DECISION DOCUMENT

22-60 46th Street
Brownfield Cleanup Program
Queens, Queens County
Site No. C241244
January 2022

Prepared by
Division of Environmental Remediation
New York State Department of Environmental Conservation

DECLARATION STATEMENT - DECISION DOCUMENT

22-60 46th Street
Brownfield Cleanup Program
Queens, Queens County
Site No. C241244
January 2022

Statement of Purpose and Basis

This document presents the remedy for the 22-60 46th Street site a brownfield cleanup site. The remedial program was chosen in accordance with the New York State Environmental Conservation Law and Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York (6 NYCRR) Part 375.

This decision is based on the Administrative Record of the New York State Department of Environmental Conservation (the Department) for the 22-60 46th Street site and the public's input to the proposed remedy presented by the Department.

Description of Selected Remedy

The elements of the selected remedy are as follows:

1. Remedial Design

A remedial design program will be implemented to provide the details necessary for the construction, operation, optimization, maintenance, and monitoring of the remedial program. Green remediation principles and techniques will be implemented to the extent feasible in the design, implementation, and site management of the remedy as per DER-31. The major green remediation components are as follows:

- Considering the environmental impacts of treatment technologies and remedy stewardship over the long term;
- Reducing direct and indirect greenhouse gases and other emissions;
- Increasing energy efficiency and minimizing use of non-renewable energy;
- Conserving and efficiently managing resources and materials;
- Reducing waste, increasing recycling and increasing reuse of materials which would otherwise be considered a waste;
- Maximizing habitat value and creating habitat when possible;
- Fostering green and healthy communities and working landscapes which balance ecological, economic and social goals;
- Integrating the remedy with the end use where possible and encouraging green and sustainable re-development; and
- Additionally, to incorporate green remediation principles and techniques to the extent

feasible in the future development at this site, any future on-site buildings will include, at a minimum, a 20-mil vapor barrier/waterproofing membrane on the foundation to improve energy efficiency as an element of construction.

2. Excavation

The existing on-site building(s) will be demolished and materials which can't be beneficially reused on site will be taken off-site for proper disposal in order to implement the remedy.

Excavation and off-site disposal of contaminant source areas, including:

- soil exceeding the 6 NYCRR Part 371 hazardous criteria for lead.

Excavation and off-site disposal of all on-site soils which exceed restricted-residential SCOs, as defined by 6 NYCRR Part 375-6.8 in the upper 15 feet. If a Track 2 restricted residential cleanup is achieved, a Cover System will not be a required element of the remedy.

Excavation and removal of any underground storage tanks (USTs), fuel dispensers, underground piping or other structures associated with a source of contamination.

Approximately 16,700 cubic yards of contaminated soil will be removed from the site.

3. Backfill

On-site soil which does not exceed the above excavation criteria may be used below the cover system described, if needed, in remedy element 9 to backfill the excavation to the extent that a sufficient volume of on-site soil is available and establish the designed grades at the site.

Clean fill meeting the requirements of 6 NYCRR Part 375-6.7(d) will be brought in to complete the backfilling of the excavation and establish the designed grades at the site.

4. Vapor Mitigation

All on-site buildings will be required to have a sub-slab depressurization system to mitigate the migration of vapors into the building from groundwater.

Off-site buildings will be evaluated for soil vapor intrusion and if soil vapor intrusion is occurring as a result of this site, a sub-slab depressurization system will be offered to the owner of the building.

5. Soil Vapor Extraction (SVE)

A soil vapor extraction (SVE) will be implemented at the site perimeter to remove volatile organic compounds (VOCs) from the subsurface if excavation and in-situ chemical oxidation does not eliminate the migration of soil vapor contamination from the site. VOCs will be physically removed from the subsurface by applying a vacuum to wells that have been installed into the vadose zone (the area below the ground but above the water table). The vacuum draws air through

the soil matrix which carries the VOCs from the soil to the SVE well. The air extracted from the SVE wells is then treated as necessary prior to being discharged to the atmosphere.

6. In-Situ Chemical Oxidation

In-situ chemical oxidation (ISCO) will be implemented to treat VOCs in ground water. A chemical oxidant will be injected into the subsurface to destroy the contaminants the western portion of the site via injection wells. The method and depth of injection will be determined during the remedial design.

7. Institutional Control

Imposition of an institutional control in the form of an environmental easement for the controlled property which will:

- require the remedial party or site owner to complete and submit to the Department a periodic certification of institutional and engineering controls in accordance with Part 375-1.8 (h)(3);
- allow the use and development of the controlled property for restricted residential use as defined by Part 375-1.8(g), although land use is subject to local zoning laws;
- restrict the use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by the NYSDOH or NYCDOH; and
- require compliance with the Department approved Site Management Plan.

8. Site Management Plan

A Site Management Plan is required, which includes the following:

a. an Institutional and Engineering Control Plan that identifies all use restrictions and engineering controls for the site and details the steps and media-specific requirements necessary to ensure the following institutional and/or engineering controls remain in place and effective:

- Institutional Controls: The Environmental Easement discussed in Paragraph 8 above.
- Engineering Controls: The sub-slab depressurization system discussed in Paragraph 4 above and the soil vapor extraction system discussed in Paragraph 5 above.

This plan includes, but may not be limited to:

- an Excavation Plan which details the provisions for management of future excavations in areas of remaining contamination;
- descriptions of the provisions of the environmental easement including any land use and groundwater use restrictions;
- a provision for evaluation of the potential for soil vapor intrusion for any off-site buildings in areas impacted with site-contamination, including provision for implementing actions recommended to address exposures related to soil vapor intrusion;
- provisions for the management and inspection of the identified engineering controls;

- maintaining site access controls and Department notification; and
- the steps necessary for the periodic reviews and certification of the institutional and/or engineering controls.

b. a Monitoring Plan to assess the performance and effectiveness of the remedy. The plan includes, but may not be limited to:

- monitoring of groundwater to assess the performance and effectiveness of the remedy;
- monitoring of soil vapor to assess the performance and effectiveness of the remedy;
- a schedule of monitoring and frequency of submittals to the Department;
- monitoring for vapor intrusion for any buildings on the site, and in impacted off-site areas, as may be required by the Institutional and Engineering Control Plan discussed above.

c. an Operation and Maintenance (O&M) Plan to ensure continued operation, maintenance, inspection, and reporting of any mechanical or physical components of the active vapor mitigation system(s). The plan includes, but is not limited to:

- procedures for operating and maintaining the system(s); and
- compliance inspection of the system(s) to ensure proper O&M as well as providing the data for any necessary reporting.

Contingent Remedial Elements

The intent of the remedy is to achieve Track 2 restricted residential use; therefore, no cover system is anticipated. In the event that soil greater than 2 feet but less than 15 feet deep does not meet the restricted residential SCOs, the following remedial element will be required, and the remedy would result in a Track 4 restricted residential cleanup.

9. Cover System

A site cover will be required to allow for restricted residential use of the site in areas where the upper two feet of exposed surface soil will exceed the applicable soil cleanup objectives (SCOs). Where a soil cover is to be used it will be a minimum of two feet of soil placed over a demarcation layer, with the upper six inches of soil of sufficient quality to maintain a vegetative layer. Soil cover material, including any fill material brought to the site, will meet the SCOs for cover material for the use of the site as set forth in 6 NYCRR Part 375-6.7(d). Substitution of other materials and components may be allowed where such components already exist or are a component of the tangible property to be placed as part of site redevelopment. Such components may include, but are not necessarily limited to: pavement, concrete, paved surface parking areas, sidewalks, building foundations and building slabs. If a Track 2 restricted residential cleanup is achieved, a Cover System will not be a required element of the remedy.

Declaration

The remedy conforms with promulgated standards and criteria that are directly applicable, or that are relevant and appropriate and takes into consideration Department guidance, as appropriate. The remedy is protected of public health and the environment.

January 26,2022

Date

Gerard Burke, Director
Remedial Bureau B

DECISION DOCUMENT

22-60 46th Street
Queens, Queens County
Site No. C241244
January 2022

SECTION 1: SUMMARY AND PURPOSE

The New York State Department of Environmental Conservation (the Department), in consultation with the New York State Department of Health (NYSDOH), has selected a remedy for the above referenced site. The disposal of contaminants at the site has resulted in threats to public health and the environment that would be addressed by the remedy. The disposal or release of contaminants at this site, as more fully described in this document, has contaminated various environmental media. Contaminants include hazardous waste and/or petroleum.

The New York State Brownfield Cleanup Program (BCP) is a voluntary program. The goal of the BCP is to enhance private-sector cleanups of brownfields and to reduce development pressure on "greenfields." A brownfield site is real property, where a contaminant is present at levels exceeding the soil cleanup objectives or other health-based or environmental standards, criteria or guidance, based on the reasonably anticipated use of the property.

The Department has issued this document in accordance with the requirements of New York State Environmental Conservation Law and 6 NYCRR Part 375. This document is a summary of the information that can be found in the site-related reports and documents.

SECTION 2: CITIZEN PARTICIPATION

The Department seeks input from the community on all remedies. A public comment period was held, during which the public was encouraged to submit comment on the proposed remedy. All comments on the remedy received during the comment period were considered by the Department in selecting a remedy for the site. Site-related reports and documents were made available for review by the public at the following document repositories:

DECInfo Locator - Web Application
https://gisservices.dec.ny.gov/gis/dil/index.html?rs=C241244

Queens Library at Broadway
40-20 Broadway
Astoria, NY 11103
Phone: (718) 721-2462

Queens Community Board District 1
45-02 Ditmars Boulevard, Suite 1025
Astoria, NY 11105
Phone: (718) 786-3335

Receive Site Citizen Participation Information By Email

Please note that the Department's Division of Environmental Remediation (DER) is "going paperless" relative to citizen participation information. The ultimate goal is to distribute citizen participation information about contaminated sites electronically by way of county email listservs. Information will be distributed for all sites that are being investigated and cleaned up in a particular county under the State Superfund Program, Environmental Restoration Program, Brownfield Cleanup Program and Resource Conservation and Recovery Act Program. We encourage the public to sign up for one or more county listservs at http://www.dec.ny.gov/chemical/61092.html

SECTION 3: SITE DESCRIPTION AND HISTORY

Location: The 0.698-acre site is located at 22-60 46th Street, in the Astoria section of Queens, NY. The site occupies Block 769, Lots 25 and 42. The site is bounded to the north by a parking garage followed by a residential building, to the east by 46th Street followed by residential buildings, to the south by residential buildings, and to the west by 45th Street followed by a commercial building and warehouses.

Site Features: The site consists of two buildings, one on each lot. The eastern portion of the site, Lot 25, contains a one-story, slab-on-grade masonry and steel frame building that occupies the entire lot. The western portion of the site, Lot 42, contains a one-story, slab-on-grade warehouse that occupies the entire lot.

Current Zoning and Land Use: The site is zoned residential (R6A) with a commercial overlay (C2-3). Both buildings are vacant and will be demolished.

Past Use of the Site: Both lots were undeveloped until approximately 1967. Lot 25 was developed with a warehouse utilized for electronics manufacturing through approximately 2006. Lot 42 was developed with an industrial building used as a knitting mill until approximately 1993 and unspecified manufacturing between 1994-2006. A portion of Lot 25 was utilized as part of the knitting mill between approximately 1981 and 1993. After 2006, both buildings were used as warehouses and truck storage.

Site Geology and Hydrology: The site is underlain by historic fill material extending to approximately 5 to 15 feet below ground surface (bgs). The fill material consists of sand, silt, and gravel with varying amounts of concrete and brick. Fill material is underlain by native sand, gravel, and silt to boring termination depths (up to 50 feet bgs). Bedrock was not encountered during soil boring. Groundwater was observed approximately 35 feet bgs and flows in a northerly direction toward the East River, which is located approximately 4000 feet from the site.

A site location map is attached as Figure 1.

SECTION 4: LAND USE AND PHYSICAL SETTING

The Department may consider the current, intended, and reasonably anticipated future land use of the site and its surroundings when evaluating a remedy for soil remediation. For this site, alternatives (or an alternative) that restrict(s) the use of the site to restricted-residential use (which allows for commercial use and industrial use) as described in Part 375-1.8(g) were/was evaluated in addition to an alternative which would allow for unrestricted use of the site.

A comparison of the results of the Remedial Investigation (RI) to the appropriate standards, criteria and guidance values (SCGs) for the identified land use and the unrestricted use SCGs for the site contaminants is available in the RI Report.

SECTION 5: ENFORCEMENT STATUS

The Applicant under the Brownfield Cleanup Agreement is a Participant. The Applicant has an obligation to address on-site and off-site contamination. Accordingly, no enforcement actions are necessary.

SECTION 6: SITE CONTAMINATION

6.1: Summary of the Remedial Investigation

A remedial investigation (RI) serves as the mechanism for collecting data to:

- characterize site conditions;
- determine the nature of the contamination; and
- assess risk to human health and the environment.

The RI is intended to identify the nature (or type) of contamination which may be present at a site and the extent of that contamination in the environment on the site, or leaving the site. The RI reports on data gathered to determine if the soil, groundwater, soil vapor, indoor air, surface water or sediments may have been contaminated. Monitoring wells are installed to assess groundwater and soil borings or test pits are installed to sample soil and/or waste(s) identified. If other natural resources are present, such as surface water bodies or wetlands, the water and sediment may be sampled as well. Based on the presence of contaminants in soil and groundwater, soil vapor will also be sampled for the presence of contamination. Data collected in the RI influence the development of remedial alternatives. The RI report is available for review in the site document repository and the results are summarized in section 6.3.

The analytical data collected on this site includes data for:

- groundwater
- soil
- soil vapor
- sub-slab vapor

- indoor air

6.1.1: Standards, Criteria, and Guidance (SCGs)

The remedy must conform to promulgated standards and criteria that are directly applicable or that are relevant and appropriate. The selection of a remedy must also take into consideration guidance, as appropriate. Standards, Criteria and Guidance are hereafter called SCGs.

To determine whether the contaminants identified in various media are present at levels of concern, the data from the RI were compared to media-specific SCGs. The Department has developed SCGs for groundwater, surface water, sediments, and soil. The NYSDOH has developed SCGs for drinking water and soil vapor intrusion. For a full listing of all SCGs see: http://www.dec.ny.gov/regulations/61794.html

6.1.2: RI Results

The data have identified contaminants of concern. A "contaminant of concern" is a contaminant that is sufficiently present in frequency and concentration in the environment to require evaluation for remedial action. Not all contaminants identified on the property are contaminants of concern. The nature and extent of contamination and environmental media requiring action are summarized below. Additionally, the RI Report contains a full discussion of the data. The contaminant(s) of concern identified at this site is/are:

tetrachloroethene (PCE)	chloroform
lead	dieldrin
benzo(a)anthracene	carbon tetrachloride
indeno(1,2,3-cd)pyrene	benzo(a)pyrene
barium	benzo(b)fluoranthene

The contaminant(s) of concern exceed the applicable SCGs for:

- groundwater
- soil
-soil vapor intrusion

6.2: Interim Remedial Measures

An interim remedial measure (IRM) is conducted at a site when a source of contamination or exposure pathway can be effectively addressed before issuance of the Decision Document.

There were no IRMs performed at this site during the RI.

6.3: Summary of Environmental Assessment

This section summarizes the assessment of existing and potential future environmental impacts presented by the site. Environmental impacts may include existing and potential future exposure

pathways to fish and wildlife receptors, wetlands, groundwater resources, and surface water. The RI report presents a detailed discussion of any existing and potential impacts from the site to fish and wildlife receptors.

Nature and Extent of Contamination:
Soil and groundwater samples were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), metals, polychlorinated biphenyls (PCBs), pesticides, Per- and Polyfluoroalkyl Substances (PFAS), and 1,4-dioxane. Soil vapor samples were analyzed for VOCs. Based upon investigations conducted to date, the primary contaminants of concern for the site include SVOCs and metals in soil, VOCs and pesticides in groundwater and VOCs in soil vapor.

Soil - Soil data were compared to Restricted-Residential Soil Cleanup Objectives (RRSCO) and Protection of Groundwater Soil Cleanup Objectives (PGSCO). No VOCs, pesticides, or PCBs were detected at concentrations exceeding the RRSCOs. None of the contaminants above Ambient Water Quality Standards and Guidance Values for Class GA groundwater (AWQSGVs) found on site were detected above PGSCO in soil. The contaminants of concern in soil are metals and SVOCs, which were both identified throughout the site at depths of up to 15 feet below ground surface (bgs). SVOCs identified include benzo(a)anthracene at a maximum concentration of 2.7 parts per million (ppm) (RRSCO is 1 ppm); benzo(a)pyrene at a maximum concentration of 2.1 ppm (RRSCO is 1 ppm); benzo(b)fluoranthene at a maximum concentration of 3 ppm (RRSCO is 1 ppm); and indeno(1,2,3-c,d)pyrene at a maximum concentration of 1.3 ppm (RRSCO is 0.5 ppm). Lead was detected at a maximum of 605 ppm (RRSCO is 400 ppm). Barium was detected at a maximum of 684 ppm (RRSCO is 400 ppm).

1,4-dioxane was not detected above the reporting limit. Perfluorooctonoic acid (PFOA) was detected at a maximum of 0.89 parts per billion (ppb); the Protection of Groundwater Guidance Value (PGGV)use is 1.1 ppb and the Restricted Residential Guidance Value (RRGV)is 0.66 ppb. Perfluorooctanesulfonic acid (PFOS) was detected at a maximum of 0.26 ppb; the PGGV is 3.7 ppb and the RRGV is 0.88 ppb. Data does not indicate any off-site impacts in soil related to this site.

Groundwater - Groundwater data was compared to Ambient Water Quality Standards and Guidance Values for Class GA groundwater (AWQSGVs). VOCS were present in the water above AWQSGVs. PCE was detected at a maximum of 28 ppb (AWQSGV is 5 ppb) and chloroform was detected at a maximum of 9 ppb (AWQSGV is 7 ppb). An onsite source was not detected. Dieldrin was detected at a maximum of 0.14 ppb (AWQSGV is 0.004 ppb). No SVOCs or PCBs exceeded their water quality standards in groundwater.

1,4-dioxane was not detected above the reporting limit and is not considered a contaminant of concern. PFOA was detected at a maximum of 34.1 parts per trillion (ppt); the guidance value is 10 ppt. PFOS was detected at a maximum of 15.7 ppt; the guidance value is 10 ppt. PFOA and PFOS were detected throughout the site. PFOA and PFOS concentrations in the upgradient onsite wells indicate that PFOA and PFOS may be attributed to an upgradient source. Data indicates potential off-site impacts in groundwater related to this site.

Soil Vapor - Tetrachloroethane (PCE) was detected in on-site sub-slab soil vapor at concentrations between 0.49 micrograms per cubic meter ($\mu g/m^3$) and1,200 $\mu g/m^3$.PCE was detected in on-site soil vapor at concentrations between 33 $\mu g/m^3$ and 4,400 ug/m^3. Carbon tetrachloride was detected at a concentration of 74 $\mu g/m^3$. The maximum indoor air detection for PCE was detected at 0.73 $\mu g/m^3$. Data indicates potential off-site impacts due to soil vapor related to this site.

6.4: Summary of Human Exposure Pathways

This human exposure assessment identifies ways in which people may be exposed to site-related contaminants. Chemicals can enter the body through three major pathways (breathing, touching or swallowing). This is referred to as *exposure.*

Since the entire site is covered by buildings, it is unlikely that people will come into direct contact with site-related soil and groundwater contamination. The area is served by a public water supply that is not affected by the groundwater contamination. Volatile organic compounds in soil vapor (air spaces within the soil) may move into buildings and affect the indoor air quality. This process, which is similar to the movement of radon gas from the subsurface into the indoor air of buildings, is referred to as soil vapor intrusion. Because the on-site buildings are vacant, the inhalation of site-related contaminants in indoor air due to soil vapor intrusion does not represent a current concern. The potential exists for the inhalation of site contaminants due to soil vapor intrusion off-site and for any future on-site redevelopment and occupancy.

6.5: Summary of the Remediation Objectives

The objectives for the remedial program have been established through the remedy selection process stated in 6 NYCRR Part 375. The goal for the remedial program is to restore the site to pre-disposal conditions to the extent feasible. At a minimum, the remedy shall eliminate or mitigate all significant threats to public health and the environment presented by the contamination identified at the site through the proper application of scientific and engineering principles.

The remedial action objectives for this site are:

Groundwater

RAOs for Public Health Protection

- Prevent ingestion of groundwater with contaminant levels exceeding drinking water standards.
- Prevent contact with, or inhalation of volatiles, from contaminated groundwater.

RAOs for Environmental Protection

- Restore ground water aquifer to pre-disposal/pre-release conditions, to the extent practicable.
- Remove the source of ground or surface water contamination.

Soil

RAOs for Public Health Protection

- Prevent ingestion/direct contact with contaminated soil.
- Prevent inhalation of or exposure from contaminants volatilizing from

contaminants in soil.

RAOs for Environmental Protection

- Prevent migration of contaminants that would result in groundwater or surface water contamination.

Soil Vapor

RAOs for Public Health Protection

- Mitigate impacts to public health resulting from existing, or the potential for, soil vapor intrusion into buildings at a site.

SECTION 7: ELEMENTS OF THE SELECTED REMEDY

The alternatives developed for the site and the evaluation of the remedial criteria are presented in the Alternative Analysis. The remedy is selected pursuant to the remedy selection criteria set forth in DER-10, Technical Guidance for Site Investigation and Remediation and 6 NYCRR Part 375.

The selected remedy is a Track 2: Restricted use with generic soil cleanup objectives remedy with a Contingent Track 4 Restricted Residential soil cleanup objective remedy.

The selected remedy is referred to as the Excavation, In Situ Chemical Oxidation, Soil Vapor Extraction, and Sub-Slab Depressurization System remedy.

The elements of the selected remedy are as follows:

1. Remedial Design

A remedial design program will be implemented to provide the details necessary for the construction, operation, optimization, maintenance, and monitoring of the remedial program. Green remediation principles and techniques will be implemented to the extent feasible in the design, implementation, and site management of the remedy as per DER-31. The major green remediation components are as follows:

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- Integrating the remedy with the end use where possible and encouraging green and sustainable re-development; and
- Additionally, to incorporate green remediation principles and techniques to the extent feasible in the future development at this site, any future on-site buildings will include, at

a minimum, a 20-mil vapor barrier/waterproofing membrane on the foundation to improve energy efficiency as an element of construction.

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then treated as necessary prior to being discharged to the atmosphere.

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- procedures for operating and maintaining the system(s); and
- compliance inspection of the system(s) to ensure proper O&M as well as providing the data for any necessary reporting.

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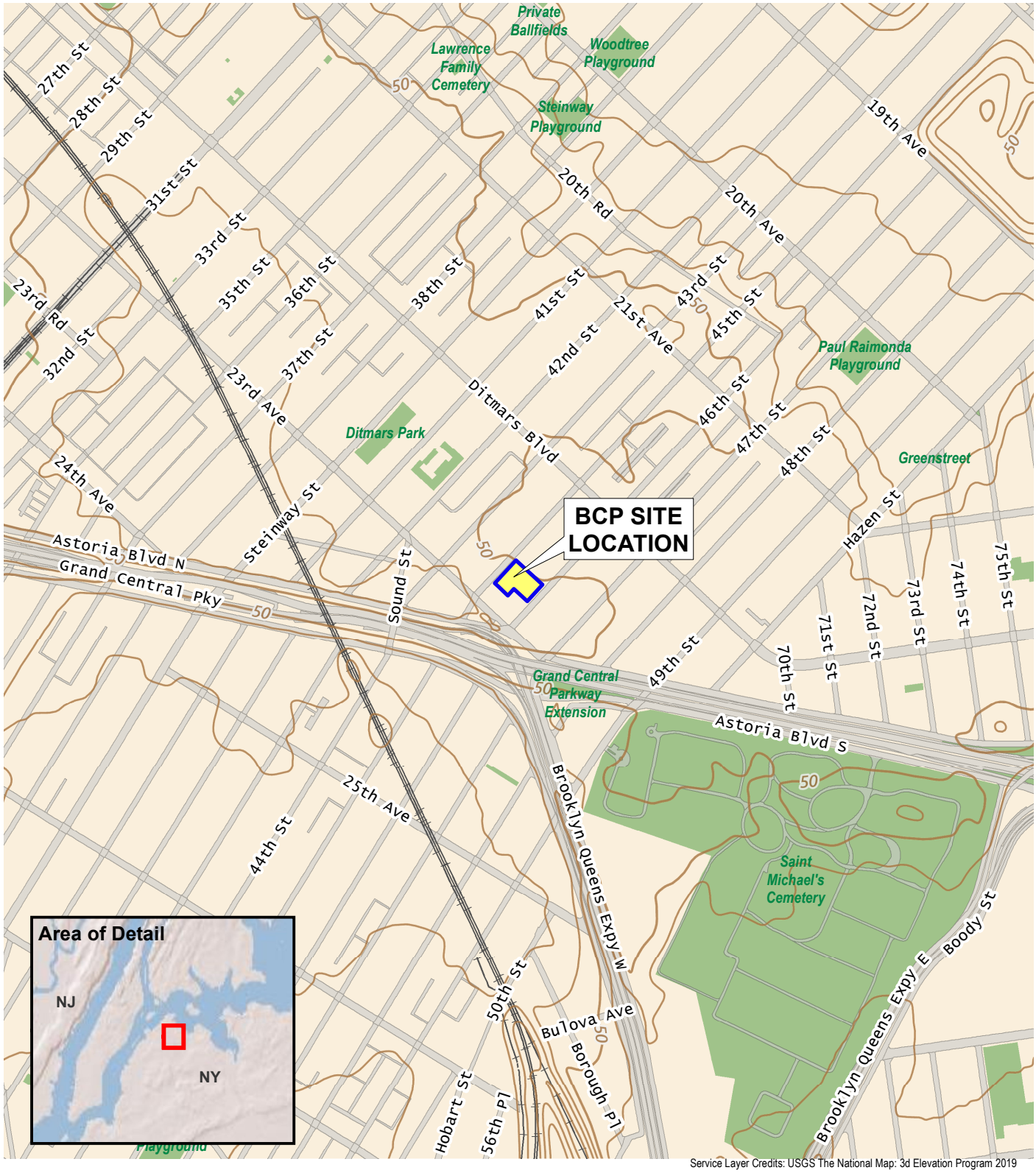


Service Layer Credits: USGS The National Map: 3d Elevation Program 2019

AKRF

440 Park Avenue South, New York, NY 10016

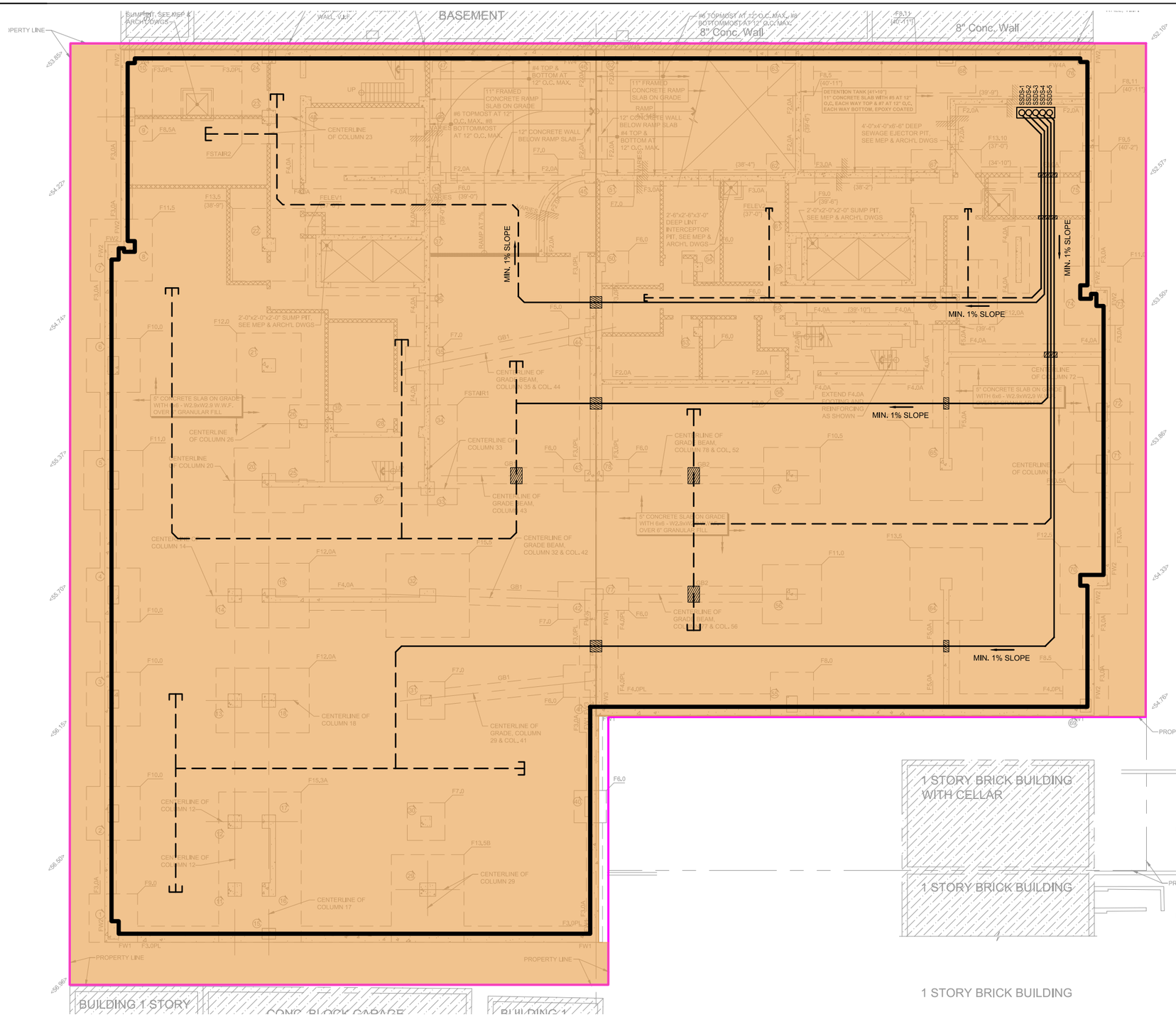
22-60 46th Street
Queens, New York

SITE LOCATION

DATE
2/11/2021

PROJECT NO.
190275

FIGURE
1



LEGEND

- BCP SITE BOUNDARY
- PROPOSED REMEDIAL EXCAVATION TO 15-FEET BELOW GRADE
- EXTENT OF VAPOR BARRIER AND GAS PERMEABLE AGGREGATE UNDER SLAB
- PIPE SLEEVE THROUGH GRADE BEAM OR WALL
- 4" Ø SLOTTED SCHEDULE 40 PVC PIPE WITH PVC END CAP
- 4" Ø SOLID SCHEDULE 40 PVC PIPE
- SSDS MANIFOLD
- SSDS-1 — 4" Ø RISER SLAB PENETRATION

0 10 20 40
SCALE IN FEET

MAP SOURCE:
BASE MAP FROM GF55 ARCHITECTS, LLP "FOUNDATION / 1ST FLOOR FRAMING PLAN", FO-100.00, DATED 03-05-2021.

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PROPOSED REMEDIAL EXCAVATION AND SSDS LAYOUT PLAN

DATE
11/22/2021

PROJECT NO.
190275

FIGURE
2