DECISION DOCUMENT

318 Nevins Street
Brownfield Cleanup Program
Brooklyn, Kings County
Site No. C224350
October 2023

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

DECLARATION STATEMENT - DECISION DOCUMENT

318 Nevins Street
Brownfield Cleanup Program
Brooklyn, Kings County
Site No. C224350
October 2023

Statement of Purpose and Basis

This document presents the remedy for the 318 Nevins Street 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 318 Nevins 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;
- 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^{TM} (available in the Sustainable Remediation Forum [SURF] library) or similar Department 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

Excavation and off-site disposal of contaminant source areas ranging in depth from 8 to 21 feet below grade, including:

- grossly contaminated soil, as defined in 6 NYCRR Part 375-1.2(u);
- non-aqueous phase liquids (NAPL);
- soil with visual waste material or NAPL;
- soils which exceed the protection of groundwater soil cleanup objectives (PGSCOs), as defined by 6 NYCRR Part 375-6.8 for those contaminants found in site groundwater above standards;
- soils that create a nuisance condition, as defined in Commissioner Policy CP-51 Section G; and
- any underground storage tanks (USTs), fuel dispensers, underground piping or other structures associated with a source of contamination.

In addition, all soils in the upper two feet which exceed the restricted residential SCOs will be excavated and transported off-site for disposal and several hot spots exceeding Semi-Volatile Organic Compounds (SVOCs) exceeding PGSCOs across the site, to depths of 9 feet below grade surface (bgs), 13 ft. bgs and 21 ft. bgs.

Approximately 7,550 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 the Department, submit the sample results and, and in consultation with the Department, 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.

3. Backfill

Clean fill meeting the requirements for 6 NYCRR Part 375-6.7(d) will be brought in to replace the excavated soil and establish the designed grades at the site.

4. Cover System

A site cover currently exists in areas not occupied by buildings and will be maintained to allow for restricted residential use of the site. Any site redevelopment will maintain the existing site cover. The site cover may include paved surface parking areas, sidewalks or soil placed over a demarcation layer where the upper two feet of exposed surface soil meets the applicable soil cleanup objectives (SCOs) for restricted residential use. Any fill material brought to the site will meet the requirements for the identified site use as set forth in 6NYCRR part 375-6.7(d).

Where the soil cover is required over the ISS treatment area, it will consist of a minimum of four feet of soil meeting the SCOs for restricted residential use. For areas where solidified material underlies the cover, the solidified material itself will serve as the demarcation layer due to the nature of the material.

5. Solidification/Stabilization

In-Situ Solidification

In-situ solidification (ISS) will be evaluated for implementation in an approximately 0.5-acre area located on the western and northern portion of the site along the bulkhead. The treatment zone will be in areas where grossly contaminated material and non-aqueous phase liquid (GCM/NAPL) consisting of coal tar is present below the groundwater table to a terminal depth of approximately -19 feet NAVD88. ISS is a process that binds the soil particles in place creating a low permeability mass. The contaminated soil will be mixed in place together with solidifying agents (typically Portland cement) or other binding agents using an excavator or augers. The soil and binding agents are mixed to produce a solidified mass resulting in a low permeability monolith. The solidified

mass will then be covered with a cover system as described in Paragraph 4 to prevent direct exposure to the solidified mass. The resulting solid matrix reduces or eliminates mobility of contamination and reduces or eliminates the matrix as a source of groundwater contamination.

In-Situ Geochemical Stabilization

In areas where obstructions limit the implementation of ISS, In-situ Geochemical Stabilization (ISGS) will be evaluated for implementation in an approximately 0.5-acre area located on the western and northern portion of the site along the bulkhead. The treatment zone will be in areas where GCM/NAPL is present below the groundwater table to a terminal depth of approximately -19 feet NAVD88. ISGS is a process that uses a stabilizing agent which chemically changes contamination to make it less soluble, and permanganate to oxidize and break down contaminants within the soil mass. The contaminated soil will be mixed in place with the geochemical stabilizing agents using an excavator or augers. The stabilized soil will then be covered with a cover system as described in Paragraph 4 to prevent direct exposure. This treatment changes the contamination from a soluble form to a stable, insoluble compound to reduce or eliminate the matrix as a source of groundwater contamination.

6. NAPL Recovery

If NAPL will remain below the ISS and/or ISGS mass, installation and operation of recovery wells will be installed across the remaining NAPL horizon along the bulkhead on the western boundary of the site to remove potentially mobile NAPL from the subsurface. The number, depth, type and spacing of the recovery wells will be determined during the design phase of the remedy. NAPL will be collected periodically from each well; however, if wells are determined by the Department to accumulate large quantities of coal tar over extended time periods, they can be converted to automated collection.

7. Vapor Mitigation

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

8. 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 and vapor mitigation system as engineering controls.

Institutional Control

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

- require the remedial party or site owner to complete and submit to the Department a periodic certification of institutional and engineering controls in accordance with Part 375-

1.8 (h)(3);

- allow the use and development of the controlled property for restricted residential use as defined by Part 375-1.8(g), although land use is subject to local zoning laws;
- restrict the use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by the NYSDOH or NYCDOH; and
- require compliance with the Department approved Site Management Plan.

9. Site Management Plan

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

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 8 above.
- Engineering Controls: The soil cover discussed in Paragraph 4 and the sub-slab depressurization system discussed in Paragraph 7 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 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. Monitoring Plan to assess the performance and effectiveness of the remedy. The plan includes, but may not be limited to:

- monitoring of groundwater and soil vapor/indoor air to assess the performance and effectiveness of the remedy; and
- a schedule of monitoring and frequency of submittals to the Department.

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 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.

October 12, 2023
Date

R. Scott Deyette
Director, Bureau B

DECISION DOCUMENT

318 Nevins Street
Brooklyn, Kings County
Site No. C224350
October 2023

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, 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.

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:

DECInfo Locator - Web Application
https://gisservices.dec.ny.gov/gis/dil/index.html?rs=C224350

Brooklyn Public Library Carroll Gardens Branch
396 Clinton Street
Brooklyn, NY 11231
Phone: (718) 596-6972

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

Receive Site Citizen Participation Information By Email

Please note that the Department's Division of Environmental Remediation (DER) is "going paperless" relative to citizen participation information. The ultimate goal is to distribute citizen participation information about contaminated sites electronically by way of county email listservs. Information will be distributed for all sites that are being investigated and cleaned up in a particular county under the State Superfund Program, Environmental Restoration Program, Brownfield Cleanup Program and Resource Conservation and Recovery Act Program. We encourage the public to sign up for one or more county listservs at http://www.dec.ny.gov/chemical/61092.html

SECTION 3: SITE DESCRIPTION AND HISTORY

Location: The site is located in an urban area surrounded historically by mainly industrial properties. The site is bound: to the south by Carroll Street followed by a New York City Office of Environmental Remediation remedial site (420 Carroll Street); to the west by the Gowanus Canal, a USEPA National Priorities List (NPL) site; to the north by Union Street and commercial/residential properties; and to the east by Nevins Street and commercial/residential properties including three BCP sites (President Street Portfolio (C224309), 473 President Street (C224220), and 514 Union Street (C224318)).. The subject property has an area of approximately 2.34 acres.

Site Features: The main site feature is a a vacant lot with no structures, and a bulkhead along the Gowanus Canal.

Current Zoning and Land Use: The site is currently zoned as M1-4 (manufacturing)/R7-2 (residential). Prior to the zoning change that went into effect in November 2021, the site was zoned M2-1. The M2-1 designation is a district characterized as between light and heavy industrial areas. The surrounding parcels have also been re-zoned and presently are within the M1-4/R7-2 designation as well.

Past Use of the Site: Historic Sanborn Fire Insurance maps indicate that the site was used as a lumber yard as early as 1886 through the 1910s. Kopper's Seaboard Coke Co. is depicted as the occupant of the site from circa 1922 until the 1950s. During this time the site received coke from barges and then distributed the coke to consumers. The current on-site structure was reportedly constructed in 1958 and was occupied by a motor freight station from the 1960s through the late 1970s. Subsequently, the building was utilized by NY Telephone Co., Bell Atlantic and Verizon.

Site Geology and Hydrogeology: The ground surface within the site is generally flat and the elevation of the property is approximately +10 (NAVD-88) feet. Groundwater is present at depths ranging from 5 to 7.5 feet below ground surface (bgs). Based on the remedial investigation, groundwater flows to the west-southwest toward the Gowanus Canal, which is located directly

adjacent to the site. Groundwater is likely tidally influenced. According to the Federal Emergency Management Agency (FEMA), the site is located within a Special Flood Hazard Area (SFHA), Zone AE, characterized by having a 1 percent annual chance of flooding.

Investigation reports prepared for the site characterized subsurface soil as historic fill material consisting of fine-grained sand with varying amounts of gravel, brick and concrete. The fill material was encountered from grade to depths of 5 to 10 feet bgs throughout the majority of the site. The fill material was reportedly underlain by sand and clay. Bedrock was not encountered during the remedial investigations.

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

SECTION 4: LAND USE AND PHYSICAL SETTING

The Department may consider the current, intended, and reasonably anticipated future land use of the site and its surroundings when evaluating a remedy for soil remediation. For this site, an alternative that restricts the use of the site to restricted residential 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, the Department has determined that this site does pose a significant threat to public health and 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:

benzo(a)anthracene
benzo(a)pyrene
benzo(b)fluoranthene
benzo(k)fluoranthene
chrysene
tetrachloroethene (PCE)
trichloroethene (TCE)
naphthalene
arsenic
lead
coal tar

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), per- and polyfluoroalkyl substances (PFAS), and pesticides. Soil vapor was analyzed for VOCs. Based on the investigations conducted to date, the primary contaminants of concern are coal tar GCM, SVOCs and metals in soil; coal tar NAPL, SVOCs and metals in groundwater; and VOCs in soil vapor.

Soil - Grossly contaminated material and non-aqueous phase liquid (GCM/NAPL) associated with MGP coal tar contamination from the Gowanus Canal NPL site has been encountered in on-site borings and delineated along the bulkhead and inland on the western and northern portion of the site. SVOCs and metals were found at concentrations exceeding the applicable restricted residential soil cleanup objectives (RRSCOs) and protection of groundwater soil cleanup objectives (PGSCOs) including benzo(a)anthracene (max of 200 parts per million (ppm); RRSCO is 1 ppm and PGSCO is 1 ppm), benzo(a)pyrene (max of 170 ppm; RRSCO is 1 ppm and PGSCO is 22 ppm), benzo(b)fluoranthene (max of 120 ppm; RRSCO is 1 ppm and PGSCO is 1.7 ppm), benzo(k)fluoranthene (max of 38 ppm; RRSCO is 3.9 ppm and PGSCO is 1.7 ppm), chrysene (max of 200 ppm; RRSCO is 3.9 ppm and PGSCO is 1 ppm), naphthalene (max of 5,800 ppm; RRSCO is 100 ppm and PGSCO is 12 ppm), arsenic (max is 160 ppm; RRSCO is 16 ppm and PGSCO is 16 ppm) and lead (max of 2,900; RRSCO is 400 ppm). Non-aqueous phase liquid (NAPL) was encountered in soil borings along the eastern boundary of the site along the bulkhead and delineated in-land to the west.

Perfluorooctanoic acid (PFOA) and perfluorooctanesulfonic acid (PFOS) were reported at concentrations below soil cleanup guidance values for restricted residential use and protection of groundwater. Data does not indicate any off-site impacts in soil related to this site.

Groundwater - Exceedances of the ambient groundwater quality standards (AWQS) for SVOCs and metals including benzo(a)anthracene (max of 58 parts per billion (ppb); AWQS of 0.002 ppb), benzo(a)pyrene (max of 67 ppb; AWQS of 0.002 ppb), benzo(b)fluoranthene (max of 45 ppb; AWQS of 0.002 ppb), benzo(k)fluoranthene (max of 12 ppb; AWQS of 0.002 ppb), chrysene (max of 46 ppb; AWQS of 0.002 ppb), naphthalene (max of 8,000 ppb; AWQS of 10 ppb), and dissolved

arsenic (max of 106 ppb; AWGS of 25 ppb). NAPL was encountered during monitoring well development and groundwater sampling. A NAPL mobility assessment will be performed prior to the implementation of the RAWP. Groundwater impacts have the potential to migrate off-site into the Gowanus Canal.

PFOS was detected above the maximum contaminant limit (MCL – drinking water standard) of 10 parts per trillion (ppt) at a maximum concentration of 178 ppt. PFOA was detected above the maximum contaminant limit (MCL – drinking water standard) of 10 parts per trillion (ppt) at a maximum concentration of 362 ppt. Data indicates off-site impacts in groundwater related to this site.

Soil Vapor - Three soil vapor samples were collected on-site which identified elevated concentrations of chlorinated VOCs. The maximum concentration of trichloroethylene (TCE) was 1,396.6 micrograms per cubic meter (ug/m3), and tetrachloroethylene (PCE) was 813.5 ug/m3. Soil vapor contamination has been determined not to originate from on-site contamination. Data does not indicate there is potential for off-site impacts in soil vapor related to this 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 completely fenced, which restricts public access, and is covered by asphalt or concrete so people will not come into contact with site-related soil and groundwater contamination unless they dig below the surface. Soil/sediment that is found on the banks of the site is contaminated with coal tar and is likely a contributing source for off-site contamination. People using the Canal for recreational purposes such as swimming and boating may come into direct contact with chemical contaminants on the banks of the site. Contaminated groundwater is not used for drinking, and the site and surrounding areas are served by a public water supply that obtains water from a different source not affected by this contamination. Because the site is vacant, inhalation of site contaminants in indoor air due to soil vapor intrusion does not represent a concern for the site in its current condition. However, the potential exists for the inhalation of site contaminants due to soil vapor intrusion for any future on-site development. Environmental sampling indicates soil vapor intrusion associated with site-related 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

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

Soil

RAOs for Public Health Protection

- Prevent ingestion/direct contact with contaminated 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 and in-situ stabilization/solidification 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;
- 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^{TM} (available in the Sustainable Remediation Forum [SURF] library) or similar Department 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

Excavation and off-site disposal of contaminant source areas ranging in depth from 8 to 21 feet below grade, including:

- grossly contaminated soil, as defined in 6 NYCRR Part 375-1.2(u);

- non-aqueous phase liquids (NAPL);
- soil with visual waste material or NAPL;
- soils which exceed the protection of groundwater soil cleanup objectives (PGSCOs), as defined by 6 NYCRR Part 375-6.8 for those contaminants found in site groundwater above standards;
- soils that create a nuisance condition, as defined in Commissioner Policy CP-51 Section G; and
- any underground storage tanks (USTs), fuel dispensers, underground piping or other structures associated with a source of contamination.

In addition, all soils in the upper two feet which exceed the restricted residential SCOs will be excavated and transported off-site for disposal and several hot spots exceeding Semi-Volatile Organic Compounds (SVOCs) exceeding PGSCOs across the site, to depths of 9 feet below grade surface (bgs), 13 ft. bgs and 21 ft. bgs.

Approximately 7,550 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 the Department, submit the sample results and, and in consultation with the Department, 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.

3. Backfill

Clean fill meeting the requirements for 6 NYCRR Part 375-6.7(d) will be brought in to replace the excavated soil and establish the designed grades at the site.

4. Cover System

A site cover currently exists in areas not occupied by buildings and will be maintained to allow for restricted residential use of the site. Any site redevelopment will maintain the existing site cover. The site cover may include paved surface parking areas, sidewalks or soil placed over a demarcation layer where the upper two feet of exposed surface soil meets the applicable soil cleanup objectives (SCOs) for restricted residential use. Any fill material brought to the site will meet the requirements for the identified site use as set forth in 6NYCRR part 375-6.7(d).

Where the soil cover is required over the ISS treatment area, it will consist of a minimum of four feet of soil meeting the SCOs for restricted residential use. For areas where solidified material underlies the cover, the solidified material itself will serve as the demarcation layer due to the

nature of the material.

5. Solidification/Stabilization

In-Situ Solidification

In-situ solidification (ISS) will be evaluated for implementation in an approximately 0.5-acre area located on the western and northern portion of the site along the bulkhead. The treatment zone will be in areas where grossly contaminated material and non-aqueous phase liquid (GCM/NAPL) consisting of coal tar is present below the groundwater table to a terminal depth of approximately -19 feet NAVD88. ISS is a process that binds the soil particles in place creating a low permeability mass. The contaminated soil will be mixed in place together with solidifying agents (typically Portland cement) or other binding agents using an excavator or augers. The soil and binding agents are mixed to produce a solidified mass resulting in a low permeability monolith. The solidified mass will then be covered with a cover system as described in Paragraph 4 to prevent direct exposure to the solidified mass. The resulting solid matrix reduces or eliminates mobility of contamination and reduces or eliminates the matrix as a source of groundwater contamination.

In-Situ Geochemical Stabilization

In areas where obstructions limit the implementation of ISS, In-situ Geochemical Stabilization (ISGS) will be evaluated for implementation in an approximately 0.5-acre area located on the western and northern portion of the site along the bulkhead. The treatment zone will be in areas where GCM/NAPL is present below the groundwater table to a terminal depth of approximately -19 feet NAVD88. ISGS is a process that uses a stabilizing agent which chemically changes contamination to make it less soluble, and permanganate to oxidize and break down contaminants within the soil mass. The contaminated soil will be mixed in place with the geochemical stabilizing agents using an excavator or augers. The stabilized soil will then be covered with a cover system as described in Paragraph 4 to prevent direct exposure. This treatment changes the contamination from a soluble form to a stable, insoluble compound to reduce or eliminate the matrix as a source of groundwater contamination.

6. NAPL Recovery

If NAPL will remain below the ISS and/or ISGS mass, installation and operation of recovery wells will be installed across the remaining NAPL horizon along the bulkhead on the western boundary of the site to remove potentially mobile NAPL from the subsurface. The number, depth, type and spacing of the recovery wells will be determined during the design phase of the remedy. NAPL will be collected periodically from each well; however, if wells are determined by the Department to accumulate large quantities of coal tar over extended time periods, they can be converted to automated collection.

7. Vapor Mitigation

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

8. 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 and vapor mitigation system as engineering controls.

Institutional Control

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

- require the remedial party or site owner to complete and submit to the Department a periodic certification of institutional and engineering controls in accordance with Part 375-1.8 (h)(3);
- allow the use and development of the controlled property for restricted residential use as defined by Part 375-1.8(g), although land use is subject to local zoning laws;
- restrict the use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by the NYSDOH or NYCDOH; and
- require compliance with the Department approved Site Management Plan.

9. Site Management Plan

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

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

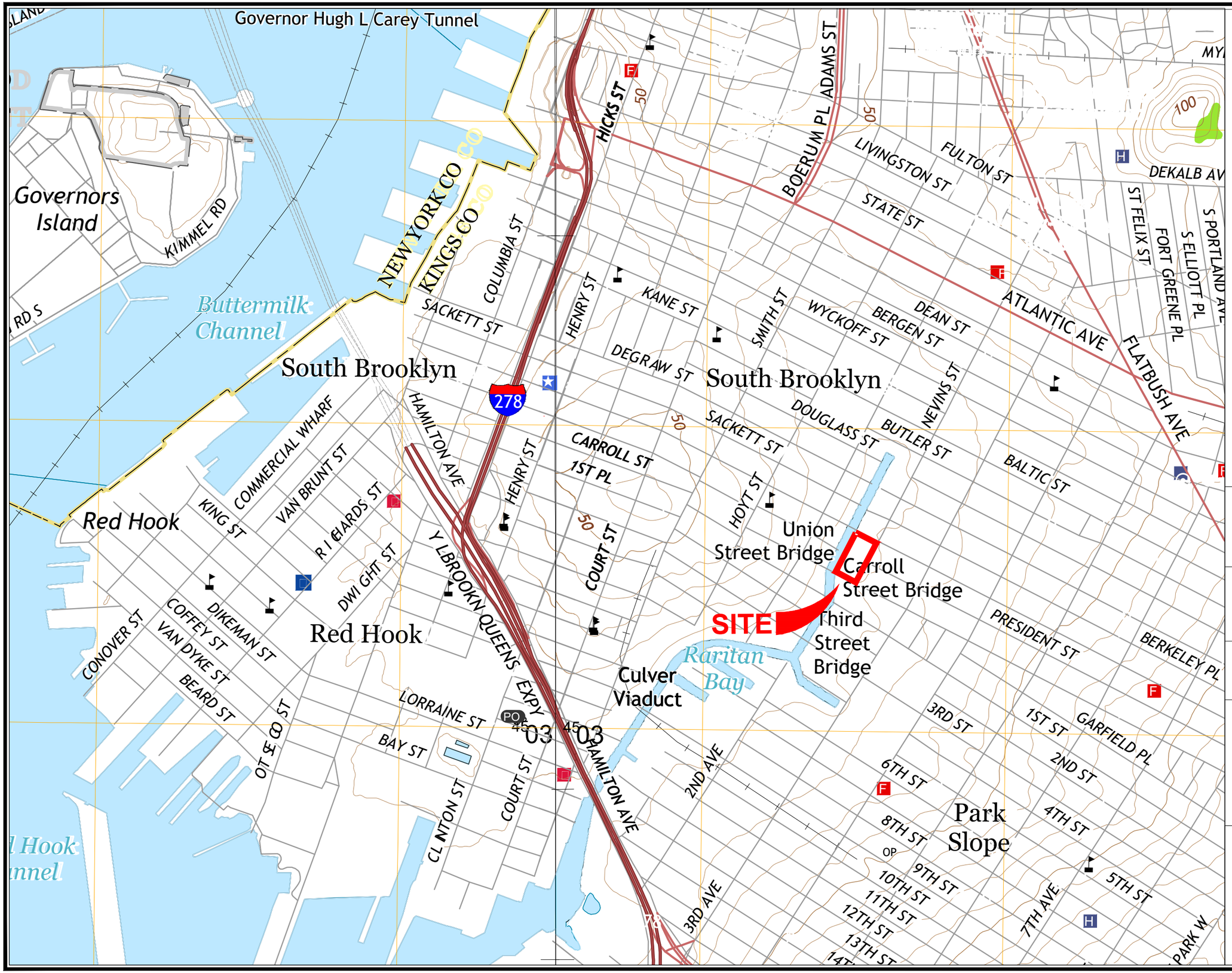
- Institutional Controls: The Environmental Easement discussed in Paragraph 8 above.
- Engineering Controls: The soil cover discussed in Paragraph 4 and the sub-slab depressurization system discussed in Paragraph 7 above.

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 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.

e. Monitoring Plan to assess the performance and effectiveness of the remedy. The plan includes, but may not be limited to:
   - monitoring of groundwater and soil vapor/indoor air to assess the performance and effectiveness of the remedy; and
   - a schedule of monitoring and frequency of submittals to the Department.

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



NOTES:

SITE LOCATION MAP

318 Nevins Street
Brooklyn, New York

Figure 1

PROJECT NO.	15977-01
DESIGNED BY:	AB
DRAWN BY:	AB
CHECKED BY:	DP
DATE:	11/30/2021
SCALE:	N.T.S.

REVISIONS

IMPACT ENVIRONMENTAL ENGINEERING AND GEOLOGY PLLC
170 KEYLAND COURT
BOHEMIA, NEW YORK 11716
TEL (631) 269-8800
FAX (631) 269-1599

ADJACENT PROPERTY

ADJACENT PROPERTY

ADJACENT PROPERTY

ADJACENT PROPERTY

GOWANUS CANAL

UNION STREET

SIDEWALK

SIDEWALK

SIDEWALK

SIDEWALK

ADJA
PROP

SIDEWALK

ADJACENT PROPERTY

ADJACENT PROPERTY

ADJACENT PROPERTY

FORMER BUILDING FOUNDATION SLAB

NEVINS STREET

SIDEWALK

SIDEWALK

SIDEWALK

SIDEWALK

PRESIDENT STREET

SIDEWALK

ADJACENT PROPERTY

ADJACENT PROPERTY

ADJACENT PROPERTY

ADJACENT PROPERTY

ADJACENT PROPERTY

SIDEWALK

SIDEWALK

SIDEWALK

CARROLL STREET

SIDEWALK

PROJECT

NORTH

0' 50' 100'

NOTES:

LEGEND

- PROPERTY LINE
- TANK FIELD IDENTIFIED DURING THE SEPTEMBER 2022 GPR SURVEY
- POTENTIAL OIL/WATER SEPARATOR IDENTIFIED URING THE SEPTEMBER GPR SURVEY

CURRENT SITE LAYOUT

318 Nevins Street
Brooklyn, New York

Figure 2

PROJECT NO.	15977-01
DESIGNED BY:	AB
DRAWN BY:	AB
CHECKED BY:	DP
DATE:	11/8/2022
SCALE:	1" = 50'

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LEGEND

- PROPERTY LINE
- TRACK 4 EXCAVATION (2 FBG)
- HOTSPOT EXCAVATION TO 8 FBG TO REMOVE PAHS EXCEEDING PGSCOS
- HOTSPOT EXCAVATION TO 9 FBG TO REMOVE PAHS AND METALS EXCEEDING PGSCOS
- HOTSPOT EXCAVATION TO 11 FBG TO REMOVE PAHS AND METALS EXCEEDING PGSCOS
- HOTSPOT EXCAVATION TO 13 FBG TO REMOVE PAHS AND METALS EXCEEDING PGSCOS
- HOTSPOT EXCAVATION TO 21 FBG TO REMOVE PAHS AND METALS EXCEEDING PGSCOS
- SOLIDIFICATION/STABILIZATION AREA - EXCAVATION TO 2 FBG

NOTES:

AN ACTIVE SSDS WILL BE INSTALLED WITHIN THE PROPOSED STRUCTURE. A COVER SYSTEM WILL BE INSTALLED OVER THE ENTIRETY OF THE SITE IN THE FORM OF BUILDING FOUNDATION, SOIL COVER OR HARDSCAPE. REFER TO FIGURE 18 A FOR THE COMPOSITE COVER SYSTEM LAYOUT.

ELEMENTS OF REMEDY

318 Nevins Street
Brooklyn, New York

Figure 03

PROJECT NO.	15977-01
DESIGNED BY:	AB
DRAWN BY:	AB
CHECKED BY:	JDF
DATE:	04/28/2023
SCALE:	N.T.S.
REVISIONS	

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