# DECISION DOCUMENT

805-825 Atlantic Avenue
Brownfield Cleanup Program
Brooklyn, Kings County
Site No. C224228
September 2019

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

# DECLARATION STATEMENT - DECISION DOCUMENT

805-825 Atlantic Avenue
Brownfield Cleanup Program
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**Statement of Purpose and Basis**

This document presents the remedy for the 805-825 Atlantic 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 805-825 Atlantic 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**

The existing on-site buildings 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 hot-spots exceeding the hazardous waste criteria in 6 NYCRR Part 371 for lead;
- removal of any underground storage tanks (USTs), fuel dispensers, underground piping or other structures associated with a source of contamination;
- grossly contaminated soil, as defined in 6 NYCRR Part 375-1.2(u), if identified during excavation;
- soil with visual waste material or non-aqueous phase liquid; and
- soils that create a nuisance condition, as defined in Commissioner Policy CP-51 Section G.

All soils in the upper two feet which exceed the restricted residential SCOs will be excavated and transported off-site for disposal.

The entire site will be excavated to a development depth of approximately 17 feet bgs. For remedial purposes, the top two feet of soil (approximately 1,700 cubic yards (CY)) at the site will be removed due to exceedances of restricted residential soil cleanup objectives for metals and semi-volatile organic compounds. In addition, approximately 1000 CY of contaminated soil will be removed from the site, consisting of 830 CY of petroleum-impacted soil that create a nuisance condition and 160 CY of lead-impacted soil that exceeds hazardous waste limits. The remaining soil above 17 feet (approximately 11,900 CY) of non-hazardous material) will be removed for development 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. 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.

## 5. Soil Vapor Extraction (SVE)

Soil vapor extraction (SVE) will be implemented to remove volatile organic compounds (VOCs) from the subsurface. VOCs will be physically removed from the soil 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.

Six SVE wells will be installed in the cellar of the new building into the vadose zone and screened from 25 feet below the cellar foundation slab to a depth of approximately 45 feet below the slab. The air containing VOCs extracted from the SVE wells will be treated by passing the air stream through activated carbon which removes the VOCs from the air prior to it being discharged to the atmosphere.

## 6. In-Situ Treatment using Activated Carbon

Activated carbon will be added to the subsurface to capture and prevent the migration of petroleum-related volatile organic compounds, such as 1,2,4- trimethylbenzene and xylenes. Sulfate salt solution will be added to enhance anaerobic biodegradation**.** In the area of the captured contamination, conditions will be maintained that will allow anaerobic degradation of the contaminants of concern to occur. Activated carbon and sulfate salt solution will be added to the subsurface in approximately a 4000 square foot area in the southeastern portion of the site. An injection well network of approximately 13 injection wells, screened from 65 to 80 feet below the existing grade, are expected to be used for the injections. The square footage and number of wells may be revised based on field conditions.

After the injections, monitoring will be required within the treatment zone. Monitoring will be conducted for the targeted contaminants (petroleum-related volatile organic compounds), and for indicators of anaerobic degradation, such as iron, manganese, sulfate, sulfide and nitrate.

**7. Treatment Remedy Shutdown**

The operation of the components of the remedy will continue until the remedial objectives have been achieved, or until the Department determines that continued operation is technically impracticable or not feasible.

**8. 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.

**9. Site Management Plan**

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

1. 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 Soil Vapor Extraction (SVE) system discussed in paragraph 5 and the In-Situ Activated Carbon Treatment discussed in paragraph 6.

   This plan includes, but may not be limited to:

   - 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;
   - a provision that should the owners of properties, where sampling was previously declined, request to have their properties sampled in the future, the NYSDEC, in consultation with the NYSDOH, shall assess the need for soil vapor intrusion sampling and take appropriate action under a separate program;

- 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.

2. a Monitoring Plan to assess the performance and effectiveness of the remedy. The plan includes, but may not be limited to:
   - monitoring of soil vapor and groundwater 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, as may be required by the Institutional and Engineering Control Plan discussed above.
3. an Operation and Maintenance (O&M) Plan to ensure continued operation, maintenance, optimization, monitoring, inspection, and reporting of any mechanical or physical components of the remedy. The plan includes, but is not limited to:
   - procedures for operating and maintaining the remedy;
   - compliance monitoring of treatment systems to ensure proper O&M as well as providing the data for any necessary permit or permit equivalent reporting;
   - maintaining site access controls and Department notification; and
   - providing the Department access to the site and O&M records.

**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.

September 27, 2019

Date

Gerard Burke, Director
Remedial Bureau B

# DECISION DOCUMENT

805-825 Atlantic Avenue
Brooklyn, Kings County
Site No. C224228
September 2019

## 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:

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

Brooklyn Community Board 2
350 Jay Street, 8th Floor
Brooklyn, NY 11201
Phone: 718-596-5410

**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 site is located in an urban area in the Clinton Hill neighborhood of Brooklyn and is bounded by Atlantic Avenue to the south, Clinton Avenue to the east, Vanderbilt Avenue to the west, and multiple-family residential buildings to the north.

Site Features: The site occupies two tax lots (Lot 1 and Lot 59) forming an L-shaped area of about 23,080 square feet that faces Atlantic Avenue. The site is currently vacant. It was formerly occupied by three automotive related businesses, two restaurants and a tile shop. A partial cellar under Lot 1 contains two empty, above-ground 275-gallon tanks. An exterior patio area is located on the southeastern portion of the property.

Current Zoning and Land Use: The site is located in an R7A residential district with a C2-4 commercial overlay, within an Inclusionary Housing Designated Area. It was used for commercial purposes and is now vacant.

Past Use of the Site: The western lot (Lot 1) was previously developed with residential and retail buildings. Past uses included a plumber/carpenter shop (1887-1950) and an automotive service facility (1938-1969). A car wash was present by 1977 and was in use until 2018.

The eastern lot (Lot 59), along Atlantic Avenue, housed commercial tenants beginning in the 1930s. These included a paint and oil company, auto repair facilities, and a gas station. By the 1940s, the lot was occupied by three auto repair facilities, and the gas station, which remained until 1979. A bar and restaurant occupied the eastern portion of the lot along Clinton Avenue from 2010 to 2018.

A set of six underground petroleum storage tanks were removed from the site in 2004 in the area of the former gas station. At that time, the soil was sampled and no exceedances were noted. The area was filled with clean material.

Site Geology and Hydrogeology: The site's subsurface consists of a layer of historic fill material beneath the surface cover that extends to depths between 5 and 24 feet below ground surface (bgs). The fill consists of fine to medium sand with variable amounts of gravel, silt, clay, brick, concrete, and glass fragments. Below the fill is a layer of sand, then a gravel layer to approximately 35 feet bgs. Native soil, consisting of fine to medium sand, is found below the gravel. The area bedrock is of the Hartland formation, and is comprised of interbedded granulite, schist and amphibolite.

Bedrock was not encountered during the investigation.

Depth to groundwater is approximately 65 feet bgs. During the RI, an area of perched groundwater was found in the western part of the site at 30 feet bgs. Groundwater beneath the site was expected to flow to the west toward the East River, about 1.5 miles away. However, based on the data collected, groundwater flow is to the southwest toward Atlantic Avenue.

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 Applicants under the Brownfield Cleanup Agreement are Volunteers. The Applicants do 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. Off-site contamination will be addressed under the Department's Oil Spill Response and Remediation program if 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
- indoor air
- sub-slab vapor

### 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:

| | |
|---|---|
| lead | toluene |
| benzene | xylene |
| ethylbenzene | 1,2,4-trimethylbenzene |

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

- soil
- groundwater

## 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: Preliminary sampling was conducted in 2015 and 2016. The Remedial Investigation results from 2018 are described below:

Soil and groundwater were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), metals, polychlorinated biphenyls (PCBs), and pesticides. Groundwater was also analyzed for the emerging contaminants per- and polyfluoroalkyl substances (PFAS) and 1,4-dioxane. Soil vapor was analyzed for VOCs.

Soil- The primary contaminants in soil at this site are metals and petroleum-related volatile organic compounds. Lead, barium and mercury exceed the restricted residential soil cleanup objectives (RRSCOs). Mercury (maximum concentration of 1.21 parts per million (ppm) compared to 0.81 ppm) and barium (maximum 459 ppm compared to 400 ppm) slightly exceed the RRSCOs in spots and are located at depths between 2 and 8 feet. Lead in soil ranges up to 2,570 ppm and is located at depths between 2 and 12 feet. The RRSCO for lead is 400 ppm.

Volatile organic compounds were detected in soil between 30 and 38 feet in depth in the area of the former gas station. 1,2,4 trimethylbenzene (42-98 ppm) and xylene (41-110 ppm) exceeded the protection of groundwater SCOs (3.6 ppm and 1.6 ppm respectively) and the RRSCOs (42 and 100 ppm respectively). Data does not indicate any off-site soil impacts related to this site.

Groundwater- Groundwater was located at approximately 65 feet bgs. Groundwater on-site flows southwest toward Atlantic Avenue. Groundwater samples at the site contained trimethylbenzenes (up to 2,167 parts per billion (ppb)) and 1,768 ppb of BTEX (benzene, toluene, ethylbenzene and xylene) in one of the wells in the former gas station area. The groundwater standards for these compounds are 5 ppb, except for benzene, which is 1 ppb.

PFAS were sampled in four wells associated with the site. Perfluorooctanesulfonic acid (PFOS) was identified in two wells near the western portion of the site; the highest level was 150 parts per trillion (ppt) and was identified in the off-site side-gradient well. Perfluorooctanoic acid (PFOA) was detected in three wells; the highest level was 40 ppt in the off-site well. The highest total PFAS concentration in the three on-site wells was 214 ppt; the off-site well was 783 ppt.

Soil Vapor- Soil vapor samples indicated the presence of BTEX compounds in soil vapor near the northwest corner of the site (7,277 micrograms per cubic meter (µg/m3)) and in the southeast corner of the site (9,324 µg/m3).

For chlorinated compounds, tetrachloroethylene (PCE) was detected at concentrations ranging from 0.72 µg/m3 to 360 µg/m3. Methylene chloride was detected at concentrations ranging from 1 µg/m3 to 82 µg/m3 and trichloroethene (TCE) was detected at concentrations ranging from 0.072 µg/m3 to 99 µg/m3.

Sub-slab vapor and Indoor Air – A soil vapor intrusion investigation was conducted at the on-site buildings. Four co-located sub-slab soil vapor and indoor air samples were collected from the vacant tenant spaces. PCE concentrations in the sub-slab vapor samples ranged from 0.58 µg/m3 to 87 µg/m3 and TCE concentrations in the sub-slab ranged from non-detect (ND) to 1 µg/m. Corresponding indoor air samples detected PCE at concentrations ranging from ND to 7µg/m3 and TCE at concentrations ranging from ND to 3.1 µg/m3, which is above the NYSDOH air guidance value of 2.0 µg/m3 for TCE.

To determine if off-site soil vapor impacts exist, the volunteer requested access for off-site soil vapor intrusion sampling at adjacent properties and was not able to obtain access.

### 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.*

Direct contact with contaminants in the soil is unlikely because the majority of the site is covered with buildings and pavement. Persons who dig below the ground surface may come into contact with contaminants in subsurface soil. Contaminated groundwater at the site is not used for drinking or other purposes and the site is served by a public water supply that obtains water from a different source not affected by this contamination. Volatile organic compounds may move into the soil vapor (air spaces within the soil), which in turn may move into overlying 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. The inhalation of site-related contaminants due to soil vapor intrusion does not represent a current concern because the site is vacant. The potential exists for people to inhale site contaminants in indoor air due to soil vapor intrusion in the event the site is re-occupied. The potential for soil vapor intrusion exists for off-site structures and should be evaluated in the event that access is granted.

### 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.

**Groundwater**

**RAOs for Public Health Protection**

- Prevent ingestion of groundwater containing contaminant levels exceeding drinking water standards.
- Prevent contact with, or inhalation of, volatiles emanating 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 groundwater 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 contamination.

**Soil Vapor**

- 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 4: Restricted use with generic soil cleanup objectives remedy.

The selected remedy is referred to as the Excavation, In-Situ Activated Carbon Treatment and Soil Vapor Extraction (SVE) remedy.

If, within five years, the SVE system has successfully achieved the RAO for source area soil and the in-situ groundwater remedy is successful in meeting the RAOs for groundwater, as indicated by soil vapor sampling results from the SVE system and eight quarters of groundwater sampling data, respectively, the remedy will have achieved a Track 2 – restricted residential use cleanup.

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;
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1. 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:

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This plan includes, but may not be limited to:

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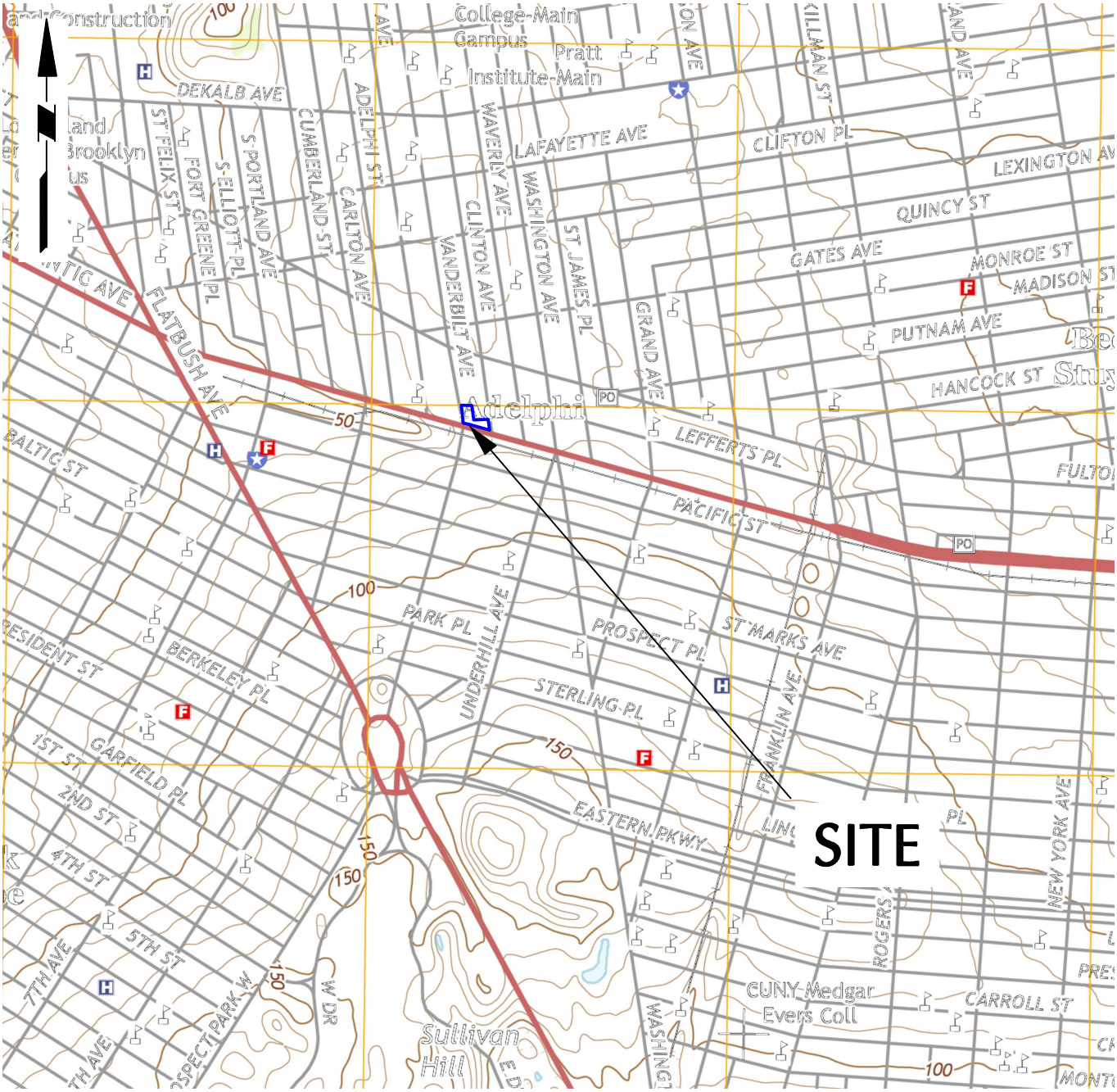
- a provision for evaluation of the potential for soil vapor intrusion for any occupied buildings on the site, including provision for implementing actions recommended to address exposures related to soil vapor intrusion;
- a provision that should the owners of properties, where sampling was previously declined, request to have their properties sampled in the future, the NYSDEC, in consultation with the NYSDOH, shall assess the need for soil vapor intrusion sampling and take appropriate action under a separate program;
- 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.

2. a Monitoring Plan to assess the performance and effectiveness of the remedy. The plan includes, but may not be limited to:
    - monitoring of soil vapor and groundwater 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, as may be required by the Institutional and Engineering Control Plan discussed above.

3. an Operation and Maintenance (O&M) Plan to ensure continued operation, maintenance, optimization, monitoring, inspection, and reporting of any mechanical or physical components of the remedy. The plan includes, but is not limited to:
    - procedures for operating and maintaining the remedy;
    - compliance monitoring of treatment systems to ensure proper O&M as well as providing the data for any necessary permit or permit equivalent reporting;

- maintaining site access controls and Department notification; and
- providing the Department access to the site and O&M records.




**NOTE:**

1. BASEMAP FROM USGS BROOKLYN, N.Y. 7.5 MINUTE SERIES TOPOGRAPHICAL QUADRANGLE MAP, DATED 2016.


**LANGAN**

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Langan Engineering, Environmental, Surveying and Landscape Architecture, D.P.C. S.A.
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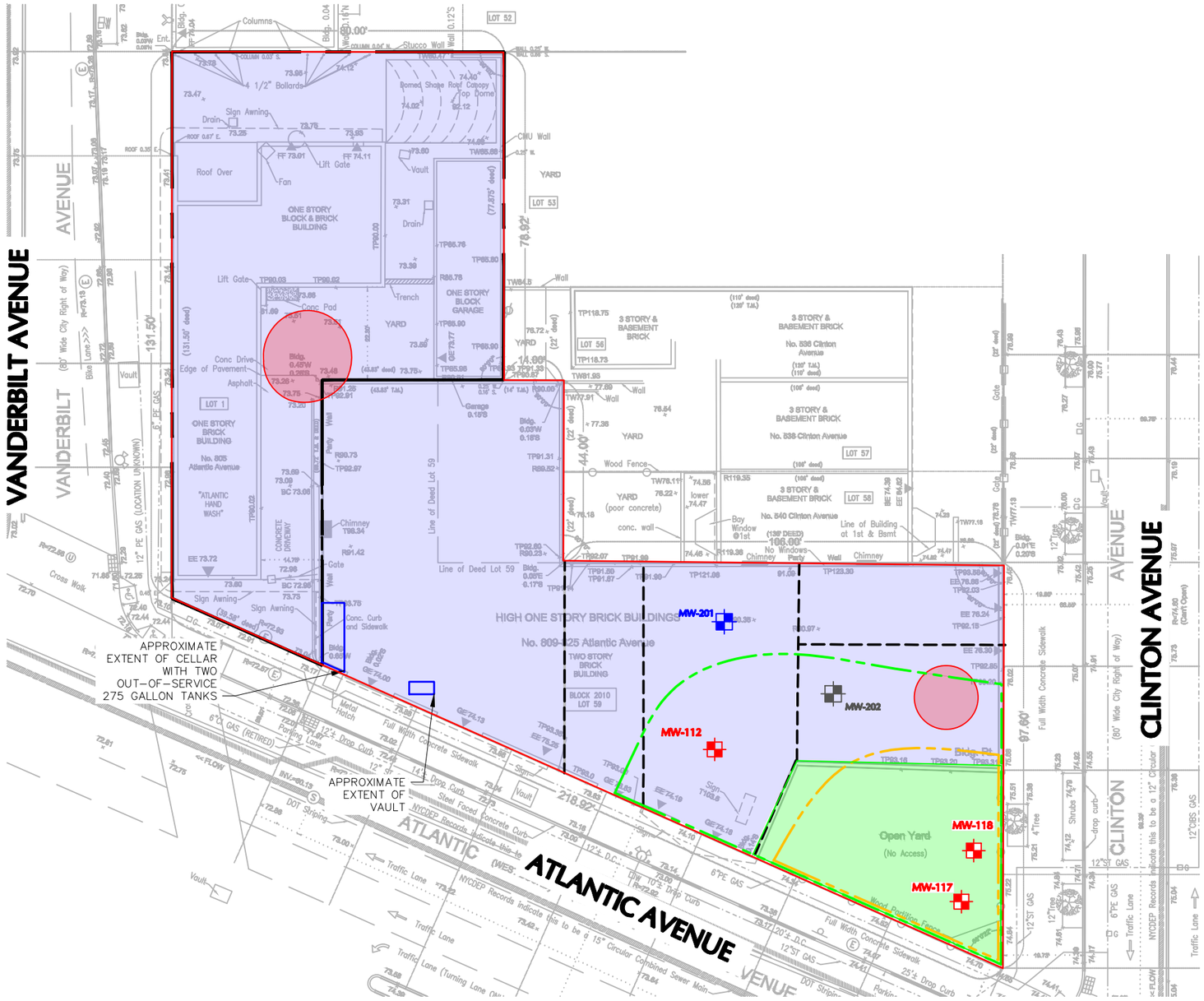
| Project | 805-825 ATLANTIC AVENUE<br>BLOCK No. 2010, LOT Nos. 1 & 59<br>BROOKLYN NEW YORK |
| Figure Title | SITE LOCATION MAP |
| Project No. | 170384501 |
| Figure No. | 1 |
| Date | 04/24/2018 |
| Scale | NTS |
| Drawn By | TM |
| Checked By | KDC |
| Submission Date | |
| Sheet | 1 of 14 |



Filename: \\langan.com\data\NYC\data5\170384501\Cadd Data - 170384501\SheetFiles\RAWP\FIGURE1 SITE LOC.dwg Date: 1/7/2019 Time: 09:30 User: jyanowitz Style Table: Langan.stb Layout: ANSIA-BP



**NOTES:**

1. THE BASE MAP IS TAKEN FROM ARCHITECTURAL SURVEY OF DESCRIBED PROPERTY AT: BOROUGH OF BROOKLYN, COUNTY OF KINGS, CITY AND STATE OF NEW YORK, TAX DESIGNATION: BLOCK 2010 LOT 1, APRIL 10, 2015. SURVEY BY NEW YORK CITY LAND SURVEYORS, PC, STATEN ISLAND, NEW YORK.
2. LOCATION AND EXTENT OF LEAD DELINEATION AREA IS APPROXIMATE. HAZARDOUS-LEAD HOTSPOTS TO BE DELINEATED DURING FORTHCOMING WASTE CHARACTERIZATION.
3. ELEVATIONS SHOWN ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).
4. APPROXIMATELY 2,700 CY OF SOIL WILL BE EXCAVATED TO ACHIEVE TRACK 4 SITE SPECIFIC SCOs. EXCAVATION INCLUDES: THE TOP TWO FEET OF SOIL THROUGHOUT THE SITE, LEAD HOTSPOTS, AND NUISANCE-CONDITION PETROLEUM CONTAMINATED SOIL.
5. ABOUT 11,900 CY OF SOIL/HISTORIC FILL WILL BE EXCAVATED TO ACCOMMODATE SUPPORT OF EXCAVATION INSTALLATION, AND FOUNDATION CONSTRUCTION.
6. RESIDUAL PETROLEUM-IMPACTED SOIL BENEATH THE DEVELOPMENT DEPTH WILL BE REMEDIATED VIA A SOIL VAPOR EXTRACTION (SVE) SYSTEM. RESIDUAL PETROLEUM- IMPACTED GROUNDWATER WILL BE REMEDIATED VIA IN-SITU TREATMENT TECHNOLOGIES.
7. MONITORING WELL MW-201 WAS INSTALLED ON DECEMBER 14 AND 15, 2018 FOR DELINEATION AND SUPPLEMENTAL GROUNDWATER SAMPLING FOR REMEDIAL FEASIBILITY STUDY. MW-202 WILL BE INSTALLED UPON DEMOLITION OF THE EXISTING SITE STRUCTURE.
8. BCP = BROWNFIELD CLEANUP PROGRAM
9. SCO = SOIL CLEANUP OBJECTIVE
10. BGS = BELOW GRADE SURFACE
11. VOC = VOLATILE ORGANIC COMPOUND

**LEGEND:**

| | |
|---|---|
| ━━━ | SITE BOUNDARY |
| — — — | TENANT PARTITION |
| —·—·— | BOUNDARY OF SOUTHEASTERN IN-SITU GROUNDWATER TREATMENT AREA (ESTIMATED) (ABOUT 2,200 CY) |
| — — — | APPROXIMATE SVE TREATMENT AREA (ABOUT 1,667 CY) |
| 🟦 | APPROXIMATE AREA OF EXCAVATION FOR TRACK 4 CLEANUP |
| 🟩 | APPROXIMATE AREA OF EXCAVATION FOR NUISANCE-CONDITION PETROLEUM CONTAMINATION CLEANUP |
| ● | APPROXIMATE AREA OF HAZARDOUS-LEAD IMPACTED EXCAVATION |
| MW-201 ⊞ | MONITORING WELL LOCATION |
| MW-202 ⊞ | PROPOSED MONITORING WELL LOCATION |
| MW-112 ⊞ | MONITORING WELL LOCATION WITH ELEVATED VOC CONCENTRATIONS |

**WARNING:** IT IS A VIOLATION OF THE NYS EDUCATION LAW ARTICLE 145 FOR ANY PERSON, UNLESS HE IS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS ITEM IN ANY WAY.

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Project
805-825 ATLANTIC AVENUE
BLOCK No. 2010, LOT Nos. 1 & 59
BROOKLYN
KINGS COUNTY NEW YORK

Figure Title
ALTERNATIVE II - TRACK 4 CLEANUP PLAN

Project No. 170384501
Date 7/19/2019
Drawn By CMA
Checked By KDC

Figure No.
2
Sheet 11 of 14

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