DECISION DOCUMENT

114 Snediker Avenue
Brownfield Cleanup Program
Brooklyn, Kings County
Site No. C224385
March 2024

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

DECLARATION STATEMENT - DECISION DOCUMENT

114 Snediker Avenue
Brownfield Cleanup Program
Brooklyn, Kings County
Site No. C224385
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Statement of Purpose and Basis

This document presents the remedy for the 114 Snediker Avenue 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 (NYSDEC) for the 114 Snediker Avenue site and the public's input to the proposed remedy presented by NYSDEC.

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™ (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. Backfill

Clean fill meeting the requirements of 6 NYCRR Part 375-6.7(d) will be brought in to complete the backfilling of the excavation performed during the Interim Remedial Measure (IRM) and establish the designed grades at the site.

3. Soil Vapor Extraction (SVE)

Soil vapor extraction (SVE) will be implemented to remove volatile organic compounds (VOCs) from the subsurface and prevent/stop off-site migration of contaminated soil vapor. VOCs will be physically removed from the soil by applying a vacuum to wells that have been installed into the vadose zone (the area below the ground but above the water table). The vacuum draws air through the soil matrix which carries the VOCs from the soil to the SVE well. The air extracted from the SVE wells is then treated as necessary prior to being discharged to the atmosphere.

The SVE treatment area is the entire Site. Fourteen (14) four-inch diameter SVE wells will be installed. Eleven (11) of the SVE wells will be constructed with 30-foot screened intervals (from 10 to 40 feet bgs) extending the SVE well screens to within approximately 5 feet of the observed groundwater interface. Three (3) of the SVE wells proposed in the partial basement will be constructed with 23-foot screened intervals (from 17 to 40 feet bgs) extending the SVE well screens to within approximately 5 feet of the observed groundwater interface.

The air containing VOCs extracted from the SVE wells will be treated by passing the air stream through activated carbon which removes the VOCs from the air prior to it being discharged to the atmosphere.

4. Groundwater Treatment: In-Situ Chemical Oxidation

In-situ chemical oxidation (ISCO) will be implemented to treat chlorinated solvent-related VOCs in groundwater. Modified Fenton's Reagent (MFR) and sodium permanganate will be injected into the subsurface to destroy the contaminants in the source area located in the northeast portion of the site, and in a series of transects downgradient of the source area, inclusive of interior portions and the southeastern and southwestern boundaries of the site.

5. 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.

6. Cover System

A site cover will be required to allow for restricted residential use of the Track 4 portion 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.

7. 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, commercial use, or industrial 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 NYCDOHMH; and
- require compliance with the NYSDEC approved Site Management Plan.

8. 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 Remedial Element 7 above.
- Engineering Controls: The Soil Vapor Extraction System discussed in Remedial Element 3, the Vapor Mitigation System discussed in Remedial Element 5, and the Cover System for the Track 4 portion of the site discussed in Remedial Element 6, 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;
- descriptions of the provisions of the environmental easement including any land use, groundwater and surface water use restrictions;
- a provision that should a building foundation or building slab be removed in the future, a cover system consistent with that described in Remedial Element 6 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:
   - monitoring of soil vapor indoor air, and groundwater to assess the performance and effectiveness of the remedy; and
   - a schedule of monitoring and frequency of submittals to the NYSDEC.

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 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.

March 27, 2024

Date

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

DECISION DOCUMENT

114 Snediker Avenue
Brooklyn, Kings County
Site No. C224385
March 2024

SECTION 1: SUMMARY AND PURPOSE

The New York State Department of Environmental Conservation (NYSDEC), 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.

NYSDEC 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

NYSDEC 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 NYSDEC 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=C224385

Brooklyn Public Library, Brownsville Library
61 Glenmore Avenue
Brooklyn, NY 11212
Phone: (718) 498-9721

Brooklyn Community Board 5
127 Pennsylvania Avenue, 2nd Floor
Brooklyn, NY 11207
Phone: (718) 819-5487

Receive Site Citizen Participation Information By Email

Please note that NYSDEC'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 within a mixed-use neighborhood on the north side of Glenmore Avenue between Van Sinderen Avenue and Snediker Avenue in the New Lots sub-section of the East New York neighborhood in Brooklyn, NY. The site is abutted to the north by light manufacturing and a multi-family residential building; to the east by Snediker Avenue followed by a five-story office building occupied by the New York City Police Department and an asphalt-paved parking lot followed by commercial, industrial, and residential uses beyond; to the south by Glenmore Avenue followed by mixed-use industrial, residential, and commercial properties; and to the west by Van Sinderen Avenue and an elevated railway for the L-line of the NYC Metropolitan Transit Authority. An adjacent property (Lot 36) divides a portion of this site along Glenmore Avenue forming a "U" shape and includes a 1-story metal frame garage and driveway.

Site Features:
The site consists of a single tax parcel (Block 3697, Lot 1) and was previously occupied by three adjoining buildings consisting of a two-story building formerly utilized as storage and workshop spaces, and two single-story former manufacturing buildings. The three former buildings were recently demolished to facilitate the Interim Remedial Measures (IRM).

Current Zoning and Land Use:
The site is currently zoned as M1-4 (light manufacturing). The surrounding area includes predominately commercial and industrial properties with some residential development.

Past Use of the Site:
Former uses of the site that may have contributed to site contamination include a lumber yard, manufacture of plumbing supplies, lighting fixture manufacturing, auto repair shop, nail polish bottling, and an auto junkyard from 1983 to 1996. The lighting manufacturer was identified as a Resource Conservation Recovery Act (RCRA) Large Quantity Generator (LQG) in 1982 for the

generation of F-coded wastes, which are defined as characteristic hazardous waste and include such chemicals as halogenated solvents (F001: tetrachloroethylene [PCE], trichloroethylene [TCE], etc.) and nonhalogenated solvents (F005: toluene, carbon disulfide, benzene, etc.).

Site Geology and Hydrogeology:
On-site surface topography is generally flat, with the surrounding area topography sloping gently down to the south-southwest, toward Jamaica Bay. Based on the U.S. Geological Survey (Brooklyn, NY Quadrangle), the Site lies at an elevation of approximately 50 feet above the North American Vertical Datum of 1988 (NAVD 1988), an approximation of mean sea level.

The site is underlain by unconsolidated fill comprised of a mixture of sand, gravel, silt, clay, brick, concrete, metal, and plastic to approximately 10.5 feet below ground surface (bgs). The fill is underlain by apparently native dense sand and silt with varying amounts of gravel and cobbles down to the maximum boring terminus of 75 feet bgs. Bedrock was not encountered during the RI; however, a cobble layer was encountered at varying depths throughout the site between approximately 10 and 30 feet bgs and was noted to act as a non-contiguous confining layer.

Groundwater is found at a depth of approximately 41 to 43 feet below sidewalk grade and flows south-southeast towards Jamaica Bay, which is located approximately 2.5 miles southeast of the site.

A site location map is attached as Figure 1.

SECTION 4: LAND USE AND PHYSICAL SETTING

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 (or an alternative) that restrict(s) the use of the site to restricted-residential use (which allows for commercial use and industrial use) as described in Part 375-1.8(g) were/was evaluated in addition to an alternative which would allow for unrestricted use of the site.

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

SECTION 5: ENFORCEMENT STATUS

The Applicant under the Brownfield Cleanup Agreement is a Volunteer. The Applicant does not have an obligation to address off-site contamination. However, the Department in consultation with NYSDOH, has determined that this site poses a significant threat to public health or the environment; accordingly, an enforcement action is necessary.

The Department will seek to identify any parties (other than the Volunteer) known or suspected to be responsible for contamination at or emanating from the site, referred to as Potentially Responsible Parties (PRPs). The Department will bring an enforcement action against the PRPs.

If an enforcement action cannot be brought or does not result in the initiation of a remedial program by any PRPs, the Department will evaluate the off-site contamination for action under the State Superfund. The PRPs are subject to legal actions by the State for recovery of all response costs the State incurs or has incurred.

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. NYSDEC 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:

trichloroethene (TCE)
tetrachloroethene (PCE)
cis-1,2-dichloroethene
lead
benzo(a)anthracene
benzo(a)pyrene
benzo(b)fluoranthene
barium
mercury

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.

IRM - Building Demolition and Excavation
The existing on-site buildings were demolished as part of the IRM and materials which can't be beneficially reused on site will be taken off-site for proper disposal in order to implement the remedy.

Excavation and off-site disposal of contaminant source areas to depths of up to 21 feet, including:

- soils which exceed the protection of groundwater soil cleanup objectives (PGWSCOs), as defined by 6 NYCRR Part 375-6.8 for those contaminants found in site groundwater above standards; and
- any underground storage tanks (USTs), fuel dispensers, underground piping or other structures associated with a source of contamination.

For the Track 2 area of the site, excavation and off-site disposal of all on-site soils which exceed restricted-residential SCOs, as defined by 6 NYCRR Part 375-6.8 in the upper 15 feet on the eastern portion of the site. If a Track 2 restricted residential cleanup is achieved, a Cover System will not be a required element of the remedy on the eastern portion of the site.

For the Track 4 area, all soils in the upper two feet which exceed the restricted residential SCOs in the western portion of the site are being excavated and transported off-site for disposal.

Approximately 12,000 cubic yards of contaminated soil are being removed from the site. Collection and analysis of confirmation and documentation samples at the remedial excavation depths will be used to verify that SCOs for the site have been achieved. If confirmation/documentation sampling indicates that SCOs were not achieved at the stated remedial depth, the Applicant must notify NYSDEC, submit the sample results and, in consultation with NYSDEC, 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.

The IRM is ongoing, and results will be documented in the Final Engineering Report.

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

Soil - Soil data were compared to Restricted Residential Use Soil Cleanup Objectives (RRUSCOs) and Protection of Groundwater Soil Cleanup Objectives (PGWSCOs). PCE was found mostly at the northeast end of the property in shallow soil (0 to 4 ft bgs) and in some areas up to 21 ft bgs. VOCs identified include PCE at a maximum concentration of 98 parts per million, or ppm (RRSCO of 19 ppm and PGWSCO of 1.3 ppm). TCE was detected at a maximum concentration of 8 ppm (PGWSCO of 0.47 ppm). SVOCs identified include benzo(a)anthracene at a maximum concentration of 15 ppm (RRSCO is 1 ppm), benzo(a)pyrene at a maximum concentration of 17 ppm (RRSCO is 1 ppm), and benzo(b)fluoranthene at a maximum concentration of 27 ppm (RRSCO is 1 ppm). Metals identified include lead at a

maximum concentration of 1,360 ppm (RRSCO of 400 ppm), mercury at a maximum concentration of 3.71 ppm (RRSCO of 0.81 ppm), and barium at a maximum concentration of 814 ppm (RRSCO of 400 ppm). There were no exceedances of RRSCOs or PGWSCOs for PCBs or pesticides in soil samples.

1,4-dioxane was not detected above the reporting limit. Perfluorooctane sulfonic acid (PFOS) was detected at a maximum of 11.4 parts per billion (ppb), which exceeds the Protection of Groundwater Guidance Value (PGGV) of 1.1 ppb but does not exceed the Restricted Residential Use Guidance Value (RRUGV) of 44 ppb. Perfluorooctanoic acid (PFOA) was detected at a maximum of 3.08 ppb which exceeds the Protection of Groundwater Guidance Value (PGGV) of 0.8 ppb but does not exceed RRUGV of 33 ppb.

Data does not indicate any off-site impacts in soil related to this site.

Groundwater - PCE and its associated degradation products are also found in groundwater across the entire site. For VOCs, PCE, was detected at a maximum concentration of 19,000 ppb exceeding its Ambient Water Quality Standards and Guidance Values (AWQSGV) of 5 ppb, and TCE was detected at a maximum concentration of 30 ppb (AWQSGV of 5 ppb). The naturally occurring metals iron, manganese, and sodium were detected at concentrations exceeding the AWQSGVs. These metals are not considered to be site-specific contaminants of concern. There were no exceedances of AWQSGVs for SVOCs, PCBs, and pesticides in groundwater samples.

For PFAS, PFOA and PFOS were detected at concentrations of up to 105 and 23.8 parts per trillion (ppt), respectively, exceeding the respective AWQSGV of 6.7 ppt and 2.7 ppt respectively. 1,4-dioxane was detected at a maximum concentration of 0.82 ppb, exceeding the AWQSGV of 0.35 ppb.

Data indicates there is potential for off-site impacts in groundwater related to this site.

Soil Vapor - Elevated concentrations of VOCs were detected in all soil vapor samples collected from 12 soil vapor points, including PCE ranging from 200 micrograms per cubic meter (ug/m3) to 10,000,000 ug/m3, and TCE ranging from 23 ug/m3 to 250,000 ug/m3. Additionally, cis-1,2-dichloroethylene (DCE) was detected in multiple soil vapor samples at concentrations up to 5,800 ug/m3.

Data indicates 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.*

Access to the site is restricted by a fence. However, people who enter the site may come into contact with contaminants in soil by walking on the site, digging, 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 this contamination. Volatile organic compounds in soil vapor (air spaces within the soil) may move into structures 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 (SVI). The site is vacant so inhalation of site contaminants in indoor air on-site via the SVI pathway is not a current concern. However, the potential exists for inhalation of site contaminants due to SVI for any future on-site development. Environmental sampling indicates that SVI related to site-contamination is a potential concern for off-site structures.

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 Multiple Cleanup Tracks remedy.

The selected remedy is referred to as the Groundwater Treatment, SVE, Vapor Mitigation and Cover System remedy.

The elements of the selected remedy, as shown in Figures 2 through 6, 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™ (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. Backfill

Clean fill meeting the requirements of 6 NYCRR Part 375-6.7(d) will be brought in to complete the backfilling of the excavation performed during the Interim Remedial Measure (IRM) and establish the designed grades at the site.

3. Soil Vapor Extraction (SVE)

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The SVE treatment area is the entire Site. Fourteen (14) four-inch diameter SVE wells will be installed. Eleven (11) of the SVE wells will be constructed with 30-foot screened intervals (from 10 to 40 feet bgs) extending the SVE well screens to within approximately 5 feet of the observed groundwater interface. Three (3) of the SVE wells proposed in the partial basement will be constructed with 23-foot screened intervals (from 17 to 40 feet bgs) extending the SVE well screens to within approximately 5 feet of the observed groundwater interface.

The air containing VOCs extracted from the SVE wells will be treated by passing the air stream through activated carbon which removes the VOCs from the air prior to it being discharged to the atmosphere.

4. Groundwater Treatment: In-Situ Chemical Oxidation

In-situ chemical oxidation (ISCO) will be implemented to treat chlorinated solvent-related VOCs in groundwater. Modified Fenton's Reagent (MFR) and sodium permanganate will be injected into the subsurface to destroy the contaminants in the source area located in the northeast portion of the site, and in a series of transects downgradient of the source area, inclusive of interior portions and the southeastern and southwestern boundaries of the site.

5. 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.

6. Cover System
A site cover will be required to allow for restricted residential use of the Track 4 portion 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.

7. 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, commercial use, or industrial 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 NYCDOHMH; and
- require compliance with the NYSDEC approved Site Management Plan.

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

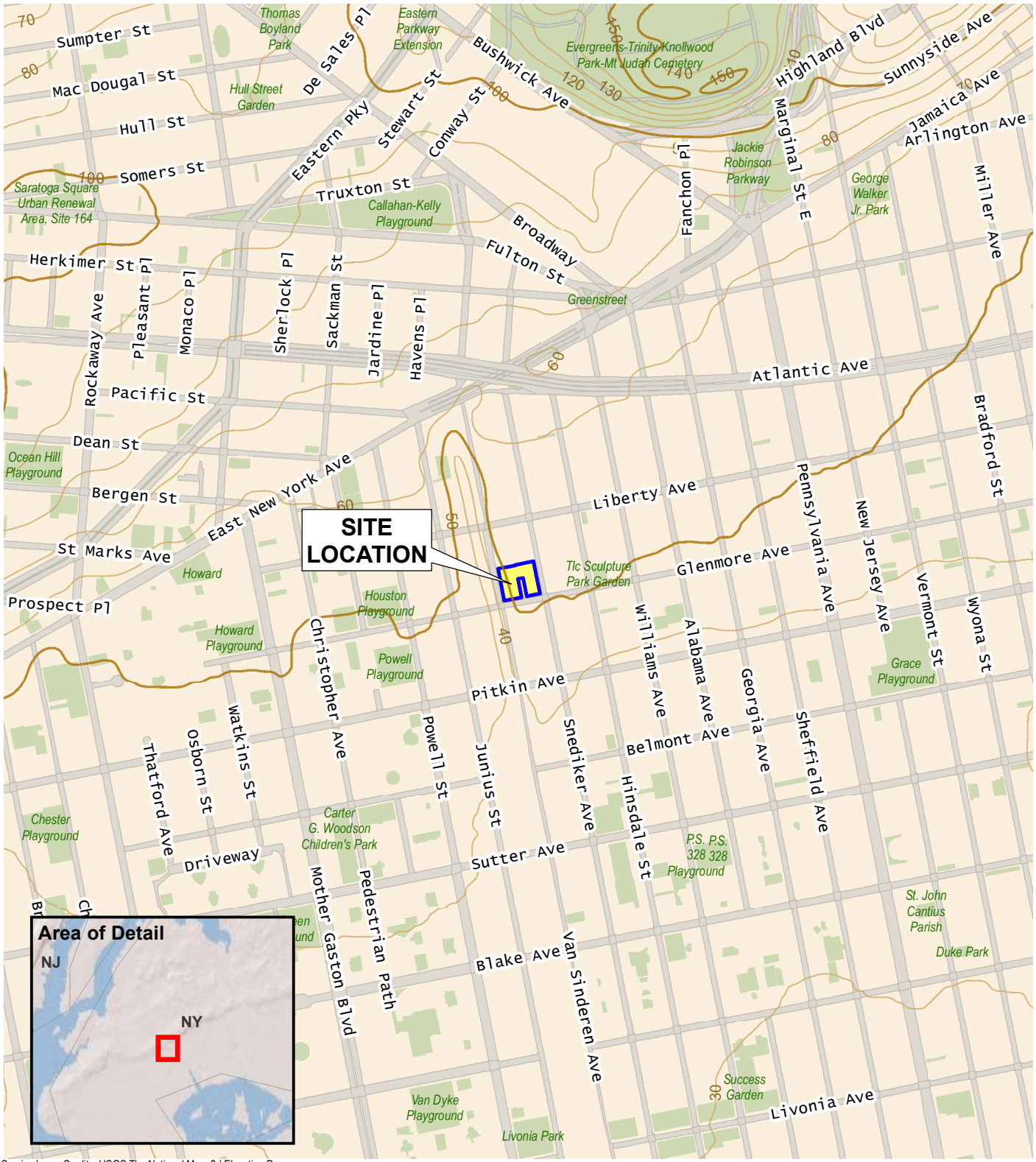
a. An Institutional and Engineering Control Plan that identifies all use restrictions and engineering controls for the site and details the steps and media-specific requirements necessary to ensure the following institutional and/or engineering controls remain in place and effective:
   - Institutional Controls: The Environmental Easement discussed in Remedial Element 7 above.
   - Engineering Controls: The Soil Vapor Extraction System discussed in Remedial Element 3, the Vapor Mitigation System discussed in Remedial Element 5, and the Cover System for the Track 4 portion of the site discussed in Remedial Element 6, 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;
   - descriptions of the provisions of the environmental easement including any land use, groundwater and surface water use restrictions;

- a provision that should a building foundation or building slab be removed in the future, a cover system consistent with that described in Remedial Element 6 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:
   - monitoring of soil vapor indoor air, and groundwater to assess the performance and effectiveness of the remedy; and
   - a schedule of monitoring and frequency of submittals to the NYSDEC.

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 NYSDEC notification; and
   - providing the NYSDEC access to the site and O&M records.



Service Layer Credits: USGS The National Map: 3d Elevation Program, Data Refreshed July, 2021

0 800 1,600

SCALE IN FEET

AKRF
440 Park Avenue South, New York, NY 10016

114 Snediker Avenue Site

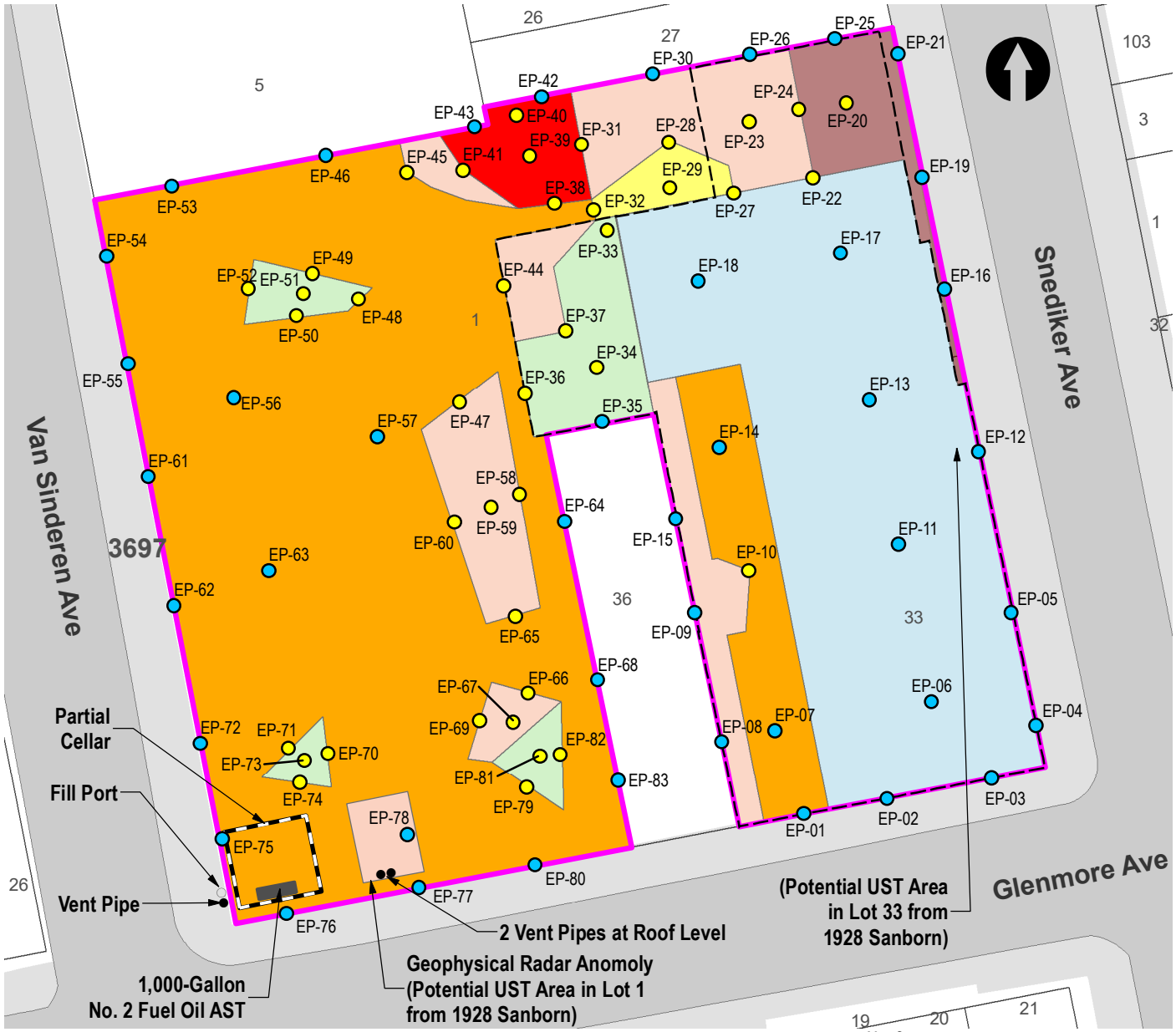
221-241 Glenmore Avenue
Brooklyn, New York

SITE LOCATION

DATE
8/22/2023

PROJECT NO.
220249

FIGURE
1



Map Source:
NYCDCP (NYC Dept. of City Planning) GIS database.

LEGEND

- PROJECT SITE BOUNDARY
- 1 — LOT BOUNDARY AND TAX LOT NUMBER
- 3697 — BLOCK NUMBER
- APPROXIMATE PROPOSED BUILDING FOOTPRINT
- EXCAVATION ENDPOINT SAMPLE LOCATION
- HOT SPOT ENDPOINT SAMPLE LOCATION

AST: ABOVEGROUND STORAGE TANK
UST: UNDERGROUND STORAGE TANK

- EXCAVATION TO APPROXIMATELY A MINIMUM OF 2 FEET BELOW GRADE (UP TO 4 FEET BELOW GRADE)
- EXCAVATION TO APPROXIMATELY 6 FEET BELOW GRADE
- EXCAVATION TO APPROXIMATELY 8 FEET BELOW GRADE
- EXCAVATION TO APPROXIMATELY 10 FEET BELOW GRADE
- EXCAVATION TO APPROXIMATELY 12 FEET BELOW GRADE
- EXCAVATION TO APPROXIMATELY 15 FEET BELOW GRADE
- EXCAVATION TO APPROXIMATELY 21 FEET BELOW GRADE

0 40 80
SCALE IN FEET

Note: Actual excavation will be expanded as needed based on field observations, endpoint sampling results, and sloping/support of excavation.

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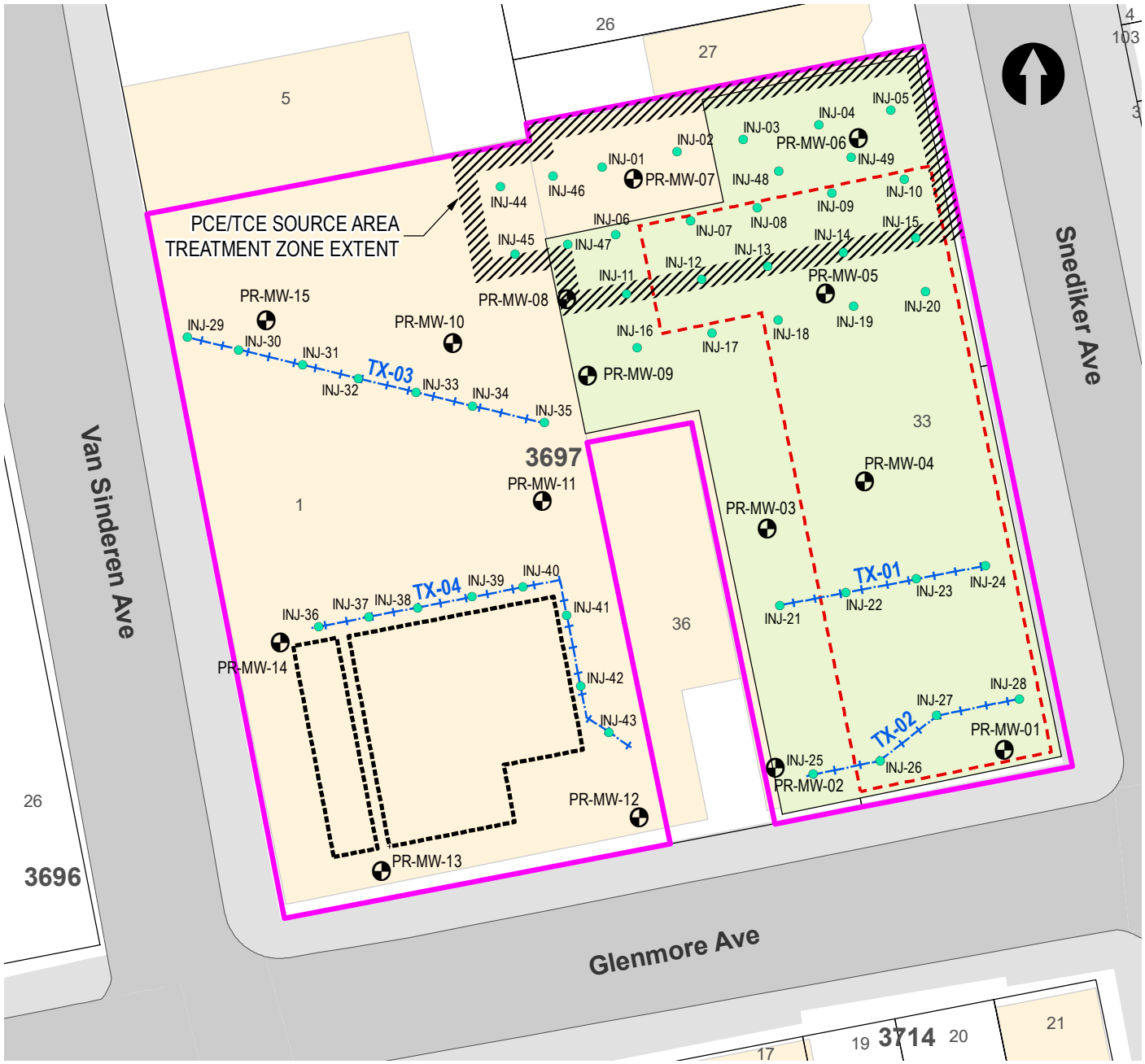
IRM EXCAVATION AND ENDPOINT SAMPLING PLAN

DATE
11/30/2023

PROJECT NO.
220249

FIGURE
2



Map Source:
NYCDCP (NYC Dept. of City Planning) GIS database.

LEGEND

- PROJECT SITE BOUNDARY
- 1 — LOT BOUNDARY AND TAX LOT NUMBER
- 3697 — BLOCK NUMBER
- BUILDING
- PCE/TCE SOURCE AREA GROUNDWATER TREATMENT ZONE
- APPROXIMATE EXTENT OF PROPOSED CELLAR
- APPROXIMATE EXTENT OF PROPOSED BUILDING
- APPROXIMATE LOCATION OF PROPOSED STORMWATER DETENTION TANK
- GROUNDWATER TREATMENT TRANSECTS
- PROPOSED GROUNDWATER TREATMENT INJECTION WELL LOCATION
- PROPOSED POST-REMEDIAL GROUNDWATER MONITORING WELL LOCATION

0 40 80
SCALE IN FEET

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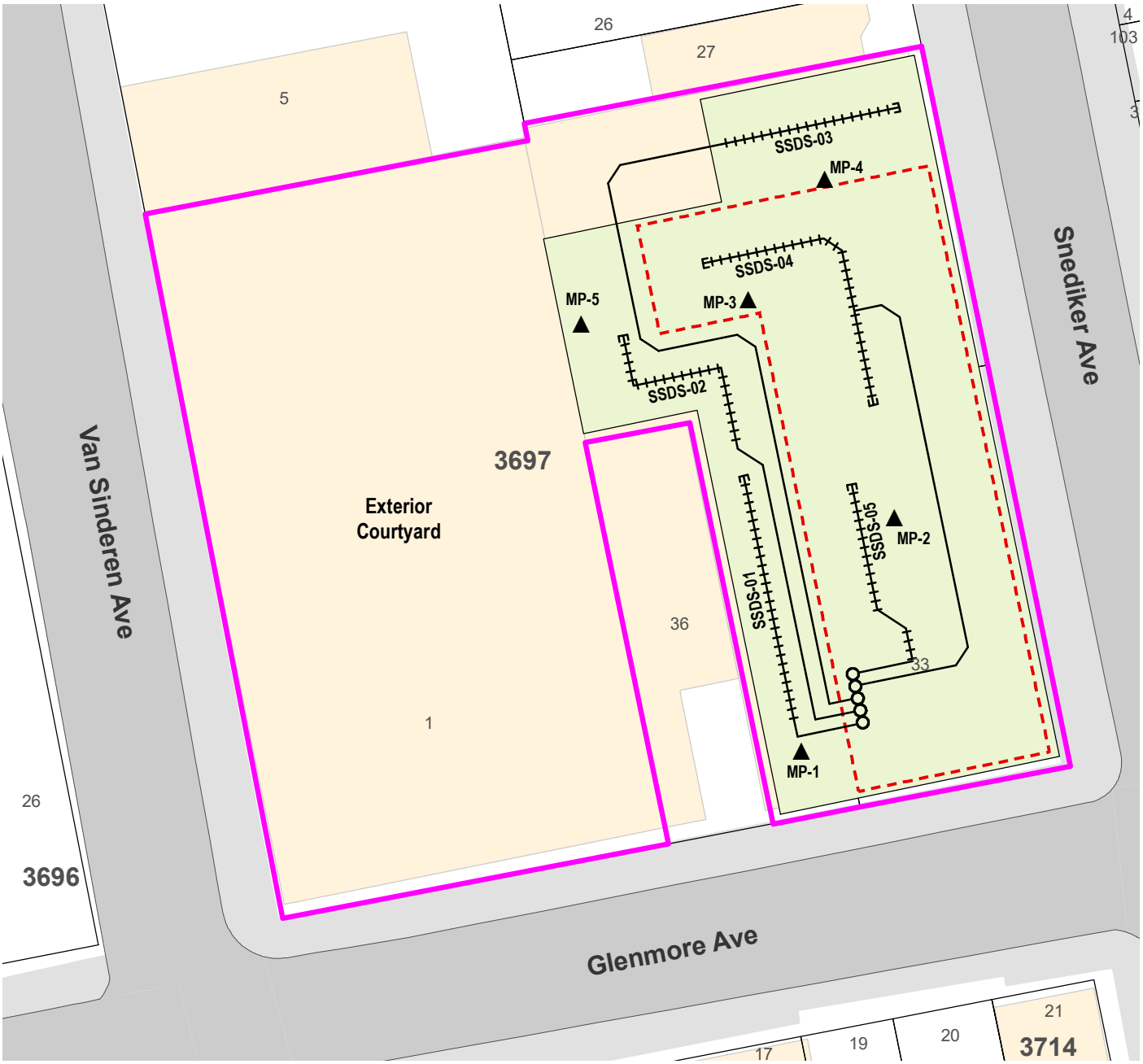
PROPOSED GROUNDWATER TREATMENT SITE PLAN AND POST-REMEDIAL GROUNDWATER MONITORING WELL LOCATIONS

DATE: 2/21/2024
PROJECT NO.: 220249
FIGURE: 3



Map Source:
NYCDCP (NYC Dept. of City Planning) GIS database.

LEGEND

- PROJECT SITE BOUNDARY
- 1 — LOT BOUNDARY AND TAX LOT NUMBER
- 3697 — BLOCK NUMBER
- BUILDING
- APPROXIMATE EXTENT OF PROPOSED BUILDING
- SUB-SLAB DEPRESSURIZATION SYSTEM RISER LOCATION
- PROPOSED TYPICAL SUB-SLAB DEPRESSURIZATION SYSTEM PIPE RUN
- APPROXIMATE EXTENT OF CELLAR
- PROPOSED SSDS VAPOR MONITORING POINT LOCATION

0 40 80
SCALE IN FEET

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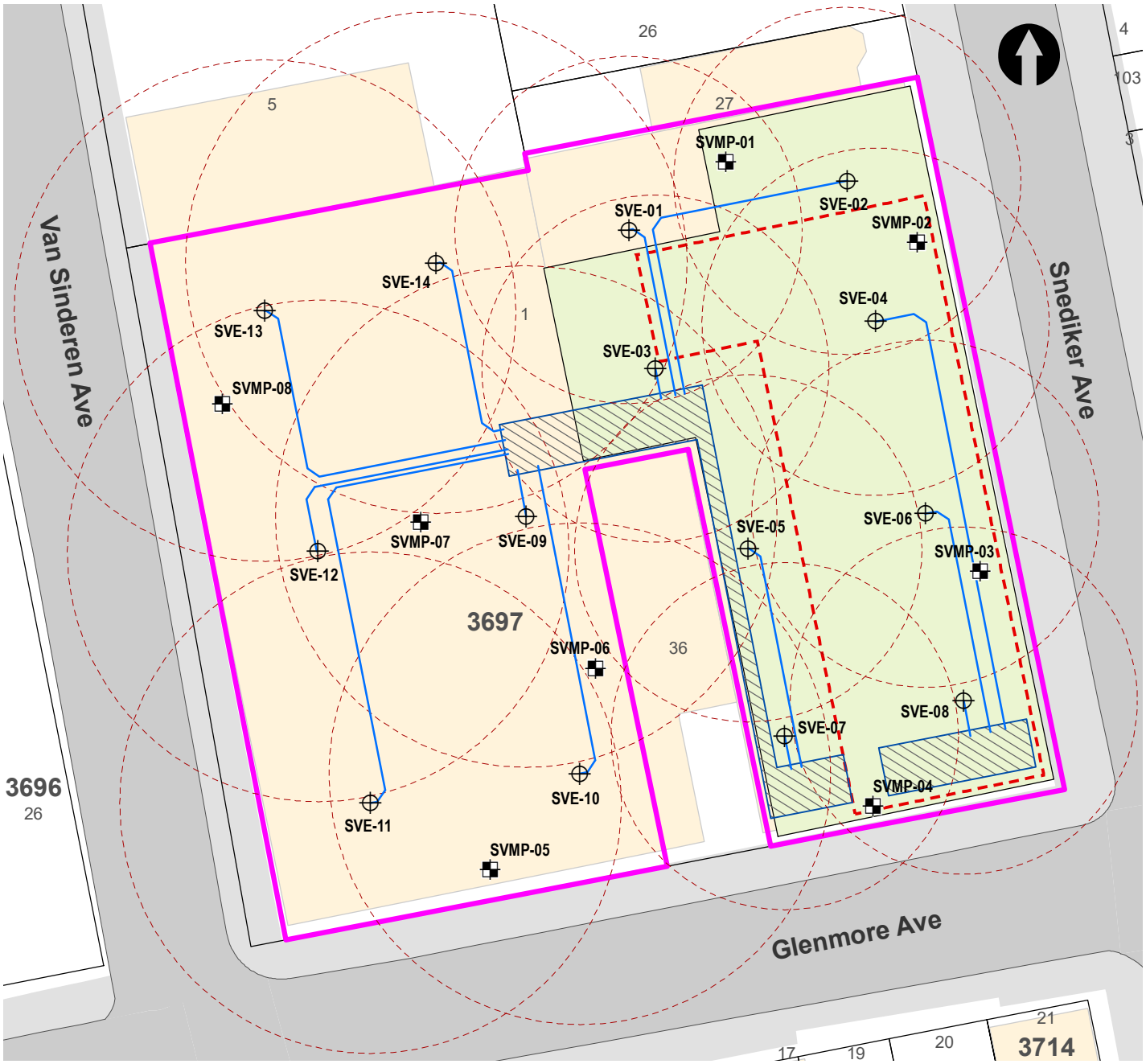
PROPOSED SUB-SLAB DEPRESSURIZATION SYSTEM SITE PLAN

DATE
8/23/2023
PROJECT NO.
220249
FIGURE
4



Map Source:
NYCDCP (NYC Dept. of City Planning) GIS database.

LEGEND

- PROJECT SITE BOUNDARY
- 1 — LOT BOUNDARY AND TAX LOT NUMBER
- 3697 — BLOCK NUMBER
- BUILDING
- APPROXIMATE EXTENT OF PROPOSED BUILDING
- APPROXIMATE EXTENT OF CELLAR
- PROPOSED SVE VACUUM MONITORING POINT LOCATION
- PROPOSED SOIL VAPOR EXTRACTION WELL
- SVE RADIUS OF INFLUENCE
- SVE LINE
- SVE TRENCH CONTAINING INDIVIDUAL SVE LINES

0 40 80
SCALE IN FEET

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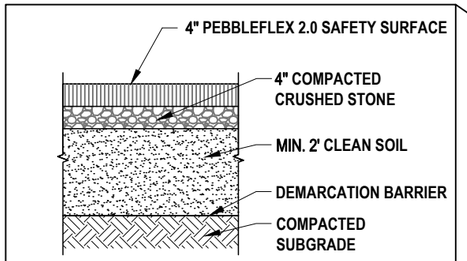
PROPOSED SOIL VAPOR EXTRACTION SYSTEM SITE PLAN

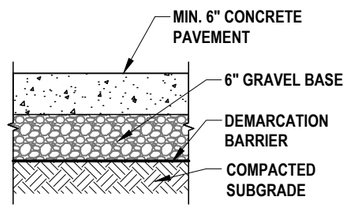
DATE
9/12/2023

PROJECT NO.
220249

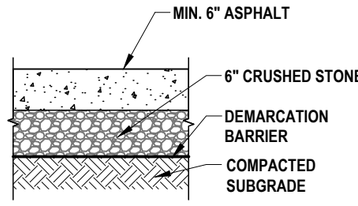
FIGURE
5



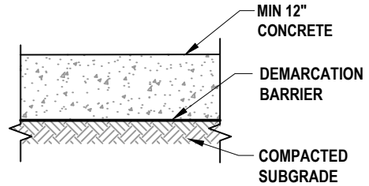
TYPICAL SAFETY SURFACE AREA
Not To Scale



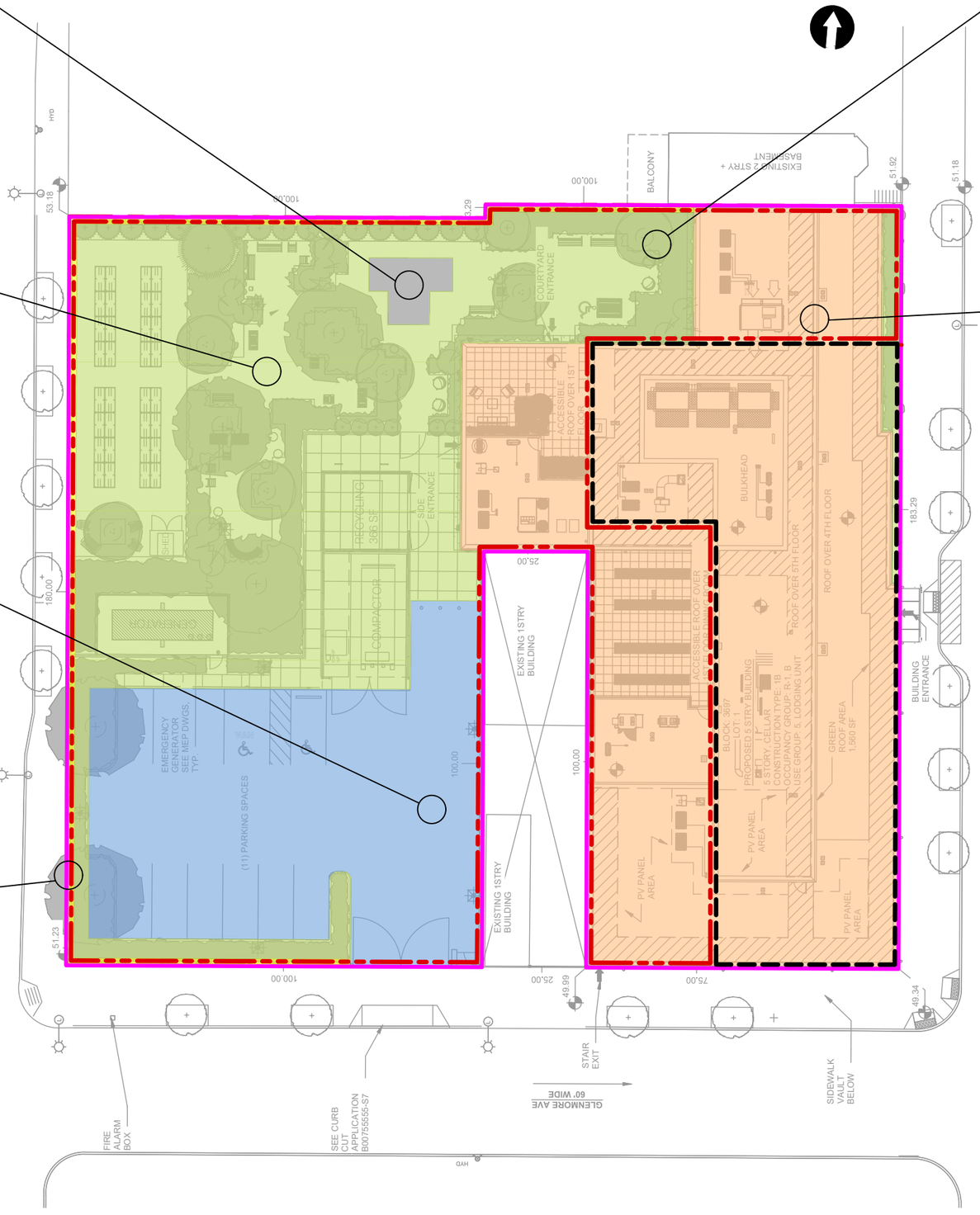
TYPICAL HARDSCAPED AREA
Not To Scale

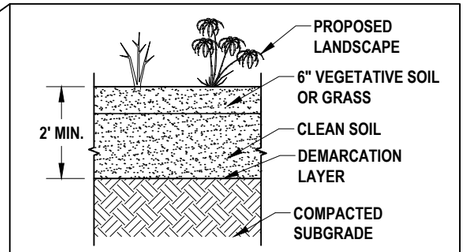


TYPICAL PARKING LOT
Not To Scale

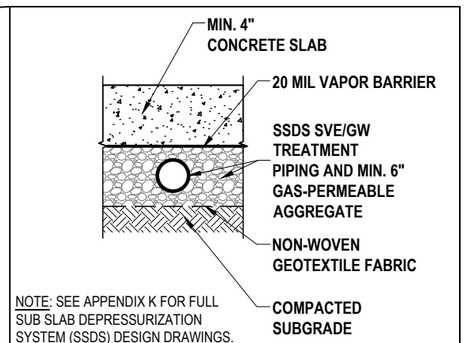


TYPICAL CONCRETE RETAINING WALL
Not To Scale





TYPICAL LANDSCAPED AREA
Not To Scale



NOTE: SEE APPENDIX K FOR FULL SUB SLAB DEPRESSURIZATION SYSTEM (SSDS) DESIGN DRAWINGS.

TYPICAL BUILDING SLAB
Not To Scale

LEGEND

- SITE BOUNDARY
- PROPOSED BUILDING SLAB
- PROPOSED LANDSCAPED AND HARDSCAPED AREAS
- PROPOSED PARKING LOT
- PROPOSED SAFETY SURFACE
- PROPOSED RETAINING WALL
- PROPOSED TRACK 2 AREA CONTINGENT COVER
- PROPOSED TRACK 4 AREA

Source:
Curtis Ginsberg Architects "114 Snediker Avenue, Site Plan" Sheet No. G-005.00, Dated 3/24/2023.

0 15 30 60
SCALE IN FEET

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114 Snediker Avenue Site
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SITE COVER SYSTEM PLAN

DATE
3/7/2024

PROJECT NO.
220249

FIGURE
6