

# DECISION DOCUMENT

---

Former A&A Brake Service Site  
Brownfield Cleanup Program  
Brooklyn, Kings County  
Site No. C224372  
May 2024



**Department of  
Environmental  
Conservation**

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

# DECLARATION STATEMENT - DECISION DOCUMENT

---

Former A&A Brake Service Site  
Brownfield Cleanup Program  
Brooklyn, Kings County  
Site No. C224372  
May 2024

## **Statement of Purpose and Basis**

This document presents the remedy for the Former A&A Brake Service 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 (NYSDEC) for the Former A&A Brake Service site and the public's input to the proposed remedy presented by NYSDEC.

## **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 shall be constructed, at a minimum, to meet the 2020 Energy Conservation Construction Code of New York (or most recent edition) to improve energy efficiency as an element of construction.

As part of the remedial design program, to evaluate the remedy with respect to green and sustainable remediation principles, an environmental footprint analysis will be completed. The environmental footprint analysis will be completed using an accepted environmental footprint analysis calculator such as SEFA (Spreadsheets for Environmental Footprint Analysis, USEPA), SiteWise™ (available in the Sustainable Remediation Forum [SURF] library) or similar NYSDEC accepted tool. Water consumption, greenhouse gas emissions, renewable and non-renewable energy use, waste reduction and material use will be estimated, and goals for the project related to these green and sustainable remediation metrics, as well as for minimizing community impacts, protecting habitats and natural and cultural resources, and promoting environmental justice, will be incorporated into the remedial design program, as appropriate. The project design specifications will include detailed requirements to achieve the green and sustainable remediation goals. Further, progress with respect to green and sustainable remediation metrics will be tracked during implementation of the remedial action and reported in the Final Engineering Report (FER), including a comparison to the goals established during the remedial design program.

Additionally, the remedial design program will include a climate change vulnerability assessment, to evaluate the impact of climate change on the project site and the proposed remedy. Potential vulnerabilities associated with extreme weather events (e.g., hurricanes, lightning, heat stress and drought), flooding, and sea level rise will be identified, and the remedial design program will incorporate measures to minimize the impact of climate change on potential identified vulnerabilities.

## 2. Excavation:

The existing on-site building will be demolished and materials which cannot 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:

- grossly contaminated soil, as defined in 6 NYCRR Part 375-1.2(u);
- soil with visual waste material or non-aqueous phase liquid;
- 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.

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

Approximately 800 cubic yards of contaminated soil will be removed from the site. Collection and analysis of confirmation samples at the remedial excavation depth will be used to verify that SCOs for the site have been achieved. If confirmation sampling indicates that SCOs were not achieved at the stated remedial depth, the Applicant must notify NYSDEC, submit the sample results and, and in consultation with NYSDEC, determine if further remedial excavation is necessary. Further excavation for development will proceed after confirmation samples demonstrate that SCOs for the site have been achieved.

To ensure proper handling and disposal of excavated material, waste characterization sampling will be completed for all identified contaminated site material. Waste characterization sampling will be performed exclusively for the purposes of off-site disposal in a manner suitable to receiving facilities and in conformance with applicable federal, state and local laws, rules, and regulations and facility-specific permits.

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

### 3. Backfill:

On-site soil which does not exceed the above excavation criteria may be used below the cover system described in remedial element four 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 replace the excavated soil or 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. Groundwater Remedy: In-Situ Chemical Oxidation

In-situ chemical oxidation (ISCO) will be implemented to treat petroleum related VOCs in groundwater. Alkaline activated persulfate will be injected into the subsurface to destroy the contaminants in an approximately 4,500 square foot area where petroleum related volatile organic

compounds were elevated in the groundwater via shallow injection wells.

Prior to the full implementation of this technology, laboratory and on-site pilot scale studies will be conducted to define design parameters more clearly. Monitoring will be conducted for contaminants of concern upgradient, downgradient and within the treatment zone.

#### 6. Vapor Mitigation

Any on-site buildings will be required to have an active sub-slab depressurization system, or other acceptable measures, to mitigate the migration of vapors into the building from the subsurface.

#### 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 NYSDEC 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 NYCDOHMH; and
- require compliance with the NYSDEC 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 Remedy Element 7 above.
  - Engineering Controls: The soil cover discussed in Remedy Element 4, and the sub-slab depressurization system discussed in Remedy Element 6 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 that should a building foundation or building slab be removed in the future, a

cover system consistent with that described in Paragraph 4 above will be placed in any areas where the upper two feet of exposed surface soil exceed the applicable soil cleanup objectives (SCOs)

- 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;
  - a schedule of monitoring and frequency of submittals to the NYSDEC;
- c. 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 NYSDEC notification; and
  - providing the NYSDEC 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 NYSDEC guidance, as appropriate. The remedy is protective of public health and the environment.

May 20, 2024

Date



Scott Deyette, Director  
Remedial Bureau B

# DECISION DOCUMENT

Former A&A Brake Service Site  
Brooklyn, Kings County  
Site No. C224372  
May 2024

---

## **SECTION 1: SUMMARY AND PURPOSE**

The New York State Department of Environmental Conservation (NYSDEC), 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.

NYSDEC 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**

NYSDEC 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 NYSDEC 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=C224372>

Brooklyn Public Library - Pacific Branch  
25 4th Avenue at Pacific Street  
Brooklyn, NY 11217  
Phone: 718-638-1531

Brooklyn Community Board 6  
250 Baltic Street  
Brooklyn, NY 11201  
Phone: 718-643-3027

### **Receive Site Citizen Participation Information By Email**

Please note that NYSDEC'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**

**Site Location:** The A&A Brake Service site is a 0.147-acre (6,400 square foot) property located in the urban area of the Borough of Brooklyn, Kings County, NY and is designated as Block 433, Lot 14 on the NYC Tax Map. The Gowanus Canal, a USEPA National Priorities List (NPL) site, is located approximately 300 feet west of the site. The site is located on the south side of Sackett Street, between Nevins Street (to the west) and 3rd Avenue (to the east).

**Site Features:** The site is 0.147 acres in size and was improved with a 2-story, slab-on-grade, brick warehouse/garage building and a 1-story brick warehouse building. The buildings were demolished in July 2023 and site is currently vacant.

**Current Zoning and Land Use:** The site is located within a manufacturing and residential zoning district (M1-4 and R6A).

**Past Site Use:** The site was first developed as early as the late 1800s when the site was divided into three small tax parcels fronting along Sackett Street. Each of the parcels was developed with a low-rise residential or retail building occupying approximately half of their respective lots, with several small outbuildings also present. By the late 1930s, the eastern parcel was redeveloped with a one-story building occupying the entire parcel footprint and identified as a private garage. By 1950, the center parcel was developed with a two-story building occupying the entire parcel footprint and identified as a private garage. The eastern building was identified as an auto repair shop. The residence on the western lot was demolished in the mid- to late-1960s, with the center and eastern buildings both identified as auto repair shops. The lots were merged into the current single lot 14 during the 1960's. Between the early and mid-1980s, the western and central parcels were merged and redeveloped into a single two-story building identified as a warehouse. By 1988, this structure was identified as an auto repair shop.

**Site Geology and Hydrogeology:** The site is underlain by urban fill generally consisting of brown silty sand with gravel and brick fragments from surface grade to approximately 10 feet below grade surface (bgs). The urban fill layer is underlain by a potential native layer consisting of brown to



gray to black sand with varying amounts of gravel and silt sediments, an organic meadow mat/peat layer is observed at depths ranging from 10 to 14 ft bgs.

The depth to groundwater is approximately 8-9 ft bgs and flows to the northwest toward the Gowanus Canal.

A site location map is attached as Figure 1 and a site plan is attached as Figure 2.

#### **SECTION 4: LAND USE AND PHYSICAL SETTING**

NYSDEC 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 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, NYSDEC 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

#### **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. NYSDEC 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 for this Operable Unit at this site is/are:

1,2,4-trimethylbenzene	benzo(k)fluoranthene
1,3,5-trimethylbenzene	chrysene
benzene	indeno(1,2,3-cd)pyrene
ethylbenzene	Perfluorooctanoic acid (PFOA)
n-propylbenzene	lead
xylene	mercury
benzo(a)anthracene	trichloroethene (TCE)
benzo(a)pyrene	tetrachloroethene (PCE)
benzo(b)fluoranthene	2,2,4-trimethylpentane

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.

### Nature and Extent of Contamination:

Soil and groundwater samples were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), metals, pesticides, polychlorinated biphenyls (PCBs), per- and polyfluoroalkyl substances (PFAS), and pesticides. Soil vapor samples were analyzed for VOCs. Based upon investigations conducted to date, the primary contaminants of concern include petroleum related VOCs, SVOCs in soil and groundwater, and chlorinated VOCs in soil vapor.

Soil - VOCs, SVOCs, and metals were compared against the Restricted Residential Soil Cleanup Objectives (RRSCOs) and/or Protection of Groundwater Soil Cleanup Objective (PGSCOs). VOCs, primarily petroleum related, were found in soils across the site including 1,2,4-trimethylbenzene at 360 parts-per million (ppm) (RRSCO: 47 ppm & PGSCO: 3.6 ppm), 1,3,5-trimethylbenzene at 87 ppm (RRSCO: 47 ppm & PGSCO: 8.4 ppm), benzene at 0.23 ppm (PGSCOs: 0.06 ppm), ethylbenzene at 54 ppm (RRSCO: 4.8 ppm), n-propylbenzene at 100 ppm (RRSCO: 100 ppm, PGSCOs: 3.9 ppm), and xylenes at 130 ppm (RRSCO: 100 ppm). SVOCs were found in soils across the site including benzo(a)anthracene at 15 ppm (RRSCO/PGSCO: 1 ppm), benzo(a)pyrene at 14 ppm (RRSCO: 1 ppm), benzo(b)fluoranthene at 14 ppm (RRSCO: 1 ppm & PGSCOs: 1.7 ppm), benzo(k)fluoranthene at 4.3 ppm (RRSCO: 1 ppm & PGSCOs: 1.7 ppm), chrysene at 14 ppm (RRSCO & PGSCOs: 1 ppm), dibenz(a,h)anthracene at 1.7 ppm (RRSCO: 0.33 ppm), and indeno(1,2,3-cd)pyrene at 8.3 ppm (RRSCO/PGSCO: 0.5 ppm). Metals were detected in soils including arsenic at 26.5 ppm (RRSCO: 16 ppm), barium at 481 ppm (RRSCO: 400 ppm), copper at 3,080 ppm (RRSCO: 270 ppm), lead at 2,080 ppm (RRSCO: 400 ppm), mercury at 12.2 ppm (RRSCO: 0.81 ppm), and nickel at 423 ppm (RRSCO: 1 ppm), selenium at 4.67 ppm (PGSCO: 4 ppm). Perfluorooctanoic acid (PFOA) was found in soils above the protection of groundwater guidance value at 1.09 parts per billion (ppb) (PGSCO: 0.08 ppb) and perfluorooctanesulfonic acid (PFOS) at 1.04 ppb (PGSCO: 1.0 ppb).

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

Groundwater - VOCs, SVOCs and metals compared against the NYSDEC Ambient Water Quality Standards and Guidance Values (AWQSGVs). VOCs, primarily petroleum related, were found in groundwater at the site including 1,2,4,5-tetramethylbenzene at 17 ppb (AWQSGV: 5 ppb), 1,3,5-

trimethylbenzene at 620 ppb (AWQSGV: 5 ppb), 1,2-dichloroethane at 17 ppb (AWQSGV: 5 ppb), benzene at 8.8 ppb (AWQSGV : 1 ppb), isopropyl benzene at 15 ppb (AWQSGV: 5 ppb), and n-propylbenzene at 12 ppb (AWQSGV: 5 ppb). SVOCs were found in groundwater including benzo(a)anthracene at 0.02 ppb (AWQSGV: 0.002 ppb), benzo(b)fluoranthene at 0.02 ppb (AWQSGV: 0.002 ppb), benzo(k)fluoranthene at 0.02 ppb (AWQSGV: 0.002 ppb), chrysene at 0.01 ppb (AWQSGV: 0.002 ppb), and indeno(1,2,3-cd)pyrene at 0.05 ppb (AWQSGV: 0.002 ppb). PFOA was detected at a maximum concentration of 105 parts per trillion, or ppt (AWQSGV: 6.7 ppt).

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

Soil Vapor - Sub slab soil vapor had elevated chlorinated VOCs including cis-1,2-dichloroethene at 4.4 micrograms per cubic meter (ug/m<sup>3</sup>), trichloroethene at 145 ug/m<sup>3</sup>, methylene chloride at 69.5 ug/m<sup>3</sup>, tetrachloroethene at 313 ug/m<sup>3</sup>, and vinyl chloride at 82.6 ug/m<sup>3</sup>. Other VOCs detected in sub-slab and soil vapor include acetone at 969 ug/m<sup>3</sup>, 2,2,4-trimethylpentane at 2,220 ug/m<sup>3</sup>, cyclohexane at 70.2 ug/m<sup>3</sup>, ethylbenzene at 25.2 ug/m<sup>3</sup>, n-heptane at 82.8 ug/m<sup>3</sup>, and toluene at 77.6 ug/m<sup>3</sup>.

Data does not indicate any off-site impacts in soil vapor related to the 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 covered by asphalt, sidewalk, or building foundation and people will not come in 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 affected by this 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. The site is vacant so inhalation of site contaminants in indoor air via vapor intrusion is not a current concern. However, the potential exists for inhalation of site contaminants due to soil vapor intrusion for any future on-site development. Environmental sampling indicates soil vapor intrusion from site contamination is not a concern for off-site buildings.

#### **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**

- Prevent the discharge of contaminants to surface water.
- 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 to contaminants volatilizing from 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 4: Restricted use with generic soil cleanup objectives remedy.

The selected remedy is referred to as the Excavation, In-situ Chemical Oxidation and Vapor Mitigation remedy.

The elements of the selected remedy, as shown in Figures 3 through 6, 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 shall be constructed, at a minimum, to meet the 2020 Energy Conservation Construction Code of New York (or most recent edition) to improve energy efficiency as an element of construction.

As part of the remedial design program, to evaluate the remedy with respect to green and sustainable remediation principles, an environmental footprint analysis will be completed. The environmental footprint analysis will be completed using an accepted environmental footprint analysis calculator such as SEFA (Spreadsheets for Environmental Footprint Analysis, USEPA), SiteWise™ (available in the Sustainable Remediation Forum [SURF] library) or similar NYSDEC accepted tool. Water consumption, greenhouse gas emissions, renewable and non-renewable energy use, waste reduction and material use will be estimated, and goals for the project related to these green and sustainable remediation metrics, as well as for minimizing community impacts, protecting habitats and natural and cultural resources, and promoting environmental justice, will be incorporated into the remedial design program, as appropriate. The project design specifications will include detailed requirements to achieve the green and sustainable remediation goals. Further, progress with respect to green and sustainable remediation metrics will be tracked during implementation of the remedial action and reported in the Final Engineering Report (FER), including a comparison to the goals established during the remedial design program.

Additionally, the remedial design program will include a climate change vulnerability assessment, to evaluate the impact of climate change on the project site and the proposed remedy. Potential vulnerabilities associated with extreme weather events (e.g., hurricanes, lightning, heat stress and drought), flooding, and sea level rise will be identified, and the remedial design program will incorporate measures to minimize the impact of climate change on potential identified vulnerabilities.

## 2. Excavation:

The existing on-site building will be demolished and materials which cannot 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:

- grossly contaminated soil, as defined in 6 NYCRR Part 375-1.2(u);
- soil with visual waste material or non-aqueous phase liquid;
- 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.

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

Approximately 800 cubic yards of contaminated soil will be removed from the site. Collection and analysis of confirmation samples at the remedial excavation depth will be used to verify that SCOs for the site have been achieved. If confirmation sampling indicates that SCOs were not achieved at the stated remedial depth, the Applicant must notify NYSDEC, submit the sample results and, and in consultation with NYSDEC, determine if further remedial excavation is necessary. Further excavation for development will proceed after confirmation samples demonstrate that SCOs for the site have been achieved.

To ensure proper handling and disposal of excavated material, waste characterization sampling will be completed for all identified contaminated site material. Waste characterization sampling will be performed exclusively for the purposes of off-site disposal in a manner suitable to receiving facilities and in conformance with applicable federal, state and local laws, rules, and regulations and facility-specific permits.

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

## 3. Backfill:

On-site soil which does not exceed the above excavation criteria may be used below the cover system described in remedial element four 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 replace the excavated soil or 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. Groundwater Remedy: In-Situ Chemical Oxidation

In-situ chemical oxidation (ISCO) will be implemented to treat petroleum related VOCs in groundwater. Alkaline activated persulfate will be injected into the subsurface to destroy the contaminants in an approximately 4,500 square foot area where petroleum related volatile organic compounds were elevated in the groundwater via shallow injection wells.

6. Vapor Mitigation

Any on-site buildings will be required to have an active sub-slab depressurization system, or other acceptable measures, to mitigate the migration of vapors into the building from the subsurface.

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 NYSDEC 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 NYCDOHMH; and
- require compliance with the NYSDEC approved Site Management Plan.

8. Site Management Plan:

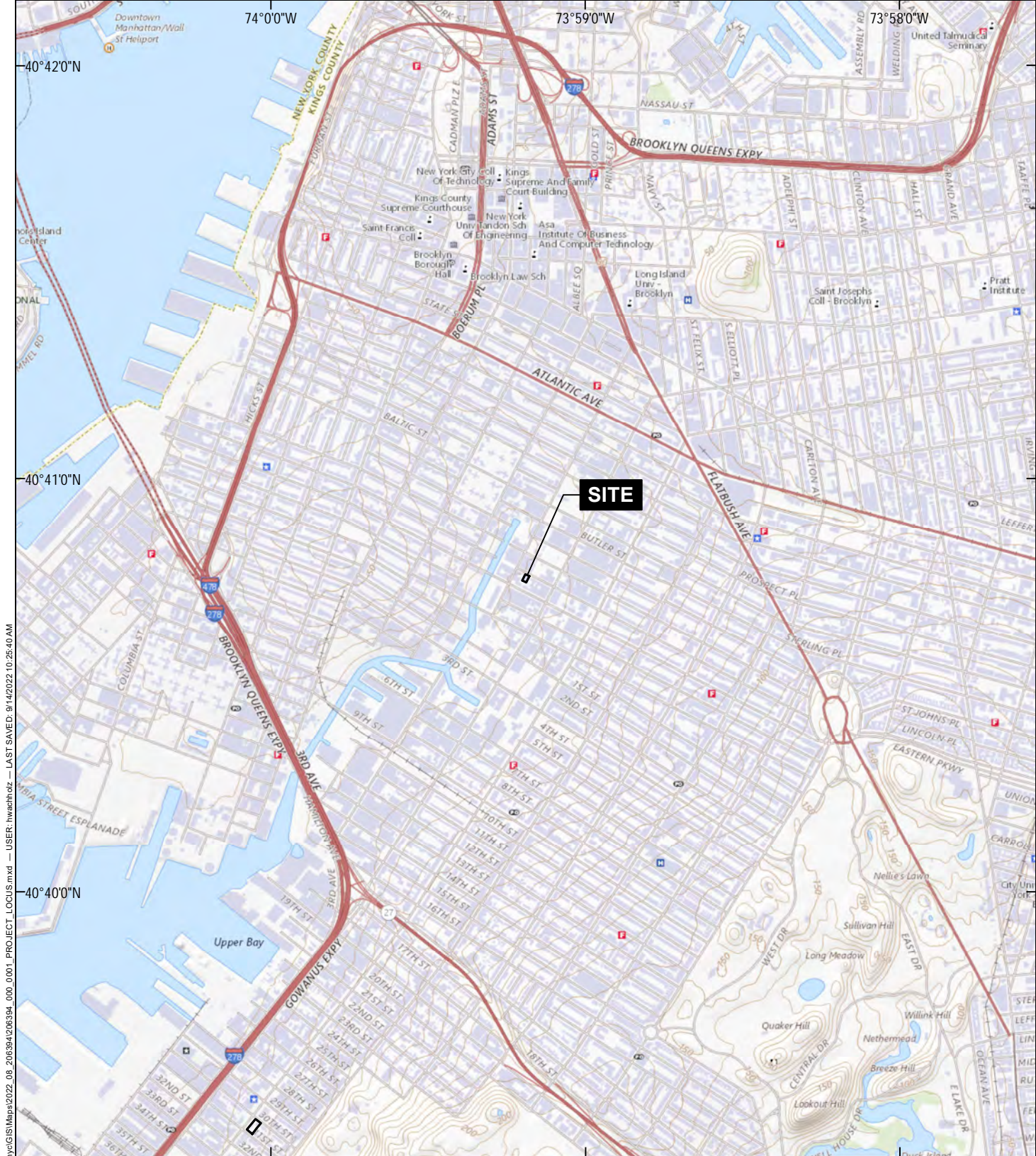
A Site Management Plan is required, which includes the following:



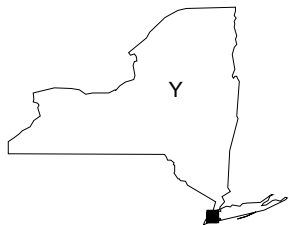
- a. an Institutional and Engineering Control Plan that identifies all use restrictions and engineering controls for the site and details the steps and media-specific requirements necessary to ensure the following institutional and/or engineering controls remain in place and effective:
  - Institutional Controls: The Environmental Easement discussed in Remedy Element 7 above.
  - Engineering Controls: The soil cover discussed in Remedy Element 4, and the sub-slab depressurization system discussed in Remedy Element 6 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 that should a building foundation or building slab be removed in the future, a cover system consistent with that described in Paragraph 4 above will be placed in any areas where the upper two feet of exposed surface soil exceed the applicable soil cleanup objectives (SCOs)
  - 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;
    - a schedule of monitoring and frequency of submittals to the NYSDEC;
  - c. 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 NYSDEC notification; and
    - providing the NYSDEC access to the site and O&M records.



GIS FILE PATH: \\haleyaldrich.com\harc\CFGroups\tyc\GIS\Maps\2022\_08\_20\3941206394\_000\_0001\_PROJECT\_LOCUS.mxd — USER: hwahloz — LAST SAVED: 9/14/2022 10:25:40 AM



MAP SOURCE: USGS  
SITE COORDINATES: 40°40'45"N, 73°59'10"W

**HALEY  
ALDRICH**

558 SACKETT STREET  
BROOKLYN, NEW YORK

## PROJECT LOCUS

APPROXIMATE SCALE: 1 IN = 2000 FT  
MARCH 2024



FIGURE 1



GIS FILE PATH: \\haleyaldrich.com\share\CF\Projects\0201577\GIS\Maps\2022\_08\_206394\206394\_000\_0002\_SITE\_PLAN.mxd — USER: hwachholz — LAST SAVED: 8/23/2022 3:49:50 PM

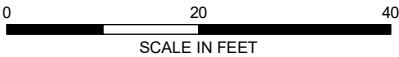


LEGEND

-  PARCEL BOUNDARY
-  SITE BOUNDARY

NOTES

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
2. ASSESSOR PARCEL DATA SOURCE: NYC DEPARTMENT OF CITY PLANNING
3. AERIAL IMAGERY SOURCE: ESRI



**HALEY  
ALDRICH**

558 SACKETT STREET  
BROOKLYN, NEW YORK

SITE PLAN

MARCH 2024

FIGURE 2



GIS FILE PATH: \\haleyaldrich.com\share\CF\Projects\0201577\GIS\Maps\2022\_08\_206394\206394\_000\_0002\_SITE\_PLAN.mxd — USER: hwachholz — LAST SAVED: 8/23/2022 3:49:50 PM

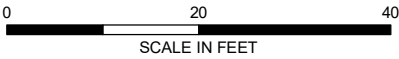


LEGEND

- PARCEL BOUNDARY
- SITE BOUNDARY
- EXCAVATION TO 2 FT BGS
- EXCAVATION TO 14 FT BGS
- EXCAVATION TO 12 FT BGS
- EXCAVATION TO 10 FT BGS
- EXCAVATION TO 7 FT BGS
- GROUNDWATER TREATMENT AREA
- PROPOSED BUILDING OUTLINE UNDERLAIN BY VAPOR BARRIER (GREEN REMEDIAL ELEMENT) AND ACTIVE SUB-SLAB VAPOR DEPRESSURIZATION SYSTEM

NOTES

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
2. ASSESSOR PARCEL DATA SOURCE: NYC DEPARTMENT OF CITY PLANNING
3. AERIAL IMAGERY SOURCE: ESRI
4. BGS = BELOW GROUND SURFACE
5. SHOULD CONFIRMATION SAMPLES NOT ACHIEVE APPLICABLE SCOS EXCAVATIONS MAY EXPAND
6. SB-4 EXCAVATION EXTENT ASSUMED APPROXIMATELY 10X10 FT BUT WILL BE EVALUATED BASED ON OBSERVATION OF CONTAMINATION IN FIELD AND SUBJECT TO CHANGE
7. PROPOSED GROUNDWATER REMEDY INJECTION POINTS WILL HAVE APPROXIMATELY A 10 FT RADIUS OF INFLUENCE FOR APPLICATION OF ALKALINE ACTIVATED PERSULFATE



HALEY  
ALDRICH

558 SACKETT STREET  
BROOKLYN, NEW YORK

ALTERNATIVE I REMEDY

MARCH 2024






FIGURE 3



GIS FILE PATH: \\haleyaldrich.com\share\CF\Projects\0201577\GIS\Maps\2022\_08\_206394\206394\_000\_0002\_SITE\_PLAN.mxd — USER: hwachholz — LAST SAVED: 8/23/2022 3:49:50 PM

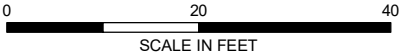


LEGEND

-  PARCEL BOUNDARY
-  SITE BOUNDARY
-  CONCEPTUAL SUB-SLAB HORIZONTAL PIPING NETWORK
-  RISER EXTENDING FROM SUB-SLAB TO BUILDING ROOF
-  POTENTIAL SUB-SLAB VAPOR MONITORING POINT

NOTES

1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
2. ASSESSOR PARCEL DATA SOURCE: NYC DEPARTMENT OF CITY PLANNING
3. AERIAL IMAGERY SOURCE: ESRI



HALEY  
ALDRICH

558 SACKETT STREET  
BROOKLYN, NEW YORK

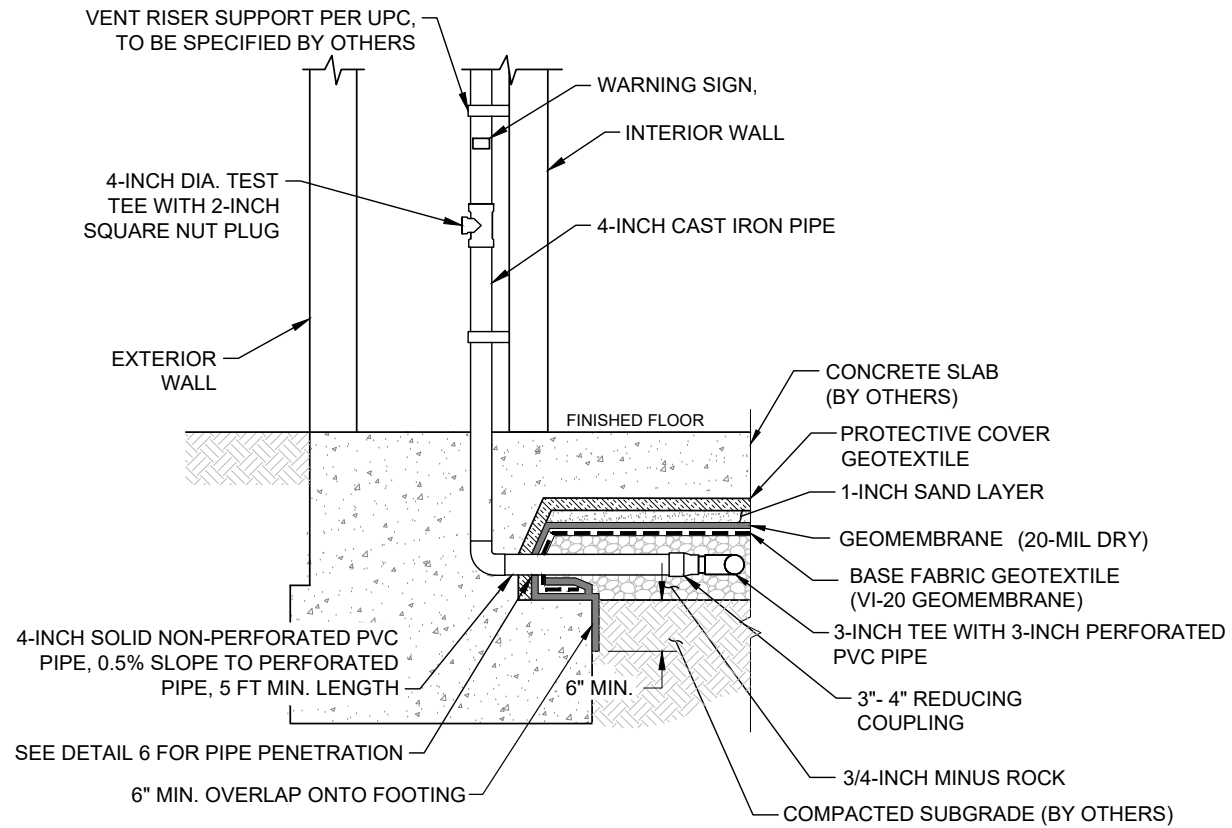
ALTERNATIVE I CONCEPTUAL ACTIVE  
SSDS PLAN

MARCH 2024

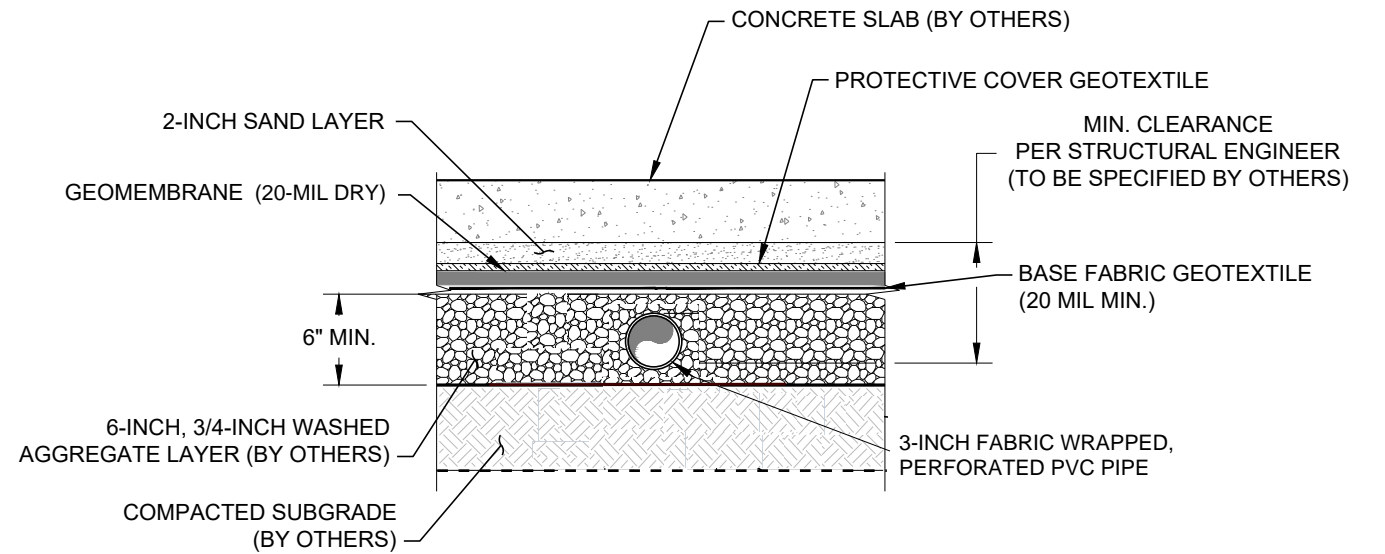
FIGURE 4



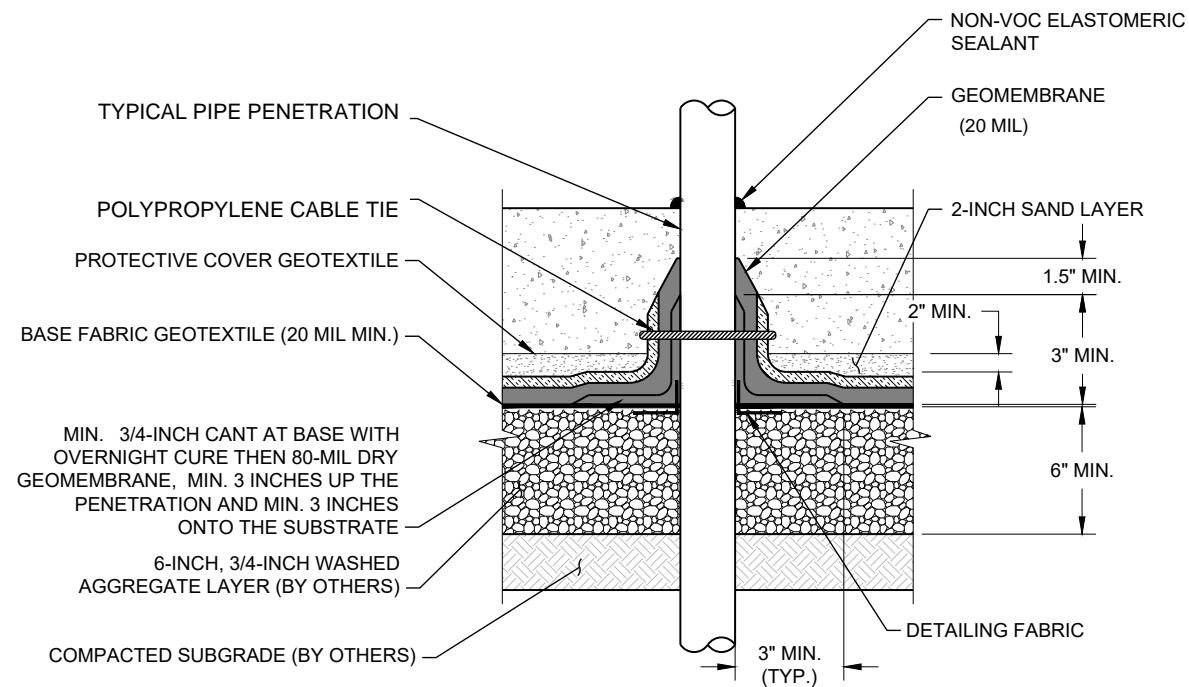
GIS FILE PATH: \\haleyaldrich.com\share\CFR\Projects\0201577\GIS\Maps\2022\_03\_20\4642202164\_001\_0002\_SITE\_PLAN.mxd — USER: hwachholz — LAST SAVED: 3/28/2022 3:32:12 PM



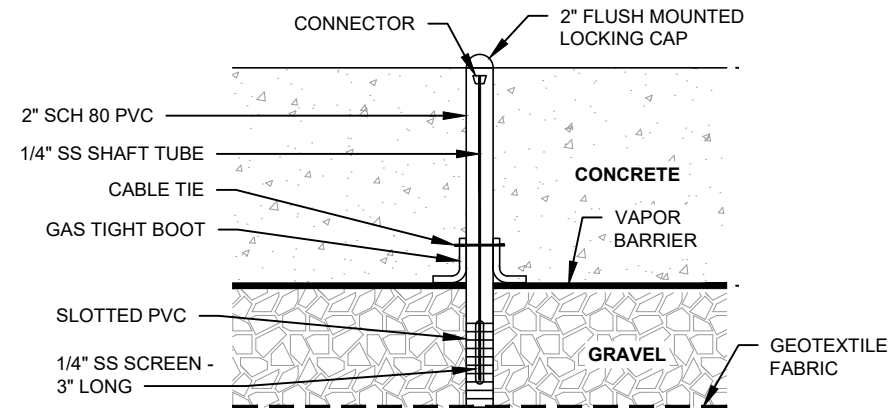
**TYPICAL SSDS RISER  
CONNECTION POINT**



**TYPICAL SSDS PIPING DETAIL**



**TYPICAL VAPOR BARRIER  
PENETRATING DETAILS**



**TYPICAL VAPOR MONITORING  
POINT DETAIL**

**HALEY  
ALDRICH** 558 SACKETT STREET  
BROOKLYN, NEW YORK

**TYPICAL SSDS DESIGN DETAILS**

MARCH 2024


FIGURE 5





GIS FILE PATH: \\haleyaldrich.com\share\CF\Projects\0201577\GIS\Maps\2023\_08\_20\6384\206384\_000\_00MB\_RIR\_FIGURES.mxd — USER: khansen — LAST SAVED: 8/16/2023 11:56:55 AM



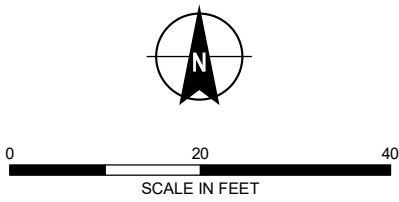
**LEGEND**

 MONITORING WELL

 PARCEL BOUNDARY

 SITE BOUNDARY

- NOTES**
1. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE.
  2. EMERGING CONTAMINANTS ANALYTICAL RESULTS COMPARED TO THE NYSDEC FEBRUARY 2023 GUIDANCE VALUES (NYSDEC GV) FOR PFOA, PFOS, AND 1,4-DIOXANE.
  3. RESULTS ARE DISPLAYED IN NANOGRAMS PER LITER (ng/L).
  4. ONLY EXCEEDANCES SHOWN ON FIGURE.
  5. ASSESSOR PARCEL DATA SOURCE: NYC DEPARTMENT OF CITY PLANNING
  6. AERIAL IMAGERY SOURCE: NEARMAP, 19 JULY 2022



558 SACKETT STREET  
BROOKLYN, NEW YORK

POST REMEDIAL GROUNDWATER  
MONITORING WELL LOCATION  
PLAN

MARCH 2024

FIGURE 6