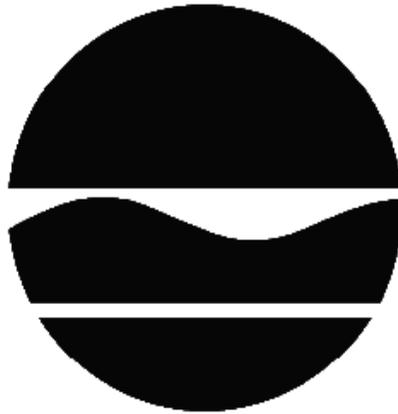


DECISION DOCUMENT

1640 Flatbush Avenue
Brownfield Cleanup Program
Brooklyn, Kings County
Site No. C224212
March 2021



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

DECLARATION STATEMENT - DECISION DOCUMENT

1640 Flatbush Avenue
Brownfield Cleanup Program
Brooklyn, Kings County
Site No. C224212
March 2021

Statement of Purpose and Basis

This document presents the remedy for the 1640 Flatbush Avenue 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 1640 Flatbush Avenue 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

- Excavation and off-site disposal of contaminant source areas, including:
 - grossly contaminated soil, as defined in 6 NYCRR Part 375-1.2(u);
 - soil exceeding the 6 NYCRR Part 371 hazardous criteria for lead;
 - non-aqueous phase liquids;
 - soil with visual waste material or non-aqueous phase liquid;
 - soil containing total SVOCs exceeding 500 ppm;
 - soils which exceed the protection of groundwater soil cleanup objectives (PGWSCOs), as defined by 6 NYCRR Part 375-6.8 for those contaminants found in site groundwater above standards; and
 - soils that create a nuisance condition, as defined in Commissioner Policy CP-51 Section G.

The above includes the excavation and off-site disposal of a petroleum-contaminated soil along the south-eastern border of the site to a maximum depth of approximately 31 feet below grade.

- Excavation and off-site disposal of all on-site soils which exceed restricted residential soil cleanup objectives, 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. Five 4,000-gallon USTs are known to exist on-site.
- Approximately 8,300 cubic yards of soil will be removed from the site for remediation purposes.

3. Backfill

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. Groundwater Extraction & Treatment

Groundwater extraction and treatment will be implemented to treat petroleum-related compounds. The groundwater extraction system will be designed and installed so that the capture zone is sufficient to excavate the petroleum impacted soil present at or below the water table. The extraction system will create a depression of the water table so that contaminated groundwater is

directed toward the excavation area. Groundwater will be extracted from the subsurface over an approximately 5,700-square foot area along the eastern border of the site where petroleum-related compounds were elevated in groundwater. Groundwater will be sampled and treated prior to discharge to the sewer system under permit. Sentinel wells will be installed and monitored during dewatering activities to ensure that no contamination is drawn in from off-site and to demonstrate the effectiveness of the dewatering remedy.

5. Engineering and Institutional Controls

Imposition of an institutional control in the form of an environmental easement and a Site Management Plan, as described below, will be required. The remedy will achieve a Track 2 restricted residential cleanup at a minimum.

Institutional Control – Imposition of an institutional control in the form of an environmental easement for the controlled property 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 (which allows for commercial or industrial 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.

6. 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 5 above.

Engineering Controls: The contingent Site Cover discussed in Paragraph 7.

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 occupied buildings on the site, 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:

- a schedule of monitoring and frequency of submittals to the Department;
- monitoring for vapor intrusion for any buildings on the site, as may be required by the Institutional and Engineering Control Plan discussed above.

Contingent Track 4

In the event that a Track 2 restricted residential use is not achieved, the following contingent remedial element will also be required, and the remedy will achieve a Track 4 restricted residential cleanup.

7. 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 protective of public health and the environment.

February 26, 2021

Date



Richard A. Mustico, Director
Remedial Bureau A

DECISION DOCUMENT

1640 Flatbush Avenue
Brooklyn, Kings County
Site No. C224212
March 2021

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, the redevelopment or reuse of which may be complicated by the presence or potential presence of a contaminant.

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=C224212>

Brooklyn Public Library - Clinton Hill Branch
380 Washington Avenue
Brooklyn, NY 11238
Phone: 718-398-8713

Brooklyn Public Library - Walt Whitman Branch
93 Saint Edwards Street
Brooklyn, NY 11205
Phone: 718-935-0244

Brooklyn Community Board 14
Attn: Alvin M. Berk, Chairman
810 East 16th Street
Brooklyn, NY 11230
Phone: 718-859-6357

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 1640 Flatbush Avenue site is located in an urban area in Brooklyn and is identified as Block 7577 and Lot 60 on the New York City Tax Map. The site is bounded by a multi-tenant retail complex to the north, Aurelia Court to the south, Flatbush Avenue to the east, and a multi-family residential apartment building to the west.

Site Features: The 0.4-acre site is a triangular-shaped vacant lot. A gasoline filling station and convenience store most recently operated on the site from 1993 until 2017. The on-site building and gasoline pumps were removed in July 2020. Five 4,000-gallon underground gasoline storage tanks were closed in-place in 2017.

Current Zoning/Use: The site is split between two zoning districts: C8-2 (Commercial) and R6 (Residential) and is currently vacant.

Past Use of the Site: The site was historically occupied by several structures from at least 1930, including an automotive repair shop, 70-car parking garage, drycleaners, metal working shop and store. A gasoline service station occupied the site prior to 1993, when all of the tanks were removed to construct the recently demolished gas station.

Site Geology and Hydrogeology: The stratigraphy of the site, from the surface down, generally consists of variable texture sands with gravel, and some clay. The upper five to seven feet is characterized as fill material. Finer, more uniform sands and gravel were encountered beneath this interval to a maximum depth of 30 feet below ground surface (bgs). Bedrock was not encountered during the investigation. Groundwater was encountered at 27 to 28 feet bgs with a flow direction

from southeast to northwest.

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, an alternative that restricts 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) 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 Volunteer. The Applicant does not have an obligation to address off-site contamination. However, the Department has determined that this site does not pose a significant threat to public health or the environment; 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
- ambient 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 contaminants of concern identified at this site are:

- | | |
|--------------------------------|-------------------------|
| lead | tetrachloroethane (PCE) |
| 1,2,4-trimethylbenzene | trichloroethene (TCE) |
| 1,3,5-trimethylbenzene | ethylbenzene |
| xylene (mixed) | chloroform |
| naphthalene | acrylonitrile |
| MTBE (methyl-tert-butyl ether) | |

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

- groundwater
- soil

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.

Soil and groundwater were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), pesticides, metals, per- and polyfluoroalkyl substances (PFAS) and 1,4-dioxane during the remedial investigation. Soil vapor and outdoor air were analyzed for VOCs during the investigation.

The primary contaminants of concern at the site are localized concentrations of petroleum-related VOCs in soil and groundwater, and low-level contamination from the chlorinated solvents PCE and TCE in groundwater. Site-wide, soils are impacted by numerous metals (*e.g.*, lead) present at levels above their unrestricted use soil cleanup objectives. The levels are consistent with the presence of historic urban fill materials and/or naturally occurring background conditions. Historic fill material is present to a depth of five to seven feet across the site.

Soil:

Lead was the only metal documented to exceed restricted residential use soil cleanup objectives (RRUSCO). Lead was detected at up to 659 parts per million (ppm), exceeding the RRUSCO of 400 ppm. Petroleum-related VOCs and SVOCs that were found in shallow and deeper soils on the eastern portion of the site at elevated levels exceeding protection of groundwater SCOs (PGSCOs) include: ethylbenzene detected at 190 ppm (PGSCO - 1 ppm); naphthalene detected at 160 ppm (PGSCO - 12 ppm); 1,2,4-trimethylbenzene at 1,100 ppm (PGSCO - 3.6 ppm); 1,3,5-trimethylbenzene at 290 ppm (PGSCO - 8.4 ppm) and total xylenes at 610 ppm (PGSCO - 1.6 ppm).

No pesticides or PCBs were detected above unrestricted use SCOs in any soil samples. No emerging contaminants (per- and polyfluoroalkyl substances [PFAS] and 1,4-dioxane) were detected in any soil samples.

Data does not indicate any off-site impacts in soil related to this site.

Groundwater:

Groundwater contamination is primarily limited to low-grade impacts from chlorinated solvents (PCE and breakdown products), PFAS, and petroleum related compounds.

Maximum VOC exceedances of Ambient Water Quality Standards (AWQS) are as follows: chloroform at 20 parts per billion (ppb) (AWQS- 7 ppb), MTBE at 54.4 ppb (AWQS - 10 ppb), acrylonitrile at 8.22 ppb (AWQS - 5 ppb), PCE at 34.4 ppb (AWQS - 5 ppb), TCE at 8.01 ppb (AWQS - 5 ppb), 1,2,4-trimethylbenzene at 270 ppb (AWQS - 5 ppb), 1,3,5-trimethylbenzene at 68 ppb (AWQS - 5 ppb), benzene at 72 ppb (AWQS - 1 ppb), ethylbenzene at 160 ppb (AWQS - 5 ppb), and total xylenes at 427.7 ppb (AWQS - 5 ppb).

For PFAS, perfluorooctanoic acid (PFOA) and perfluorooctanesulfonic acid (PFOS) were reported at concentrations in groundwater of up to 97.9 and 43.4 parts per trillion (ppt), respectively, exceeding the Maximum Contaminant Level (drinking water standard) of 10 ppt. These concentrations were detected in wells on the upgradient side of the property indicating that the PFAS contamination is not site-related.

Data does not indicate any off-site impacts in groundwater-related to this site.

Soil Vapor: Ten soil vapor samples were collected from shallow (five to eight feet below ground) and deep (25 feet below ground) temporary soil vapor points installed in the vadose zone at the site. Soil vapor sample results were reviewed as a whole, in conjunction with results of other environmental sampling. Low-grade contamination was documented throughout the site, including petroleum compounds related to gasoline, with relatively elevated concentrations of both chlorinated solvents (PCE and TCE) and non-chlorinated solvents (2-butanone, 2-hexanone and acetone) found in both shallow and deep samples. PCE was detected in shallow soil vapor at up to 692 micrograms per cubic meter (mcg/m³) and in deep soil vapor at up to 86.8 mcg/m³. TCE was detected in shallow and deep soil vapor at up to 22.6 mcg/m³ and 8.76 mcg/m³, respectively. 2-butanone was detected in shallow and deep soil vapor at up to 773 mcg/m³ and 1170 mcg/m³, respectively. 2-hexanone was detected in shallow and deep soil vapor at up to 131 mcg/m³ and 179 mcg/m³, respectively. Acetone was detected shallow and deep soil vapor at up to 739 mcg/m³ and 1700 mcg/m³, respectively.

Data does not indicate any off-site impacts in 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*.

The site is vacant, fenced, and covered by pavement, therefore people will not come into contact with site-related soil and groundwater contamination unless they dig below the surface. People are not drinking the contaminated groundwater because the area is served by a public water supply that is not contaminated by the site. 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 site is 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 for any future on-site redevelopment. Environmental sampling indicates that soil vapor intrusion associated with this site is not a concern off-site.

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

- 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 generic soil cleanup objectives remedy.

The selected remedy is referred to as the Excavation and Dewatering remedy.

The elements of the selected remedy, as shown in Figure 2, 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

- a. Excavation and off-site disposal of contaminant source areas, including:
 - grossly contaminated soil, as defined in 6 NYCRR Part 375-1.2(u);
 - soil exceeding the 6 NYCRR Part 371 hazardous criteria for lead;
 - non-aqueous phase liquids;
 - soil with visual waste material or non-aqueous phase liquid;
 - soil containing total SVOCs exceeding 500 ppm;
 - soils which exceed the protection of groundwater soil cleanup objectives (PGWSCOs), as defined by 6 NYCRR Part 375-6.8 for those contaminants found in site groundwater above standards; and
 - soils that create a nuisance condition, as defined in Commissioner Policy CP-51 Section G.

The above includes the excavation and off-site disposal of a petroleum-contaminated soil along the south-eastern border of the site to a maximum depth of approximately 31 feet below grade.

- b. Excavation and off-site disposal of all on-site soils which exceed restricted residential soil cleanup objectives, 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.

- c. Excavation and removal of any underground storage tanks (USTs), fuel dispensers, underground piping or other structures associated with a source of contamination. Five 4,000-gallon USTs are known to exist on-site.
- d. Approximately 8,300 cubic yards of soil will be removed from the site for remediation purposes.

3. Backfill

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. Groundwater Extraction & Treatment

Groundwater extraction and treatment will be implemented to treat petroleum-related compounds. The groundwater extraction system will be designed and installed so that the capture zone is sufficient to excavate the petroleum impacted soil present at or below the water table. The extraction system will create a depression of the water table so that contaminated groundwater is directed toward the excavation area. Groundwater will be extracted from the subsurface over an approximately 5,700-square foot area along the eastern border of the site where petroleum-related compounds were elevated in groundwater. Groundwater will be sampled and treated prior to discharge to the sewer system under permit. Sentinel wells will be installed and monitored during dewatering activities to ensure that no contamination is drawn in from off-site and to demonstrate the effectiveness of the dewatering remedy.

5. Engineering and Institutional Controls

Imposition of an institutional control in the form of an environmental easement and a Site Management Plan, as described below, will be required. The remedy will achieve a Track 2 restricted residential cleanup at a minimum.

Institutional Control – Imposition of an institutional control in the form of an environmental easement for the controlled property 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 (which allows for commercial or industrial 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.

6. 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 5 above.

Engineering Controls: The contingent Site Cover discussed in Paragraph 7.

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 occupied buildings on the site, 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:
 - a schedule of monitoring and frequency of submittals to the Department;
 - monitoring for vapor intrusion for any buildings on the site, as may be required by the Institutional and Engineering Control Plan discussed above.

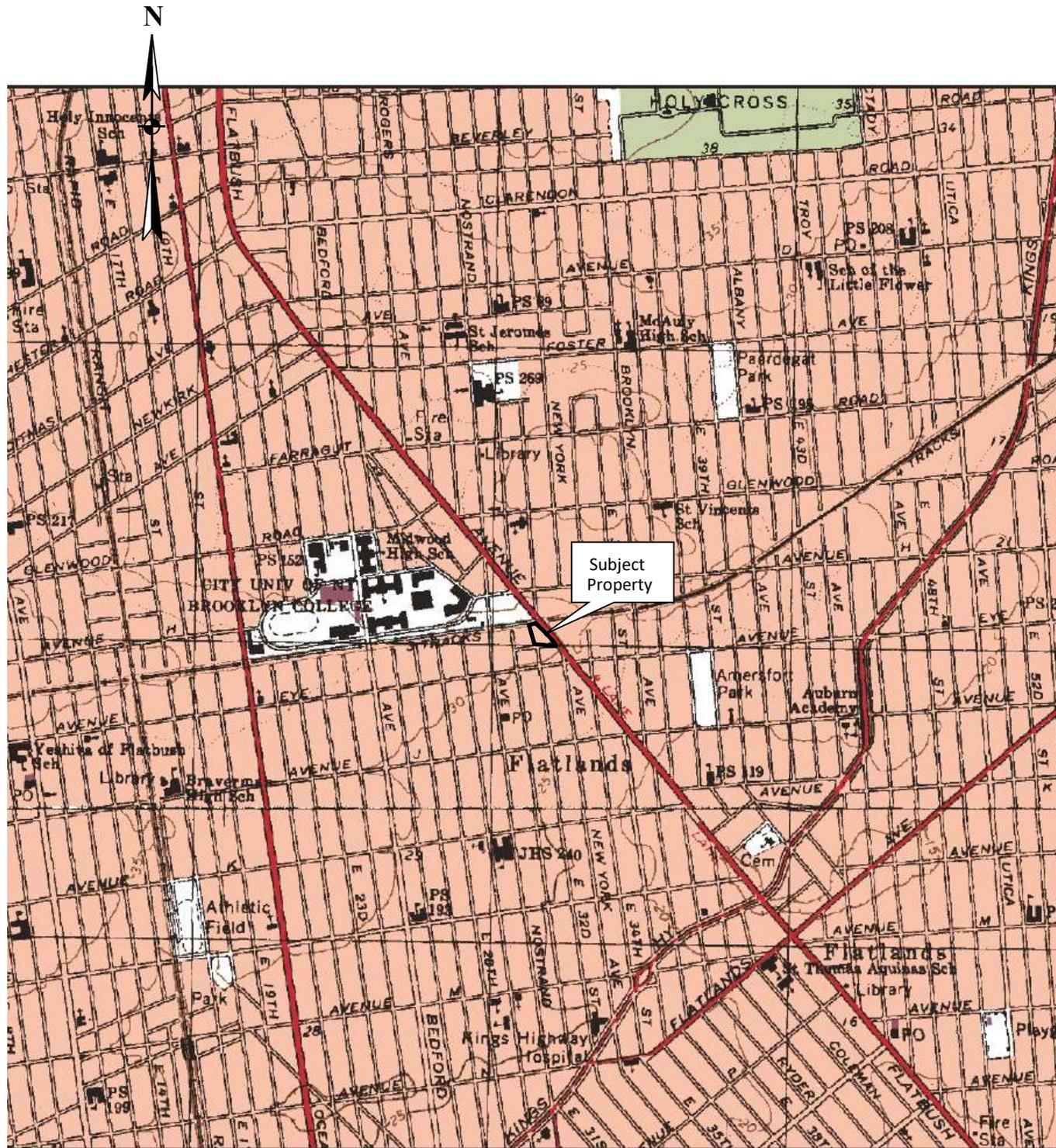
Contingent Track 4

In the event that a Track 2 restricted residential use is not achieved, the following contingent remedial element will also be required, and the remedy will achieve a Track 4 restricted residential cleanup.

7. 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.

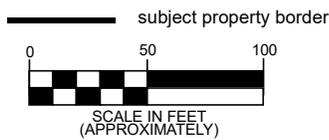


Source: USGS Topographic Map of the Central Park Quadrangle. All feature locations are approximate. This map is intended as a schematic to be used in conjunction with the associated report, and it should not be relied upon as a survey for planning or other activities.

Figure 1: Site Location Map

NYSDEC BCP Site Number: C224212
1640 Flatbush Avenue
Brooklyn, New York

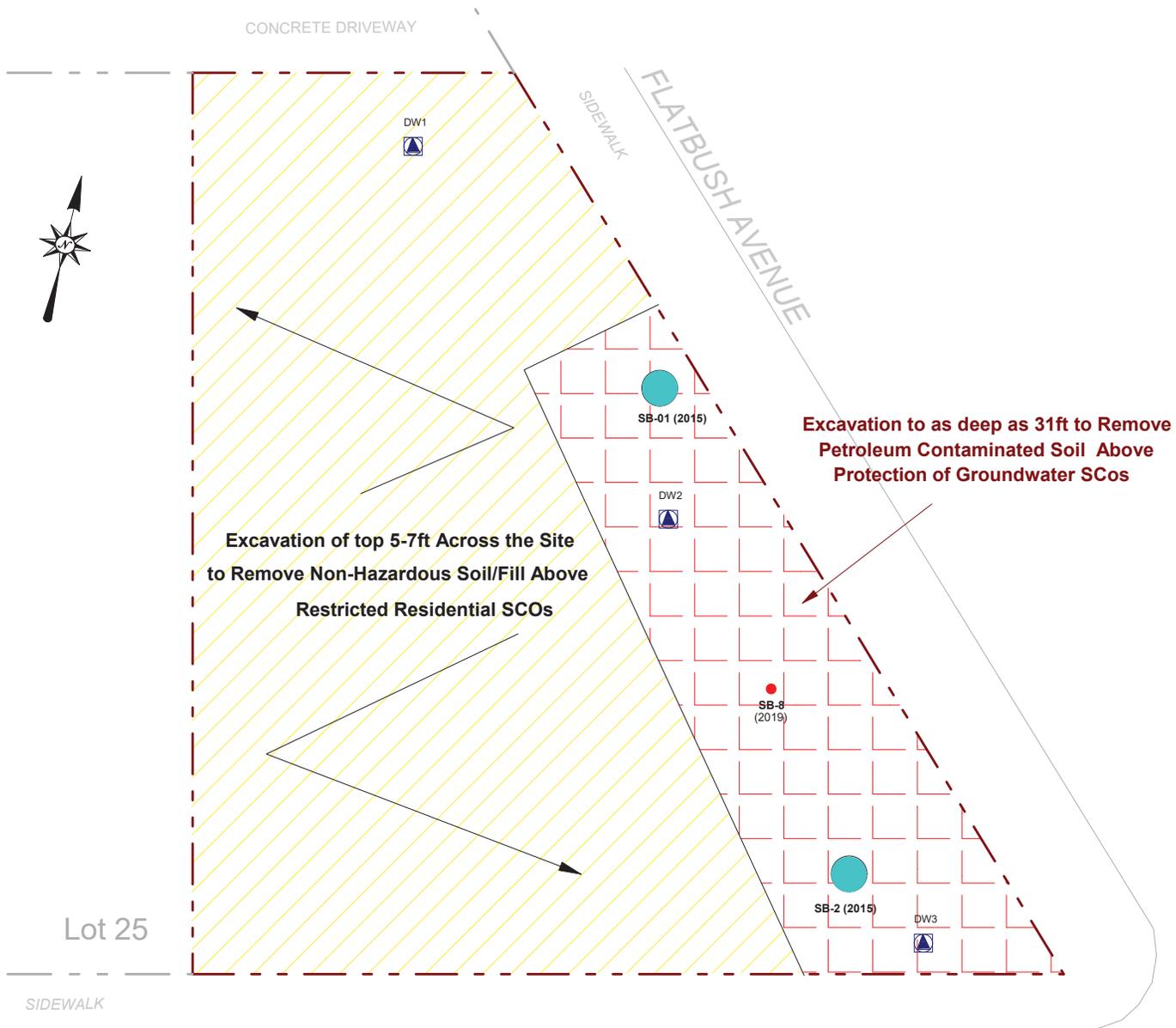
Legend:



WCD File: 16-9335

September 2019

Figures



KEY:

-  Property Boundary
-  2019 Soil Sample Location
-  Proposed Monitoring Well

SCALE:

