

30 -04 38 Avenue
Queens, NEW YORK

Remedial Action Work Plan

NYC VCP Project Number: 16CVCP054Q
OER Project Number: 14EHAZ498Q

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**REMEDIAL ACTION WORK PLAN
TABLE OF CONTENTS**

LIST OF ACRONYMS	5-6
CERTIFICATION	7
EXECUTIVE SUMMARY	8-20
REMEDIAL ACTION WORK PLAN	21
1.0 PROJECT BACKGROUND	21
1.1 SITE LOCATION AND BACKGROUND	21
1.2 REDEVELOPMENT PLAN	21
1.3 DESCRIPTION OF SURROUNDING PROPERTY	22
1.4 SUMMARY OF PAST SITE USES AND AREAS OF CONCERN	22
1.5 SUMMARY OF WORK PERFORMED UNDER THE RI	23
1.6 SUMMARY OF FINDINGS OF RI	23-25
2.0 REMEDIAL ACTION OBJECTIVES	26
3.0 REMEDIAL ALTERNATIVES ANALYSIS	27-29
3.1 THRESHOLD CRITERA	29-30
3.2 BALANCING CRITERA	30-36
4.0 REMDIAL ACTION	37
4.1 SUMMARY OF PREFERRED REMIAL ACTION	37-39
4.2 SOIL CLEANUP OBJECTIVES AND SOIL/FILL MANAGEMENT	40-43
4.3 ENGINEERING CONTROLS	44-45
4.4 INSTITUTIONAL CONTROLS	46
4.5 SITE MANAGEMENT PLAN	47
4.6 QUALITATIVE HUMAN HEALTH EXPOSURE ASSESSMENT	48-52
5.0 REMEDIAL ACTION MANAGEMENT	52
5.1 PROJECT ORGANIZATION AND OVERSIGHT	52
5.2 SITE SECURITY	52
5.3 WORK HOURS	52
5.4 CONSTRUCTION HEALTH AND SAFETY PLAN	52-53
5.5 COMMUNITY AIR MONITORING PLAN	53-55
5.6 AGENCY APPROVALS	55
5.7 SITE PREPARATION	56-59
5.8 TRAFFIC CONTROL	60
5.9 DEMOBILIZATION	60
5.10 REPORTING AND RECORD KEEPING	60-61
5.11 COMPLAINT MANAGEMENT	61
5.12 DEVIATIONS FROM THE REMEIDAL ACTION WORK PLAN	61
6.0 REMEDIAL ACTION REPORT	62-63
7.0 SCHEDULE	64

FIGURES

Figure 1: Site Location Map

Figure 2: Site Boundary Map

Figure 3: Surrounding Land Usage Map

Figure 4: Map of End-point Sample Locations

Figure 5: Map of Site Excavation Diagram

Figure 6: Sub-Slab Depressurization System Plan

APPENDICES

Appendix 1: Proposed Development Plans

Appendix 2: Citizen Participation Plan

Appendix 3: Sustainability Statement

Appendix 4: Soil/Materials Management Plan

Appendix 5: Construction Health and Safety Plan

Appendix 6: Cover System Design Plan

Appendix 7: Vapor Barrier Specification Sheets

LIST OF ACRONYMS

Acronym	Definition
AOC	Area of Concern
AS/SVE	Air Sparging/Soil Vapor Extraction
BOA	Brownfield Opportunity Area
CAMP	Community Air Monitoring Plan
C&D	Construction and Demolition
CEQR	City Environmental Quality Review
CFR	Code of Federal Regulations
CHASP	Construction Health and Safety Plan
COC	Certificate of Completion
CQAP	Construction Quality Assurance Plan
CSOP	Contractors Site Operation Plan
DCR	Declaration of Covenants and Restrictions
ECs/ICs	Engineering Controls and Institutional Controls
ELAP	Environmental Laboratory Accreditation Program
HASP	Health and Safety Plan
HAZWOPER	Hazardous Waste Operations Emergency Response
IRM	Interim Remedial Measure
MNA	Monitored Natural Attenuation
NOC	Notice of Completion
NYS DEC	New York State Department of Environmental Conservation
NYC DEP	New York City Department of Environmental Protection
NYC DOHMH	New York State Department of Health and Mental Hygiene
NYC OER	New York City Office of Environmental Remediation
NYC VCP	New York City Voluntary Cleanup Program
NYCRR	New York Codes Rules and Regulations
NYS DEC	New York State Department of Environmental Conservation
NYS DEC DER	New York State Department of Environmental Conservation Division of

	Environmental Remediation
NYS DOH	New York State Department of Health
NYS DOT	New York State Department of Transportation
ORC	Oxygen-Release Compound
OSHA	United States Occupational Health and Safety Administration
PCBs	Polychlorinated Biphenyls
PE	Professional Engineer
PID	Photo Ionization Detector
QEP	Qualified Environmental Professional
QHHEA	Qualitative Human Health Exposure Assessment
RAOs	Remedial Action Objectives
RAR	Remedial Action Report
RAWP	Remedial Action Work Plan or Plan
RCA	Recycled Concrete Aggregate
RD	Remedial Design
RI	Remedial Investigation
RMZ	Residual Management Zone
SCOs	Soil Cleanup Objectives
SCG	Standards, Criteria and Guidance
SMP	Site Management Plan
SPDES	State Pollutant Discharge Elimination System
SSDS	Sub-Slab Depressurization System
SVOC	Semi-Volatile Organic Compound
TAL	Target Analyte List
TCL	Target Compound List
USGS	United States Geological Survey
UST	Underground Storage Tank
VCA	Voluntary Cleanup Agreement
VOC	Volatile Organic Compound

CERTIFICATION

I, Eshwar Kosuri, am currently a registered professional engineer licensed by the State of New York. I performed professional engineering services and had primary direct responsibility for designing the remedial program for the 30-04 38 Avenue LLC, site number [VCP site number]. I certify to the following:

- I have reviewed this document and the Stipulation List, to which my signature and seal are affixed.
- Engineering Controls developed for this remedial action were designed by me or a person under my direct supervision and designed to achieve the goals established in this Remedial Action Work Plan for this site.
- The Engineering Controls to be constructed during this remedial action are accurately reflected in the text and drawings of the Remedial Action Work Plan and are of sufficient detail to enable proper construction.
- 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.

ESHWAR KOSURI

61875
PE License Number

[Signature]
Signature

Jan 20, 2016
Date



I, Michael Veraldi, am a qualified Environmental Professional. I will have primary direct responsibility for implementation of the remedial program for the 30-04 38 Avenue LLC site, site number [VCP site number]. I certify to the following:

- 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.

Michael Veraldi

Michael Veraldi
QEP Name

[Signature]
QEP Signature

1/20/16
Date

EXECUTIVE SUMMARY

30-04 38 Ave LLC is working with the NYC Office of Environmental Remediation (OER) in the New York City Voluntary Cleanup Program to investigate and remediate a 4,502-square foot site located at 30-04 38th Ave in Queens, New York. A remedial investigation (RI) was performed to compile and evaluate data and information necessary to develop this Remedial Action Work Plan (RAWP). The remedial action described in this document provides for the protection of public health and the environment consistent with the intended property use, complies with applicable environmental standards, criteria and guidance and conforms with applicable laws and regulations.

Site Location and Background

The Site is located at 30-04 38th Ave LIC in the Long Island City section in Queens, New York and is identified as Block 383 and Lot 9 on the New York City Tax Map. Figure 1 shows the Site location. The Site is 4,508 square feet and is bounded by 38th Avenue to the North to the south Nesle Inc, to the east Mixed use residential apartment buildings, and to the west 38th Street. A map of the site boundary is shown in Figure 2. Currently, the Site is a vacant lot and contains no buildings, and other pertinent Site features.

Summary of Redevelopment Plan

The proposed future use of the Site will consist of one (six story) residential building with some warehouse storage space. The new construction will have a basement underneath the entire footprint of the building which shall be used for Storage, Mechanical Systems, and Laundry. Layout of the proposed site development is presented in the RIR Figure 1. The current zoning designation is R6A/M1-2. The proposed use is consistent with existing zoning for the property. The new construction will occupy approximately 3,500 square feet of the footprint of the property, leaving approximately 1,000 open grassy area, and have ten (10) residential apartments, and approximately 1,700 square feet of warehouse space. The construction shall require the entire footprint of the proposed new building to be excavated to a depth of five (5) below existing grade level, with the exception of a small area to accommodate the elevator pit,

which shall be excavated to ten (10) feet below grade. In addition the small grassy area in the rear of the property shall be excavated to a depth of three (3) feet.

Summary of Surrounding Property

The area surrounding the Site consists of a mix of residential, industrial and vacant properties the below table shows the surrounding land usage of the adjacent properties, no sensitive receptor such as schools, hospitals, and day care facilities are within a 250 to 500 foot radius of the subject parcel.

Surrounding Property Usage

Direction	Directly Adjacent	Further Beyond
North	38 th Avenue	Commercial Buildings
South	Nesle Inc. Commercial Bldg.	Commercial businesses
East	Mixed use residential apartments	31 st Street
West	38 th Street	Two (2) story residential townhouses

Summary of Past Site Uses and Areas of Concern

The past usage of the subject site was on improved one (1) story residential dwelling, with a partial basement located at 30-04-38th Avenue L.I.C. NY. The current owners of the property Mr. Frank Cunningham and Ms. Sharon Cunningham purchased the property from John R Robinson Inc. a condenser, heat exchanger, and Tool Company, which occupied the site and used it for an office and warehouse since circa 1948. The present owners reportedly purchased the property in 1952, and the residential house has been vacant since the mid 1980's. The house is was partially collapsed and un-safe to enter when the Phase I Environmental Site Assessment Report was conducted dated April 22, 2013. The only onsite recognized environmental conditions (REC's) listed in the Phase I Report was to:

1. Dye test the sanitary discharge to confirm connection to the NYC Sewer System. Which was completed prior to demolition.

2. Satisfy Little "E" Designation.

Summary of the Work Performed under the Remedial Investigation

30-04 38 Ave 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 4 soil borings across the entire project Site, and collected 8 soil samples for chemical analysis from the soil borings to evaluate soil quality;
3. Installed 3 groundwater monitoring wells throughout the Site to establish groundwater flow and collected 3 groundwater samples for chemical analysis to evaluate groundwater quality;
4. Installed 3 soil vapor probes around Site perimeter and collected 3 samples for chemical analysis.

Summary of Findings of Remedial Investigation

1. Elevation of the property ranges from 34.68 to 36.25 feet.
2. Depth to groundwater ranges from 15 feet to 18 feet at the Site.
3. Groundwater flow is generally from east to west beneath the Site.
4. Depth to bedrock is approximately >80 feet at the Site.
5. The stratigraphy of the site, from the surface down, consists of less than one foot of historic fill material underlain by native brown silty sand. In general and according to the United State Department of Agriculture, Soil Conservation Service the site is located in the Atlantic Coastal Plain physiographic province which is characterized by low hills of unconsolidated sands, gravel and silt. The subsurface deposits consist of the Upper Glacial deposits that are characterized by southward sloping deposits of sand, gravel and silt. The Upper Glacial deposits have a maximum thickness of 600 feet. They are underlain by the Magothy, Raritan and Llyod Formations. The Gardiners clay and

Jameco gravel separate the Upper Glacial deposits and the Magothy Formation along the southwest portion of Long Island. The Borough of Queens is underlain by bedrock, although the majority of it is at several hundred feet below land surface.

6. Soil/fill samples results were compared to New York State Department of Environmental Conservation (NYSDEC) Unrestricted Use Soil Cleanup Objectives and Restricted Residential Use Soil Cleanup Objectives (SCOs) as presented in 6NYCRR Part 375-6.8. Soil/fill samples collected during the RI showed no VOC's, SVOC's, PCB's were detected at concentrations above Unrestricted Use Soil Cleanup Objectives. Four pesticides including Heptachlor (maximum 155 ppb), cis Chlordane (maximum 714 ppb), 4,4 DDE (maximum 10.1 ppb), and 4,4 DDT (maximum 36.9 ppb) slightly exceeded the Unrestricted Use SCOs but well below their Residential and Restricted Residential Use SCO's. Lead was detected in all shallow and deep soil samples, but only exceeded Unrestricted Use SCOs in SB-1 (0 to 2 ft.) at 85.8 ppm and (12 to 15 ft) at 107 ppm. All other metal results were below Unrestricted Use SCOs. Overall, the findings of soil quality were found to be unremarkable.
7. Groundwater samples collected during the RI showed no detection or exceedances of the NYSDEC 6NYCRR Part 703.5 Groundwater Quality Standards (GQS) for SVOC's Metals, PCB's, or Pesticides. VOCs were detected above their respective GQS for Cis-1-2 Dichloroethylene (7.95 ppb) in GW-1, Trichloroethylene (5.46 ppb) in GW-1, and Tetrachloroethylene (56.4 ppb in GW-1, 42.20 in GW-2, and 28.60 in GW-3).
8. Soil vapor sample results collected during the RI were compared to the compounds listed in Vapor Intrusion Matrices in the New York State Department of Health (NYSDOH) Final Guidance for Evaluating Soil Vapor Intrusion, dated October 2006. Soil vapor samples collected during the RI showed several VOCs were detected at varying concentrations. Soil vapor collected during the RI showed low levels of petroleum-related VOCs. Most compounds were detected at concentrations less than 25 ug/m³. Maximum concentration for BTEX was found at 79.8 ug/m³ in SV-2. Chlorinated VOCs including Trichloroethylene (76 ug/m³ in SV-3 only), and Tetrachloroethylene (maximum 89 ug/m³) were found at elevated levels in all samples. Both the Trichloroethylene and Tetrachloroethylene concentrations for the soil vapor samples are

within the monitoring/mitigation level ranges established within the State DOH soil vapor guidance matrix. Carbon tetrachloride and 1,1,1-trichloroethane was not found in any of the samples.

Summary of the Remedial Action

The preferred remedial action alternative is Alternative 2, the Track 4 remedial action. The preferred remedial action achieves protection of public health and the environment for the intended use of the property. The preferred remedial action will achieve all of the remedial action objectives established for the project and addresses applicable SCGs. The preferred remedial action is effective in both the short-term and long-term and reduces mobility, toxicity and volume of contaminants. The preferred remedial action alternative is cost effective and implementable and uses standards methods that are well established in the industry.

The proposed remedial action will consist of:

1. Preparation of a Community Protection Statement and performance of all required NYC VCP Citizen Participation activities according to an approved Citizen Participation Plan.
2. Perform a Community Air Monitoring Program for particulates and volatile organic carbon compounds;
3. Establishment of Track 4 Site-Specific Soil Cleanup Objectives (SCOs);
4. Site mobilization involving Site security setup, equipment mobilization, utility mark outs and marking & staking excavation areas;
5. Completion of a Waste Characterization Study prior to excavation activities. Waste characterization soil samples will be collected at a frequency dictated by disposal facility(s).
6. Excavation and removal of soil/fill exceeding Track 4 Site Specific SCOs. For development purposes, the entire footprint of the building area (about 80% of the property) will be excavated to a depth of approximately 5 feet below grade, with the exception of a small area to accommodate the elevator pit which shall be excavated to ten (10) feet, and a small grassy area in the rear which shall be excavated to three (3) feet below grade. Approximately 1400 tons of soil/fill will be removed from the Site and properly disposed at an appropriately licensed or permitted facility.

7. Screening of excavated soil/fill during intrusive work for indications of contamination by visual means and monitoring with a PID. Appropriate segregation of excavated media on-Site;
8. Management of excavated materials including temporarily stockpiling and segregating in accordance with defined material types and to prevent co-mingling of contaminated material and non-contaminated materials.
9. Removal of all UST's that are encountered during soil/fill removal actions. Registration of tanks and reporting of any petroleum spills associated with UST's and appropriate closure of these petroleum spills in compliance with applicable local, State and Federal laws and regulations.
10. Transportation and off-Site disposal of all soil/fill material at permitted facilities in accordance with applicable laws and regulations for handling, transport, and disposal, and this plan. Sampling and analysis of excavated media as required by disposal facilities. Appropriate segregation of excavated media onsite;
11. Collection and analysis of end-point samples to determine the performance of the remedy with respect to attainment of SCOs.
12. Import of materials to be used for backfill and cover, as needed, in compliance with OER-approved plan and in accordance with all Federal, State, and city laws and regulations.
13. Construction of an engineered composite cover consisting of six-inch thick concrete building slab with an 8-inch clean granular sub-base beneath all building areas, the building will occupy the approximately 80% of the property. The small exposed grassy area shall have a two (2) foot cover of certified clean fill and topsoil, and planted with grass seed.
14. Installation of a vapor barrier system consisting of vapor barrier beneath the building slab and outside of sub-grade foundation sidewalls to mitigate soil vapor migration into the building. The vapor barrier system will consist of a 20-mil vapor barrier Raven Industries' VaporBlock 20 Plus below the slab throughout the full building which occupies the entire footprint of the property. All welds, seams and penetrations will be

system is an Engineering Control for the remedial action. The remedial engineer will certify in the RAR that the vapor barrier system was designed and properly installed to mitigate soil vapor migration into the building.

15. Installation of an active sub-slab depressurization system (SSDS) consisting of a network of horizontal pipe roughly spaced at eight (8) to ten (10) foot intervals depending on the location (see figure 6) set in the middle of a gas permeable layer immediately beneath the building slab and vapor barrier system. The piping system shall be placed in an 8” deep layer of sub-base material. The SSDS system will be constructed of 4 inch schedule 40 PVC perforated pipe, which will be installed under the VaporBlock 20 Vapor Barrier System, which is to be installed directly under the concrete slab, a Rotron 250 CFM blower fan motor shall be installed on the roof with auto off and on alarm sensor. The remedial engineer will certify in the RAR that the active SSDS was designed and properly installed to establish a vacuum in the gas permeable layer and a negative (decreasing outward) pressure gradient to prevent vapor migration into the building.
16. Implementation of storm-water pollution prevention measures in compliance with applicable laws and regulations.
17. Performance of all activities required for the remedial action, including permitting requirements, in compliance with applicable laws and regulations;
18. Submission of an approved Site Management Plan (SMP) in the Remedial Action Plan (RAR) for long-term management of residual contamination, including plans for operation, maintenance, monitoring, inspection and certification of Engineering and Institutional Controls and reporting at a specified frequency.
19. The property will continue to be registered with an E-Designation at the NYC Buildings Department. Establishment of Engineering Controls and Institutional Controls in this RAWP and a requirement that management of these controls must be in compliance with an approved SMP. Institutional Controls will include prohibition of the following: (1) vegetable gardening and farming; (2) use of groundwater without treatment rendering it safe for the intended use; (3) disturbance of residual contaminated material unless it is conducted in accordance with the SMP; and (4) higher level of land usage without OER-approval.

COMMUNITY PROTECTION STATEMENT

The NYC Office of Environmental Remediation (OER) provides governmental oversight for the cleanup of contaminated property in NYC. This Remedial Action Work Plan (“cleanup plan”) describes the findings of prior environmental studies, shows the location of identified contamination at the site, and describes the plans to clean up the site to protect public health and the environment.

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

Project Information:

- Site Name: 30-04 38 Ave LLC
- Site Address: 30-04 38th Ave LIC NY
- NYC Voluntary Cleanup Program Project Number: 16CVCP054Q

Project Contacts:

- OER Project Manager: William Wong, 212-788-8841
- Site Project Manager: Frank Cunningham, 1-718-786-6088
- Site Safety Officer: Frank Cunningham, 1-718-786-6088
- Online Document Repository: link to OER’s document repository

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

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

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

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

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

Worker Training: Workers participating in cleanup of contaminated material on this project are required to be trained in a 40-hour hazardous waste operators training course and to take annual refresher training. This pertains to workers performing specific tasks including removing contaminated material and installing cleanup systems in contaminated areas.

Community Air Monitoring Plan: Community air monitoring will be performed during this cleanup project to ensure that the community is properly protected from contaminants, dust and odors. Air samples will be tested in accordance with a detailed plan called the Community Air Monitoring Plan or CAMP. Results will be regularly reported to the NYC Office of Environmental Remediation. This cleanup plan also has a plan to address any unforeseen problems that might occur during the cleanup (called a 'Contingency Plan').

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

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

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

Hours of Operation: The hours for operation of cleanup will comply with the NYC Department of Buildings construction code requirements or according to specific variances

issued by that agency. For this cleanup project, the hours of operation will conform to requirements of the NYC Department of Buildings.

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 and provides project contact names and numbers, and a link to the document repository where 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 or the NYC Office of Environmental Remediation Project Manager listed on the first page of this Community Protection Statement document, or call 311 and mention the Site is in the NYC Voluntary Cleanup Program.

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

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

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

Stockpile Management: Soil stockpiles will be kept covered with tarps to prevent dust, odor and erosion. Stockpiles will be frequently inspected. Damaged tarp covers will be

promptly replaced. Stockpiles will be protected with silt fences. Hay bales will be used, as needed, to protect storm water catch basins and other discharge points.

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

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

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

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

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

Final Report: The results of all cleanup work will be fully documented in a final report (called the Remedial Action Report) that will be available for public review online. A link to the online document repository and the public library with Internet access nearest the Site are listed on the first page of this Community Protection Statement document

Long-Term Site Management: If long-term protection is needed 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 either in the property's deed or established through a city environmental designation registered with the Department of Buildings. 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 Project Background

30-04 38 Ave LLC is working with the NYC Office of Environmental Remediation (OER) in the New York City Voluntary Cleanup Program and/or in the “E” Designation Program to investigate and remediate a property located at 30-04 38th Avenue in the Long Island City section of Queens, New York (the “Site”). A Remedial Investigation (RI) was performed to compile and evaluate data and information necessary to develop this Remedial Action Work Plan (RAWP) in a manner that will render the Site protective of public health and the environment consistent with the contemplated end use. This RAWP establishes remedial action objectives, provides a remedial alternatives analysis that includes consideration of a permanent cleanup, and provides a description of the selected remedial action. The remedial action described in this document provides for the protection of public health and the environment, and complies with applicable environmental standards, criteria and guidance and applicable laws and regulations.

1.1 Site Location and Background

The Site is located at 30-04 38th Ave LIC in the Long Island City section in Queens, New York and is identified as Block 383 and Lot 9 on the New York City Tax Map. Figure 1 shows the Site location. The Site is 4,508 square feet and is bounded by 38th Avenue to the North to the south Nesle Inc, to the east Mixed use residential apartment buildings, and to the west 38th Street. A map of the site boundary is shown in Figure 2. Currently, the Site is a vacant lot and contains no buildings, and other pertinent Site features.

1.2 Redevelopment Plan

The proposed future use of the Site will consist of one (six story) residential building with some warehouse storage space. The entire footprint of the building shall have a basement which shall be used for storage, mechanical systems, and laundry. Layout of the proposed site development is presented in the RIR Figure 1. The current zoning designation is R6A/M1-2. The proposed use is consistent with existing zoning for the property. The new construction will occupy approximately 3,500 square feet of the footprint of the property, leaving approximately 1,000 open grassy area, and have ten (10) residential apartments, and approximately 1,700

square feet of warehouse space. The final depth of the excavation under the footprint of the building is five (5) below grade with the exception of a small area to accommodate the elevator pit which shall be excavated to ten (10) feet, in addition the small grassy area in the rear of the property shall be excavated to a depth of three (3) feet below grade level.

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

1.3 Description of Surrounding Property

The area surrounding the Site consists of a mix of residential, industrial and vacant properties the below table shows the surrounding land usage of the adjacent properties, no sensitive receptor such as schools, hospitals, and day care facilities are within a 250 to 500 foot radius of the subject parcel.

TABLE 1. Surrounding Property Usage

Direction	Directly Adjacent	Further Beyond
North	38 th Avenue	Commercial Buildings
South	Nesle Inc. Commercial Bldg.	Commercial businesses
East	Mixed use residential apartments	31 st Street
West	38 th Street	Two (2) story residential townhouses

1.4 Summary of Past Site Uses and Areas of Concern

The past usage of the subject site was on improved one (1) story residential dwelling, with a partial basement located at 30-04-38th Avenue L.I.C. NY. The current owners of the property Mr. Frank Cunningham and Ms. Sharon Cunningham purchased the property from John R Robinson Inc. a condenser, heat exchanger, and Tool Company, which occupied the site and used it for an office and warehouse since circa 1948. The present owners reportedly purchased

the property in 1952, and the residential house has been vacant since the mid 1980's. The house is was partially collapsed and un-safe to enter when the Phase I Environmental Site Assessment Report was conducted dated April 22, 2013. The only onsite recognized environmental conditions (REC's) listed in the Phase I Report was to:

1. Dye test the sanitary discharge to confirm connection to the NYC Sewer System. Which was completed prior to demolition.
2. Satisfy Little "E" Designation.

1.5 Summary of Work Performed under the Remedial Investigation

30-04 38 Ave 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 4 soil borings across the entire project Site, and collected 8 soil samples for chemical analysis from the soil borings to evaluate soil quality;
3. Installed 3 groundwater monitoring wells throughout the Site to establish groundwater flow and collected 3 groundwater samples for chemical analysis to evaluate groundwater quality;
4. Installed 3 soil vapor probes around Site perimeter and collected 3 samples for chemical analysis.

1.6 Summary of Findings of Remedial Investigation

A remedial investigation was performed and the results are documented in a companion document called "Remedial Investigation Report, 30-04 38 Ave LLC, dated October 2015 (RIR).

1. Elevation of the property ranges from 34.68 to 36.25 feet.
2. Depth to groundwater ranges from 15 feet to 18 feet at the Site.
3. Groundwater flow is generally from east to west beneath the Site.
4. Depth to bedrock is approximately >80 feet at the Site.

5. The stratigraphy of the site, from the surface down, consists of less than one foot of historic fill material underlain by native brown silty sand. In general and according to the United State Department of Agriculture, Soil Conservation Service the site is located in the Atlantic Coastal Plain physiographic province which is characterized by low hills of unconsolidated sands, gravel and silt. The subsurface deposits consist of the Upper Glacial deposits that are characterized by southward sloping deposits of sand, gravel and silt. The Upper Glacial deposits have a maximum thickness of 600 feet. They are underlain by the Magothy, Raritan and Llyod Formations. The Gardiners clay and Jameco gravel separate the Upper Glacial deposits and the Magothy Formation along the southwest portion of Long Island. The Borough of Queens is underlain by bedrock, although the majority of it is at several hundred feet below land surface.
6. Soil/fill samples results were compared to New York State Department of Environmental Conservation (NYSDEC) Unrestricted Use Soil Cleanup Objectives and Restricted Residential Use Soil Cleanup Objectives (SCOs) as presented in 6NYCRR Part 375-6.8. Soil/fill samples collected during the RI showed no VOC's, SVOC's, PCB's were detected at concentrations above Unrestricted Use Soil Cleanup Objectives. Four pesticides including Heptachlor (maximum 155 ppb), cis Chlordane (maximum 714 ppb), 4,4 DDE (maximum 10.1 ppb), and 4,4 DDT (maximum 36.9 ppb) slightly exceeded the Unrestricted Use SCOs but well below their Residential and Restricted Residential Use SCO's. Lead was detected in all shallow and deep soil samples, but only exceeded Unrestricted Use SCOs in SB-1 (0 to 2 ft.) at 85.8 ppm and (12 to 15 ft) at 107 ppm. All other metal results were below Unrestricted Use SCOs. Overall, the findings of soil quality were found to be unremarkable.
7. Groundwater samples collected during the RI showed no detection or exceedances of the NYSDEC 6NYCRR Part 703.5 Groundwater Quality Standards (GQS) for SVOC's Metals, PCB's, or Pesticides. VOCs were detected above their respective GQS for Cis-1-2 Dichloroethylene (7.95 ppb) in GW-1, Trichloroethylene (5.46 ppb) in GW-1, and Tetrachloroethylene (56.4 ppb in GW-1, 42.20 in GW-2, and 28.60 in GW-3).
8. Soil vapor sample results collected during the RI were compared to the compounds listed in Vapor Intrusion Matrices in the New York State Department of Health (NYSDOH)

Final Guidance for Evaluating Soil Vapor Intrusion, dated October 2006. Soil vapor samples collected during the RI showed several VOCs were detected at varying concentrations. Soil vapor collected during the RI showed low levels of petroleum-related VOCs. Most compounds were detected at concentrations less than 25 ug/m³. Maximum concentration for BTEX was found at 79.8 ug/m³ in SV-2. Chlorinated VOCs including Trichloroethylene (76 ug/m³ in SV-3 only), and Tetrachloroethylene (maximum 89 ug/m³) were found at elevated levels in all samples. Both the Trichloroethylene and Tetrachloroethylene concentrations for the soil vapor samples are within the monitoring/mitigation level ranges established within the State DOH soil vapor guidance matrix. Carbon tetrachloride and 1,1,1-trichloroethane was not found in any of the samples.

For more detailed results, consult the RIR.

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

2.0 Remedial Action Objectives

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

Soil

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

Groundwater

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

Soil Vapor

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

3.0 Remedial Alternatives Analysis

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

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

As required, a Track 1 Unrestricted Use scenario is evaluated for the remedial action. The following is a detailed description of the alternatives analyzed to address impacted media at the Site:

Alternative 1:

- Selection of NYSDEC 6NYCRR Part 375 Unrestricted Use (Track 1) Soil Cleanup Objectives (SCOs).
- Removal of all soil/fill exceeding Track 1 Unrestricted Use SCOs throughout the Site and confirmation that Track 1 Unrestricted Use SCOs have been achieved with post-excavation endpoint sampling. Based on the results of the Remedial Investigation, it is expected that this alternative would be achieved by excavating 5 feet for the building's cellar level and 3 feet for landscaped areas. If soil/fill containing analytes at

concentrations above Unrestricted Use SCOs is still present at the base of the excavation after removal of all soil required for construction of the new building's cellar level is complete, additional excavation would be performed to ensure complete removal of soil/fill that does not meet Track 1 Unrestricted Use SCOs.

- No Engineering or Institutional Controls are required for a Track 1 cleanup, but a sub-slab depressurization system (SSDS) beneath the foundation and a vapor barrier along the building slab and along the vertical foundation walls would be installed as part of development to prevent potential exposures from soil vapor in the future; and
- As part of development, placement of a final cover over the entire Site.

Alternative 2:

- Establishment of Site-Specific (Track 4) 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 end point sampling. Based on the results of the Remedial Investigation, it is expected that this alternative would be achieved by excavating and properly disposing of soil from any areas that exceed the residential standard. As part of development, soil beneath most of the site will be removed to a depth of 5 feet for the building's cellar level and 3 feet for landscaped areas. If soil/fill containing analytes at concentrations above Track 4 Site-specific SCOs is still present at the base of the excavation, additional excavation would be performed to meet Track 4 Site-Specific SCOs.
- Placement of a composite cover system over the entire Site to prevent exposure to remaining soil/fill;
- Installation of a vapor barrier system beneath the building slab and along foundation side walls to prevent potential exposures from soil vapor;
- Installation of an active sub-slab depressurization system (SSDS) beneath the foundation to prevent any potential future exposures from soil vapor;
- Establishment of use restrictions including prohibitions on the use of groundwater from the Site; prohibitions of restricted Site uses, such as farming or vegetable gardening, to prevent future exposure pathways; and prohibition of a higher level of land use without OER approval;

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

3.1 Threshold Criteria

Protection of Public Health and the Environment

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

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

Alternative 2 would achieve comparable protections of human health and the environment by excavation and removal of most of the historic fill at the Site and by ensuring that remaining soil/fill on-Site meets Track 4 Site-Specific SCO's, as well as by placement of Institutional and Engineering Controls, including a composite cover system. The composite cover system would prevent direct contact with any remaining on-Site soil/fill. Implementing Institutional Controls including a Site Management Plan and continuing the E-designation on the property would ensure that the composite cover system remains intact and protective of public health.

Establishment of Track 4 Site-Specific SCO's would minimize the risk of contamination leaching into groundwater.

For both Alternatives, potential exposure to contaminated soils or groundwater during construction would be minimized by implementing a Construction Health and Safety Plan, an approved Soil/Materials Management Plan, and Community Air Monitoring Plan (CAMP).

Potential contact with contaminated groundwater would be prevented as its use is prohibited by city laws and regulations. Potential future migration of off-Site soil vapors into the new building would be prevented by installing a vapor barrier below the building slab and outside foundations walls below grade and installation of an active SSDS.

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 SCO's and Protection of Groundwater SCO's. Compliance with SCGs for soil vapor would also be achieved by installing a vapor barrier system below the new building's basement slab and continuing the vapor barrier outside of subgrade foundation walls, as part of development. In addition, Alternative 1 would include installation of an active SSDS as part of development.

Alternative 2 would achieve compliance with the remedial goals, chemical-specific SCG's and RAOs for soil through removal of soil to meet Track 4 Site-Specific SCO's. Compliance with SCG's for soil vapor would also be achieved by installing a vapor barrier system below the new building's basement slab and continuing the vapor barrier outside of subgrade foundation walls, as well as installing an active SSDS.

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

Short-Term Effectiveness and Impacts

This evaluation criterion assesses the effects of the alternative during the construction and

implementation phase until remedial action objectives are met. Under this criterion, alternatives are evaluated with respect to their short term effects during the remedial action on public health and the environment during implementation of the remedial action, including protection of the community, protection of onsite workers and environmental impacts.

Both Alternative 1 and 2 have similar short-term effectiveness during their implementation, as each requires excavation of historic fill material. Both alternatives would result in short-term dust generation impacts associated with excavation, handling, load out of materials, and truck traffic. Short-term impacts could potentially be higher for Alternative 1 since excavation of greater amounts of historical fill material would take place. However, focused attention to means and methods during a Track 1 removal action, including community air monitoring and appropriate truck routing, would minimize the overall impact of these activities.

An additional short-term adverse impact and risks to the community associated with both remedial alternatives is increased truck traffic. Truck traffic will be routed on the most direct course using major thoroughfares where possible and flag persons will be used to protect pedestrians at Site entrances and exits.

The potential adverse impact to the community, workers and the environment for both alternatives would be minimized through implementation of control plans including a Construction Health and Safety Plan, a Community Air Monitoring Plan (CAMP) and a Soil/Materials Management Plan (SMMP), during all on-Site soil disturbance activities and would minimize the release of contaminants into the environment. Both alternatives provide short-term effectiveness in protecting the surrounding community by decreasing the risk of contact with on-Site contaminants. Construction workers operating under appropriate management procedures and a Construction Health and Safety Plan (CHASP) would provide protection from on-Site contaminants by using personal protective equipment would be worn consistent with the documented risks within the respective work zones.

Long-term effectiveness and permanence

This evaluation criterion addresses the results of a remedial action in terms of its permanence and quantity/nature of waste or residual contamination remaining at the Site after response objectives have been met, such as permanence of the remedial alternative, magnitude of remaining contamination, adequacy of controls including the adequacy and suitability of

Engineering Controls/Institutional Controls (ECs/ICs) that may be used to manage contaminant residuals that remain at the Site and assessment of containment systems and ICs that are designed to eliminate exposures to contaminants, and long-term reliability of ECs.

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

Alternative 2 would provide long-term effectiveness by removing most on-Site contamination and attaining Track 4 Site-Specific SCOs; installing a composite cover system across the Site; maintaining use restrictions; establishing an SMP to ensure long-term management of ICs and ECs; and maintaining 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 continue to provide the required level of protection.

Both alternative 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.

Reduction of toxicity, mobility, or volume of contaminated material

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

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

Alternative 2 would remove most of the historic fill at the Site, and all remaining on-Site soil/fill beneath the new building will meet Track 4 Site-Specific SCO's.

Alternative 1 would remove a greater total mass of contaminants from the Site. The removal of soil to 5 feet for the new development in both scenarios would lessen the difference in contaminant mass removal between these two alternatives.

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 Alternatives 1 and 2 are readily available and have been proven to be effective in remediating the contaminants present on the Site. They use standard equipment and technologies that are well established in the industry. The reliability of each remedy is also high. There are no special difficulties associated with any of the activities proposed.

Cost effectiveness

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

Since historic fill at the Site was found to extend to a depth of up to 4 feet below grade during the RI, and the new building requires excavation of the entire Site to a depth of 5 feet, the costs associated with both Alternative 1 and Alternative 2 will likely be comparable. Costs associated with Alternative 1 could potentially be higher than Alternative 2 if soil with analytes above Track 1 Unrestricted Use SCOs is encountered below the excavation depth required for

development. Additional costs would include installation of additional shoring/underpinning, disposal of additional soil, and import of clean soil for backfill. However, long-term costs for Alternative 2 are likely higher than Alternative 1 based on implementation of a Site Management Plan as part of Alternative 2.

The remedial plan would couple the remedial action with the redevelopment of the Site, lowering total costs. The remedial plan will also consider the selection of the most appropriate disposal facilities to reduce transportation and disposal costs during cleanup and redevelopment of the Site.

Community Acceptance

This evaluation criterion addresses community opinion and support for the remedial action.

Observations here will be supplemented by public comment received on the RAWP.

This RAWP will be subject to a public review under the NYC VCP and will provide the opportunity for detailed public input on the remedial alternatives and the selected remedy. This public comment will be considered by OER prior to approval of this plan. The Citizen Participation Plan for the project is provided in Appendix 2. Observations here will be supplemented by public comment received on the RAWP. Under both alternatives, the overall goals of the remedial program, to protect public health and the environment and eliminate potential contaminant exposures, have been broadly supported by citizens in NYC communities.

Land use

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

might emanate from the site, proximity to flood plains, geography and geology; and current Institutional Controls applicable to the site.

The current, intended, and reasonably anticipated future land use of the Site and its surroundings are compatible with the selected remedy of soil remediation. The proposed future use of the Site includes one (six story) residential building with some warehouse storage space. The current zoning designation is R6A/M1-2. The proposed use is consistent with existing zoning for the property. The new construction will occupy the entire footprint of the property, and have ten (10) residential apartments, and approximately 1,700 square feet of warehouse space.

Following remediation, the Site will meet either Track 1 Unrestricted Use or Track 4 Site-Specific SCOs, both of which are protective of public health and the environment for its planned residential use. The proposed use is compliant with the property's zoning and is consistent with recent development patterns. The areas surrounding the site The area surrounding the Site consists of a mix of residential, industrial and vacant properties the below table shows the surrounding land usage of the adjacent properties, no sensitive receptor such as schools, hospitals, and day care facilities are within a 250 to 500 foot radius of the subject parcel.. The proposed development would clean up the property and make it safer, create new employment opportunities, living space for affordable and supportive housing and associated societal benefits to the community, and other economic benefits from land revitalization.

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

The Site is not in close proximity to important cultural resources, including federal or state historic or heritage sites or Native American religious sites, natural resources, waterways, wildlife refuges, wetlands, or critical habitats of endangered or threatened species. The Site is located in an urban area and not in proximity to fish or wildlife and neither alternative would result in any potential exposure pathways of contaminant migration affecting fish or wildlife. The remedial action is also protective of groundwater natural resources. The Site does not lie in a Federal Emergency Management Agency (FEMA)-designated flood plain. Both alternatives are

equally protective of natural resources and cultural resources. Improvements in the current environmental condition of the property achieved by both alternatives considered in this plan are consistent with the City's goals for cleanup of contaminated land.

Sustainability of the Remedial Action

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

While Alternative 2 would potentially result in lower energy usage based on reducing the volume of material transported off-Site, both remedial alternatives are comparable with respect to the opportunity to achieve sustainable remedial action. The remedial plan for either alternative would take into consideration the shortest trucking routes during off-Site disposal of historic fill and other soils, which would reduce greenhouse gas emissions and conserve energy used to fuel trucks. The New York City Clean Soil Bank program is available for reuse of any clean native soils under either alternative. A complete list of green remedial activities considered as part of the NYC VCP is included in a Sustainability Statement, included as Appendix 3.

4.0 Remedial Action

4.1 Summary of Preferred Remedial Action

The preferred remedial action alternative is Alternative 2, the Track 4 remedial action. The preferred remedial action achieves protection of public health and the environment for the intended use of the property. The preferred remedial action will achieve all of the remedial action objectives established for the project and addresses applicable SCGs. The preferred remedial action is effective in both the short-term and long-term and reduces mobility, toxicity and volume of contaminants. The preferred remedial action alternative is cost effective and implementable and uses standards methods that are well established in the industry.

The proposed remedial action will consist of:

1. Preparation of a Community Protection Statement and performance of all required NYC VCP Citizen Participation activities according to an approved Citizen Participation Plan.
2. Perform a Community Air Monitoring Program for particulates and volatile organic carbon compounds;
3. Establishment of Track 4 Site-Specific Soil Cleanup Objectives (SCOs);
4. Site mobilization involving Site security setup, equipment mobilization, utility mark outs and marking & staking excavation areas;
5. Completion of a Waste Characterization Study prior to excavation activities. Waste characterization soil samples will be collected at a frequency dictated by disposal facility(s).
6. Excavation and removal of soil/fill exceeding Track 4 Site Specific SCOs. For development purposes, the entire footprint of the building area (about 80% of the property) will be excavated to a depth of approximately five (5) feet below grade. Approximately 1400 tons of soil/fill will be removed from the Site and properly disposed at an appropriately licensed or permitted facility.
7. Screening of excavated soil/fill during intrusive work for indications of contamination by visual means and monitoring with a PID. Appropriate segregation of excavated media on-Site;

8. Management of excavated materials including temporarily stockpiling and segregating in accordance with defined material types and to prevent co-mingling of contaminated material and non-contaminated materials.
9. Removal of all UST's that are encountered during soil/fill removal actions. Registration of tanks and reporting of any petroleum spills associated with UST's and appropriate closure of these petroleum spills in compliance with applicable local, State and Federal laws and regulations.
10. Transportation and off-Site disposal of all soil/fill material at permitted facilities in accordance with applicable laws and regulations for handling, transport, and disposal, and this plan. Sampling and analysis of excavated media as required by disposal facilities. Appropriate segregation of excavated media onsite;
11. Collection and analysis of end-point samples to determine the performance of the remedy with respect to attainment of SCOs.
12. Import of materials to be used for backfill and cover, as needed, in compliance with OER-approved plan and in accordance with all Federal, State, and city laws and regulations.
13. Construction of an engineered composite cover consisting of six-inch thick concrete building slab with an 8-inch clean granular sub-base beneath all building areas, the building will occupy the approximately 80% of the property. The remaining grassy area shall have two (2) feet of certified clean fill and six inches of top soil.
14. Installation of a vapor barrier system consisting of vapor barrier beneath the building slab and outside of sub-grade foundation sidewalls to mitigate soil vapor migration into the building. The vapor barrier system will consist of a 20-mil vapor barrier Raven Industries' VaporBlock 20 Plus below the slab throughout the full building which occupies the entire footprint of the property. All welds, seams and penetrations will be properly sealed to prevent preferential pathways for vapor migration. The vapor barrier system is an Engineering Control for the remedial action. The remedial engineer will certify in the RAR that the vapor barrier system was designed and properly installed to mitigate soil vapor migration into the building.

15. Installation of an active sub-slab depressurization system (SSDS) consisting of a network of horizontal pipe roughly spaced at eight (8) to ten (10) foot intervals depending on the location (see figure 6) set in the middle of a gas permeable layer immediately beneath the building slab and vapor barrier system. The piping system shall be placed in an 8” deep layer of sub-base material. The SSDS system will be constructed of 4 inch schedule 40 PVC perforated pipe, which will be installed under the VaporBlock 20 Vapor Barrier System, which is to be installed directly under the concrete slab, a Rotron 250 CFM blower fan motor shall be installed on the roof with auto off and on alarm sensor. The remedial engineer will certify in the RAR that the active SSDS was designed and properly installed to establish a vacuum in the gas permeable layer and a negative (decreasing outward) pressure gradient to prevent vapor migration into the building.
16. Implementation of storm-water pollution prevention measures in compliance with applicable laws and regulations.
17. Performance of all activities required for the remedial action, including permitting requirements, in compliance with applicable laws and regulations;
18. Submission of an approved Site Management Plan (SMP) in the Remedial Action Plan (RAR) for long-term management of residual contamination, including plans for operation, maintenance, monitoring, inspection and certification of Engineering and Institutional Controls and reporting at a specified frequency.
19. The property will continue to be registered with an E-Designation at the NYC Buildings Department. Establishment of Engineering Controls and Institutional Controls in this RAWP and a requirement that management of these controls must be in compliance with an approved SMP. Institutional Controls will include prohibition of the following: (1) vegetable gardening and farming; (2) use of groundwater without treatment rendering it safe for the intended use; (3) disturbance of residual contaminated material unless it is conducted in accordance with the SMP; and (4) higher level of land usage without OER-approval.

The preferred remedy for the site is Alternative 2. Data generated during the site investigation support the conclusion that Alternative 1 is not achievable because an active SSDS is required to be operated at this Site to mitigate elevated chlorinated compounds in the soil vapors.

Engineering Controls are required for a Track 4 cleanup. A concrete slab covering the entire site and vapor barrier would be installed as part of standard building development. Additional soil vapor management would include an active SSDS to address soil vapor contamination.

Use restrictions will be imposed on the site (including prohibitions on any use higher than Restricted Residential, e.g. the use of groundwater from the Site; prohibitions of restricted Site uses, such as farming or vegetable gardening, to prevent future exposure pathways. The Site would continue to be encumbered with an E-designation for hazardous material.

4.2 Soil Cleanup Objectives and Soil/ Fill Management

The following Track 4 Site-Specific SCO's will be utilized for this project:

<u>Contaminant</u>	<u>Site-Specific SCO's</u>
Total SVOCs	250 ppm
Lead	400 ppm

Soil and materials management on-Site and off-Site, including excavation, handling and disposal, will be conducted in accordance with the Soil/Materials Management Plan in Appendix 4. Discrete contaminant sources (such as hotspots) identified during the remedial action will be identified by GPS or surveyed. This information will be provided in the Remedial Action Report.

Soil/Fill Excavation and Removal

The entire footprint of the property will be occupied by the new building, and the entire site will be excavated to five (5) below grade level, with the exception of a small area that will be excavated to ten (10) for the elevator pit, and the grassy area which shall be excavated to three (3) feet. The location of planned excavation area is shown in figure 5, and the endpoint sampling locations are shown in Figure 4. The total quantity of soil/fill expected to be excavated and disposed off-Site is 1,400 tons. For each disposal facility to be used in the remedial action, a

letter from the developer/QEP to the receiving facility requesting approval for disposal and a letter back to the developer/QEP providing approval for disposal will be submitted to OER prior to any transport and disposal of soil at a facility.

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 Facility	Waste Type	Estimated Quantity
Cleanearth of Carteret 24 Middlesex Avenue Carteret NJ 07008	Non-hazardous soil urban Fill	1,400 tons

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

End-point Sampling

End-point samples will be analyzed for compounds and elements as described below utilizing the following methodology:

- 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.

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

Confirmation End-point Sampling

Removal actions for development purposes under this plan will be performed in conjunction with confirmation end-point soil sampling. A total of six (6) confirmation samples will be collected from the base of the excavation at locations to be determined by OER. To evaluate attainment of

Track 4 Site-specific SCOs, analytes will be collected and analyzed for SVOCs and Metals according to analytical methods described above.

Hotspot End-point Sampling

For any hotspots identified during this remedial program, including any hotspots identified during the remedial action, hotspot removal actions will be performed to ensure that hotspots are fully removed and end-point samples will be collected at the following frequency:

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

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

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

QA/QC shall be maintained in accordance with NYSDOH ELAP protocol including but not limited to method blanks, matrix spikes, matrix spike duplicates, as outlined in the NYSDOH ELAP Manual: In addition the following procedures shall be followed:

- Sample collection apparatus, all samples shall be collected, and preserved in strict accordance with NYSDOH ELAP practices, all non-single use sample apparatus used shall be decontaminated after each use.
- Sampling methods, all samples shall be collected using the approved containers, and preservatives (where applicable) as described in the appropriate EPA method used. All sample containers shall be provided by the laboratory, along with coolers, ice packs, and chain of custody documents. All samples shall be collected by a trained laboratory technician or the professional engineer assigned to this project.
- Decontamination methods, all non-single use disposable sampling tools, shall undergo a decontamination process using a solution of Alconox and water, by scrubbing the item with the Alconox solution and triple rinsing with laboratory grade water.
- Sample containers, shall be provided by the ELAP approved laboratory, and must be in accordance with the specified analytical EPA approved method.
- Holding time, all samples must be analyzed within the prescribed holding times outlined in the NYSDOH ELAP manual.
- Preservatives including temperature, all samples must be collected and preserved in strict accordance with NYSDOH ELAP manual for each analyte to be analyzed, all samples shall be placed in a cooler with ice or ice-packs to be kept cold until received by the laboratory for analysis.
- Lab blanks, in accordance with the NYSDOH ELAP protocol the laboratory must analyze the appropriate laboratory blank samples including but not limited to method blanks, control blanks, and matrix blanks.

- Detection levels, the laboratory must report results to the lowest detection limits as allowed by the method, and or the sample matrix.
- Standards for comparative analysis, all results shall be compared to the NYCRR Part 375-6.8. in a tabular fashion.

Import of Soils

Approximately 30 cubic yards of certified clean fill shall be imported to facilitate the open grassy area with a two (2) native cover, in addition approximately 10 cubic yards of topsoil will be imported to facilitate the 6 inch layer of topsoil layer on top of the two (2) of native cover.

The imported material shall meet the lower of:

- Track 2 Restricted Residential Use SCO's, and
- Groundwater Protection Standards in Part 375-6.8.

Reuse of Onsite Soils

Soil reuse is not planned on this project.

4.3 Engineering Controls

The remedial action will achieve Track 4 Site Specific SCOs and Engineering Controls are required. However, the following design elements will be incorporated into the project as part of the development:

- (1) Composite Cover System
- (2) Soil Vapor Barrier System
- (3) Active Sub-Slab Depressurization System

These elements will constitute Engineering Controls that will be employed in the remedial action to address residual contamination remaining at the Site.

Composite Cover System

Exposure to residual soil/fill will be prevented by an engineered, composite cover system to be built on the Site. This composite cover system will be comprised of a 6-inch thick concrete building slab with an 8-inch clean granular sub-base beneath all building areas, the proposed

building will occupy approximately 80% of the property. The proposed open grassy area shall have a two (2) feet of certified native clean soil with a 6-inch layer of topsoil.

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

Please refer to Appendix 6 for the design for the cover system.

Vapor Barrier System

Migration of soil vapor from onsite or offsite sources into the building will be mitigated with a combination of building slab and vapor barrier. The vapor barrier will consist of a 20-mil vapor barrier Raven Industries' VaporBlock 20 Plus below the slab throughout the full building area. All welds, seams and penetrations will be properly sealed to prevent preferential pathways for vapor migration. The vapor barrier will extend throughout the area occupied by the footprint of the new building and up the foundation sidewalls and will be installed in accordance with manufacturer specifications.

A plan view showing the location of the proposed vapor barrier system is provided in Appendix 6. Typical design sections for the vapor barrier on slab and sidewalls are provided in Appendix 6. Product specification sheets are provided in Appendix 7. The Remedial Action Report will include as-built drawings and diagrams; manufacturer documentation; and photographs. The Vapor Barrier System is a permanent engineering control and will be inspected and its performance certified at specified intervals as required by this RAWP and the Site Management Plan. A Soil and Materials Management Plan will be included in the Site Management Plan and will outline the procedures to be followed in the event that the composite cover system and underlying vapor barrier system is disturbed after the remedial action is complete. Maintenance of these systems will be described in the Site Management Plan in the Remedial Action Report.

Sub-Slab Depressurization System

Migration of soil vapor into the building will be mitigated with the construction of an active Sub-Slab Depressurization System (SSDS). The SSDS will consist of a network of connecting perforated 4 inch PVC schedule 40 piping specifically designed for SSDS systems. The SSDS system is designed to collect any sub-slab vapors from the accumulating under the building slab, and venting them to the exterior of the building. A 250 CFM Roton Fan Blower will be installed to aide with the draw of air from underneath the concrete slab. The SSDS system will be installed directly underneath the proposed Vapor Block 20 membrane (See attached Proposed SSDS system design Figure 6).

The sub-slab depressurization system is an Engineering Control for the remedial action. The remedial engineer will certify in the RAR that the active SSDS was designed and properly installed to establish a vacuum in the gas permeable layer and a negative (decreasing outward) pressure gradient across the building slab to prevent vapor migration into the building. The SSDS is a permanent engineering control. The system will be inspected and its performance certified at specified intervals as required by this RAWP and the Site Management Plan. Maintenance of this SSDS will be described in the Site Management Plan in the Remedial Action Report. The location and layout of the SSDS is shown in Figure 6. A typical section of the system is shown in Figure 6.

4.4 Institutional Controls

A series of Institutional Controls (ICs) are required under this Remedial Action to assure permanent protection of public health by elimination of exposure to residual materials. These IC's define the program to operate, maintain, inspect and certify the performance of Engineering Controls and Institutional Controls on this property. Institutional Controls would be implemented in accordance with a Site Management Plan included in the final Remedial Action Report (RAR). Institutional Controls would be:

- Continued registration of the E-Designation for the property. This RAWP includes a description of all ECs and ICs and summarizes the requirements of the SMP which will note that the property owner and property owner's successors and assigns must comply with the approved SMP;

- Submittal of a SMP in the RAR for approval by OER that provides procedures for appropriate operation, maintenance, inspection, and certification of ECs and IC's. SMP will require that the property owner and property owner's successors and assigns will submit to OER a periodic written statement that certifies that: (1) controls employed at the Site are unchanged from the previous certification or that any changes to the controls were approved by OER; and, (2) nothing has occurred that impairs the ability of the controls to protect public health and environment or that constitute a violation or failure to comply with the SMP. OER retains the right to enter the Site in order to evaluate the continued maintenance of any controls. This certification shall be submitted at a frequency to be determine by OER in the SMP and will comply with RCNY §43-1407(1)(3).
- Vegetable gardens and farming on the Site are prohibited in contact with residual soil materials;
- Use of groundwater underlying the Site is prohibited without treatment rendering it safe for its intended use;
- All future activities on the Site that will disturb residual material must be conducted pursuant to the soil management provisions in an approved SMP;
- The Site will be used for residential usage, with approximately 1,700 sq ft of warehouse space 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

Voluntary Cleanup Agreement with OER. This includes a plan for: (1) implementation of EC's and ICs; (2) operation and maintenance of EC's; (3) inspection and certification of IC's and EC's.

Site management activities and EC/IC certification will be scheduled by OER on a periodic basis to be established in the RAR and 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 30 of the year following the reporting period.

4.6 Qualitative Human Health Exposure Assessment

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

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

Known and Potential Contaminant Sources

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

Soil

- Pesticides including Heptachlor, cis Chlordane, 4,4 DDE, and 4,4 DDT, and one metal (lead) exceeded Unrestricted Use SCOs;

Groundwater:

- VOCs including Cis-1-2 dichloroethylene, trichloroethylene, and tetrachloroethylene exceeded their respective GQS

Soil Vapor:

- Chlorinated VOCs, PCE and TCE were detected within the monitoring/mitigation level ranges established within the State DOH soil vapor guidance matrix;
- Petroleum-related VOCs including BTEX were detected at low concentrations.

Nature, Extent, Fate and Transport of Contaminants

Soil: Although no exceedances to the NYCRR Part 375-6.8 Restricted Residential Soil Cleanup objectives were encountered there were some minor exceedances to the Unrestricted Cleanup objectives for 4,4-DDE, 4,4-DDT, cis-Chlordane, Heptachlor, and lead, however all of the exceedances were found in the 0 to 2' intervals except for lead in SB-1 (12 to 15 ft.). Since the entire site is to be excavated to five (5) below grade with the exception of a small area to accommodate the elevator pit which shall be excavated to ten (10) feet, in addition the small grassy area in the rear of the property shall be excavated to a depth of three (3) feet below grade level., 6 end-point samples will be collected from the base of excavation. All post excavation endpoint samples will include those for which SCOs have been developed, including SVOCs and metals according to analytical methods described above. Since all impacted material is planned to be removed from the site no adverse risks to human health and/or the environment is anticipated.

Groundwater: Concentrations of VOCs exceeding the NYSDEC Groundwater Standard are present in groundwater at the Site. Since the site will receive its drinking water from the NYCDEP and contact with the groundwater table is not possible onsite this poses little or no risk to the occupants.

Soil Vapor: There were elevated concentrations of chlorinated VOCs, particularly TCE and PCE, in soil vapor. It is expected that soil vapors would accumulate underneath the proposed building foundation. An engineered composite cover slab, consisting of the building foundation,

an active SSDS, and a vapor barrier, will act as a vertical barrier to the soil vapor coming into the building.

Receptor Populations

On-Site Receptors: The site is currently vacant and undeveloped and, access to the Site is restricted by an 8 foot high, chained and locked, perimeter fence. Onsite receptors are limited to trespassers, site representatives and visitors granted access to the property. During construction, potential on-site receptors include construction workers, site representatives, and visitors. Under proposed future conditions, potential on-site receptors include adult and child building residents, workers and visitors.

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

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

Potential Routes of Exposure

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

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

Potential Exposure Points

Current Conditions: The site is currently vacant and undeveloped, during the construction phase of the project there is the risk of minor potential exposure pathways from ingestion, inhalation,

or dermal absorption of soil/ fill. Dust control measure during the construction phase of the project will be deployed on as needed basis, depending of site and weather conditions.

Groundwater is not exposed at the site. The site is served by the public water supply and groundwater is not used at the site for potable supply and there is no potential for exposure.

Because the site is currently undeveloped, there is no potential for soil vapor to accumulate on site.

Construction/ Remediation Conditions: During the remedial action, onsite workers will come into direct contact with surface and subsurface soils as a result of on-Site construction and excavation activities. On-Site construction workers potentially could ingest, inhale or have dermal contact with exposed impacted soil and fill. Similarly, off-Site receptors could be exposed to dust and vapors from on-Site activities. Due to the depth of groundwater, direct contact with groundwater is not expected. During construction, on-Site and off-Site exposures to contaminated dust from on-Site will be addressed through the Soil/Materials Management Plan, dust controls, and through the implementation of the Community Air-Monitoring Program and a Construction Health and Safety Plan.

Proposed Future Conditions: Under future remediated conditions, all soils in excess of Track 1 SCOs will be removed. The site will be fully capped, preventing potential direct exposure to soil and groundwater remaining in place, and engineering controls (active SSDS and vapor barrier system), and concrete slab will prevent any potential exposure due to inhalation by preventing soil vapor intrusion. The site is served by the public water supply, and groundwater is not used at the site. There are no plausible off-site pathways for oral, inhalation, or dermal exposure to contaminants derived from the site.

Overall Human Health Exposure Assessment

There are no complete exposure pathways 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 surface cover, and a subsurface vapor barrier system for the building. Under current conditions, on-Site exposure pathways exist for those with access to the Site and trespassers. During remedial construction, on-Site and off-Site exposures to contaminated dust from historic fill material will be addressed through dust controls, and through

the implementation of the Community Air Monitoring Program, the Soil/Materials Management Plan, and a Construction Health and Safety Plan. Potential post-construction use of groundwater is not considered an option because groundwater in this area of New York City is not used as a potable water source. There are no surface waters in close proximity to the Site that could be impacted or threatened.

5.0 Remedial Action Management

5.1 Project Organization and Oversight

Principal personnel who will participate in the remedial action include Frank Cunningham (project supervisor) Michael Veraldi (project safety officer). The Professional Engineer (PE) and Qualified Environmental Professionals (QEP) for this project are Eshwar Kosuri PE, and Michael Veraldi (QEP).

5.2 Site Security

Site access will be controlled by the project supervisor by means of an 8 foot high, chained and locked, perimeter fence.

5.3 Work Hours

The hours for operation of cleanup will comply with the NYC Department of Buildings construction code requirements or according to specific variances issued by that agency. The hours of operation will be conveyed to OER during the pre-construction meeting.

5.4 Construction Health and Safety Plan

The Health and Safety Plan is included in Appendix 5. The Site Safety Coordinator will be Michael Veraldi. 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, such as 40-hour hazardous waste operator training and annual 8-hour refresher training. Site Safety Officer will be responsible for maintaining workers training records. Personnel entering any exclusion zone will be trained in the provisions of the HASP and will comply with all requirements of 29 CFR 1910.120. Site-specific training will be provided to field personnel. Additional safety training may be added depending on the tasks performed. Emergency telephone numbers will be posted at the site location before any remedial work begins. A safety meeting will be conducted before each shift begins. Topics to be discussed include task hazards and protective measures (physical, chemical, environmental); emergency procedures; PPE levels and other relevant safety topics. Meetings will be documented in a log book or specific form.

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

5.5 Community Air Monitoring Plan

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

Periodic monitoring for VOCs will be performed during non-intrusive activities such as the collection of soil and sediment samples or the collection of groundwater samples from existing monitoring wells. Periodic monitoring during sample collection, for instance, will consist of taking a reading upon arrival at a sample location, monitoring while opening a well cap or overturning soil, monitoring during well bailing/purging, and taking a reading prior to leaving a sample location. Depending upon the proximity of potentially exposed individuals, continuous monitoring may be performed during sampling activities. Examples of such situations include

groundwater sampling at wells on the curb of a busy urban street, in the midst of a public park, or adjacent to a school or residence. 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/m³) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques will be employed. Work will continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 mcg/m³ above the upwind level and provided that no visible dust is migrating from the work area.
- If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 mcg/m³ above the upwind level, work will be stopped and a re-evaluation of activities initiated. Work will resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 mcg/m³ of the upwind level and in preventing visible dust migration.

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

5.6 Agency Approvals

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

5.7 Site Preparation

Pre-Construction Meeting

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

Mobilization

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

Utility Marker Layouts, Easement Layouts

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

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

Dewatering

Dewatering is not anticipated during remediation and construction.

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

Storm Response

At the conclusion of an extreme storm event, as soon as it is safe to access the property, a complete inspection of the property will be performed. A site inspection report will be submitted to OER at the completion of site inspection and after the site security is assessed. Site conditions will be compared to the inventory of site conditions and material performed prior to the storm event and significant differences will be noted. Damage from storm conditions that result in acute public safety threats, such as downed power lines or imminent collapse of buildings, structures or equipment will be reported to public safety authorities via appropriate means such as calling 911. Petroleum spills will be reported to NYS DEC within 2 hours of identification and consistent with State regulations. Emergency and spill conditions will also be reported to OER. Public safety structures, such as construction security fences will be repaired promptly to eliminate public safety threats. Debris will be collected and removed. Dewatering will be performed in compliance with existing laws and regulations and consistent with emergency notifications, if any, from proper authorities. Eroded areas of soil including unsafe slopes will be stabilized and fortified. Dislocated materials will 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. Stormwater control systems and structures will be inspected and maintained as necessary. If soil or fill materials are

discharged off site to adjacent properties, property owners and OER will be notified and corrective measure plan designed to remove and clean dislocated material will be submitted to OER and implemented following approval by OER and granting of site access by the property owner. Impacted offsite areas may require characterization based on site conditions, at the discretion of OER. If onsite petroleum spills are identified, a qualified environmental professional will determine the nature and extent of the spill and report to NYS DEC's spill hotline at DEC 800-457-7362 within statutory defined timelines. 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 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 will use the following route:

- Exit the site towards Northern Blvd.
- Make right turn onto Northern Blvd.
- Merge onto the Long Island Expressway west bound.

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 business day. Those reports will include:

- Project number and statement of the activities and an update of progress made and locations of excavation and other remedial 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 results noting all excursions. CAMP data may be reported;
- 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, and approved by, 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 with basis that the remedial action with the deviation(s) is protective of public health and the environment.

6.0 Remedial Action Report

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

- Information required by this RAWP;
- Text description with thorough detail of all engineering and institutional controls (if Track 1 remedial action is not achieved)
- As-built drawings for all constructed remedial elements;
- Manifests for all soil or fill disposal;
- Photographic documentation of remedial work performed under this remedy;
- Site Management Plan (if Track 1 remedial action 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 (including all soil test results from the remedial investigation for soil that will remain on site) and all soil/fill waste characterization results, QA/QC results for end-point sampling, and other sampling and chemical analysis performed as part of the remedial action;
- Test results or other evidence demonstrating that remedial systems are functioning properly;
- Account of the source area locations and characteristics of all soil or fill material removed from the Site including a map showing the location of these excavations and hotspots, tanks or other contaminant source areas;

- Full accounting 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 (if Track 1 remedial action is not achieved);
- The RAWP and Remedial Investigation Report will be included as appendices to the RAR;
- Reports and supporting material will be submitted in digital form and final PDF's will include bookmarks for each appendix.

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 one (1) month remediation period is anticipated.

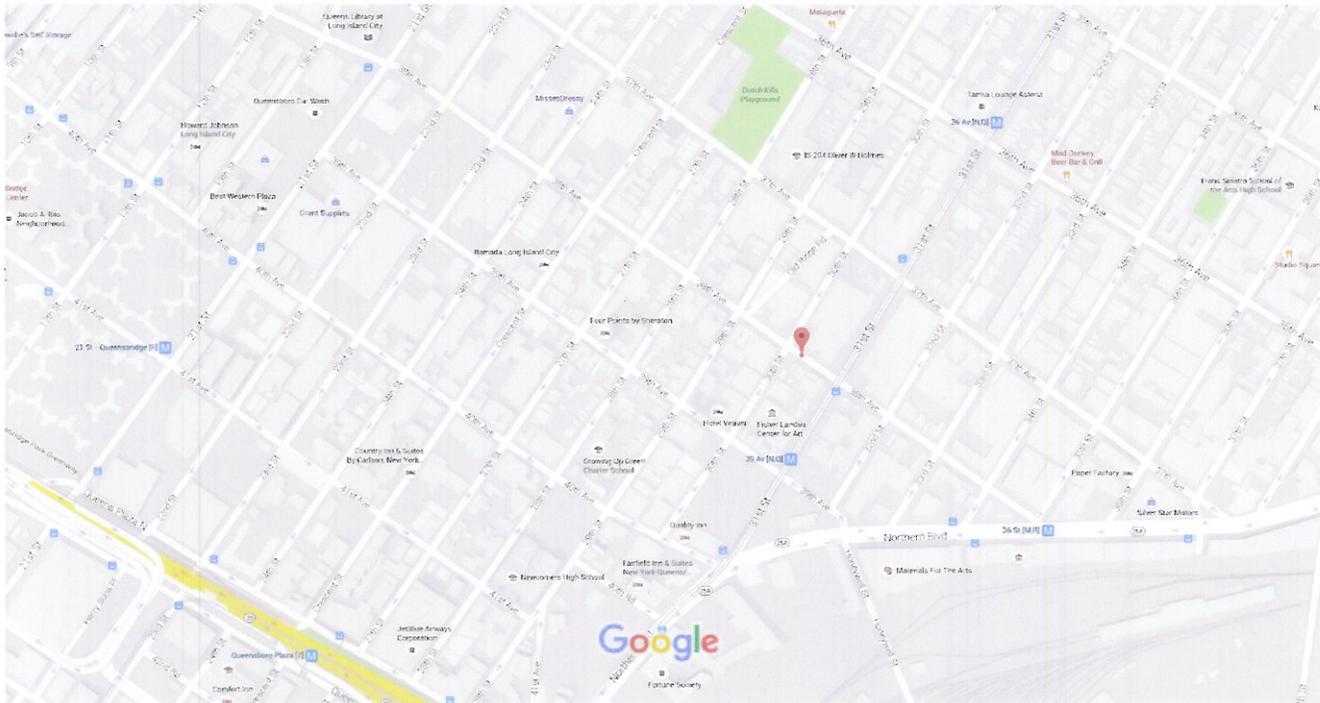
Schedule Milestone	Weeks from Remedial Action Start	Duration (weeks)
OER Approval of RAWP	1	2
Fact Sheet 2 announcing start of remedy	2	1
Mobilization	1	1
Remedial Excavation	1	1
Demobilization	1	1
Submit Remedial Action Report	2	2

Figures



30-4 38th Ave

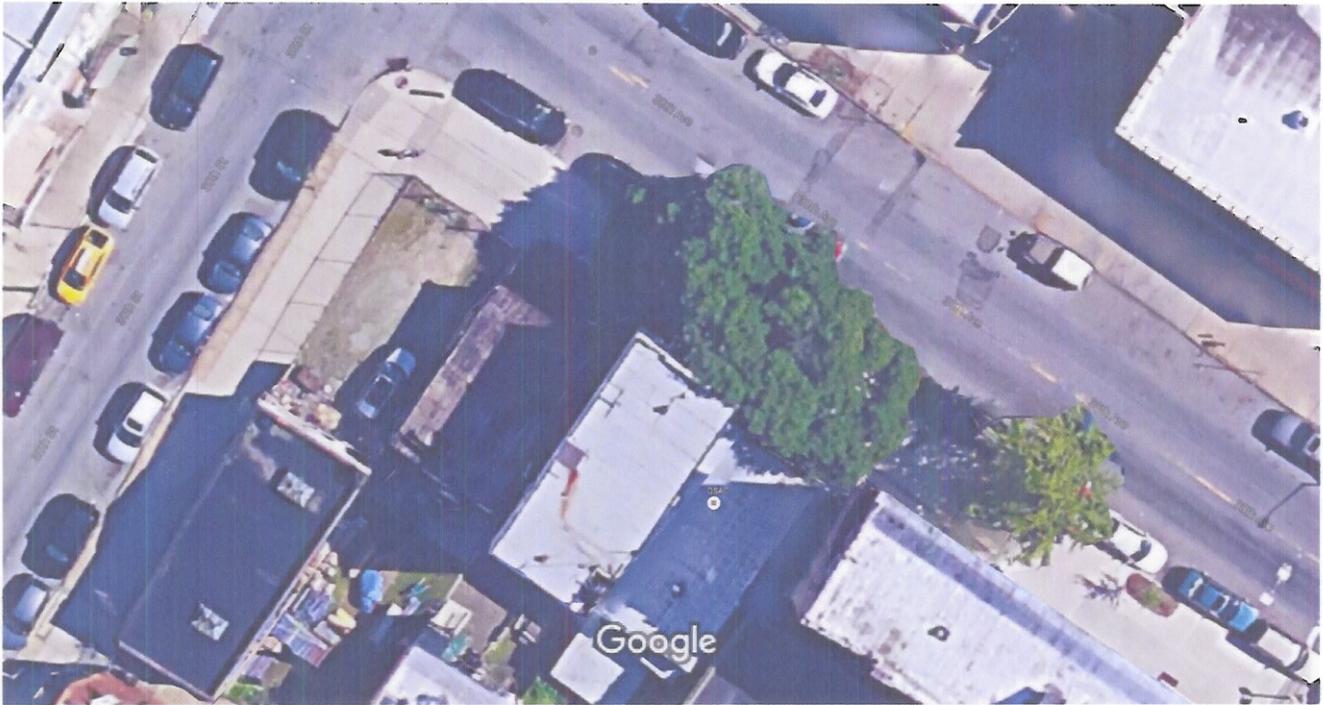
Figure #1 Site Location Map



Map data ©2015 Google 200 ft

30-4 38th Ave
Queens, NY 11101

Google Maps **Figure #2 Site Boundary Map**

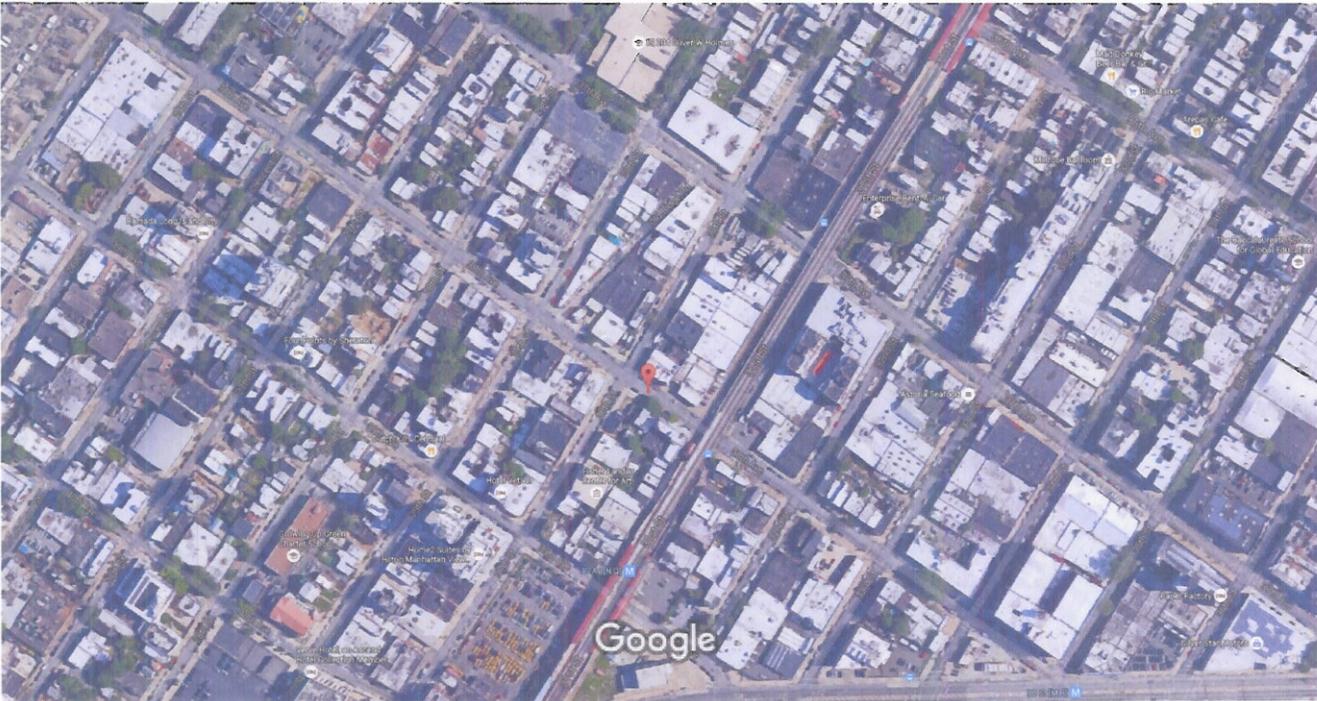


Imagery ©2015 Google, Map data ©2015 Google 10 ft

Google Maps

30-4 38th Ave

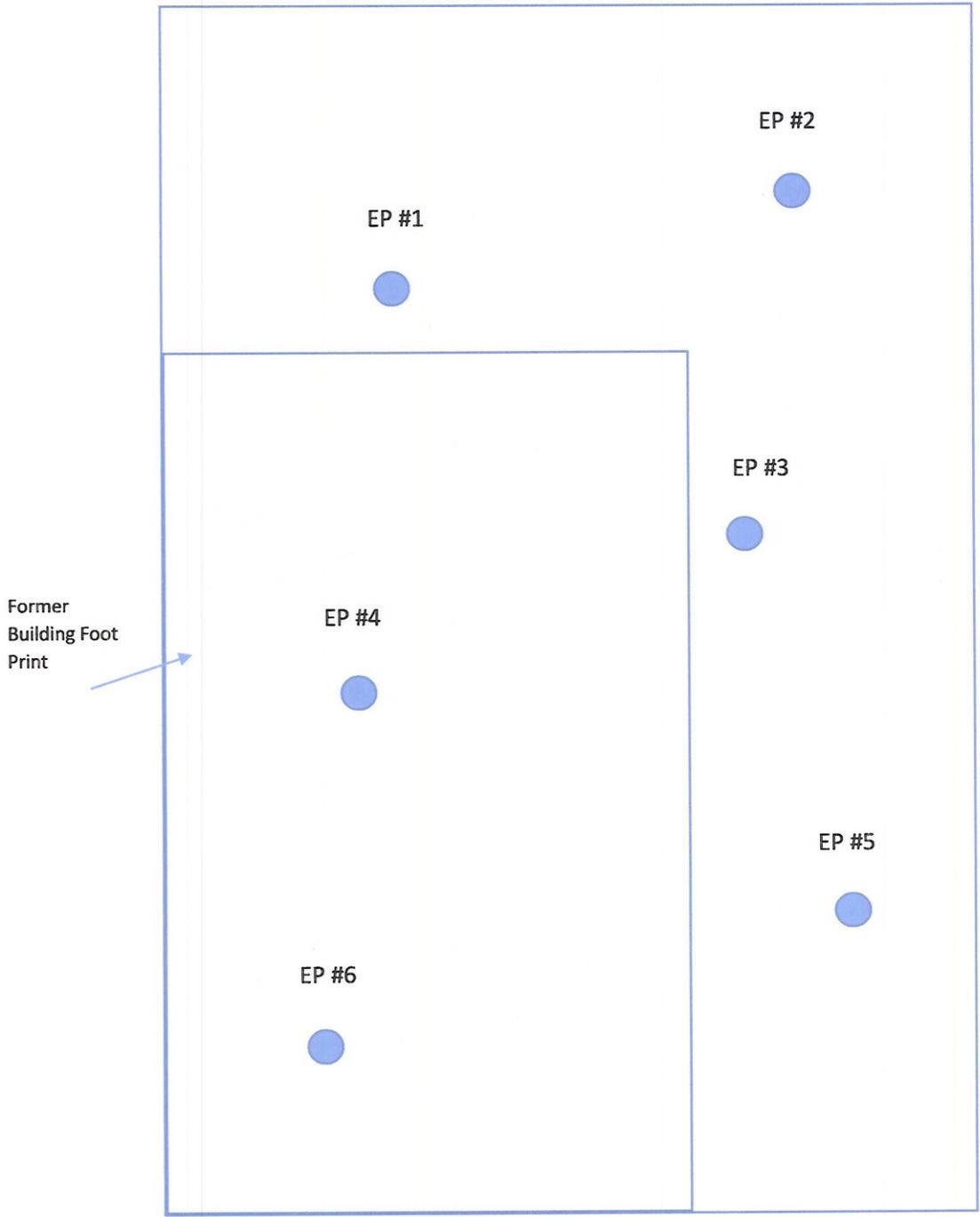
Figure # 3 Surrounding Land Usage Map



Imagery ©2015 Google, Map data ©2015 Google 100 ft

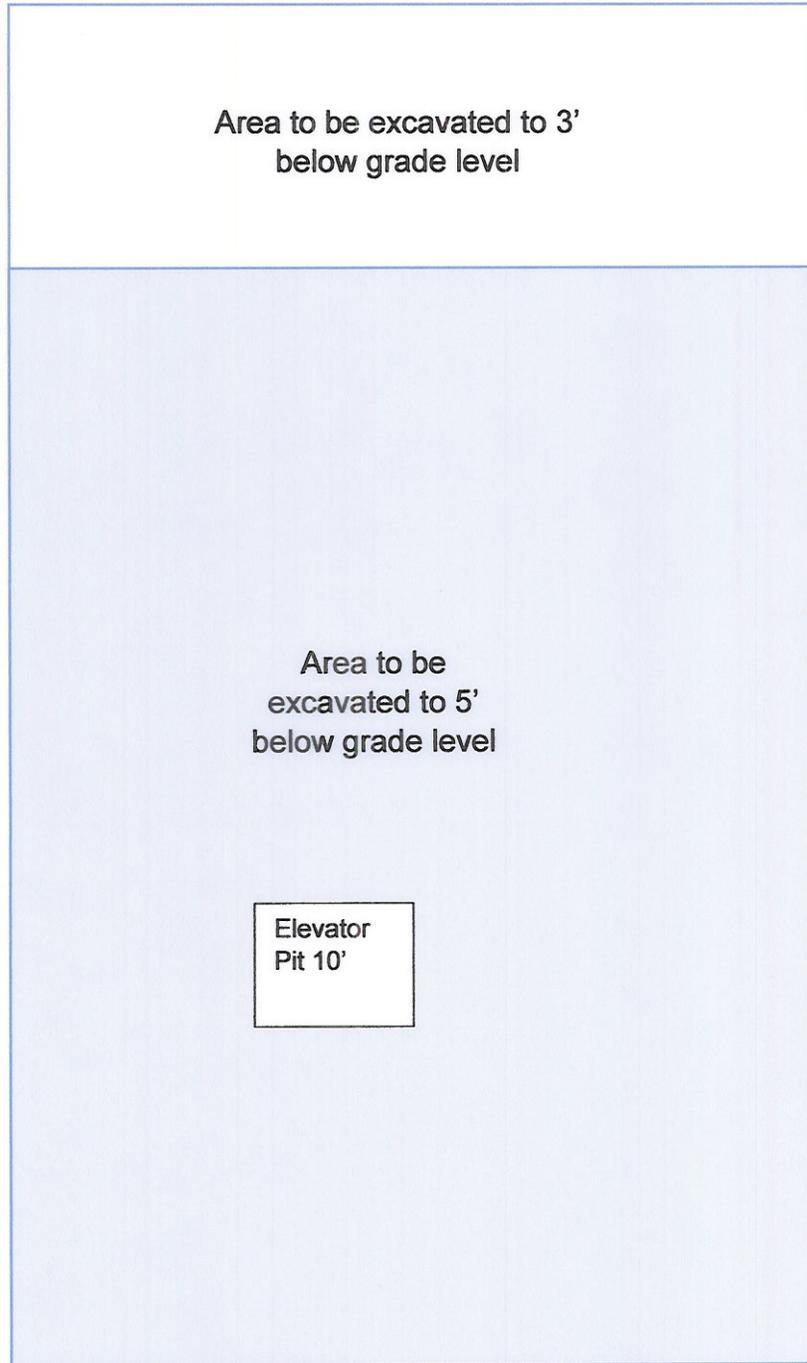
30-4 38th Ave
Queens, NY 11101

Figure 4
Map of End Point Sampling Diagram
30-04 38 Avenue LLC



38 Avenue LLC

Figure #5
Site Excavation Diagram
30-04 38 Avenue LLC



38 Avenue LIC

Figure 6

Sub-Slab Depressurization System Plan

ISSUED FOR CONSTRUCTION

No.	Date	Revision



Block # 283 Lot # 9 BBL # 0000077
 Approved Stamp

Checked By: IK Drawn By: EC
 BLS Job Number: 420856853 Date: 03.05.15

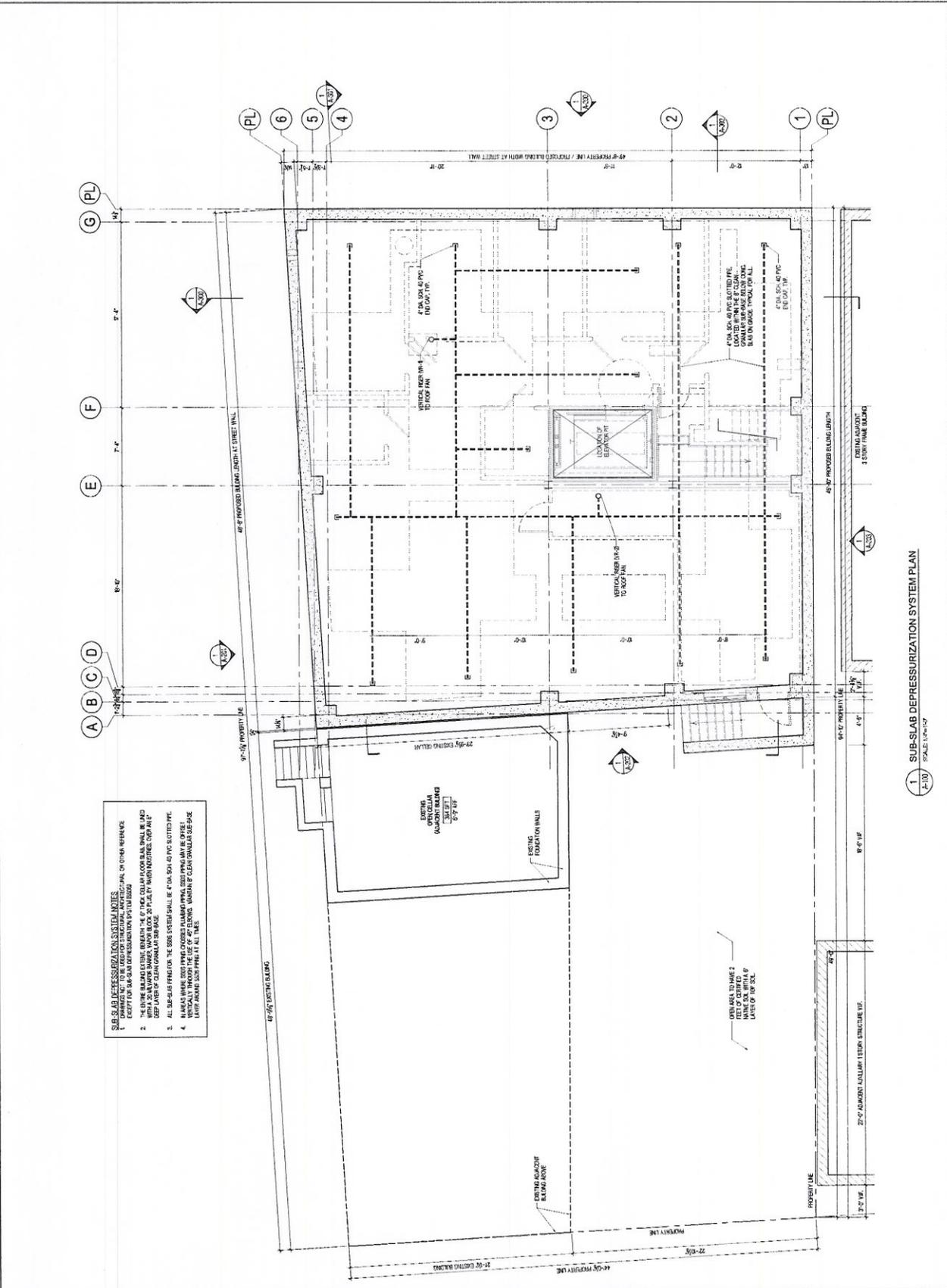
Project: 30-04 38th Avenue
 Long Island City, NY 11101
NEW MIXED USE BUILDING
COMMERCIAL / RESIDENTIAL

Drawing Title:
SUB-SLAB DEPRESSURIZATION SYSTEM PLAN

Drawing Scale: AS NOTED
 Drawing No:

ENV-100.00

Sheet Contact: 10.05



1 SUB-SLAB DEPRESSURIZATION SYSTEM PLAN
 SCALE: 1/8\"/>

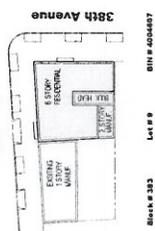
APPENDIX 1

PROPOSED SITE DEVELOPMENT PLANS

**ISSUED FOR BID
 NOT FOR CONSTRUCTION**

No.	Date	Revision

Key Plan



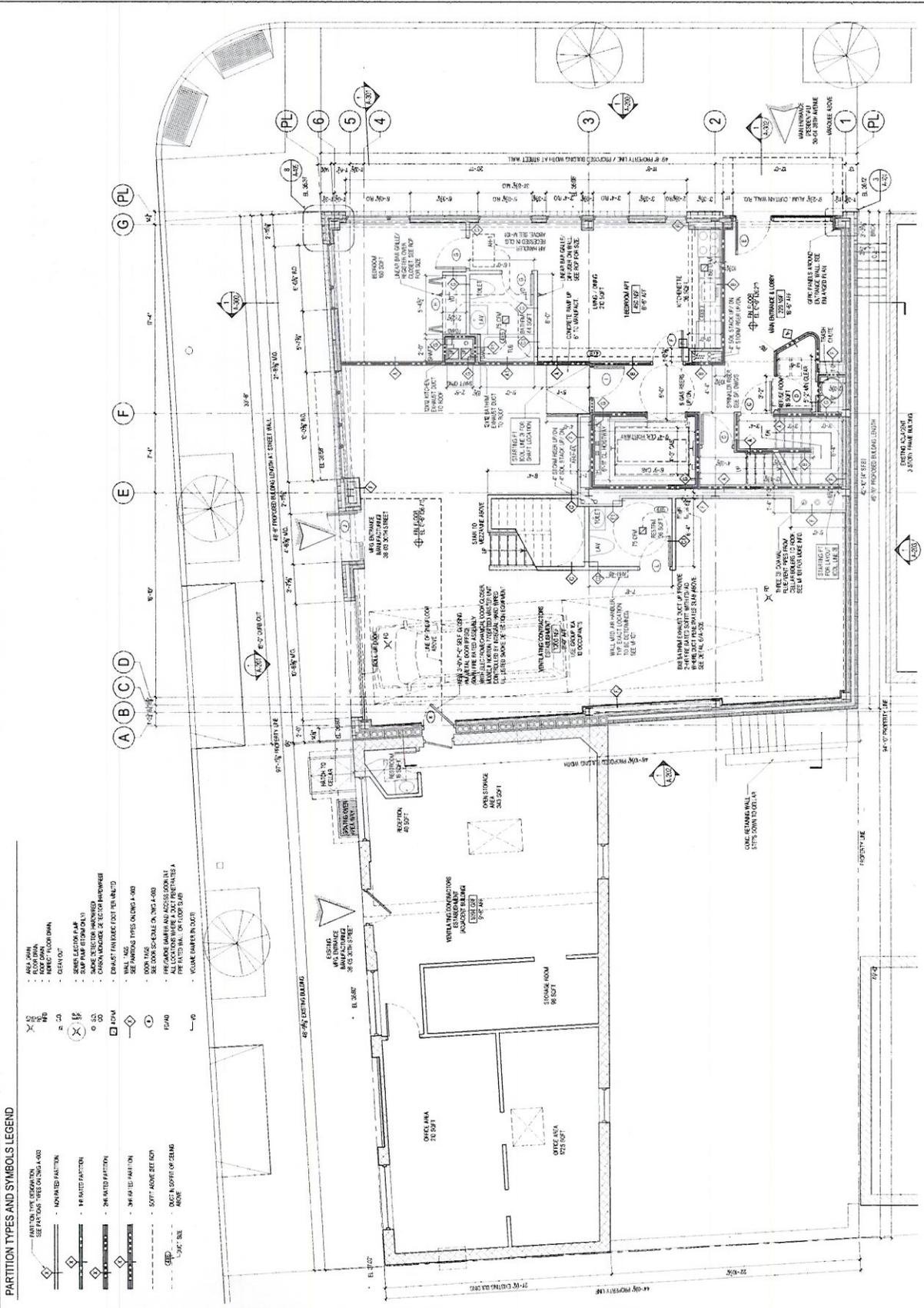
Block # 383 Lot # 9 BIR # 000007
 Approval Stamp

Checked By: JK Drawn By: EP
 BIR Job Number: **420856853**
 Date: **02.10.14**

Project:
30-04 38th Avenue
Long Island City, NY 11101
NEW MIXED USE BUILDING
MANUFACTURING / RESIDENTIAL
 Drawing Title:
FIRST FLOOR PLAN

Drawing Scale: 1/8"=1'-0"
 Drawing No.:

A-101.00
 Sheet in Contract
 of 112



- PARTITION TYPES AND SYMBOLS LEGEND**
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 - 5/8" Gypsum Board
 - 1" Gypsum Board
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APPENDIX 2

CITIZEN PARTICIPATION PLAN

The NYC Office of Environmental Remediation and 30-04 38 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, 30-04 38LLC 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, Frank Cunningham, who can be contacted about these issues or any others questions, comments or concerns that arise during the remedial process at (212) 788-8841.

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

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

Repositories: A document repository is maintained online. Internet access to view OER's document repositories is available at public libraries. This document repository is intended to house, for community review, all principal documents generated during the cleanup program including Remedial Investigation plans and reports, Remedial Action work plans and reports, and all public notices and fact sheets produced during the lifetime of the remedial project. The library nearest the Site is:

Queens Library at L.I.C.

37-44 21st Long Island City, Queens NY

1-718-752-3700

Open Noon to 8PM daily

Digital Documentation: NYC OER requires the use of digital documents in our repository as a means of minimizing paper use while also increasing convenience in access and ease of use.

Issues of Public Concern: No specific issues of concern to stakeholders proximate to the project site exists to 30-04 38 LLC.

Public Notice and Public Comment: Public notice to all members of the Project Contact List is required at three major steps during the performance of the cleanup program (listed below) and at other points that may be required by OER. Notices will include Fact Sheets with descriptive project summaries, updates on recent and upcoming project activities, repository information, and important phone and email contact information. All notices will be reviewed and approved by OER prior to distribution and mailed by the Enrollee. Public comment is solicited in public notices for all work plans developed under the NYC Voluntary Cleanup

Program. Final review of all work plans by OER will consider all public comments. Approval will not be granted until the public comment period has been completed.

Citizen Participation Milestones: Public notice and public comment activities occur at several steps during a typical NYC VCP project. These steps include:

- **Public Notice of the availability of the Remedial Investigation Report and Remedial Action Work Plan and a 30-day public comment period on the Remedial Action Work Plan:** Public notice in the form of a Fact Sheet is sent to all parties listed on the Site Contact List announcing the availability of the Remedial Investigation Report and Remedial Action Work Plan and the initiation of a 30-day public comment period on the Remedial Action Work Plan. The Fact Sheet summarizes the findings of the RIR and provides details of the RAWP. The public comment period will be extended an additional 15 days upon public request. A public meeting or informational session will be conducted by OER upon request.
- **Public Notice announcing the approval of the RAWP and the start of remediation:** Public notice in the form of a Fact Sheet is sent to all parties listed on the Site Contact List announcing the approval of the RAWP and the start of remediation.
- **Public Notice announcing the completion of remediation, designation of Institutional and Engineering Controls and issuance of the Notice of Completion:** Public notice in the form of a Fact Sheet is sent to all parties listed on the Site Contact List announcing the completion of remediation, providing a list of all Institutional and Engineering Controls implemented for to the Site and announcing the issuance of the Notice of Completion.

APPENDIX 3

SUSTAINABILITY STATEMENT

This Sustainability Statement documents sustainable activities and green remediation efforts planned under this remedial action. 30-04 38 Ave LLC shall make all reasonable attempts to employ sustainable means to implement the selected remedy defined in this RAWP and subsequent redevelopment including those that take into consideration the sustainability, resilience and equity goals defined in PlaNYC. Such goals include: maximizing the recycling and reuse of clean, non-virgin materials, including the use of the NYC Clean Soil Bank; reducing the consumption of virgin and non-renewable resources; minimizing energy consumption and greenhouse gas emissions; improving energy efficiency; and enhancing biodiversity during landscaping associated with Site development.

Reuse of Clean, Recyclable Materials and Reduced Consumption of Non-

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

The redevelopment plans and RAWP does not call for the replenishment or import of soils and or materials.

Reduced Energy Consumption and Promotion of Greater Energy Efficiency:

Reduced energy consumption lowers greenhouse gas emissions, improves local air quality, lessens in-city power generation requirements, can lower traffic congestion, and provides substantial cost savings. The new construction will be an energy efficient dwelling designed to reduce energy cost, and waste production. 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. Natural gas will be utilized for fuel in the new building.

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 entire footprint of the site will be occupied by the building and the use of natural gas will prevent the release of petroleum into the environment due to a sudden or non-sudden release.

Stormwater Retention: Stormwater retention improves water quality by lowering the rate of combined stormwater and sewer discharges to NYC's sewage treatment plants during periods of precipitation, and reduces the volume of untreated influent to local surface waters. Stormwater retention will be managed by with the implementation of a Slow Percolation Roof System designed to retain 2.5 inches of rainfall to help minimize the stormwater volume being discharged to the NYC Sewer system.

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 new construction will be equipped with green energy equipment such as lights, fixtures, and HVAC equipment.

Paperless Voluntary Cleanup Program: 30-04 38 LLC is participating in OER's Paperless Voluntary 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: 30-04 38 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. Approximately 1,000 square feet of the subject site will be grass, will be reported in square feet in the RAR.

APPENDIX 4

SOIL/MATERIALS MANAGEMENT PLAN

1.1 Soil Screening Methods

Visual, olfactory and PID soil screening and assessment will be performed under the supervision of a Qualified Environmental Professional and will be reported in the final remedial report. Soil screening will be performed during invasive work performed during the remedy and development phases prior to issuance of final signoff by OER.

1.2 Stockpile Methods

Excavated soil from suspected areas of contamination (e.g., hot spots, USTs, drains, etc.) will be stockpiled separately and will be segregated from clean soil and construction materials.

Stockpiles will be used only when necessary and will be removed as soon as practicable. While stockpiles are in place, they will be inspected daily, and before and after every storm event.

Results of inspections will be recorded in a logbook and maintained at the Site and available for inspection by OER. Excavated soils will be stockpiled on, at minimum, double layers of 8-mil minimum sheeting, will be kept covered at all times with appropriately anchored plastic tarps, and will be routinely inspected. Broken or ripped tarps will be promptly replaced.

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

1.3 Characterization of Excavated Materials

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

1.4 Materials Excavation, Load-Out, and Departure

The PE/QEP overseeing the remedial action will:

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

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

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

1.5 Off-Site Materials Transport

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

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

1.6 Materials Disposal Off-Site

The following documentation will be established and reported by the PE/QEP for each disposal destination used in this project to document that the disposal of regulated material exported from the Site conforms with applicable laws and regulations: (1) a letter from the PE/QEP or Enrollee to each disposal facility describing the material to be disposed and requesting written acceptance of the material. This letter will state that material to be disposed is regulated material generated at an environmental remediation Site in New York City 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 final remedial report.

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 final remedial report.

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 final remedial report. A manifest system for off-Site transportation of exported materials will be employed. Manifest information will be reported in the final remedial report. Hazardous wastes derived from on-Site will be stored, transported, and disposed of in compliance with applicable laws and regulations.

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

1.7 Materials Reuse On-Site

Soil and fill that is derived from the property that meets the Soil Cleanup Objectives (SCOs) established in this plan may be reused on-Site. The SCOs for on-Site reuse are listed in Section 4.2 of this cleanup plan. '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 land with comparable levels of contaminants in soil/fill material, compliant with applicable laws and regulations, 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 remedial plan are followed. The expected location for placement of reused material is shown in Section 4.2.

No onsite materials or soils are intended for re-use on this project. 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. Imported soils will not exceed groundwater protection standards established in Part 375. Imported soils for Track 1 remedial action projects will not exceed Track 1 SCO's.

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

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

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

- All materials received for import to the Site will be approved by a PE/QEP and will be in compliance with provisions in this remedial plan. The final remedial report 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.
- All material will be subject to source screening and chemical 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 final remedial report. A PE/QEP is responsible to ensure that the facility is compliant with 6NYCRR Part 360 registration and permitting requirements for the period of acquisition of RCA. RCA imported from compliant facilities will not require additional testing, unless required by NYSDEC under its terms for operation of the facility. RCA imported to the Site must be derived from recognizable and uncontaminated concrete. RCA material is not acceptable for, and will not be used as cover material.

1.10 Fluids Management

All liquids to be removed from the Site, including dewatering fluids, will be handled, transported and disposed in accordance with applicable laws and regulations. Liquids discharged into the

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

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

1.11 Stormwater Pollution Prevention

Applicable laws and regulations pertaining to stormwater pollution prevention will be addressed during the remedial program. Erosion and sediment control measures identified in this remedial plan (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 for Unknown Contamination Sources

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 this remedial plan.

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 this remedial plan.

Other Nuisances

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

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

APPENDIX 5

CONSTRUCTION HEALTH AND SAFETY PLAN

The Site Safety Coordinator will be Michael Veraldi of LIAL. 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 HAZWOPPER requirements.

Confined space entry, if any, will comply with OSHA requirements and industry standards, and will address the potential risks. The parties performing the remedial construction work will ensure that performance of work is in compliance with the HASP and applicable laws and regulations. The HASP pertains to remedial and invasive work performed at the Site until the issuance of the Notice of Completion.

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

Personnel entering any exclusion zone will be trained in the provisions of the HASP and be required to sign an HASP acknowledgment. Site-s-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. Meeting will be documented in a log book or specific form. The following list of emergency contact numbers are provided:

- Emergency Service 911
- Frank Cunningham Construction Supervisor 1-718-786-6088 24HR
- Michael Veraldi Safety Coordinator 1-631-472-3400
- Frank Cunningham Safety Officer 1-718-786-6088
- Elmhurst Hospital 1-718-334-7000

TABLE OF CONTENTS

1.0	INTRODUCTION-----	1
2.0	KEY PESONNEL-----	2
3.0	POTENTIAL CHEMICAL EXPOSURE-----	3
4.0	MEDICAL EMERGENCY-----	4
4.1	Transporting victim-----	4
4.2	Emergency notification-----	5
5.0	PERSONAL PROTECTION ON-SITE-----	6
5.1	General Requirements-----	6
5.2	Basic Equipment-----	6
5.3	Personnel Training-----	7
6.0	FIELD PROCEDURES-----	9
6.1	Air Monitoring-----	9
6.2	Record Keeping-----	9
7.0	DECONTAMINATION-----	9
7.1	Level "C" areas-----	9
7.2	Level "D" areas-----	9

APPENDIX

Site Location Map-----	Figure 1
Hospital Location Route Plan-----	Figure 2

1.0 INTRODUCTION:

This document is a compilation of minimum health and safety and emergency response requirements to be followed by 30-04 38 Ave LLC personnel during the proposed RAWP activities associated with this project. The project site is located within a mixed residential and commercial area of Long Island City, New York. The subject site is currently a vacant lot parcel, and the proposed construction involves one (1) six story residential and commercial mixed usage building with a small grassy area in the rear. There is a basement under the entire footprint of the proposed new construction, with no parking.

Long Island Analytical Laboratories Inc. has developed the following health and safety procedures for all personnel to follow during construction and remedial activities the independent Site Safety Office (SSO) will be responsible for informing construction personnel on-site of the pertinent level of personal protection required and work rules to be observed. The SSO will also maintain a daily sign in sheet to document all on-site personnel and visitors. No smoking or eating will be permitted on the subject site during excavation of soil. Under no circumstance will soil excavation commence prior to completion of utility mark-out activities have been concluded.

The health and safety requirements are based on currently available information provided to Long Island Analytical Laboratories about potential soil at the subject site and preliminary analysis of associated potential hazards. This plan establishes the minimum protocols necessary to protect human health and the environment.

All contractors, sub-contractors, and third parties will be responsible for supplying their own personnel on-site safety equipment, which shall at a minimum meet the requirements of this Site Health and Safety Plan (HASP).

2.0 KEY PERSONNEL/ATERNATES:

The Site Safety Officer is Frank Cunningham. The Site Supervisor will be Frank Cunningham and Sharon Cunningham Co-Owner of the subject site. The following phone numbers are available for the Key Personnel:

Mr. Frank Cunningham (Owner) 1-718-786-6088

Ms. Sharon Cunningham (Alternate and Co-owner) 1-718-786-6088

3.0 POTENTIAL CHEMICAL EXPOSURE:

Based on the information provided and on the information obtained from the RIR no significant chemical exposure is expected. However, the potential for chemical exposure to volatile and semi-volatile hydrocarbons may be encountered specifically petroleum related chemicals associated with fuel oil, gasoline and chlorinated hydrocarbons including but not limited to Tetrachloroethylene, and Trichloroethylene.

4.0 MEDICAL EMERGENCY:

Medical emergencies can be described as situations, which present a significant threat to human health and or the environment, as well as personnel, involved in the RAWP activities proposed for the subject site. These situation can results from chemical exposure, heat stress, cold stress, and poisonous insect bites. Medical emergencies must be dealt with immediately and proper care should be administered. This may be in the form of first aid and emergency hospitalization if necessary.

In the event of a medical emergency, assess whether or not the victim can be safely transported to medical facilities. If the victim cannot be moved without the risk of aggravating their condition, refer to Section 3.2 "Emergency Notification" and summon an ambulance and appropriate emergency response personnel.

4.1 TRANSPORTING VICTIMS:

If the victim can be safely transported without risk of additional injury, the nearest hospital is:

**Mount Sinai Hospital
25-10 30th Avenue
Long Island City
New York
1-718-932-1000**

The Hospital is located on 30th Avenue in Long Island City Queens the most direct route is:

DIRECTIONS FROM SITE:

Head southeast on 38th Avenue toward 30st Street, turn right onto 29th street, turn left onto 30th Avenue, drive approximately 432 feet to Hospital.

4.2 EMERGENCY NOTIFICATION:

The following is a list of telephone numbers for the nearest hospital and emergency response personnel:

- Mount Sinai Hospital 1-718-932-1000
- Fire Emergency 911
- Ambulance/Rescue Squad 911
- NYC Police 911
- NYS DEC Spill Hotline 1-800-457-7362
- NYC Department of Health 1-212-442-9666
- NYS DEC Region II Headquarters 1-718-482-4995
- NYS DEC Environmental Remediation 1-718-482-6358
- NYC Office of Environmental Remediation (NYCOER) 1-212-788-8841

5.0 PERSONAL PROTECTION ON-SITE:

5.1 General Requirements:

Construction workers and any other personnel will be required to wash their hands upon leaving the work zone, in particular prior to eating.

NO SMOKING or eating will be permitted at the project site during construction and remedial activities.

5.2 Basic Equipment:

The two (2) basic objectives of the personnel protective equipment (PPE) are to protect the wearer from safety and health hazards, and to prevent the wearer from incorrect use and/or malfunction of the PPE.

Potential site hazards have been discussed previously. The duration of the site remedial soil excavation activities is estimated to take one (1) week. All work is expected to be performed during daylight hours and on workdays, in general, and are expected to be eight (8) to ten (10) hours in duration. Any work performed beyond daylight hours will require the permission of the SSO. This decision will be based on the adequacy of artificial illumination and the type and necessity of the task being performed.

Personal protection levels for the site activities, based on past investigations, are anticipated to be Level "D" with the possibility of upgrading to Level "C". The equipment included for each level of protection is provided as follows:

LEVEL "C" Protection:

- **Air purifying respirator, full or Half Face**
- **Chemical resistant clothing includes, Tyvek suit and limited splash protection or Saranex (plastic film laminated Tyvek for permeation resistance to solvents).**
- **Coveralls**
- **Gloves**
- **Boots**
- **Hard Hat**
- **Eye Protection**

LEVEL "D" Protection:

- **Coveralls**
- **Gloves**
- **Boots**
- **Eye Protection**

5.3 PERSONNEL TRAINING:

All workers shall receive adequate training prior to entering the site, at a minimum workers should have completed the OSHA 10 Hour approved safety course. Prior to site work the SSO will conduct an in-house review of the project with respect to health and safety with all workers. The review shall include discussions of signs, symptoms of chemical exposure and heat/cold stress that indicate potential medical emergencies. In addition, review of personal protective equipment will be conducted to include the proper use of air purifying respirators in needed.

SIGNS & SYMPTOMS OF EXPOSURE TO CHEMICALS-

- Behavioral changes
- Breathing difficulties
- Changes in complexion or skin color
- Confusion
- Coordination difficulties
- 'Coughing
- Depression
- Dermatitis
- Dilated Pupils
- Dizziness
- Euphoria
- Fatigue and or weakness
- Flushed face and or neck
- Insomnia
- Irregular Heartbeat
- Irritability
- Irritation of eyes, nose, respiratory tract, skin or throat
- Headache
- Lacrimation
- Light Headedness
- Muscle Fatigue
- Nausea
- Nervousness
- Numbness in limbs
- Paresthesia
- Sleepiness
- Tingling
- Tremors
- Visual disturbance
- Vomiting

SIGNS & SYMPTOMS OF HEAT ESHAUSTION-

- **Clammy skin**
- **Confusion**
- **Dizziness**
- **Fainting**
- **Fatigue**
- **Heat Rush**
- **Light Headedness**
- **Profuse sweating**
- **Slurred speech**
- **Weak Pulse**
- **Hot Skin**
- **Incoherent Speech**
- **Staggering gait**
- **Unconsciousness**

6.0 FIELD PROCEDURES:

Work areas will be defined as Level "D" to correspond with the required level of personal protection. Each work area will be cordoned off while work is taking place. Access to these areas will be provided only to those persons directly involved in the field operations and only if the appropriate level of personal protection is worn. All equipment and personnel will be subjected to decontamination procedures before leaving an area of restricted access. Separate work zones and decontamination zones will be predesignated in areas requiring level "C" protection.

6.1 AIR MONITORING:

Throughout the duration of remedial activities, air quality will be monitored at the work site with a portable photo-ionization detector (PID). Work will stop if levels of organic vapors exceed 50 ppm. Real-Time Dust Monitoring shall be conducted both upwind, and downwind during any work involving the moving or handling of soil.

6.2 RECORD KEEPING:

The SSO on-site will maintain a daily record of individuals present at the work site, levels of worker protection, and general conformance with this Health & Safety Plan. Photo-ionization detector readings obtained through the course of the monitoring shall be periodically recorded in addition to noting observed peak readings, and daily weather conditions.

6.0 DECONTAMINATION:

All equipment and personnel will be subjected to decontamination procedures before leaving an area of restricted access. Separate work zones and decontamination zones will be predesignated, if needed, in areas requiring Level "C" protection (if encountered).

7.1 LEVEL "C" AREAS:

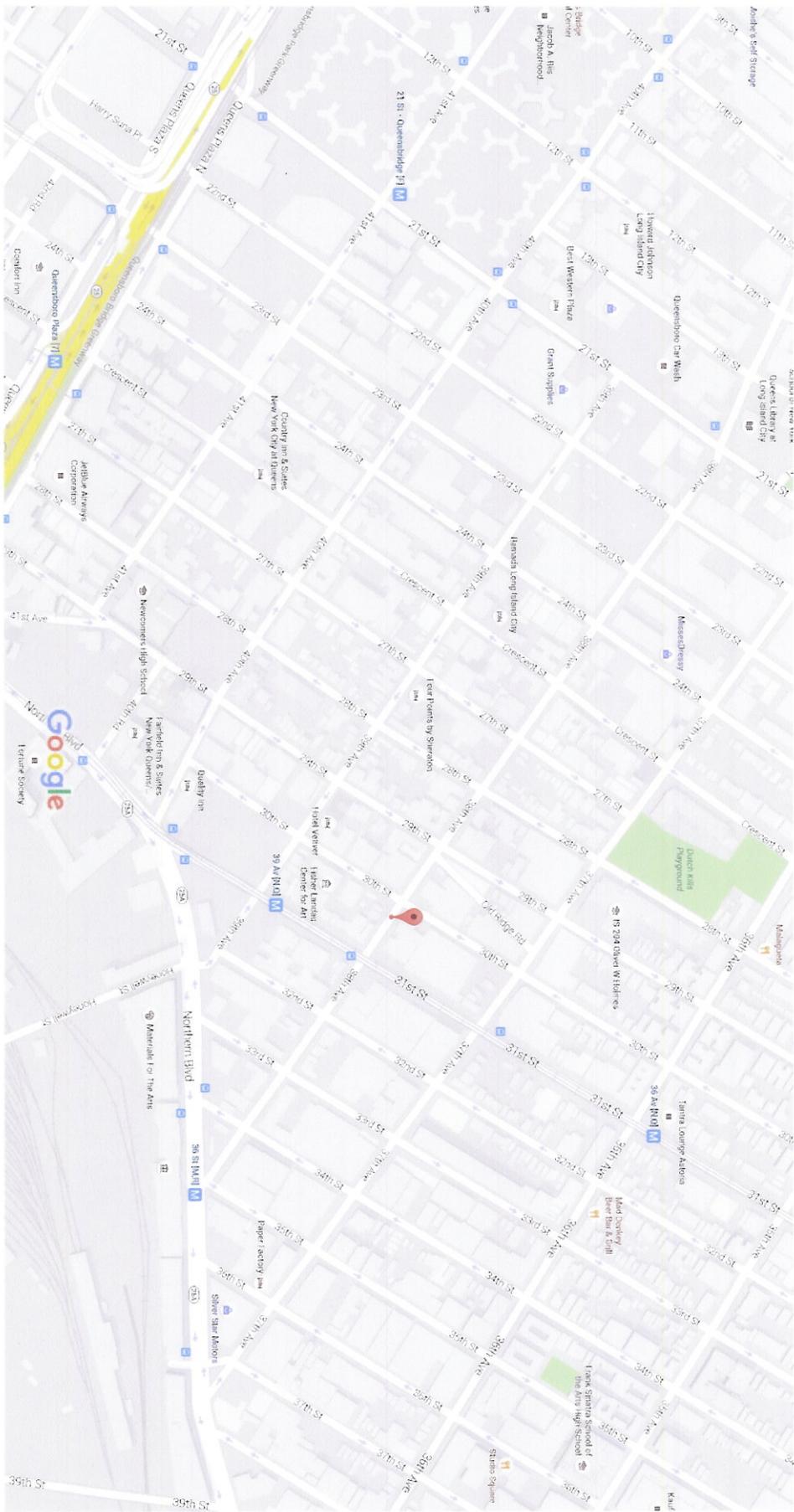
The decontamination zone within a Level "C" (if encountered) area will be lined with plastic to contain wash waters. Reusable equipment will be cleaned with appropriate solutions such as Alconox. Disposable equipment coveralls, gloves, etc. will be placed in plastic bags and disposed of as household waste in available on-site receptacles. Respirators will be worn throughout the decontamination process. Liquid wastes, contained in the process of Level "C" decontamination, will be placed in drums to be supplied by the contractor for disposal in accordance with applicable regulations.

7.2 LEVEL "D" AREAS:

Before leaving the Level "D" work areas, loose soil will be brushed from equipment and clothing. All equipment, which comes in contact with soil in the restricted areas, will be washed with detergent and water. Disposable coveralls, gloves, etc. will be all placed in plastic bags and disposed of as household waste in receptacles located on-site.

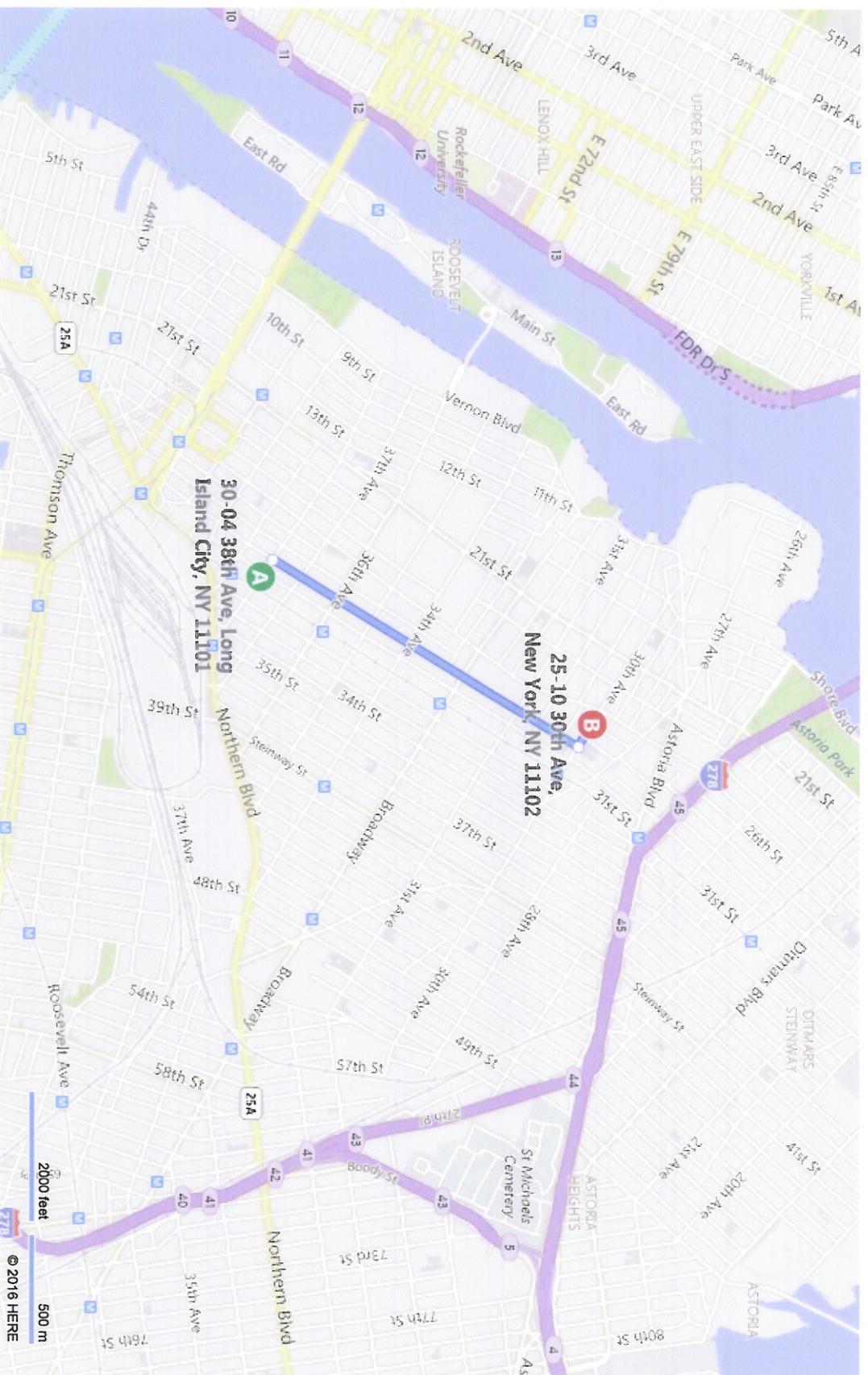
SITE AREA LOCATION MAP

Google Maps 30-4 38th Ave



30-4 38th Ave
Queens, NY 11101

HOSPITAL LOCATION ROUTE MAP



These directions are subject to the Microsoft® Service Agreement and are for informational purposes only. No guarantee is made regarding their completeness or accuracy. Construction projects, traffic, or other events may cause actual conditions to differ from these results. Map and traffic data © 2016 HERE™.



From: 30-04 38th Ave, Long Island City, NY 11101
To: 25-10 30th Ave, New York, NY 11102

Notes:

Route to Hospital from Subject Site

08 min, 1.2 mi
Heavy traffic
5 min without traffic
Via 29th St

30-04 38th Ave, Long Island City, NY 11101

↑ Depart 38th Ave toward 30th St

322 ft

↘ Turn right onto 29th St

1.1 mi

↙ Turn left onto 30th Ave

423 ft

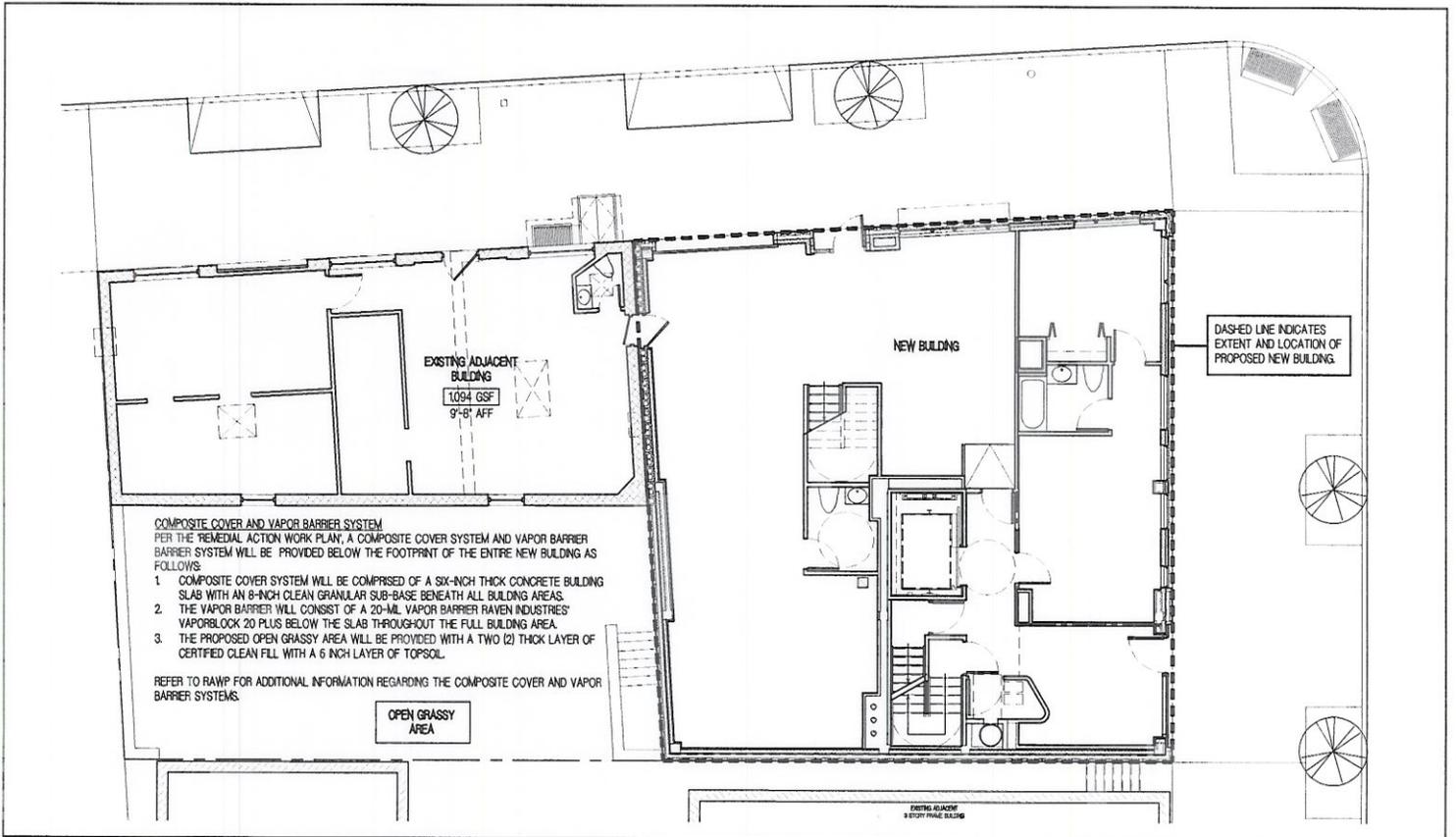
Arrive at 30th Ave

If you reach 27th St, you've gone too far

25-10 30th Ave, New York, NY 11102

APPENDIX 6

COVER SYSTEM DESIGN PLAN



COMPOSITE COVER AND VAPOR BARRIER SYSTEM
 PER THE REMEDIAL ACTION WORK PLAN, A COMPOSITE COVER SYSTEM AND VAPOR BARRIER SYSTEM WILL BE PROVIDED BELOW THE FOOTPRINT OF THE ENTIRE NEW BUILDING AS FOLLOWS:

1. COMPOSITE COVER SYSTEM WILL BE COMPRISED OF A SIX-INCH THICK CONCRETE BUILDING SLAB WITH AN 8-INCH CLEAN GRANULAR SUB-BASE BENEATH ALL BUILDING AREAS.
2. THE VAPOR BARRIER WILL CONSIST OF A 20-ML VAPOR BARRIER RAVEN INDUSTRIES' VAPORBLOCK 20 PLUS BELOW THE SLAB THROUGHOUT THE FULL BUILDING AREA.
3. THE PROPOSED OPEN GRASSY AREA WILL BE PROVIDED WITH A TWO (2) THICK LAYER OF CERTIFIED CLEAN FILL WITH A 6 INCH LAYER OF TOPSOIL.

REFER TO RAWP FOR ADDITIONAL INFORMATION REGARDING THE COMPOSITE COVER AND VAPOR BARRIER SYSTEMS.

OPEN GRASSY AREA

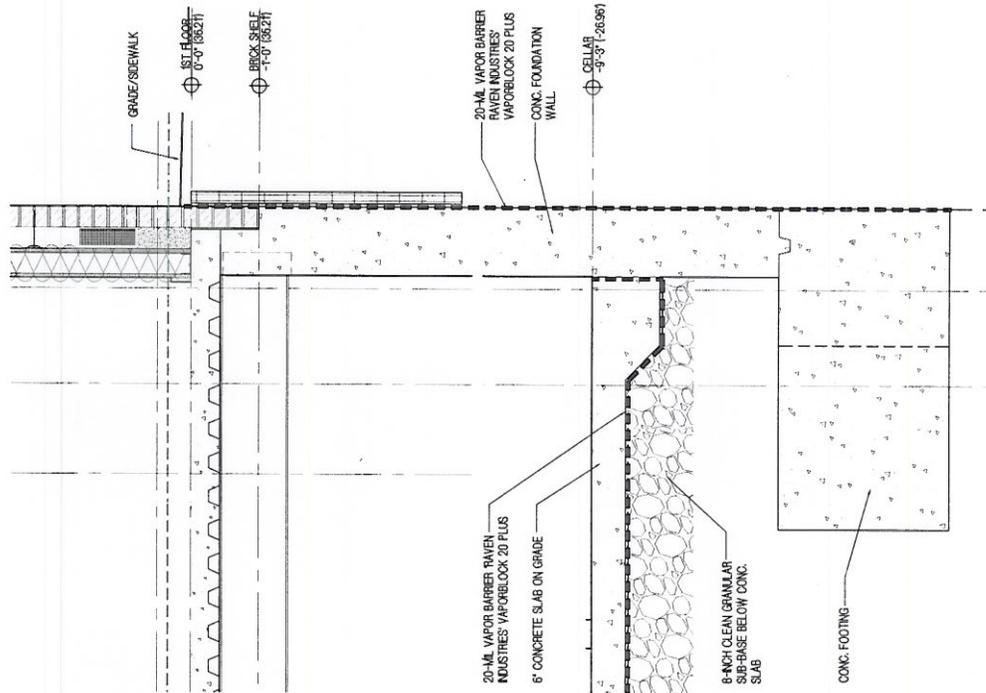
Revisions:

BIS Job Number

NDKazalas Architecture P.C.
 Architecture • Interior Design • Planning
 24-48 47th Street, Astoria New York 11103
 Tel: 718.721.5865 Fax: 718.721.5745
 e: info@ndkarc.com w: www.ndkarc.com

Project: 30-04 38TH AVENUE- NEW BUILDING
SITE DIAGRAM
COMPOSITE COVER AND VAPOR BARRIER SYSTEMS
 SCALE: 1/8"=1'-0"

Drawing No: SK-001.00



TYPICAL BUILDING SECTION

Revisions:

BIS Job Number

NDKazalas Architecture P.C.
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Project: 30-04 38TH AVENUE- NEW BUILDING
 TYPICAL BUILDING SECTION
 COMPOSITE COVER AND VAPOR BARRIER SYSTEMS
 SCALE: 3/4"=1'-0"

Drawing No: SK-002.00

APPENDIX 7

VAPOR BARRIER SPECIFICATION SHEETS

VAPORBLOCK® PLUS™ VBP20

Under-Slab Vapor / Gas Barrier

RAVEN
INDUSTRIES

Product Description

VaporBlock® Plus™ 20 is a seven-layer co-extruded barrier made from state-of-the-art polyethylene and EVOH resins to provide unmatched impact strength as well as superior resistance to gas and moisture transmission. VaporBlock® Plus™ 20 is a highly resilient underslab / vertical wall barrier designed to restrict naturally occurring gases such as radon and/or methane from migrating through the ground and concrete slab. VaporBlock® Plus™ 20 is more than 100 times less permeable than typical high-performance polyethylene vapor retarders against Methane, Radon and other harmful VOCs.

VaporBlock® Plus™ 20 is one of the most effective underslab gas barriers in the building industry today far exceeding ASTM E-1745 (Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill Under Concrete Slabs) Class A, B and C requirements. Available in a 20 (Class A) mil thicknesses designed to meet the most stringent requirements. VaporBlock® Plus™ 20 is produced within the strict guidelines of our ISO 9001:2008 Certified Management System.

Product Use

VaporBlock® Plus™ 20 resists gas and moisture migration into the building envelop when properly installed to provide protection from toxic/harmful chemicals. It can be installed as part of a passive or active control system extending across the entire building including floors, walls and crawl spaces. When installed as a passive system it is recommended to also include a ventilated system with sump(s) that could be converted to an active control system with properly designed ventilation fans.

VaporBlock® Plus™ 20 works to protect your flooring and other moisture-sensitive furnishings in the building's interior from moisture and water vapor migration, greatly reducing condensation, mold and degradation.

Size & Packaging

VaporBlock® Plus™ 20 is available in 10' x 150' rolls to maximize coverage. All rolls are folded on heavy-duty cores for ease in handling and installation. Other custom sizes with factory welded seams are available based on minimum volume requirements. Installation instructions and ASTM E-1745 classifications accompany each roll.



Under-Slab Vapor/Gas Retarder

Product

Part

VaporBlock Plus 20 VBP20

APPLICATIONS

Radon Barrier	Under-Slab Vapor Retarder
Methane Barrier	Foundation Wall Vapor Retarder
VOC Barrier	

VaporBlock® Plus™
UNDERSLAB VAPOR RETARDER / GAS BARRIER

VAPORBLOCK® PLUS™ VBP20

Under-Slab Vapor / Gas Barrier

PROPERTIES	TEST METHOD	VAPORBLOCK PLUS 20	
		IMPERIAL	METRIC
APPEARANCE		White/Gold	
THICKNESS, NOMINAL		20 mil	0.51 mm
WEIGHT		102 lbs/MSF	498 g/m ²
CLASSIFICATION	ASTM E 1745	CLASS A, B & C	
TENSILE STRENGTH LBF/IN (N/CM) AVERAGE MD & TD (NEW MATERIAL)	ASTM E 154 Section 9 (D-882)	58 lbf	102 N
IMPACT RESISTANCE	ASTM D 1709	2600 g	
MAXIMUM USE TEMPERATURE		180° F	82° C
MINIMUM USE TEMPERATURE		-70° F	-57° C
PERMEANCE (NEW MATERIAL)	ASTM E 154 Section 7 ASTM E 96 Procedure B	0.0098 Perms grains/(ft ² ·hr·in·Hg)	0.0064 Perms g/(24hr·m ² ·mm Hg)
(AFTER CONDITIONING) PERMS (SAME MEASUREMENT AS ABOVE PERMEANCE)	ASTM E 154 Section 8, E96 Section 11, E96 Section 12, E96 Section 13, E96	0.0079 0.0079 0.0097 0.0113	0.0052 0.0052 0.0064 0.0074
WVTR	ASTM E 96 Procedure B	0.0040 grains/hr-ft ²	0.0028 gm/hr-m ²
RADON DIFFUSION COEFFICIENT	K124/02/95	< 1.1 x 10 ⁻¹³ m ² /s	
METHANE PERMEANCE	ASTM D 1434	< 1.7 x 10 ⁻¹⁰ m ² /d·atm 0.32 GTR (Gas Transmission Rate) ml/m ² ·D·ATM	

VaporBlock® Plus™ Placement

All instructions on architectural or structural drawings should be reviewed and followed. Detailed installation instructions accompany each roll of VaporBlock® Plus™ and can also be located on our website. ASTM E-1643 also provides general installation information for vapor retarders.



VaporBlock® Plus™ is a seven-layer co-extruded barrier made using high quality virgin-grade polyethylene and EVOH resins to provide unmatched impact strength as well as superior resistance to gas and moisture transmission.

Note: To the best of our knowledge, unless otherwise stated, these are typical property values and are intended as guides only, not as specification limits. Chemical resistance, odor transmission, longevity as well as other performance criteria is not implied or given and actual testing must be performed for applicability in specific applications and/or conditions. RAVEN INDUSTRIES MAKES NO WARRANTIES AS TO THE FITNESS FOR A SPECIFIC USE OR MERCHANTABILITY OF PRODUCTS REFERRED TO, no guarantee of satisfactory results from reliance upon contained information or recommendations and disclaims all liability for resulting loss or damage. Limited Warranty available at www.RavenEFD.com



Scan QR Code to download current technical data sheets via the Raven website.



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1/11 EFD 1125