or that any changes to the controls were approved by OER; and, (2) nothing has occurred that impairs the ability of the controls to protect public health and environment or that constitute a violation or failure to comply with the SMP. OER retains the right to enter the Site in order to evaluate the continued maintenance of any controls. This certification shall be submitted at a frequency to be determined by OER in the SMP and will comply with RCNY §43-1407(1)(3).
- 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 commercial and residential (school) use and will not be used for a higher level of use without prior approval by OER.

4.5 SITE MANAGEMENT PLAN

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

The SMP will provide a detailed description of the procedures required to manage residual soil/fill left in place following completion of the remedial action in accordance with the Brownfield Cleanup Agreement with OER. This includes a plan for: (1) implementation of EC's

and ICs; (2) implementation of monitoring programs; (3) operation and maintenance of EC's; (4) inspection and certification of EC's; and (5) reporting.

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

4.6 QUALITATIVE HUMAN HEALTH EXPOSURE ASSESSMENT

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

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

Known and Potential Sources

Based on the findings of the RIR, the site contains poor quality urban fill, which will require management and disposal as non-hazardous regulated waste. Based on the results of the Remedial Investigation Report, the contaminants of concern found are:

Soil

- Trace concentrations of VOCs;
- Several SVOCs including benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene and indeno(1,2,3-c,d)pyrene exceeded their respective Restricted Residential SCOs in one soil sample B1 (10'-12').

- Metals including arsenic, barium and iron exceeded Restricted Residential SCOs.
- Two pesticides 4,4'-DDT and dieldrin exceeded Restricted Residential SCOs in one soil boring B1 (10-12').

Groundwater

- Elevated concentrations of chlorinated solvents were detected in all wells. VOCs including cis-1,2-dichloroethylene, tetrachloroethylene, trichloroethylene, vinyl chloride, and trans-1,2-dichloroethylene exceeded their respective GQS.
- Metals including aluminum, iron, magnesium, manganese and sodium exceeded GQS.

Soil Vapor

- Tetrachloroethylene (PCE) was reported in all four soil vapor samples at concentrations well above the NYS DOH monitoring thresholds.

Nature, Extent, Fate and Transport of Contaminants

Soil/fill samples collected during the RI showed no field evidence of contamination; however, elevated concentrations of SVOCs, pesticides and arsenic, above RR SCOs, were detected in the B-1 (10'-12') sample. Elevated metals and pesticides were detected throughout the Site. Groundwater samples showed elevated concentrations of chlorinated solvents in all samples. Soil vapor samples showed elevated concentration of tetrachloroethylene.

Potential Routes of Exposure

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

- Ingestion of water, fill, or soil;

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

Existence of Human Health Exposure

Current Conditions: The site is currently a paved parking lot (capped with asphalt). The Site is completely fenced, restricting access, but during business hours is currently used as a parking lot for customers at the northern adjoining supermarket. Groundwater is not exposed at the site, and because the site is served by the public water supply, groundwater is not used at the site and there is no potential for exposure. As there is currently no structure onsite, accumulation of soil vapor cannot pose an exposure threat.

Construction/ Remediation Activities: Once redevelopment activities begin, construction workers will come into direct contact with surface and subsurface soils and groundwater, as a result of on-Site construction and excavation activities. On-Site construction workers potentially could ingest, inhale or have dermal contact with any exposed impacted soil, and fill. During the remedial action, on-site exposure pathways will be eliminated by preventing access to the site, through implementation of soil/ materials management, stormwater pollution prevention, and dust controls, employment of a community air monitoring plan, and implementation of a Construction Health and Safety Plan.

Proposed Future Conditions: Under future remediated conditions, the site will be fully capped, limiting potential direct exposure to soil and groundwater remaining in place, and engineering controls will prevent potential for inhalation via soil vapor intrusion. The site is served by the public water supply and groundwater is not used at the site. There are no plausible off-site pathways for ingestion, inhalation, or contact exposures to contaminants derived from the site.

Receptor Populations

On-Site Receptors: The site is currently a paved parking area. Potential on-site receptors include adult and child visitors, construction workers, trespassers and commercial workers.

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

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 0.25 mile) – existing and future
5. Schools (up to 0.25 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 and a SSDS 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. Complete on-site exposure pathways appear to be present only during the construction and remediation phase. During the remedial action, on-site exposure pathways will be eliminated by preventing access to the site, through implementation of soil/materials management, stormwater pollution prevention, and dust controls, employment of a community air monitoring plan, and implementation of a Construction Health and Safety Plan.

5.0 REMEDIAL ACTION MANAGEMENT

5.1 PROJECT ORGANIZATION AND OVERSIGHT

Principal personnel who will participate in the remedial action include Jolanda G. Jansen, Professional Engineer (PE) of Jansen Engineering, PLLC and Paul H. Ciminello, Qualified Environmental Professional (QEP) of Ecosystems Strategies, Inc.

5.2 SITE SECURITY

Site access will be controlled by fencing surrounding the Site and gated entrances.

5.3 WORK HOURS

The hours for operation of remedial construction will be from 7 AM to 5 PM. These hours conform to the New York City Department of Buildings (DOB) construction code requirements.

5.4 CONSTRUCTION HEALTH AND SAFETY PLAN

The Health and Safety Plan is included in Appendix 4. The Environmental Site Safety Coordinator (ESSC) will be Paul H. Ciminello. 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. The ESSC will have completed a 40-hour hazardous waste operator training and general site workers who remove hazardous waste (i.e. excavators, truck drivers) will have completed an 8-hour hazardous waste operations training course or will receive specific training on health and safety matters by the ESSC. The ESSC will be responsible for maintaining worker training records.

Personnel entering any exclusion zone will be trained in the provisions of the HASP and be required to sign an HASP acknowledgment. Site-specific training will be provided to field

personnel. Additional safety training may be added depending on the tasks performed. Emergency telephone numbers will be posted at the site location before any remedial work begins. A safety meeting will be conducted before each shift begins. Topics to be discussed include task hazards and protective measures (physical, chemical, environmental); emergency procedures; PPE levels and other relevant safety topics. Meetings will be documented in a log book or specific form.

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

5.5 COMMUNITY AIR MONITORING PLAN

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

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

VOC Monitoring, Response Levels, and Actions

Volatile organic compounds (VOCs) will be monitored at the downwind perimeter of the immediate work area (i.e., the exclusion zone) on a continuous basis during invasive work. Upwind concentrations will be measured at the start of each workday and periodically thereafter

to establish background conditions. The monitoring work will be performed using equipment appropriate to measure the types of contaminants known or suspected to be present. The equipment will be calibrated at least daily for the contaminant(s) of concern or for an appropriate surrogate. The equipment will be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below.

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

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

Particulate Monitoring, Response Levels, and Actions

Particulate concentrations will be monitored continuously at the upwind and downwind perimeters of the exclusion zone at temporary particulate monitoring stations. The particulate monitoring will be performed using real-time monitoring equipment capable of measuring particulate matter less than 10 micrometers in size (PM-10) and capable of integrating over a

period of 15 minutes (or less) for comparison to the airborne particulate action level. The equipment will be equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration should be visually assessed during all work activities.

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

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

5.6 AGENCY APPROVALS

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

5.7 SITE PREPARATION

Pre-Construction Meeting

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

Mobilization

Mobilization will be conducted as necessary for each phase of work at the Site.

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

Utility Marker Layouts, Easement Layouts

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

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

Dewatering

Groundwater is not present at the anticipated maximum depth of excavation (11 feet). Consistent static groundwater at the Site (as measured by on-Site monitoring wells) is approximately 15 feet bsg, or roughly 4 feet below the maximum depth of excavation. As such, active dewatering is not proposed at this time. Should construction plans warrant the implementation of dewatering, a separate Dewatering Plan will be submitted to OER.

Equipment and Material Staging

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

Stabilized Construction Entrance

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

Truck Inspection Station

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

Extreme Storm Preparedness and Response Contingency Plan

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

Storm Preparedness

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

including, as necessary: clean and reposition silt fences, haybales; clean storm sewer filters and traps; and secure and protect pumps and hosing.

Storm Response

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

Storm Response Reporting

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

5.8 TRAFFIC CONTROL

Drivers of trucks leaving the NYC VCP Site with soil/fill will be instructed to proceed without stopping in the vicinity of the site to prevent neighborhood impacts. The planned route on local roads for trucks leaving the site is north along Third Avenue towards the Cross Bronx 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 Remedial Action Report.

Record Keeping and Photo-Documentation

Job-site record keeping for all remedial work will be performed. These records will be maintained on-Site during the project and will be available for inspection by OER staff. Representative photographs will be taken of the Site prior to any remedial activities and during major remedial activities to illustrate remedial program elements and contaminant source areas.

Photographs will be submitted at the completion of the project in the RAR in digital format (i.e. jpeg files).

5.11 COMPLAINT MANAGEMENT

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

5.12 DEVIATIONS FROM THE REMEDIAL ACTION WORK PLAN

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

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

5.13 DATA USABILITY SUMMARY REPORT

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

6.0 REMEDIAL ACTION REPORT

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

- Information required by this RAWP.
- As-built drawings for all constructed remedial elements, required certifications, manifests and other written and photographic documentation of remedial work performed under this remedy.
- Site Management Plan (if Track 1 is not achieved).
- Description of any changes in the remedial action from the elements provided in this RAWP and associated design documents.
- Tabular summary of all end point sampling results and all material characterization results, QA/QC results for end-point sampling, and other sampling and chemical analysis performed as part of the remedial action and DUSR.
- Test results or other evidence demonstrating that remedial systems are functioning properly.
- Account of the source area locations and characteristics of all contaminated material removed from the Site including a map showing source areas.
- Account of the disposal destination of all contaminated material removed from the Site. Documentation associated with disposal of all material will include transportation and disposal records, and letters approving receipt of the material.
- Account of the origin and required chemical quality testing for material imported onto the Site.
- Continue registration of the property with an E-Designation by the NYC Department of Buildings.
- Reports and supporting material will be submitted in digital form.

Remedial Action Report Certification

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

I, Jolanda G. Jansen, 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 Mott Hall School site located at 3458 Third Avenue, Bronx, NY Site 14CVCP230X.

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

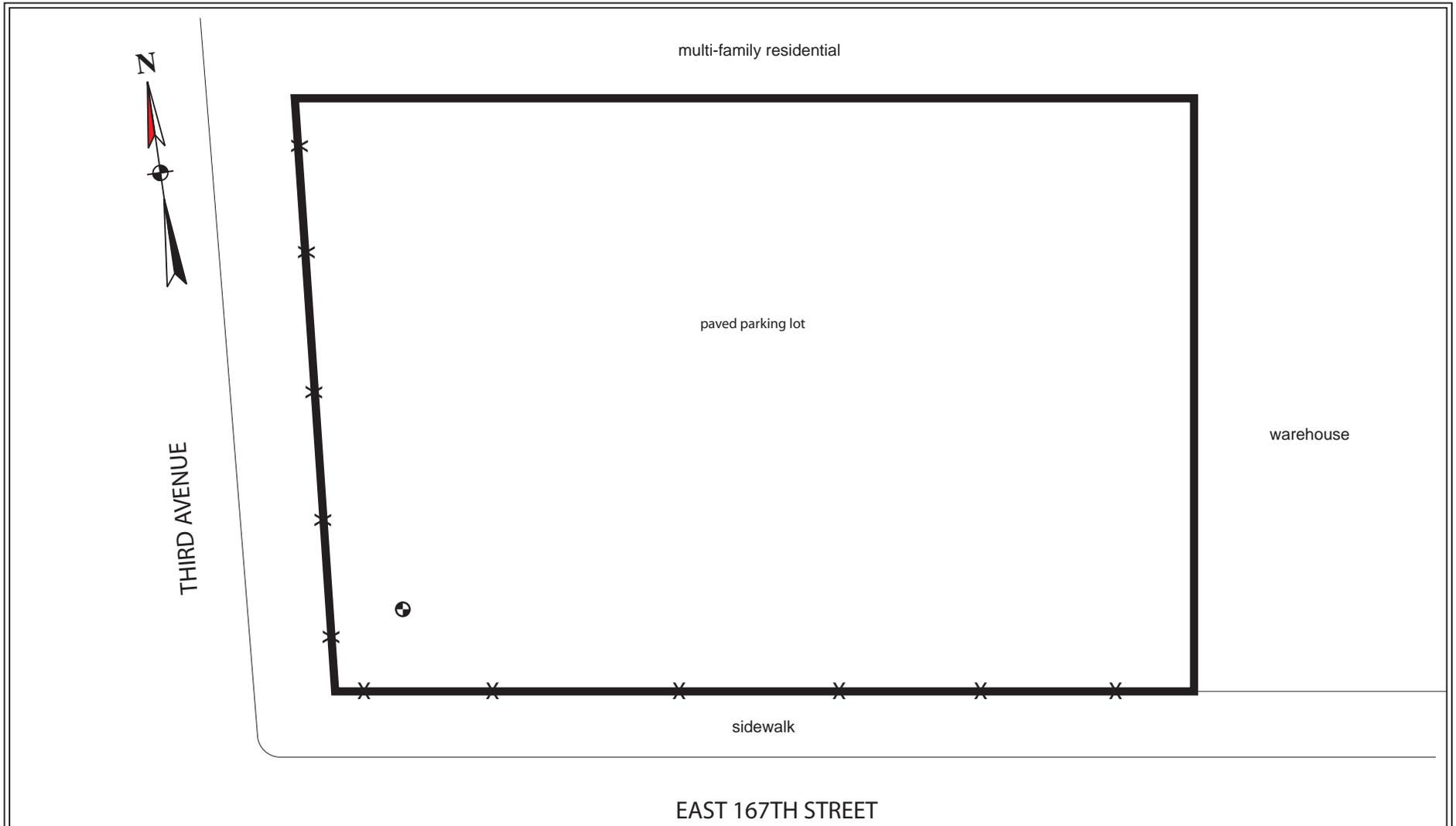
7.0 SCHEDULE

The table below presents a schedule for the proposed remedial action and reporting. If the schedule for remediation and development activities changes, it will be updated and submitted to OER. Currently, a 18 month remediation period is anticipated.

Schedule Milestone	Weeks from Remedial Action Start	Duration (weeks)
OER Approval of RAWP	0	-
Fact Sheet 2 announcing start of remedy	0	-
Mobilization	1	1
Demobilization	12	1
Submit Remedial Action Report	18	2



FIGURES



All feature locations are approximate. This map is intended as a schematic to be used in conjunction with the associated report, and it should not be relied upon as a survey for planning or other activities.

Figure 1: Site Map
 3458 Third Avenue
 Borough of Bronx, New York

Legend:

-  subject property border
-  chain link fence
-  pre-existing monitoring well location

ESI File: KB07097.50

February 2014

1" = 20' approximately

Figures

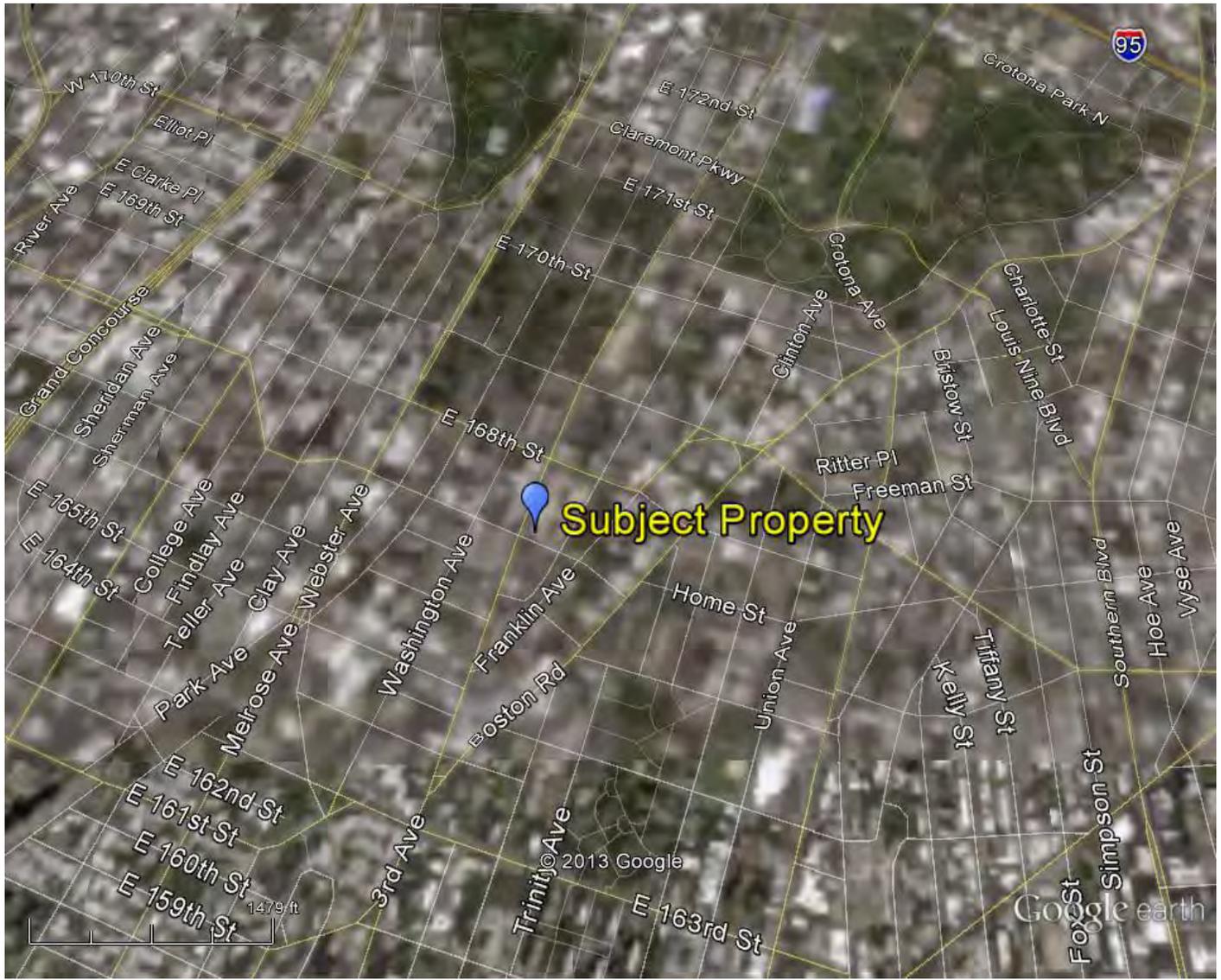


Figure 2: Site Location Map

3458 Third Avenue
Borough of Bronx, New York



ESI File: KB07097.50

February 2014

Figures



Figure 3 - Zoning Map

3458 Third Avenue
Bronx, New York

ESI File: KB07097.50

February 2014

Figures

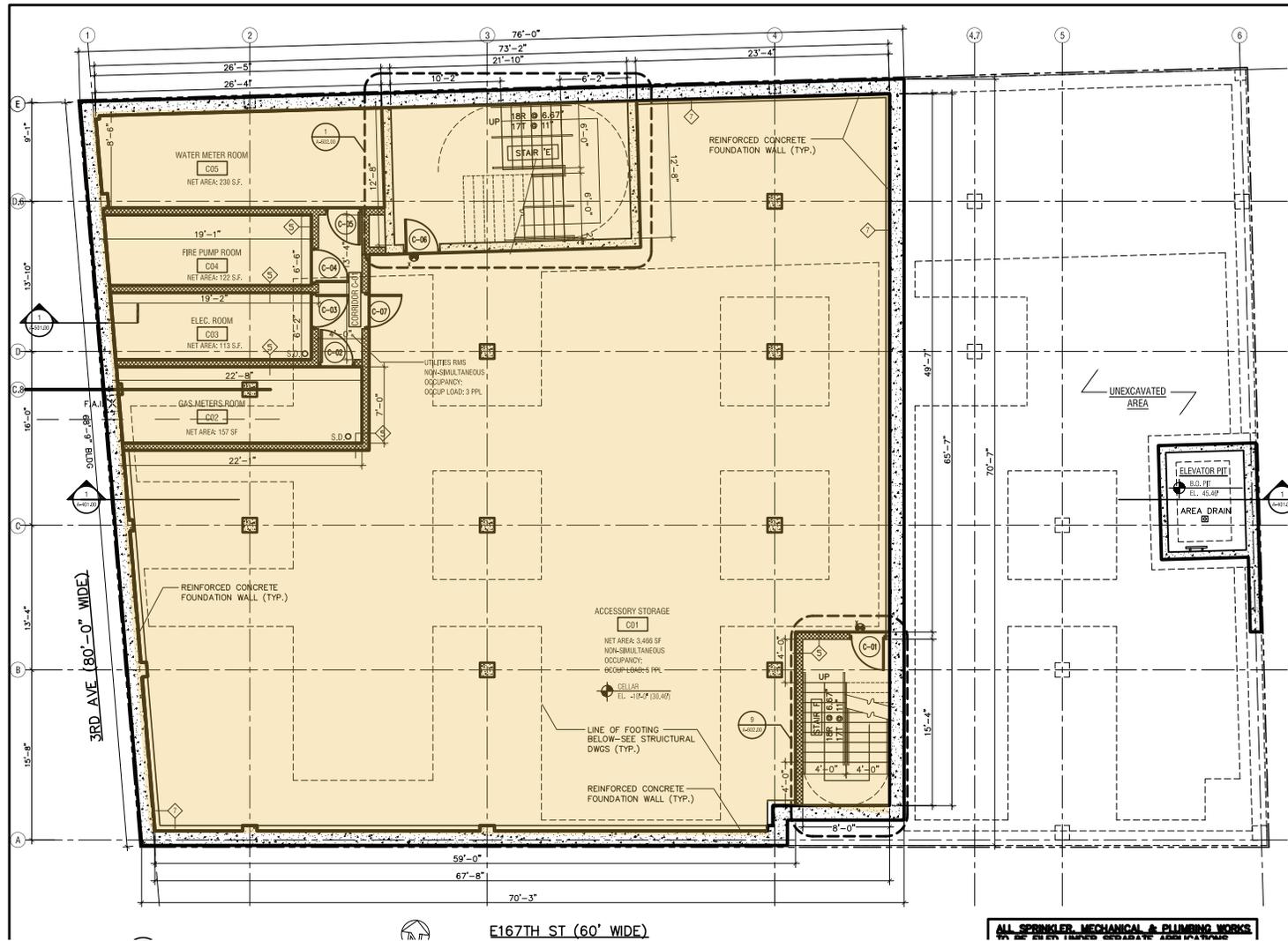


Figure 4 - Excavation Plan

3458 Third Avenue
Bronx, New York

Legend:

area of excavation

ESI File: KB07097.50

February 2014

Figures

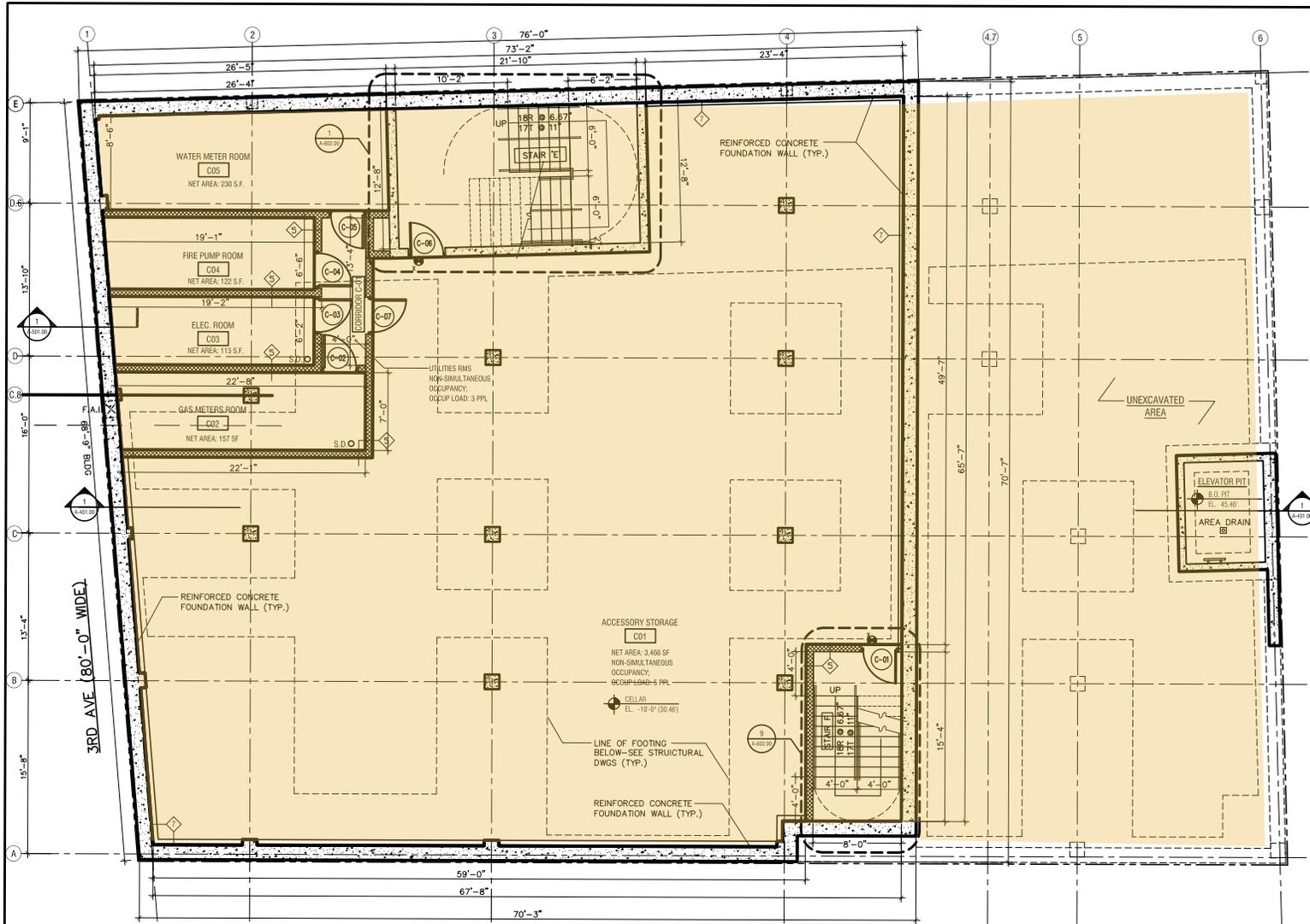


Figure 5 - Cover Type

3458 Third Avenue
Bronx, New York

Legend:

area of vapor barrier

ESI File: KB07097.50

February 2014

Figures

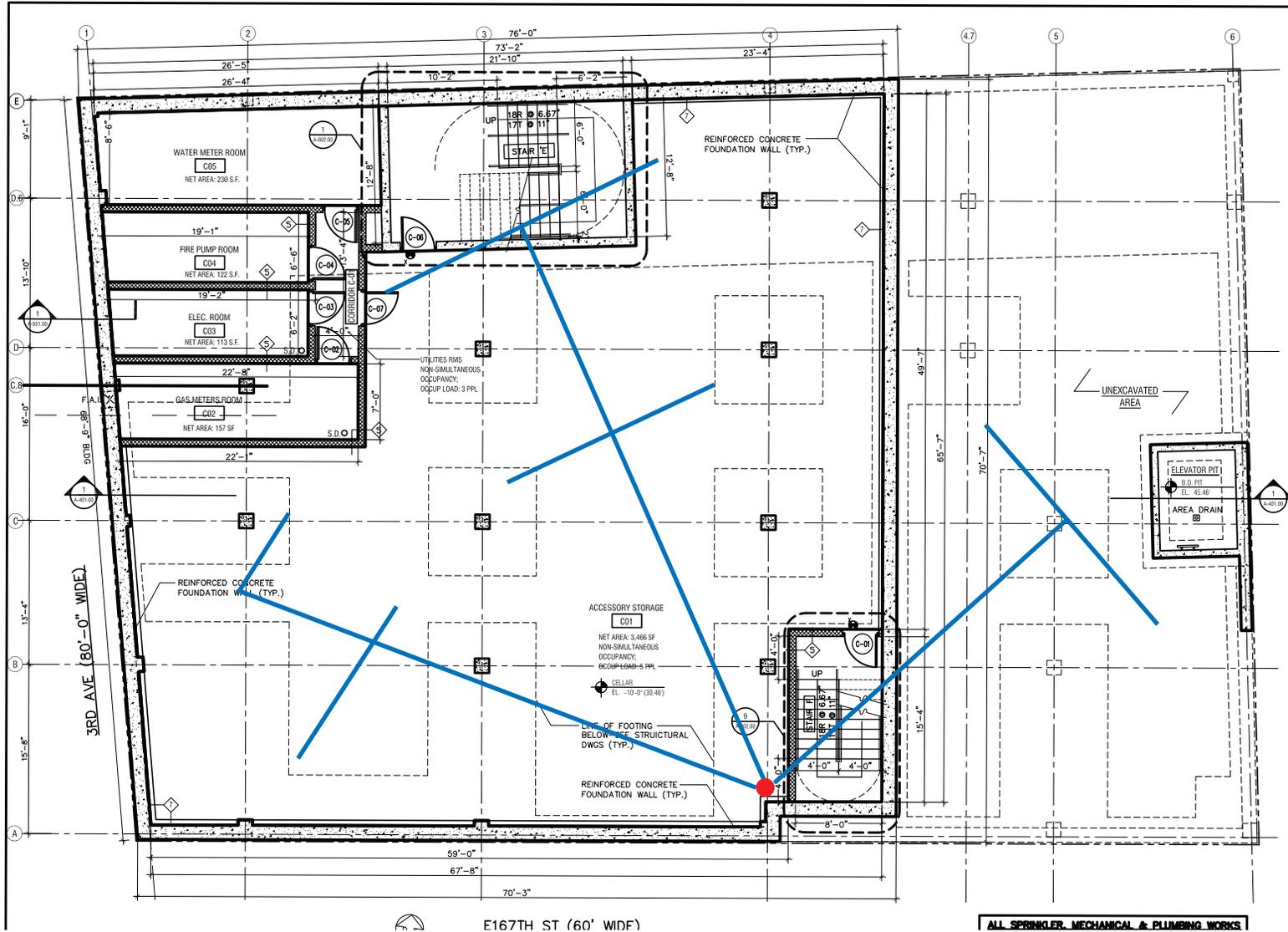


Figure 6 - SSDS Plan

3458 Third Avenue
Bronx, New York

Legend:

- riser
- system piping

ESI File: KB07097.20

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Figures



TABLES

Table 1A: VOCs in Soil

VOCs (USEPA Method 8260)	Table 375-6.8(b): Restricted Use SCO - Residential (ppb)	Sample Identification										
		B1 10'-12' (4/10/13)	B2 0'-2' (4/10/13)	B3 10'-12' (4/10/13)	B4 0'-2' (4/10/13)	B6 0'-2' (4/10/13)	B6 10'-12' (4/10/13)	2B-1 8' (6/24/13)	2B-1 16' (6/24/13)	2B-3 10' (6/24/13)	2B-4 16' (6/24/13)	2B-5 10' (6/24/13)
1,1,1,2-Tetrachloroethane	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	100,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Tetrachloroethane	100,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	100,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloro - 1,2,2-trifluoroethane	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	19,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	100,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloropropene	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-Trichlorobenzene	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,3-Trichloropropane	80,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4-Trichlorobenzene	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4-Trimethylbenzene	47,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dibromo-3-chloropropane	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dibromoethane (EDB)	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	100,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	2,300	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3,5-Trimethylbenzene	47,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	17,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichloropropane	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	9,800	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2,2-Dichloropropane	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Butanone	NE	6.4 J	ND	13 J	ND	ND	ND	ND	ND	ND	ND	ND
2-Chlorotoluene	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Chlorotoluene	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acetone	100,000	46 B	46 B	60 B	7.0 J,B	61 B	8.9 J,B	ND	ND	ND	ND	ND
Benzene	2,900	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromobenzene	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromochloromethane	NE	ND	12 B	ND	ND	6.6 J,B	ND	ND	ND	ND	ND	ND
Bromodichloromethane	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromoform	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Bromomethane	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon tetrachloride	1,400	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	100,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroethane	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	10,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloromethane	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloropropene	59,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromochloromethane	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibromomethane	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dichlorodifluoromethane	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	30,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexachlorobutadiene	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	100,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methylene chloride	100,000	5.3 J,B	62 B	ND	6.6 J,B	34 B	ND	ND	ND	ND	ND	ND
Methyl-tert-butyl-ether (MTBE)	62,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	NE	6.8 J,B	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Butylbenzene	100,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Propylbenzene	100,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Xylenes (o,m,p)	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p-Isopropyltoluene	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
sec-Butylbenzene	100,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Styrene	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
tert-Butylbenzene	100,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene	5,500	ND	ND	13	ND	ND	21	ND	ND	5.7 J	ND	ND
Toluene	100,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloropropene	100,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	10,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichlorofluoromethane	NE	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vinyl chloride	210	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Notes:

Guidance levels based on BCP Restricted Use, "Residential" SCOs, 6 NYCRR Part 375, Table 375-6.8(b).

J = Data indicate the presence of a compound that meets the identification criteria. The result is less than the quantitation limit but greater than zero. The concentration given is an approximate value.

B = Analyte is found in the associated analysis batch blank.

ND = Not Detected ; NE = No value listed

Blue shade indicates detectable concentrations.

ESI File: KB07097.20

Table 1B: SVOCs in Soil

SVOCS (USEPA Method 8270)	Table 375-6.8(b): Restricted Use SCO - Residential (ppb)	Sample Identification					
		B1 10'-12' (4/10/13)	B2 0'-2' (4/10/13)	B3 10'-12' (4/10/13)	B4 0'-2' (4/10/13)	B6 0'-2' (4/10/13)	B6 10'-12' (4/10/13)
1,2,4-Trichlorobenzene	NE	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	NE	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	NE	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	NE	ND	ND	ND	ND	ND	ND
2,4,5-Trichlorophenol	100,000	ND	ND	ND	ND	ND	ND
2,4,6-Trichlorophenol	NE	ND	ND	ND	ND	ND	ND
2,4-Dichlorophenol	100,000	ND	ND	ND	ND	ND	ND
2,4-Dimethylphenol	NE	ND	ND	ND	ND	ND	ND
2,4-Dinitrophenol	100,000	ND	ND	ND	ND	ND	ND
2,4-Dinitrotoluene	NE	ND	ND	ND	ND	ND	ND
2,6-Dinitrotoluene	1,030	ND	ND	ND	ND	ND	ND
2-Chloronaphthalene	NE	ND	ND	ND	ND	ND	ND
2-Chlorophenol	100,000	ND	ND	ND	ND	ND	ND
2-Methylnaphthalene	410	ND	ND	ND	ND	ND	ND
2-Methylphenol	NE	ND	ND	ND	ND	ND	ND
2-Nitroaniline	NE	ND	ND	ND	ND	ND	ND
2-Nitrophenol	NE	ND	ND	ND	ND	ND	ND
3,3-Dichlorobenzidine	NE	ND	ND	ND	ND	ND	ND
3-Methylphenol	NE	ND	ND	ND	ND	ND	ND
3-Nitroaniline	NE	ND	ND	ND	ND	ND	ND
4,6-Dinitro-2-methylphenol	NE	ND	ND	ND	ND	ND	ND
4-Bromophenyl phenyl ether	NE	ND	ND	ND	ND	ND	ND
4-Chloro-3-methylphenol	NE	ND	ND	ND	ND	ND	ND
4-Chloroaniline	NE	ND	ND	ND	ND	ND	ND
4-Chlorophenyl phenyl ether	NE	ND	ND	ND	ND	ND	ND
4-Methylphenol	NE	ND	ND	ND	ND	ND	ND
4-Nitroaniline	NE	ND	ND	ND	ND	ND	ND
4-Nitrophenol	NE	ND	ND	ND	ND	ND	ND
Acenaphthene	100,000	ND	ND	ND	ND	ND	ND
Acenaphthylene	100,000	844 J	ND	ND	ND	ND	ND
Aniline	48,000	ND	ND	ND	ND	ND	ND
Anthracene	100,000	ND	ND	ND	ND	ND	ND
Benzo(a)anthracene	1,000	2,080	ND	ND	ND	ND	ND
Benzo(a)pyrene	1,000	1,950	ND	ND	ND	ND	ND
Benzo(b)fluoranthene	1,000	2,700	ND	ND	ND	ND	ND
Benzo(ghi)perylene	100,000	1,240 J	ND	ND	ND	ND	ND
Benzo(k)fluoranthene	1,000	1,900	ND	ND	ND	ND	ND
Benzyl alcohol	1,000	ND	ND	ND	ND	ND	ND
Bis(2-chloroethoxy)methane	NE	ND	ND	ND	ND	ND	ND
Bis(2-chloroethyl)ether	NE	ND	ND	ND	ND	ND	ND
Bis(2-chloroisopropyl)ether	NE	ND	ND	ND	ND	ND	ND
Bis(2-ethylhexyl)phthalate	50,000	ND	ND	ND	ND	ND	ND
Butyl benzyl phthalate	NE	ND	ND	ND	ND	ND	ND
Chrysene	1,000	2,130	ND	ND	ND	ND	ND
Dibenzo(a,h)anthracene	330	ND	ND	ND	ND	ND	ND
Dibenzofuran	NE	ND	ND	ND	ND	ND	ND
Diethyl phthalate	100,000	ND	ND	ND	ND	ND	ND
Dimethyl phthalate	100,000	ND	ND	ND	ND	ND	ND
Di-n-butyl phthalate	100,000	ND	ND	ND	ND	ND	ND
Di-n-octyl phthalate	100,000	ND	ND	ND	ND	ND	ND
Fluoranthene	100,000	5,890	ND	ND	ND	ND	ND
Fluorene	100,000	ND	ND	ND	ND	ND	ND
Hexachlorobenzene	410	ND	ND	ND	ND	ND	ND
Hexachlorobutadiene	NE	ND	ND	ND	ND	ND	ND
Hexachlorocyclopentadiene	NE	ND	ND	ND	ND	ND	ND
Hexachloroethane	NE	ND	ND	ND	ND	ND	ND
Indeno(1,2,3-cd)pyrene	500	1,130 J	ND	ND	ND	ND	ND
Isophorone	100,000	ND	ND	ND	ND	ND	ND
m-Cresol	100,000	ND	ND	ND	ND	ND	ND
Naphthalene	100,000	ND	ND	ND	ND	ND	ND
Nitrobenzene	3,700	ND	ND	ND	ND	ND	ND
n-Nitroso-di-n-propylamine	NE	ND	ND	ND	ND	ND	ND
n-Nitrosodiphenylamine	NE	ND	ND	ND	ND	ND	ND
o-Cresol	100,000	ND	ND	ND	ND	ND	ND
p-Cresol	34,000	ND	ND	ND	ND	ND	ND
Pentachlorophenol	2,400	ND	ND	ND	ND	ND	ND
Phenanthrene	100,000	4,860	ND	ND	ND	ND	ND
Phenol	100,000	ND	ND	ND	ND	ND	ND
Pyrene	100,000	3,850	ND	ND	ND	ND	ND
Pyridine	NE	ND	ND	ND	ND	ND	ND

Notes:

Guidance levels based on BCP Restricted Use, "Residential" SCOs, 6 NYCRR Part 375, Table 375-6.8(b).

J - Data indicate the presence of a compound that meets the identification criteria. The result is less than the quantitation limit but greater than zero. The

Concentration given is an approximate value.

ND = Not Detected ; NE = No value listed

Blue shade indicates detectable concentrations.

Bold and yellow shade indicates exceedance of applicable regulatory criteria.

ESI File: KB07097.20

Table 1C: PCBs and Pesticides in Soil

PCBs (USEPA Method 8082)	Table 375-6.8(b): Restricted Use SCO - Residential (ppb)	Sample Identification					
		B1 10'-12' (4/10/13)	B2 0'-2' (4/10/13)	B3 10'-12' (4/10/13)	B4 0'-2' (4/10/13)	B6 0'-2' (4/10/13)	B6 10'-12' (4/10/13)
Aroclor 1016	1,000	ND	ND	ND	ND	ND	ND
Aroclor 1221	1,000	ND	ND	ND	ND	ND	ND
Aroclor 1232	1,000	ND	ND	ND	ND	ND	ND
Aroclor 1242	1,000	ND	ND	ND	ND	ND	ND
Aroclor 1248	1,000	ND	ND	ND	ND	ND	ND
Aroclor 1254	1,000	ND	ND	ND	ND	ND	ND
Aroclor 1260	1,000	ND	ND	ND	ND	ND	ND
Aroclor 1262	1,000	ND	ND	ND	ND	ND	ND
Aroclor 1268	1,000	ND	ND	ND	ND	ND	ND
Aroclor, Total	1,000	ND	ND	ND	ND	ND	ND
Pesticides (USEPA Method 8081)							
4,4-DDD	2,600	247	18.3	ND	21.1	5.49	22.1
4,4-DDE	1,800	388	94.6	ND	65.3	8.73	48.6
4,4-DDT	1,700	3,260	288	9.55	23	3.81	235
Aldrin	19	ND	ND	ND	ND	ND	ND
alpha-BHC	97	ND	ND	ND	ND	ND	ND
beta-BHC	72	ND	ND	ND	ND	ND	ND
delta-BHC	100,000	ND	ND	ND	ND	ND	ND
Dibenzofuran	14,000	ND	ND	ND	ND	ND	ND
Dieldrin	39	179	18.6	3.36	8.68	ND	24.1
Endosulfan I	4,800	ND	ND	ND	ND	ND	ND
Endosulfan II	4,800	ND	ND	ND	ND	ND	ND
Endosulfan sulfate	4,800	ND	ND	ND	ND	ND	ND
Endrin	2,200	ND	ND	ND	ND	ND	ND
Endrin aldehyde	NE	ND	ND	ND	ND	ND	ND
Enrin ketone	NE	ND	ND	ND	ND	ND	ND
gamma-BHC (Lindane)	280	ND	ND	ND	ND	ND	ND
Heptachlor	420	ND	ND	ND	ND	ND	ND
Heptachlor epoxide	77	ND	ND	ND	ND	ND	ND
Methoxychlor	100,000	ND	ND	ND	ND	ND	ND
Toxaphene	NE	ND	ND	ND	ND	ND	ND
Chlordane Total	910	874	184	23.4	81.1	10.9	283

Notes:

Guidance levels based on BCP Restricted Use, "Residential" SCOs, 6 NYCRR Part 375, Table 375-6.8(b).

ND = Not Detected; NE = No value listed

Blue shade indicates detectable concentrations.

Bold and yellow shade indicates exceedance of applicable regulatory criteria.

ESI File: KB07097.20

Table 1D: Metals in Soil

TAL Metals	Table 375-6.8(b): Restricted Use SCO - Residential (ppm)	Sample Identificaiton					
		B1 10'-12' (4/10/13)	B2 0'-2' (4/10/13)	B3 10'-12' (4/10/13)	B4 0'-2' (4/10/13)	B6 0'-2' (4/10/13)	B6 10'-12' (4/10/13)
Aluminum	NE	9,850	8,930	7,320	10,100	14,300	14,200
Antimony	NE	1.2	1.36	ND	0.925	0.717	0.627
Arsenic	16	41.3	8.14	5.63	2.8	2.02	4.16
Barium	350	652	1,750	760	355	171	662
Beryllium	14	ND	ND	ND	ND	ND	ND
Cadmium	2.5	ND	1.21	ND	ND	ND	ND
Calcium	NE	104,000	139,000	90,100	58,000	27,200	75,300
Chromium	36	13	13.6	10.7	18.3	26.8	24.8
Cobalt	30	5.26	5.07	4.64	9.53	16.3	14.3
Copper	270	14.2	12	20.5	33.9	31.5	28.7
Iron	2,000	15,600	11,500	9,230	16,800	24,500	22,400
Lead	400	237	200	71.8	85.6	30.8	82.7
Magnesium	NE	39,500	55,400	24,900	12,600	8,500	34,300
Manganese	2,000	308	356	217	251	290	394
Mercury	0.31	ND	ND	ND	ND	ND	ND
Nickel	140	7.77	8.78	9.6	15.5	23.9	18.4
Potassium	NE	11.3	1,340	1,810	3,180	7,810	6,860
Selenium	36.0	ND	0.976	0.94	1.04	1.83	ND
Silver	36	ND	ND	ND	ND	ND	ND
Sodium	NE	1,060	609	452	463	284	562
Thallium	NE	ND	ND	ND	ND	ND	ND
Vanadium	100	25.5	20.6	19.4	32.4	38.9	36.2
Zinc	2,200	566	1,230	268	175	96.1	324

Notes:

Guidance levels based on BCP Restricted Use, "Residential" SCOs, 6 NYCRR Part 375, Table 375-6.8(b).

ND = Not Detected ; NE = No value listed

Blue shade indicates detectable concentrations.

Bold and yellow shade indicates exceedance of applicable regulatory criteria.

ESI File: KB07097.20

Table 2A: VOCs in Groundwater

VOCs (USEPA Method 8260)	Regulatory Criteria/ Guidance Level µg/L (parts per billion)	Sample Identification				
		MW-1 (4/16/13)	MW-2 (4/16/13)	MW-3 (4/16/13)	2MW-1 (11/12/13)	2MW-2 (11/12/13)
1,1,1,2-Tetrachloroethane	5	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	5	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	5	ND	ND	ND	ND	ND
1,1,2-Trichloro-1,2,2-trifluoroethane	5	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	1	ND	ND	ND	ND	ND
1,1-Dichloroethane	5	ND	ND	ND	ND	ND
1,1-Dichloroethylene	5	ND	ND	4.4 J	12	7.4
1,1-Dichloropropylene	5	ND	ND	ND	ND	ND
1,2,3-Trichlorobenzene	5	ND	ND	ND	ND	ND
1,2,3-Trichloropropane	0.04	ND	ND	ND	ND	ND
1,2,3-Trimethylbenzene	5	ND	ND	ND	ND	ND
1,2,4-Trichlorobenzene	5	ND	ND	ND	ND	ND
1,2,4-Trimethylbenzene	5	ND	ND	ND	ND	ND
1,2-Dibromo-3-chloropropane	0.04	ND	ND	ND	ND	ND
1,2-Dibromoethane	5	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	3	ND	ND	ND	ND	ND
1,2-Dichloroethane	0.6	ND	ND	ND	ND	ND
cis-1,2-Dichloroethylene	5	12	13	4,500	4,000	5,600
trans-1,2-Dichloroethylene	5	ND	ND	34	48	61
1,2-Dichloroethylene (total)	5	ND	ND	ND	ND	ND
1,2-Dichloropropane	1	ND	ND	ND	ND	ND
1,3,5-Trimethylbenzene	5	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	3	ND	ND	ND	ND	ND
1,3-Dichloropropane	5	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	3	ND	ND	1.0 J	ND	ND
1-Chlorohexane	5	ND	ND	ND	ND	ND
2,2-Dichloropropane	5	ND	ND	ND	ND	ND
2-Butanone	NE	14	1.7 J		ND	ND
2-Chlorotoluene	5	ND	ND	1.5 J	ND	ND
4-Chlorotoluene	5	ND	ND	1.5 J	ND	3.0 J
Acetone	NE	6.2 J	ND	ND	5.8	5.5
Benzene	1	ND	ND	ND	ND	ND
Bromobenzene	5	ND	ND	ND	ND	ND
Bromochloromethane	5	ND	ND	ND	ND	ND
Bromodichloromethane	50	ND	ND	ND	ND	ND
Bromoform	50	ND	ND	ND	ND	ND
Bromomethane	5	ND	ND	ND	ND	ND
Carbon tetrachloride	5	ND	ND	ND	ND	ND
Chlorobenzene	5	ND	ND	ND	ND	ND
Chloroethane	5	ND	ND	ND	ND	ND
Chloroform	7	16	7.2	ND	3.4 J	ND
Chloromethane	5	ND	ND	ND	ND	ND
Cis-1,3-Dichloropropylene	0.4	ND	ND	ND	ND	ND
Dibromochloromethane	5	ND	ND	ND	ND	ND
Dibromomethane	5	ND	ND	ND	ND	ND
Dichlorodifluoromethane	5	ND	ND	ND	ND	ND
Ethylbenzene	5	ND	ND	ND	ND	ND
Hexachlorobutadiene	0.5	ND	ND	ND	ND	ND
Isopropylbenzene	5	ND	ND	ND	ND	ND
Methylene chloride	5	6.6 J,B	4.1 J,B	3.9 J,B	ND	ND
Methyl tert-butyl ether (MTBE)	10	ND	ND	ND	ND	ND
Naphthalene	10	ND	ND	ND	ND	ND
n-Butylbenzene	5	ND	ND	ND	ND	ND
n-Propylbenzene	5	ND	ND	ND	ND	ND
Xylenes (o,m,p)	5	ND	ND	ND	ND	ND
p-Isopropyltoluene	5	ND	ND	ND	ND	ND
sec-Butylbenzene	5	ND	ND	ND	ND	ND
Styrene	5	ND	ND	ND	ND	ND
tert-Butylbenzene	5	ND	ND	ND	ND	ND
Tetrachloroethylene	5	32	22	2,200	1,700	2,100
Toluene	5	ND	ND	ND	5.7	ND
trans-1,3-Dichloropropylene	0.4	ND	ND	ND	ND	ND
Trichloroethylene	5	3.3 J	5.1	1,200	1,200	1,400
Trichlorofluoromethane	5	ND	ND	ND	ND	ND
Vinyl chloride	2	ND	1.0 J	700	ND	630

Notes:

Regulatory Criteria/Guidance levels based on Title 6 NYCRR Part 703 Water Quality Standards or NYSDEC Division of Water TOGS

1.1.1 (June 1998) and subsequent NYSDEC Memoranda, as appropriate

J - Data indicate the presence of a compound that meets the identification criteria. The result is less than the quantitation limit but greater than zero. The concentration given is an approximate value;

B = Analyte is found in the associated analysis batch blank.

ND = Not Detected ; NE = No value listed

Blue shade indicates detectable concentrations.

Bold and yellow shade indicates exceedance of applicable regulatory criteria.

ESI File: KB07097.20

Table 2B: SVOCs in Groundwater

SVOCs (USEPA Method 8270)	Regulatory Criteria/ Guidance Level µg/L (parts per billion)	Sample Identification		
		MW-1 (4/16/13)	MW-2 (4/16/13)	MW-3 (4/16/13)
1,2,4-Trichlorobenzene	5	ND	ND	ND
1,2-Dichlorobenzene	3	ND	ND	ND
1,3-Dichlorobenzene	3	ND	ND	ND
1,4-Dichlorobenzene	3	ND	ND	ND
2,4,5-Trichlorophenol	NE	ND	ND	ND
2,4,6-Trichlorophenol	NE	ND	ND	ND
2,4-Dichlorophenol	5	ND	ND	ND
2,4-Dimethylphenol	50	ND	ND	ND
2,4-Dinitrophenol	10	ND	ND	ND
2,4-Dinitrotoluene	5	ND	ND	ND
2,6-Dinitrotoluene	5	ND	ND	ND
2-Chloronaphthalene	10	ND	ND	ND
2-Chlorophenol	NE	ND	ND	ND
2-Methylnaphthalene	NE	ND	ND	ND
2-Methylphenol	NE	ND	ND	ND
2-Nitroaniline	5	ND	ND	ND
2-Nitrophenol	NE	ND	ND	ND
3,3-Dichlorobenzidine	5	ND	ND	ND
3-Nitroaniline	5	ND	ND	ND
4,6-Dinitro-2-methylphenol	NE	ND	ND	ND
4-Bromophenyl phenyl ether	NE	ND	ND	ND
4-Chloro-3-methylphenol	NE	ND	ND	ND
4-Chloroaniline	5	ND	ND	ND
4-Chlorophenyl phenyl ether	NE	ND	ND	ND
4-Methylphenol	NE	ND	ND	ND
4-Nitroaniline	5	ND	ND	ND
4-Nitrophenol	5	ND	ND	ND
Acenaphthene	20	ND	ND	ND
Acenaphthylene	NE	ND	ND	ND
Aniline	5	ND	ND	ND
Anthracene	50	ND	ND	ND
Benzo(a)anthracene	0.002	ND	ND	ND
Benzo(a)pyrene	NE	ND	ND	ND
Benzo(b)fluoranthene	0.002	ND	ND	ND
Benzo(ghi)perylene	NE	ND	ND	ND
Benzo(k)fluoranthene	0.002	ND	ND	ND
Benzyl alcohol	NE	ND	ND	ND
Bis(2-chloroethoxy)methane	5	ND	ND	ND
Bis(2-chloroethyl)ether	1	ND	ND	ND
Bis(2-chloroisopropyl)ether	NE	ND	ND	ND
Bis(2-ethylhexyl)phthalate	5	ND	ND	ND
Chrysene	0.002	ND	ND	ND
Dibenzo(a,h)anthracene	NE	ND	ND	ND
Dibenzofuran	NE	ND	ND	ND
Diethyl phthalate	50	ND	ND	ND
Dimethyl phthalate	50	ND	ND	ND
Di-n-butyl phthalate	50	ND	ND	ND
Di-n-octyl phthalate	50	ND	ND	ND
Fluoranthene	50	ND	ND	ND
Fluorene	50	ND	ND	ND
Hexachlorobenzene	0.04	ND	ND	ND
Hexachlorobutadiene	0.5	ND	ND	ND
Hexachlorocyclopentadiene	5	ND	ND	ND
Hexachloroethane	5	ND	ND	ND
Indeno(1,2,3-cd)pyrene	0.002	ND	ND	ND
Isophorone	50	ND	ND	ND
Naphthalene	10	ND	ND	ND
Nitrobenzene	0.4	ND	ND	ND
n-Nitroso-di-n-propylamine	NE	ND	ND	ND
n-Nitrosodiphenylamine	50	ND	ND	ND
n-Nitrosodimethylamine	50	ND	ND	ND
Pentachlorophenol	1	ND	ND	ND
Phenanthrene	50	ND	ND	ND
Phenol	1	ND	ND	ND
Pyrene	50	ND	ND	ND
Pyridine	50	ND	ND	ND

Notes:

Regulatory Criteria/Guidance levels based on Title 6 NYCRR Part 703 Water Quality Standards or NYSDEC Division of Water TOGS 1.1.1 (June 1998) and subsequent NYSDEC Memoranda, as appropriate.

ND = Not Detected ; NE = No value listed

ESI File: KB07097.20

Table 2C: Pesticides and PCBs in Groundwater

Pesticides (USEPA Method 8081)	Regulatory Criteria/ Guidance Level µg/L (parts per billion)	Sample Identification		
		MW-1 (4/16/13)	MW-2 (4/16/13)	MW-3 (4/16/13)
4,4'-DDD	0.30	ND	ND	ND
4,4'-DDE	0.20	ND	ND	ND
4,4'-DDT	0.20	ND	ND	ND
Aldrin	NE	ND	ND	ND
alpha-BHC	0.01	ND	ND	ND
beta-BHC	0.04	ND	ND	ND
Chlordane	0.05	ND	ND	ND
delta-BHC	0.04	ND	ND	ND
Dieldrin	0.004	ND	ND	ND
Endosulfan I	NE	ND	ND	ND
Endosulfan II	NE	ND	ND	ND
Endosulfan sulfate	NE	ND	ND	ND
Endrin	NE	ND	ND	ND
Endrin aldehyde	5	ND	ND	ND
gamma-BHC (Lindane)	0.05	ND	ND	ND
Heptachlor	0.04	ND	ND	ND
Heptachlor Epoxide	0.03	ND	ND	ND
Toxaphene	0.06	ND	ND	ND
PCBs (USEPA Method 8082)				
Aroclor 1016	100	ND	ND	ND
Aroclor 1221	100	ND	ND	ND
Aroclor 1232	100	ND	ND	ND
Aroclor 1242	100	ND	ND	ND
Aroclor 1248	100	ND	ND	ND
Aroclor 1254	100	ND	ND	ND
Aroclor 1260	100	ND	ND	ND
Aroclor 1262	100	ND	ND	ND
Aroclor 1268	100	ND	ND	ND
Aroclor, Total	100	ND	ND	ND

Notes:
 Regulatory Criteria/Guidance levels based on Title 6 NYCRR Part 703 Water Quality Standards or NYSDEC Division of Water TOGS 1.1.1 (June 1998) and subsequent NYSDEC Memoranda, as appropriate
 ND = Not Detected ; NE = No value listed
 ESI File: KB07097.20

Table 2D: Metals in Groundwater

TAL METAL	Regulatory Criteria/ Guidance Level mg/L (parts per million)	Sample Identification		
		MW-1 (4/16/13)	MW-2 (4/16/13)	MW-3 (4/16/13)
Aluminum	0.1	0.042	0.193	2.97
Antimony	0.003	ND	ND	ND
Arsenic	0.025	ND	ND	ND
Barium	1	0.061	0.081	0.06
Beryllium	0.003	ND	ND	ND
Cadmium	0.005	ND	ND	ND
Calcium	NE	88.9	130	80.1
Chromium	0.05	ND	ND	ND
Cobalt	0.005	ND	ND	0.02
Copper	2	ND	ND	0.011
Iron	3*	ND	0.241	35.9
Lead	0.025	ND	ND	0.011
Magnesium	35	8.69	23.7	36.3
Manganese	3*	0.131	0.579	5.19
Mercury	0.0007	ND	ND	ND
Nickel	1	ND	ND	0.014
Potassium	NE	8.31	20	6.21
Selenium	0.01	ND	ND	ND
Silver	0.05	ND	ND	ND
Sodium	20	47.5	75.9	40.6
Thallium	0.0005	ND	ND	ND
Vanadium	0.014	ND	ND	ND
Zinc	2	ND	ND	0.099

Notes:

Regulatory Criteria/Guidance levels based on Title 6 NYCRR Part 703 Water Quality Standards or NYSDEC Division of Water TOGS 1.1.1 (June 1998) and subsequent NYSDEC Memoranda, as appropriate.

Blue shade indicates detectable concentrations.

Bold and yellow shade indicates exceedance of applicable regulatory criteria.

ND = Not Detected; NE = No value listed; * = Guidance level for total iron and manganese is 500

ESI File: KB07097.20

Table 3: Summary of Detected VOCs in Soil Vapor Samples

 Results provided in ug/m³

Compound	Guideline Values	Sample Identification			
		SV-1 (4/9/13)	SV-2 (4/9/13)	SV-3 (4/9/13)	SV-4 (4/9/13)
1,1,1-Trichloroethane	NE	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	NE	ND	ND	ND	ND
1,1,2-Trichloroethane	NE	ND	ND	ND	ND
1,1-Dichloroethane	NE	ND	ND	ND	ND
1,1-Dichloroethylene	NE	ND	ND	ND	ND
1,2,4-Trichlorobenzene	NE	ND	ND	ND	ND
1,2,4-Trimethylbenzene	NE	2.7	ND	3.5	2.6
1,2-Dibromoethane	NE	ND	ND	ND	ND
1,2-Dichlorobenzene	NE	ND	ND	ND	ND
1,2-Dichloroethane	NE	ND	ND	ND	ND
1,2-Dichloropropane	NE	ND	ND	ND	ND
1,2-Dichlorotetrafluoroethane	NE	ND	ND	ND	ND
1,3,5-Trimethylbenzene	NE	ND	ND	ND	ND
1,3-Butadiene	NE	ND	ND	110	ND
1,3-Dichlorobenzene	NE	ND	ND	ND	ND
1,4-Dichlorobenzene	NE	ND	ND	ND	ND
1,4-Dioxane	NE	ND	ND	ND	ND
2,2,4-Trimethylpentane	NE	ND	ND	ND	ND
2-Butanone	NE	100	ND	110	17
2-Hexanone	NE	2.5	ND	ND	ND
3-Chloropropene	NE	ND	ND	ND	ND
4-Methyl-2-pentanone	NE	ND	ND	8.1	ND
Acetone	NE	130 E	ND	100	59
Benzene	NE	7.8	ND	13	0.77
Benzyl Chloride	NE	ND	ND	12	ND
Bromodichloromethane	NE	ND	ND	ND	ND
Bromoform	NE	ND	ND	ND	ND
Bromomethane	NE	ND	ND	ND	ND
Carbon Disulfide	NE	13	ND	18	9.4
Carbon Tetrachloride	NE	ND	ND	ND	ND
Chlorobenzene	NE	ND	ND	ND	ND
Chloroethane	NE	ND	ND	ND	ND
Chloroform	NE	88	ND	20	48
Chloromethane	NE	ND	ND	ND	ND
cis-1,2-Dichloroethylene	NE	ND	ND	ND	ND
cis-1,3-Dichloropropylene	NE	13	ND	ND	ND
Cyclohexane	NE	3	ND	9.8	ND
Dichlorodifluoromethane	NE	ND	ND	ND	ND
Ethyl acetate	NE	ND	ND	ND	ND
Ethylbenzene	NE	1.6	ND	1.5	ND
Freon-113	NE	ND	ND	ND	ND
Isopropanol	NE	4.5	ND	4.8	3.9
Methylene Chloride	60	3.4	ND	14	17
MTBE	NE	ND	ND	ND	ND
n-Heptane	NE	11	ND	19	2.3
n-Hexane	NE	21	ND	52	15
o-Xylene	NE	2	ND	2.1	1
p- & m-Xylenes	NE	4.5	ND	4	2.2
p-Ethyltoluene	NE	ND	ND	ND	ND
Propylene	NE	ND	ND	ND	ND
Styrene	NE	ND	ND	ND	ND
Tetrachloroethylene	100	86	1,300	3.2	160
Tetrahydrofuran	NE	27	ND	ND	ND
Toluene	NE	17	ND	9.4	2.8
trans-1,2-Dichloroethylene	NE	ND	ND	ND	ND
trans-1,3-Dichloropropylene	NE	ND	ND	ND	ND
Trichloroethylene	5	38	40	ND	8.5
Trichlorofluoromethane	NE	3.6	ND	22	38
Vinyl acetate	NE	ND	ND	ND	ND
Vinyl Bromide	NE	ND	ND	ND	ND
Vinyl Chloride	NE	ND	ND	ND	ND

Notes

Guideline values based on the NYSDOH Guidance for Evaluating Soil Vapor Intrusion in the State of New York, dated October 2006.

E= The concentration is an estimated value above the calibration range of the instrument. The value is considered an estimate.

Blue shade indicates detectable concentrations

Bold and yellow shade indicates exceedance of applicable regulatory criteria

ND = Non detect

NE = Not established

ESI File: KB07097.20



Table 4: Field Observations - Page 1 of 4

Coring ID	Location ¹	Depth of Core (feet)	Soil Characteristics	Groundwater Encountered	PID Reading	Field Observations
B-1	Northeast corner of property. 7' south of northern property line and 20' east of western property line.	0-2 2-4 4-6 6-8 8-10 10-12	Asphalt breach. Coarse yellowish brown sand with pebbles. Coarse medium brown sand with brick fragments. Grayish brown medium sand with brick and concrete fragments. Wood chip at 8'. Coarse medium brown sand.	No	0.0	No visual or olfactory evidence of contamination.
B-2	Central northern portion of property. 7' south of northern property line and 50' west of eastern property line.	0-2 2-4 4-6 6-8 8-10 10-12	Asphalt breach. Coarse medium brown sand with brick fragments throughout.	No	0.0	No visual or olfactory evidence of contamination.
B-3	Northeast portion of property. 8' west of eastern property line and 15' south of northern property line.	0-2 2-4 4-6 6-8 8-10 10-12	Asphalt breach. Coarse medium brown sand with brick fragments throughout.	No	0.0	No visual or olfactory evidence of contamination.
B-4	Central western portion of property. 24' east of western property line and 33' north of southern property line.	0-2 2-4 4-6 6-8 8-10 10-12	Asphalt breach. Coarse medium brown sand with brick fragments throughout.	No	0.0	No visual or olfactory evidence of contamination.
B-5	Southeast portion of property. 20' west of eastern property line and 14' north of southern property line.	0-2 2-4 4-6 6-8 8-10 10-12	Asphalt breach. Coarse, moist greenish sand. Fill comprised of brick fragments, and dark gray sand. Fill with brick fragments and coarse gray/brown sand. Decayed and weathered bed rock.	No	0.0	No visual or olfactory evidence of contamination.



Table 4: Field Observations - Page 2 of 4

Coring ID	Location ¹	Depth of Core (feet)	Soil Characteristics	Groundwater Encountered	PID Reading	Field Observations
B-6	Central eastern portion of property. 35' west of eastern property line and 40' north of southern property line.	0-2	Asphalt breach. Coarse sand with brick fragments.	No	0.0	No visual or olfactory evidence of contamination.
		2-4	Coarse medium brown sand.			
		4-6	Coarse medium brown sand with brick fragments.			
		6-8 8-10 10-12	Silty sand with brick fragments. 20% recovery.			
B-8	Central southern portion of property. 35' west of eastern property line and 9' north of southern property line.	0-2	Asphalt breach. Coarse yellowish brown sand with pebbles.	No	0.0	No visual or olfactory evidence of contamination.
		2-4				
		4-6	Black sand to 4.5', then coarse yellowish brown sand.			
		6-8				
		8-10	Fill comprised of brick fragments and coarse brown sand.			
10-12	Coarse sand and brick fragments.					
2B-1	Southeast portion of property. 6' east of the western property line and 6' north of southern property line.	0-20'	Fill comprised of brick fragments and coarse brown sand throughout.	14'	0.0	No visual or olfactory evidence of contamination.
2B-2	Southeast portion of property. 6' east of the western property line and 20' north of southern property line.	0-20'	Fill comprised of brick fragments and coarse brown sand throughout.	15'	0.0	No visual or olfactory evidence of contamination.
2B-3	Southeast portion of property. 19' east of the western property line and 6' north of southern property line.	0-20'	Fill comprised of brick fragments and coarse brown sand throughout.	15'	0.0	No visual or olfactory evidence of contamination.
2B-4	Southeast portion of property. 18' east of the western property line and 17' north of southern property line.	0-20'	Fill comprised of brick fragments and coarse brown sand throughout.	15'	0.0	No visual or olfactory evidence of contamination.



Table 4: Field Observations - Page 3 of 4

Coring ID	Location ¹	Depth of Core (feet)	Soil Characteristics	Groundwater Encountered	PID Reading	Field Observations
2B-5	Southeast portion of property. 19' east of the western property line and 13' north of southern property line.	0-20'	Fill comprised of brick fragments and coarse brown sand throughout.	15'	0.0	No visual or olfactory evidence of contamination.
MW-1	Northeast corner of property. 7' south of northern property line and 20' east of western property line.	0-2 2-4 4-6 6-8 8-10 10-12	Asphalt breach.	13.92'	0.0	No visual or olfactory evidence of contamination.
MW-2	Central northern portion of property. 7' south of northern property line and 50' west of eastern property line.	0-2 2-4 4-6 6-8 8-10 10-12	Asphalt breach.	15.89'	0.0	No visual or olfactory evidence of contamination.
MW-3	Southwest corner of property. 10' north of southern property line and 10' east of western property line.	N/A	Well already existed on property prior to ESI fieldwork.	17.10'	0.0	N/A
SV-1	North west corner of the property. 14' south of the northern property line and 16' east of the western property line.	8'	Asphalt breach. Probe extended to 8'. No soil sample collected.	No	0.0	No visual or olfactory evidence of contamination.
SV-2	Central northern portion of property. 16' south of the northern property line and 46' east of the western property line.	8'	Asphalt breach. Probe extended to 8'. No soil sample collected	No	0.0	No visual or olfactory evidence of contamination.
SV-3	Southeast portion of property. 19' west of the eastern property line and 13' north of southern property line.	8'	Asphalt breach. Probe extended to 8'. No soil sample collected	No	0.0	No visual or olfactory evidence of contamination.
SV-4	Southwest corner of property. 27' east of western property line and 18' north of southern property line.	8'	Asphalt breach. Probe extended to 8'. No soil sample collected	No	0.0	No visual or olfactory evidence of contamination.
2MW-1	Central northern portion of property. 7' south of northern property line and 25' west of eastern property line.	0-40'	Asphalt breach. Coarse medium brown sand with brick fragments throughout	14.72	0.0	No visual or olfactory evidence of contamination.



Table 4: Field Observations - Page 4 of 4

Coring ID	Location¹	Depth of Core (feet)	Soil Characteristics	Groundwater Encountered	PID Reading	Field Observations
2MW-2	Southwest corner of property. 15' north of southern property line and 15' east of western property line.	0-40'	Asphalt breach. Coarse medium brown sand with brick fragments throughout	16.92	0.0	No visual or olfactory evidence of contamination.

APPENDIX 1

CITIZEN PARTICIPATION PLAN

The NYC Office of Environmental Remediation and 3462 Third Avenue Realty 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, 3462 Third Avenue Realty 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, William Wong, 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 by OER at their website. All documents pertaining to this project can be found there:
<http://www.nyc.gov/html/oer/html/document-repository/document-repository.shtml>

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 3462 Third Avenue Realty LLC, reviewed and approved by OER prior to distribution and mailed by 3462 Third Avenue Realty LLC. Public comment is solicited in public notices for all work plans developed under the NYC Voluntary Cleanup Program. Final review of all work plans by OER will consider all public comments. Approval will not be granted until the public comment period has been completed.

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

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

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

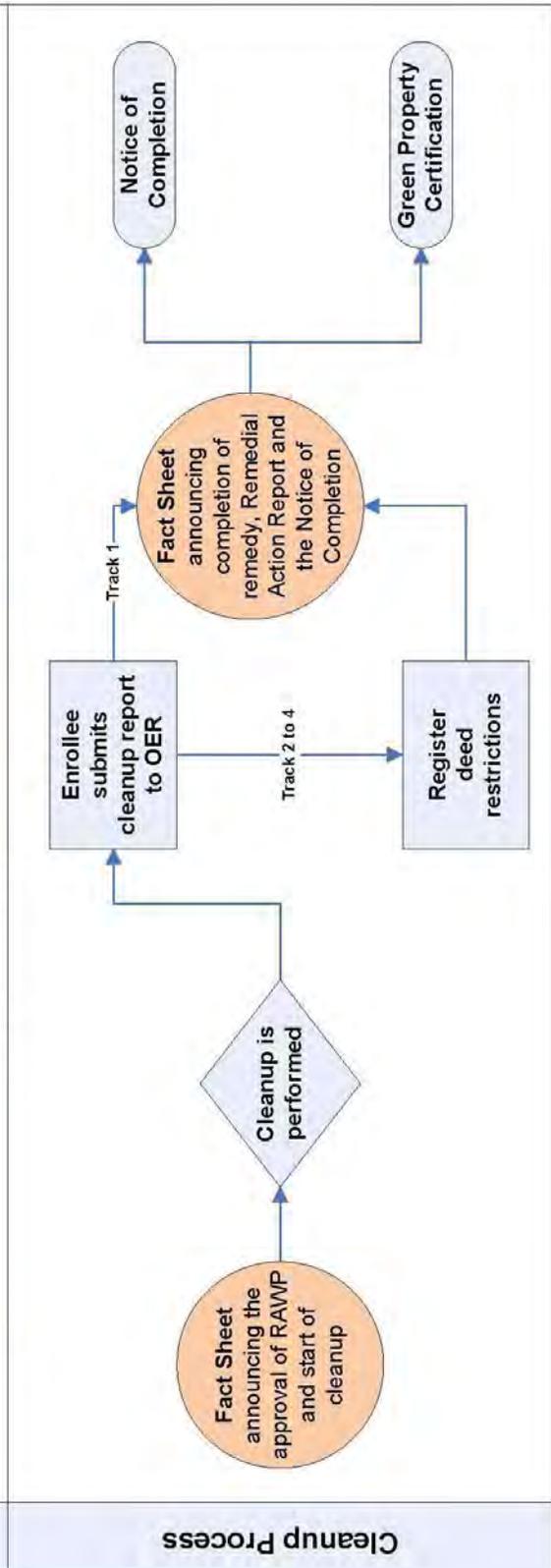
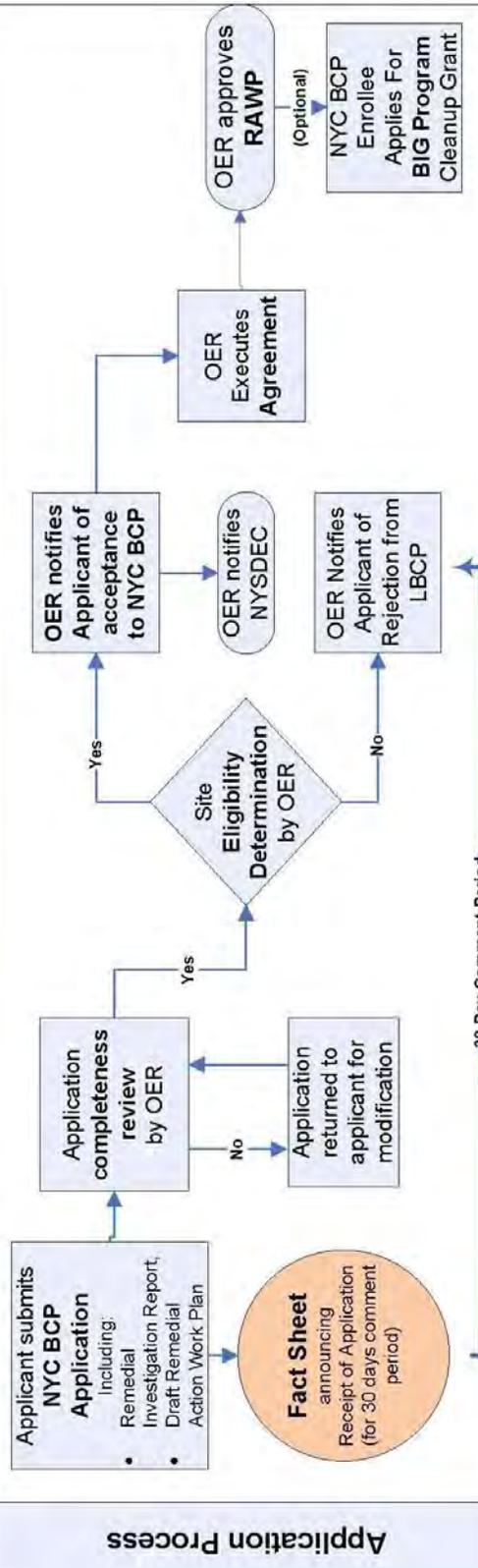
- **Public Notice announcing the approval of the RAWP and the start of remediation**

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

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

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

Flow Chart For NYC Brownfield Cleanup Program (NYC BCP)



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. The Project will reuse clean soils to the extent feasible; however, construction excavations may not extend into native material beneath the layer of urban fill that extends across the site.

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

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

The Project will utilize on-Site clean soils for filling requirements, reducing the need for importation.

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

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

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

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

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

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

The building slab, which will cover the entire site, will prevent recontamination. The area of the Site that utilizes recontamination controls under this plan will be reported in the RAR in square feet.

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

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

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

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

Paperless Brownfield Cleanup Program. 3458 Third Avenue 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. 3458 Third Avenue LLC is participating in OER's low-energy project management program. Under this program, whenever possible, meetings are held using remote communication technologies, such as videoconferencing and teleconferencing to reduce energy consumption and traffic congestion associated with personal transportation.

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

The entire site will be covered by the proposed building. No trees or planting will be added to the site.

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 route is north along Third Avenue to the Cross Bronx 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 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. ‘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.

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 NYSDEC BCP Unrestricted 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; and,
- 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 for Site Remediation

HEALTH AND SAFETY PLAN
FOR
SITE REMEDIATION
(INCORPORATING COMMUNITY HEALTH AND SAFETY PLAN)

OER Brownfield Program Site: 14CVCP230X

**3458 Third Avenue
Borough of Bronx, New York**

March 2014

ESI File: KB07097.51

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Proposed Remediation Maps



1.0 INTRODUCTION

1.1 Purpose

This Health and Safety Plan for Site Remediation (HASP) has been developed to provide the requirements and general procedures to be followed by Ecosystems Strategies, Inc. (ESI) and on-site subcontractors while performing remedial services at the site located at 3458 Third Avenue, Borough of Bronx, New York.

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

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

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

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

1.2 Site Location and Description

The Site as defined in this HASP is the property located at 3458 Third Avenue, borough of Bronx, New York. A Proposed Remediation Map (illustrating the configuration of the Site as well as the areas of proposed fieldwork activities) is included as an Attachment to this HASP.

1.3 Work Activities

Environmental remediation activities are detailed in the Remedial Action Work Plan (RAWP), dated March 2014. The specific tasks detailed in the RAWP are wholly incorporated by reference into this HASP. The RAWP was prepared to remediate documented soil, groundwater and soil vapor contamination on the property located at 3458 Third Avenue and describes tasks required for remediation and post-remediation documentation and management of on-site environmental conditions.

The total quantity of soil/fill expected to be excavated and disposed of off-Site is 1,900 cubic yards (estimated average excavation of 11 feet over the western two thirds of the entire 4,500 square foot lot). The entire volume of excavated material (approximately 1,900 yd³ is presumed to require management as non-hazardous regulated waste.



2.0 HEALTH AND SAFETY HAZARDS

2.1 Hazard Overview for On-Site Personnel

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

2.2 Potential Hazards to the Public from Fieldwork Activities

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

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

3.0 PERSONAL PROTECTIVE EQUIPMENT

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

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

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

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



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

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

4.0 CONTAMINANT CONTROL

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

5.0 MONITORING AND ACTION LEVELS

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

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

6.0 SITE CONTROL/WORK ZONES

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



The following Work Zone will be established:

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

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

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

Intermediate Zone (Decontamination Zone) - The intermediate zone, also known as the decontamination zone, is where patient decontamination should take place, if necessary. A degree of contamination still is found in this zone; thus, some PPE is required, although it is usually of a lesser degree than that required for the hot zone.

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

7.0 NOISE CONTROL

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

8.0 PERSONNEL TRAINING

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

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

- Availability of this HASP;
- General site hazards and specific hazards in the work areas, including those attributable to known or suspect on-site contaminants;
- Selection, use, testing, and care of the body, eye, hand, and foot protection being worn, with the limitations of each;



- Decontamination procedures for personnel, their personal protective equipment, and other equipment used on the Site;
- Emergency response procedures and requirements;
- Emergency alarm systems and other forms of notification, and evacuation routes to be followed; and,
- Methods to obtain emergency assistance and medical attention.

9.0 DECONTAMINATION

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

10.0 EMERGENCY RESPONSE

10.1 Notification of Site Emergencies

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

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

10.2 Responsibilities

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

- Notify individuals, authorities and/or health care facilities of the potentially hazardous activities and potential wastes that may develop as a result of the remedial activities.
- Confirm that first aid supplies and a fire extinguisher are available on-site.
- Have a working knowledge of safety equipment available.
- Confirm that a map detailing the most direct route to the hospital is prominently posted with the emergency telephone numbers.

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

Upon notification of an exposure incident, the SHSO will contact the appropriate emergency response personnel for recommended medical diagnosis and, if necessary, treatment. The SHSO will determine whether and at what levels exposure actually occurred, the cause of such exposure, and the means to prevent similar incidents from occurring.



10.3 Accidents and Injuries

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

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

10.4 Communication

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

10.5 Safe Refuge

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

10.6 Site Security and Control

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

10.7 Emergency Evacuation

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

10.8 Resuming Work

A determination that it is safe to return to work will be made by the SHSO and/or any personnel assisting in the emergency, e.g., fire department, police department, utility company, etc. No personnel will be allowed to return to the work areas until a full determination has been made by the above-identified personnel that all field activities can continue unobstructed. Such a determination will depend upon the nature of the emergency (e.g., downed power lines -- removal of all lines from the property; fire -- extinguished fire; injury -- safe transport of the injured party to a medical facility with either assurance of acceptable medical care present or completion of medical care; etc.). Before on-site work is resumed following an emergency, necessary emergency equipment will be recharged, refilled or replaced. Government agencies will be notified as appropriate. An Incident Report Form will be filed.

10.9 Fire Fighting Procedures

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



10.10 Emergency Decontamination Procedure

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

10.11 Emergency Equipment

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

- Fire extinguisher;
- First-aid kit; and,
- Extra copy of this Health and Safety Plan.

11.0 SPECIAL PRECAUTIONS AND PROCEDURES

The activities associated with this remediation may involve potential risks of exposure to both chemical and physical hazards. The potential for chemical exposure to hazardous or regulated substances will be significantly reduced through the use of monitoring, personal protective clothing, engineering controls, and implementation of safe work practices.

11.1 Heat/Cold Stress

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

11.2 Heavy Equipment

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

11.3 Additional Safety Practices

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

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



- Eating, drinking, chewing gum or tobacco, smoking, or other practices that increase the probability of hand-to-mouth transfer and ingestion of material is prohibited except in areas designated by the SHSO.
- Contact with potentially contaminated surfaces will be avoided whenever possible. Workers will not unnecessarily walk through puddles, mud or other discolored surfaces; kneel on the ground; or lean, sit, or place equipment on drums, containers, vehicles, or the ground.
- Personnel and equipment in the work areas will be minimized, consistent with effective site operations.
- Unsafe equipment left unattended will be identified by a "DANGER, DO NOT OPERATE" tag.
- Work areas for various operational activities will be established.

11.4 Daily Log Contents

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

- Personnel on the Site, their arrival and departure times and their destination on the Site.
- Incidents and unusual activities that occur on the Site such as, but not limited to, accidents, spills, breaches of security, injuries, equipment failures and weather-related problems.
- Changes to the HASP.
- Daily information generated such as: changes to work and health and safety plans; work accomplished and the current Site status; and monitoring results.

12.0 TABLE AND FIGURES

Table 1: Emergency Contact Information

Emergency Contact	Phone Number
EMERGENCY	911
Hospital: Bronx Lebanon Hospital Center 1650 Grand Concourse, Bronx, NY	(718)-590-1800
Police Department	(718) 402-3887 or 911
Fire Department	(718) 430-0273 or 911
Site Health and Safety Officer, Paul Ciminello, ESI	(845) 452-1658
Remedial Engineer, Jolanda G. Jansen, PE	(845) 505-0324
OER Project Manager, William Wong	(212) 341-0659
Construction Manager	TBD

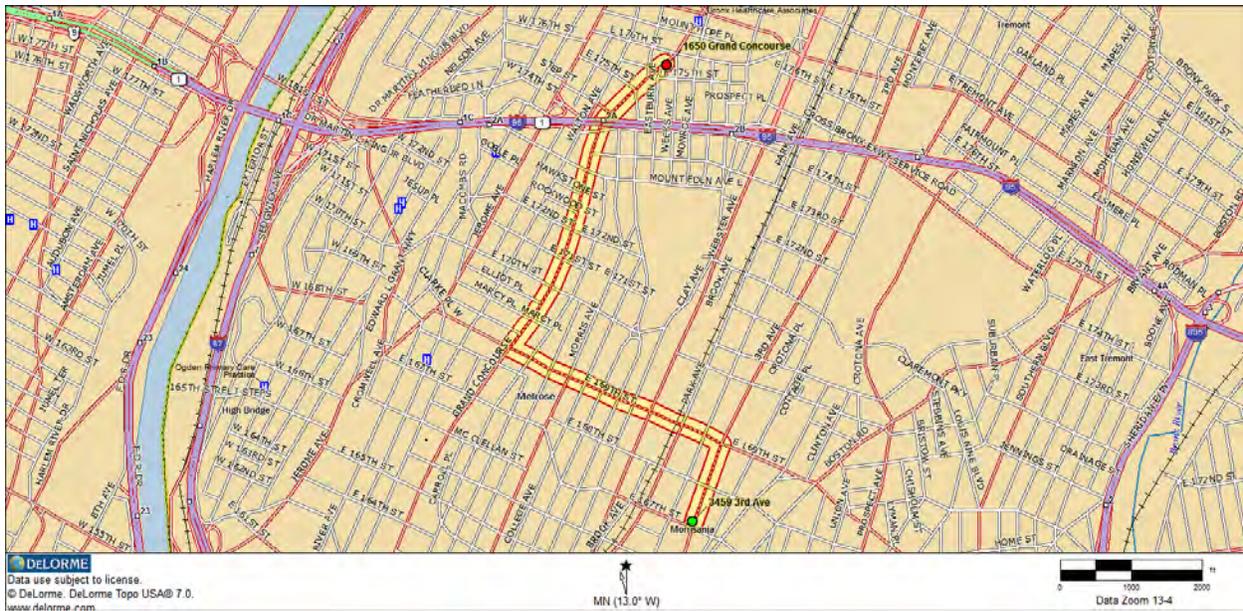


Figure 1: Directions to Hospital

	Dist	Turn		Road	Exit	Total Time	Total Dist
		Start	at	3459 3rd Ave		00:00:00	0.00 mi
		Go straight (NNE)	on	3rd Ave		00:00:00	0.00 mi
	in 0.22 mi	Turn left (WNW)	on to	E 169th St		00:00:35	0.22 mi
	in 0.62 mi	Turn right (NNE)	on to	Grand Concourse		00:02:15	0.84 mi
	in 0.88 mi	Finish	at	1650 Grand Concourse		00:04:38	1.72 mi

Total Time: 00:04:38 Total Distance: 1.72 mi

Figure 2: Map to Hospital (overview)



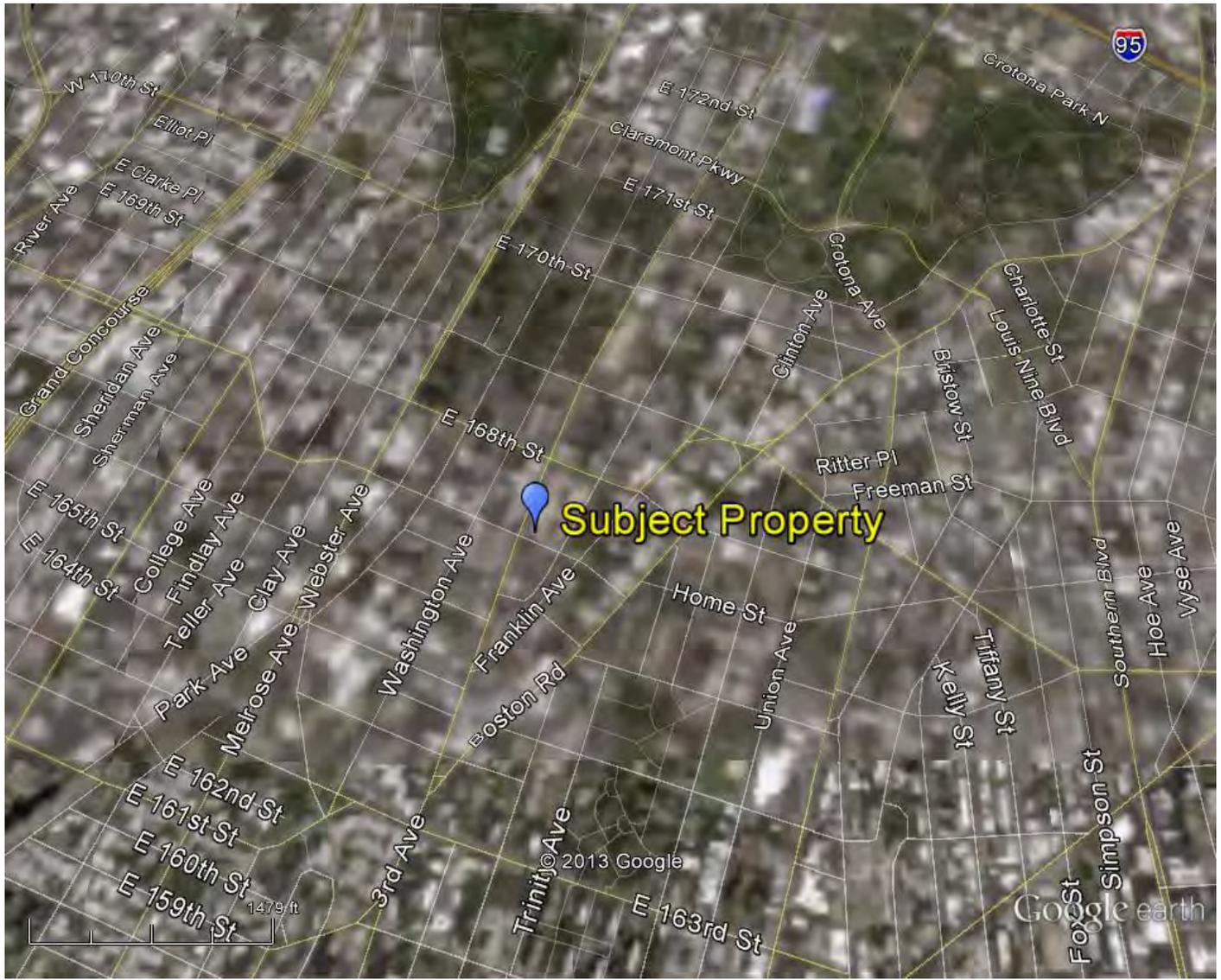


Figure 3: Site Location Map

3458 Third Avenue
Borough of Bronx, New York



ESI File: KB07097.50

February 2014

Figures

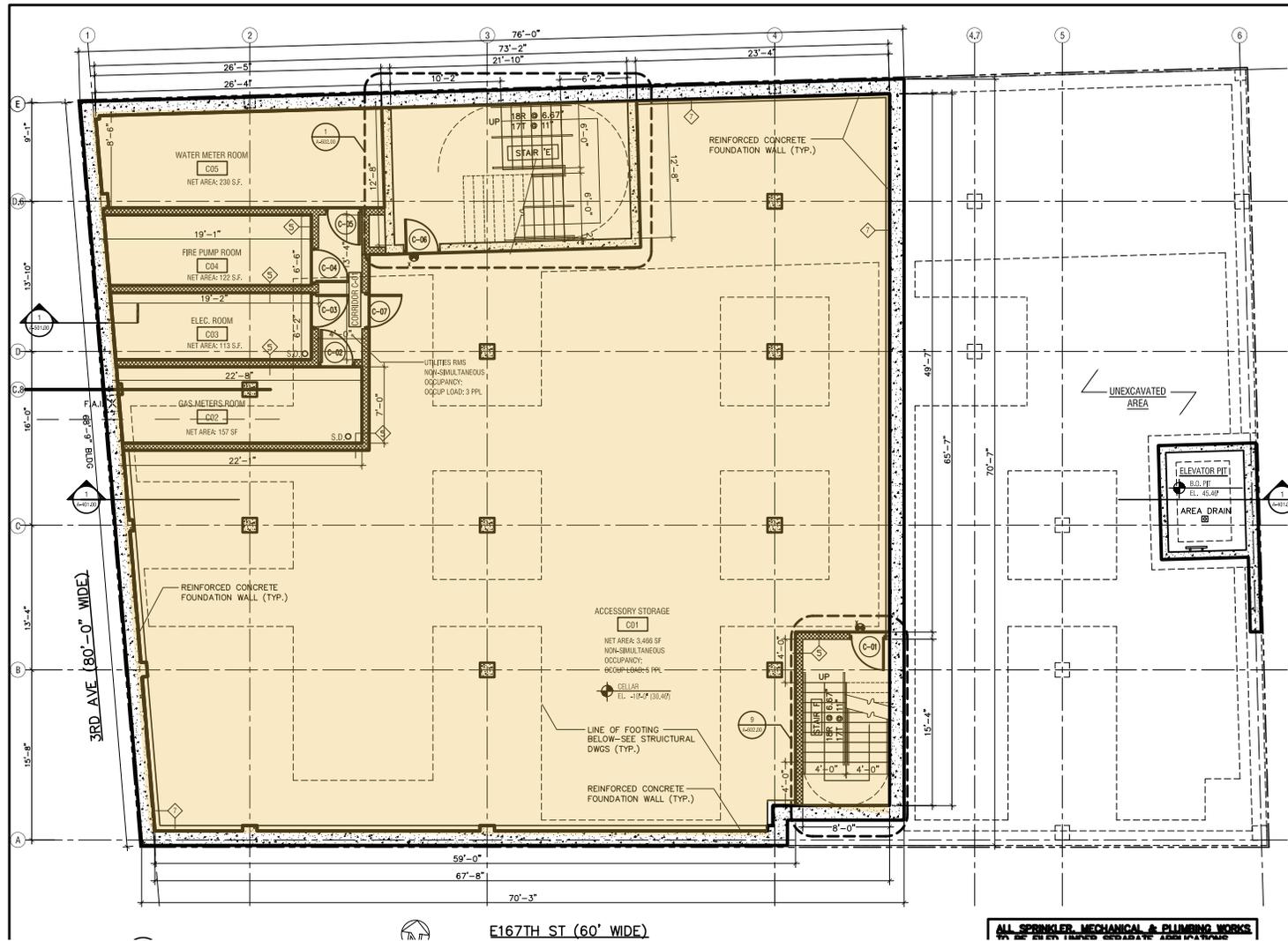


Figure 4 - Excavation Plan

3458 Third Avenue
Bronx, New York

Legend:

area of excavation

ESI File: KB07097.50

February 2014

Figures

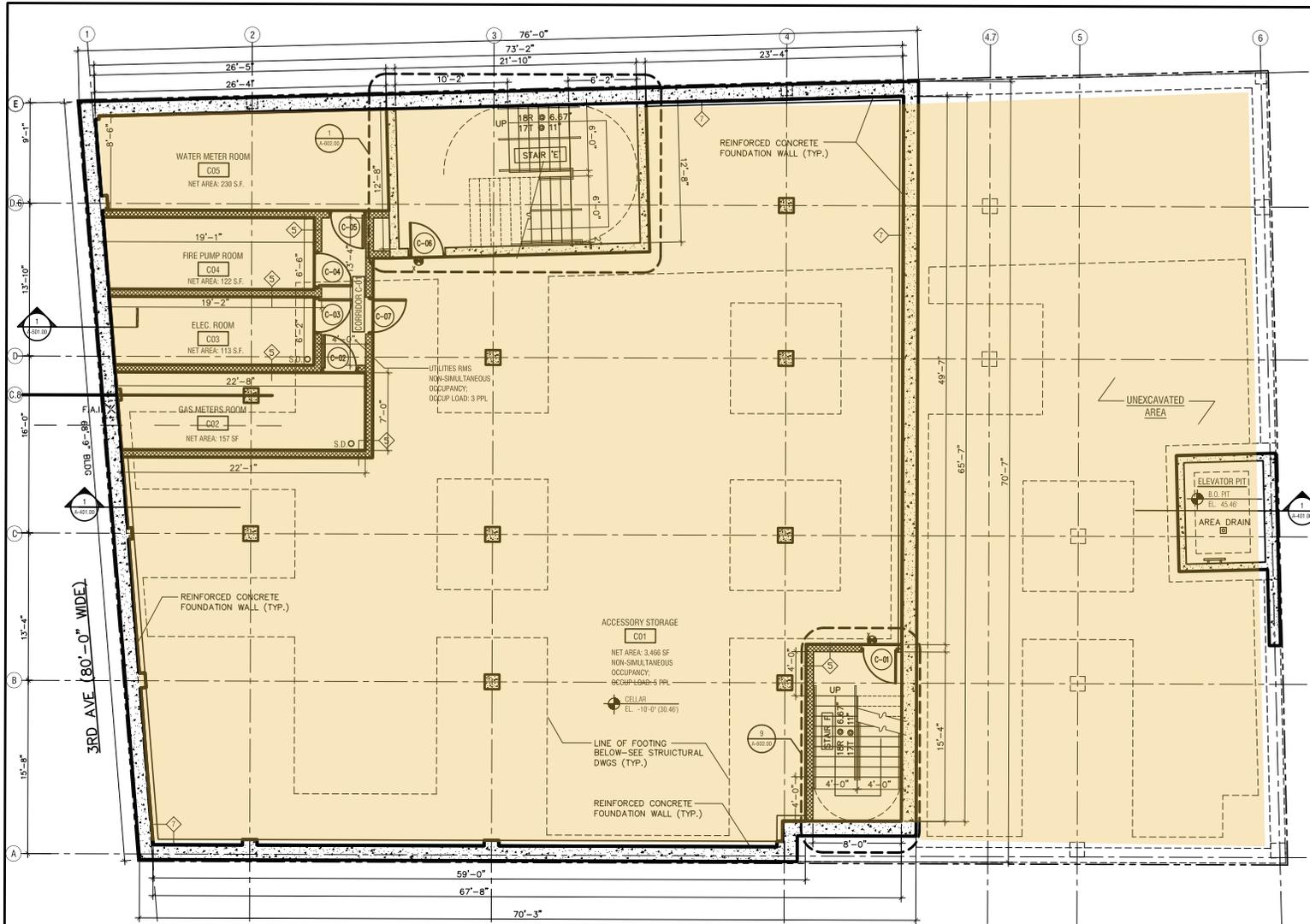


Figure 5 - Cover Type

3458 Third Avenue
Bronx, New York

Legend:

area of vapor barrier

ESI File: KB07097.50

February 2014

Figures

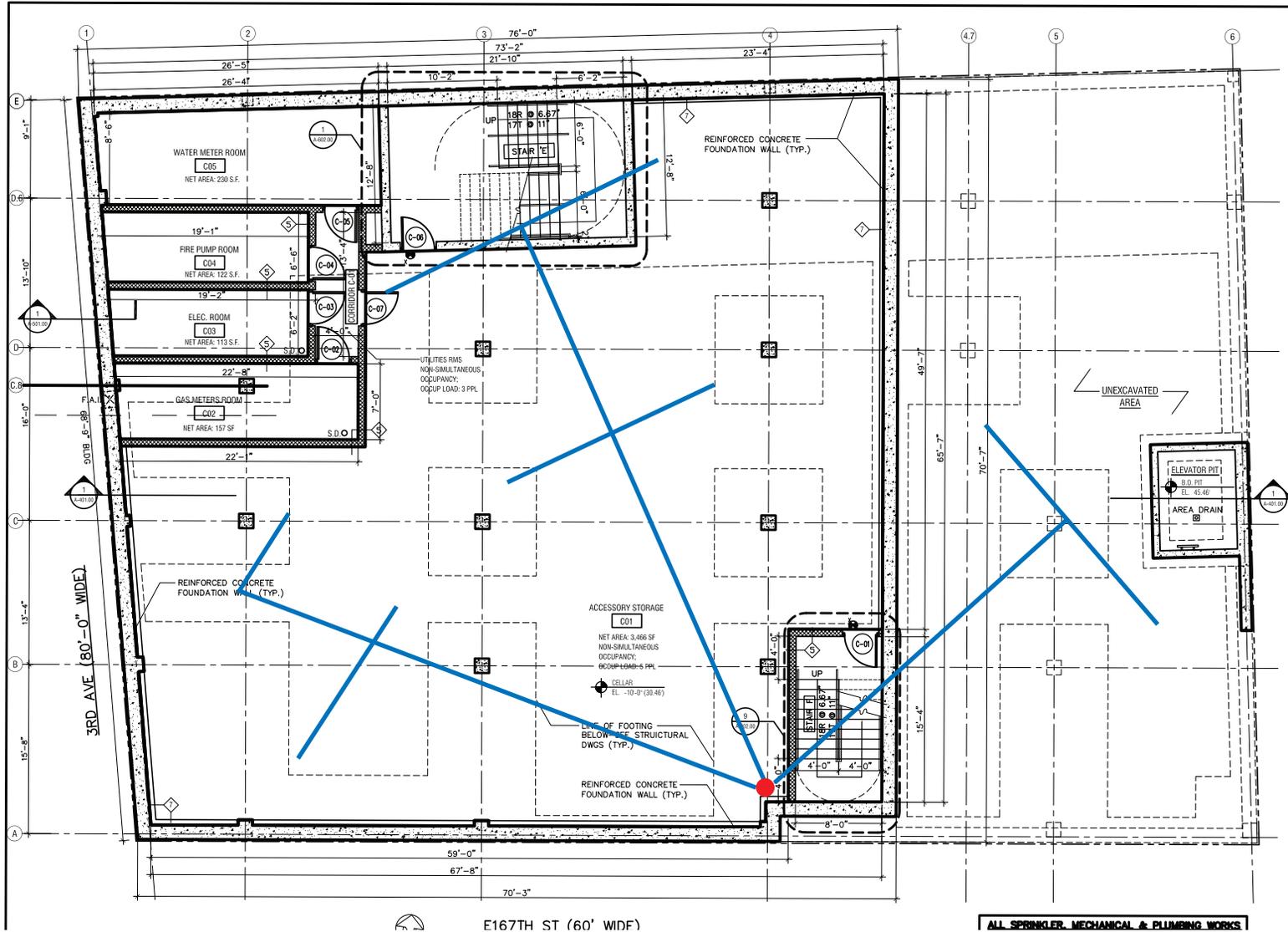


Figure 6 - SSDS Plan

3458 Third Avenue
Bronx, New York

Legend:

- riser
- system piping

ESI File: KB07097.20

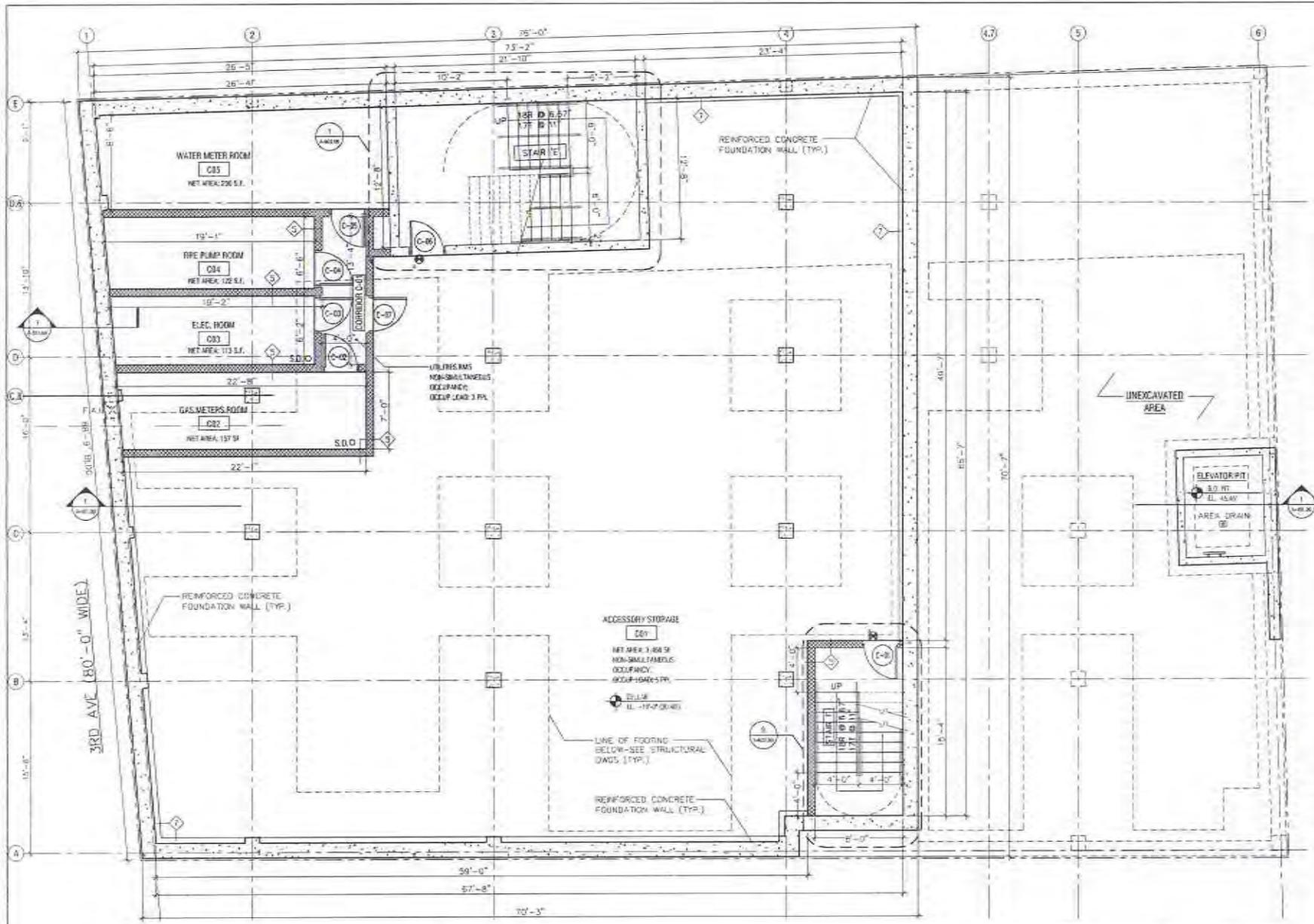
February 2014

Figures



APPENDIX 5

Site Development Plans



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DOB APPLICATION NO.

PROJECT:
MOTT HALL SCHOOL
345B THIRD AVENUE
BRONX, NY 10456

DOB TITLE:

**CELLAR CONSTRUCTION
PLAN**

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	CHEK BY:	ML

DWG. NO:
A-100.00

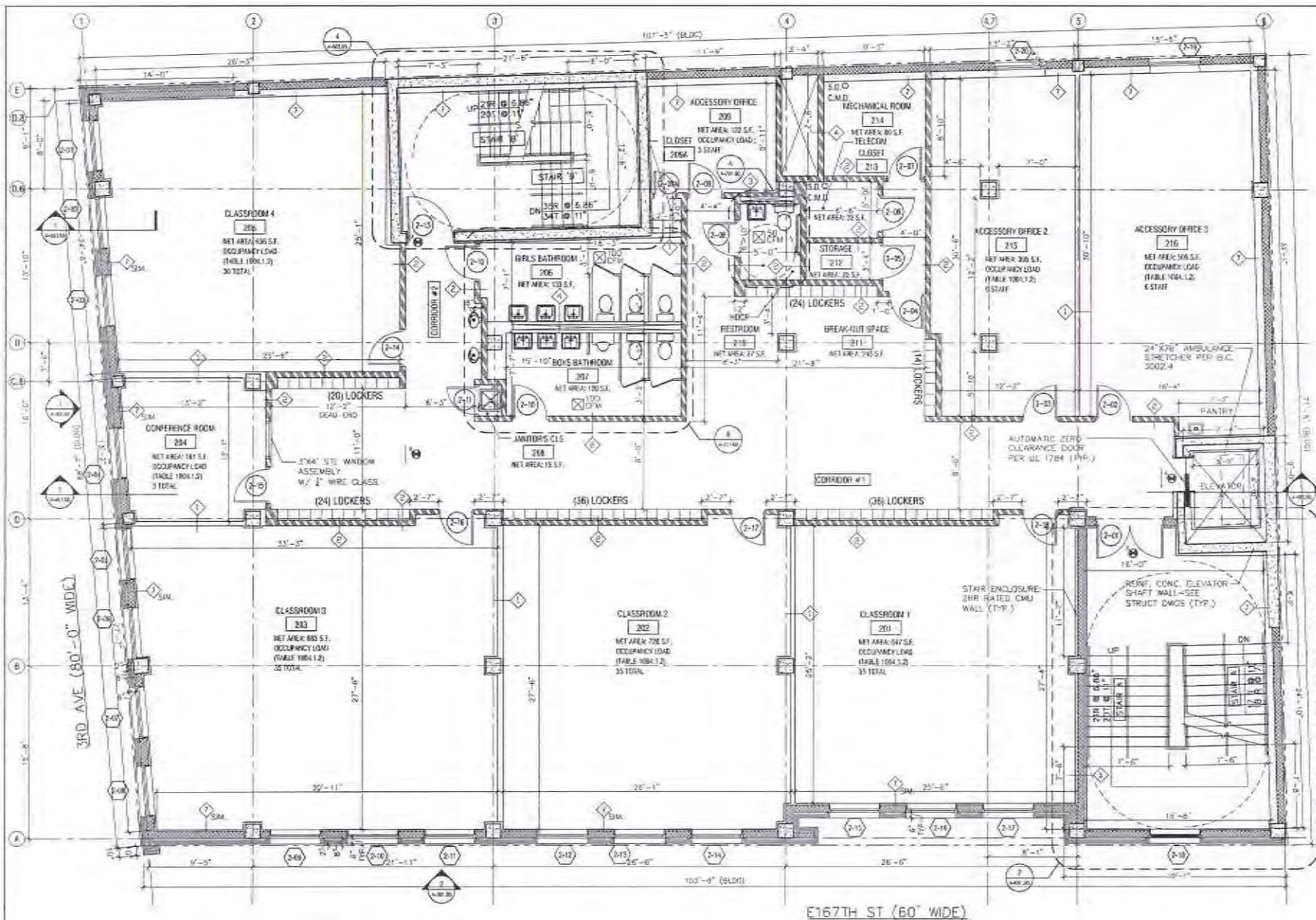
PAGE NO. 8 OF 47

1 CELLAR PLAN

SCALE: 1/4"=1'-0"

E167TH ST (60' WIDE)

ALL SPRINKLER, MECHANICAL & PLUMBING WORKS
TO BE FILED UNDER SEPARATE APPLICATIONS.



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

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PH: 718-944-3282

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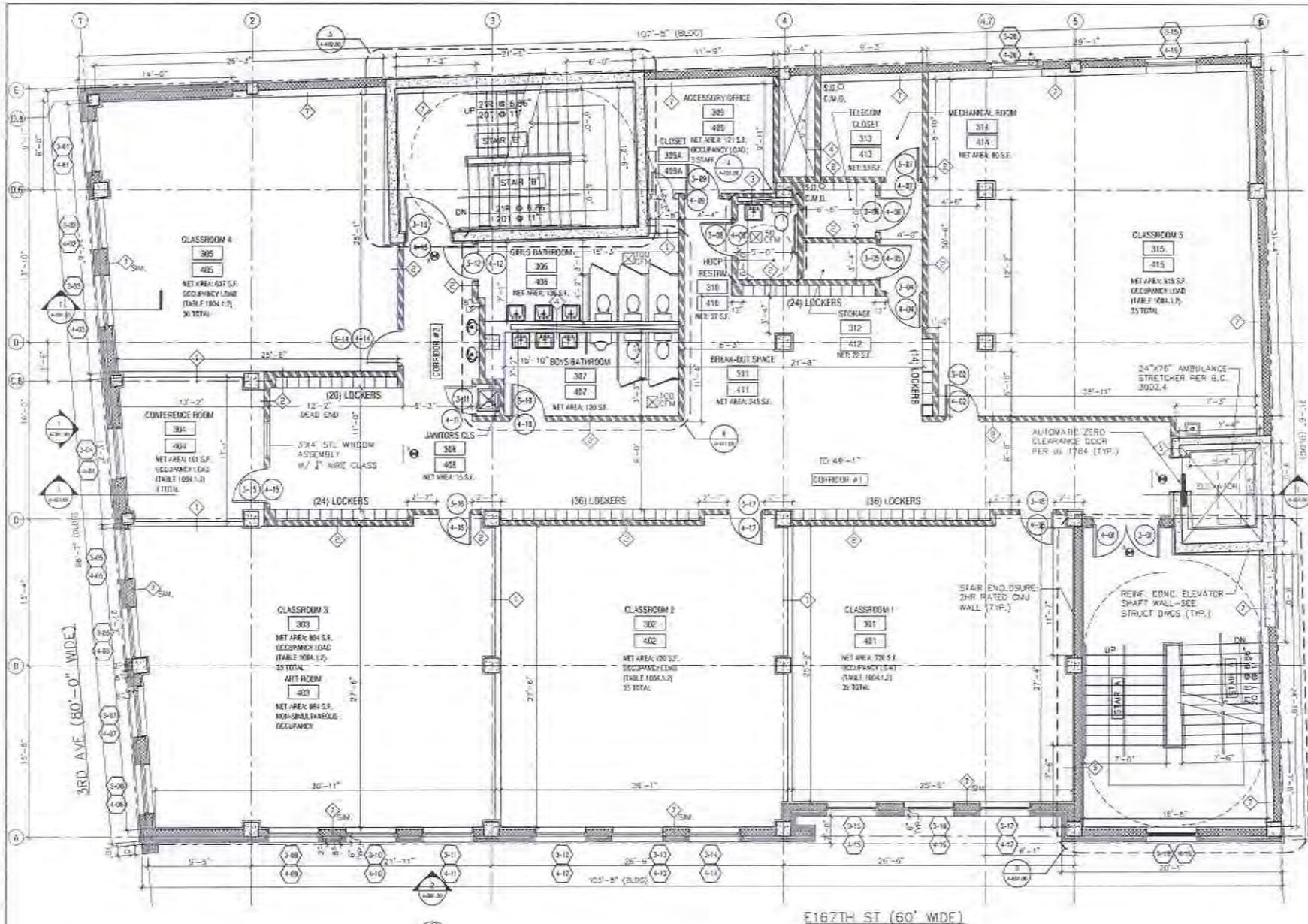
PROJECT:
**MOTT HALL SCHOOL
3458 THIRD AVENUE
BRONX, NY 10456**

DWG TITLE:
**2ND FL FLOOR
CONSTRUCTION PLAN**

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	DATE: 08-28-13
	DWG BY: M.
	DWG BY: M.
	DWG NO. A-102.00
	DATE NO. 10.07.13



1 3RD & 4TH FLOOR PLAN
SCALE: 1/4"=1'-0"

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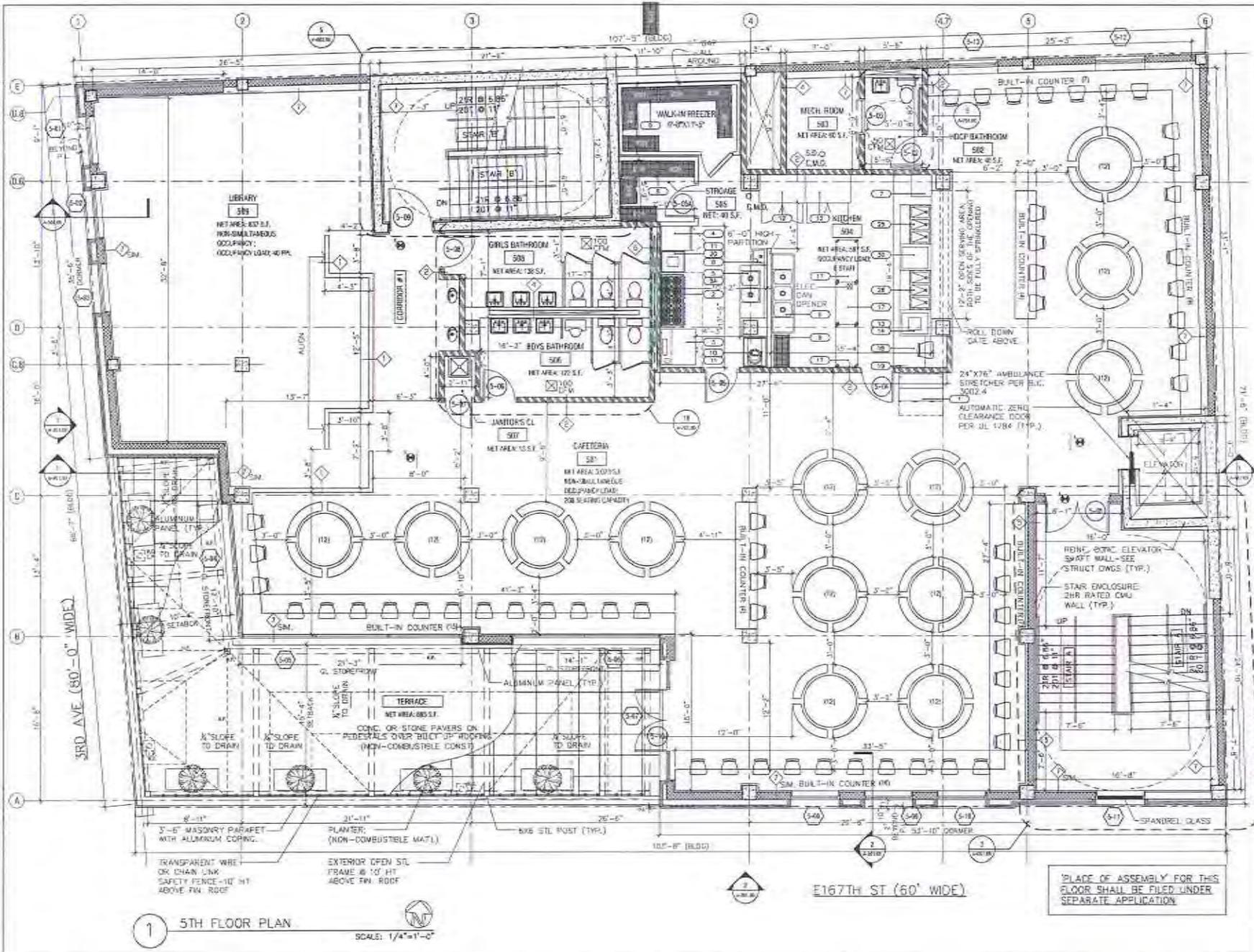
PROJECT:
MOTT HALL SCHOOL
3458 THIRD AVENUE
BRONX, NY 10456

DWG TITLE:
3RD & 4TH FLOORS
CONSTRUCTION PLANS

All drawings and specifications shall be read and understood without exception. Contractors shall verify all dimensions, shades and job conditions. All measurements shall be taken from the centerline of the structure unless otherwise specified. The contractor shall be responsible for obtaining all necessary permits and approvals. The contractor shall be responsible for obtaining all necessary permits and approvals. The contractor shall be responsible for obtaining all necessary permits and approvals.

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	CHK BY:	WL
DWG. NO.		A-103.00
PAGE NO.		11 OF 47



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

**ARRAY ARCHITECTURE
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USE APPLICATION NO:

PROJECT:
MOTT HALL SCHOOL
3458 THIRD AVENUE
BRONX, NY 10456

DWG TITLE:
FIFTH FLOOR
CONSTRUCTION PLAN

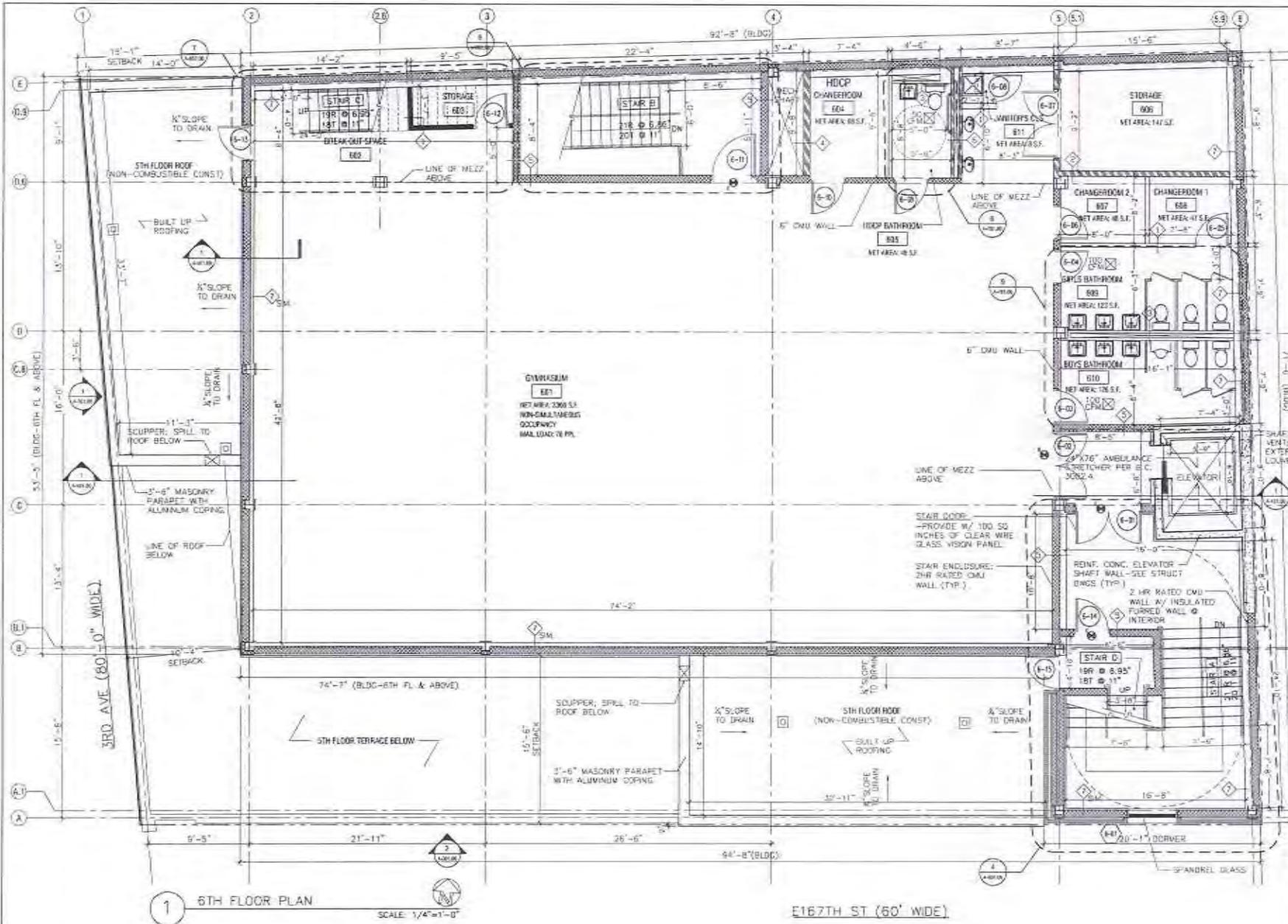
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DATE:	08-28-13
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CHK BY:	ML
DWG NO:	A-104.00

PLACE OF ASSEMBLY FOR THIS FLOOR SHALL BE FILED UNDER SEPARATE APPLICATION



1 6TH FLOOR PLAN

SCALE: 1/4"=1'-0"

E167TH ST (60' WIDE)

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DOB APPLICATION NO.

PROJECT:
MOTT HALL SCHOOL
 3458 THIRD AVENUE
 BRONX, NY 10456

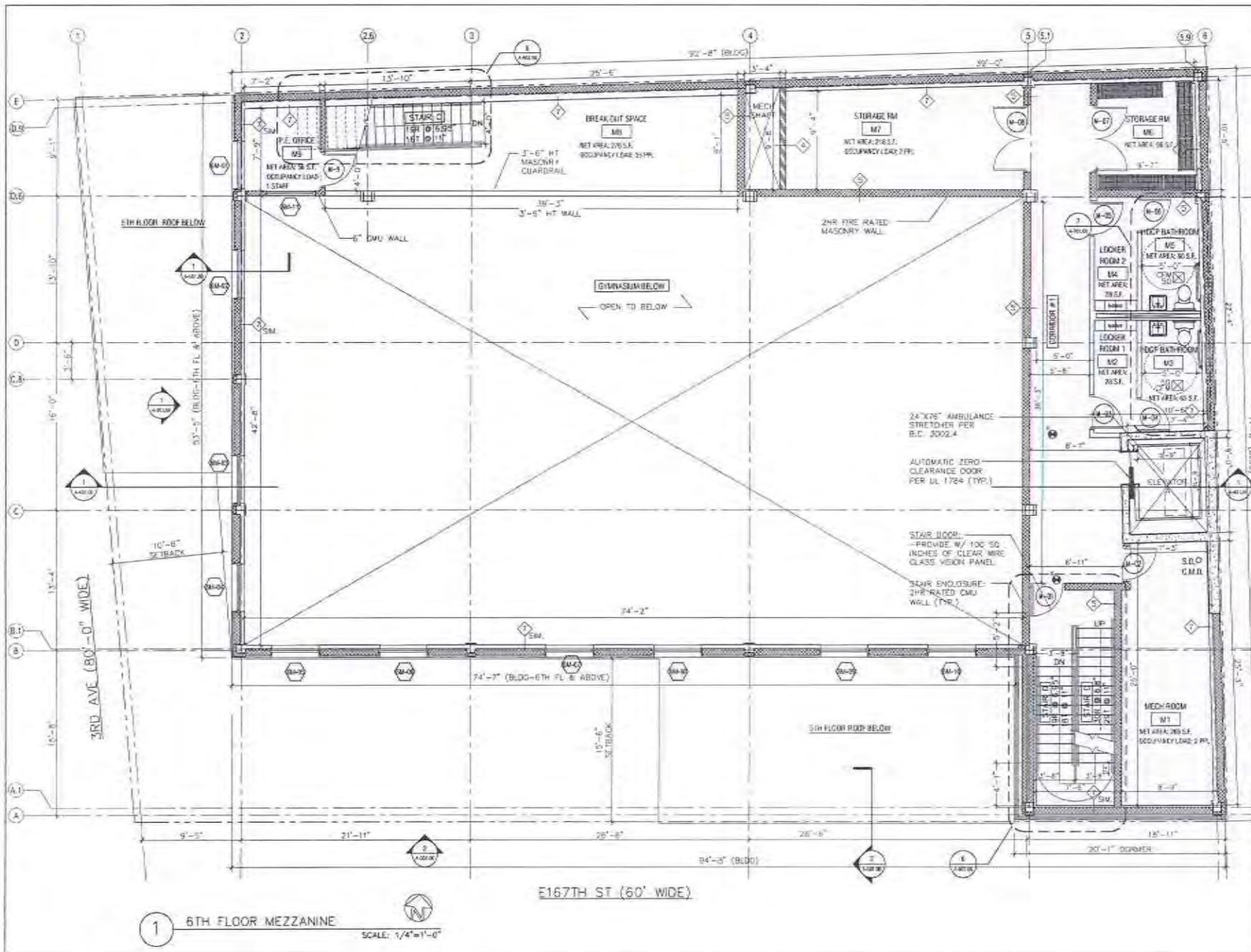
DWG TITLE:
SIXTH FLOOR CONSTRUCTION PLAN

Architects do not accept any responsibility for construction methods, materials, or workmanship. Construction methods, materials, and workmanship shall be the responsibility of the contractor. The contractor shall be responsible for obtaining all necessary permits, licenses, and approvals from the appropriate authorities.

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DATE:	09-26-12
DWG BY:	ML
CHEK BY:	ML
DWG NO.:	A-105.00



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SC PRIME ENERGY LTD HVAC CONTRACTING

28-41 75TH STREET, MIDDLE VILLAGE, NY 11377
 PH: 718-284-3200

DOB APPLICATION NO:

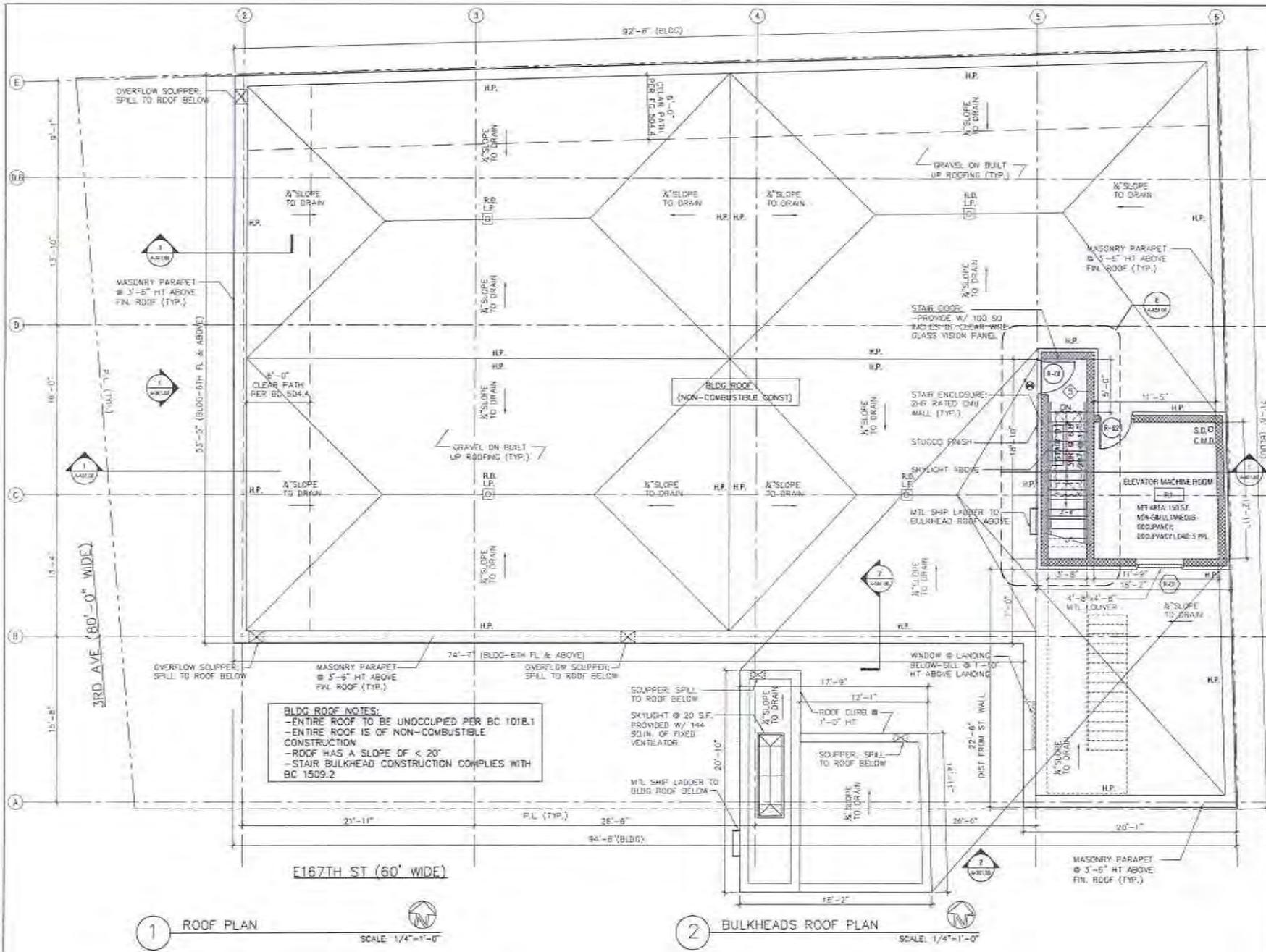
PROJECT:
MOTT HALL SCHOOL
 3458 THIRD AVENUE
 BRONX, NY 10456

DWG TITLE:
**6TH FLOOR MEZZANINE
 CONSTRUCTION PLAN**

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	CHK BY:	WL
	DWG NO:	A-106.00
	PAGE NO:	1A OF 47



BLDG ROOF NOTES:
 -ENTIRE ROOF TO BE UNOCCUPIED PER BC 101B.1
 -ENTIRE ROOF IS OF NON-COMBUSTIBLE CONSTRUCTION
 -ROOF HAS A SLOPE OF < 20°
 -STAIR BULKHEAD CONSTRUCTION COMPLIES WITH BC 1509.2

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

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

ARRAY ARCHITECTURE STUDIO, P.C.

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PROJECT:
 MOTT HALL SCHOOL
 3458 THIRD AVENUE
 BRONX, NY 10456

DWG TITLE:
 BLDG ROOF & BULKHEAD ROOF PLANS

All design and construction details are subject to local official jurisdiction. Conditions are subject to change without notice and are dependent upon the availability of materials. The contractor shall be responsible for obtaining all necessary permits and approvals. The contractor shall be responsible for obtaining all necessary permits and approvals. The contractor shall be responsible for obtaining all necessary permits and approvals.

REVISIONS		
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DATE:	06-28-13
DWG BY:	VL
CHK BY:	VL
DWG NO.	A-107.00
PAGE NO.	15 OF 47