**SENDERO VERDE REDEVELOPMENT PROJECT – PARCEL A**

**NEW YORK COUNTY**

**NEW YORK, NEW YORK**

**SITE MANAGEMENT PLAN**

**NYSDEC Site Number: C231135**

**Prepared for:**

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Jonathan Rose Companies

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**Revisions to Final Approved Site Management Plan:**

|  |  |  |  |
| --- | --- | --- | --- |
| **Revision No.** | **Date Submitted** | **Summary of Revision** | **NYSDEC Approval Date** |
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**August 2022**

# CERTIFICATION STATEMENT

i, Noelle Clarke, certify that I am currently a NYS registered professional engineer as defined in 6 NYCRR Part 375 and that this Site Management Plan was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10).

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ p.E.

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**SITE MANAGEMENT PLAN**

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# List of Acronyms

AS Air Sparging

ASP Analytical Services Protocol

BCA Brownfield Cleanup Agreement

BCP Brownfield Cleanup Program

CERCLA Comprehensive Environmental Response, Compensation and Liability Act

CAMP Community Air Monitoring Plan

C/D Construction and Demolition

CFR Code of Federal Regulation

CLP Contract Laboratory Program

COC Certificate of Completion

CO2 Carbon Dioxide

CP Commissioner Policy

CVOCs Chlorinated Volatile Organic Compounds

DER Division of Environmental Remediation

EC Engineering Control

ECL Environmental Conservation Law

ELAP Environmental Laboratory Approval Program

ERP Environmental Restoration Program

EWP Excavation Work Plan

GHG Green House Gas

GWE&T Groundwater Extraction and Treatment

HASP Health and Safety Plan

IC Institutional Control

NYSDEC New York State Department of Environmental Conservation

NYSDOH New York State Department of Health

NYCRR New York Codes, Rules and Regulations

O&M Operation and Maintenance

OM&M Operation, Maintenance and Monitoring

OSHA Occupational Safety and Health Administration

OU Operable Unit

PCBs Polychlorinated Biphenyls

PID Photoionization Detector

PRP Potentially Responsible Party

PRR Periodic Review Report

QA/QC Quality Assurance/Quality Control

QAPP Quality Assurance Project Plan

RAO Remedial Action Objective

RAWP Remedial Action Work Plan

RCRA Resource Conservation and Recovery Act

RI/FS Remedial Investigation/Feasibility Study

ROD Record of Decision

RP Remedial Party

SAC State Assistance Contract

SCG Standards, Criteria and Guidelines

SCO Soil Cleanup Objective

SMP Site Management Plan

SOP Standard Operating Procedures

SOW Statement of Work

SPDES State Pollutant Discharge Elimination System

SRIWP Supplemental Remedial Investigation Work Plan

SSD Sub-slab Depressurization

SVE Soil Vapor Extraction

SVI Soil Vapor Intrusion

SVOCs Semivolatile Organic Compounds

TAL Target Analyte List

TCL Target Compound List

TCLP Toxicity Characteristic Leachate Procedure

USEPA United States Environmental Protection Agency

UST Underground Storage Tank

VCA Voluntary Cleanup Agreement

VCP Voluntary Cleanup Program

VOCs Volatile Organic Compounds

# EXECUTIVE SUMMARY

The following provides a brief summary of the institutional and engineering controls (ICs and ECs) implemented on the portions of the Sendero Verde Redevelopment Project – Parcel A site that achieved Track 2 or Track 4 remedial action objectives, as well as the inspections, monitoring, maintenance and reporting activities required by this Site Management Plan (SMP):

| Site Identification: | C231135, Sendero Verde Redevelopment Project - Parcel A |
| --- | --- |
| **Institutional Controls**: | 1. The property may be used for restricted residential, commercial, or industrial use. |
|  | 2. Compliance with the Environmental Easement by the Grantee and Grantee’s successors and adherence to all elements of the SMP is required. |
|  | 3. All ECs must be operated and maintained as specified in this SMP. |
|  | 4. All ECs must be inspected and certified at a frequency and in a manner defined in the SMP. |
|  | 5. Data and information pertinent to Site Management must be reported at the frequency and in a manner defined in the SMP. |
|  | 6. The potential for vapor intrusion must be evaluated for any future buildings (excluding the buildings currently under construction at the time this SMP was issued) developed in the area within the IC boundaries noted on Figure 5, and appropriate actions to address exposures must be implemented. |
|  | 7. Vegetable gardens and farming are prohibited, with the exception of raised planting beds. |
|  | 8. Use of groundwater underlying the property is prohibited without necessary water quality treatment as determined by the New York State Department of Health or the New York City Department of Health and Mental Hygiene to render it safe for use as drinking water or for industrial purposes, and the user must first notify and obtain written approval to do so from the New York State Department of Environmental Conservation. |
|  | 9. All future activities falling within the Track 2 and Track 4 areas on the property that will disturb remaining contaminated material are prohibited unless they are conducted in accordance with the SMP. |
|  | 10. Access to the site must be provided to agents, employees or other representatives of the State of New York with reasonable prior notice to the property owner to assure compliance with the restrictions identified by the Environmental Easement. |
| **Engineering Controls**: | Cover system |
| **Inspections**: | **Frequency** |
| 1. Cover Inspection: | Annually |
| **Monitoring**: | Not applicable |
| **Maintenance**: | Not applicable |
| **Reporting**: |  |
| 1. Periodic Review Report | First Periodic Review Report due after the first 16-month certification period, then annually until completion and documentation of all development-related construction, then every 3 years thereafter. |

Further descriptions of the above requirements are provided in detail in the latter sections of this Site Management Plan.

# 1.0 Introduction

1.1 General

This Site Management Plan (SMP) is a required element of the remedial program for the Sendero Verde Redevelopment Project- Parcel A located in the Borough of Manhattan, City and State of New York (hereinafter referred to as the “Site”). See Figure 1. The Site is currently in the New York State (NYS) Brownfield Cleanup Program (BCP), Site No. C231135, which is administered by New York State Department of Environmental Conservation (NYSDEC).

SV-A Owners LLC entered into a Brownfield Cleanup Agreement (BCA), Index No. C231135-09-19, with the NYSDEC on November 12, 2019 to remediate the Site. BCA Amendment No. 1 was executed on September 15, 2021 to reflect the change in legal ownership of the Site from “The City of New York Acting by and through its Department of Housing Preservation and Development” to “Acacia Sendero Verde Housing Development Fund Company, Inc.”. The Site location and boundaries are depicted in Figure 2. The boundaries of the Site are more fully described in the metes and bounds Site description that is part of the Environmental Easement provided in Appendix A.

After completion of the remedial work, some contamination was left at this Site, which is hereinafter referred to as “remaining contamination.” Institutional Controls (ICs) and an Engineering Control (EC) have been incorporated into the Site remedy to control exposure to remaining contamination to ensure protection of public health and the environment. An Environmental Easement granted to the NYSDEC and recorded with the New York City Office of the City Register requires compliance with this SMP and all ECs and ICs placed on the Site.

This SMP was prepared to manage remaining contamination at the Site until the Environmental Easement is extinguished in accordance with ECL Article 71, Title 36. This plan has been approved by the NYSDEC, and compliance with this plan is required by the grantor of the Environmental Easement and the grantor’s successors and assigns. This SMP may only be revised with the approval of the NYSDEC.

It is important to note that:

* This SMP details the Site-specific implementation procedures that are required by the Environmental Easement. Failure to properly implement the SMP is a violation of the Environmental Easement, which is grounds for revocation of the Certificate of Completion (COC);
* Failure to comply with this SMP is also a violation of Environmental Conservation Law, 6 NYCRR Part 375 and the BCA (Index #C231135-09-19; Site #C231135) for the Site, and thereby subject to applicable penalties.

All reports associated with the Site can be viewed by contacting the NYSDEC or its successor agency managing environmental issues in New York State. A list of contacts for persons involved with the Site is provided in Appendix B of this SMP.

This SMP was prepared by Roux Environmental Engineering and Geology, D.P.C. (Roux), on behalf of SV-A Owners LLC, in accordance with the requirements of the NYSDEC’s DER-10 (“Technical Guidance for Site Investigation and Remediation”), dated May, 2010 and the guidelines provided by the NYSDEC. This SMP addresses the means for implementing the ICs and/or EC that are required by the Environmental Easement for the Site.

1.2 Revisions

Revisions to this plan will be proposed in writing to the NYSDEC’s project manager. The NYSDEC can also make changes to the SMP or request revisions from the remedial party. Revisions will be necessary upon, but not limited to, the following occurring: a change in media monitoring requirements, upgrades to or shut-down of a remedial system, post‑remedial removal of contaminated sediment or soil, or other significant change to the Site conditions. In accordance with the Environmental Easement for the Site, the NYSDEC project manager will provide a notice of any approved changes to the SMP and append these notices to the SMP that is retained in its files.

1.3 Notifications

Notifications will be submitted by the property owner to the NYSDEC, as needed, in accordance with NYSDEC’s DER – 10 for the following reasons:

1. 60-day advance notice of any proposed changes in Site use that are required under the terms of the BCA, 6 NYCRR Part 375 and/or Environmental Conservation Law.
2. 7-day advance notice of any field activity associated with the remedial program.
3. 15-day advance notice of any proposed ground-intrusive activity pursuant to the Excavation Work Plan. If the ground-intrusive activity qualifies as a change of use as defined in 6 NYCRR Part 375, the above mentioned 60-day advance notice is also required.
4. Notice within 48-hours of any damage or defect to the foundation, structures or EC that reduces or has the potential to reduce the effectiveness of an EC, and likewise, any action to be taken to mitigate the damage or defect.
5. Notice within 48 hours of any non-routine maintenance activities.
6. Verbal notice by noon of the following day of any emergency, such as a fire, flood, or earthquake, that reduces or has the potential to reduce the effectiveness of an EC in place at the Site, with written confirmation within 7 days that includes a summary of actions taken, or to be taken, and the potential impact to the environment and the public.
7. Follow-up status reports on actions taken to respond to any emergency event requiring ongoing responsive action submitted to the NYSDEC within 45 days of the emergency event describing and documenting actions taken to restore the effectiveness of the EC.

Any change in the ownership of the Site or the responsibility for implementing this SMP will include the following notifications:

1. At least 60 days prior to the change, the NYSDEC will be notified in writing of the proposed change. This will include a certification that the prospective purchaser/Remedial Party has been provided with a copy of the BCA and all approved work plans and reports, including this SMP.
2. Within 15 days after the transfer of all or part of the Site, the new owner’s name, contact representative, and contact information will be confirmed in writing to the NYSDEC.

Table 1 on the following page includes contact information for the above notifications. The information on this table will be updated as necessary to provide accurate contact information. A full listing of Site-related contact information is provided in Appendix B.

**Table 1: Notifications\***

|  |  |  |
| --- | --- | --- |
| **Name** | **Contact Information** | **Required Notification\*\*** |
| Steven Wu, NYSDEC Project Manager | Phone: (718) 482-6725  email: steven.wu@dec.ny.gov | All Notifications |
| Cris-Sandra Maycock, NYSDEC Section Chief | phone: (718) 482-4679 email: cris-sandra.maycock@dec.ny.gov | All Notifications |
| Kelly Lewandowski, NYSDEC Site Control Section Chief | phone: (518) 402-9569 email: kelly.lewandowski@dec.ny.gov | Notifications 1 and 8 |
| Mark Sergott, NYSDOH Project Manager | Phone: (518) 402-7897  Email: mark.sergott@health.ny.gov | Notifications 4, 6, and 7 |

\* Note: Notifications are subject to change and will be updated as necessary.

\*\* Note: Numbers in this column reference the numbered bullets in the notification list in this section.

# 2.0 Summary Of Previous Investigations And Remedial Actions

## 2.1 Site Location and Description

The Site is located in the Borough of Manhattan, City and State of New York and is identified as Section Manhattan Block 1617 and Lot 120 on the New York City Tax Map (see Figure 2). As described previously, BCA Amendment No. 1 was executed on September 15, 2021 to address the change in legal ownership of the Site from “The City of New York Acting by and through its Department of Housing Preservation and Development” to “Acacia Sendero Verde Housing Development Fund Company, Inc.”.

Most recently, the Site was utilized as community gardens, which were vacated in February 2018. The Site is located in a mixed-use area of East Harlem, Manhattan, New York. There are multiple high-rise residential buildings located to the north beyond East 112th Street; to the west, beyond Madison Avenue, is a multi-family residential building; to the south are Block 1617 Lot 21 (which includes a four story commercial building), a portion of Lot 7502 and Lot 125, East 111th Street and multiple mixed use commercial and residential high-rise buildings; to the east is the main portion of the Sendero Verde Redevelopment Project – Parcel B on Lot 7502 (SV-B), which is currently under construction, beyond which is Park Avenue, the elevated Metro North Railroad Tracks and a playground belonging to a public school (see Figure 2 – Site Layout Map). The boundaries of the Site are more fully described in Appendix A – Environmental Easement. The owners of the Site parcels at the time of issuance of this SMP is/are:

* Fee Owner - Acacia Sendero Verde Housing Development Fund Company, Inc.
* Beneficial Owner - SV-A Owners LLC

## 2.2 Physical Setting

### 2.2.1 Land Use

Prior to the remedial action, the Site consisted of the following: an unpaved vacant lot surrounded by chain-link fence that was formerly used as a community garden. The Site is currently zoned for commercial (C2-5) and residential (R-9) use and was vacant prior to the start of remedial activities. Prior to the community garden, previous Site occupants included Scaffldi Geo Shoe Repair, Jalisco Express, Hy-Grade Electric Company, Mohawk Fuel Company (likely an office based on other lines of evidence reviewed), Contreras Hernando Shoes, A&M Floor Covering Company, Morton Pharmacy, and Falit Jack Dry Goods.

The properties adjoining the Site and in the neighborhood surrounding the Site primarily include commercial and residential properties. The properties immediately south of the Site include commercial and residential properties; the properties immediately north of the Site include residential properties; the properties immediately east of the Site include commercial and residential properties (which are part of the overall Sendero Verde Redevelopment Project); and the properties immediately west of the Site include residential properties.

### 2.2.2 Geology

The grade at the Site is relatively flat. The elevation of the Site and surrounding area is approximately 18 feet above mean sea level (amsl).

Based on the investigations completed on-Site to date, the shallow deposits at the Site are typical of historic fill material found in urban environments such as New York City (i.e., brick and concrete). The depth to the bottom of the fill layer extends to between five and 13 feet (ft) below land surface (bls) across the Site, with localized areas of fill up to 20 ft bls. This urban fill material overlies deeper native deposits consisting of mostly fine to coarse sands and gravel with varying amounts of sand, silt, and clay. Bedrock was not encountered during the Roux Phase II Environmental Site Assessment (ESA) or the completed Remedial Investigation (RI).

A geologic cross section is shown in Figure 3. Site specific boring logs are provided in Appendix C.

### 2.2.3 Hydrogeology

According to water-level data collected during the RI the elevation of the water table surface at the Site ranges from approximately 4.41 ft North American Vertical Datum of 1988 (NAVD 88) at the southwest portion of the Site to approximately 4.88 NAVD 88 in the northwest portion of the Site. Groundwater depth at the Site varied from 12.00 ft bls to 13.60 ft bls. Groundwater flow is generally to the southeast towards the Harlem River which is located approximately 3,300 feet east of the Site.

A groundwater contour map is shown in Figure 4. Groundwater elevation data is provided in Table 2. Groundwater monitoring well construction logs are provided in Appendix C.

## 2.3 Investigation and Remedial History

The following narrative provides a history timeline and a brief summary of the available project records to document key investigative and remedial milestones for the Site. Full titles for each of the reports referenced below are provided in Section 8.0 - References.

The following environmental reports were available for review:

Phase I ESA, prepared by Roux, dated March 2018.

Phase II ESA, prepared by Roux, dated June 2018.

Amendment to the Phase II ESA, prepared by Roux, dated November 13, 2018.

Waste Characterization Soil Sampling Letter Report, prepared by Roux, dated February 18, 2019.

Remedial Investigation Report / Remedial Action Work Plan, prepared by Roux, dated May 2021.

Historic Site Use

According to a review of the historical aerial photographs, the Site appears to have been developed since at least 1924 with several Site buildings, which corroborates the historical development conditions as shown in the Certified Sanborn Fire Insurance maps. Demolition of several Site buildings is first shown in the 1975 aerial photograph. The 1984 aerial photograph shows demolition of additional Site buildings. The 1991 aerial photograph shows all Site buildings demolished. The general site layout appeared generally consistent between 1991 and the demolition of the garden structures in 2018.

The City Directory Abstract also included listings for the surrounding properties. As indicated by the City Directory, 56 East 112th Street, which is located east of the Site and is part of SV-B, operated as Continental Tailors & Cleaners (assumed to be a dry cleaner) in 1968. Other noted operators/tenants of Lot 20 included White Printer Department, Hyman Furrier, Jonas Drug Company, Schweitzer Isaac Jennie Shoe Repair, Krals Novelty Shoe Co, and Hirsch Brandel Shoes.

The following section summarizes soil, groundwater, and soil vapor quality data that was generated by Roux during the RI (comprised of the 2018 Phase II ESA, 2019 waste characterization sampling program, and 2020 SRI):

* Based on the Site-wide detections and exceedances of NYSDEC Unrestricted Use Soil Cleanup Objectives (UUSCOs) (and/or guidance values for erfluorooctanesulfonic acid [PFOS] and perfluorooctanoic acid [PFOA]), soil at the Site was impacted with SVOCs (exclusively polycyclic aromatic hydrocarbons [PAH]s), metals, pesticides/herbicides, PCBs, PFOS and PFOA, likely due to urban fill materials across the Site.
* Groundwater was not significantly impacted. Only two VOCs (PCE and chloroform) were detected in groundwater above the applicable NYSDEC AWQSGVs, but at relatively low concentrations. VOC exceedances of NYSDEC PGWSCOs in soil were limited to only acetone (i.e., a typical lab contaminant); therefore, no on-Site source of VOCs was identified.
* Some PAHs were identified in both soil and groundwater. However, it is likely that SVOCs present in the unfiltered groundwater samples were a result of suspended sediment present in the samples and are not representative of dissolved impacts in groundwater. This data indicates that SVOCs in soil were not a significant source of groundwater contamination at the Site. Heavy metals with corresponding exceedances in soil were not observed in groundwater.
* PFAS compounds were detected in both soil (only within the fill layer) and groundwater. There was no documented use of PFAS at the Site and no known historical Site use that would indicate the past use of these compounds (i.e., historical uses only included stores and residential dwellings). Therefore, the presence of PFAS was likely due to background levels of these compounds in New York City, and they are not considered contaminants of concern for the Site.
* Based on the Site-wide detections, soil vapor at the Site was impacted with VOCs, though at relatively low concentrations not indicative of an on-Site source. Soil vapor impacts likely originated from off-Site sources as no on-Site source of VOCs was identified in soil. Two chlorinated VOCs (PCE and chloroform) were found in both soil vapor and groundwater. Chloroform was found in SVA-MW-2 and SVA-MW-4 in groundwater, but in soil vapor it was found in SVA-SV-4, SVA‑SV‑5 and SVA-SV-6.
* There was no on-Site source for the VOCs in soil vapor identified during the RI. It is possible the chlorinated VOCs in groundwater (likely from an off-Site source) were contributing to soil vapor concentrations. The highest concentrations of PCE and TCE in soil vapor were observed in the central portion of the Site at SVA-SV‑5. Soil vapor concentrations at the perimeter of the Site were non-detect (southern and eastern portions of the Site) or low (northern and western portions), and off-Site migration is not a concern. Although the source of the chloroform could not be confirmed, the presence of chloroform in groundwater and soil vapor may be attributed to potentially leaking plumbing related to the former on-Site structures, leaking water mains and/or the watering of the community gardens with potable water that was likely chlorinated.

## 2.4 Remedial Action Objectives

The Remedial Action Objectives (RAOs) for the Site as listed in the Decision Document dated May 21, 2021 are as follows:

**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

* 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.

**Remedial Action Elements**

The selected remedy is referred to as the Excavation and Partial Site Cover remedy. The following list summarizes the elements of the remedial action performed in accordance with the Site’s Decision Document issued by NYSDEC:

* A remedial design program implemented to provide the details necessary for the construction, operation, optimization, maintenance, and monitoring of the remedial program. Green remediation principles and techniques implemented to the extent feasible in the design, implementation, and Site management of the remedy as per DER 31. The major green remediation components are as follows:
* Considering the environmental impacts of treatment technologies and remedy stewardship over the long term;
* Reducing direct and indirect greenhouse gases and other emissions;
* Increasing energy efficiency and minimizing use of non-renewable energy;
* Conserving and efficiently managing resources and materials;
* Reducing waste, increasing recycling and increasing reuse of materials which would otherwise be considered a waste;
* Maximizing habitat value and creating habitat when possible;
* Fostering green and healthy communities and working landscapes which balance ecological, economic and social goals; and
* Integrating the remedy with the end use where possible and encouraging green; and
* sustainable redevelopment.
* Additionally, to incorporate green remediation principles and techniques to the extent feasible in the future development at this Site, any future on-site buildings will include, at a minimum, a 20-mil vapor barrier/waterproofing membrane on the foundation to improve energy efficiency as an element of construction.
* Excavation and off-site disposal of all on-site soils which exceed unrestricted SCOs as defined by 6 NYCRR Part 375-6.8 in the Track 1 areas 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 in the Track 2 areas of the site. Where a Track 1 unrestricted cleanup or Track 2 restricted residential cleanup is achieved, a Cover System will not be a required element of the remedy in those locations. 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 2 feet in the Track 4 portion of the site.
* Clean fill meeting the requirements of 6 NYCRR Part 375-6.7(d) brought in to replace the excavated soil and/or complete the backfilling of the excavation and establish the designed grades at the Site.
* Groundwater extraction and treatment implemented to facilitate remedial excavation. The extracted groundwater was treated using prior to discharge to the municipal sewer.
* A site cover was required in the Track 4 area of the Site to allow for restricted residential use of the site in areas where the upper two feet of exposed surface soil exceed the applicable soil cleanup objectives (SCOs). Where a soil cover was used it was 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.
* As part of the remedy, a soil vapor intrusion evaluation was completed. The evaluation included a provision for implementing actions recommended to address exposures related to soil vapor intrusion.
* Imposition of an institutional control in the form of an Environmental Easement for the portions of the Site that do not achieve a Track 1 unrestricted use cleanup 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, commercial or industrial uses 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 the NYCDOHMH; and
* require compliance with the NYSDEC-approved Site Management Plan.
* A Site Management Plan (SMP) is required for all portions of the Site that do not achieve a Track 1 unrestricted use cleanup 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 for the Track 4 area of the site discussed above; and
* Engineering Controls: The cover system for the Track 4 area of the site discussed above.

[list to be updated to include final volume of soil excavated and additional details as needed]

## 2.5 Remaining Contamination

The remaining contamination after the remedial action was completed is limited to soil in the areas where a Track 1 Unrestricted Use cleanup was not achieved. Limited northwestern and eastern portions of the Site achieved Track 2 Restricted Residential Use or Residential Use cleanups, respectively, and the southern portion of the Site achieved a Track 4 Restricted Residential Use cleanup through theimplementation of EC (Site Cover System) where UUSCOs were exceeded. The remainder of the Site met Track 1 UUSCOs. Based on the endpoint samples collected during the remedial action, the remaining contamination is limited to a subset of certain SVOCs, metals, and pesticides. All remaining contamination is located under the building foundation slab. For the areas where Track 1 UUSCOs were not achieved, long-term management of the EC/ICs and residual contamination will be performed in accordance with this SMP. The areas of the **S**ite that achieved Track 2 and Track 4 cleanups are shown on Figure 5**.**

Tables 3 through 8 and Plate 1 summarize the results of all endpoint soil samples collected that exceed the UUSCOs and the RRSCOs at the Site after completion of remedial action.

# 3.0 INSTITUTIONAL and Engineering control plan

## 3.1 General

Because remaining contamination exists at the site, Institutional Controls (ICs) and an Engineering Control (EC) are required to protect human health and the environment. This IC/EC Plan describes the procedures for the implementation and management of all ICs/EC at the Site. The IC/EC Plan is one component of the SMP and is subject to revision by the NYSDEC.

This Plan provides:

* A description of all ICs/EC on the Site;
* The basic implementation and intended role of each IC/EC;
* A description of the key components of the ICs set forth in the Environmental Easement;
* A description of the controls to be evaluated during each required inspection and periodic review;
* A description of plans and procedures to be followed for implementation of ICs/EC, such as the implementation of the Excavation Work Plan (EWP) (as provided in Appendix D) for the proper handling of remaining contamination that may be disturbed during maintenance or redevelopment work on the Site; and
* Any other provisions necessary to identify or establish methods for implementing the ICs/EC required by the Site remedy, as determined by the NYSDEC.

## 3.2 Institutional Controls

A series of ICs is required by the RAWP to: (1) implement, maintain and monitor Engineering Control systems; (2) prevent future exposure to remaining contamination; and (3) limit the use and development of the Site to restricted residential, commercial or industrial uses only. Adherence to these ICs on the Site is required by the Environmental Easement and will be implemented under this SMP. ICs identified in the Environmental Easement may not be discontinued without an amendment to or extinguishment of the Environmental Easement as approved by the NYSDEC. The IC boundaries are shown on Figure 5. These ICs include:

* The property may be used for restricted residential, commercial, or industrial use.
* Compliance with the Environmental Easement by the Grantor and Grantor’s successors and adherence to all elements of the SMP is required.
* All ECs must be operated and maintained as specified in this SMP.
* All ECs must be inspected and certified at a frequency and in a manner defined in the SMP.
* Data and information pertinent to Site Management must be reported at the frequency and in a manner defined in the SMP.
* The potential for vapor intrusion must be evaluated for any future buildings (excluding the buildings currently under construction at the time this SMP was issued) developed in the area within the IC boundaries noted on Figure 5, and appropriate actions to address exposures must be implemented.
* Vegetable gardens and farming are prohibited, with the exception of raised planting beds.
* Use of groundwater underlying the property is prohibited without necessary water quality treatment as determined by the NYSDOH or the NYCDOHMH to render it safe for use as drinking water or for industrial purposes, and the user must first notify and obtain written approval to do so from the NYSDEC.
* All future activities on the property that will disturb remaining contaminated material are prohibited unless they are conducted in accordance with the SMP.
* Access to the Site must be provided to agents, employees or other representatives of the State of New York with reasonable prior notice to the property owner to assure compliance with the restrictions identified by the Environmental Easement.

## 3.3 Engineering Controls

### 3.3.1 Site Cover System

Exposure to remaining contamination in the Track 4 area of the Site (Plate 1) will be prevented by the engineered, Site Cover System constructed on the Site. This Site Cover System is comprised of concrete building foundations.  Although not a required EC, to incorporate green remediation principles, a vapor barrier/waterproofing membrane was installed as an element of construction throughout the area occupied by the footprint of the new building and up the foundation sidewalls in accordance with manufacturer specifications. The Site Cover System for the concrete building foundation is comprised of a crushed stone subbase and concrete foundation slab, with a demarcation layer between the concrete and waterproofing/vapor barrier.

Plate 2 presents the location of the Site Cover System and applicable demarcation layers. The Excavation Work Plan (EWP) provided in Appendix D outlines the procedures required to be implemented in the event the Site Cover System is breached, penetrated or temporarily removed. Procedures for the inspection of this Cover are provided in the Monitoring and Sampling Plan included in Section 4.0 of this SMP. Any work conducted pursuant to the EWP must also be conducted in accordance with the procedures defined in the Health and Safety Plan (HASP) and associated Community Air Monitoring Plan (CAMP) prepared for the Site and provided in Appendix E. Any disturbance of the Site Cover System must be overseen by a qualified environmental professional as defined in 6 NYCRR Part 375, a Professional Engineer (PE) who is licensed and registered in New York State, or a qualified person who directly reports to a PE who is licensed and registered in New York State.

### 3.3.2 Criteria for Completion of Remediation/Termination of Remedial Systems

Generally, remedial processes are considered completed when monitoring indicates that the remedy has achieved the remedial action objectives identified by the Decision Document. The framework for determining when remedial processes are complete is provided in Section 6.4 of NYSDEC DER-10.

### 3.3.2.1 – Site Cover System

The composite Site Cover System is a permanent control, and the quality and integrity of this System will be inspected at defined, regular intervals in accordance with this SMP in perpetuity.

# 4.0 Monitoring plan

## 4.1 General

This Monitoring Plan describes the measures for evaluating the overall performance and effectiveness of the remedy. This Monitoring Plan may only be revised with the approval of the NYSDEC.

This Monitoring Plan describes the methods to be used for:

* Monitoring the EC; and
* Evaluating Site information periodically to confirm that the remedy continues to be effective in protecting public health and the environment.

To adequately address these issues, this Monitoring Plan provides information on:

* Annual inspection and periodic certification.

Reporting requirements are provided in Section 7.0 of this SMP.

## 4.2 Site–wide Inspection

Site-wide inspections will be performed at a minimum of once per year. These periodic inspections must be conducted when the ground surface is visible (i.e., no snow cover). Site-wide inspections will be performed by a qualified environmental professional as defined in 6 NYCRR Part 365, a PE who is licensed and registered in New York State, or a qualified person who directly reports to a PE who is licensed and registered in New York State. Modification to the frequency or duration of the inspections will require approval from the NYSDEC project manager. Site-wide inspections will also be performed after all severe weather conditions that may affect ECs or monitoring devices. During these inspections, an inspection form will be completed as provided in Appendix G – Site Management Forms. The form will compile sufficient information to assess the following:

* Compliance with all ICs, including Site usage;
* Evaluation of the condition and continued effectiveness of the EC;
* General Site conditions at the time of the inspection;
* Whether stormwater management systems, such as basins and outfalls, are working as designed;
* The Site management activities being conducted, including, where appropriate, confirmation sampling and a health and safety inspection; and
* Confirmation that Site records are up to date.

Inspections of all remedial components installed at the Site will be conducted. A comprehensive Site-wide inspection will be conducted and documented according to the SMP schedule, regardless of the frequency of the Periodic Review Report. The inspections will determine and document the following:

* Whether the EC continues to perform as designed;
* Whether the EC continues to be protective of human health and the environment;
* Compliance with requirements of this SMP and the Environmental Easement;
* Achievement of remedial performance criteria; and
* Whether Site records are complete and up to date.

Reporting requirements are outlined in Section 7.0 of this plan.

Inspections will also be performed in the event of an emergency. If an emergency, such as a natural disaster or an unforeseen failure of any of the EC occurs that reduces or has the potential to reduce the effectiveness of the EC in place at the Site, verbal notice to the NYSDEC project manager must be given by noon of the following day. In addition, an inspection of the Site will be conducted within 5 days of the event to verify the effectiveness of the ICs/EC implemented at the Site by a qualified environmental professional, as defined in 6 NYCRR Part 375. Written confirmation must be provided to the NYSDEC project manager within 7 days of the event that includes a summary of actions taken, or to be taken, and the potential impact to the environment and the public.

## 4.3 Treatment System Monitoring and Sampling

There are no active ECs; therefore, Treatment System Monitoring and Sampling is not included in this SMP.

## 4.4 Post-Remediation Media Monitoring and Sampling

There is no media to be monitored and sampled after the remediation is completed; therefore, it is not included in this SMP. The remedial elements including excavation and the Site Cover System addressed remaining soil contamination in the Track 2 and Track 4 portions of the Site. An EWP is included as Appendix D in the event that future excavation and/or import or reuse of soil is required. Based on the RI data, groundwater is not significantly impacted and is not used for drinking or other potable uses, and there is no direct contact with or ingestion by the general public. Based on an evaluation included in the FER of the soil vapor data from the RI, there was no soil vapor intrusion issue prior to the remedy, and there was no on-Site source identified during the remediation. Therefore, there is no current vapor intrusion risk for the buildings currently under construction at the time this SMP was issued.

The potential for vapor intrusion will be evaluated for any future buildings (excluding the buildings currently under construction at the time this SMP was issued) developed in the area within the IC boundaries noted on Figure 5, and appropriate actions to address exposures must be implemented.

# 5.0 OPERATION AND MAINTENANCE PLAN

5.1 General

The Site remedy does not rely on any mechanical systems, such as groundwater treatment systems, sub-slab depressurization systems or air sparge/soil vapor extraction systems to protect public health and the environment. Therefore, the operation and maintenance of such components is not included in this SMP.

# 6.0 PERIODIC ASSESSMENTS/EVALUATIONS

## 6.1 Climate Change Vulnerability Assessment

Increases in both the severity and frequency of storms/weather events, an increase in sea level elevations along with accompanying flooding impacts, shifting precipitation patterns and wide temperature fluctuation, resulting from global climactic change and instability, have the potential to significantly impact the performance, effectiveness and protectiveness of a given site and associated remedial systems. Vulnerability assessments provide information so that the site and associated remedial systems are prepared for the impacts of the increasing frequency and intensity of severe storms/weather events and associated flooding.

This section provides a summary of vulnerability assessments that will be conducted for the Site during periodic assessments, and briefly summarizes the vulnerability of the Site and/or EC to severe storms/weather events and associated flooding.

* Flood Plain: The Site is not located in a flood plain, low-lying or low-groundwater recharge area.
* Site Drainage and Storm Water Management: During construction, adequate storm management systems were constructed for the building and Site; therefore, flooding is not anticipated.
* Erosion: The Site is capped by a building, therefore, erosion at the Site is not anticipated.
* High Wind: The Site is not susceptible to damage from the wind itself or from falling objects, such as trees or utility structures during periods of high wind.
* Electricity: Power loss, dips and/or surges in voltage during severe weather events, including lightning strikes, and the associated impact on Site equipment and operations are not anticipated.
* Spill/Contaminant Release: No areas of the Site have been identified that may be susceptible to a spill or other containment release due to storm-related damage caused by flooding, erosion, high winds, loss of power, etc.

## 6.2 Green Remediation Evaluation

NYSDEC’s DER-31 Green Remediation requires that green remediation concepts and techniques be considered during all stages of the remedial program including Site management, with the goal of improving the sustainability of the cleanup and summarizing the net environmental benefit of any implemented green technology. This section of the SMP provides a summary of green remediation evaluations completed for the Site.

Green remediation principles and techniques were implemented to the extent feasible in the design, implementation, and Site management of the remedy per DER-31. The primary green remediation principles incorporated into the Site’s remediation are as follows:

* 1. Consideration of the environmental impacts of treatment technologies and remedy stewardship over the long term;
  2. Reduction of direct and indirect greenhouse gases and other emissions;
  3. Increase in energy efficiency and minimizing use of non‐renewable energy;
  4. Conservation and efficient management of resources and materials;
  5. Reduction of waste and increase in recycling and reuse of materials which would otherwise be considered a waste;
  6. Maximization of habitat value and creation of habitat when possible;
  7. Fostering green and healthy communities and working landscapes which balance ecological, economic and social goals; and
  8. Integration of the remedy with the end use where possible and encouragement of green and sustainable re‐development.

In addition, to further incorporate green remediation principles and techniques to the extent feasible in the development at this Site, on-Site buildings included, at a minimum, a 20-mil vapor barrier on the foundation to improve energy efficiency and meet Passive House standards. The buildings have been designed and constructed to meet Passive House standards. Once the project is completed, the Sendero Verde Redevelopment Project (both Parcels A [BCP Site No. C231135] and Parcel B [BCP Site No. C231128]) will be the largest multi-family Passive House development in the United States and will be certified by both the Passive House Institute and Enterprise Green Communities, ensuring superior levels of energy efficiency, indoor air quality, occupant comfort, and resiliency. Buildings meeting Passive House design standards can be up to 60 or 70 percent more energy efficient than a traditionally designed building of similar size.

Conservation and efficient management of resources and materials, along with reduction of waste and increase in recycling and reuse of materials which would otherwise be considered a waste, were two of the green remediation principles incorporated during the remedial action. To adhere to these principles the Volunteer exported approximately 111.25 tons of clean concrete and bricks to permitted Class B recycling facilities in New York and New Jersey for recycling.

## 6.3 Soil Vapor Intrusion Evaluation

An SVI evaluation must be performed upon a change in use of the property that will result in occupancy of a previously unoccupied building (excluding the buildings currently under construction at the time this SMP was issued) or initial occupancy of a new building (excluding the buildings currently under construction at the time this SMP was issued). This SVI evaluation has already been completed for the buildings currently under construction, as documented in the FER. The breadth of the SVI evaluation will be determined based upon discussion with the NYSDEC project manager and NYSDOH. Per this discussion and other agency requirements, a work plan may need to be developed that requires that sampling be performed. At a minimum, an SVI sampling work plan would include the following information:

* A figure showing the soil vapor intrusion sample locations;
* Discussion of the depths of the soil vapor samples; and
* A table of sample locations and analytical parameters to be analyzed along with the minimum reporting limits to be achieved by the NYS ELAP-certified laboratory.

If an action is required upon completion of the SVI evaluation, any actions taken or to be taken must be reflected in an updated SMP and submitted to the NYSDEC project manager for approval.

# 7.0 Reporting Requirements

## 7.1 Site Management Reports

All site management inspection and maintenance events will be recorded on the appropriate site management forms provided in Appendix G. These forms are subject to NYSDEC revision. All site management inspection and maintenance events will be conducted by a qualified environmental professional as defined in 6 NYCRR Part 375, a PE who is licensed and registered in New York State, or a qualified person who directly reports to a PE who is licensed and registered in New York state.

All applicable inspection forms and other records generated for the Site during the reporting period will be provided in electronic format to the NYSDEC in accordance with the requirements of Table 10 and summarized in the Periodic Review Report.

**Table 10: Schedule of Interim Inspection Reports**

|  |  |
| --- | --- |
| **Task/Report** | **Reporting Frequency\*** |
| Inspection Report | Annually or as otherwise determined by the Department |
| Periodic Review Report | First report 30 days after the end of each certification period. First report will be submitted after the first 16-month certification period, then annually until completion and documentation of all development-related construction, then every 3 years thereafter or as otherwise determined by the NYSDEC. |
| SVI Evaluation | Upon change of use/occupancy of a previously unoccupied building or initial occupancy of a new building (excluding the buildings currently under construction at the time this SMP was issued, as this evaluation has already been completed and is documented in the FER). |

\* The frequency of events will be conducted as specified until otherwise amended and approved by the NYSDEC.

All interim inspections reports will include, at a minimum:

* Date of event or reporting period;
* Name, company, and position of person(s) conducting inspection activities;
* Description of the activities performed;
* Where appropriate, color photographs or sketches showing the approximate location of any problems or incidents noted (included either on the checklist/form or on an attached sheet);
* Any observations, conclusions, or recommendations; and
* A determination as to whether contaminant conditions have changed since the last reporting event.

Routine maintenance event reporting forms will include, at a minimum:

* Date of event;
* Name, company, and position of person(s) conducting maintenance activities;
* Description of maintenance activities performed;
* Where appropriate, color photographs or sketches showing the approximate location of any problems or incidents noted (included either on the checklist/form or on an attached sheet); and
* Other documentation such as copies of invoices for maintenance work, receipts for replacement equipment, etc., (attached to the checklist/form).

Non-routine maintenance event reporting forms will include, at a minimum:

* Date of event;
* Name, company, and position of person(s) conducting non-routine maintenance/repair activities;
* Description of non-routine activities performed;
* Where appropriate, color photographs or sketches showing the approximate location of any problems or incidents (included either on the form or on an attached sheet); and
* Other documentation such as copies of invoices for repair work, receipts for replacement equipment, etc. (attached to the checklist/form).

If any data is generated, it will be reported in digital format as identified by the NYSDEC. Currently, data is to be supplied electronically and submitted to the NYSDEC EQuISTM database in accordance with the requirements found at this link http://www.dec.ny.gov/chemical/62440.html.

## 7.2 Periodic Review Report

A Periodic Review Report (PRR) will be submitted to the NYSDEC 30 days after the initial sixteen (16) month certification period. After submittal of the initial Periodic Review Report, the subsequent PRRs shall be submitted annually to the NYSDEC project manager or at another frequency as may be required by the NYSDEC project manager. In the event that the Site is subdivided into separate parcels with different ownership, a single Periodic Review Report will be prepared that addresses the Site described in Appendix A - Environmental Easement. The Report will be prepared in accordance with NYSDEC’s DER-10 and submitted within 30 days of the end of each certification period. Media sampling results (if any) will also be incorporated into the Periodic Review Report. The Report will include:

* Identification, assessment and certification of all EC/ICs required by the remedy for the Site.
* Results of the required annual Site inspections and severe condition inspections, if applicable.
* All applicable Site management forms and other records generated for the Site during the reporting period in the NYSDEC-approved electronic format, if not previously submitted.
* If any data is collected, data summary tables and graphical representations of contaminants of concern by media (soil vapor), which include a listing of all compounds analyzed, along with the applicable standards, with all exceedances highlighted. These will include a presentation of past data as part of an evaluation of contaminant concentration trends.
* If any data is collected, results of all analyses, copies of all laboratory data sheets, and the required laboratory data deliverables for all samples collected during the reporting period will be submitted in digital format as identified by the NYSDEC. Currently, data is supplied electronically and submitted to the NYSDEC EQuISTM database in accordance with the requirements found at this link: http://www.dec.ny.gov/chemical/62440.html.
* A Site evaluation, which includes the following:
  + The compliance of the remedy with the requirements of the Site-specific RAWP;
  + Any new conclusions or observations regarding Site contamination based on inspections or data (if any) generated by the Sampling Plan for the media being monitored;
  + Recommendations regarding any necessary changes to the remedy and/or Sampling Plan; and
  + The overall performance and effectiveness of the remedy.

### 7.2.1 Certification of Institutional and Engineering Controls

Following the last inspection of the reporting period, a Professional Engineer licensed to practice in New York State will prepare, and include in the Periodic Review Report, the following certification as per the requirements of NYSDEC DER-10:

“*For each institutional or engineering control identified for the Site, I certify that all of the following statements are true:*

* *The inspection of the Site to confirm the effectiveness of the institutional and engineering controls required by the remedial program was performed under my direction;*
* *The institutional control and/or engineering control employed at this Site is unchanged from the date the control was put in place, or last approved by the Department;*
* *Nothing has occurred that would impair the ability of the control to protect the public health and environment;*
* *Nothing has occurred that would constitute a violation or failure to comply with any Site management plan for this control;*
* *Access to the Site will continue to be provided to the Department to evaluate the remedy, including access to evaluate the continued maintenance of this control;*
* *If a financial assurance mechanism is required under the oversight document for the Site, the mechanism remains valid and sufficient for the intended purpose under the document;*
* *Use of the Site is compliant with the environmental easement;*
* *The engineering control systems are performing as designed and are effective;*
* *To the best of my knowledge and belief, the work and conclusions described in this certification are in accordance with the requirements of the Site remedial program and generally accepted engineering practices; and*
* *The information presented in this report is accurate and complete.*

*I certify that all information and statements in this certification form are true. I understand that a false statement made herein is punishable as a Class “A” misdemeanor, pursuant to Section 210.45 of the Penal Law. I, Noelle Clarke, of Roux Environmental Engineering and Geology, D.P.C., am certifying as Owner’s Designated Site Representative.*

* *No new information has come to my attention, including groundwater monitoring data from wells located at the Site boundary, if any, to indicate that the assumptions made in the qualitative exposure assessment of off-Site contamination are no longer valid; and*

For BCP projects, every five years the following certification will be added:

* *The assumptions made in the qualitative exposure assessment remain valid.*

The signed certification will be included in the Periodic Review Report.

The Periodic Review Report will be submitted, in an approved electronic format, to the NYSDEC project manager and the NYSDOH project manager. The Periodic Review Report may need to be submitted in hard-copy format, as requested by the NYSDEC project manager.

## 7.3 Corrective Measures Work Plan

If any component of the remedy is found to have failed, or if the periodic certification cannot be provided due to the failure of an IC or EC, a Corrective Measures Work Plan will be submitted to the NYSDEC project manager for approval. This plan will explain the failure and provide the details and schedule for performing work necessary to correct the failure. Unless an emergency condition exists, no work will be performed pursuant to the Corrective Measures Work Plan until it has been approved by the NYSDEC project manager.

# 8.0 REFERENCES

6NYCRR Part 375, Environmental Remediation Programs. December 14, 2006.

NYSDEC DER-10 – “Technical Guidance for Site Investigation and Remediation”.

NYSDEC, 1998. Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations Division of Water Technical and Operational Guidance Series (TOGS) 1.1.1. June 1998 (April 2000 addendum).

Phase I Environmental Site Assessment (ESA), prepared by Roux Environmental Engineering and Geology, D.P.C., dated March 30, 2018.

Phase II ESA, prepared by Roux Environmental Engineering and Geology, D.P.C., dated June 8, 2018.

Amendment to the Phase II ESA, prepared by Roux Environmental Engineering and Geology, D.P.C., dated November 13, 2018.

Waste Characterization Soil Sampling Letter Report, prepared by Roux Environmental Engineering and Geology, D.P.C., dated February 18, 2019.

Remedial Investigation Report (RIR)/Remedial Action Work Plan (RAWP), prepared by Roux Environmental Engineering and Geology, D.P.C., dated May 2021.