DECISION DOCUMENT

538-544 Hudson Street
Brownfield Cleanup Program
New York, New York County
Site No. C231097
January 2018

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

DECLARATION STATEMENT - DECISION DOCUMENT

538-544 Hudson Street
Brownfield Cleanup Program
New York, New York County
Site No. C231097
January 2018

Statement of Purpose and Basis

This document presents the remedy for the 538-544 Hudson Street site, a brownfield cleanup site. The remedial program was chosen in accordance with the New York State Environmental Conservation Law and Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York (6 NYCRR) Part 375.

This decision is based on the Administrative Record of the New York State Department of Environmental Conservation (the Department) for the 538-544 Hudson Street site and the public's input to the proposed remedy presented by the Department.

Description of Selected Remedy

The elements of the selected remedy are as follows:

1. Remedial Design

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

- Considering the environmental impacts of treatment technologies and remedy stewardship over the long term;
- Reducing direct and indirect greenhouse gases and other emissions;
- Increasing energy efficiency and minimizing use of non-renewable energy;
- Conserving and efficiently managing resources and materials;
- Reducing waste, increasing recycling and increasing reuse of materials which would otherwise be considered a waste;
- Maximizing habitat value and creating habitat when possible;
- Fostering green and healthy communities and working landscapes which balance ecological, economic and social goals; and
- Integrating the remedy with the end use where possible and encouraging green and sustainable re-development.
- Additionally, any future on-site buildings will include, at a minimum, a 20-mil water/vapor barrier to improve energy efficiency as an element of construction.

2. Excavation

The existing on-site building on Lot 1 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. The existing on-site building on Lot 4 may be demolished contingent upon NYC Landmarks Preservation Commission's approval.

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

All soil to a depth of 16 feet on Lot 1, and to a minimum depth between 2 and 5 feet on Lot 4 will be excavated and transported off-site for disposal. Approximately 3,800 cubic yards of contaminated soil will be removed from the site.

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.

The site will be re-graded to accommodate installation of a cover system as described in remedy element 4.

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. In-Situ Chemical Oxidation

In-situ chemical oxidation (ISCO) will be implemented to treat volatile organic compounds in groundwater. A chemical oxidant will be injected into the subsurface to destroy the contaminants in the eastern portion of Lot 4 and southern portion of Lot 1 where chlorinated solvents were elevated in the groundwater. The method and depth of injection will be determined during the remedial design.

6. 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.

7. 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 7 above.
    - Engineering Controls: The cover system discussed in Paragraph 4.

    This plan includes, but may not be limited to:
    - 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 restrictions;
    - a provision for evaluation of the potential for soil vapor intrusion for any 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:
    - monitoring of groundwater to assess the performance and effectiveness of the remedy;
    - a schedule of monitoring and frequency of submittals to the Department; and
    - monitoring for vapor intrusion for any existing or future buildings on the site, as may be required by the Institutional and Engineering Control Plan discussed above.

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.

January 23, 2018

Date

Gerard Burke, Director
Remedial Bureau B

DECISION DOCUMENT

538-544 Hudson Street
New York, New York County
Site No. C231097
December 2017

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:

Hudson Park Library
66 Leroy Street
New York, NY 10014
Phone: 212-243-6876

Manhattan Community Board 2
3 Washington Square Village, #1A
New York, NY 10012
Phone: 212-979-2272

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, Voluntary 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, approximately 0.184 acres, is located in an urban area at 538-544 Hudson Street in the West Village neighborhood of Manhattan, New York. The site is situated on the northeast corner of the intersection of Hudson Street and Charles Street. The site is bound by multiple-story mixed used residential and commercial buildings to the north and east, Charles Street to the south, and Hudson Street to the west.

Site Features: The site consists of two paved tax parcels. Lot 1 consists of a parking lot with a one-story storage building on the eastern part of the site and an abandoned gasoline dispenser on the western part of the lot. Lot 4 consists of a two-story office building with a cellar. The 1-story building on Lot 1 and the lowest level of the building on Lot 4 are being used storage.

Current Zoning and Land Use: The site zoned C1-6 for commercial use, but the area surrounding the site is predominately residential in character. Surrounding properties consist of 3- to 5-story mixed use residential and commercial buildings. The site is not e-designated by NYC and is currently being used for storage and maintenance staff locker room for William Gottlieb Real Estate. The current use of both buildings is storage; but he two upper floors of the building on Lot 4 are vacant.

Past Use of the Site: Lot 1 (538 Hudson Street) was formerly used as a gasoline filling station from 1950 until at least 1988, and an automobile repair facility from 1950 to at least 1969. Lot 4 (544 Hudson Street) was improved with the existing two-story building with a cellar occupied by an auto repair facility from 1950 to at least 1969, now used for storage with no full-time occupants.

Site Geology and Hydrogeology: Soil at the site is urban land, which is characterized by soils that were greatly altered by humans, along with the presence of fill. No exposed or shallow bedrock is present at the site, and the approximate depth to the groundwater table is approximately 26 feet bgs. The soils are generally characterized as well-graded sands with well-graded granules and fine pebbles. Groundwater flow direction is towards the west.

A site location map is attached as Figure 1.

SECTION 4: LAND USE AND PHYSICAL SETTING

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

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

SECTION 5: ENFORCEMENT STATUS

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

SECTION 6: SITE CONTAMINATION

6.1: Summary of the Remedial Investigation

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

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

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

The analytical data collected on this site includes data for:

- groundwater
- soil
- soil vapor

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:

benzo(a)anthracene
benzo(a)pyrene
chrysene
benzo(b)fluoranthene
benzo[k]fluoranthene
dibenz[a,h]anthracene
indeno(1,2,3-CD)pyrene
manganese
sodium
antimony
tetrachloroethene (PCE)
trichloroethene (TCE)
dichloroethene (cis-1,2-)
dieldrin
chlordane
lead
mercury
cadmium
barium

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 were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), metals, polychlorinated biphenyls (PCBs), and pesticides. Soil vapor was analyzed for VOCs. Based upon investigations conducted to date, the primary contaminants of concern include SVOCs and metals in soil as well as chlorinated VOCs in groundwater and soil vapor.

Soil - SVOCs found in shallow soil across the site with some detections in deeper intervals at selected locations. SVOCs were detected in concentrations exceeding soil cleanup objectives (SCOs) for restricted residential use, presented in parenthesis, for benzo(a)anthracene up to 43 ppm (1 ppm), benzo(a)pyrene up to 10.2 ppb (1 ppb), benzo(b)fluoranthene up to 11.2 ppm (1 ppm), benzo(k)fluoranthene up to 13.5 ppm (3.9 ppm), chrysene up to 39.2 ppm (3.9 ppm), dibenzo(a,h)anthracene up to 2.21 ppm (0.33 ppm), and indeno(1,2,3-cd)pyrene up to 4.22 ppm (0.5 ppm). Metals were detected in concentrations exceeding SCOs for restricted residential use in parenthesis for lead up to 3,930 ppm (400 ppm), mercury up to 4.45 ppm (0.81 ppm), cadmium up to 7.49 ppm (4.3 ppm), and barium up to 463 ppm (400 ppm). Data does not indicate any off-site impacts in soil related to this site. Other contaminant classes, such as VOCs, pesticides/herbicides, and PCBs were not detected above their respective Unrestricted Use SCOs.

Groundwater - Tetrachloroethene (PCE) was found up to 25 ppb (standard of 5 ppb) found in groundwater at the northeast and southwest portions of the site. Trichloroethene (TCE) and cis-dichloroethene (cis-1,2-DCE) were detected at 8.1 ppb and 7 ppb respectively along the southwestern property line (standard of 5 ppb for both). Two SVOCs were detected in groundwater samples and included benzo(a)anthracene up to 0.056 ppb (standard of 0.002 ppb) and chrysene up to 0.088 ppb (standard of 0.002 ppb). Dissolved metals were detected in groundwater samples and included manganese up to 1,020 ppb (standard of 300 ppb), sodium up to 317,000 ppb (standard of 20,000 ppb), and antimony up to 8 ppb (standard of 3 ppb). Two pesticides were detected and included chlordane (total) up to 0.085 ppb (standard of 0.05 ppb) and dieldrin up to 0.0049 ppb (standard of 0.004 ppb). Data does not indicate any off-site impacts in groundwater related to this site. Other contaminant classes, such as PCBs, were not detected above their respective AWQS.

Soil Vapor - PCE was detected in soil vapor at concentrations up to 150 micrograms per cubic meter. Petroleum related contaminants were also detected in the soil vapor samples with the highest detection being 2-butanone at 1,600 micrograms per cubic meter. Data does not indicate any off-site impacts in soil vapor related to this site.

Although none were encountered during the remedial investigation underground storage tanks (USTs), fuel dispensers, underground piping or other structures associated with a source of contamination may exist.

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*.

People may contact contaminated soil or groundwater if they dig below the ground surface. 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 in the groundwater 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 potential exists for people to inhale site contaminants in indoor air due to soil vapor intrusion within the on-site buildings. Access to conduct the recommend sampling within the on-site structures has been denied by the property owner. Environmental sampling indicates soil vapor intrusion 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

- Restore ground water aquifer to pre-disposal/pre-release conditions, to the extent practicable.
- Prevent the discharge of contaminants to surface water.

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 4: Restricted use with site-specific soil cleanup objectives remedy. The selected remedy is referred to as the Excavation, ISCO, and Cover System 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;

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- Integrating the remedy with the end use where possible and encouraging green and sustainable re-development.
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- 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);
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- require compliance with the Department approved Site Management Plan.

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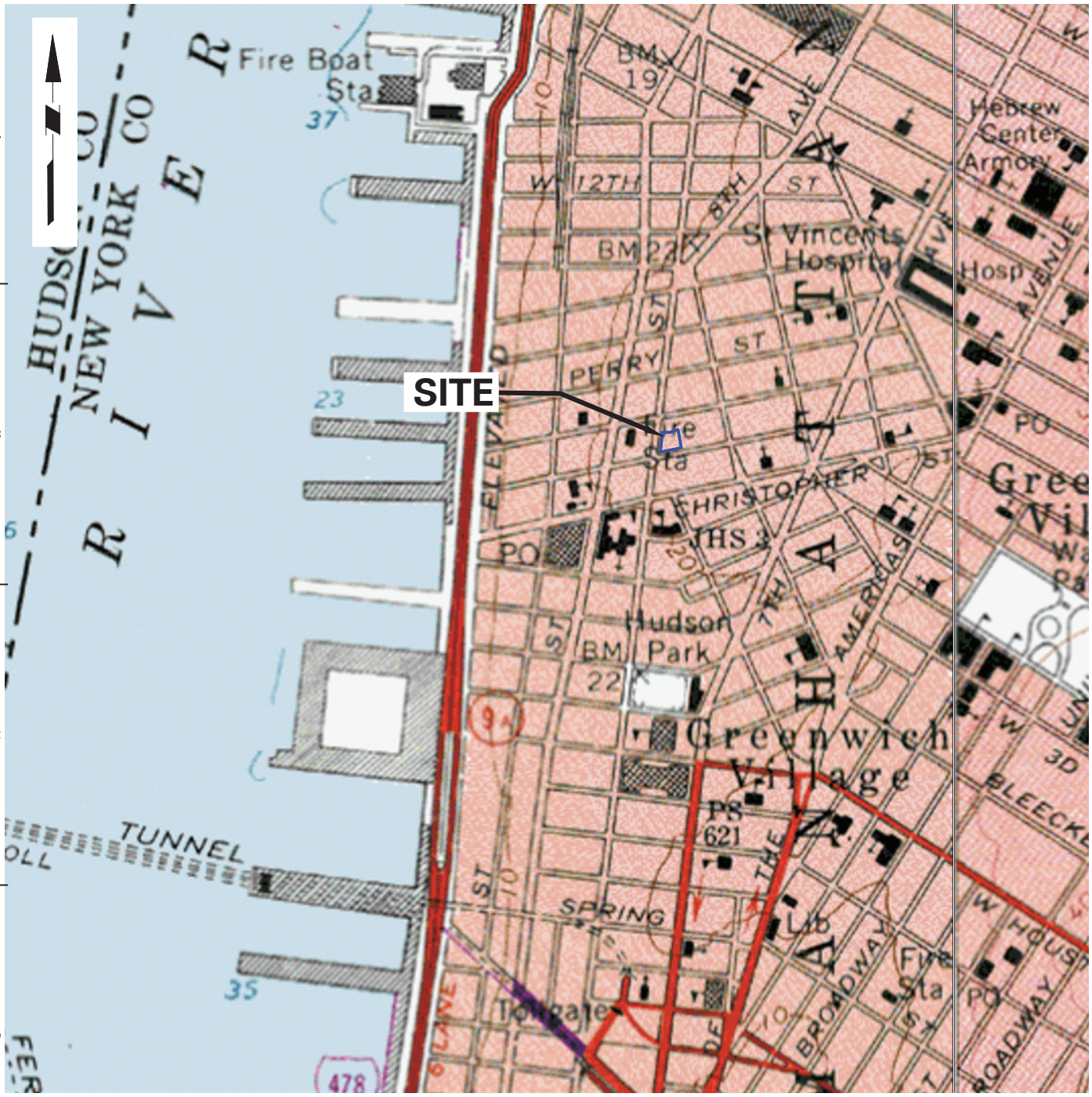
a. an Institutional and Engineering Control Plan that identifies all use restrictions and engineering controls for the site and details the steps and media-specific requirements necessary to ensure the following institutional and/or engineering controls remain in place and effective:

   - Institutional Controls: The Environmental Easement discussed in Paragraph 7 above.
   - Engineering Controls: The cover system discussed in Paragraph 4.

   This plan includes, but may not be limited to:
   - 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 restrictions;
   - a provision for evaluation of the potential for soil vapor intrusion for any 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:
   - monitoring of groundwater to assess the performance and effectiveness of the remedy;
   - a schedule of monitoring and frequency of submittals to the Department; and
   - monitoring for vapor intrusion for any existing or future buildings on the site, as may be required by the Institutional and Engineering Control Plan discussed above.



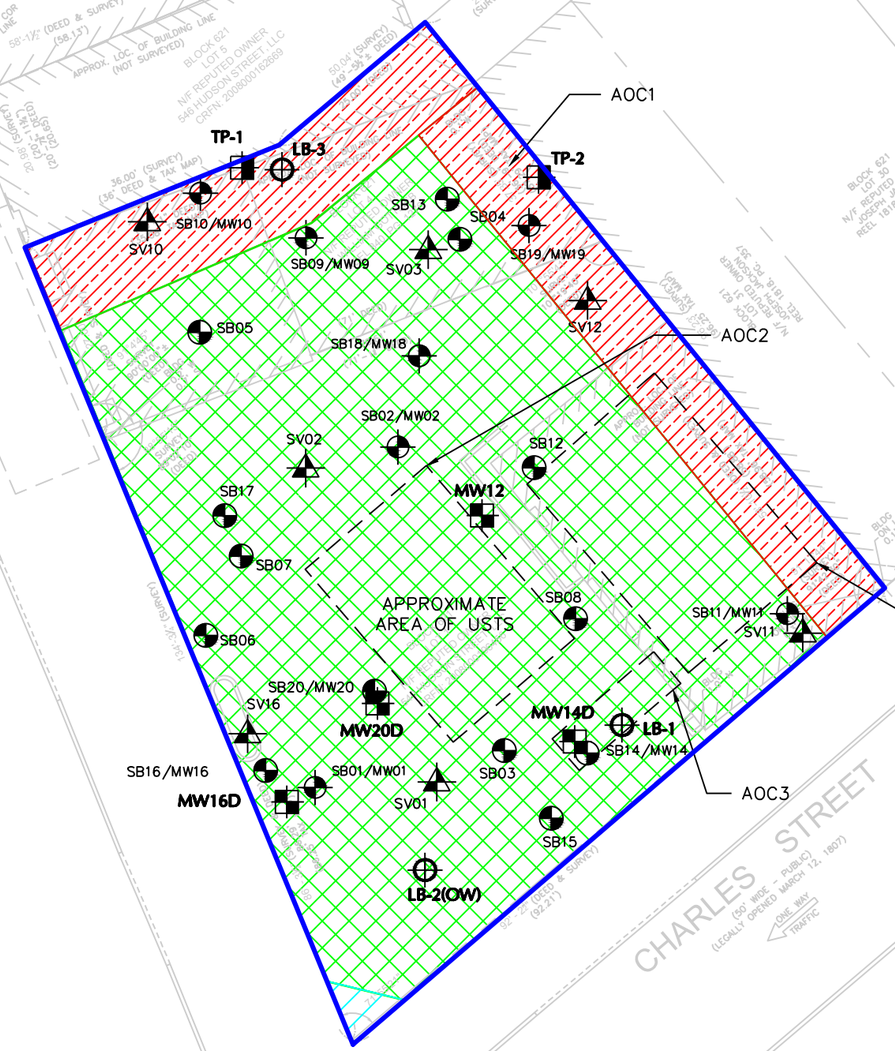
LEGEND

SITE BOUNDARY

NOTES

1. MAP REFERENCE: USGS 7.5-MINUTE JERSEY CITY, N.J., TOPOGRAPHIC QUADRANGLE, DATED 1967, REVISED 1981

	Project **538-544 HUDSON STREET** BLOCK No. 621, LOT Nos. 1 and 4 NEW YORK NEW YORK	Figure Title **SITE LOCATION MAP**		Figure **1** Sheet 1 of 12



LEGEND

- APPROXIMATE BCP SITE BOUNDARY
- SB09/MW09 — ENVIRONMENTAL SOIL BORING AND MONITORING WELL LOCATION (LANGAN, APRIL 2015)
- SB17 — ENVIRONMENTAL SOIL BORING LOCATION (LANGAN, APRIL 2015)
- SV12 — SOIL VAPOR SAMPLING POINT LOCATION (LANGAN, APRIL 2015)
- TP-1 — GEOTECH TEST PIT LOCATION (LANGAN, JANUARY 2016)
- LB-3 — GEOTECH BORING LOCATION (LANGAN, JANUARY 2016)
- SB09/MW09 — ENVIRONMENTAL SOIL BORING AND MONITORING WELL LOCATION (LANGAN, MAY 2016)
- SB17 — ENVIRONMENTAL SOIL BORING LOCATION (LANGAN, MAY 2016)
- SV12 — SOIL VAPOR SAMPLING POINT LOCATION (LANGAN, MAY 2016)
- MW12 — MONITORING WELL LOCATION (LANGAN, MAY 2016)
- EXCAVATION TO EL 21 FEET (ABOUT 2 FEET BGS)
- EXCAVATION TO EL 11 to 13 FEET (ABOUT 10 TO 12 FEET BGS)
- EXCAVATION TO EL 1 FEET (ABOUT 22 FEET BGS)

NOTES

1. BASE MAP TAKEN FROM GSG SURVEY, DATED MARCH 2016
2. ELEVATIONS BASED ON NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).
3. BGS = BELOW GRADE SURFACE
4. AOC = AREA OF CONCERN
5. AOC 1 REPRESENTS SPILL NO. 1501318
6. AOC 2 REPRESENTS DECOMMISSIONED GASOLINE USTS (11) ON LOT 1
7. AOC 3 REPRESENTS A DECOMMISSIONED WASTE OIL UST ON LOT 1
   AOC 4 REPRESENTS DECOMMISSIONED HYDRAULIC LIFTS AND ASSOCIATED RESERVOIRS ON LOT 1
9. AOC 5, AOC 6 AND AOC 7 ARE SITE–WIDE AREAS OF CONCERN
10. IF DEMOLITION IS APPROVED FOR LOT 4, THIS LOT WILL BE EXCAVATED ABOUT 12 FEET (TO EL 11 FEET) TO ALLOW FOR CONSTRUCTION OF A NEW BUILDING WITH A CELLAR.
11. BCP = BROWNFIELD CLEANUP PROGRAM

20 0 5 10 20
SCALE IN FEET

	Project	Figure Title		Figure No.
	538-544 HUDSON STREET **BLOCK No. 621, LOT Nos. 1 AND 4** **NEW YORK** **NEW YORK** **NEW YORK**	**REMEDIAL EXCAVATION**		**2**