DECISION DOCUMENT

Broadway Triangle Site A
Brownfield Cleanup Program
Brooklyn, Kings County
Site No. C224333
January 2024

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

DECLARATION STATEMENT - DECISION DOCUMENT

Broadway Triangle Site A
Brownfield Cleanup Program
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Statement of Purpose and Basis

This document presents the remedy for the Broadway Triangle Site A 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 Broadway Triangle Site A 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 NYSDEC accepted tool. Water consumption, greenhouse gas emissions, renewable and non-renewable energy use, waste reduction and material use will be estimated, and goals for the project related to these green and sustainable remediation metrics, as well as for minimizing community impacts, protecting habitats and natural and cultural resources, and promoting environmental justice, will be incorporated into the remedial design program, as appropriate. The project design specifications will include detailed requirements to achieve the green and sustainable remediation goals. Further, progress with respect to green and sustainable remediation metrics will be tracked during implementation of the remedial action and reported in the Final Engineering Report (FER), including a comparison to the goals established during the remedial design program.

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

2) Excavation

All soils in the upper two feet which exceed the restricted residential soil cleanup objectives (RRSCOs) will be excavated and transported off-site for disposal.

Approximately 1,100 cubic yards of contaminated soil will be removed from the site. Collection and analysis of end-point soil samples at the two-foot remedial excavation depth will be used to document remaining soil contamination to be addressed by the site cover system.

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

4) Cover System

A site cover will be required in areas where the upper two feet of exposed surface soil will exceed the applicable soil cleanup objectives (SCOs), to allow for future restricted residential use of the site. Where a soil cover is to be used it will be a minimum of two feet of soil placed over a demarcation layer, with the upper six inches of soil of sufficient quality to maintain a vegetative layer. Soil cover material, including any fill material brought to the site, will meet the SCOs for cover material for the use of the site as set forth in 6 NYCRR Part 375-6.7(d). Substitution of other materials and components may be allowed where such components already exist or are a component of the tangible property to be placed as part of site redevelopment. Such components may include, but are not necessarily limited to: pavement, concrete, paved surface parking areas, sidewalks, building foundations and building slabs.

5) 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 NYSDEC a periodic certification of institutional and engineering controls in accordance with Part 375-1.8 (h)(3);
- allow the use and development of the controlled property for restricted residential use as defined by Part 375-1.8(g), although land use is subject to local zoning laws;
- restrict the use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by the New York State Department of Health (NYSDOH) or New York City Department of Health and Mental Hygiene (NYCDOHMH); and
- require compliance with the NYSDEC 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.
   – Engineering Controls: the cover system discussed in Paragraph 4.

   This plan includes, but may not be limited to:
   - an Excavation Plan which details the provisions for management of future excavations in areas of remaining contamination;
   - descriptions of the provisions of the Environmental Easement including any land use or groundwater use restrictions;
   - a provision for evaluation of the potential for soil vapor intrusion for any occupied buildings on the site, including provision for implementing actions recommended to address exposures related to soil vapor intrusion;
   - 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 NYSDEC 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:
    - a schedule of monitoring and frequency of submittals to the NYSDEC; and
    - monitoring for vapor intrusion for any building 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:
    - procedures for operating and maintaining the remedy;
    - maintaining site access controls and NYSDEC notification; and
    - providing the NYSDEC access to the site and O&M records.

Declaration

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

January 12, 2024

Date

Jane H. O'Connell
Regional Remediation Engineer, Region 2

DECISION DOCUMENT

Broadway Triangle Site A
Brooklyn, Kings County
Site No. C224333
January 2024

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=C224333

Brooklyn Public Library - Bushwick Branch
340 Bushwick Avenue
Brooklyn, NY 11206
Phone: (718) 602-1348

Brooklyn Community Board 1
435 Graham Avenue
Brooklyn, NY 11211
Phone: (718) 389-0009

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 comprised of two separate parcels located at 663 – 667 Flushing Avenue (Site A1) and 29 – 31 Bartlett Street (Site A2) in the Williamsburg neighborhood of Brooklyn, NY. Site A1 includes Block 2272, Lot 49 (formerly Lots 49, 51, 52, 53 and 108) and Site A2 is Block 2269, Lot 52 on the New York City (NYC) Tax Map. Site A1 is bounded to the north by two residential buildings currently under construction, to the east by a residential building followed by a NYC park/playground, to the south by Flushing Avenue and southeast by Whipple Street, and to the west by another residential building. Site A2 is bounded to the north by a residential construction site being developed under BCP Site No. C224396, to the east by a commercial office building, to the south by Bartlett Street followed by the same residential construction sites adjacent to Site A1, and to the west by a mixed-use commercial/residential building.

Site Features: The site encompasses a total area of 0.33 acres (Site A1 being ±0.22 acres and Site A2 being ±0.11 acres) and is currently vacant with overgrown land and several patches of exposed concrete, likely from former on-site structures. The site is fully enclosed by chain-link fencing with locked gates.

Current Zoning and Land Use: The property is currently zoned R7A for residential use with a C2-4 commercial overlay. The site is in an urban area and is primarily surrounded by commercial and multi-family residential properties and vacant land.

Past Use of the Site: Site A1 was developed as early as 1887 with residential and commercial structures. Former on-site commercial uses included retail stores, a bakery, carpenter's shop, and a junk shop. The former buildings on Site A1 were demolished by 1980 and the site has remained vacant since. Site A2 is likely to have also been in use for residential and commercial purposes since at least 1887. Former on-site uses included single and multi-family residences, a fur dresser, and several retail stores. The former buildings on Site A2 were demolished sometime after 2006 and the site has remained vacant since that time. No other significant on-site commercial uses were noted. All six site lots are currently owned by New York City (NYC) Housing Preservation and Development (HPD).

Site Geology & Hydrogeology: Subsurface materials throughout the site generally contain urban fill (e.g., unsorted sand, brick, concrete, and glass) to depths ranging from 4 to 8 feet below grade surface (ft-bgs) at Site A1, and 7 to 8 ft-bgs at Site A2. Urban fill materials overlie native brown sand with some clay around 8 ft-bgs in the northern portion of Site A1, and native brown sand with some silt and trace clay was observed at the southern extent of Site A2. No bedrock was encountered during previous investigations, but bedrock depth in the area is estimated to range from 160 to 200 ft-bgs. Groundwater was generally encountered at approximately 7 to 9 ft-bgs at Site A1 and 12 ft-bgs at Site A2. The property is mostly flat with the topographic gradient sloping downward to the northwest and groundwater flows generally to the north. Groundwater in this area of Brooklyn is not used as a source of potable water.

A site location map is attached as Figure 1.

SECTION 4: LAND USE AND PHYSICAL SETTING

The NYSDEC may consider the current, intended, and reasonably anticipated future land use of the site and its surroundings when evaluating a remedy for soil remediation. For this site, alternatives that restrict 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 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 Applicants under the Brownfield Cleanup Agreement is a Volunteer. The Applicants do not have an obligation to address off-site contamination. 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:

indeno(1,2,3-cd)pyrene
benzo(b)fluoranthene
benzo(a)anthracene
benzo(a)pyrene
barium
lead
mercury
dibenz[a,h]anthracene
chrysene
pyrene
phenanthrene

The contaminants of concern exceed the applicable SCGs for:

- 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 samples were analyzed for VOCs. Based upon investigations conducted to date, the primary contaminants of concern for the site include SVOCs and metals in soil, and VOCs in soil vapor.

Soil - SVOCs and metals were detected above their respective restricted residential soil cleanup objectives (RRSCOs). For Site A1, the highest concentrations of SVOCs included benzo(a)anthracene at 94 parts per million (ppm) (RRSCO is 1 ppm), benzo(a)pyrene at 75 ppm (RRSCO is 1 ppm), benzo(b)fluoranthene at 97 ppm (RRSCO is 1 ppm), benzo(k)fluoranthene at 38 ppm (RRSCO is 3.9 ppm), chrysene at 90 ppm (RRSCO is 3.9 ppm), dibenz(a,h)anthracene at 18 ppm (RRSCO is 0.33 ppm), fluoranthene at 240 ppm (RRSCO is 100 ppm), indeno(1,2,3-cd)pyrene at 59 ppm (RRSCO is 0.5 ppm), phenanthrene at 280 ppm (RRSCO is 100 ppm), and pyrene at 210 ppm (RRSCO is 100 ppm). On Site A2, the highest SVOC concentrations included benzo(a)anthracene at 2.1 ppm, benzo(a)pyrene at 2.1 ppm, benzo(b)fluoranthene at 3 ppm, and indeno(1,2,3-cd)pyrene at 1.5 ppm. For metals, the highest concentrations at Site A1 included arsenic at 24.3 ppm (RRSCO is 16 ppm), barium at 1,880 ppm (RRSCO is 400 ppm), cadmium at 13.2 ppm (RRSCO is 4.3 ppm), lead at 2,290 ppm (RRSCO is 400 ppm), and mercury at 1.5 ppm (RRSCO is 0.81 ppm). The highest metal detections at Site A2 included barium at 1,630 ppm, lead at 768 ppm, and mercury at 24.8 ppm.

For the PFAS compounds, perfluorooctanesulfonic acid (PFOS) was detected in soil at Site A1 with concentrations ranging from non-detect to 4.91 parts per billion (ppb), and at Site A2 from non-detect to 3.13 ppb. These detections exceed the guidance value for protection of groundwater of 1 ppb but are below the restricted residential guidance value of 44 ppb. Data does not indicate any off-site impacts in soil related to this site.

Groundwater - Groundwater samples collected at Site A2 exceeded the Ambient Water Quality Standards and Guidance Values (AWQSGVs) for two VOCs, cis-1,2-dicholorethylene at 6.1 ppb (AWQSGV is 5 ppb) and vinyl chloride at 3.9 ppb (AWQSGV is 2 ppb). No on-site source of

these VOCs was found on the site. The emerging contaminant 1,4-dioxane was also detected on Site A2 at a maximum concentration of 0.47 ppb, exceeding the AWQSGV of 0.35 ppb.

PFOS and perfluorooctanoic acid (PFOA) were found above the AWQSGV on both Site A1 and Site A2, with PFOS detected at 87.8 ppt and 156 ppt (AWQSGV of 2.7 ppt) and PFOA detected at 138 ppt and 227 ppt (AWQSGV of 6.7 ppt), respectively. Dissolved metals exceeding AWQSGVs were detected across the site with the highest concentrations at Site A2, including magnesium (maximum of 233,000 ppb; AWQSGV is 35,000 ppb) and manganese (max. of 2,030 ppb; AWQSGV is 300 ppb). Since these are naturally occurring trace metals, they are not considered to be contaminants of concern for this site. Data does not indicate any off-site impacts in groundwater related to this site.

Soil Vapor - Chlorinated VOCs were detected in soil vapor samples across the site including tetrachloroethene (PCE) at a maximum concentration of 98 micrograms per cubic meter ($\mu g/m^3$) on Site A1 and 48 $\mu g/m^3$ on Site A2, trichloroethylene (TCE) at a maximum of 0.56 $\mu g/m^3$ on Site A1 and 7.6 $\mu g/m^3$ on Site A2, methylene chloride at a maximum of 1 $\mu g/m^3$ on Site A1 and 1.3 $\mu g/m^3$ on Site A2, and carbon tetrachloride at a maximum of 0.35 $\mu g/m^3$ on both site parcels. 1,1,1-Trichloroethane (1,1,1-TCA) was observed only on Site A1 at a maximum concentration of 0.53 $\mu g/m^3$. Several petroleum-related VOCs were also detected across the site, including benzene at a maximum concentration of 6.3 $\mu g/m^3$ on Site A1 and 6.2 $\mu g/m^3$ on Site A2, total xylene at a max. of 87 $\mu g/m^3$ on Site A1 and 69 $\mu g/m^3$ on Site A2, and 1,3-butadiene at a max. of 9.5 $\mu g/m^3$ on Site A1 and 1.5 $\mu g/m^3$ on Site A2. Data does not indicate any 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 and secured which restricts public access. However, persons who enter the site may come into contact with contaminants in soil by walking through, digging up, or otherwise disturbing the soil. People are not drinking the contaminated groundwater because the area is served by a public water supply that is not affected by site-related contamination. Volatile organic compounds in soil vapor (air spaces within the soil) may move into buildings and affect the indoor air quality. This process, which is similar to the movement of radon gas from the subsurface into the indoor air of buildings, is referred to as soil vapor intrusion. Because the site is vacant and unoccupied, soil vapor intrusion is not a current concern. The potential exists for inhalation of site-related contaminants due to soil vapor intrusion for any future on-site redevelopment and building occupancy. Environmental sampling indicates that soil vapor intrusion from site contaminants 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.

Soil

RAOs for Public Health Protection

- Prevent ingestion/direct contact with contaminated soil.

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 Soil Excavation and Site Cover remedy.

The elements of the selected remedy, as shown in Figures 2 and 3, 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;
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- 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 NYSDEC accepted tool. Water consumption, greenhouse gas emissions, renewable and non-renewable energy use, waste reduction and material use will be estimated, and goals for the project related to these green and sustainable remediation metrics, as well as for minimizing community impacts, protecting habitats and natural and cultural resources, and promoting environmental justice, will be incorporated into the remedial design program, as appropriate. The project design specifications will include detailed requirements to achieve the green and sustainable remediation goals. Further, progress with respect to green and sustainable remediation metrics will be tracked during implementation of the remedial action and reported in the Final Engineering Report (FER), including a comparison to the goals established during the remedial design program.

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

2) Excavation

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Approximately 1,100 cubic yards of contaminated soil will be removed from the site. Collection and analysis of end-point soil samples at the two-foot remedial excavation depth will be used to document remaining soil contamination to be addressed by the site cover system.

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.

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4) Cover System

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5) 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 NYSDEC a periodic certification of institutional and engineering controls in accordance with Part 375-1.8 (h)(3);
- allow the use and development of the controlled property for restricted residential use as defined by Part 375-1.8(g), although land use is subject to local zoning laws;
- restrict the use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by the New York State Department of Health (NYSDOH) or New York City Department of Health and Mental Hygiene (NYCDOHMH); and
- require compliance with the NYSDEC approved Site Management Plan.

6) Site Management Plan

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a. an Institutional and Engineering Control Plan that identifies all use restrictions and engineering controls for the site and details the steps and media-specific requirements necessary to ensure the following institutional and/or engineering controls remain in place and effective:
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    – Engineering Controls: the cover system discussed in Paragraph 4.

This plan includes, but may not be limited to:

- an Excavation Plan which details the provisions for management of future excavations in areas of remaining contamination;
- descriptions of the provisions of the Environmental Easement including any land use or groundwater use restrictions;
- a provision for evaluation of the potential for soil vapor intrusion for any occupied buildings on the site, including provision for implementing actions recommended to address exposures related to soil vapor intrusion;
- 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 NYSDEC 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:
    - a schedule of monitoring and frequency of submittals to the NYSDEC; and
    - monitoring for vapor intrusion for any building 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:
    - procedures for operating and maintaining the remedy;
    - maintaining site access controls and NYSDEC notification; and
    - providing the NYSDEC access to the site and O&M records.

QUADRANGLE LOCATION

N

1,000 0 1,000'

Title:

SITE LOCATION MAP

BROADWAY TRIANGLE SITE A, 663 - 667 FLUSHING AVE AND 29 - 31 BARTLETT ST, BROOKLYN NY

Prepared for: BARTLETT CROSSING LLC, BARTLETT CROSSING MANAGERS LLC, BARTLETT CROSSING UNP LLC

ROUX

Compiled by: B.V.	Date: 05/23/22
Prepared by: M.S.R.	Scale: AS SHOWN
Project Mgr: L.C.	Project: 3605.0001Y004
File: 3605.0001Y132.1.mxd	

FIGURE 1

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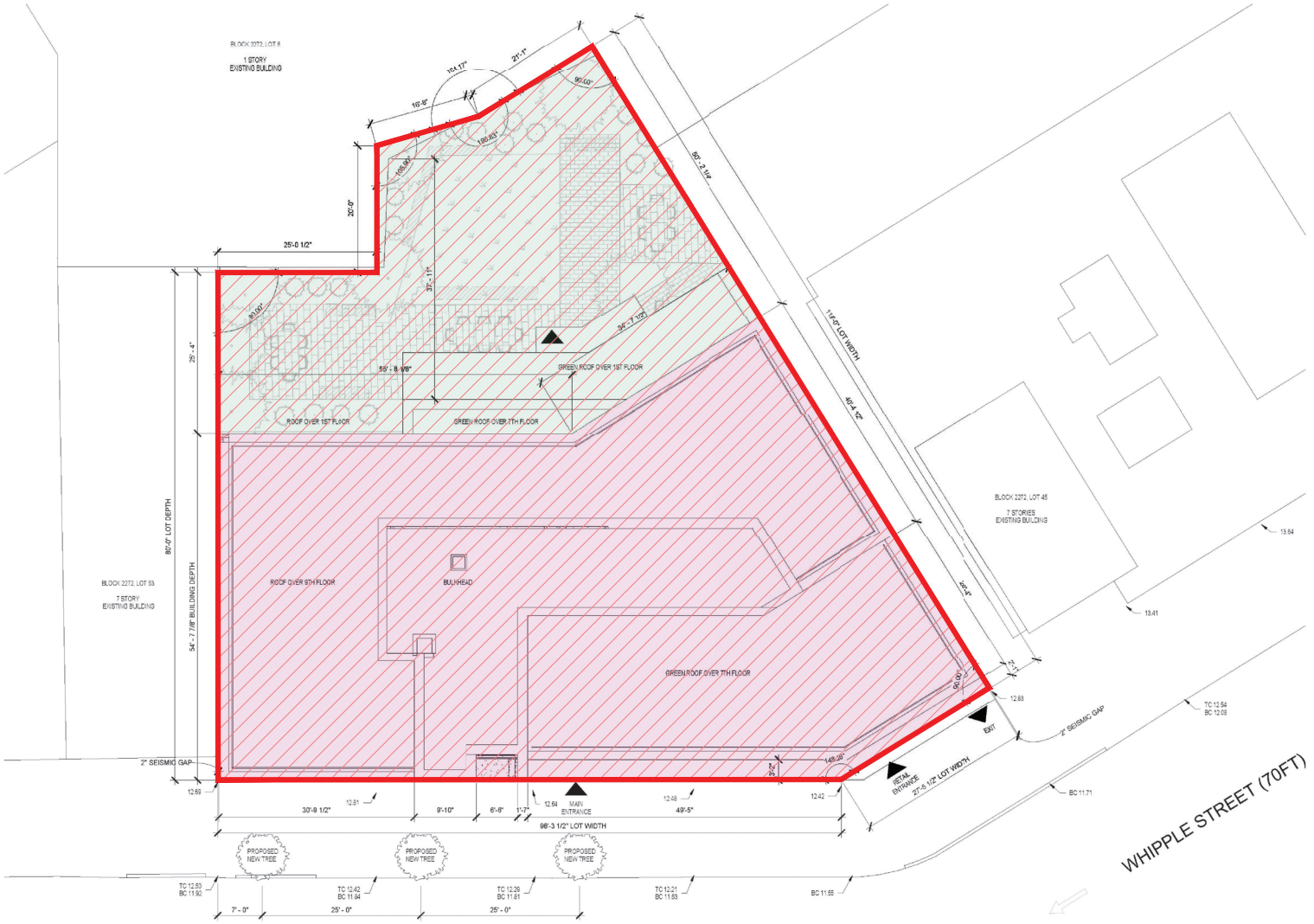
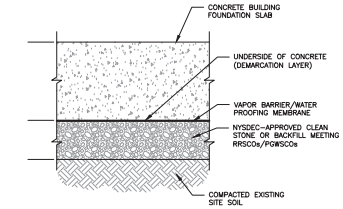
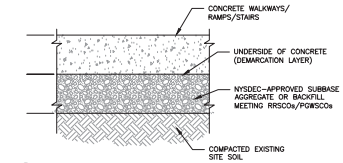
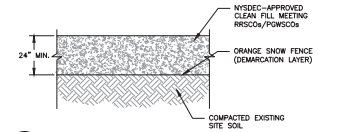




1 PROPOSED SITE COVER SYSTEM: CONCRETE BUILDING FOUNDATION
SCALE: NOT TO SCALE



2 PROPOSED SITE COVER SYSTEM: EXTERIOR PAVED WALKWAYS/RAMPS/STAIRS
SCALE: NOT TO SCALE



3 PROPOSED SITE COVER SYSTEM: EXTERIOR LANDSCAPED AREAS
SCALE: NOT TO SCALE

LEGEND

- CONCRETE BUILDING FOUNDATION UNDERLAIN BY VAPOR BARRIER (SEE DETAIL 1 AND NOTE 2)
- CONCRETE OR AT LEAST 2-FEET OF CLEAN FILL (SEE DETAILS 2 AND 3 AND NOTE 2)
- EXCAVATION TO 2 FT BLS TO ALLOW FOR PLACEMENT OF SITE COVER
- BCP SITE BOUNDARY

BCP – BROWNFIELD CLEANUP PROGRAM
RIR/RAWP – REMEDIAL INVESTIGATION REPORT/REMEDIAL ACTION WORK PLAN
NYSDEC – NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
PGWSCOs – PROTECTION OF GROUNDWATER SOIL CLEANUP OBJECTIVES
RCA – RECYCLED CONCRETE AGGREGATE
RRSCOs – RESTRICTED RESIDENTIAL SOIL CLEANUP OBJECTIVES
FT BLS – FEET BELOW LAND SURFACE

NOTES

1. BASE MAP ADAPTED FROM THE SITE PLAN PREPARED BY MAGNUSSON ARCHITECTURE & PLANNING PC.
2. BACKFILL FOR THE SITE'S TRACK 4 REMEDIAL ALTERNATIVE WILL MEET THE LOWER OF PART 375 RRSCOS OR PGWSCOS (WITH THE EXCEPTION OF VIRGIN GRANULAR FILL MATERIALS WITH LESS THAN 10 PERCENT PASSING THE NUMBER 80 SIEVE). FILL MATERIALS WITH LESS THAN 10 PERCENT PASSING THE NUMBER 80 SIEVE (I.E., STONE, GRAVEL, ET.) DO NOT REQUIRE SAMPLING. RCA MAY ONLY BE USED IN THE TRACK 4 AREA ABOVE THE NATURAL GROUNDWATER TABLE AND AS FURTHER DEFINED IN THE RIR/RAWP WITH PRIOR APPROVAL OF NYSDEC AND ROUX.

N

8' 0 8'

NO.	DATE	REVISION DESCRIPTION	INT.

PROJ. ENGINEER:	L.C.	DRAWN BY:	B.H.C.
DESIGNED BY:	B.L.	CHECKED BY:	L.C.
DRAWING SCALE:	AS SHOWN	PLOT SCALE:	1:1
DRAWING DATE:	6/2/2023	PRINT TYPE:	COLOR
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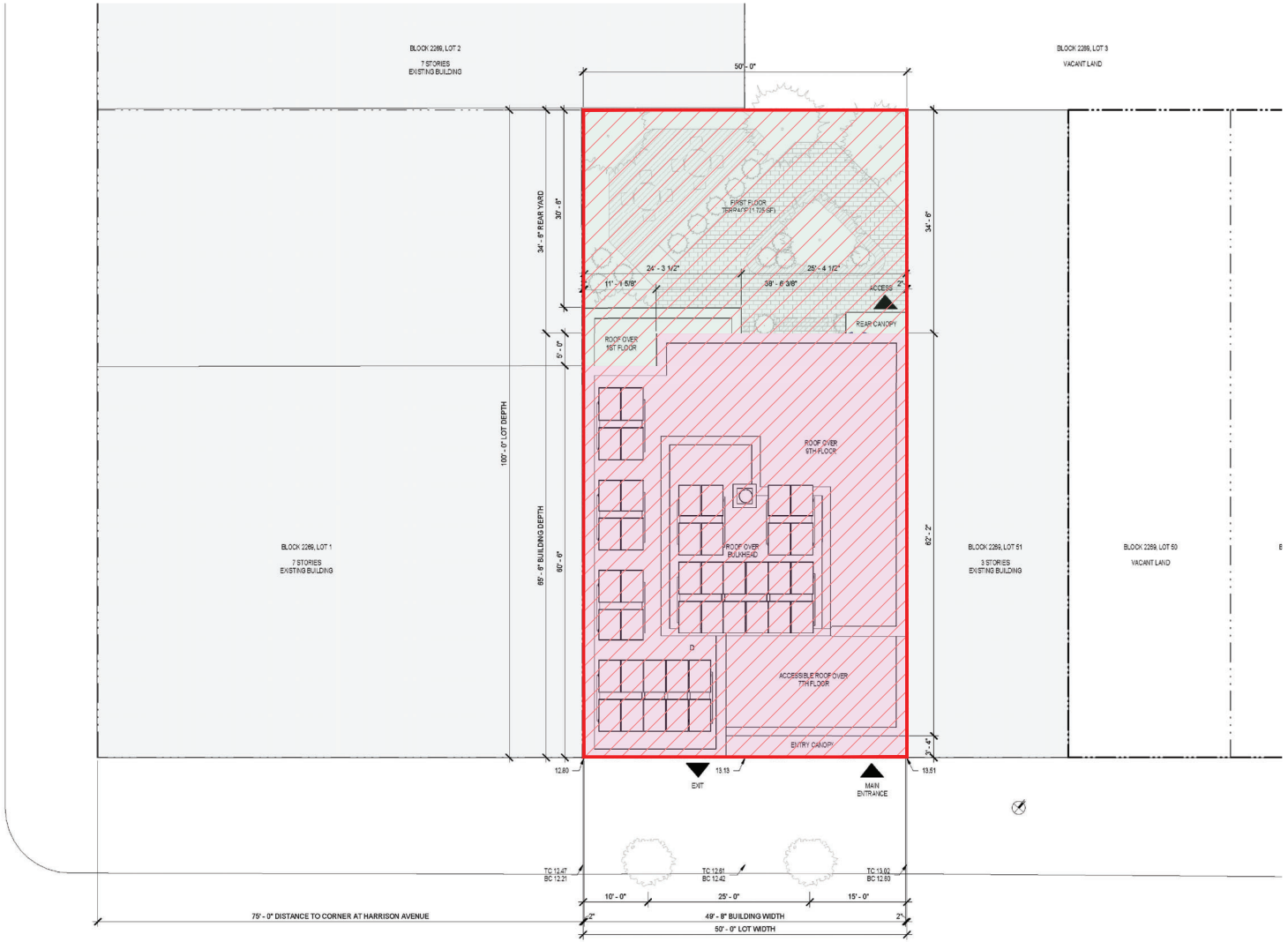
ROUX
Roux Environmental Engineering and Geology, D.P.C.
209 SHAFTER STREET ISLANDIA NEW YORK 11749
(631) 232-2600

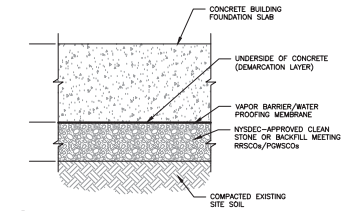
PROJECT NAME:
BROADWAY TRIANGLE SITE A-1
BROOKLYN, NEW YORK

PROJECT FOR:
BARTLETT CROSSING LLC

TITLE:
REMEDIAL ALTERNATIVE 2: TRACK 4 RESTRICTED RESIDENTIAL USE VIA COMPOSITE COVER SYSTEM

FIGURE
2





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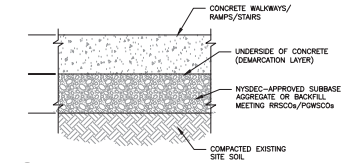
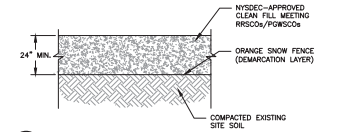


2 PROPOSED SITE COVER SYSTEM: EXTERIOR PAVED WALKWAYS/RAMPS/STAIRS

SCALE: NOT TO SCALE



3 PROPOSED SITE COVER SYSTEM: EXTERIOR LANDSCAPED AREAS

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NOTES

1. BASE MAP ADAPTED FROM THE SITE PLAN PREPARED BY MAGNUSSON ARCHITECTURE & PLANNING PC DATED MARCH 11, 2021.
2. BACKFILL FOR THE SITE'S TRACK 4 REMEDIAL ALTERNATIVE WILL MEET THE LOWER OF PART 375 RRSCOS OR PGWSCOS (WITH THE EXCEPTION OF VIRGIN GRANULAR FILL MATERIALS WITH LESS THAN 10 PERCENT PASSING THE NUMBER 80 SIEVE). FILL MATERIALS WITH LESS THAN 10 PERCENT PASSING THE NUMBER 80 SIEVE (I.E., STONE, GRAVEL, ET.) DO NOT REQUIRE SAMPLING. RCA MAY ONLY BE USED IN THE TRACK 4 AREA ABOVE THE NATURAL GROUNDWATER TABLE AND AS FURTHER DEFINED IN THE RIR/RAWP WITH PRIOR APPROVAL OF NYSDEC AND ROUX.

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PROJECT NAME:
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BROOKLYN, NEW YORK

PROJECT FOR:
BARTLETT CROSSING LLC

TITLE:
REMEDIAL ALTERNATIVE 2: TRACK 4 RESTRICTED RESIDENTIAL USE VIA COMPOSITE COVER SYSTEM

FIGURE
3