DECISION DOCUMENT

Former Shell Service Station and Parking Garage
Brownfield Cleanup Program
New York, New York County
Site No. C231067
February 2014

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

DECLARATION STATEMENT - DECISION DOCUMENT

Former Shell Service Station and Parking Garage
Brownfield Cleanup Program
New York, New York County
Site No. C231067
February 2014

Statement of Purpose and Basis

This document presents the remedy for the Former Shell Service Station and Parking Garage 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 Shell Service Station and Parking Garage 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 and off-site disposal of contaminant source areas:

- Demolition of the existing on-site structures to allow excavation and off-site disposal of contaminated soils.
- All on-site soils which exceed unrestricted SCOs, as defined by 6 NYCRR Part 375-6.8, will be excavated and transported off-site for disposal. Approximately 6026 cubic yards of contaminated soil will be removed from the site. An additional 1422 yards of clean soil will be removed for development purposes only. On-site soil which does not exceed SCOs for the use of the site and/or the protection of groundwater may be used to backfill the excavation. 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.

3. **Groundwater Treatment**

The proposed groundwater remedy includes:

- Extraction and treatment of shallow impacted groundwater during foundation construction using a temporary on-site dewatering and treatment system with discharge to the New York City sanitary sewer system. Alternately, dewatering fluids may be sent offsite for treatment and disposal;
- In-situ chemical oxidation (ISCO) will be implemented to treat contaminants in groundwater. Sodium persulfate and chelated iron will be applied to the open excavation in order to treat residual contaminated groundwater. The byproducts of the ISCO process are non-toxic.

Prior to the full implementation of these technologies, studies will be conducted to more clearly define design parameters. If the studies determine that the treated groundwater does not or will not meet discharge limitations using this technology alone, additional treatment will be conducted using granular activated carbon or other appropriate technology.

4. **Vapor Intrusion Assessment**

A post-remedial soil vapor intrusion evaluation will be completed prior to occupying any buildings developed on the site. The assessment will include a provision for implementing actions recommended to address exposures related to soil vapor intrusion, if identified.

The intent of the soil removal is to achieve Track 1 unrestricted use; therefore, no environmental easement or site management plan is anticipated. No groundwater use restriction is needed because the area is served by public water and Article 141 of the NYCDOH code prohibits potable use of groundwater without prior approval. In the event that Track 1 unrestricted use is not achieved, including achievement of groundwater and soil vapor remedial action objectives, the following contingent remedial elements will be required.

Contingent Remedial Elements:

Alternative Engineering and Institutional Controls

Imposition of an institutional control in the form of an environmental easement and a Site Management Plan, as described below, will be required. The remedy will achieve a Track 4 restricted residential cleanup at a minimum and will include imposition of a site cover (as a contingency if some soil greater than 2 feet but less than 15 feet deep does not meet the restricted residential SCOs), an environmental easement, and site management plan as described below.

5. **Site Cover**

A site cover will be required to allow for restricted residential use of the site. The cover will consist either of the structures such as buildings, pavement, sidewalks comprising the site development or a soil cover in areas where the upper two feet of exposed surface soil will not exceed the applicable soil cleanup objectives (SCOs). Where the soil cover is required it will be a minimum of two feet of soil, meeting the SCOs for cover material as set forth in 6 NYCRR Part 375-6.7(d) for restricted residential use. The soil cover will be placed over a demarcation layer, with the upper six inches of the soil of sufficient quality to maintain a vegetation layer. Any fill material brought to the site will meet the requirements for the identified site use as set forth in 6 NYCRR Part 375-6.7(d).

6. **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 OR 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 County DOH and
- requires compliance with the Department approved Site Management Plan.

7. **Site Management Plan**

A Site Management Plan 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 item 6 above.
   - Engineering Controls: The groundwater treatment discussed in item 3 above.

   This plan includes, but may not be limited to:

   o an Excavation Plan which details the provisions for management of future excavations in areas of remaining contamination;

- provisions of the environmental easement including any land use, and/or groundwater and/or surface water use restrictions;
- 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.

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:

- compliance monitoring of treatment systems to ensure proper O&M as well as providing the data for any necessary permit or permit equivalent reporting;
- maintaining site access controls and Department notification; and
- providing the Department access to the site and O&M records.

Declaration

The remedy conforms with promulgated standards and criteria that are directly applicable, or that are relevant and appropriate and takes into consideration Department guidance, as appropriate. The remedy is protective of public health and the environment.

February 24, 2014

Date

for

Robert Cozzy, Director
Remedial Bureau B

DECISION DOCUMENT

Former Shell Service Station and Parking Garage
New York, New York County
Site No. C231067
February 2014

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:

New York Public Library
Harlem Branch
9 West 124th Street
Manhattan, NY 10027-5699
Phone: (212)348-5620

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 Former Shell Service Station and Parking garage site is located in an urban area. The site is located on St. Nicholas Ave., between 121st Street (south) and 122nd Street (north) in the Borough of Manhattan.

Site Features:
The site currently contains an operating multi-story parking garage and a former gasoline service station with automobile repair facility. The site is comprised of two adjacent tax parcels (Lots 30 and 35) totaling approximately 0.468 acres.

Current Zoning and Land Use:
The site is zoned R8A/R7A (residential) with a C2-4 (commercial) overlay. Current use is commercial. Surrounding properties include a mix of multi-family residential and commercial/retail uses. The intended use is mixed-use residential and commercial with community facility space.

Past Use of the site:
Prior uses on Lot 30 include coal storage, a junkyard and the parking garage. On Lot 35, the former uses include a carriage factory, auto repair and the gas station.

Site Geology and Hydrogeology
Depth to groundwater is approximately 20 feet below ground surface. Groundwater flows to the north.

A site location map is attached as Figure 1.

SECTION 4: LAND USE AND PHYSICAL SETTING

The Department may consider the current, intended, and reasonably anticipated future land use of the site and its surroundings when evaluating a remedy for soil remediation. For this site, an alternative which allows for unrestricted use of the site was evaluated.

A comparison of the results of the Remedial Investigation (RI) against unrestricted use standards, criteria and guidance values (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

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:

Chrysene	BENZO(B)FLUORANTHENE
LEAD	BENZO[K]FLUORANTHENE
ACETONE	indeno(1,2,3-cd)pyrene
MERCURY	1,1,2 TCA
METHYLENE CHLORIDE	POLYCHLORINATED BIPHENYLS (PCB)
BENZO(A)PYRENE	TETRACHLOROETHYLENE (PCE)
XYLENE (MIXED)	TRICHLOROETHENE (TCE)
1,2,4-TRIMETHYLBENZENE	BENZ(A)ANTHRACENE

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.

The following IRM(s) has/have been completed at this site based on conditions observed during the RI.

Lot 35 UST Removal

An Interim Remedial Measure (IRM) was completed in June 2011. Field work consisted of the removal of fifteen (15) gasoline underground storage tanks (USTs) and associated contaminated soil from the Former Shell Gas Station. Approximately 114 tons of soil was removed and properly disposed off-site. Post-excavation samples identified some exceedances of unrestricted use SCOs, which will be addressed by the final remedy. The excavations were backfilled with recycled concrete aggregate.

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:
Based upon the results of several investigations, contaminants of concern include volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), metals and polychlorinated biphenyls (PCBs). The contaminants of concern do not appear to be contributing to off-site environmental impacts that require additional investigation or remedial action.

Soil – Volatile organic compounds (VOCs) were found at concentrations exceeding the Unrestricted Use Soil Cleanup Objectives, including acetone at 0.056 ppm and methylene chloride at a concentration of 0.22 ppm. In addition, "Stoddard solvent" was identified at a concentration of 671 ppm. Semi-volatile organic compounds (SVOCs) have been found including benzo(a)anthracene at 2.3 ppm, benzo(a)pyrene at 2 ppm, and benzon(k)fluoranthene at 3.6 ppm Two metals were detected at concentrations exceeding their respective UUSCOs: lead at 2980 ppm and mercury at 2.45 ppm.

Groundwater - The results from groundwater samples show detections of several VOCs above groundwater standards including 1,1,2-trichloroethane (2.9 ppb), 2-isopropyltoluene (9.1 ppb), total xylenes (25 ppb), tetramethylbenzene (43 ppb), 1,2,4-trimethylbenzene (11 ppb), isopropylbenzene (19 ppb) and n-propylbenzene (30 ppb). Several SVOCs were also detected above their respective groundwater standards, including benzo(a)anthracene at 0.07 ppb, benzo(b)fluoranthene at 0.09 ppb, benzo(k)fluoranthene at 0.03 ppb, chrysene at 0.07 ppb, and ideno(1,2,3)pyrene at 0.04 ppb. PCBs were detected in groundwater above standards at 2.2 ppb.

Soil Vapor – Elevated concentrations of several petroleum VOCs (including 1,2,4-trimethylbenzene at 26 ug/m3 and xylenes at 100 ug/m3) and chlorinated solvents (tetrachloroethylene at 112 ug/m3 and trichloroethene at 14.9 ug/m3) were found throughout the site. The investigation indicates that the presence of PCE in soil vapor can likely be attributed to an off-site source, due to the lack of PCE in on-site soil or groundwater.

Significant Threat:
NYSDEC and NYSDOH have determined that this site does not pose a significant threat to human health or the environment.

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*.

Persons who dig below the ground surface may come into contact with contaminants in subsurface soil. 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 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. Because there are no occupied enclosed structures at the site, inhalation of site-related contaminants due to soil vapor intrusion does not represent a current concern.

Sampling indicates that off-site soil vapor intrusion as a result of this site 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 1: Unrestricted use 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;
- 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 and off-site disposal of contaminant source areas:

- Demolition of the existing on-site structures to allow excavation and off-site disposal of contaminated soils.
- All on-site soils which exceed unrestricted SCOs, as defined by 6 NYCRR Part 375-6.8, will be excavated and transported off-site for disposal. Approximately 6026 cubic yards of contaminated soil will be removed from the site. An additional 1422 yards of clean soil will be removed for development purposes only. On-site soil which does not exceed SCOs for the use of the site and/or the protection of groundwater may be used to backfill the excavation. 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.

3. **Groundwater Treatment**

The proposed groundwater remedy includes:

- Extraction and treatment of shallow impacted groundwater during foundation construction using a temporary on-site dewatering and treatment system with discharge to the New York City sanitary sewer system. Alternately, dewatering fluids may be sent offsite for treatment and disposal;

- In-situ chemical oxidation (ISCO) will be implemented to treat contaminants in groundwater. Sodium persulfate and chelated iron will be applied to the open excavation in order to treat residual contaminated groundwater. The byproducts of the ISCO process are non-toxic.

Prior to the full implementation of these technologies, studies will be conducted to more clearly define design parameters. If the studies determine that the treated groundwater does not or will not meet discharge limitations using this technology alone, additional treatment will be conducted using granular activated carbon or other appropriate technology.

4. **Vapor Intrusion Assessment**

A post-remedial soil vapor intrusion evaluation will be completed prior to occupying any buildings developed on the site. The assessment will include a provision for implementing actions recommended to address exposures related to soil vapor intrusion, if identified.

The intent of the soil removal is to achieve Track 1 unrestricted use; therefore, no environmental easement or site management plan is anticipated. No groundwater use restriction is needed because the area is served by public water and Article 141 of the NYCDOH code prohibits potable use of groundwater without prior approval. In the event that Track 1 unrestricted use is not achieved, including achievement of groundwater and soil vapor remedial action objectives, the following contingent remedial elements will be required.

Contingent Remedial Elements:

Alternative Engineering and Institutional Controls

Imposition of an institutional control in the form of an environmental easement and a Site Management Plan, as described below, will be required. The remedy will achieve a Track 4 restricted residential cleanup at a minimum and will include imposition of a site cover (as a contingency if some soil greater than 2 feet but less than 15 feet deep does not meet the restricted residential SCOs), an environmental easement, and site management plan as described below.

5. **Site Cover**

A site cover will be required to allow for restricted residential use of the site. The cover will consist either of the structures such as buildings, pavement, sidewalks comprising the site development or a soil cover in areas where the upper two feet of exposed surface soil will not exceed the applicable soil cleanup objectives (SCOs). Where the soil cover is required it will be a minimum of two feet of soil, meeting the SCOs for cover material as set forth in 6 NYCRR Part 375-6.7(d) for restricted residential use. The soil cover will be placed over a demarcation layer, with the upper six inches of the soil of sufficient quality to maintain a vegetation layer. Any fill material brought to the site will meet the requirements for the identified site use as set forth in 6 NYCRR Part 375-6.7(d).

6. **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 OR 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 County DOH and
- requires compliance with the Department approved Site Management Plan.

7. **Site Management Plan**

A Site Management Plan 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 item 6 above.
   – Engineering Controls: The groundwater treatment discussed in item 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;
   - provisions of the environmental easement including any land use, and/or groundwater and/or surface water use restrictions;
   - 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.

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:

- compliance monitoring of treatment systems to ensure proper O&M as well as providing the data for any necessary permit or permit equivalent reporting;
- maintaining site access controls and Department notification; and
- providing the Department access to the site and O&M records.

ST. NICHOLAS AVENUE

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Former Shell Service Station and Parking Garage

FIGURE 1 SITE BOUNDARY MAP

0 10 20 40 60

1 Inch = 30 Feet

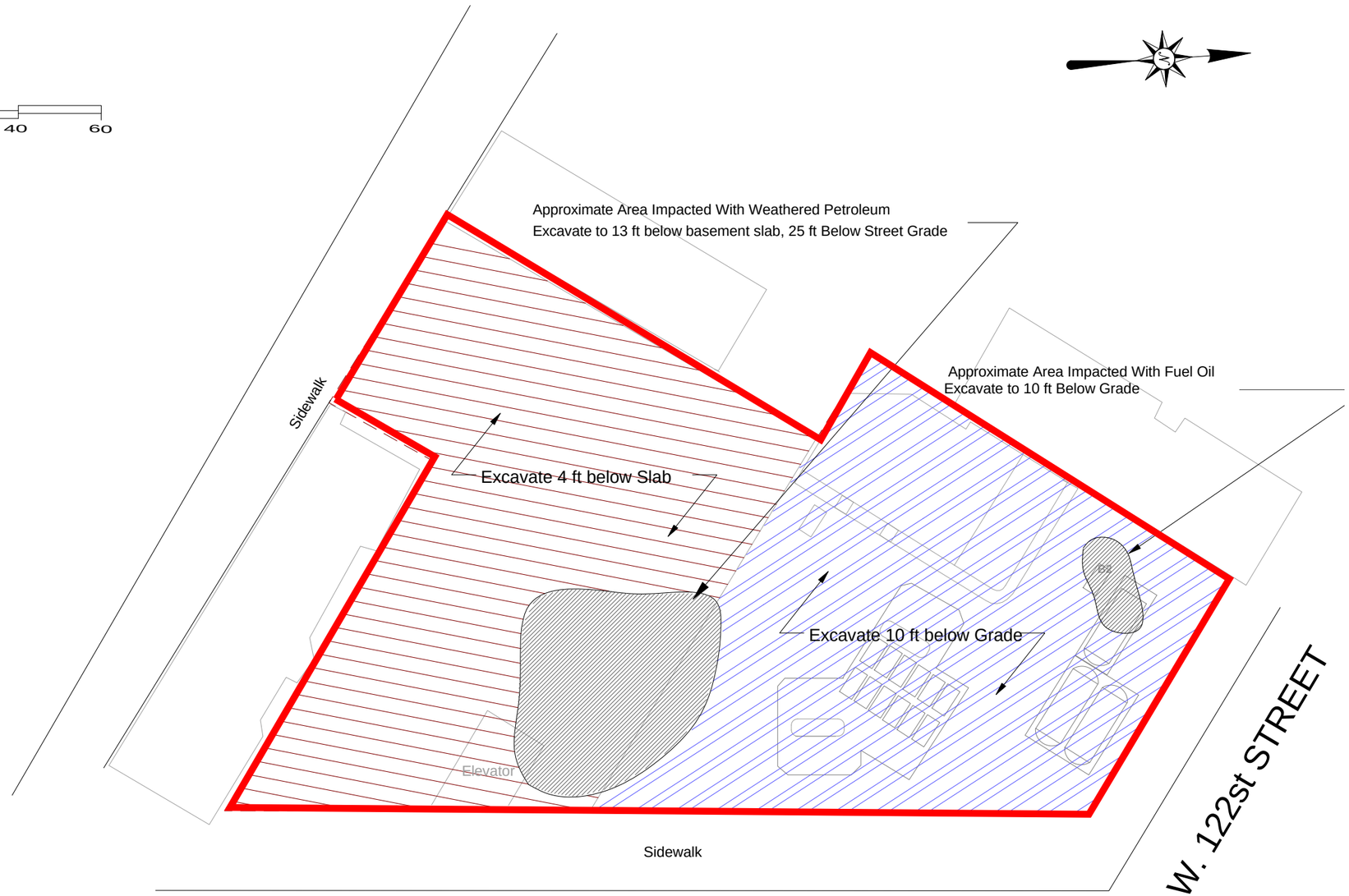

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FIGURE 2 - REMEDIAL EXCAVATION PLAN