
FINAL ENGINEERING REPORT

for

**1095 Southern Blvd.
Block 2727, Lot 41
New York, NY 10459
NYSBCP Site No. C203055**

Prepared For:

**Urban Health Plan, Inc.
1065 Southern Blvd., Bronx, NY 10459**

Prepared By:

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LANGAN

**June 18, 2025
Langan Project No. 170199904**

CERTIFICATIONS

I, Gerald Nicholls, P.E., certify that I am currently a registered professional engineer licensed by the State of New York, I had primary direct responsibility for implementation of the remedial program activities, and I certify that the Remedial Action Work Plan (RAWP) was implemented and that all construction activities were completed in substantial conformance with the Department-approved RAWP.

I certify that the data submitted to the Department with this Final Engineering Report demonstrates that the remediation requirements set forth in the RAWP and in all applicable statutes and regulations have been or will be achieved in accordance with the time frames, if any, established for the remedy.

I certify that all documents generated in support of this report have been submitted in accordance with the DER's electronic submission protocols and have been accepted by the Department.

I certify that all data generated in support of this report have been submitted in accordance with the Department's electronic data deliverable and have been accepted by the Department.

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, Gerald Nicholls, of Langan Engineering, Environmental, Surveying, Landscape Architecture and Geology, D.P.C. (Langan), am certifying as Owner's Designated Site Representative for the site.

NYS Professional Engineer #

Date

Signature

TABLE OF CONTENTS

CERTIFICATIONS	
LIST OF ACRONYMS	 III
1.0 BACKGROUND AND SITE DESCRIPTION	1
2.0 SITE HISTORY AND REMEDIAL ACTION SELECTION	2
2.1 Site and Environmental History	2
2.2 Remedial Action Objectives	3
2.3 Description of Selected Remedy	3
2.4 Additional Construction Measures	5
3.0 INTERIM REMEDIAL MEASURES, OPERABLE UNITS AND REMEDIAL CONTRACTS	6
4.0 DESCRIPTION OF REMEDIAL ACTIONS PERFORMED	7
4.1 Governing Documents	7
4.1.1 Site Specific Health & Safety Plan (HASP)	7
4.1.2 Quality Assurance Project Plan (QAPP)	7
4.1.3 Soil/Materials Management Plan (SMMP)	8
4.1.4 Stormwater Pollution Prevention Plan	10
4.1.5 Community Air Monitoring Plan (CAMP)	11
4.1.6 Contractors Site Operations Plans	11
4.1.7 Community Participation Plan	12
4.2 Remedial Program Elements	12
4.2.1 Contractors and Consultants	12
4.2.2 Site Preparation	13
4.2.3 NYSDEC Pre-Construction Meeting	14
4.2.4 General Site Controls	14
4.2.5 Nuisance Controls	14
4.2.6 CAMP Results	15
4.2.7 Reporting	17
4.3 Contaminated Materials Removal	17
4.3.1 Waste Characterization Sampling	17
4.3.2 Quantities Removed	19
4.4 Post-Remediation Off-Site Groundwater Sampling	19
4.4.1 Groundwater Sample Analytical Results	20
4.4.2 Data Validation	21
4.5 Imported Backfill	21
4.6 Contamination Remaining at the Site	22
4.7 Engineering Controls	22
4.8 Institutional Controls	22

4.9	Deviations from the RAWP	22
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LIST OF TABLES

Table 1:	Track 1 Unrestricted Use Soil Cleanup Objectives
Table 2:	Waste Disposal Summary
Table 3:	Post-Remediation Off-Site Groundwater Sample Results
Table 4:	Imported Material Summary

LIST OF FIGURES

Figure 1:	Site Location Map
Figure 2:	Site Plan
Figure 3:	Track 1 Excavation Map
Figure 4:	Off-site Groundwater Sample Location and Results Map
Figure 5A:	Groundwater CVOC Concentration Trend Charts – Shallow Wells
Figure 5B:	Groundwater CVOC Concentration Trend Charts – Deep Wells

LIST OF APPENDICES

Appendix A:	NYSDEC RAWP Approval, Decision Document, BCA Amendments, and Contained in Determination
Appendix B:	Daily and Monthly Reports
Appendix C:	Dewatering Documentation and Permits
Appendix D:	CAMP Field Data Sheets and Air Monitoring
Appendix E:	Remediation Photograph Log
Appendix F:	Waste Disposal Facility Approval
Appendix G:	Waste Disposal Documentation
Appendix H:	Off-site Monitoring Well Construction and Sampling Logs
Appendix I:	Post Remediation Off-site Groundwater Sampling Laboratory Data
Appendix J:	Data Usability Summary Report
Appendix K:	Imported Material Documentation

LIST OF ACRONYMS

Acronym	Definition
BCA	Brownfield Cleanup Agreement
BCP	Brownfield Cleanup Program
C/D	Construction and Demolition
CPP	Citizen Participation Plan
CQUAP	Construction Quality Assurance Plan
CVOC	Chlorinated Volatile Organic Compound
DSHM	Division of Solid & Hazardous Materials
El.	Elevation
EPA	Environmental Protection Agency
EPH	Extractable Petroleum Hydrocarbons
EWMI	Environmental Waste Minimization, Inc.
FER	Final Engineering Report
GRO	Gasoline Range Organics
µg/m ³	Micrograms per cubic meter
NYCDEP	New York City Department of Environmental Protection
NYCDOB	New York City Department of Buildings
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
NYSDOT	New York State Department of Transportation
OSHA	Occupational Safety and Health Administration
PCBs	Polychlorinated Biphenyls
PCE	Tetrachloroethene
PID	Photo Ionizing Detector
PM10	Particulate Matter Smaller than 10 microns in diameter
PPM	Parts Per Million
QEP	Qualified Environmental Professional
QAPP	Quality Assurance Project Plan
RAO	Remedial Action Objectives
RAWP	Remedial Action Work Plan
RCRA	Resource Conservation Recovery Act
RI	Remedial Investigation
RIWP	Remedial Investigation Work Plan
SCOs	Soil Cleanup Objectives
SRIWP	Supplemental Remedial Investigation Work plan

Acronym	Definition
SWPPP	Stormwater Pollution Prevention Plan
TCE	Trichloroethene
TCL	Target Compound list
TPH	Total Petroleum Hydrocarbon
UHP	Urban Health Plan Inc.
VOCs	Volatile Organic Compounds

1.0 BACKGROUND AND SITE DESCRIPTION

Urban Health Plan, Inc. (UHP) executed a Brownfield Cleanup Agreement (BCA) with the New York State Department of Environmental Conservation (NYSDEC) on March 4, 2011 to investigate and remediate a 10,000-square-foot property located at 1095 Southern Boulevard, the Bronx, New York (the “site”) under the Brownfield Cleanup Program (BCP Site C203055). BCA Amendment #1 was executed on October 15, 2014 to add 1095 Southern Boulevard Urban, LLC as an applicant. BCA Amendment #2 was executed on June 29, 2016 to add 1095 Southern OpCo LLC, 1095 Southern HoldCo LLC, 1095 Southern III LLC, 1095 Southern IV LLC as applicants. BCA Amendment #3 was executed on March 13, 2020 to remove 1095 Southern HoldCo LLC, 1095 Southern III LLC, 1095 Southern IV LLC as applicants. An amendment was executed on September 2, 2020 to transfer the site from a Generation 2 to Generation 3 BCP site to align with the revised statutory schedule. BCA Amendment #4 was executed on November 12, 2021 to document sale of the property to Urban Health Plan, Inc. as the sole owner of the BCP site.

The site is located at 1095 Southern Boulevard in the Bronx, New York and is identified as New York City Tax Block 2727, Lot 41. The approximately 10,000-square foot site conforms to the tax lot boundaries and is bordered by a five-story residential building to the north with a ground-level salon; Southern Boulevard to the east, followed by a parking lot; a two-story residential building with ground-level daycare and playground to the south; and one five-story and three two-story residential buildings to the west. A New York City Transit (NYCT) elevated rail for the Nos. 2 and 5 Metropolitan Transit Authority (MTA) trains runs above Southern Boulevard, along the eastern boundary of the site. A Site Location Plan is provided as Figure 1.

Remediation was completed between June 13, 2022 and October 17, 2023 concurrent with construction. Construction of the development structure continued after remediation and is near completion; the building is vacant pending certificate of occupancy. After construction, the site will be used as a five-story medical facility and office for the surrounding community.

This Final Engineering Report (FER) describes the remedial actions completed in accordance with the NYSDEC-approved RAWP and Decision Document for a Track 1 Unrestricted Use cleanup.

2.0 SITE HISTORY AND REMEDIAL ACTION SELECTION

2.1 Site and Environmental History

The site was vacant and undeveloped between 1896 and 1915. Ownership records report that the site was used as a food retail venue as early as 1940. Site usage information between 1915 and 1940 was not available. According to a review of Sanborn maps, the eastern part of the site was developed with a one-story building, used as a store, with basement from 1950 to 1993. A New York City Department of Buildings (NYCDOB) record, dated 26 August 1993, indicated historical site usage as a dry cleaner. This building remained until November 2008, when it was destroyed by fire. Since destruction of the building by fire in 2008, the site was vacant until 2022 when construction began. A site plan showing pre-remediation and post-remediation conditions is provided as Figure 2.

The results of previous investigations and the remedial investigation indicated the following findings:

- Four geologic units existed beneath the site: non-native fill, native soil, decomposed bedrock, and bedrock. The native soil contained a clayey silt layer, which had lower permeability and higher organic content than the non-native fill above and the silty sand and decomposed bedrock below.
- About 1,035 cubic yards (1,550 tons) of chlorinated volatile organic compound (CVOC)-impacted, F002-listed hazardous soil were identified—primarily found near the southeast site corner from 11 to 21 feet below grade surface (bgs). The listed hazardous soil was characterized and delineated as part of Contained-In Determination approved by the NYSDEC. Previous sampling indicated that the clayey silt layer's lower permeability and higher organic content retarded downward migration of CVOC impacts.
- DNAPL was not identified in the overburden or bedrock monitoring wells. CVOC impacts in overburden soil and groundwater samples indicated that residual CVOC source material was bound within the clayey silt layer.
- Non-hazardous non-native fill identified in all other areas outside of the listed hazardous soil area, within the site, were at concentrations exceeding the Title 6 New York Codes, Rules, and Regulations (6 NYCRR) Part 375 Unrestricted Use (UU) Soil Cleanup Objectives (SCOs).
- Total CVOC concentrations in overburden groundwater were between 240 micrograms per liter ($\mu\text{g/L}$) and 150,000 $\mu\text{g/L}$, with the highest concentrations found in the eastern part of the site. CVOC concentrations in bedrock were between 5.3 $\mu\text{g/L}$ and 841 $\mu\text{g/L}$, with the highest concentrations also in the eastern part of the site.

- Tetrachloroethene (PCE) was detected in soil vapor up to 2,800 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) in the southeastern site corner and trichloroethene (TCE) was detected up to 280 $\mu\text{g}/\text{m}^3$ in the western side of the site.
- Supplemental groundwater sampling at three wells for per- and polyfluoroalkyl substances (PFAS) identified perfluorooctanoic acid (PFOA) and perfluorooctanesulfonic acid (PFOS) in all samples. The concentrations were not indicative of a source and there is no history of PFAS use at the site; therefore, no further action related to emerging contaminants was needed.

2.2 Remedial Action Objectives

Based on the results of the remedial investigation and previous investigations, the following Remedial Action Objectives (RAOs) were identified for this site.

Media	RAOs for Public Health Protection	RAOs for Environmental Protection
Soil	• Prevent ingestion/direct contact with contaminated soil • Prevent inhalation of or exposure to contaminants volatilizing from contaminated soil	• Prevent migration of contaminants that would result in groundwater or surface water contamination.
Groundwater	• Prevent ingestion of groundwater containing contaminant concentrations exceeding drinking water standards • Prevent contact with, or inhalation of, volatiles from contaminated groundwater	• Restore the groundwater aquifer to pre-disposal/pre-release conditions, to the extent practicable • Remove the source of ground or surface water contamination
Soil Vapor	• Mitigate impacts to public health resulting from existing, or the potential for, soil vapor intrusion into buildings at the site	

2.3 Description of Selected Remedy

The site was remediated in accordance with the NYSDEC-approved September 9, 2013 RAWP; October 31, 2013 Decision Document; September 30, 2015 Contained-In Determination for CVOC-Impacted Soil; and NYSDEC-issued August 19, 2019 Explanation of Significant Difference (ESD). The factors considered during the selection of the remedy are those listed in the NYSDEC Division of Environmental Remediation (DER) Program Policy DER-10 ("Technical Guidance for Site Investigation and Remediation") and 6 NYCRR Part 375. Documentation of agency

approvals, including NYSDEC approval of the RAWP, Decision Document, Contained-In Determination, and NYSDEC-issued ESD are included in Appendix A.

The selected remedy was implemented under NYSDEC oversight and achieved a Track 1 Unrestricted Use cleanup through completion of the following elements:

- Development and implementation of a Construction Health and Safety Plan (CHASP) and Community Air Monitoring Plan (CAMP) for the protection of on-site workers, the public, and the environment during remediation.
- Installation of a concrete secant pile wall around the site perimeter and into bedrock as a groundwater cutoff wall, in addition to providing support of excavation.
- Excavation and removal of all on-site soil/fill and F002-listed hazardous soil down to bedrock across the entire site to about 24 feet bgs and as deep as 30 feet bgs for elevator pits. Bedrock was at variable depths and as shallow as 18 feet bgs, and was also removed to achieve the target excavation depth.
- Off-site disposal of about 2,171 tons of listed hazardous soil and about 12,039 tons of non-hazardous soil/fill at permitted disposal facilities.
- Removal of all on-site groundwater above and partially within bedrock using a dewatering system. Dewatered fluids were treated through an on-site treatment system before discharge to the New York City sewer system in accordance with a New York City Department of Environmental Protection (NYCDEP) sewer discharge permit.
- Import of NYSDEC-approved virgin, native crushed stone from an off-site source for use as a temporary truck pad and backfill. All temporary imported stone was removed with site soil/fill during excavation down to bedrock.
- Installation of two off-site monitoring well pairs in the adjoining Southern Boulevard sidewalk. Each well pair consisted of a shallow well (screened in the overburden) and a deep well (socketed into bedrock).
- Completion of four quarterly post-remediation groundwater sampling events from the off-site monitoring wells. Samples were analyzed for VOCs and the results demonstrated a bulk reduction of CVOC concentrations in groundwater. On March 13, 2025, the NYSDEC approved a Track 1 unrestricted use cleanup for the site. The off-site monitoring wells are to remain accessible for any further investigations undertaken by the NYSDEC. .

2.4 Additional Construction Measures

In addition to the completed remedial elements, the following construction measures were incorporated during construction.

- Placement of a concrete mud-mat directly atop bedrock and construction of 30-inch-thick reinforced concrete mat foundation followed by a 6-inch-thick topping slab (cellar surface). A waterproofing membrane was installed below the foundation mat slab and between the foundation walls and secant pile wall.
- Installation of a cellar ventilation system, as required by NYC Building Code for the cellar parking and utility spaces.

3.0 INTERIM REMEDIAL MEASURES, OPERABLE UNITS AND REMEDIAL CONTRACTS

The remedy for this site was performed as a single project, and no interim remedial measures, operable units or separate construction contracts were performed.

4.0 DESCRIPTION OF REMEDIAL ACTIONS PERFORMED

The remedial action was completed between June 13, 2022 and October 17, 2023 in accordance with the NYSDEC-approved September 9, 2013 RAWP; October 31, 2013 Decision Document; September 30, 2015 Contained-In Determination for CVOC-Impacted Soil; and NYSDEC-issued August 19, 2019 Explanation of Significant Difference (ESD). Langan documented remedial activities in daily site observation report and monthly progress reports. Daily and monthly reports submitted to the NYSDEC are provided in Appendix B. Deviations from the NYSDEC-approved documents are described in Section 4.9. Based on the completed remedial actions, a Track 1 Unrestricted Use cleanup will be achieved, pending quarterly off-site groundwater sampling events showing bulk reduction in CVOC's. The Track 1 Unrestricted Use SCOs are summarized in Table 1.

4.1 Governing Documents

4.1.1 Site Specific Health & Safety Plan (HASP)

Remedial work performed under this remedial action was in compliance with governmental requirements, including site and worker safety requirements mandated by Federal OSHA (Occupational Safety and Health Administration). Documented remedial and invasive work complied with the provisions of the site-specific CHASP, which met the requirements of Code of Federal Regulations (CFR) Title 29 Part 1910 (29 CFR 1910) and 29 CFR 1926 (which includes 29 CFR 1910.120 and 29 CFR 1926.65).

Contractors performing the remediation were responsible for the health and safety of their own employees and complying with the OSHA requirements applicable to their trade work.

4.1.2 Quality Assurance Project Plan (QAPP)

The QAPP was included as RAWP Appendix C and describes the specific policies, objectives, organization, functional activities, and quality assurance/quality control (QA/QC) activities designed to achieve the project data quality objectives.

Project Organization

Project organization and associated roles, including key personnel, descriptions of duties, and lines of authority in the management of the remedial action included the following project personnel:

Remediation Engineer:	Gerald Nicholls, P.E.
Project Manager:	Albert Tashji, P.E.
Langan Health & Safety Officer:	Tony Moffa, ASP, CHMM, COSS

Site Safety Coordinator	William Bohrer, P.G.
Qualified Environmental Professional	Michael Burke, P.G., CHMM
Field Team Leader	Roswell Lo, P.E.
Quality Assurance Officer	Jason Hayes, P.E.

The Remedial Engineer directly supervised field staff that were on-site during the remedial action, including field screening of excavations, soil/fill excavation and removal, and CAMP implementation. The RE supervised field staff met with the Remedial Contractors (see section 4.2.1) on a daily basis to discuss the plans for that day and schedule upcoming activities. Field staff kept a project field book and a photograph log documenting remedial activities. Daily reports summarizing remedial activities and CAMP results were submitted to NYSDEC and the New York State Department of Health (NYSDOH).

4.1.3 Soil/Materials Management Plan (SMMP)

The Soil/Materials Management Plan (SMMP) included in the NYSDEC-approved RAWP (Section 5.4) provided detailed plans for managing soil/materials that were disturbed during implementation of the remedy, including excavation, handling, storage, transportation, and disposal of the soil and nuisance mitigation measures. Remediation was completed using conventional hydraulic equipment and hand tools.

4.1.3.1 Soil Screening Methods

Visual, olfactory and PID soil screening and assessments were performed by field staff under the supervision of the remedial engineer during remedial excavation. Instrumental soil screening was performed with a PID equipped with a 10.6 electron volt (ev) lamp.

4.1.3.2 Stockpile Methods

Soil stockpile areas, when needed for the different soil materials, were constructed for staging of site soil, pending loading for off-site disposal. Separate stockpile areas were used to avoid comingling materials of differing waste types. Impacted source material from the 10- to 20-foot depth range was directly loaded into trucks for off-site disposal or stockpiled temporarily. Source material was not stockpiled overnight. All stockpile areas met the following minimum requirements:

- Excavated soil was placed onto a minimum thickness of 10-mil (thousands of an inch) low-permeability liner of sufficient strength and thickness; separate stockpiles were created for different material types as needed.
- Equipment and procedures were used to place and remove the soil to minimize the potential to jeopardize the integrity of the liner.

- Stockpiles were covered at the end of each workday with a minimum 6-mil plastic sheet/tarp and securely anchored to the ground.
- Stockpiles were routinely inspected, and broken sheeting covers were promptly replaced.
- Individual stockpiles did not exceed 1,000 cubic yards.

4.1.3.3 Excavated Materials Load Out, Transport and Off-site Disposal

The waste types and quantities of waste removed are described in Section 4.3. Listed hazardous soil, non-native fill, secant pile drill cuttings, native soil, and native bedrock were removed and transported off site for disposal. All excavated soil was handled, transported and disposed of in accordance with applicable Part 360 and Part 364 regulations, and other applicable local, state and federal regulations. The Waste Disposal Manager (see section 4.2.1) provided the appropriate permits, certifications, and written commitments from disposal facilities accepting the soil/fill. Excavated soil/fill was not reused on site.

The Remedial Engineer reviewed the Remedial Contractors proposed disposal facilities to document permit compliance to accept the soil/fill. Hazardous and non-hazardous contaminated soil was transported to facilities licensed to receive such material from the site. Approval letters were provided on the facility's letterhead, and included the BCP site as the originating location, referenced the analytical data provided to and reviewed by the facility, and noted any restrictions on delivery schedules or other non-analytical conditions that may have caused rejection of transported soil/fill. These approvals may be found in Appendix F – Waste Disposal Facility Approval.

Langan staff observed the load-out of excavated soil/fill. Loaded vehicles leaving the site were appropriately lined, securely covered, manifested, and placarded in accordance with appropriate federal, state, and local requirements. Hazardous and non-hazardous soil was transported by waste removal contractors who possessed a valid New York State Part 364 Waste Transporter Permit, where applicable. A manifest system was used to document and track off-site movement of non-hazardous wastes and contaminated soil.

4.1.3.4 Fluids Management

Temporary construction dewatering and groundwater treatment was required to reach the remediation and development depths. Dewatering fluids were pumped from localized sumps into a 1,000-gallon fractionation tank and then continued through two 5-micron bag filters (in parallel) into two 1,000-pound activated carbon vessels (in series) for treatment prior to discharge to the New York City sewer system. Discharge to the sewers was performed in accordance with a New York City Department of Environmental Protection (NYCDEP) wastewater discharge

permit (approval number 22-C-7705-1). The contractor treated and removed about 1,274,060 gallons of groundwater before discharge to the New York sewer system. Dewatering and treatment system documentation is provided in Appendix C.

After receiving approval to remove the treatment system, incidental water needing to be removed was collected into a storage tank and later removed via vacuum truck for off-site disposal at a permitted facility. Fluids removal is further discussed in Section 4.3.

4.1.3.5 Backfill from Off-Site Sources

Backfill materials imported to the site were reviewed by the Remediation Engineer and pre-approved by the NYSDEC. Solid waste or material from industrial sites, spill sites, other environmental remediation sites or other potentially contaminated sites was not imported to the site. Imported virgin stone was used to stabilize the site surface at various phases of the remediation, but was completely removed later during sitewide excavation down to bedrock. Backfill import material and quantities are described in Section 4.5.

4.1.3.6 Truck Traffic Control

Truck routes were selected by considering the following:

- Limiting transport through residential areas
- Use of defined truck routes
- Minimizing to the extent possible off-site queuing of trucks entering the facility
- Limiting the total distance to the major thoroughfares
- Safety in access to highways
- Overall safety in transport

Soil was removed from the exterior of outbound trucks before leaving the site. Locations where vehicles enter or exit the site were inspected daily for evidence of off-site sediment tracking. Egress points for truck and equipment transport from the site were routinely cleaned of excess site soil/fill. Cleaning of the adjacent street was performed as needed to maintain a clean condition with respect to site-derived soil/fill.

4.1.4 Stormwater Pollution Prevention Plan

A Stormwater Pollution Prevention Plan (SWPPP) was not necessary, because the project disturbed less than one acre and stormwater discharged to a combined NYC sewer. Since earthwork was completed below the adjacent sidewalk grade, full-time erosion and sedimentation measures were not required. Best Management Practices for soil erosion were selected and implemented, as needed, to minimize erosion and sedimentation off-site.

4.1.5 Community Air Monitoring Plan (CAMP)

The CAMP was developed in accordance with the requirements of the NYSDEC DER-10 and the NYSDOH Generic CAMP to prevent off-site receptors, including neighboring residences and businesses, from potential airborne contaminant releases during intrusive field activities. CAMP results are discussed in Section 4.2.6.

Continuous real-time monitoring for VOCs and particulate matter smaller than 10 microns in diameter (PM₁₀) was performed at the upwind and downwind perimeter of the daily designated work area during ground-intrusive activities. Each monitoring station was equipped with a MiniRAE 3000 PID (or similar) for monitoring VOCs and a TSI DustTrak aerosol monitor for measuring PM₁₀. A portable PID was used to monitor the work zone and the site perimeter was visually monitored for fugitive dust emissions.

Action levels used for PM₁₀ and VOCs were established in the CAMP (Appendix B of the RAWP). Per the CAMP, the action level for particulates was set at 150 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) above background for a 15-minute average. The alert level (to assess perimeter site conditions and apply dust suppression as necessary) for particulates was set at 100 $\mu\text{g}/\text{m}^3$ above background for a 15-minute average. The action levels for VOCs were set at 25 parts per million (ppm) for instantaneous readings above background and 5 ppm above background for a 15-minute average. Aerosol and PIDs were monitored on a continuous basis during implementation of the RAWP. Fifteen-minute running averages were calculated from the data recorded and were compared to the action levels specified in the CAMP.

Field personnel observed ambient air conditions to check for visible dust emissions and odors and monitored CAMP station measurements; if visible dust emissions, odors, or action level exceedances were observed, mitigation measures were implemented. Preventative measures for dust generation included wetting surficial soil and surrounding work areas. Instances when 15-minute-average concentrations of VOCs and PM₁₀ exceeded action levels were included in the daily reports. CAMP results and response actions are discussed in Section 4.2.6.

4.1.6 Contractors Site Operations Plans

Site Operations Plans (SOPs) for this remedial project consisted of construction specifications, including safety, health and emergency response, excavation, storage, handling, transport, and disposal specifications. The Remediation Engineer reviewed plans and submittals related to the remedial project to verify compliance with the RAWP and NYSDEC-approved documents. Remedial documents were submitted to NYSDEC and NYSDOH in a timely manner and prior to the start of work.

4.1.7 Community Participation Plan

The Citizen Participation Plan (CPP) lends transparency to remediation projects by providing the public with information on the proposed plans and an outlet to voice concerns to limit the impact a remediation project may have on the surrounding community. The CPP established a protocol for citizen participation, including creating a document repository to contain a copy of all applicable project documents. Document repositories for this project were established at the following locations:

Hunt's Point Library

877 Southern Boulevard
Bronx, NY 10456
Phone: (718) 617-0338

Bronx Community Board #2

1029 East 163rd Street
Bronx, NY 10459
Phone: (718) 328-9125

A certification of mailing was sent by the Volunteer to the NYSDEC project manager following the distribution of fact sheets and notices that included: (1) certification that the fact sheets were mailed, (2) the date they were mailed; (3) a copy of the fact sheet, (4) a list of recipients (contact list), and (5) a statement that the repositories contained all of the applicable project documents. Additional fact sheets will be distributed to announce (1) the completion of the Remedial Action with a summary of this FER, and (2) the issuance of the COC for the site.

4.2 **Remedial Program Elements**

4.2.1 Contractors and Consultants

Gilbane Building Company (Gilbane) was hired as the Construction Manager responsible for remediation, obtaining permits for construction, preventing exposures to the surrounding area, and maintaining a safe work site. Darcon Construction Corporation (Darcon) under direction by Gilbane implemented the remediation, which was documented by Langan. Copies of permits related to implementation of the RAWP are provided in Appendix C.

The following table summarizes parties associated with RAWP implementation and their responsibilities:

Contractor Consultant	Company Name	General Responsibilities
Remedial Engineer	Langan Engineering, Environmental, Surveying, Landscape Architecture and Geology, D.P.C.	• Remediation Design • Remediation Submittal Reviews • Observation and documentation of work for conformance with the RAWP implementation • Periodic reporting to NYSDEC and NYSDOH
Construction Manager	Gilbane Building Company	• Implement the RAWP • Coordinate and obtain construction permits (NYCDOB, NYSDOT, NYCDEP, etc.) to execute the work.
Remediation Contractor	Darcon Construction Inc.	• Earthwork • Support of Excavation • Excavation and loadout of site soil/fill • Nuisance odor and dust control
Soil Waste Disposal Manager	Environmental Waste Minimalization, Inc (subcontractor to Darcon)	• Coordinate soil disposal facility approvals • Schedule trucks and maintain disposal records
Support of Excavation Contractor	Keller Foundations	• Secant pile wall installation

4.2.2 Site Preparation

Gilbane coordinated the following mobilization and site preparation activities in June 2022:

- Identified the location of aboveground and underground utilities (e.g., power, gas, water, sewer, and telephone), equipment, and structures as necessary to implement the remedy.
- Mobilized necessary remediation personnel, equipment, and materials.
- Constructed a temporary, stabilized construction entrance located in the eastern part of the site along Southern Boulevard, which included a site-access ramp.
- Installed erosion and sediment control measures, as needed, in accordance with the construction specifications.
- Installed temporary construction fencing around the perimeter of the site, including locked gates to limit unauthorized access to areas where remediation was conducted.

- Installed and maintained a water hose at the site access/loading ramp for washing outbound trucks before exiting the site.
- Obtained required agency and city approvals and permits from the NYSDEC and NYCDEP to implement the remedial action.

4.2.3 NYSDEC Pre-Construction Meeting

Prior to beginning the remedial action, a pre-construction meeting was held with the Volunteer, NYSDEC, RE representative, and remediation contractor on January 10, 2022. The meeting objective was to introduce the remediation team, discuss NYSDEC expectations, review the RAWP and approved NYSDEC documents, and identify the expected construction schedule for the BCP project.

4.2.4 General Site Controls

4.2.4.1 Site Security

The site perimeter was secured with gated, signed, plywood fencing with points of entry in accordance with NYCDOB and New York City Department of Transportation (NYCDOT) permits and requirements. The purpose of the fencing was to limit site access to authorized personnel, protect pedestrians from site activities, and maintain site security.

4.2.4.2 Job Site Record Keeping

Field observations were recorded in the form of notes, charts, sketches, or photographs. All observations were recorded in the project field book. Daily and monthly reports that summarized remedial activities and project progress were submitted to the NYSDEC and NYSDOH project managers within the reporting period. Monthly reports summarizing remedial activities during the reporting period and anticipated activities for the next month were also submitted to the NYSDEC and NYSDOH. Daily and monthly reports are further discussed in Section 4.2.7.

4.2.4.3 Equipment Decontamination and Residual Waste Management

Construction equipment was decontaminated after working in CVOC-impacted soil. Rinse water was collected and transferred through the on-site treatment system before discharge to the New York City sewer system through a site connection or transported for off-site disposal. Refuse not generated from the site subsurface was periodically collected and removed as typical trash.

4.2.5 Nuisance Controls

Dust Control

The Remediation Contractor used dust suppression techniques while excavating, drilling, cutting, grading, stockpiling, and during other remediation activities. The Remediation Contractor applied

water to dry work zones and excavation areas and covered stockpiles with polyethylene sheeting, as needed, to minimize releases of airborne particulates.

Odor Control

Nuisance odors from site soil were not observed during the remedial action. While odor controls were available, they were not needed to control site conditions.

Complaints

No known complaints related to nuisance odors, vapors or dust were received during remediation.

4.2.6 CAMP Results

Continuous air monitoring for particulates and VOCs was performed at upwind and downwind stations during ground-intrusive work in accordance with the CAMP described in Section 4.1.6. Fifteen-minute running averages were calculated from the data recorded at each station, and averages were compared to the action levels established in the CAMP.

CAMP action levels were triggered on 15 occasions for particulates; action levels for VOCs were not exceeded. Incident details, including reasons for the exceeding concentrations and corrective measures, are summarized in the following table. Daily CAMP field data summary sheets and air monitoring data are provided in Appendix D.

Date of Exceedance	Total Duration (HH:MM)	Particulate/VOC Exceedance at Downwind Station	Maximum 15-Minute Average Concentration Observed	Reason for Exceedance	Corrective Measures
June 21, 2022	00:10	Particulate	181.7 mg/m ³	Vehicle movement in close proximity to the downwind station	Occurrence was temporary and quickly subsided. Area was monitored for further interference. No further action.
June 24, 2022	00:05	Particulate	166.1 mg/m ³	Concrete trucks being cleaned in close proximity to the downwind station	Truck was relocated. Area was monitored for further interference. No further action.

Date of Exceedance	Total Duration (HH:MM)	Particulate/VOC Exceedance at Downwind Station	Maximum 15-Minute Average Concentration Observed	Reason for Exceedance	Corrective Measures
September 12, 2022	00:11	Particulate	379.1 mg/m ³	Trucks in close proximity to the downwind station	Contractor sprayed water to wet the area and dry surface
November 3, 2022	00:05	Particulate	195.2 mg/m ³	Excavator moving in close proximity to downwind station	Contractor sprayed water to wet the area and dry surface
November 9, 2022	00:05	Particulate	240.0 mg/m ³	Excavator moving in close proximity to downwind station	Contractor sprayed water to wet the area and dry surface
January 11, 2023	00:24	Particulate	237.6 mg/m ³	Hammering Bedrock	Contractor paused work, sprayed water to wet the area. Work resumed after particulate concentrations returned to background
January 30, 2023	00:08	Particulate	393.3 mg/m ³	Welding activities near downwind station	Welding activities paused until concentrations return to background
February 1, 2023	00:01	Particulate	392.5 mg/m ³	Truck unloading stone near downwind station	Station was temporarily relocated away from proximate work
February 2, 2023	00:02	Particulate	214.3 mg/m ³	Drilling secant pile wall adjacent to CAMP station	Drilling activities ceased
February 6, 2023	00:19	Particulate	223.7 mg/m ³	High winds near downwind station	Contractor sprayed water to wet the area and dry surface
February 9, 2023	00:09	Particulate	265.4 mg/m ³	Drilling bedrock adjacent to downwind station	Contractor sprayed water to wet the area and dry surface

Date of Exceedance	Total Duration (HH:MM)	Particulate/VOC Exceedance at Downwind Station	Maximum 15-Minute Average Concentration Observed	Reason for Exceedance	Corrective Measures
February 16, 2023	00:10	Particulate	257.6 mg/m ³	Drilling bedrock adjacent to downwind station	Contractor sprayed water to wet the area and dry surface
February 22, 2023	00:36	Particulate	4237.1 mg/m ³	Drilling bedrock adjacent to downwind station	Contractor paused work, sprayed water to wet the area
March 28, 2023	00:09	Particulate	238.0 mg/m ³	Concrete hammering adjacent to downwind station	Contractor paused work, sprayed water to wet the working area
March 30, 2023	00:22	Particulate	464.6 mg/m ³	Concrete drilling	Contractor sprayed water to wet the area and dry surface

4.2.7 Reporting

Field staff under the supervision of the RE documented the remedial action, including on-site personnel, a summary of work completed, CAMP results, and the anticipated schedule of upcoming work. This data was used to track remediation progress, compliance with the RAWP, and summarize completed remedial actions to prepare daily and monthly BCP reports for submission to the NYSDEC. Daily and monthly reports are included in Appendix B. Photographic documentation of the remedial action is included in Appendix E.

4.3 **Contaminated Materials Removal**

All soil/fill within the BCP site was excavated and removed down to bedrock, to about 24 feet below grade and up to about 30 feet below grade for deep elevator pits. Bedrock was also removed as needed to achieve the required development depth for foundation construction. The excavation extents and depths are shown on Figure 3.

4.3.1 Waste Characterization Sampling

Langan completed a preliminary waste characterization investigation between March 12 and March 13, 2015, to classify soil that was to be removed during site-wide excavation and to support facility approval for off-site disposal. Waste characterization sampling methods and laboratory analyses were performed in accordance with typical requirements of disposal facilities that typically accept soil/fill from New York City sites. Samples for VOC analysis were collected

using laboratory-supplied Terra Core sampler kits. Grab soil samples were collected from discrete locations and analyzed for the following parameters:

- NYSDEC Part 375 / Target Compound List (TCL) VOCs by United States Environmental Protection Agency (EPA) Method 8260C.
- Total petroleum hydrocarbon (TPH) gasoline range organics (GRO) and total extractable petroleum hydrocarbons (EPH) by EPA Method 8015C.
- Toxicity Characteristic Leaching Procedure (TCLP) VOCs by EPA method 1311.

Composite samples were collected by combining soil from five discrete locations/intervals and were analyzed for the following parameters:

- NYSDEC Part 375 / TCL semivolatile organic compounds (SVOCs) by EPA method 8270D
- NYSDEC Part 375 / TAL metals by EPA Methods 6010C/7471B
- NYSDEC Part 375 / TCL pesticides by EPA Method 8081B
- NYSDEC Part 375 herbicides via EPA Method 8151A
- NYSDEC Part 375 / TCL polychlorinated biphenyls (PCBs) by EPA Method 8082A
- Total cyanide by EPA Method 9010C/9014
- TCLP SVOCs, pesticides, herbicides, and metals by EPA Method 1311
- Resource Conservation Recovery Act (RCRA) hazardous waste characteristics, including pH, ignitability, cyanide, and sulfide reactivity.

Supplemental waste characterization sampling was completed by East Coast Geoservices (subcontracted by the Remediation Contractor) on February 17, 2023 to further characterize subsurface conditions and satisfy the selected disposal facility acceptance requirements. For the sampling, 57 soil samples were collected at 1-foot intervals from eight soil borings advanced to about 20 feet bgs in grids WC01B, WC03B, and WC07B. The soil samples were submitted for laboratory analysis for volatile organic compounds (VOCs) to assist the disposal facility's acceptance of the soil/fill.

Soil/fill on the western half of the site contained SVOCs, metals and pesticides at concentrations exceeding the Part 360 general fill criteria, but consistent with concentrations typically found in New York City non-native fill. Soil/fill in the eastern half of the site contained similar non-native fill contaminants and an about 2,750-square-foot area from about 11 to 21 feet bgs classified as listed hazardous and characteristic hazardous waste for PCE and TCE. Based on a NYSDEC

Contained-In Determination, 1,550 tons of soil/fill generated from this area was to be managed as a listed hazardous waste.

4.3.2 Quantities Removed

The following table summarizes the soil/fill types, designated disposal facility, and quantities removed during the remedial action.

Type of Soil/Fill	Disposal Facility Name	Facility Location	No. of Loads	Quantity Removed (tons)	Quantity Removed (Approx. Cubic Yards)
F002 listed hazardous soil/fill	Englobe Corp	8365 Avenue Broadway Nord, Montreal, Canada	58	2,171.22	2,030
Non-hazardous soil/fill	Bayshore Soil Management, LLC	75 Crows Mill Road, Keasbey, New Jersey	225	7,062.58	4,500
	Waste Management Fairless Landfill	1000 New Ford Mill Road, Morrisville, Pennsylvania	192	4,448.79	3,840
	Conestoga Landfill	420 Quarry Road, Morgantown, Pennsylvania	23	527.59	460
Total			498	14,188.24	10,830

On December 19, 2022, the contractor transported two loads (about 8,000 gallons) of industrial rinse fluids to ClearFlo Technologies in 1110 Rte. 109, N. Lindenhurst, New York.

Each regulated soil/fill waste stream was transported for off-site disposal using NYCRR Part 364-permitted transporters in accordance with federal, state, and local regulations. All regulated waste removed for disposal was tracked using a manifesting system. The waste types, total quantities, transport date, disposal facility destination, and manifest numbers for each load removed from the site during the remedial action are presented in Table 2.

Copies of the Part 364 waste transporter permits, disposal facility acceptance letter, and disposal manifests are included in Appendix F. Waste disposal transporters, corresponding manifest numbers, and quantities are provided in Appendix G.

4.4 **Post-Remediation Off-Site Groundwater Sampling**

All soil/fill within the site was removed down to bedrock and transported off site for disposal and the continuous secant pile wall, which is socketed about 9 feet into bedrock along the eastern boundary, provides a watertight and structurally reinforced concrete barrier to off-site soil/fill/groundwater. Therefore, confirmation base or sidewall soil sampling was not required to

achieve the Track 1 Unrestricted Use cleanup. In accordance with the RAWP, off-site monitoring wells were installed to document off-site groundwater conditions after the on-site remediation and confirm bulk reduction in groundwater concentrations to demonstrate completion of the Track 1 remedy.

Two off-site monitoring well pairs (PMW-01S/D and PMW-02S/D) were installed in the adjoining Southern Boulevard sidewalk between July 13 and 29, 2023 under Langan oversight. Each well pair consisted of a shallow well (screened in the overburden) and a deep well (socketed into bedrock). The bedrock wells are open hole wells down to 50 to 51 feet bgs with steel casing installed 4 to 5 feet into bedrock followed by 15 feet of open bedrock. Groundwater samples were collected on October 17, 2023 and on May 30, August 14, and November 5, 2024 and submitted to York Analytical Laboratories, a NYSDOH Environmental Laboratory Approval Program (ELAP)-certified laboratory (ELAP No. 10854) in Stratford, Connecticut, for analysis of TCL and Part 375 list VOCs. The post remediation off-site groundwater well locations and analytical sample results are shown on Figure 4. Well construction and sampling logs are provided in Appendix H.

4.4.1 Groundwater Sample Analytical Results

Groundwater sample analytical results were compared to NYSDEC Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards and Guidance Values (SGVs) for Class GA water. Post remediation off-site groundwater sample results are summarized in Table 3. The laboratory analytical reports are included in Appendix I.

The laboratory analytical results identified CVOCs at concentrations above the SGVs, but at concentrations substantially less than pre-remediation conditions. Average PCE and TCE concentrations in overburden and bedrock groundwater decreased by about 3 to 4 orders of magnitude. When compared to pre-remediation conditions, the November 2024 performance sampling indicated an increase in average concentrations of cis-1,2-dichloroethene and vinyl chloride (PCE daughter products), which demonstrates that CVOCs are undergoing natural attenuation via reductive dichlorination. The ratio of cis-1,2-dichloroethene concentrations to vinyl chloride also shows that reductive dichlorination is not stalling at cis-1,2-dichloroethene. The lack of accumulation of vinyl chloride shows that complete mineralization of PCE to carbon dioxide and water is occurring. The CVOC concentration trends from pre-remediation to the last post-remediation sampling event are illustrated on trend charts provided as Figure 5A and 5B. Now that the on-site source has been completely removed through the implementation of the Track 1 remedy, off-site groundwater concentrations that already demonstrate bulk reduction will continue to decline over time.

The following bullets summarize pre- and post-remediation groundwater monitoring relative to the Track 1 remediation requirement to achieve bulk reduction in groundwater contaminants of concern. Bulk reduction for contaminants of concern in groundwater is evidenced by the following:

- During the RI, PCE was detected at MW-8 at 51,000 µg/L and total CVOCs were detected at 128,000 µg/L. During the final post-remediation groundwater event in November 2024, PCE was detected at PMW-01S at 5.53 µg/L, a 99.9+ % reduction, and total CVOCs were detected at PMW-01S at 4,119 µg/L.
- During the RI, PCE was detected at MW-1 at 7,800 µg/L and total CVOCs were detected at 20,000 µg/L. During the final post-remediation groundwater event in November 2024, PCE was undetected at PMW-02S, a 100% reduction, and total CVOCs were detected at PMW-02S at 2,614 µg/L.

Compared to pre-remediation on-site concentrations, the post-remediation groundwater sample data indicates a successful bulk reduction in groundwater CVOCs. Remaining CVOCs are largely represented by PCE daughter products resulting from the continued reductive dichlorination process. The trend graphs of groundwater sample data comparing the pre-remediation RI data to the post-remediation groundwater data are shown in Figure 5A and 5B.

4.4.2 Data Validation

Laboratory analyses were conducted in accordance with EPA SW-846 methods and NYSDEC Analytical Services Protocol (ASP) Category B deliverable format. QA/QC procedures required by the NYSDEC ASP and SW-846 methods were followed, including instrument calibration, standard compound spikes, surrogate compound spikes, and analysis of quality control samples. The laboratory provided sample bottles, which were pre-cleaned and preserved. Where there were differences in the SW-846 and NYSDEC ASP requirements, the NYSDEC ASP took precedence.

Data Usability Summary Reports (DUSR) were prepared for the laboratory reports associated with the post-remediation off-site groundwater samples and are included as Appendix J. Based on the DUSRs, all data are considered usable, as qualified. Completeness, defined as the percentage of analytical results that are judged to be valid, is 100%.

4.5 **Imported Backfill**

NYSDEC-approved backfill was imported and placed within the site as aggregate layer and as a temporary truck pad and temporary surface stabilizer. Proposed backfill was submitted to the NYSDEC for approval prior to import to the site. Between January 17 and February 15, 2023, about 939 tons (740 cubic yards) of ASTM #57 - ¾ inch virgin stone was imported from Tilcon

Mount Hope Quarry in Wharton, New York. All temporary stone was subsequently removed with soil excavation down to bedrock.

Imported material is summarized in Table 4. Imported material documentation is provided in Appendix K.

4.6 Contamination Remaining at the Site

A Track 1 Unrestricted Use cleanup will be achieved for the on-site remediation. All soil within the site was removed down to bedrock and transported off site for disposal. Bedrock was also excavated and removed to accommodate construction of the cellar. All on-site groundwater above bedrock was also removed to facilitate remediation and construction of the building foundation. As part of construction, a concrete mud mat was placed on top of the bedrock surface across the site, before installing the 30-inch-thick mat foundation, gravel layer, and 6-inch concrete topping slab; a waterproofing membrane also completely wraps the new foundation. Because of the targeted Track 1 Unrestricted Use remedy, the site will not require engineering or institutional controls, an environmental easement, or a Site Management Plan (SMP).

4.7 Engineering Controls

A Track 1 Unrestricted Use cleanup will be achieved; therefore, no engineering controls will be required to protect human health and the environment.

4.8 Institutional Controls

A Track 1 Unrestricted Use cleanup will be achieved; therefore, no institutional controls will be required.

4.9 Deviations from the RAWP

There were no significant deviations from the RAWP or subsequent NYSDEC-approved documents.

Confirmation endpoint samples were not collected as all on-site soil was removed from the site and groundwater was completely removed from within the site down to the excavated bedrock depth. This change was communicated by email to the NYSDEC on April 3, 2023 and documented in monthly progress reports submitted to the NYSDEC, beginning with progress report #125 (March 2023).