DECISION DOCUMENT

Former Getty Service Station No. 00564
Brownfield Cleanup Program
Brooklyn, Kings County
Site No. C224176
February 2015

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

DECLARATION STATEMENT - DECISION DOCUMENT

Former Getty Service Station No. 00564
Brownfield Cleanup Program
Brooklyn, Kings County
Site No. C224176
February 2015

Statement of Purpose and Basis

This document presents the remedy for the Former Getty Service Station No. 00564 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 Former Getty Service Station No. 00564 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.

2. Excavation
Excavation of soil/fill exceeding the lower of Track 2 restricted residential use or the applicable

protection of groundwater SCOs to a depth up to 15 feet below grade, including contaminant source areas and grossly contaminated soil as defined in 6 NYCRR part 375-1.2(u). Approximately 4,300 cubic yards of soil will be removed from the site. Clean fill meeting the requirements of 6 NYCRR Part 375-6.7(d) will be brought in to replace the excavated soil and establish the designed grades at the site.

3. Soil Vapor Extraction (SVE)
Soil vapor extraction (SVE) will be implemented to remove contamination from the subsurface soil, below the limits of the excavation called for in item 2, in the area of the former tank field and hot spot areas where the concentration of gasoline-related compounds exceed the protection of groundwater SCOs and also exceed groundwater standards. Volatile Organic Compounds (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. The number and location of the SVE wells will be determined during the design phase.

4. In-Situ Chemical Oxidation
In-situ chemical oxidation (ISCO) will be implemented to treat contaminants in groundwater. A chemical oxidant, sodium persulfate, will be injected into the subsurface via injection wells, placed into the groundwater, to destroy the contaminants in an approximately 3,600-square foot area located in the southern portion of the site, where gasoline-related compounds are at elevated concentrations in the groundwater. The depth of injection will be determined during the remedial design.

5. Institutional Control
Imposition of an institutional control in the form of an environmental easement for the controlled property that:
- requires 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);
- allows the use and development of the controlled property for restricted residential, commercial and industrial uses as defined by Part 375-1.8(g), although land use is subject to local zoning laws;
- restricts the use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by the NYSDOH or City DOH; and
- requires compliance with the Department approved Site Management Plan.

6. Site Management Plan
A Site Management Plan is required, which includes the following:
a. an Institutional and Engineering Control Plan that identifies all use restrictions and engineering controls for the site and details the steps and media-specific requirements necessary to ensure the following institutional and/or engineering controls remain in place and effective:
Institutional Controls: The Environmental Easement discussed in Paragraph 5 above.
Engineering Controls: The ISCO injections discussed in paragraph 4 and the SVE discussed in paragraph 3 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;
- a provision for evaluation of the potential for soil vapor intrusion for any buildings developed 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;
- monitoring for vapor intrusion for any buildings developed 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.

February 11, 2015

Date

Robert Cozzy, Director
Remedial Bureau B

DECISION DOCUMENT

Former Getty Service Station No. 00564
Brooklyn, Kings County
Site No. C224176
February 2015

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 repository:

Brooklyn Public Library
Macon Branch
361 Lewis Avenue
Brooklyn, NY 11233
Phone: 718-573-5606

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 is located in the Bedford Stuyvesant section of Brooklyn (Kings County) and has 75 feet of frontage on DeKalb Avenue and 150 feet of frontage on Malcom X Boulevard. The site is surrounded by multi-story apartments with first-floor commercial units to the south and east, by an active Getty Petroleum Marketing, Inc. (GPMI) gas station across Malcolm X Boulevard to the west and by a commercial building to the northeast and a commercial parking lot to the north.

Site Features: The site is comprised of two (2) tax parcels, Block 1600 Lots 1 and 28 totaling approximately 0.218 acres and is currently vacant.

Current Zoning and Land Use(s): The current zoning is C4-4L for commercial use. Prior to demolition, the site was most recently used as an auto repair and vehicle storage yard.

Past Use of the Site: The site was formerly used as a gas station and auto service station.

Site Geology and Hydrogeology: The bedrock in this area of Brooklyn is an igneous intrusive type classified as Ravenswood granodiorite of middle Ordovician to middle Cambrian age. Unconsolidated sediments overlie the bedrock and consist of Pleistocene-aged sand, gravel and silty clays, deposited by glacial-fluvial activity. These subsurface soils consist of a mixture of silty non-native fill, fine to coarse sand and sandy silt to a depth of approximately 10 feet below grade followed by sandy-clay to a depth of approximately 15 feet below grade. Medium to coarse grained gravelly sands exist to a depth of at least 50 feet below grade.

Groundwater is present under water table conditions at a depth of approximately 46 feet below the surface and flows in a westerly direction.

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(s) under the Brownfield Cleanup Agreement is a/are Volunteer(s). The Applicant(s) does/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.

SECTION 6: SITE CONTAMINATION

6.1: Summary of the Remedial Investigation

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

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

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

The analytical data collected on this site includes data for:

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

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:

Petroleum Products	ETHYLBENZENE
TETRACHLOROETHYLENE (PCE)	NAPHTHALENE
TRICHLOROETHENE (TCE)	BENZO(A)PYRENE
XYLENE (MIXED)	BENZ(A)ANTHRACENE
1,2,4-TRIMETHYLBENZENE	BENZO(B)FLUORANTHENE
1,3,5-Trimethylbenzene	LEAD
N-PROPYLBENZENE	CHROMIUM

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

- groundwater
- soil
- soil vapor intrusion

6.2: Interim Remedial Measures

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

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

6.3: Summary of Environmental Assessment

This section summarizes the assessment of existing and potential future environmental impacts presented by the site. Environmental impacts may include existing and potential future exposure pathways to fish and wildlife receptors, wetlands, groundwater resources, and surface water. The RI report presents a detailed discussion of any existing and potential impacts from the site to fish and wildlife receptors.

Nature and Extent of Contamination:
Activities completed under the Phase II investigation and the Remedial Investigation included installation and sampling of soil borings, groundwater monitoring wells and soil vapor probes. Based on these investigations, the primary contaminants of concern include both petroleum related and chlorinated volatile organic compounds (VOCs).

Soil - The results of the investigations revealed elevated petroleum-related VOCs in five of the samples with total VOCs ranging from 1.1 ppm at 0-2 ft-bgs to 635 ppm at 45-47 ft-bgs. Xylenes, 1,2,4-trimethylbenzene, and 1,3,5-trimethylbenzene were all reported above restricted residential use SCOs (RRUSCOs); n-propylbenzene, ethylbenzene and naphthalene were at concentrations exceeding unrestricted use SCOs (UUSCOs). There was only one detection of a chlorinated VOC (CVOC) namely trichloroethylene (TCE) and it was at a concentration below its UUSCO. In addition the SVOCs benzo(a)pyrene, benz(a)anthracene, benzo(b)fluoranthene, and metals including lead and chromium were also detected at concentrations in soil samples above RRUSCOs. Site contamination does not extend off-site based on the available data.

Groundwater - Petroleum-related VOCs were detected in six of ten groundwater samples. Total BTEX concentrations ranged from 28.7 ppb to 1,500 ppb. CVOCs, including tetrachloroethene (PCE) and TCE were reported above groundwater standards in four of the ten samples respectively with a total maximum concentration of 35.1 ppb; TCE ranged from 14 to 29 ppb and PCE ranged from 0.41 to 8 ppb. This CVOC contamination is related to the past use of the site as an auto service center and repair shop. Benzo(a)anthracene and other SVOCs were also found at levels exceeding SCGs. No pesticides or PCBs were detected in any of the groundwater samples collected on-site. No site-related metals were detected in filtered groundwater samples collected on-site above their SCG. However, certain naturally-occurring metals (e.g., iron, manganese and sodium) were detected above drinking water standards.Site-related groundwater contamination does not extend off-site.

Soil vapor - Multiple VOCs were detected in each of the soil vapor samples as well as the ambient air sample. BTEX concentrations ranged from 1.66 ug/m3 in the ambient air sample to 1,219 ug/m3 in soil vapor adjacent to the existing tank field. CVOCs were reported in five of the six soil vapor/sub-slab vapor samples at concentrations ranging from 1.3 to 6.9 ug/m3.

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. People are not drinking the contaminated groundwater because the area is served by a public water supply that is not contaminated by the site. Volatile organic compounds in 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. Inhalation of site-related contaminants due to soil vapor intrusion does not represent a current concern because the site is vacant. Furthermore, 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.
- Remove the source of ground or surface water contamination.

Soil

RAOs for Public Health Protection

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

RAOs for Environmental Protection

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

Soil Vapor

RAOs for Public Health Protection

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

SECTION 7: ELEMENTS OF THE SELECTED REMEDY

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

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

The selected remedy is referred to as the Excavation and Groundwater Treatment remedy.

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

1. Remedial Design

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

- Considering the environmental impacts of treatment technologies and remedy stewardship over the long term;
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4. In-Situ Chemical Oxidation

In-situ chemical oxidation (ISCO) will be implemented to treat contaminants in groundwater. A chemical oxidant, sodium persulfate, will be injected into the subsurface via injection wells, placed into the groundwater, to destroy the contaminants in an approximately 3,600-square foot area located in the southern portion of the site, where gasoline-related compounds are at elevated concentrations in the groundwater. The depth of injection will be determined during the remedial design.

5. Institutional Control

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

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

Institutional Controls: The Environmental Easement discussed in Paragraph 5 above.

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- 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.

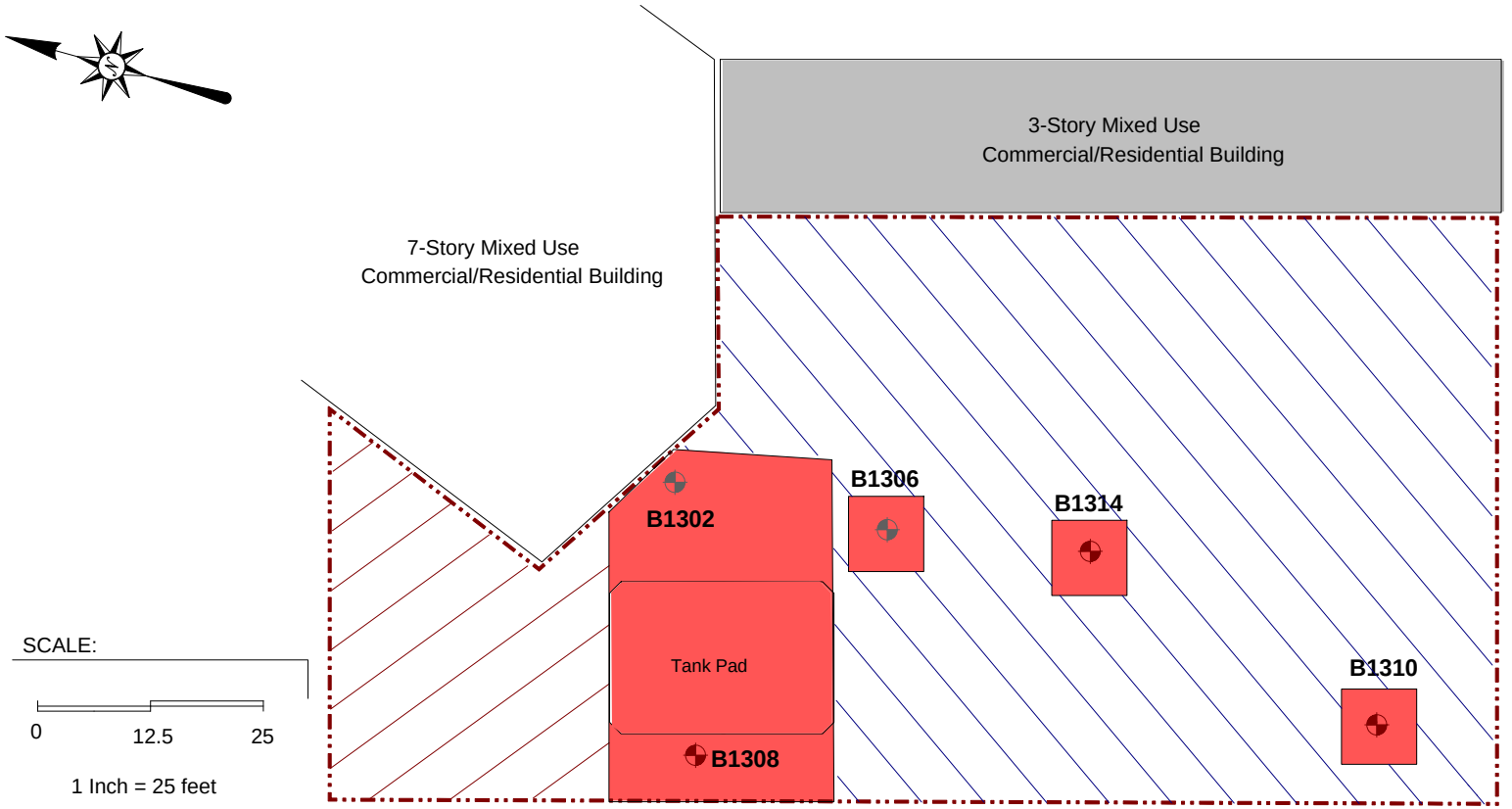
b. a Monitoring Plan to assess the performance and effectiveness of the remedy. The plan includes, but may not be limited to:

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

EBC
Environmental Business Consultants
1808 Middle Country Road. Ridge. NY 11961
Phone: 631.504.6000
Fax: 631.924.2780

1103-1107 DeKalb Avenue
Brooklyn, NY

FIGURE 1 Project Site and Adjacent Properties



KEY:

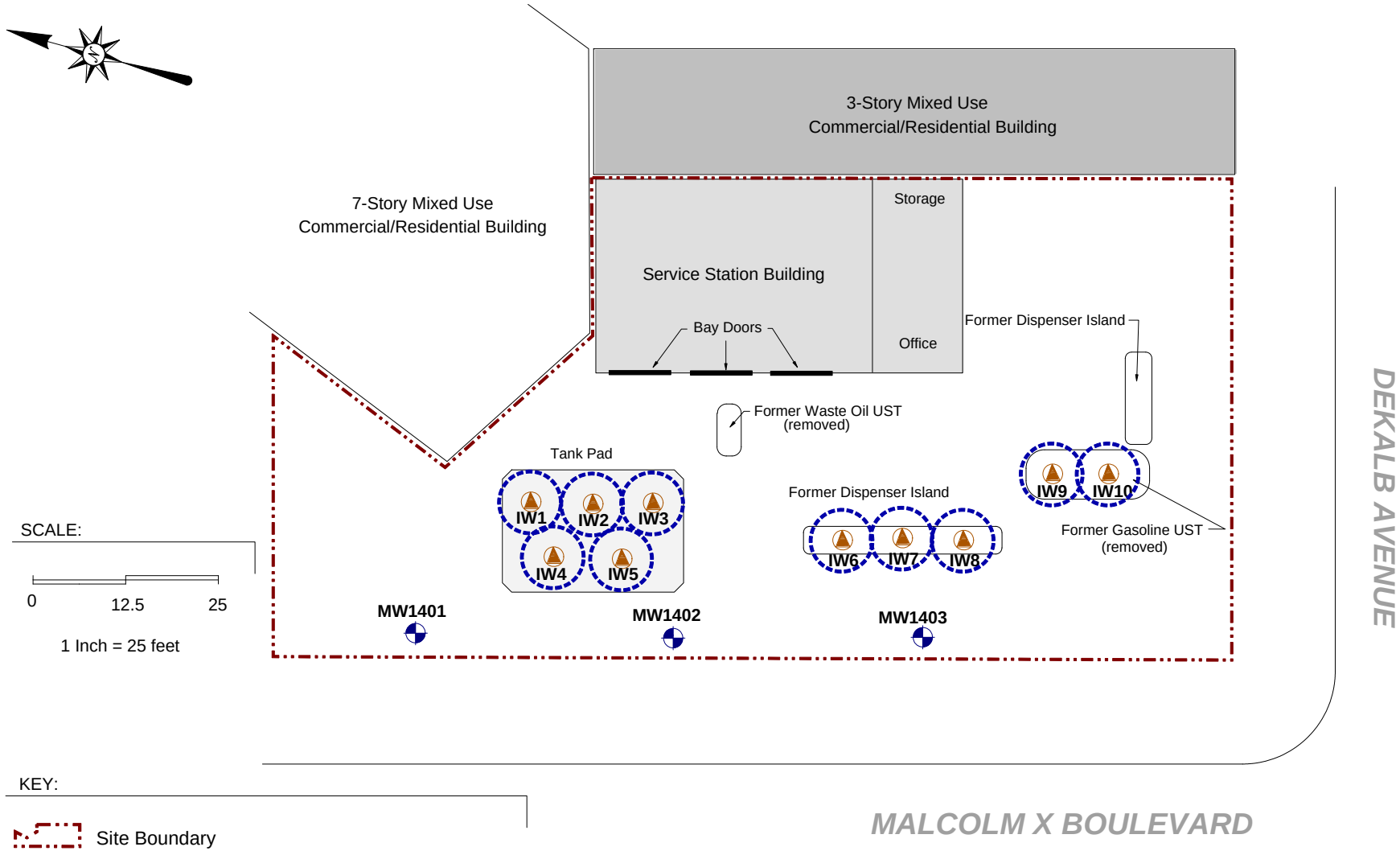
- Site Boundary
- Excavation Area - 11ftbg
- Excavation Area - 2ftbg
- Hotspot Excavation Area - 15ftbg

MALCOLM X BOULEVARD

EBC
ENVIRONMENTAL BUSINESS CONSULTANTS
Phone 631.504.6000
Fax 631. 924 .2870

Figure No. 2

Site Name: FORMER GETTY SERVICE STATION
Site Address: 1103-1107 DEKLB AVENUE, BROOKLYN, NY
Drawing Title: REMEDIAL EXCAVATION PLAN



KEY:

Site Boundary

MWx

Performance Monitoring Well Location

IWx

Chemical Injection Well / Inj. Radius

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Phone 631.504.6000
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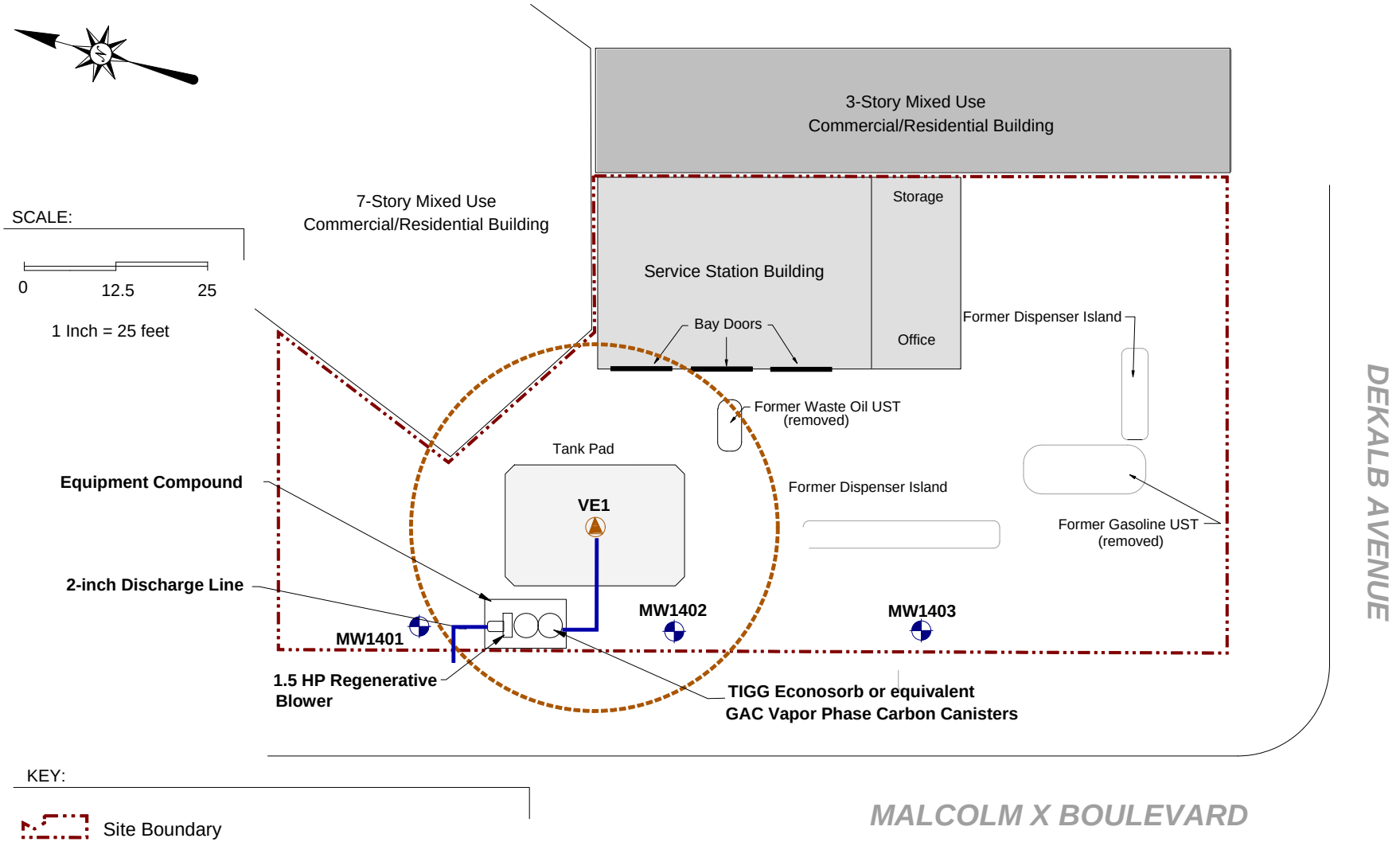
Figure No. 3

Site Name: FORMER GETTY SERVICE STATION

Site Address: 1103-1107 DEKALB AVENUE, BROOKLYN, NY

Drawing Title: PROPOSED CHEMICAL INJECTION LOCATIONS



KEY:

Site Boundary

MWx

Performance Monitoring Well Location

VE1

Vapor Extraction Well / Radius of Influence

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Figure No. 4

Site Name: FORMER GETTY SERVICE STATION

Site Address: 1103-1107 DEKALB AVENUE, BROOKLYN, NY

Drawing Title: PROPOSED SVE SYSTEM LAYOUT