

MILL BROOK TERRACE DEVELOPMENT

570 EAST 137TH STREET

BRONX, NEW YORK

Remedial Action Report

NYC VCP Project Number 17CVCP041X

CEQR Number 17CHA001X

Prepared For:

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REMEDIAL ACTION REPORT

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LIST OF ACRONYMS

Acronym	Definition
CAMP	Community Air Monitoring Plan
DER-10	NYS DEC Division of Environmental Remediation Technical Guidance Manual 10
DGA	Densely Graded Aggregate
DUSR	Data Usability Summary Report
EC	Engineering Control
HASP	Health and Safety Plan
IC	Institutional Control
NYC VCP	New York City Voluntary Cleanup Program
NYC DEP	New York City Department of Environmental Protection
NYC DOHMH	New York City Department of Health and Mental Hygiene
NYC OER	New York City Office of Environmental Remediation
NYS DEC	New York State Department of Environmental Conservation
ORC	Oxygen Release Compound
PID	Photoionization Detector
QA/QC	Quality Assurance/Quality Control
QEP	Qualified Environmental Professional
RAR	Remedial Action Report
RAWP	Remedial Action Work Plan
RCA	Recycled concrete Aggregate
SCG	Standards, Criteria and Guidance
SCO	Soil Cleanup Objective
SMMP	Soil/Materials Management Plan
SMP	Site Management Plan
SPDES	State Pollutant Discharge Elimination System
SVOCs	Semi-Volatile Organic Compounds
UST	Underground Storage Tank
VOCs	Volatile Organic Compounds

CERTIFICATION

I, Stephen M. Kline, P.E., certify the following:

- I am currently a registered professional engineer licensed by the State of New York.
- I performed professional engineering services and had primary direct responsibility for implementation of the remedial program for the Mill Brook Terrace site, site number 17CVCP041X.
- I have reviewed this document, to which my signature and seal are affixed.
- Engineering Controls implemented during this remedial action were designed by me or a person under my direct supervision and achieve the goals established in the Remedial Action Work Plan for this site. The vapor barrier and composite cover system constructed during this remedial action were designed by me or a person under my direct supervision and achieve the goals established in the Remedial Action Work Plan for this site.
- The Engineering Controls constructed during this remedial action were professionally observed by me or by a person under my direct supervision and (1) are consistent with the Engineering Control design established in the Remedial action Work Plan and (2) are accurately reflected in the text and drawings for as-built design reported in this Remedial Action Report.
- The New York City Office of Environmental Remediation (OER)-approved Remedial Action Work Plan dated March 13, 2017 and Stipulations in a letter dated March 23, 2017 were implemented and that all requirements in those documents have been substantively complied with. I certify that contaminated soil, fill, liquid, or other material from the property was taken to facilities licensed to accept this material in full compliance with applicable laws and regulations.

Stephen M. Kline, P.E.

Name

NYS 080431

PE License Number

Stephen M. Kline

Signature

10/08/2020

Date



EXECUTIVE SUMMARY

Mill Brook Housing Development Fund Company, Inc (Mill Brook HDFC) has enrolled in the New York City Voluntary Cleanup Program (NYC VCP) to investigate and remediate the property located at 570 East 137th Street in Mott Haven section of Bronx, New York. A Remedial Investigation (RI) was performed to compile and evaluate data and information necessary to develop a Remedial Action Work Plan (RAWP). A remedial action was performed pursuant to the New York City Office of Environmental Remediation (OER)-approved RAWP in a manner that has rendered the Site protective of public health and the environment consistent with the proposed use of the property. This RAR describes the remedial action performed under the RAWP. The remedial action described in this document provides for the protection of public health and the environment and complies with applicable environmental standards, criteria and guidance, and applicable laws and regulations.

Site Location and Background

The Site is located at 570 East 137th Street in the Mott Haven section of Bronx, NY. The Site is triangular shaped with an area of 31,735 square feet (SF) as surveyed by Control Point Associates dated July 8, 2016 and amended October 27, 2016. The Site occupies the northwest portion of 570 137th Street property Block 2548 Lot 1, which is identified as Mill Brook Houses, a New York City Housing Authority (NYCHA)-owned residential property. Prior to the development, the Site was paved with asphalt and was primarily used for parking by residents from the adjoining Mill Brook Houses.

Summary of Redevelopment Plan

The Site development consisted of a construction of new 134,000-gross square feet (GSF) nine-story block and plank building with one partial basement level, roof top terrace, and landscaped grounds. The lower level will be used as an office space with an egress/ingress ramp, storage space and building maintenance facilities (e.g. trash room, gas meter room, water meter room, fire pump room, delivery room, electrical room, telecom room etc.). The development also included over 8,300 square feet of community facility space, a senior center and meeting spaces to be operated by Mill Brook HDFC for use by NYCHA and Mott Haven community residents.

In addition to a roof top terrace, the Site also contains landscaped open spaces along the perimeter of the Site.

The redevelopment plan is 100% affordable which provides 159 units of affordable housing for seniors and an 8,300 SF community/senior center. The community/senior center features a large commercial kitchen and dining room, neighborhood community space, and multi-purpose activity rooms for senior programming.

The development is consistent with the zoning classification for the area and was under the New York City Department of Housing Preservation and Development (HPD) Senior Affordable Rental Apartments Program.

The Site topography slopes down to the west. To make way for the lower level spaces, the Site was excavated down from between 4 to 12 feet below ground surface (bgs), with the deep excavation concentrated on the main building footprint at the center portion of the lot. The elevator pit was excavated to approximately 15 feet bgs. The Site perimeter was excavated to approximately 2 to 4 feet bgs.

Summary of Surrounding Property

The Site appears on the City of New York, Department of City Planning (DCP), Zoning Map 6a. The Site is located in an area zoned for multi-story residential properties (R6) and is bounded by the Saint Ann's Avenue sidewalk to the west, East 137th Street to the north, and the five buildings of the Mill Brook Housing Complex to the east and south. The surrounding properties are mainly residential with commercial stores located north of East 137th Street.

During the Site reconnaissance, GZA GeoEnvironmental of New York (GZA) observed the following land use on properties in the immediate vicinity of the Site:

Direction from the Site	Street Address	Block/Lots	Owner	Property Description	Property Use
North (across E. 137 th St)	575 E 137th St.	2550/1	575 E 137th St Real Estate	5-story building	Residential/ Commercial
	577 E 137th St.	2550/76	Anna Del Gigante	Undeveloped Lot	
	581 E 137th St.	2550/75	581 137th St Associates	4-story building	Residential
	585 E 137th St.	2550/73	585 137th St Associates	4-story building	Residential
	587 E 137th St.	2550/72	Anna Maria Del Gigante	4-story building	Residential
	589 E 137th St.	2550/71		2-story building	Residential
	591 E 137th St.	2550/70		3-story building	Residential

Direction from the Site	Street Address	Block/Lots	Owner	Property Description	Property Use
East	160 St. Ann's Avenue (Mill Brook Houses)	2548/1	NYCHA	Three 16-story buildings	Residential
	625 E 135th Street	2548/100	NYC Department of Parks and Recreation	Park	
	169 Cypress Avenue (Mill Brook Houses)	2548/42	NYCHA	16-story building	Residential
West (across St. Ann's Ave)	180 Brook Avenue	2263/19	NYCHA	Four 16-story buildings	Residential
South	Interstate-87 - Major Deegan Expressway				
	160 St. Ann's Avenue (Mill Brook Houses)	2548/1	NYCHA	Two 16-story buildings	Residential

Sensitive receptors located with a 500-foot radius of the Site include the following:

Name	Address
Pamela C Torres Day Care Center	161 St Ann's Avenue
Tender Tots Day Care, Preschool & After School Programs	531 E 137 th Street
Adalgisa Morel Day Care	165 St Ann's Avenue

Summary of Past Site Uses and Areas of Concern

According to the April 2017 Phase I Environmental Site Assessment, the Site contained several detached small dwellings from before 1891 to 1901. Then from around 1908 until the mid-1950s, the Site contained several larger adjoined multi-story buildings. By the mid-1960s, the multi-story buildings were demolished, and the property was converted into parking space that was integrated into the NYCHA Mill Brook Houses apartment complex. At the time of GZA's reconnaissance in April 21, 2017, the Site contained an access road and was used as a parking lot by the apartment complex.

Summary of Work Performed under the Remedial Investigation

The previous work performed at the Site referenced the 160 St. Ann's Avenue address, since the new Site address was not assigned until 2017 after these investigations were already completed.

Phase II Environmental Site Investigation, GZA, November 2016

Mill Brook HDFC retained GZA to conduct a Phase II Environmental Site Investigation (Phase II ESI) to evaluate the subsurface conditions at the Site. GZA performed the Phase II ESI field activities between October and November 2016 consistent with the Phase II Site Investigation Work Plan (SIWP) and Health and Safety Plan (HASP), both of which were dated September 2016. The New York City Department of Environmental Protection (DEP) Bureau of Sustainability approved the SIWP and HASP in a letter dated September 30, 2016.

GZA's Phase II ESI scope of services included the following activities:

- Review of historical documents and environmental databases;
- Completion of two geophysical survey events;
- Advancement of six soil borings;
- Collection and laboratory analysis of twelve soil samples;
- Installation and development of two new monitoring wells;
- Collection and laboratory analysis of three groundwater samples;
- Installation and sampling of three soil vapor probes;
- Collection and laboratory analysis of three soil vapor samples; and
- Preparation of the Phase II ESI Report.

Phase II ESI Report Addendum, GZA, December 2016

Due to the occurrence of elevated levels of lead in three samples (designated as SB-1 [0-2], SB-5[0-2], and SB-6[9-11], as shown on the Phase II ESI - Figure 2 Sampling Location Plan), GZA recommended Toxicity Characteristic Leaching Procedure (TCLP) analysis for lead. Under 40 Code of Federal Regulations (40 CFR) Part 261, the United States Environmental Protection Agency (USEPA) stipulates that the lead levels must not exceed the USEPA allowable limit or the TCLP regulatory level of 5 milligrams per liter (mg/L). During the Phase II ESI Addendum, three samples were analyzed for TCLP lead to evaluate whether the lead that is present in the soil is characterized as hazardous. The sample from SB-5 exceeded the TCLP regulatory level and was considered hazardous waste for disposal purposes.

Geotechnical Engineering Report, GZA, January 2017

GZA was retained by Mill Brook HDfC to perform a geotechnical subsurface exploration at the Site. The geotechnical investigation's objectives were to evaluate the subsurface conditions at the site and to provide geotechnical engineering design recommendations, construction recommendations, and support of excavation design for the proposed development. GZA's scope of services included:

- A subsurface exploration program consisting of 13 test borings;
- Limited geotechnical laboratory testing, including natural moisture content testing, Atterberg Limits, and grain-size analyses;
- Geotechnical engineering analyses of the subsurface conditions encountered at the site; and
- Preparation of a geotechnical engineering report which summarized the observations and engineering recommendations for the project.

Supplemental Remedial Investigation Report, GZA, March 9, 2017

On January 4, 2017, Mill Brook HDfC, entered into an Agreement for the Voluntary Cleanup Program (VCP) with the OER. GZA performed a supplemental remedial investigation (SRI) of the Site to fulfill OER's VCP requirements. The objectives of the SRI were to collect additional data to aid in the remedial design for the Site, address critical data gaps (such as additional sample locations from the northeast portion of the Site and within the building footprint), and collect additional data on potential contamination.

Waste Characterization Study Reports, GZA, March 10, 2017 and February 1, 2018

Following the Phase II ESI and the Supplemental Phase II ESI sampling activities, GZA also conducted waste characterization sampling at the Site in February 2017. GZA's based its estimate of excess excavated material on the proposed basement level footprint of the Mill Brook Terrace building, which has a depth of approximately 12 feet bgs in the center of the Site. GZA estimated approximately 5,500 cubic yards (CY) of excess soil would be generated and would require off-site disposal. The 5,500 CY estimate included a 15% factor applied to the calculated in-place soil volume.

Based on the proposed construction excavation activities, GZA divided the expected area of excavation into 12 cells of approximately 500 CY each, which accounted for a total excavated volume of 6,000 CY. The waste characterization study involved drilling 18 soil borings (designated WC-01 through WC-18) in area of excavation within nine sampling grids, to depths ranging between 5 and 12 feet bgs. Three of the nine sampling grids were subdivided into a shallow excavation depth (i.e., 0-5 feet bgs - designated as “A”) and a deeper excavation depth (i.e., 5-10 feet bgs - designated as “B”) for a total of 12 cells. Each cell contained one composite sample submitted for waste characterization sampling and one discrete sample collected for volatile organic compounds (VOCs).

Additionally, GZA collected eight confirmatory soil (CS) samples around soil boring SB-5, which had a soil sample (collected from 0-2 feet) that contained hazardous levels of lead based on TCLP metals analyses. These samples were collected from borings off-set approximate 10 feet from SB-5 at a shallow depth (0'-2') and a deeper depth (8'-10'), and analyzed for total lead, both using EPA SW-846 extraction method and the EPA Method 1311 TCLP extraction method. Five additional CS samples were sampled to confirm that the proposed excavation depth around WC-14 in excavation GRID-7 did not contain hazardous levels of lead for disposal purposes. The purpose of this CS sampling was to estimate the extent of this hazardous waste hot spot that would require special handling during the building excavation.

In order to meet the requirements of soil disposal facilities, additional waste characterization samples were collected on January 26, 2018 for the additional soil that was excavated in the cellar area. The estimated excavation quantity was 200 CY. The soil in the cellar was tested for TCLP Metals and Extractable Petroleum Hydrocarbons (EPH).

Summary of Findings of Remedial Investigation

Phase II Environmental Site Investigation, GZA, November 2016

The findings of the Phase II ESI are summarized as follows:

- The water table was observed between approximately 13 to 14 feet bgs. The inferred direction of groundwater flow beneath the Site is generally to the southwest.
- Based on the analytical results of the soil sampling, several semi-volatile organic compounds (SVOCs) and metals (i.e. copper, lead, iron, mercury and zinc) exceeded their respective Part 375 Unrestricted Use (Track 1) and Restricted Residential Use (Track 2)



Soil Cleanup Objectives (SCOs). We note that the SVOCs and metals that exceeded their respective Track 1 SCOs are constituents typically found in historic urban fill observed in New York City. Several pesticides also exceeded their respective Track 1 SCOs. We also note that the presence of landscaped areas in the Site parking lot might account for the occurrence of pesticides.

- No VOCs, no pesticides, and no polychlorinated biphenyls (PCBs) were detected in any of the groundwater samples at concentrations that exceeded their respective New York State Department of Environmental Conservation (NYSDEC) Ambient Water Quality Standards (AWQS) and Guidance Values. Several metals were detected above their respective AWQS. We note that the detected metals are typically observed in New York City groundwater that is in contact with historic urban fill.
- Benzo(b)fluoranthene and chrysene exceeded their respective AWQS in MW-3.
- Several VOCs were detected in the three soil vapor samples collected at the Site. However, none of the detected VOCs exceeded their respective New York State Department of Health (NYSDOH) Air Guideline Values (AGVs).

For more detailed results, consult the Phase II ESI. Based on an evaluation of the data and information from the Phase II ESI and the RAWP, disposal of significant amounts of hazardous waste was not performed at this site.

Addendum to the Phase II Environmental Site Investigation Report, GZA, December 5, 2016

The three samples were analyzed for TCLP lead to evaluate whether the lead that is present in the soil is characterized as hazardous. Material that fails to meet the TCLP regulatory level is considered hazardous waste for disposal. Only one sample collected from one location SB-5(0-2) exceeded the TCLP regulatory level, and therefore, is considered hazardous waste. The location around SB-02 was considered a hotspot for hazardous lead.

Geotechnical Engineering Report, GZA, January 2017

GZA observed the following subsurface conditions at the Site:

- **SURFACE COVER MATERIALS:** Approximately 3 to 8 inches of asphalt was encountered in the parking spaces and 5 to 6 inches of root-mat and topsoil at landscaped areas.

- **FILL:** Fill materials were encountered in all the test borings from directly below the surface cover to depths of about 6 to 15 feet bgs. The fill consisted of brown, fine to coarse sand and gravel, contained up to 20 percent silt, 10 percent cobbles, 10 percent mica, and varied amounts of asphalt, brick, and concrete fragments.
- **SAND:** In some areas a Sand stratum was encountered from immediately below the Fill to depths of about 8 to 35 feet bgs. The Sand stratum varied in thickness from about 2 to 28 feet, but generally averaged about 5 to 10 feet thick. This stratum consisted of brown, fine to coarse sand, with up to 35 percent silt, and 20 percent gravel, 20 percent rock fragments, 10 percent mica, and 10 percent cobbles.
- **HIGHLY WEATHERED ROCK:** In some areas, a stratum of Highly Weathered Rock (HWR) underlain the Sand Stratum. The HWR stratum consisted of very dense, brown, and yellow, fine to coarse sand, with up to 10 percent mica, 20 percent silt, and 20 percent gravel.
- **ROCK:** Rock was identified by split-spoon sampler and auger refusal at each of the boring locations. Due to the intense geologic folding of the rock at the Site, multiple rock formations were encountered as the borings were advanced through different geologic fold limbs. Rock consisted of moderately hard to hard, slightly to severely weathered, slightly to moderately fractured Schist; moderately hard to hard, slightly to severely weathered, moderately to extremely fractured Marble; soft to moderately hard, moderately to severely weathered, moderately to extremely fractured Sandstone; and slightly to severely weathered, slightly to moderately fractured Gneiss.

Supplemental Remedial Investigation Report, GZA, March 9, 2017

The findings of the SRI were as follows:

- No soil VOCs exceeded their respective Track 1 and Track 2 SCOs.
- Several SVOCs in soil exceeded their respective Track 1 and Track 2 SCOs in one shallow soil sample (SB-8[0-2]) collected and analyzed. The detected SVOC compounds include benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene, and indeno(1,2,3-cd)pyrene.

- Barium and Lead exceeded its Track 1 and Track 2 SCOs in sample SB-8 (0-2). Iron exceeded its Track 1 and Track 2 SCOs in all five samples. Mercury and zinc exceeded its Track 1 SCO in sample SB-8 (0-2) while nickel and zinc exceeded its Track 1 SCO in sample SB-9(18-20).
- Several pesticides in soil exceeded their respective Track 1 SCOs in one shallow sample (SB-8[0-2]). These pesticides include 4,4'-DDD, 4,4'-DDE, and 4,4'-DDT. No PCBs exceeded their respective Track 1 and Track 2 SCOs. One sample SB-9 (18-20) exceeded Track 1 and Track 2 SCOs for concentrations of Trivalent Chromium.
- VOCs were not detected in the soil vapor samples collected at the Site. None of the VOC concentrations exceeded their respective NYSDOH Air Guideline Values (AGVs).

Waste Characterization Study Report, GZA, March 10, 2017 and Supplemental Waste Characterization, February 1, 2018

The excavated material did not meet New York clean fill standards. GRID-1, GRID-2, GRID-3 and GRID-5A contain soil SVOC concentrations that Part 375 Residential Soil Cleanup Objectives (SCOs). SVOC concentrations are general consistent with those commonly observed in urban fill. In addition, several metal analytes exceed Part 375 Residential SCOs which is also indicative of urban fill. Only the total concentrations of SVOCs in GRID-1 exhibited material that exceeds the site-specific clean-up criteria.

The TCLP lead concentrations from GRID-7 were equal to the hazardous lead level. GRID-7 was a composite sample from WC-13 and WS-14. Additional, sampling identified elevated lead levels around the WS-14 location. GZA developed from a CS sampling results for the hazardous lead observed around the previously sampled location SB-5 (0'-2' and 8'-10') indicate that the hazardous lead soils appear to be limited in extent since the CS sample concentrations were all reported below the TCLP hazardous limit for lead.

In 2018, GZA performed a supplemental waste characterization on excavated stockpiled soil in order to meet the disposal facility sampling frequency requirements. The additional soil stockpile had been excavated from GRID-2, in the area that would become the cellar, for waste characterization for the additional soil that needed to be excavated. The soil in the cellar was tested

for TCLP Metals and Extractable Petroleum Hydrocarbons (EPH). In general, the excavated soil samples exhibited that the characteristics consistent with typical urban fill; however, it failed TCLP testing for lead and the entire stockpile of materials was shipped out as hazardous lead in 2018.

Summary of the Remedial Action

The Remedial Action achieved protection of public health and the environment for the intended use of the property. The Remedial Action achieved the Remedial Action Objectives established for the project; addressed applicable standards, criteria, and guidance; reduced mobility, toxicity and volume of contaminants; was cost effective and implementable; and used standard methods that are well established in the industry. The remedial action is effective in the short-term and long-term.

A summary of the milestones achieved in the Remedial Action is as follows: The Remedial Investigation (RI) was performed in September 2016. A Pre-Application Meeting was held on December 16, 2016. The RI Report was prepared to evaluate data and information necessary to develop a Remedial Action Work Plan (RAWP). The Site contact list was established. The Draft RAWP was prepared and released with a Fact Sheet on February 14, 2017, for a 30-day public comment period. The RAWP dated March 13, 2017 and the Stipulation List dated March 23, 2017, was approved by the OER on March 23, 2017. A Pre-Construction Meeting was held on July 24, 2017. The remedial action began on August 18, 2017 and completed in October 2019.

The remedial action consisted of the following tasks:

1. Prepared a Community Protection Statement and implemented a Citizen Participation Plan.
2. Mobilized site security and equipment (July 2017), completed utility mark outs, and marked and staked excavation areas.
3. Additional soil and soil vapor investigations were performed to supplement investigation data due to critical data gaps for the northeast portion of the Site and the building footprint, identified during RAWP preparation. Five (5) soil samples and two (2) soil vapor samples were collected, and results were submitted to OER on March 9, 2017 under the *Supplemental Remedial Investigation Report*. Due to the occurrence of elevated levels of lead in three samples, the three samples were analyzed for TCLP lead to evaluate whether

the lead that is present in the soil is characterized as hazardous. The results were submitted to OER on December 5, 2016 under the *Addendum to the Phase II Environmental Site Investigation Report*.

4. Performed Waste Characterization Study prior to excavation activities. In total, 32 waste characterization soil samples (including 8 confirmatory samples) were collected between February 6 and 8, 2017; an additional 6 confirmatory samples were taken on August 29, 2017; and an additional 4 waste characterization samples were collected between January 26 and February 1, 2018. Waste characterization samples were collected at a frequency dictated by disposal facility.
5. Performed a Community Air Monitoring Program (CAMP) for particulates and volatile organic compounds. Daily and weekly CAMP was performed during ground intrusive activities from August 18, 2017 to July 26, 2018.
6. Established Track 4 Site-Specific Soil Cleanup Objectives (SCOs) in the Remedial Action Work Plan (RAWP) with the following criteria: Total SVOC - 200 parts per million (ppm), lead - 800 ppm; mercury - 1.5 ppm; and barium - 600 ppm.
7. The Site topography slopes down to the west so to make way for the lower level spaces, the Site was excavated down from between 4 to 12 feet bgs, with the deep excavation concentrated on the main building footprint at the center portion of the lot. The elevator pit was excavated to approximately 15 feet bgs. The Site perimeter was excavated to approximately 2 to 4 feet bgs, for the landscaped areas.
8. Screened excavated soil during intrusive work for indications of contamination by visual means, odor, and monitoring with a photoionization detector (PID).
9. Conducted materials management of excavated materials including temporarily stockpiling and segregating in accordance with defined material types and to prevent co-mingling of contaminated material and non-contaminated materials.
10. Appropriately segregated excavated media onsite prior to disposal. Transported and disposed all soil/fill material at permitted facilities in accordance with all applicable laws and regulations for handling, transporting, and disposing, and the RAWP.

11. Collected and analyzed fifteen post excavation end-point samples to evaluate the attainment of SCOs. Site-Specific Track 4 SCOs were achieved.
12. Excavated four hotspot locations (EP-5, EP-15, SB-5, and Grid-7[WC-14]) and successfully delineated the locations. Site-Specific Track 4 SCOs were achieved.
13. Transported and disposed 10,636 tons of soil/fill material at permitted facilities in accordance with all applicable laws and regulations for handling, transporting, and disposing, and the RAWP. Excavated soils were disposed as:
 - a. 316 tons of hazardous lead soil/fill and transported to Republic Env. Systems (PA), Inc., 2869 Sandstone Drive Hatfield, PA. (see 13 for Hotspot delineation); and
 - b. 10,320 tons of non-hazardous soil/fill soil was transported to Soil Safe-Metro12, 300 Salt Meadow Road, Carteret, NJ.
14. Constructed an engineered Composite Cover System consisting of a nominal 6 inches of reinforced concrete slab underlain by 8 inches of clean sub-base material in building areas, a nominal 4-inch placed concrete on a 6-inch sub-base in sidewalk areas, and 2 feet of clean soil, overlain by planting soil and gravel in landscaped areas to prevent human exposure to residual soil/fill remaining under the Site. The contractor for the cover construction was Island Foundation.
15. Installed a Vapor Barrier System that consisted of Preprufe 300R with a 46- mil vapor membrane and Florprufe 120 with a 46- mil vapor membrane (manufactured by GCP Applied Technologies). GCP Bituthene 3000 with a 50-mil vapor membrane was applied to the subgrade concrete walls after overlapping the horizontal vapor barrier applications. The welds, seams and penetrations were properly sealed with liquid membrane and/or mastic to limit preferential pathways for vapor migration. The installation contractor for the Vapor Barrier System construction was RTI.
16. Residual soil is present beneath the cover layer and will be subject to Site Management under this Remedial Action. Residual soil was demarcated using geosynthetic mesh material placed beneath at least 2 feet of clean soil underneath the landscaped areas.

17. Performed all activities required for the Remedial Action, including permitting requirements and pretreatment requirements, in compliance with applicable laws and regulations.
18. Implemented storm-water pollution prevention measures in compliance with applicable laws and regulations.
19. Imported a total of 1,187 CY of dense graded aggregate from Braen Stone of Spart, NJ, used as backfill and site cover (2 feet of clean fill) in compliance with the Remedial Action Work Plan and in accordance with applicable laws and regulations. In addition to the clean fill, the project also imported 340 CY of stone fill along with 901 CY of planting soil mix for the landscaped areas
20. Submitted daily reports during construction oversight activities. Daily reports were submitted to OER from August 18, 2017 to February 9, 2018. From February 2018 to November 2019, weekly and monthly reports were provided to OER.
21. Submitted a Sustainability Report the details the sustainable items incorporated into the project remediation and redevelopment.
22. Submitted a RAR that describes the Remedial Action, certifies that the remedial requirements defined in the Remedial Action Work Plan have been achieved; defines the Site boundaries; describes all Engineering and Institutional Controls applicable to the Site; and describes any changes from the RAWP.
23. Submitted a Site Management Plan (SMP) for long-term management of residual soil, including plans for operation, maintenance, inspection, and certification of the performance of Engineering Controls and Institutional Controls. Inspection and Certification reports will be submitted by July 30, 2026 (for the reporting period calendar year 2021-2025), July 30, 2036 (for the reporting period calendar years 2026-2035) and every 10 year thereafter (for the reporting period consisting of the same number prior calendar years). Inspection and Certification Reports will cover all calendar years since the prior reporting period.
24. The property will continue to be enrolled in OER Voluntary Cleanup Program. Engineering Controls and Institutional Controls will be managed in compliance with the SMP.

Institutional Controls will include prohibition of the following: (1) prohibition of vegetable gardening and farming in residual soil; (2) prohibition of the use of groundwater beneath the site without treatment rendering it safe for the intended use; (3) prohibition of disturbance of residual soil material unless it is conducted in accordance with the SMP; and (4) prohibition of higher levels of land usage than the restricted residential uses addressed by this remedial action without prior notification and approval by OER.

REMEDIAL ACTION REPORT

1.0 PROJECT BACKGROUND

Mill Brook Housing Development Fund Company, Inc (Mill Brook HDfC) has enrolled in the NYC VCP to investigate and remediate a property located at 570 137th Street in Mott Haven section of Bronx, New York. The property subject to this Remedial Action Bronx is located in the northwest portion of Block 2548 and Lot 1. The Remedial Action was performed pursuant to the OER-approved RAWP in a manner that has rendered the property protective of public health and the environment consistent with its intended use. This RAR describes the Remedial Action performed under the RAWP. The remedial action described in this document provides for the protection of public health and the environment and complies with applicable environmental standards, criteria, and guidance (SCGs) and applicable laws and regulations.

1.1 Site Location and Background

The Site is located at 570 East 137th Street in the Mott Haven section of Bronx, NY. The Site is triangular shaped with an area of 31,735 square feet (SF) as surveyed by Control Point Associates dated July 8, 2016 and amended October 27, 2016. The Site occupies the northwest portion of 570 East 137th Street property Block 2548 Lot 1, which is identified as Mill Brook Houses, a New York City Housing Authority (NYCHA)-owned residential property. The Site Location Map is shown on **Figure 1**.

Prior to the development, the Site was paved with asphalt and was primarily used for parking by residents from the adjoining Mill Brook Houses. Photographs of the Site prior to the development are included in **Appendix A**. The Site Plan is shown on **Figure 2**.

1.2 Redevelopment Plan

The Site development consisted of a construction of new 134,000 gross square feet (GSF) nine-story block and plank building with one partial basement level, roof top terrace, and landscaped grounds. The lower level will be used as an office space with an egress/ingress ramp, storage space and building maintenance facilities (e.g. trash room, gas meter room, water meter room, fire pump room, delivery room, electrical room, telecom room etc.). The development also included over 8,300 square feet of community facility space, a senior center and meeting spaces to be

operated by Mill Brook HDHC for use by NYCHA and Mott Haven community residents. In addition to a roof top terrace, the Site also contains landscaped open spaces along the perimeter of the Site.

The redevelopment plan is 100% affordable which provides 159 units of affordable housing for seniors and an 8,300 SF community/senior center. The community/senior center features a large commercial kitchen and dining room, neighborhood community space, and multi-purpose activity rooms for senior programming.

The Site topography slopes down to the west. To make way for the lower level spaces, the Site was excavated down from between 4 to 12 feet below ground surface (bgs), with the deep excavation concentrated on the main building footprint at the center portion of the lot. The elevator pit was excavated to approximately 15 feet bgs. The Site perimeter was excavated to approximately 2 to 4 feet bgs.

The development is consistent with the zoning classification for the area and falls under the HPD Senior Affordable Rental Apartments Program. A map showing the building location, basement location and open space location is shown in the Development Plan in **Appendix B**.

1.3 Description of Surrounding Property

The Site appears on the City of New York, Department of City Planning (DCP), Zoning Map 6a. The Site is located in an area zoned for multi-story residential properties (R6) and is bounded by the Saint Ann's Avenue sidewalk to the west, East 137th Street to the north, and the five buildings of the Mill Brook Housing Complex to the east and south. The surrounding properties are mainly residential with commercial stores located north of East 137th Street.

During the Site reconnaissance, GZA GeoEnvironmental of New York (GZA) observed the following land use on properties in the immediate vicinity of the Site:

Direction from the Site	Street Address	Block/Lots	Owner	Property Description	Property Use
North (across E. 137th St)	575 E 137th St.	2550/1	575 E 137th St Real Estate	5-story building	Residential/Commercial
	577 E 137th St.	2550/76	Anna Del Gigante	Undeveloped Lot	
	581 E 137th St.	2550/75	581 137th St Associates	4-story building	Residential
	585 E 137th St.	2550/73	585 137th St Associates	4-story building	Residential
	587 E 137th St.	2550/72	Anna Maria Del Gigante	4-story building	Residential
	589 E 137th St.	2550/71		2-story building	Residential
	591 E 137th St.	2550/70		3-story building	Residential

Direction from the Site	Street Address	Block/Lots	Owner	Property Description	Property Use
East	160 St. Ann's Avenue (Mill Brook Houses)	2548/1	NYCHA	Three 16-story buildings	Residential
	625 E 135th Street	2548/100	NYC Department of Parks and Recreation	Park	
	169 Cypress Avenue (Mill Brook Houses)	2548/42	NYCHA	16-story building	Residential
West (across St. Ann's Ave)	180 Brook Avenue	2263/19	NYCHA	Four 16-story buildings	Residential
South	Interstate-87 - Major Deegan Expressway				
	160 St. Ann's Avenue (Mill Brook Houses)	2548/1	NYCHA	Two 16-story buildings	Residential

Sensitive receptors located with a 500-foot radius of the Site include the following:

Name	Address
Pamela C Torres Day Care Center	161 St Ann's Avenue
Tender Tots Day Care, Preschool & After School Programs	531 E 137 th Street
Adalgisa Morel Day Care	165 St Ann's Avenue

Figure 3 shows the land use in the area and sensitive receptors near the Site.

1.4 Summary of Past Site Uses and Areas of Concern

According to the April 2017 Phase I Environmental Site Assessment, the Site contained several detached small dwellings from before 1891 to 1901. From around 1908 until the mid-1950s, the Site contained several larger adjoined multi-story buildings. Then by the mid-1960s, the multi-story buildings were demolished, and the property was converted into parking space that was integrated into the NYCHA Mill Brook Houses apartment complex. At the time of GZA's reconnaissance in April 21, 2017, the Site contained an access road and was used as a parking lot by the apartment complex.

1.5 Summary of Work Performed under the Phase II Environmental Site Investigation

The previous work performed at the Site reference the 160 St. Ann's Avenue street address, since the new Site address was not assigned until 2017, after these investigations were already completed.

Phase II Environmental Site Investigation, GZA, November 2016.

Mill Brook HDFC retained GZA to conduct a Phase II Environmental Site Investigation (Phase II ESI) to evaluate the subsurface conditions at the Site. GZA performed the Phase II ESI field activities between October and November 2016 consistent with the Phase II Site Investigation Work Plan (SIWP) and Health and Safety Plan (HASP), both of which were dated September 2016. The New York City Department of Environmental Protection (DEP) Bureau of Sustainability approved the SIWP and HASP in a letter dated September 30, 2016.

GZA's Phase II ESI scope of services included the following activities:

- Review of historical documents and environmental databases;
- Completion of two geophysical survey events;
- Advancement of six soil borings;
- Collection and laboratory analysis of twelve soil samples;
- Installation and development of two new monitoring wells;
- Collection and laboratory analysis of three groundwater samples;
- Installation and sampling of three soil vapor probes;
- Collection and laboratory analysis of three soil vapor samples; and
- Preparation of the Phase II ESI Report.

Phase II ESI Report Addendum, GZA, December 2016.

Due to the occurrence of elevated levels of lead in three samples (designated as SB-1 [0-2], SB-5[0-2], and SB-6[9-11]), GZA recommended TCLP analysis for lead. Under 40 Code of Federal Regulations (40 CFR) Part 261, the EPA stipulates that the lead levels must not exceed the USEPA allowable limit or the TCLP regulatory level of 5 mg/L. The three samples were analyzed for TCLP lead to evaluate whether the lead that is present in the soil is characterized as hazardous. Material that fails to meet the TCLP regulatory level is considered hazardous waste for disposal purposes.



Geotechnical Engineering Report, GZA, January 2017.

GZA was retained by Mill Brook HDfC to perform a geotechnical subsurface exploration at the Site. The geotechnical investigation's objectives were to evaluate the subsurface conditions at the site and to provide geotechnical engineering design recommendations, construction recommendations, and support of excavation design for the proposed development. GZA's scope of services included:

- A subsurface exploration program consisting of 13 test borings;
 - Limited geotechnical laboratory testing, including natural moisture content testing, Atterberg Limits, and grain-size analyses;
 - Geotechnical engineering analyses of the subsurface conditions encountered at the site; and
- Preparation of a geotechnical engineering report which summarized the observations and engineering recommendations for the project.

Supplemental Remedial Investigation Report, GZA, March 9, 2017

On January 4, 2017, Mill Brook HDfC, entered into an Agreement for the VCP with OER. GZA performed a supplemental remedial investigation (SRI) of the Site to fulfill OER's VCP requirements. The objectives of the SRI were to collect additional data to aid in the remedial design for the Site, address critical data gaps (such as additional sample locations from the northeast portion of the Site and within the building footprint), and collect additional data on potential contamination.

Waste Characterization Study Reports, GZA, March 10, 2017 and February 1, 2018

Following the Phase II ESI and the Supplemental Phase II ESI sampling activities, GZA also conducted waste characterization sampling at the Site in February 2017. GZA's based its estimate of excess excavated material on the proposed basement level footprint of the Mill Brook Terrace building, which has a depth of approximately 12 feet below ground surface (bgs) in the center of the Site. GZA estimated approximately 5,500 cubic yards (CY) of excess soil would be generated and would require off-site disposal. The 5,500 CY estimate included a 15% factor applied to the calculated in-place soil volume.



Based on the proposed construction excavation activities, GZA divided the expected area of excavation into 12 cells of approximately 500 CY each, which accounted for a total excavated volume of 6,000 CY. The waste characterization study involved drilling 18 soil borings (designated WC-01 through WC-18) in area of excavation within nine sampling grids, to depths ranging between 5 and 12 feet bgs. Three of the nine sampling grids were subdivided into a shallow excavation depth (i.e., 0-5 feet bgs - designated as “A”) and a deeper excavation depth (i.e., 5-10 feet bgs - designated as “B”) for a total of 12 cells. Each cell contained one composite sample submitted for waste characterization sampling and one discrete sample collected for volatile organic compounds (VOCs).

Additionally, GZA collected eight confirmatory soil (CS) samples around soil boring SB-5, which had a soil sample (collected from 0-2 feet) that contained hazardous levels of lead based on TCLP metals analyses. These samples were collected from borings off-set approximate 10 feet from SB-5 at a shallow depth (0'-2') and a deeper depth (8'-10'), and analyzed for total lead, both using EPA SW-846 extraction method and the EPA Method 1311 TCLP extraction method. The purpose of this CS sampling was to estimate the extent of this hotspot hazardous waste soils that would require special handling during the building excavation. In order to meet the requirements of soil disposal facilities, additional waste characterization samples were collected on January 26, 2018 for the additional soil that was excavated in the cellar area. The estimated excavation quantity was 200 CY. The soil in the cellar was tested for TCLP Metals and EPH.

1.6 Summary of Findings of Phase II Environmental Site Investigation

Phase II Environmental Site Investigation, GZA, November 2016

A Phase II Environmental Site Investigation was performed, and the results are documented in a companion document called “Phase II Environmental Site Investigation Report, Mill Brook Terrace Development 160 Saint Ann’s Avenue, Bronx, NY”, dated November 2016 (Phase II ESI).

The findings of the Phase II ESI are summarized as follows:

- Based on the analytical results of the soil sampling, several semi-volatile organic compounds (SVOCs) and metals (i.e. copper, lead, iron, mercury and zinc) exceeded their respective Part 375 Unrestricted Use (Track 1) and Restricted Residential Use (Track 2)



Soil Cleanup Objectives (SCOs). We note that the SVOCs and metals that exceeded their respective Track 1 SCOs are constituents typically found in historic urban fill observed in New York City. Several pesticides also exceeded their respective Track 1 SCOs. We also note that the presence of landscaped areas in the Site parking lot might account for the occurrence of pesticides.

- No VOCs, no pesticides, and no polychlorinated biphenyls (PCBs) were detected in any of the groundwater samples at concentrations that exceeded their respective New York State Department of Environmental Conservation (NYSDEC) Ambient Water Quality Standards (AWQS) and Guidance Values. Several metals were detected above their respective AWQS. We note that the detected metals are typically observed in New York City groundwater that is in contact with historic urban fill.
- Benzo(b)fluoranthene and chrysene exceeded their respective AWQS in MW-3.
- Several VOCs were detected in the three soil vapor samples collected at the Site. However, none of the detected VOCs exceeded their respective New York State Department of Health (NYSDOH) Air Guideline Values (AGVs).
- The soils were analyzed for TCLP for metals. The results show that the sample SB-5 (0-2) exceeded the EPA allowable limit for lead. The location is considered a Hotspot for hazardous lead.

For more detailed results, consult the Phase II ESI.

Addendum to the Phase II Environmental Site Investigation Report, GZA, December 5, 2016.

The three samples were analyzed for TCLP lead to evaluate whether the lead that is present in the soil is characterized as hazardous. Material that fails to meet the TCLP regulatory level is considered hazardous waste for disposal. Only sample collected from one location SB-5(0-2) exceeded the TCLP regulatory level, and therefore, is considered hazardous waste. The location was considered a hotspot.

Geotechnical Engineering Report, GZA, January 2017.

GZA observed the following subsurface conditions at the Site:



- **SURFACE COVER MATERIALS:** Approximately 3 to 8 inches of asphalt was encountered in the parking spaces and 5 to 6 inches of root-mat and topsoil at landscaped areas.
- **FILL:** Fill materials were encountered in all the test borings from directly below the surface cover to depths of about 6 to 15 feet bgs. The fill consisted of brown, fine to coarse sand and gravel, contained up to 20 percent silt, 10 percent cobbles, 10 percent mica, and varied amounts of asphalt, brick, and concrete fragments.
- **SAND:** In some areas a Sand stratum was encountered from immediately below the Fill to depths of about 8 to 35 feet bgs. The Sand stratum varied in thickness from about 2 to 28 feet, but generally averaged about 5 to 10 feet thick. This stratum consisted of brown, fine to coarse sand, with up to 35 percent silt, and 20 percent gravel, 20 percent rock fragments, 10 percent mica, and 10 percent cobbles.
- **HIGHLY WEATHERED ROCK:** In some areas, a stratum of Highly Weathered Rock (HWR) underlain the Sand Stratum. The HWR stratum consisted of very dense, brown, and yellow, fine to coarse sand, with up to 10 percent mica, 20 percent silt, and 20 percent gravel.
- **ROCK:** Rock was identified by split-spoon sampler and auger refusal at each of the boring locations. Due to the intense geologic folding of the rock at the Site, multiple rock formations were encountered as the borings were advanced through different geologic fold limbs. Rock consisted of moderately hard to hard, slightly to severely weathered, slightly to moderately fractured Schist; moderately hard to hard, slightly to severely weathered, moderately to extremely fractured Marble; soft to moderately hard, moderately to severely weathered, moderately to extremely fractured Sandstone; and slightly to severely weathered, slightly to moderately fractured Gneiss.

Supplemental Remedial Investigation Report, GZA, March 9, 2017

The findings of the SRI were as follows:

- No soil VOCs exceeded their respective Track 1 and Track 2 SCOs.



- Several SVOCs in soil exceeded their respective Track 1 and Track 2 SCOs in one shallow soil sample (SB-8[0-2]) collected and analyzed. The detected SVOC compounds include benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene, and indeno(1,2,3-cd)pyrene.
- Barium and Lead exceeded its Track 1 and Track 2 SCOs in sample SB-8 (0-2). Iron exceeded its Track 1 and Track 2 SCOs in all five samples. Mercury and zinc exceeded its Track 1 SCO in sample SB-8 (0-2) while nickel and zinc exceeded its Track 1 SCO in sample SB-9(18-20).
- Several pesticides in soil exceeded their respective Track 1 SCOs in one shallow sample (SB-8[0-2]). These pesticides include 4,4'-DDD, 4,4'-DDE, and 4,4'-DDT. No PCBs exceeded their respective Track 1 and Track 2 SCOs. One sample SB-9 (18-20) exceeded Track 1 and Track 2 SCOs for concentrations of Trivalent Chromium.
- VOCs were not detected in the soil vapor samples collected at the Site. None of the VOC concentrations exceeded their respective NYSDOH Air Guideline Values (AGVs).

Waste Characterization Study Report, GZA, March 10, 2017 and Supplemental Waste Characterization, February 1, 2018

The excavated material did not meet New York clean fill standards. GRID-1, GRID-2, GRID-3 and GRID-5A contain soil SVOC concentrations that exceeded Part 375 Residential Soil Cleanup Objectives (SCOs). SVOC concentrations are general consistent with those commonly observed in urban fill. In addition, several metal analytes exceed Part 375 Residential SCOs which is also indicative of urban fill. Only the total concentrations of SVOCs in GRID-1 exhibited material that exceeds the site-specific clean-up criteria.

The TCLP lead concentrations from GRID-7 were equal to the hazardous lead level. GRID-7 was a composite sample from WC-13 and WS-14. Additional, sampling identified elevated lead levels around the WS-14 location. GZA developed from a CS sampling results for the hazardous lead observed around the previously sampled location SB-5 (0'-2' and 8'-10') indicate that the

hazardous lead soils appear to be limited in extent since the CS sample concentrations were all reported below the TCLP hazardous limit for lead.

In 2018, GZA performed a supplemental waste characterization on excavated stockpiled soil in order to meet the disposal facility sampling frequency requirements. The additional soil stockpile had been excavated from GRID-2, in the area that would become the cellar, for waste characterization for the additional soil that needed to be excavated. The soil in the cellar was tested for TCLP Metals and Extractable Petroleum Hydrocarbons (EPH). In general, the excavated soil samples exhibited that the characteristics consistent with typical urban fill; however, it failed TCLP testing for lead and the entire stockpile of materials was shipped out as hazardous lead in 2018.

The Phase II ESI, Supplemental Phase II ESI, Geotechnical Report, and Waste Characterization Study Report and Supplemental Waste Characterization Memorandum are included in **Appendix C**.

2.0 DESCRIPTION OF REMEDIAL ACTIONS

The Remedial Action was performed in accordance with an OER-approved Remedial Action Work Plan and achieved the Remedial Action Objectives established for the project. The Remedial Action was evaluated in an alternatives analysis and was determined to be protective of human health and the environment, compliant with standards, criteria, and guidelines (SCGs), effective in the short-term, effective in the long-term, capable of attaining appropriate levels of reduction of toxicity, mobility, or volume of contaminated material, implementable, cost effective, acceptable to the community, consistent with land uses, and sustainable.

A summary of the milestones achieved in the Remedial Action is as follows:

- The Remedial Investigation (RI) was performed in September 2016.
- A Pre-Application Meeting was held on December 16, 2016.
- The RI Report was prepared to evaluate data and information necessary to develop a Remedial Action Work Plan (RAWP).
- The Site contact list was established.
- The Draft RAWP was prepared and released with a Fact Sheet on February 14, 2017 for a 30-day public comment period.
- The RAWP dated March 13, 2017 and the Stipulation List dated March 23, 2017 were approved by the New York City Office of Environmental Remediation (OER) on March 23, 2017.
- A Pre-Construction Meeting was held on July 24, 2017.
- The remedial action began in August 18, 2017 and completed in October 2019. The RAWP and Stipulation letter are included in **Appendix D**.

The remedial action consisted of the following tasks:

1. Prepared a Community Protection Statement and implemented a Citizen Participation Plan.
2. Mobilized site security and equipment (July 2017), completed utility mark outs, and marked and staked excavation areas.
3. Additional soil and soil vapor investigations were performed to supplement investigation data due to critical data gaps for the northeast portion of the Site and the building footprint,



identified during RAWP preparation. Five (5) soil samples and two (2) soil vapor samples were collected, and results were submitted to OER on March 9, 2017 under the *Supplemental Remedial Investigation Report*. Due to the occurrence of elevated levels of lead in three samples, the three samples were analyzed for TCLP lead to evaluate whether the lead that is present in the soil is characterized as hazardous. The results were submitted to OER on December 5, 2016 under the *Addendum to the Phase II Environmental Site Investigation Report*.

4. Performed Waste Characterization Study prior to excavation activities. In total, 32 waste characterization soil samples (including 8 confirmatory samples) were collected between February 6 and 8, 2017; an additional 6 confirmatory samples were taken on August 29, 2017; and an additional 4 waste characterization samples were collected between January 26 and February 1, 2018. Waste characterization samples were collected at a frequency dictated by disposal facility.
5. Performed a Community Air Monitoring Program (CAMP) for particulates and volatile organic compounds. Daily and weekly CAMP was performed during ground intrusive activities from August 18, 2017 to July 26, 2018.
6. Established NYSDEC Part 375 Track 4 Site-Specific Soil Cleanup Objectives (SCOs) in the Remedial Action Work Plan (RAWP) with the following criteria: Total SVOC - 200 parts per million (ppm), lead - 800 ppm; mercury - 1.5 ppm; and barium - 600 ppm.
7. The Site topography slopes down to the west so to make way for the lower level spaces, the Site was excavated down from between 4 to 12 feet bgs, with the deep excavation concentrated on the main building footprint at the center portion of the lot. The elevator pit was excavated to approximately 15 feet bgs. The Site perimeter was excavated to approximately 2 to 4 feet bgs, for the landscaped areas.
8. Excavated four hotspot locations (EP-5, EP-15, SB-5, and Grid-7[WC-14]) and successfully delineated the locations. Site-Specific Track 4 SCOs were achieved.



9. Transported and disposed 10,636 tons of soil/fill material at permitted facilities in accordance with all applicable laws and regulations for handling, transporting, and disposing, and the RAWP. Excavated soils were disposed as:
 - a. 316 tons of hazardous lead soil/fill and transported to Republic Env. Systems (PA), Inc., 2869 Sandstone Drive Hatfield, PA. (see 13 for Hotspot delineation); and
 - b. 10,320 tons of non-hazardous soil/fill soil was transported to Soil Safe-Metro12, 300 Salt Meadow Road, Carteret, NJ.
10. Screened excavated soil during intrusive work for indications of contamination by visual means, odor, and monitoring with a photoionization detector (PID).
11. Conducted materials management of excavated materials including temporarily stockpiling and segregating in accordance with defined material types and to prevent co-mingling of contaminated material and non-contaminated materials.
12. Appropriately segregated excavated media onsite prior to disposal. Transported and disposed all soil/fill material at permitted facilities in accordance with all applicable laws and regulations for handling, transporting, and disposing, and the RAWP.
13. Collected and analyzed fifteen post excavation end-point samples to evaluate the attainment of SCOs. Site-Specific Track 4 SCOs were achieved.
14. Constructed an engineered Composite Cover System consisting of a nominal 6 inches of reinforced concrete slab underlain by 8 inches of clean sub-base material in building areas, a nominal 4-inch placed concrete on a 6-inch sub-base in sidewalk areas, and at least 2 feet of clean soil, overlain by planting soil and gravel in landscaped areas to prevent human exposure to residual soil/fill remaining under the Site. The contractor for the cover construction was Island Foundation.
15. Installed a Vapor Barrier System that consisted of Preprufe 300R with a 46- mil vapor membrane and Florprufe 120 with a 46- mil vapor membrane (manufactured by GCP Applied Technologies). GCP Bituthene 3000 with a 50-mil vapor membrane was applied

to the subgrade concrete walls after overlapping the horizontal vapor barrier applications. The welds, seams and penetrations were properly sealed with liquid membrane and/or mastic to limit preferential pathways for vapor migration. The installation contractor for the Vapor Barrier System construction was RTI.

16. Residual soil is present beneath the cover layer and will be subject to Site Management under this Remedial Action. Residual soil was demarcated using geosynthetic mesh material placed beneath the at least 2 feet of clean soil underneath the landscape areas.
17. Performed all activities required for the Remedial Action, including permitting requirements and pretreatment requirements, in compliance with applicable laws and regulations.
18. Implemented storm-water pollution prevention measures in compliance with applicable laws and regulations.
19. Imported a total of 1,187 CY of dense graded aggregate from Braen Stone of Spart, NJ, used as backfill and site cover (2 feet of clean fill) in compliance with the Remedial Action Work Plan and in accordance with applicable laws and regulations. In addition to the clean fill, the project also imported 340 CY of Dense Grade Aggregate (DGA) along with 901 CY of planting soil mix for the landscaped areas
20. Submitted daily reports during construction oversight activities. Daily reports were submitted to OER from August 18, 2017 to February 9, 2018. From February 2018 to November 2019, weekly and monthly reports were provided to OER.
21. Submitted a Sustainability Report the details the sustainable items incorporated into the project remediation and redevelopment.
22. Submitted a RAR that describes the Remedial Action, certifies that the remedial requirements defined in the Remedial Action Work Plan have been achieved; defines the Site boundaries; describes all Engineering and Institutional Controls applicable to the Site; and describes any changes from the RAWP.

23. Submitted a Site Management Plan (SMP) for long-term management of residual soil, including plans for operation, maintenance, inspection, and certification of the performance of Engineering Controls and Institutional Controls. Inspection and Certification reports will be submitted by July 30, 2026 (for the reporting period calendar year 2021-2025), July 30, 2036 (for the reporting period calendar years 2026-2035) and every 10 year thereafter (for the reporting period consisting of the same number prior calendar years). Inspection and Certification Reports will cover all calendar years since the prior reporting period.
24. The property will continue to be enrolled in OER Voluntary Cleanup Program. Engineering Controls and Institutional Controls will be managed in compliance with the SMP. Institutional Controls will include prohibition of the following: (1) prohibition of vegetable gardening and farming in residual soil; (2) prohibition of the use of groundwater beneath the site without treatment rendering it safe for the intended use; (3) prohibition of disturbance of residual soil material unless it is conducted in accordance with the SMP; and (4) prohibition of higher levels of land usage than the restricted residential uses addressed by this remedial action without prior notification and approval by OER.

3.0 COMPLIANCE WITH REMEDIAL ACTION WORK PLAN

3.1 Construction Health & Safety Plan

The remedial construction activities performed under this program were in compliance with the Construction Health and Safety Plan and applicable laws and regulations. The Site Safety Coordinator was Keron Phillip of Procida Construction Corp.

3.2 Community Air Monitoring Plan

The Community Air Monitoring Plan provided for the collection and analysis of air samples during remedial construction activities to ensure proper protections were employed to protect workers and the neighboring community. Daily and weekly monitoring were performed during ground intrusive activities from August 18, 2017 to July 26, 2018 in compliance with the Community Air Monitoring Plan in the approved RAWP. After July 2018, monitoring was performed monthly and during intrusive activities. There were no major work disruptions due to particulate and vapor exceedances. The CAMP field reports are included in **Appendix E**.

3.3 Soil/Materials Management Plan

The Soil/Materials Management Plan (SMMP) provided detailed plans for managing all soil/materials that were disturbed at the Site, including excavation, handling, storage, transport, and disposal. It also included a series of controls to assure effective, nuisance-free remedial activity in compliance with applicable laws and regulations. Remedial construction activities performed under this program were in compliance with the SMMP in the approved RAWP.

3.4 Stormwater Pollution Prevention

Storm water pollution prevention included physical methods and processes to control and/or divert surface water flows and to limit the potential for erosion and migration of Site soils, via wind or water. Remedial construction activities performed under this program were in full compliance with methods and processes defined in the RAWP for storm water prevention and applicable laws and regulations.

3.5 Deviations from the Remedial Action Work Plan

The following items are deviations from the OER-approved RAWP:

- The RAWP anticipated approximately 5,500 cubic yards of soil to be excavated and disposed off-site. However, based on the final tally of exported materials, a total of 10,320 tons (approximately 7,370 cubic yards [CY]) of non-hazardous soil/fill was excavated and transported it to Soil Safe-Metro12, 300 Salt Meadow Road, Carteret, NJ and 316 tons (approximately 280 CY) of hazardous lead soil/fill was excavated and transported to Republic Env. Systems (PA), Inc., 2869 Sandstone Drive Hatfield, PA. The additional excavation was due the combined effects of a change in the support of excavation strategy, and a redesign of the eastern ground floor foundation which extended the grade beams down to the top of the bedrock surface.
- Prior to the start of the remedial excavation two hazardous waste hotspots had been identified and delineated in excavation GRID-5 (at SB-05) and GRID-7 (at WC-14). Six truckloads of soil were excavated, and these hotspots were removed on August 25, 2017 at the start of the remedial excavation. In 2018, during excavation of GRID-2 a stockpile of excavated material was also identified as containing hazardous qualities of lead. This stockpile was transported of site as hazardous material on February 2018.
- Five additional endpoint samples were collected by GZA (for a total of 15 endpoint samples) due to the greater extent of the excavation. The excavation endpoint samples were collected to evaluate the attainment of Track 4 SCOs for the Site.

4.0 REMEDIAL PROGRAM

4.1 Project Organization

The Professional Engineer (PE) and for this project is Stephen M. Kline, P.E (GZA) and tasks were managed by Reinbill Maniquez, CHMM (GZA) with Dena Davis of Mill Brook HDFC, and David Arndts of KOW Building Consultants as the Owner's Representative. Brian McCurry, of Procida Construction Corp. is the General Contractor.

4.2 Site Controls

The following section describes the Site controls that were implemented during the Remedial Action.

4.2.1 Site Preparation

Mobilization was conducted as necessary for each phase of the work at the Site and Preliminary mobilization activities occurred during the months of August and September 2017 and later on an as-needed basis through September 2018. Mobilization included field personnel orientation, equipment mobilization (including securing sampling equipment needed for the field investigation and community air monitoring equipment), marking/staking sampling location and utility mark-outs. Each field team member attended an orientation meeting to become familiar with the general operation of the Site, health and safety requirements, and field procedures.

In July 2017, a construction fence was erected around the Site and removal activities and commenced immediately after. The Site Removal Plan is attached as **Appendix F**. Soil intrusive activities began on August 18, 2017, and soil removal commenced on August 25, 2017. Erosion and sediment control measures such as straw bale dikes, temporary silt fences, and temporary inlet protection were implemented. The Erosion Sediment Control Plan is included in **Appendix G**.

Equipment and materials were stored and staged in a manner that complies with applicable laws and regulations. The locations of equipment and material staging areas, concrete mixing truck wash station, stockpile areas, and other pertinent remedial management features were submitted when appropriate.

The presence of utilities and easements on the Site was fully investigated prior to the performance of invasive work such as excavation or drilling under this plan by using, at a minimum, the One-call System (811). Underground utilities may pose an electrocution, explosion, or other hazard during excavation or drilling activities. Invasive activities were performed in compliance with applicable laws and regulations to assure safety.

An OER Project Notice was erected at the project entrance and was in place during all phases of the Remedial Action.

4.2.2 Soil Screening

Under the supervision of the qualified environmental personnel (QEP), soil screening and assessment by PID, visual, and olfactory means were performed during the intrusive soil work and during the remedial action and construction phases. Soils encountered were mainly urban fill with vapor concentrations generally below action levels.

4.2.3 Stockpile Management

Direct loading of soils unto trucks were performed during the excavation phase of the project. Soils were stockpiled only when absolutely necessary. However, when soils were stockpiled, poly sheeting was used to cover it. The stockpiles were covered at the designated times with minimum 8-millimeter (mil) plastic sheeting. Stockpiles were covered and remained covered until ready for loading and covered at the end of each workday. The poly sheeting was appropriately anchored and inspected regularly.

4.2.4 Truck Inspection

Equipment cleaning was implemented to limit the transport of waste material present on the equipment used for intrusive activities. Each transport vehicle was visually inspected prior to leaving the loading area. Accumulations of soil on the vehicle tires or other exterior surfaces were removed manually using high-pressure water in the equipment cleaning area.

A truck route to and from the Site from the nearest major highway was selected and considered so as to limit transport through residential areas, emphasize the use of defined truck routes, limit the total distance to the major thoroughfares and maintain safety in access to highways. Egress

points for trucks and equipment transport from the Site were kept clean of dirt and other material during the site development, and trucks exiting the Site were securely covered. Power washing of truck tires and undercarriages were completed for trucks and equipment departing the Site. Direct loading of soils unto trucks were performed during the excavation phase of the project.

4.2.5 Site Security

Site Security was managed by High Level Development, a security contractor. Access to the Site was restricted by perimeter fencing to control access of unauthorized personnel. Access gates provide ingress and egress access to the Site. Turnstiles were implemented with access badges to control and limit Site access. Implementation of safe work practices were provided for additional Site security during development including parking heavy equipment in a designated area (center of site) each night and removing keys, maintaining an organized work area, maintaining access roads, and proper storage of tools and equipment.

4.2.6 Nuisance Controls

Vapor and dust management was implemented according to the CAMP. Particulates were monitored using both stationary and handheld equipment. The stationary equipment includes two CAMP stations (i.e. upwind and downwind). Each set contains a MiniRAE 3000 PID and a TSI8530 Dust Trak II in an enclosure. The monitoring was conducted in accordance with the CAMP and HASP. Air monitoring was also performed utilizing handheld equipment MiniRae 3000 PID and a Thermo Scientific dust meter.

Fugitive dust was mitigated by spraying water at areas of concern. The means for minimization of odors during soil management activities included limiting the area of open excavations and the use of staff to monitor odors in surrounding areas. The project did not receive any complaints with regard to nuisance dusts and vapors leaving the Site.

4.2.7 Reporting

Daily field activities were documented on Daily Field Reports (DFRs) by GZA field representatives. DFRs include the summary work performed for the day, the samples collected, air monitoring data, the problems encountered and the planned activities for the following workday. After intrusive soil work was completed, field reporting frequency was changed from daily to

weekly with concurrence by OER. By August 2018, field reporting changed to monthly. Daily, Weekly, and Monthly reports providing a general summary of activities for each day of active remedial work were sent to the OER Project Manager and uploaded into the OER EPIC website.

The reports included details such as:

- The project number, statement of the activities, an update of construction progress, and locations of work performed;
- Quantities of material imported and exported from the Site;
- Status of on-Site soil/fill stockpiles;
- A summary of all citizen complaints, with relevant details (basis of complaint; actions taken; etc.);
- A summary of CAMP exceedances, if any; and
- Photographs of notable Site conditions and activities.

Daily reports were not intended to be the primary mode of communication for notification to OER of emergencies (accidents, spills), requests for changes to the RAWP or other sensitive or time critical information. However, such information was included in the daily reports. Emergency conditions and changes to the RAWP were communicated directly to the OER project manager by personal communication.

The daily, weekly, and monthly reports are included in **Appendix E**.

4.3 Materials Excavation and Removal

The following section describes the materials excavated and removed during the Remedial Action.

4.3.1 Soil/Fill Excavation and Removal

The Site excavation thickness varies approximately from 2 to 15 feet below ground surface (bgs), with the shallowest excavation located in the proposed landscaped area and along the Site perimeter down approximately 2 to 4 ft bgs, then the main building footprint down to approximately 8 to 12 ft bgs, and deepest excavation at the elevator pit down to approximately 15 ft bgs. A cut / fill map, showing the approximate locations where excavations were performed, hotspot removal, and the approximate depth of excavation, is shown on **Figure 4**.

4.3.2 Removal Action

A total of approximately 10,320 tons (~ 7,370 CY) of non-hazardous soil/fill was excavated and removed from the property during the Remedial Action under the Metro-12 Disposal Facility acceptance approval nos. M6-1075 and M6- M6-1080. Approximately 311 tons of hazardous lead soil/urban fill was removed from the property during the Remedial Action under Stericycle Hatfield Facility the acceptance approval no. 827757.

4.3.3 Removal Action Performance Criteria

The removal action performance criteria are based on the construction development plans. The Mill Brook Terrace building was constructed with a slab-on-grade foundation with the footprint excavated to 12-feet bgs and the landscaped area excavated down to 2 to 4-feet bgs.

4.3.4 Material Type

Based on the waste characterization sampling performed, the material was found to contain mainly historical fill and construction and demolition debris.

4.3.5 Onsite Reuse

No onsite reuse of excavated material was performed.

4.3.6 UST Removal

No USTs were encountered during the removal activities.

4.3.7 NYSDEC Petroleum Spills

No NYSDEC open petroleum spill cases were associated with the Site.

4.3.8 Dewatering

Dewatering was not performed during construction.



4.3.9 Soil Cleanup Objectives

The following Track 4 Site-Specific SCOs were utilized for this project:

<u>Contaminant</u>	<u>Site-Specific SCOs</u>
Total SVOCs	200 ppm
Lead	800 ppm
Mercury	1.5 ppm
Barium	600 ppm

4.3.10 End Point Sample Results

Removal actions were performed in conjunction with remedial end-point sampling. End-point sampling frequency was in accordance with the OER-approved Remedial Action Plan and collected per DER-10 guidance. Endpoint samples were collected when the limits of the excavation had been reached. End-point samples to a New York State Department of Health (NYSDOH) Environmental Laboratory Accreditation Program (ELAP)-certified laboratory in accordance with EPA SW-846 methods, under proper chain-of-custody protocols and documentation.

The analytical laboratory analyzed the end-point samples for semi-volatile organic compounds (SVOCs) by Method 8270 and metals by Method 6010/7000. Soil samples were containerized in laboratory-prepared jars, labeled, sealed, and placed in a chilled cooler for shipment to the laboratory. Fifteen endpoint samples were collected and sent to Alpha Analytical, a New York State Department of Health (NYSDOH) Environmental Laboratory Accreditation Program (ELAP)-certified laboratory, for analysis.

Endpoint laboratory analytical results were compared to Track 4 Site-Specific SCOs. Preliminary endpoint sampling results collected in September 18, 2017, were below the Track 4 Site-Specific SCOs, except for EP-5 (for Barium and Lead) and EP-12 (for Total SVOCs). The EP-5 and EP-12 locations were excavated further, and endpoint samples were collected on November 1, 2017. EP-12 was resampled for SVOCs and did not exceed Track 4 Site-Specific SCO. However, EP-5 showed elevated concentration of lead (at 8 feet bgs) and further excavation was performed. The area was then delineated, and another set of endpoint sample were collected

(Section 4.3.11). Track 4 Site-Specific SCOs was achieved for the Site. The endpoint laboratory analytical results are included in **Table 1**. A map of endpoint sample locations is shown on **Figure 4**. The laboratory reports are included in **Appendix H**.

4.3.11 Hotspot Removal

As mentioned, EP-5 showed elevated concentration of barium (832 mg/kg) and lead (1260 mg/kg) above the Track 4 SCOs (800 mg/kg) at 8 feet bgs. The EP-5 location was then considered a hotspot and was excavated down to 10 feet bgs. Soil generated during this excavation were managed as hazardous material (see Section 4.3.2). For this EP-5 hot spot, endpoint samples were collected from the sidewalls (samples CS-1 to CS-4) and base of excavation (EP-5) were analyzed for total lead and for TCLP for lead. The total lead levels for CS-1 to CS-4 were below the Track 4 Site-Specific SCOs. The TCLP lead results were also below respective Maximum Concentration of Contaminants for the Toxicity Characteristic (40 CFR 261.6/96).

As mentioned, EP-12 location was excavated further, and additional hotspot sample was collected on November 1, 2017. EP-12 was resampled for SVOCs and did not exceed Track 4 Site-Specific SCO.

The Phase II RIR showed SB-5 (0-2) with elevated levels of lead at 1,800 mg/kg and TCLP at 17 mg/l which exceeded the EPA maximum concentration for toxicity for lead (5 mg/l). The area was designated a hotspot for hazardous lead and was excavated down to 10 to 12 feet bgs. The results of the analysis showed delineation results were below Track 4 SCOs.

The Waste Characterization Report showed elevated concentration of TCLP lead at Grid 7 (5 mg/l). The area was also designated a hotspot for lead and confirmatory samples were collected (CS-11 to CS-15) which showed TCLP concentration of below Track 4 SCOs.

The hotspot delineation results are included in **Table 2**. The hotspot endpoint sample location is shown on **Figure 4**. The laboratory reports are included in **Appendix H**.

4.4 Materials Disposal

Prior to the removal of soil/fill from the Site, GZA performed waste characterization sampling of the material between February 6 and 8, 2017, as part of the preliminary Remedial Investigation done at the Site. The waste characterization study involved drilling 18 soil borings (designated

WC-01 through WC-18) to depths ranging between 5 and 12 feet bgs within nine sampling grids of excavation area. Three of the nine sampling grids were subdivided into a shallow excavation depth (i.e., 0-5 feet bgs - designated as “A”) and a deeper excavation depth (i.e., 5-10 feet bgs - designated as “B”) for a total of 12 cells. Each cell contained one composite sample submitted for waste characterization sampling and one discrete sample collected for volatile organic compounds (VOCs). GZA collected five (5) soil (SB) samples from soil borings, twelve (12) waste characterization (WC) samples, and twelve (12) GRID samples. In addition, GZA, collected eight (8) confirmatory soil (CS) samples around soil boring SB-5, which had a soil sample (collected from 0-2 feet) that contained hazardous levels of lead based on TCLP metals analyses.

In August 18, 2017, a Historic Fill and & Soil Disposal Notification Form was distributed to the receiving disposal facilities along with the Waste Characterization Report dated March 10, 2017. The waste characterization results report is included in **Appendix C** and the disposal notification form are provided in **Appendix I**.

Additionally, GZA collected eight confirmatory soil (CS) samples around soil boring SB-5, which had a soil sample (collected from 0-2 feet) that contained hazardous levels of lead based on TCLP metals analyses. These samples were collected from borings off-set approximate 10 feet from SB-5 at a shallow depth (0’-2’) and a deeper depth (8’-10’), and analyzed for total lead, both using EPA SW-846 extraction method and the EPA Method 1311 TCLP extraction method. The purpose of this CS sampling was to estimate the extent of this hot spot of hazardous waste soils that would require special handling during the building excavation.

In order to meet the requirements of soil disposal facilities, additional waste characterization samples were collected on January 26, 2018 for the additional soil that needed to be excavated in the cellar area. The estimated excavation quantity is 200 CY. The soil in the cellar was tested for TCLP Metals and Extractable Petroleum Hydrocarbons (EPH). The samples exhibited that the soil to be excavated out was consistent with typical urban fill and were acceptable for disposal to Soil Safe Metro12.

All excavated materials were handled, transported, and disposed of in accordance with applicable Part 360 regulations, the Soil Material Management Plan included in RAWP, and other local, state, and federal regulations. Mill Brook HDPC (the Applicant) applied for disposal of historic fill. Waste streams were characterized, per the disposal facility requirements, by laboratory analysis prior to the start of Site work. The disposal facilities received copies of the RIs and SRI

and the waste-characterization sample analysis for their review. The disposal facilities then issued a materials acceptance approval letter.

The type, quantity and disposal location of each material removed and disposed off-Site is presented below:

Disposal Location/Address	Type of Material	Quantity
Soil Safe-Metro12 300 Salt Meadow Road, Carteret, NJ	Non-Hazardous Soil	10,320 tons
Republic Env. Systems (PA), Inc. 2869 Sandstone Drive Hatfield, PA	Lead Hazardous Soil	311 tons

Letters from Mill brook HDPC / WSFSSH to the disposal facility providing materials type, source and data, and acceptance letters from disposal facility stating it is approved to accept above materials are attached in **Appendix I**. A table of individual truck transport and material disposal quantities and the copies of manifests are included in **Appendix J**.

4.5 Backfill Import

Clean fill was imported from the Braen Stone facility located at 217 Limecrest Road, Lafayette Township, New Jersey. A total of 1,187 CY of dense grade aggregate (DGA) used as backfill was generated at the facility and was used as backfill around the perimeter of the building footprint. The backfill was laid down on top of the demarcation layer and filled to 2 feet below grade. The DGA was tested by collecting 2 samples on Site against Part 375 Groundwater Protection Standards, Restricted Residential Use and Unrestricted Use SCOs and the Track 4 SCOs. The analytical laboratory analyzed the samples for volatile organic compounds (VOCs) by Method 8260, semi-volatile organic compounds (SVOCs) by Method 8270, metals by Method 6010/7000 and Pesticides/PCBs by EPA Method 8081/8082. The five-point samples were sent to Alpha Analytical Laboratories for analysis. Soil imported from Braen Stone to the property achieved the lower of 6NYCRR Part 375-6.8 Unrestricted Use and Restricted Residential Use Soil Cleanup Objectives. Tables summarizing chemical analytical results for Braen Stone (DGA) backfill are included in **Tables 3 through 6**. Full laboratory reports are included in **Appendix H**.

In addition, the Mill Brook Project imported gravel from Stavola Construction Materials comprised of traprock from Bound Brook quarry in New Jersey. The material certification is included in **Appendix K**.

At the landscaped areas, a total of 901 CY of planting soil (Woodland Soil Mix and Meadow Mix) were placed on top of the 2 feet of clean fill. The laboratory analytical results along with the material certification are included in **Appendix K**.

The total material imported to the Site are summarized as follows:

Imported Soil Backfill		Stone Backfill		Landscaping Clean Fill		Import	
Braen Stone		Stavola		Organic Recycling, Inc.		Project Totals	
Trucks	CY	Trucks	CY	Trucks	CY	Trucks	CY
71	1,187	17	340	52	901	140	2,428

Copies of the receipts are provided in **Appendix K**. A map showing final cover including backfilled locations at the Site is shown on **Figure 5**.

4.6 Demarcation

The Site achieved Track 4 SCOs and a composite cover system, comprised of a concrete slab with a clean granular sub-base beneath the building footprint and sidewalls, and concrete placed on clean granular sub-base in sidewalk areas, to limit human exposure to residual soil/fill remaining under the Site. Demarcation of residual soil/fill was placed in landscaped areas beneath at least 2 feet of clean material. The demarcation layer consists geosynthetic orange snow fencing placed on the surface of residual soil/fill to provide an observable reference layer. Soil below the final cover is residual soil that will be addressed by Site Management Plan under this Remedial Action. **Figure 5** shows the demarcation locations.

5.0 ENGINEERING CONTROLS

Engineering Controls were employed in the Remedial Action to address residual soil remaining at the site. The Site has two primary Engineering Control Systems. These are:

- (1) Composite Cover System
- (2) Vapor Barrier System

A Track 4 SCOs Remedial Action was achieved, and Engineering Controls are required. As part of construction, the protective systems stated above were installed.

5.1 Composite Cover System

Exposure to residual soil/fill is prevented by an engineered composite cover system that has been installed on Site by Island Foundations contractor. The composite cover system is comprised of 6 inches of reinforced concrete slab with 8 inches of clean granular sub-base beneath the building footprint, 2 feet of clean soil in landscaped areas, and 4 inches concrete underlain by 6 inches of sub-base material in walkway areas to limit human exposure to residual soil/fill remaining under the Site.

The composite cover system is considered a “permanent” engineering control for the Site. The system will be inspected and reported at specified intervals as required by RAP and the Site Management Plan (SMP). An Excavation Management Plan is included in the SMP, which outlines the procedures to be followed if the composite cover system and underlying residual soil/fill is disturbed after the remedial action is complete. Maintenance of this composite cover system is described in the SMP in this RAR.

Figure 5 shows the location of composite cover system on this Site. Detailed cross-sections of the cover system are shown on **Figure 6**. Photographs of construction of the composite cover system are included in **Appendix A**.

5.2 Vapor Barrier System

Migration of soil vapor from onsite or offsite sources into the building will be mitigated with a combination of composite cover system (as described in the previous section) and the vapor

barrier installed by RTI, the vapor barrier system installation contractor. The vapor barrier system was installed throughout the area occupied by the building and extended up the foundation sub-grade walls to mitigate soil vapor intrusion into the building and provide waterproofing. The vapor barrier system installed consisted of a 46-mil GCP Applied Technologies (GCP) Preprufe 300R placed horizontally beneath the cellar floor slab, and a 20-mil GCP Florprufe 120 vapor barrier placed horizontally beneath the ground floor slab. These products are installed prior to the between the concrete slab and the subsurface material and are integrally bonded to the concrete during the pour. On the walls, a 50-mil GCP Bituthene 3000 membrane was placed vertically along the sub-grade foundation walls after the walls were constructed. A GCP Bituthene liquid membrane was applied to the concrete walls to seal transitions in the vapor barrier system. The welds, seams and penetrations were properly sealed with liquid membrane and/or mastic to limit preferential pathways for vapor migration. Overlapped edges and seams of the horizontal membranes were trimmed and overlapped by 4 to 6 inches of Bituthene 3000 membrane on the sides of footings and grade beams to make the transition to the vertical walls. The vapor barrier used to tie in was cleaned and dried prior to overlapping and seaming. The vapor barrier system is an Engineering Control for the remedial action.

A map of the location of the Vapor Barrier System is presented in the **Figures 5**. Detailed cross-sections of the vapor barrier system are shown on **Figure 6**. Photographs of installation of the Vapor Barrier System are included in **Appendix A**. A copy of manufacturer's specifications for the Vapor Barrier System is included in **Appendix L**.

6.0 INSTITUTIONAL CONTROLS

A series of Institutional Controls (ICs) were required under this Remedial Action for the protection of public health through the elimination of potential exposure pathways to residual materials. These ICs define the program to operate, maintain, inspect, and certify the performance of Engineering Controls and Institutional Controls on this property. These ICs will be implemented in accordance with the Site Management Plan included in this RAR.

Institutional Controls for this property are:

- (1) Recorded an OER-approved Declaration of Covenant and Restrictions (DCR) with the deed with the Kings County Clerk. The recorded DCR is included in Appendix M. The DCR includes a description of all ECs and ICs, summarizes the requirements of the Site Management Plan, and notes that the property owner and property owner's successors and assigns are required to comply with the approved SMP;
- (2) Compliance with an OER-approved Site Management Plan including procedures for appropriate operation, maintenance, inspection, and certification of performance of ECs and ICs. The property owner and property owner's successors and assigns will inspect ECs and ICs and submit to OER a written certification that evaluates their performance in a manner and at a frequency to be determined by OER;
- (3) Engineering Controls will not be discontinued without prior OER approval;
- (4) OER has the right to enter the Site upon notice for the purpose of evaluating the performance of ECs and ICs;
- (5) Vegetable gardens and farming in residual soil/fill on the Site are prohibited;
- (6) Use of groundwater underlying the Site without treatment, rendering it safe for its intended use, is prohibited;
- (7) Future activities on the Site that will disturb residual soil/fill must be conducted pursuant to the Soil/Materials Management provisions of the SMP, or otherwise approved by OER;

- (8) The Site is intended to be used for restricted residential use and will not be used for a higher level of use without prior approval by OER.

7.0 SITE MANAGEMENT PLAN

Site Management is the last phase of the remedial process and begins after the approval of the Remedial Action Report (RAR) and issuance of the Notice of Completion (NOC) by OER. It is the responsibility of the property owner to make sure that all Site Management responsibilities are performed. The penalty for failure to implement the SMP includes revocation of the NOC and all associated certifications and liability protections providing notice of the revocation to the NYC DOB.

ECs and ICs have been incorporated into this Remedial Action so the Site will remain protective of public health and the environment. Generally, ECs provide physical protective measures and ICs provide restrictions on Site usage and establish remedial operation, maintenance, inspection, and certification measures. This Site Management Plan has been established to govern long-term performance of ECs and ICs for this property.

The SMP provides a detailed description of procedures required to manage residual material at the Site, following the completion of remedial construction, which is in accordance with the NYC Voluntary Cleanup Agreement with OER. The SMP includes: (1) operation and maintenance of ECs; (2) inspection of ECs and ICs; and (3) certification of performance of ECs and ICs.

7.1 Engineering Controls

Engineering Controls were employed in the remedial action to address residual materials remaining at the site. The Site has two (2) Engineering Control Systems. Engineering Controls for this property are:

1. Composite Cover System;
2. Vapor Barrier System;

7.1.1 Operation and Maintenance of Composite Cover System

Section 5 describes the Composite Cover System utilized in this Remedial Action and provides as-built design details and the location of each cover type. The Composite Cover System

is a permanent EC for the Site. The system will be inspected, and its performance certified at specified intervals defined in this SMP. A Soil/Materials Management Plan is included in this Site Management Plan and outlines the procedures to be followed in the event that the composite cover system and underlying residual soil/material must be disturbed after the Remedial Action is complete.

The Composite Cover System does not require any special operation or maintenance activities. If the system is breached during future construction activities [or “normal wear and tear”], the system will be rebuilt by reconstructing the system according to the original design and tying newly constructed cover layers into existing cover layers to form a continuous layer.

7.1.2 Operation and Maintenance of Vapor Barrier System

Section 5 describes the Vapor Barrier System utilized in this Remedial Action and provides as-built design details and the system location. The Vapor Barrier System is a permanent Engineering Control for the Site. The system will be inspected, and its performance certified at specified intervals defined in this SMP.

The Vapor Barrier System does not require any special operation or maintenance activities. If the system is breached during future construction activities, the system will be rebuilt by reconstructing the vapor barrier layers and sealing the newly constructed materials with existing barrier materials in accordance with manufacturer specifications.

7.2 Institutional Controls

A series of Institutional Controls are required under this Remedial Action for the permanent protection of public health through the elimination of potential exposure pathways to residual materials. These ICs define the program to operate, maintain, inspect, and certify the performance of Engineering Controls and Institutional Controls on this property. These Institutional Controls will be implemented in accordance with the Site Management Plan included in this RAR.

Institutional Controls are also designed to prevent future exposure to residual soil/materials by controlling disturbances in the subsurface, restricting higher uses of the property than those

addressed by the Remedial Action and establishing restrictions on activities and site usage. Institutional Controls for this property are:

- (1) An OER-approved Declaration of Covenant and Restrictions (DCR) with the deed has been recorded with the Kings County Clerk. The recorded DCR is included in **Appendix M**. The DCR includes a description of all ECs and ICs, summarizes the requirements of the Site Management Plan, and notes that the property owner and property owner's successors and assigns are required to comply with the approved SMP;
- (2) Compliance with an OER-approved Site Management Plan including procedures for appropriate operation, maintenance, inspection, and certification of performance of ECs and ICs. The property owner and property owner's successors and assigns will inspect ECs and ICs and submit to OER a written certification that evaluates their performance in a manner and at a frequency to be determined by OER;
- (3) Engineering Controls will not be discontinued without prior OER approval;
- (4) OER has the right to enter the Site upon notice for the purpose of evaluating the performance of ECs and ICs;
- (5) Vegetable gardens and farming in residual soil/fill on the Site are prohibited;
- (6) Use of groundwater underlying the Site without treatment rendering it safe for its intended use is prohibited;
- (7) All future activities on the Site that will disturb residual soil/fill must be conducted pursuant to the Soil/Materials Management provisions of the SMP, or otherwise approved by OER;
- (8) The Site is intended to be used for restricted residential use and will not be used for a higher level of use without prior approval by OER.

7.3 Inspections

ECs and ICs will be inspected on a periodic basis at a frequency established below.

Monitoring/Inspection Schedule

Monitoring Program	Frequency	Method
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Composite Cover Inspection	First inspection after 5 years, with 10 years frequency thereafter	Visual Inspection
Vapor Barrier Inspection	First inspection after 5 years, with 10 years frequency thereafter	Visual Inspection

The inspections will evaluate the following:

- If Engineering Controls or Institutional Controls employed at the Site continue to perform as designed and continue to be protective of human health and the environment;
- If anything has occurred that impairs the ability of the Engineering Controls or Institutional Controls to protect public health and the environment;
- If changes are needed to the remedial systems or controls;
- If compliance with this SMP has been maintained;
- If site records are complete and up to date; and
- General Site conditions at the time of inspection.

In addition, if an emergency occurs, such as a natural disaster, or if an unforeseen failure of any of the Engineering Controls occurs, an inspection of the Site will be performed within 30 days to evaluate the Engineering Controls, and a letter report of findings will be submitted to OER.

7.3.1 Inspection of Composite Cover System

The inspections will include visual inspection and documentation of accessible components of composite cover system including visual evaluation of past invasive activity such as patches and repairs. A Qualified Environmental Professional or Professional Engineer will conduct a periodic inspection of the composite cover in accordance with the schedule in Section 7.3. The inspection results will be reported in the Inspection and Certification Letter Report described in Section 7.3.4. Any damage to the composite cover will be reported to OER and will be repaired.

7.3.2 Inspection of Vapor Barrier System

The inspections will include visual inspection and documentation of accessible components of vapor barrier system including visual evaluation of past invasive activity such as patches and repairs. A Qualified Environmental Professional or Professional Engineer will conduct a periodic inspection of the vapor barrier in accordance with the schedule in Section 7.3. The inspection

results will be reported in the Inspection and Certification Letter Report described in Section 7.3.4. Any damage to the vapor barrier will be reported to OER and will be repaired.

7.3.3 Site Use Prohibitions

Inspections to evaluate the status of site use prohibitions will include an evaluation of all of the ICs listed above, including:

- whether there is vegetable gardening or farming in residual soil/fill;
- whether groundwater underlying the site has been used without treatment rendering it safe for its intended use;
- whether activities that have disturbed site soil/fill have been conducted pursuant to the Soil/Material Management provisions of the SMP, or otherwise approved by OER; and
- whether the site has been used for a higher level of use other than the restricted residential use addressed by the Remedial Action.

7.3.4 Inspection and Certification Letter Report

Results of inspections performed during a reporting period and certification of performance of all Engineering Controls and Institutional Controls will be included in an Inspection and Certification Letter Report. Inspections will be performed in 2026 and 2036. Inspection and Certification Letter Reports will be submitted by July 30, 2026 (for the reporting period calendar years 2021-2025), July 30, 2036 (for the reporting period calendar years 2026-2035). Inspection and Certification Reports will cover all calendar years since the prior reporting period. Inspection and Certification Letter Reports will be submitted to OER in digital format. The letter report will utilize a form established by OER. This form includes, at a minimum:

- Date of inspections;
- Personnel conducting inspections;
- Description of the inspection activities performed;
- Observations, conclusions, or recommendations;
- Copy of any monthly inspection forms;
- Photographs; and

- Certification of the performance of Engineering Controls and Institutional Controls executed by the P.E. or QEP responsible for this Inspection and Certification Letter Report, as discussed below.

The certification of the performance of ECs and ICs will establish:

- If Engineering Controls and Institutional Controls employed at the Site continue to be in place, perform as designed and continue to be protective of human health and the environment;
- If anything has occurred that impairs the ability of Engineering Controls or Institutional Controls to protect public health and the environment;
- If changes are needed to the remedial systems or controls;
- If compliance with this Site Management Plan has been maintained;
- If vegetable gardening and farming in residual soils has been prevented;
- If groundwater underlying the Site is being utilized without treatment rendering it safe for the intended purpose has been prevented;
- If activities on the Site that have disturbed residual soil/fill material have been in accordance with the Soil/Materials Management Plan in this SMP;
- If the Site has been used for a higher level of use other than the restricted residential use addressed by the Remedial Action;
- If site records are complete and up to date;
- If the Site continues to be enrolled in Voluntary Cleanup Program;

OER may enter the Site upon notice for the purpose of evaluating the performance of ECs and ICs.

7.3.5 Notifications

Notifications will be submitted by the property owner to OER as described below:

- 60-day advance notice of any proposed changes in Site use, such as an upgrade from existing use to residential use that was not contemplated in the Remedial Action.



- Notice within 30 days of any emergency, such as a fire, flood, or earthquake that has the potential to reduce the effectiveness of Engineering Controls in place at the Site.

7.4 Soil / Materials Management Plan

Any future intrusive work that will disturb residual soil/fill beneath the property, including modifications or repairs to the existing composite cover system, will be performed in compliance with this Soil/Materials Management Plan (SMMP). Intrusive work will also be conducted in accordance with the procedures defined in the Community Air Monitoring Plan (CAMP) included in this Section and a Construction Health and Safety Plan (HASP). The HASP is the responsibility of the property owner and should be in compliance with NYSDEC DER-10 Technical Guide and 29 CFR 1910 and 1926, and all other applicable Federal, State and City regulations. Intrusive construction work should be compliant with this SMMP and described in the next Inspection and Certification Letter Report.

7.4.1 Soil Screening Methods

Visual, olfactory and PID soil screening and assessment will be performed under the supervision of a Qualified Environmental Professional (QEP). Soil screening will be performed during any future intrusive work.

7.4.2 Stockpile Methods

If stockpiles are used to isolate excavated soil they will be removed as soon as practicable. While stockpiles are in place, they will be inspected daily, and before and after every storm event. Results of inspections will be recorded in a logbook and maintained at the Site and available for inspection by OER. Excavated soils will be stockpiled on, at minimum, double layers of 6-mil minimum sheeting, will be kept covered at all times with appropriately anchored plastic tarps, and will be routinely inspected. Broken or ripped tarps will be promptly replaced.

All stockpile activities will be compliant with applicable laws and regulations. Soil stockpile areas will be appropriately graded to control run-off in accordance with applicable laws and regulations. Stockpiles of excavated soils and other materials shall be located at least of 50 feet from the property boundaries, where possible. Hay bales or equivalent will surround soil stockpiles

except for areas where access by equipment is required. Silt fencing and hay bales will be used as needed near catch basins, surface waters, and other discharge points.

7.4.3 Characterization of Excavated Materials

Soil/fill or other excavated media that is transported off-Site for disposal will be sampled in a manner required by the receiving facility, and in compliance with applicable laws and regulations. Excavated soil will only be reused on-site with prior approval by OER.

7.4.4 Materials Excavation, Load-Out and Departure

The PE/QEP overseeing the remedial action will:

- Oversee intrusive work and the excavation and load-out of excavated material;
- Ensure that there is a party responsible for the safe execution of invasive and other work performed under this management plan;
- Ensure that Site maintenance activities and maintenance-related grading cuts will not interfere with, or otherwise impair or compromise the remedial measures established during the remediation construction phase;
- Ensure that the presence of utilities and easements on the Site has been investigated and that any identified risks from work proposed under this plan are properly addressed by appropriate permits or authorized notifications.;
- Ensure that all loaded outbound trucks are inspected and cleaned if necessary, before leaving the Site; and
- Ensure that all egress points for truck and equipment transport from the Site will be kept clean of Site-derived materials during Site intrusive work.

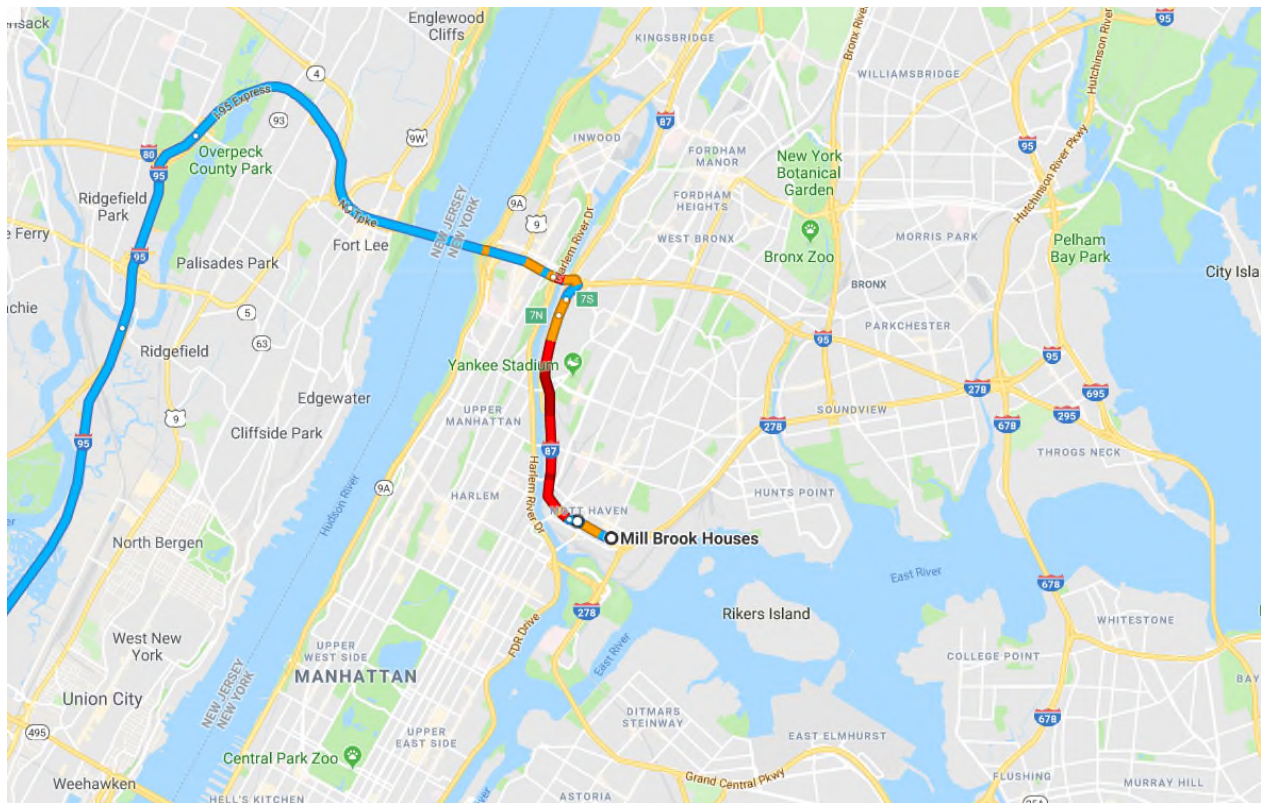
Locations where vehicles exit the Site shall be inspected daily for evidence of soil tracking off premises. Cleaning of the adjacent streets will be performed as needed to maintain a clean condition with respect to Site-derived materials.

7.4.5 Off-Site Materials Transport

Loaded vehicles leaving the Site will comply with all applicable materials transportation requirements (including appropriate covering, manifests, and placards) in accordance with applicable laws and regulations, including use of licensed haulers in accordance with 6 NYCRR Part 364. If loads contain wet material capable of causing leakage from trucks, truck liners will be used. Queuing of trucks will be performed on-Site, when possible, in order to minimize off Site disturbance.

Outbound truck transport routes are shown on the figure below. This routing takes into account the following factors: (a) limiting transport through residential areas and past sensitive sites; (b) use of mapped truck routes; (c) minimizing off-Site queuing of trucks entering the facility; (d) limiting total distance to major highways; (e) promoting safety in access to highways; and (f) overall safety in transport. To the extent possible, all trucks loaded with Site materials will travel from the Site using these truck routes. Trucks will not stop or idle in the neighborhood after leaving the project Site. Outbound truck transport routes are as follows:

1. Head southwest on St Ann's Ave toward E 135th St
2. Turn right at the 1st cross street onto E 135th St
3. Use the left lane to take the Interstate 87 N ramp
4. Continue on I-87 N. Take Interstate 95 Lower Level S/U.S. 1 Lower Level S and I-95 to E Edgar Rd in Linden. Exit from I-278 W



7.4.6 Materials Disposal Off-Site

The following documentation will be established and reported by the PE/QEP for each disposal destination used in this project to document that the disposal of regulated material exported from the Site conforms with applicable laws and regulations: (1) an OER Historical Fill Notification Form and letter from the PE/QEP or property owner to each disposal facility describing the material to be disposed and requesting written acceptance of the material. This letter will state that material to be disposed is regulated material generated at an environmental remediation Site in New York City under a governmental remediation program. The letter will provide the project identity and the name and phone number of the PE/QEP or Enrollee. The letter will include, as an attachment, a summary of all chemical data for the material being transported; and (2) a letter from each disposal facility stating it is in receipt of the correspondence (1, above) and is approved to accept the material.

Documentation associated with disposal of all material will include records and approvals for receipt of the material. All impacted soil/fill or other waste excavated and removed from the Site will be managed as regulated material and will be disposed in accordance with applicable laws and

regulations. Historic fill and contaminated soils taken off-Site will be handled as solid waste and will not be disposed at a Part 360-16 Registration Facility (also known as a Soil Recycling Facility).

Waste characterization will be performed for off-Site disposal in a manner required by the receiving facility and in conformance with its applicable permits. Waste characterization sampling and analytical methods, sampling frequency, analytical results and QA/QC will be retained and included in the following Inspection and Certification Report. A manifest system for off-Site transportation of exported materials will be employed. Hazardous wastes derived from on-Site will be stored, transported, and disposed of in compliance with applicable laws and regulations.

7.4.7 Materials Reuse On-Site

All of the non-hazardous soil excavated during any future repair or construction purposes will be placed in the same excavation it was derived from or will be disposed of off-site unless otherwise approved by OER beforehand.

7.4.8 Repair of Remedial Systems

After completion of invasive work, any damage to the engineering controls (composite cover system, vapor barrier, etc.) will be restored to the original condition established during initial construction.

7.4.9 Import of Backfill Soil from Off-Site Sources

In the event that soil importation is needed for the backfilling purposes, this Section presents the requirements for imported fill materials. All imported soils will meet OER-approved backfill and cover soil quality objectives for this Site. The backfill and cover soil quality objectives include NYSDEC Part 375 Track 2 Residential SCOs and groundwater protections standards. A process will be established to evaluate sources of backfill and cover soil to be imported to the Site, and will include an examination of source location, current and historical use(s), and any applicable documentation. Material from industrial sites, spill sites, environmental remediation sites or other potentially contaminated sites will not be imported to the Site.

The following potential sources may be used pending attainment of backfill and cover soil quality objectives:

- Clean soil from construction projects at non-industrial sites in compliance with applicable laws and regulations;
- Clean soil from roadway or other transportation-related projects in compliance with applicable laws and regulations;
- Clean recycled concrete aggregate (RCA) from facilities permitted or registered by the regulations of NYS DEC; and
- Virgin quarried material or other materials with an approved Beneficial Use Determination (BUD) from NYSDEC for reuse as clean fill.

All materials received for import to the Site will be approved by a PE/QEP and will be in compliance with provisions in this SMP. The Inspection and Certification Letter Report will report the source of the fill, evidence that an inspection was performed on the source, chemical sampling results, frequency of testing, and a Site map indicating the locations where backfill or soil cover was placed.

7.4.10 Source Screening and Testing

Inspection of imported fill material will include visual, olfactory, and PID screening for evidence of contamination. Materials imported to the Site will be subject to inspection, as follows:

- Trucks with imported fill material will be in compliance with applicable laws and regulations and will enter the Site at designated locations;
- The PE/QEP is responsible to ensure that every truck load of imported material is inspected for evidence of contamination; and
- Fill material will be free of solid waste including pavement materials, debris, stumps, roots, and other organic matter, as well as ashes, oil, perishables, or foreign matter.

Composite samples of imported material from the identified clean soil sources will be taken at a minimum frequency of one sample for every 500 cubic yards of material. One composite sample

will be collected from each source of virgin quarried material or other material with an NYSDEC approved BUD, unless otherwise approved by OER. Once it is determined that the fill material meets imported backfill or cover soil chemical requirements, is non-hazardous, and lacks petroleum contamination, the material will be loaded onto trucks for delivery to the Site.

Recycled concrete aggregate (RCA) without fines may be imported from facilities permitted or registered by NYSDEC. A PE/QEP is responsible to ensure that the facility is compliant with 6NYCRR Part 360 registration and permitting requirements for the period of acquisition of RCA. RCA imported from compliant facilities will not require additional testing, unless required by NYSDEC under its terms for operation of the facility. RCA imported to the Site must be derived from recognizable and uncontaminated concrete. RCA will not be used as cover material. [Clarify use of Asphalt Millings]

7.4.11 Fluids Management

All liquids to be removed from the Site, including dewatering fluids, will be handled, transported, and disposed in accordance with applicable laws and regulations. Liquids discharged into the New York City sewer system will receive prior approval by New York City Department of Environmental Protection (NYC DEP). The NYC DEP regulates discharges to the New York City sewers under Title 15, Rules of the City of New York Chapter 19. If discharge to the City sewer system is not feasible, the dewatering fluids will be managed by transportation and disposal at an off-Site treatment facility or some other means compliant with applicable laws and regulations. Discharge of water generated during remedial construction to surface waters (i.e. a stream or river) is prohibited without a SPDES permit issued by NYSDEC.

7.4.12 Storm-water Pollution Prevention

Applicable laws and regulations pertaining to storm-water pollution prevention will be addressed during the remedial program. All existing storm-water systems will be inspected to ensure proper operation.

7.4.13 Odor Control

All necessary means will be employed to prevent on- and off-Site odor nuisances. At a minimum, procedures will include: (a) limiting the area of open excavations; (b) use of foams to

cover exposed odorous soils. If odors develop and cannot be controlled by these means, additional means to eliminate odor nuisances will include: (c) direct load-out of soils to trucks for off-Site disposal; and (d) use of chemical odorants in spray or misting systems.

The odor control plan must be capable of controlling emissions of nuisance odors. If nuisance odors are identified, work will be halted, and the source of odors will be identified and corrected. Work will not resume until all nuisance odors have been abated. OER will be notified of all odor complaint events. Implementation of all odor controls, including halt of work, will be the responsibility of the PE/QEP.

7.4.14 Dust Control

Dust management during invasive on-Site work will include, at a minimum:

- Use of a dedicated water spray methodology for roads, excavation areas and stockpiles;
- Use of properly anchored tarps to cover soil/fill stockpiles;
- Exercise extra care during dry and high-wind periods; and
- Use of asphalt millings, gravel or recycled concrete aggregate on egress and other roadways to provide a clean and dust-free road surface.

If nuisance dust emissions are identified, work will be halted, and the source of dust will be identified and corrected. Work will not resume until all nuisance dust emissions have been abated. OER will be notified of all dust complaint events. Implementation of all dust controls, including halt of work, will be the responsibility of the PE/QEPs.

7.4.15 Noise

Noise control will be exercised during the remedial program. All remedial work will conform, at a minimum, to NYC noise control standards.

7.5 **Community Air Monitoring Plan**

Real-time air monitoring for volatile organic compounds (VOCs) and particulate levels at the perimeter of the exclusion zone or work area will be performed. Continuous monitoring will be performed for all ground intrusive activities and during the handling of contaminated or potentially contaminated media. Ground intrusive activities include, but are not limited to, soil/waste

excavation and handling, test pit excavation or trenching, and the installation of soil borings or monitoring wells.

Periodic monitoring for VOCs will be performed during non-intrusive activities such as the collection of soil and sediment samples or the collection of groundwater samples from existing monitoring wells. Periodic monitoring during sample collection, for instance, will consist of taking a reading upon arrival at a sample location, monitoring while opening a well cap or overturning soil, monitoring during well baling/purging, and taking a reading prior to leaving a sample location. Depending upon the proximity of potentially exposed individuals, continuous monitoring may be performed during sampling activities. Examples of such situations include groundwater sampling at wells on the curb of a busy urban street, in the midst of a public park, or adjacent to a school or residence. Exceedances of action levels observed during performance of the Community Air Monitoring Plan (CAMP) will be reported to the OER Project Manager and included in the Daily Report.

7.5.1 VOC Monitoring, Response Levels, and Actions

Volatile organic compounds (VOCs) will be monitored at the downwind perimeter of the immediate work area (i.e., the exclusion zone) on a continuous basis during invasive work. Upwind concentrations will be measured at the start of each workday and periodically thereafter to establish background conditions. The monitoring work will be performed using equipment appropriate to measure the types of contaminants known or suspected to be present. The equipment will be calibrated at least daily for the contaminant(s) of concern or for an appropriate surrogate. The equipment will be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below.

- If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 parts per million (ppm) above background for the 15-minute average, work activities will be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities will resume with continued monitoring.
- If total organic vapor levels at the downwind perimeter of the work area or exclusion zone persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities will be halted, the source of vapors identified, corrective actions taken to abate emissions,

and monitoring continued. After these steps, work activities will resume provided that the total organic vapor level 200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less, but in no case less than 20 feet, is below 5 ppm over background for the 15-minute average.

- If the organic vapor level is above 25 ppm at the perimeter of the work area, activities will be shut down.

All 15-minute readings must be recorded and be available for OER personnel to review. Instantaneous readings, if any, used for decision purposes will also be recorded.

7.5.2 Particulate Monitoring, Response Levels, and Actions

Particulate concentrations will be monitored continuously at the upwind and downwind perimeters of the exclusion zone at temporary particulate monitoring stations. The particulate monitoring will be performed using real-time monitoring equipment capable of measuring particulate matter less than 10 micrometers in size (PM-10) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level. The equipment will be equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration should be visually assessed during all work activities.

If the downwind PM-10 particulate level is 100 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques will be employed. Work will continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed $150 \mu\text{g}/\text{m}^3$ above the upwind level and provided that no visible dust is migrating from the work area.

If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than $150 \mu\text{g}/\text{m}^3$ above the upwind level, work will be stopped, and a re-evaluation of activities initiated. Work will resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within $150 \mu\text{g}/\text{m}^3$ of the upwind level and in preventing visible dust migration.

All readings will be recorded and available for OER personnel to review.



7.6 Contingency Plan

This contingency plan is developed for the remedial construction or repair work to address the discovery of unknown structures or contaminated media during excavation. Identification of unknown contamination source areas during invasive Site work will be promptly communicated to OER's Project Manager. Petroleum spills will be reported to the NYS DEC Spill Hotline. If previously unidentified contaminant sources are found during on-Site remedial excavation or development-related excavation, sampling will be performed on contaminated source material and surrounding soils and reported to OER. Chemical analytical testing will be performed for TAL metals, TCL volatiles and semi-volatiles, TCL pesticides and PCBs, as appropriate.

Emergency Telephone Numbers

In the event of any emergency condition pertaining to these remedial systems, the Owner's representative(s) should contact the appropriate parties from the contact list below. Prompt contact should also be made to Stephen M. Kline. These emergency contact lists must be maintained in an easily accessible location at the Site.

Emergency Contact Numbers

Medical, Fire, and Police:	911
One Call Center: 3-day notice required for utility mark-out	(800) 272-4480
Poison Control Center:	(800) 222-1222
Pollution Toxic Chemical Oil Spills:	(800) 424-8802
NYSDEC Spills Hotline	(800) 457-7362

Project Contact Numbers

Stephen M. Kline - Environmental Consultant	212-594-8140
Office of Environmental Remediation	(212) 788-8841; 311

8.0 SUSTAINABILITY REPORT

This Remedial Action provided for sustainable remediation and redevelopment through a variety of means that are defined in this Sustainability Report. As part of the redevelopment under HPD, Mill Brook HDfC participated in the Enterprise Green Communities Criteria (EGCC) for affordable housing projects. The EGCC provides a commitment framework for environmentally responsible and sustainable practices for new affordable housing construction. To achieve EGCC certification, the Mill Brook Terrace development achieved compliance with the mandatory measures for new construction projects under the following eight categories:

1. Integrative Design
2. Location and Neighborhood Fabric
3. Site Improvements
4. Water Conservation
5. Energy Efficiency
6. Materials
7. Healthy Living Environment
8. Operations, Maintenance, and Resident Engagement

The Mill Brook Terrace Development has integrated this Green Development Plan into its design. The project is a compact development (e.g. 15 dwelling units per acre, or 75% of surrounding net residential density) located within a 0.5-mile walking distance of combined transit service (e.g. bus, rail, etc.) and has set aside a percentage of the total project acreage as open space for use by residents. The sustainability practices enumerated below will be discussed in the context of the EGCC. The EGCC Checklist is provided in **Appendix N**.

Reuse of Clean, Recyclable Materials and Conservation of Natural Resources. Reuse of clean, recyclable materials reduces consumption of non-renewable virgin resources and can provide energy savings and greenhouse gas reduction since these materials can be derived locally.

Conservation of non-renewable resources was achieved by the EGCC's 75% Construction Waste Diversion Target. In addition, the project had provided permanent accessible area for recycling and trash for each dwelling unit and shared community space.

The Project also incorporated the use of Low/ No VOC paints, primers, adhesives, and sealants, composite wood products that is certified compliant with California 93120, environmentally preferable flooring, and asthmagen-free material.

Mill Brook Terrace incorporated advance water conservation features by installing water conserving appliances and fixtures (WaterSense-labeled) in all units and any common area facilities with the following specifications:- Toilets: 1.1 gallons per flush (gpf) - Showerheads: 1.5 gallons per minute (gpm)- Kitchen faucets: 1.5 gpm- Bathroom faucets: 1.0 gpm. This will reduce total indoor water consumption by at least 30% compared to the baseline through any combination of flow rates.

Reduced Energy Consumption and Promotion of Greater Energy Efficiency. Reduced energy consumption lowers greenhouse gas emissions, improves local air quality, lessens in-city power generation requirements, and can lower traffic congestion and provide substantial cost savings. Direct loading of trucks during the remedial action prevented truck idling.

To achieve this, the Mill Brook Terrace Development has been certified under the ENERGY STAR New Homes by demonstrating energy performance better than American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) 90.1-2007. In addition, the Project will install Energy Star-rated clothes washers, dishwashers, and refrigerators. High efficacy LEDs & T-8 or smaller diameter fluorescent lamps with an efficacy of at least 40-60 lumen/watt, will be installed in all areas. Recessed lights will include CFLs or ENERGY STAR qualified LED's. Occupancy sensors, daylight controls, or bi-level controls will be used in any space not intended for 24-hour use. Exterior fixtures will be Dark-Sky approved (or full cut off) & include a timer or photocell. Each residential unit will have sub-meters for monitoring energy consumption.

Conversion to Clean Fuels. Use of clean fuel improves NYC's air quality by reducing harmful emissions. Natural gas is utilized as the principal fuel in the new building. In addition, the project has installed 131 kW photovoltaic (PV) panels or other electric generating renewable source to provide a percentage of the project's energy demand.

Recontamination Control. Recontamination after cleanup and redevelopment is completed undermines the value of work performed, may result in a property that is less protective of public

health or the environment, and may necessitate additional cleanup work later that could impede future redevelopment. Recontamination can arise from future releases that occur within the property or by influx of contamination from off-Site.

The area of the Site that utilizes recontamination controls under this plan is the area of the entire site underlain by the composite cover system and vapor barrier. The area of the Site that utilizes recontamination controls under this plan is 31,735 square feet. The vapor barrier mitigates the release of contaminants into occupied space and into the environment.

Stormwater Retention. Storm-water retention improves water quality by lowering the rate of combined stormwater and sewer discharges to NYC's sewage treatment plants during periods of precipitation and reduces the volume of untreated influent to local surface waters. The northeastern portion of the Site was converted from concrete paving to landscaped area, providing 14,100 SF of street level open space. In addition, the 2,950 SF rooftop terrace can provide stormwater retention capacity with the vegetation.

Paperless Brownfield Cleanup Program. Mill Brook HDGC participated in OER's paperless Voluntary Cleanup Program. Under this program, submission of electronic documents replaced submission of hard copies for the review of project documents, communications, and milestone reports. A best estimate of the mass (pounds) of paper saved under this plan is 150 pounds.

Low-Energy Project Management Program. Mill Brook HDGC participated in OER's low-energy project management program. Under this program, whenever possible, meetings were held using remote communication technologies, such as videoconferencing and teleconferencing to reduce energy consumption and traffic congestion associated with personal transportation. A gross estimate of the number of miles of personal transportation that was conserved in this process is 60 miles.

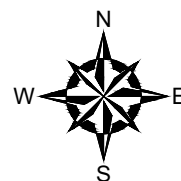
Trees and Plantings. Trees and other plantings provide habitat and add to NYC's environmental quality in a wide variety of ways. Native plant species and native habitat provide optimal support to local fauna, promote local biodiversity, and require less maintenance. There will be eight trees and several herbs and perennials planted as part of this redevelopment. The landscape details are provided in in **Appendix O**.



FIGURES



SOURCE:
USGS TOPOGRAPHIC MAP: CENTRAL PARK, NY-NJ (2019).
CONTOUR INTERVAL 10 FT, NAVD-1988, ORIGINAL
SCALE 1:24,000 (1IN=2,000 FT).



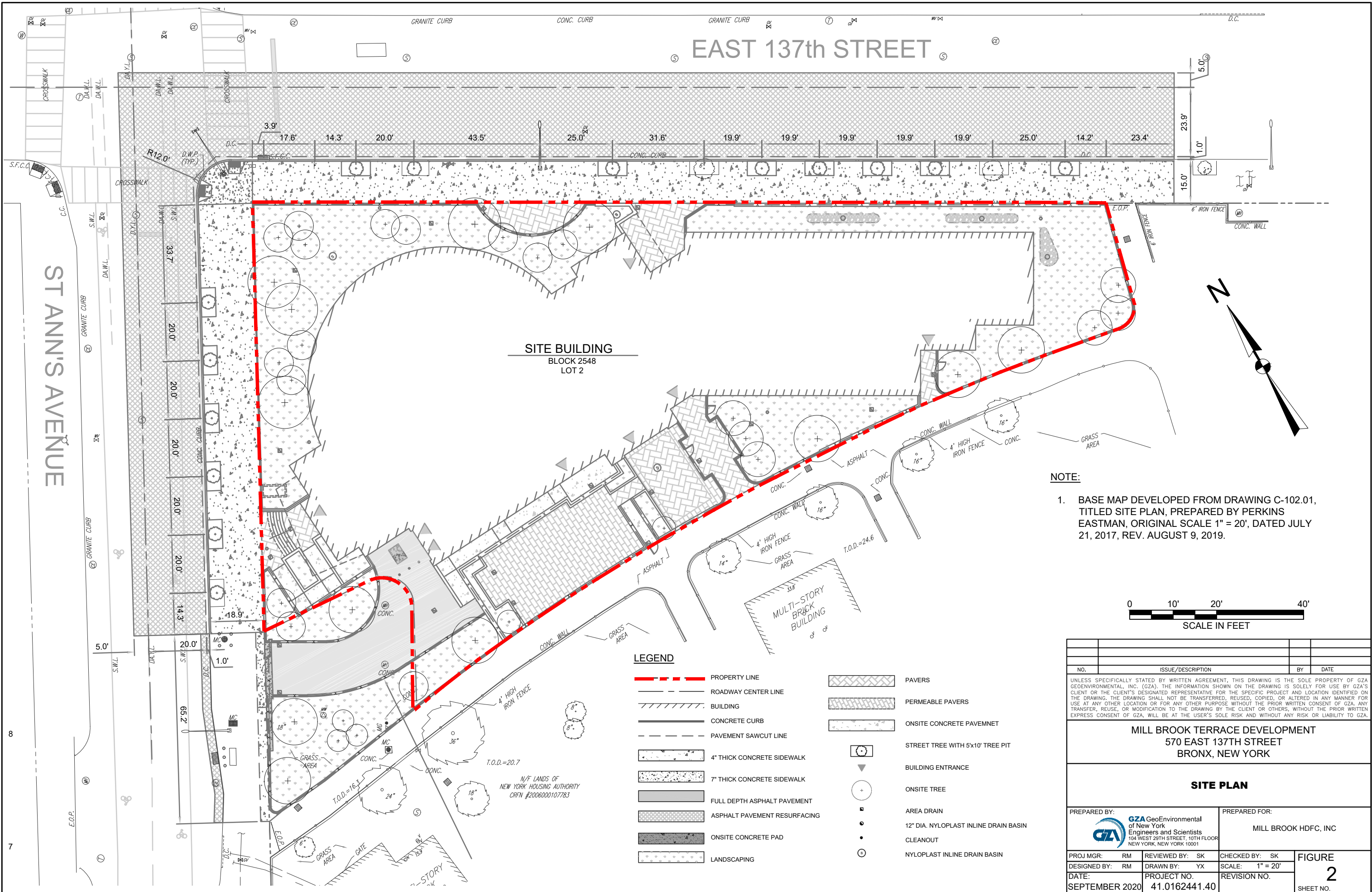
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PREPARED BY:  **GZA** GeoEnvironmental
of New York
Engineers and Scientists
104 WEST 29TH STREET, 10TH FLOOR
NEW YORK, NEW YORK 10001

PROJ MGR: RM	REVIEWED BY: SK
DESIGNED BY: RM	DRAWN BY: YX
DATE: SEPTEMBER 2020	PROJECT NO. 41.0162441.40

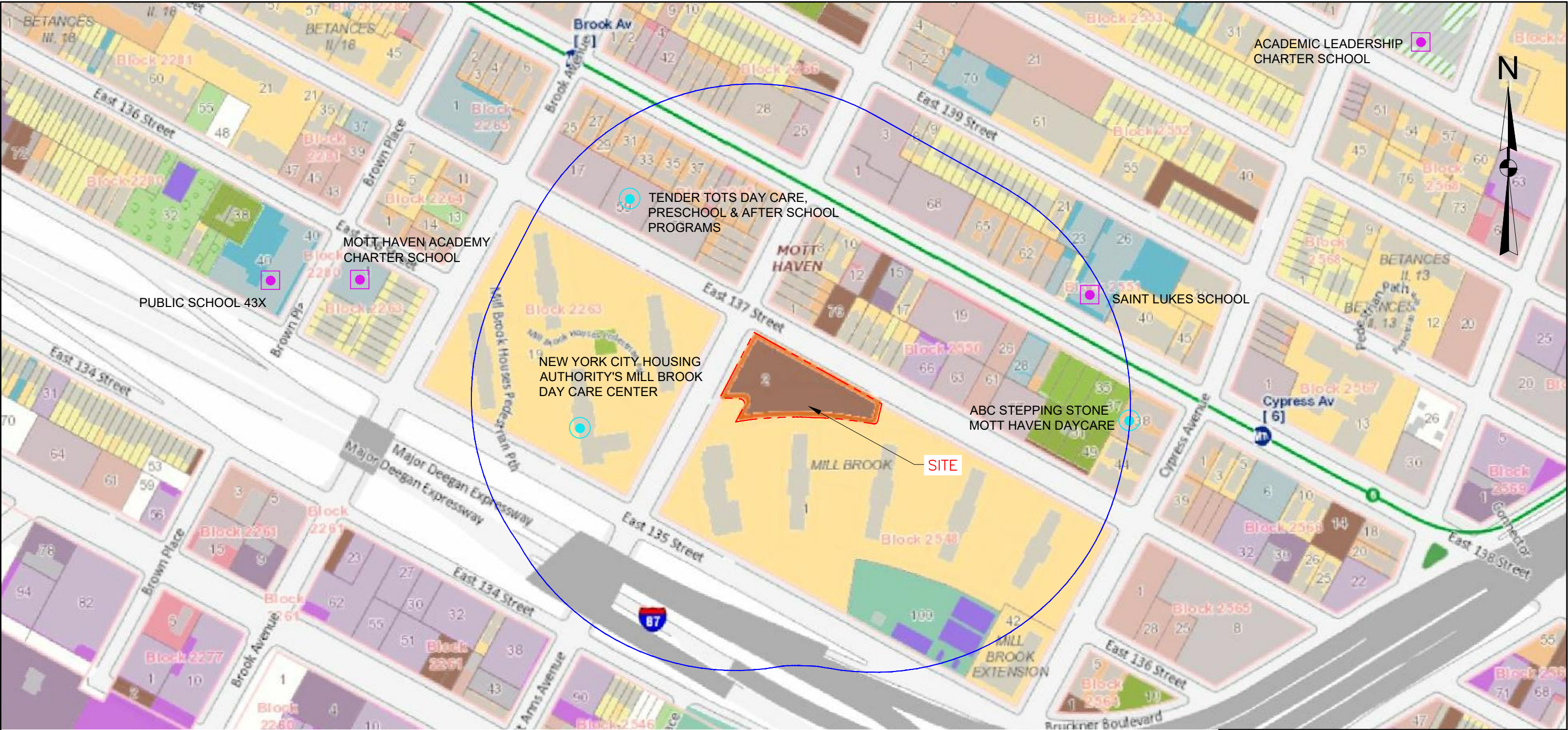
FIGURE
1
SHEET NO.

SITE LOCATION MAP



NO.		ISSUE/DESCRIPTION	BY	DATE
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MILL BROOK TERRACE DEVELOPMENT 570 EAST 137TH STREET BRONX, NEW YORK				
SITE PLAN				
PREPARED BY: GZA GeoEnvironmental of New York Engineers and Scientists 104 WEST 29TH STREET, 10TH FLOOR NEW YORK, NEW YORK 10001		PREPARED FOR: MILL BROOK HDFC, INC		
PROJ MGR: RM	REVIEWED BY: SK	CHECKED BY: SK	FIGURE	
DESIGNED BY: RM	DRAWN BY: YX	SCALE: 1" = 20'	2	
DATE: SEPTEMBER 2020	PROJECT NO. 41.0162441.40	REVISION NO.	SHEET NO.	

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LEGEND

- Transit, Roads, Reference Features**
- Roads, ferries, commuter rail, neighborhood names
 - Major Roads
 - Interstate Highways
 - Tunnels
 - NYC subway routes and stations
 - Parks, Playgrounds, & Open Space
 - Parks & Public Lands
 - Forested Areas (NJ)
 - Community Gardens
 - School property with garden
 - Playgrounds
 - Green Spaces Along Streets
 - Golf Courses
 - Baseball/Soccer/Football Fields
 - Tennis/Basketball/Handball Courts & Tracks
 - Cemeteries

- Land Use**
- Block/Lot Boundaries
- 1 & 2 Family Residential
 - Multi-family Residential
 - Mixed Use
 - Open space & outdoor recreation
 - Commercial
 - Institutions
 - Industrial
 - Parking
 - Transportation / Utilities
 - Vacant Lots
- (Not all items in the legend may be visible on the map.)

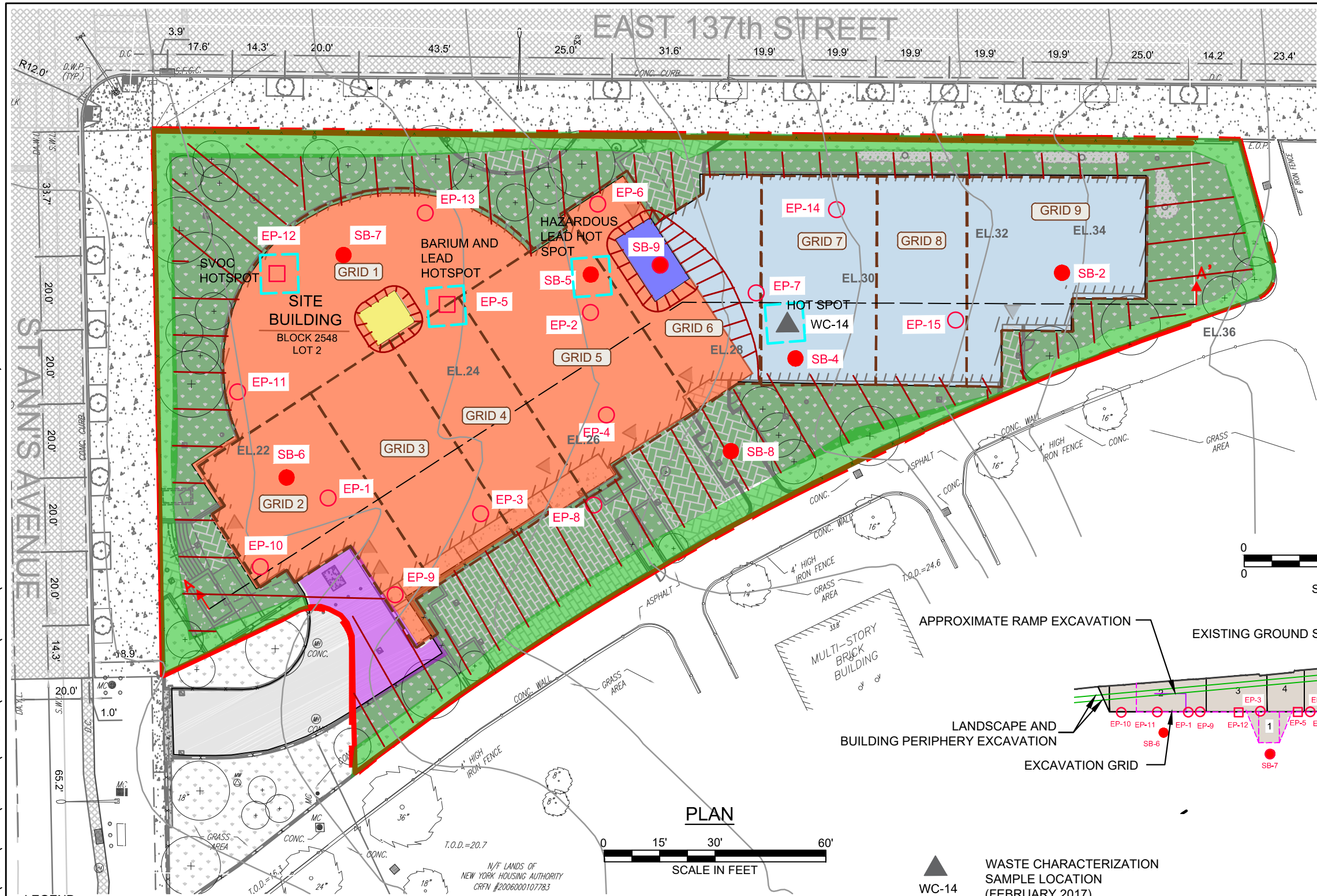
- 500 FEET BUFFER
- DAY CARE CENTER
- SCHOOL

NOTE:

1. BASE MAP DEVELOPED FROM THE OPEN ACCESSIBLE SPACE INFORMATION SYSTEM (OASIS) WEBSITE.



NO.	ISSUE/DESCRIPTION			BY	DATE
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MILL BROOK TERRACE DEVELOPMENT 570 EAST 137TH STREET BRONX, NEW YORK					
SURROUNDING LAND USAGE					
PREPARED BY:  GZA GeoEnvironmental of New York Engineers and Scientists 104 WEST 29TH STREET, 10TH FLOOR NEW YORK, NEW YORK 10001			PREPARED FOR: MILL BROOK HDFC, INC		
PROJ MGR: RM	REVIEWED BY: SK	CHECKED BY: SK	FIGURE		
DESIGNED BY: RM	DRAWN BY: YX	SCALE: 1" = 200'	3		
DATE: SEPTEMBER 2020	PROJECT NO. 41.0162441.40	REVISION NO.	SHEET NO.		



LEGEND

PIT EXCAVATION AREAS

- APPROX. BOTTOM OF EXCAVATION GRADE EL. 10.0'
- APPROX. BOTTOM OF EXCAVATION GRADE EL. 9.0'

EXCAVATION AREAS

- APPROX. BOTTOM OF EXCAVATION GRADE EL. 26' TO 28.0'
- APPROX. BOTTOM OF EXCAVATION GRADE EL. 16.0' TO 19.0'
- APPROX. BOTTOM OF EXCAVATION GRADE EL. 19.0'
- APPROX. SLOPED EXCAVATION TO 2 TO 6' BELOW GROUND SURFACE
- APPROX. EXCAVATION TO 2' BELOW GROUND SURFACE

EXCAVATION SLOPED TO NEXT LOWER ELEVATION

- PROPERTY BOUNDARY
- APPROX. GRID BOUNDARY
- PRE-CONSTRUCTION TOPOGRAPHY CONTOUR
- EXCAVATION GRID NUMBER
- ENDPOINT SAMPLE LOCATION
- REMEDIAL INVESTIGATION SAMPLE LOCATION (OCTOBER 12, 2016 AND FEBRUARY 6, 2017)
- HOT SPOT ENDPOINT SAMPLE LOCATION



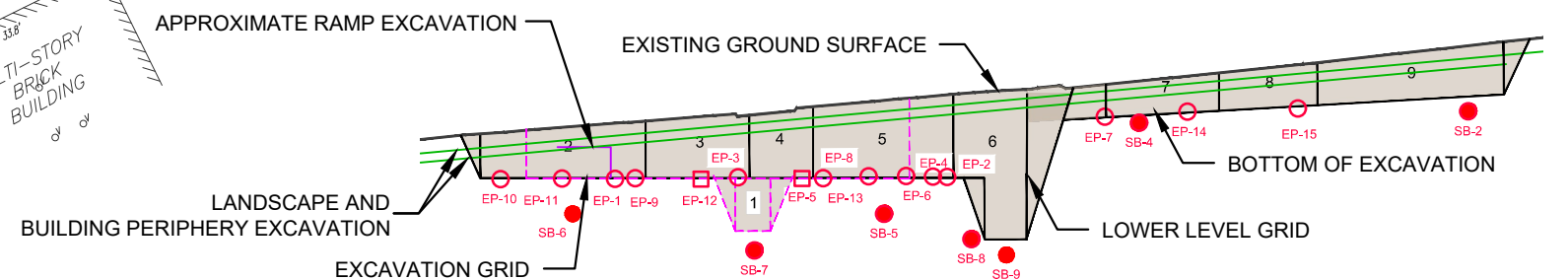
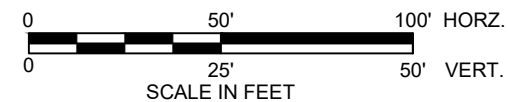
WASTE CHARACTERIZATION SAMPLE LOCATION (FEBRUARY 2017)

- HOTSPOT EXCAVATION
- ROADWAY CENTER LINE
- BUILDING
- CONCRETE CURB
- PAVERS
- PERMEABLE PAVERS
- PAVEMENT SAWCUT LINE
- ONSITE CONCRETE PAVEMENT
- 4" THICK CONCRETE SIDEWALK
- 7" THICK CONCRETE SIDEWALK
- FULL DEPTH ASPHALT PAVEMENT
- ASPHALT PAVEMENT RESURFACING
- STREET TREE WITH 5"x10" TREE PIT
- BUILDING ENTRANCE
- ONSITE CONCRETE PAD
- LANDSCAPING
- ONSITE TREE
- AREA DRAIN

NOTE:

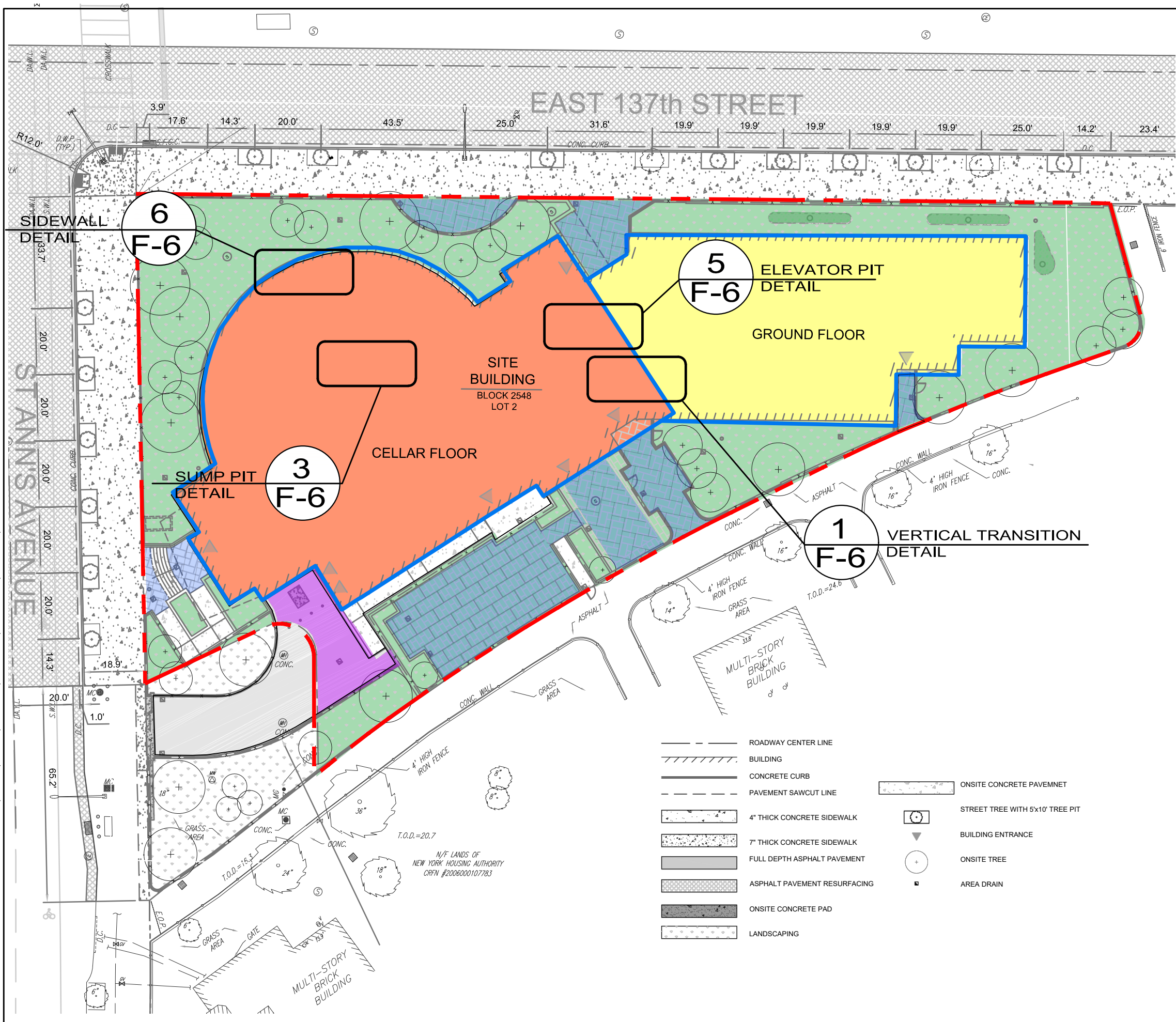
- BASE MAP WAS DEVELOPED FROM THE FOLLOWING DRAWINGS
 - "BOUNDARY AND TOPOGRAPHIC SURVEY," DATED 07-08-2016, PREPARED BY CONTROL POINT ASSOCIATES, ORIGINAL SCALE 1" = 20', DRAWING NUMBER 04-160125.
 - "CELLAR LEVEL PLAN," DATED 02-28-2017, PREPARED BY PERKINS EASTMAN, ORIGINAL SCALE 1/8" = 1'-0", DRAWING NO. A-100.00.
 - DRAWING C-102.01, TITLED SITE PLAN, PREPARED BY PERKINS EASTMAN, ORIGINAL SCALE 1" = 20', DATED JULY 21, 2017, REV. AUGUST 9, 2019
- "HOT SPOT ENDPOINT SAMPLES" ARE AREAS WHERE TRACK 1 SOIL CLEANUP STANDARDS DURING THE FIRST ENDPOINT SAMPLE DID NOT MEET CLEANUP OBJECTIVES. THESE AREAS WERE OVER-EXCAVATED AND RE-SAMPLED.
- REMEDIAL INVESTIGATION SOIL SAMPLING LOCATIONS ARE DEPICTED WHERE SAMPLED SOILS WERE NOT REMOVED DURING THE REMEDIAL ACTION OR SITE REDEVELOPMENT.

PROFILE A-A'



NO.		ISSUE/DESCRIPTION	BY	DATE
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MILL BROOK TERRACE DEVELOPMENT 570 EAST 137TH STREET BRONX, NEW YORK				
SITE EXCAVATION AND ENDPOINT SAMPLE LOCATIONS				
PREPARED BY: GZA GeoEnvironmental of NY Engineers and Scientists www.gza.com		PREPARED FOR: MILL BROOK HDFC, INC		
PROJ MGR: RM	REVIEWED BY: SK	CHECKED BY: SK	FIGURE	
DESIGNED BY: SK	DRAWN BY: YX	SCALE: 1" = 30'	4	
DATE: SEPTEMBER 2020	PROJECT NO. 41.0162441.40	REVISION NO.		

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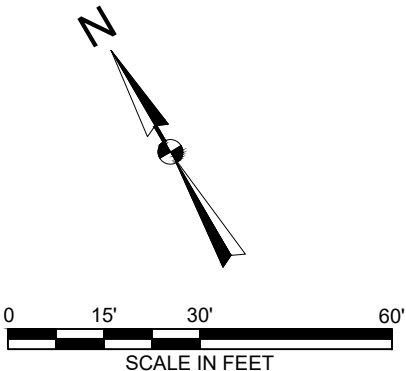


NOTE:

1. BASE MAP WAS DEVELOPED FROM THE FOLLOWING DRAWINGS
 - "BOUNDARY AND TOPOGRAPHIC SURVEY," DATED 07-08-2016, PREPARED BY CONTROL POINT ASSOCIATES, ORIGINAL SCALE 1" = 20', DRAWING NUMBER 04-160125.
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 - DRAWING C-102.01, TITLED SITE PLAN, PREPARED BY PERKINS EASTMAN, ORIGINAL SCALE 1" = 20', DATED JULY 21, 2017, REV. AUGUST 9, 2019

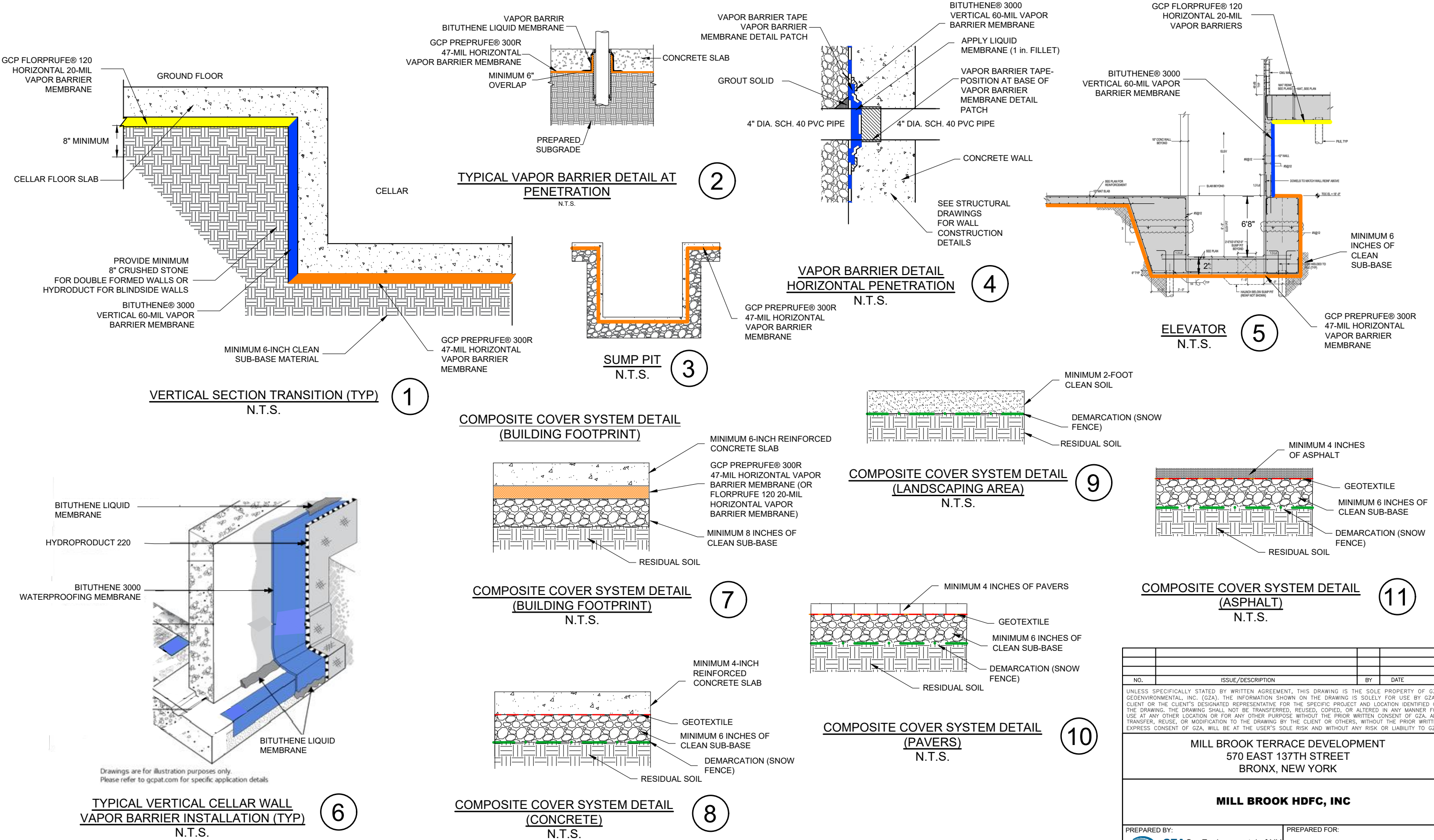
LEGEND

- PROPERTY BOUNDARY
- BITUTHENE 3000 AND HYDRODUCT 220 INSTALLED ON VERTICAL WALL TO GROUND SURFACE (SEE FIGURE 6 DETAIL 5)
- GRADE LEVEL GAS VAPOR BARRIER AND BUILDING SLAB GCP FLORPRUFE 120R (SEE FIGURE 6 DETAIL 7)
- BASEMENT LEVEL GAS VAPOR BARRIER AND BUILDING SLAB ((SEE FIGURE 6 DETAIL 7)
- CONCRETE COVER (SEE FIGURE 6 DETAIL 8)
- DEMARCATED OPEN SPACE / LANDSCAPED AREA (SEE FIGURE 6 DETAIL 9)
- PAVERS (SEE FIGURE 6 DETAIL 10)
- PERMEABLE PAVERS (SEE FIGURE 6 DETAIL 10)
- ASPHALT DRIVEWAY (SEE FIGURE 6 DETAIL 11)



- ROADWAY CENTER LINE
- BUILDING
- CONCRETE CURB
- PAVEMENT SAWCUT LINE
- 4" THICK CONCRETE SIDEWALK
- 7" THICK CONCRETE SIDEWALK
- FULL DEPTH ASPHALT PAVEMENT
- ASPHALT PAVEMENT RESURFACING
- ONSITE CONCRETE PAD
- LANDSCAPING
- ONSITE CONCRETE PAVEMENT
- STREET TREE WITH 5'x10' TREE PIT
- BUILDING ENTRANCE
- ONSITE TREE
- AREA DRAIN

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MILL BROOK TERRACE DEVELOPMENT 570 EAST 137TH STREET BRONX, NEW YORK			
SITEWIDE COVER SYSTEM PLAN			
PREPARED BY: GZA GeoEnvironmental of NY Engineers and Scientists www.gza.com		PREPARED FOR: MILL BROOK HDFC, INC	
PROJ MGR: RM	REVIEWED BY: SK	CHECKED BY: SK	FIGURE 5
DESIGNED BY: SK	DRAWN BY: YX	SCALE: 1" = 30'	
DATE:	PROJECT NO.	REVISION NO.	
SEPTEMBER 2020	41.0162441.40		



NO.		ISSUE/DESCRIPTION	BY	DATE
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MILL BROOK TERRACE DEVELOPMENT 570 EAST 137TH STREET BRONX, NEW YORK				
MILL BROOK HDFC, INC				
PREPARED BY: GZA GeoEnvironmental of NY Engineers and Scientists www.gza.com		PREPARED FOR: WSFSSH PA LLC		
PROJ MGR: RM	REVIEWED BY: SK	CHECKED BY: SK	FIGURE	
DESIGNED BY: SK	DRAWN BY: YX	SCALE: 1" = 30'	6	
DATE: SEPTEMBER 2020	PROJECT NO. 41.0162441.40	REVISION NO.		



TABLES

Table 1 - Endpoint Soil Samples

Mill Brook Terrace
Bronx, New York

SAMPLE LOCATION		Track 4 Site Specific Soil Cleanup Objectives	EP-1		EP-2		EP-3		EP-4		EP-5		EP-5		EP-5 *	
LAB SAMPLE ID			L1733028-01		L1733028-02		L1733028-03		L1733028-04		L1733028-05		L1739930-01		L1801330-01	
DATE			18-Sep-17		18-Sep-17		18-Sep-17		18-Sep-17		18-Sep-17		1-Nov-17		15-Jan-18	
SAMPLE TYPE			SOIL		SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
SAMPLE DEPTH (FT.)			8'		10'		8'		10'		8'		8'		10'	
Units			Units		Qual	Units	Qual	Units	Qual	Units	Qual	Units	Qual	Units	Qual	Units
Semivolatile Organics (SVOC) by GC/MS																
TOTAL SVOCs	mg/kg	200	0.05	J	4.68	J	8.95	J	3.99	J	41.05	J	n/a		n/a	
Total Metals																
Barium, Total	mg/kg	600	202		126		408		86.2		832		251		n/a	
Lead, Total	mg/kg	800	4.71		37.6		143		62.2		35.2		1,260		278	
Mercury, Total	mg/kg	1.5	0.01	U	0.1		0.15		0.3		0.05	J	0.18		n/a	

TABLE NOTES:

U	Not detected at the reported detection limit for the sample.
J	Estimated value. The analyte concentration is below the reporting limit (RL), but above the method detection limit (MDL) or estimated detection limit (EDL).
--	No Guidance Value.
mg/kg	Milligrams per kilogram.
*	Refer to Table 2 for Hotspot Endpoint Soil Results
n/a	Not analyzed.

Table 1 - Endpoint Soil Samples

Mill Brook Terrace
Bronx, New York

SAMPLE LOCATION	Track 4 Site Specific Soil Cleanup Objectives	EP-6		EP-7		EP-8		EP-9		EP-10		
LAB SAMPLE ID		L1733028-06		L1733028-07		L1739930-02		L1739930-03		L1733028-08		
DATE		18-Sep-17		18-Sep-17		1-Nov-17		1-Nov-17		18-Sep-17		
SAMPLE TYPE		SOIL		SOIL		SOIL		SOIL		SOIL		
SAMPLE DEPTH (FT.)		10'		8'		10'		8'		6'		
Units		Units	Qual	Units	Qual	Units	Qual	Units	Qual	Units	Qual	
Semivolatile Organics (SVOC) by GC/MS												
TOTAL SVOCs	mg/kg	200	10.47	J	18.75	J	10.21	J	6.93	J	24.71	J
Total Metals												
Barium, Total	mg/kg	600	86.1		366		135		222		437	
Lead, Total	mg/kg	800	35.2		218		44.4		53.2		174	
Mercury, Total	mg/kg	1.5	0.59		0.23		0.08		0.1		0.2	

TABLE NOTES:

U	Not detected at the reported detection limit for the sample.
J	Estimated value. The analyte concentration is below the reporting limit (RL), but above the method detection limit (MDL) or estimated detection limit (EDL).
--	No Guidance Value.
mg/kg	Milligrams per kilogram.
*	Refer to Table 2 for Hotspot Endpoint Soil Results

Table 1 - Endpoint Soil Samples

Mill Brook Terrace
Bronx, New York

SAMPLE LOCATION		Track 4 Site Specific Soil Cleanup Objectives	EP-11		EP-12		EP-12 *		EP-13		EP-14		EP-15	
LAB SAMPLE ID			L1733028-09		L1733028-10		L1811185-01		L1733028-11		L1733028-12		L1733028-13	
DATE			18-Sep-17		18-Sep-17		30-Mar-18		18-Sep-17		18-Sep-17		18-Sep-17	
SAMPLE TYPE			SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
SAMPLE DEPTH (FT.)			6'		2'		5'		6'		2'		4'	
Units		Units	Qual	Units	Qual	Units	Qual	Units	Qual	Units	Qual	Units	Qual	
Semivolatile Organics (SVOC) by GC/MS														
TOTAL SVOCs	mg/kg	200	46.87	J	291.87		82.85	J	76.97	J	18.06	J	104.63	J
Total Metals														
Barium, Total	mg/kg	600	228		321				302		532		565	
Lead, Total	mg/kg	800	148		336				266		352		715	
Mercury, Total	mg/kg	1.5	0.32		0.64				0.065	J	0.45		0.19	

TABLE NOTES:

U	Not detected at the reported detection limit for the sample.
J	Estimated value. The analyte concentration is below the reporting limit (RL), but above the method detection limit (MDL) or estimated detection limit (EDL).
--	No Guidance Value.
mg/kg	Milligrams per kilogram.
*	Refer to Table 2 for Hotspot Endpoint Soil Results

Table 1 - Endpoint Soil Samples

**Mill Brook Terrace
Bronx, New York**

SAMPLE LOCATION			Site Specific Soil Cleanup Objectives	SB-2 (7-9)		SB-4 (9-11)		SB-5 (10-12)		SB-6 (9-11)		SB-7 (13-15)		SB-8 (13-15)		SB-9 (18-20)	
LAB SAMPLE ID				10/12/2016		10/12/2016		10/12/2016		10/12/2016		2/6/2017		2/6/2017		2/6/2017	
DATE				L1632556-04		L1632556-08		L1632556-10		L1632556-12		L1703769-02		L1703769-04		L1703769-05	
SAMPLE TYPE				Soil		Soil		Soil		Soil		Soil		Soil		Soil	
SAMPLE DEPTH (FT.)				9.5 -10'		9-11'		10-12'		9-11'		13-15'		13-15'		18-20'	
Units				Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual	Result	Qual
Semivolatile Organics (SVOC) by GC/MS																	
TOTAL SVOCs		mg/kg	200	U	U	U	158.453	J, E	U	U	U						
Total Metals																	
Barium	mg/kg	600	210		44	31	150	18	190	95							
Lead	mg/kg	800	11		7.6	4.1	610	0.95	J	7.2	9.4						
Mercury	mg/kg	1.5	0.07	U	0.07	U	0.07	U	0.22	0.07	U	0.06	J	0.09	U		

TABLE NOTES:

U	Not detected at the reported detection limit for the sample.
J	Estimated Value. The target analyte concentration is below the reporting limit (RL), but above the method detection limit (MDL).
--	No Standard or Guidance Value.
mg/kg	Milligrams per kilogram.
Qual	Qualifiers.

Table 2 - Hotspot Delineation Sample Results

Mill Brook Terrace
Bronx, New York

HOTSPOT (BARIUM AND LEAD) LOCATION		Track 4 Site Specific Soil Cleanup Objectives	EP-5					
SAMPLE LOCATION			EP-5		EP-5		EP-5	
LAB SAMPLE ID			L1733028-05		L1739930-01		L1801330-01	
DATE			18-Sep-17		1-Nov-17		15-Jan-18	
SAMPLE TYPE			SOIL		SOIL		SOIL	
SAMPLE DEPTH (FT.)			8'		8'		10'	
Units			Units	Qual	Units	Qual	Units	Qual
Total Metals								
Barium, Total	mg/kg	600	832		251		n/a	
Lead, Total	mg/kg	800	35.2		1,260		278	
Mercury, Total	mg/kg	1.5	0.05	J	0.18		n/a	

HOTSPOT (TOTAL SVOCs) LOCATION			Track 4 Site Specific Soil Cleanup Objectives		EP-12		EP-12	
LAB SAMPLE ID					L1733028-10		L1811185-01	
DATE					18-Sep-17		30-Mar-18	
SAMPLE TYPE					SOIL		SOIL	
SAMPLE DEPTH (FT.)					2'		5'	
Units					Units	Qual	Units	Qual
Semivolatile Organics (SVOC) by GC/MS								
TOTAL SVOCs	mg/kg	200	291.87		82.85	J		

HOTSPOT (LEAD) LOCATION		Track 4 Site Specific Soil Cleanup Objectives			SB-5									
SAMPLE ID			SB-5 (0-2)		CS-1 (8-10)		CS-2 (8-10)		CS-3 (8-10)		CS-4 (8-10)		SB-5 (10-12) (bottom)	
LAB SAMPLE ID			L1632556-09		L1733028-05		L1703873-04		L1703873-06		L1703873-08		L1632556-10	
DATE			12-Oct-16		7-Feb-17		7-Feb-17		7-Feb-17		7-Feb-17		12-Oct-16	
SAMPLE TYPE			SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
SAMPLE DEPTH (FT.)			0-2'		8-10'		8-10'		8-10'		8-10'		10-12'	
Units			Units	Qual	Units	Qual	Units	Qual	Units	Qual	Units	Qual	Units	Qual
Total Metals														
Lead, Total	mg/kg	800	1800	190		210		2.4		6.6		4.1		
TCLP Metals by EPA 1311												GRID 5		
Lead, TCLP	mg/L	5	17	0.26	J	0.03	U	0.03	U	0.03	U	0.5	U	

HOTSPOT (TCLP LEAD) LOCATION			Track 4 Site Specific Soil Cleanup Objectives			WC-14 (GRID 7)									
SAMPLE ID				GRID 7		CS-11 (5')		CS-12 (5')		CS-13 (5')		CS-14 (5')		CS-15 (5')	
LAB SAMPLE ID				L1704103-03		L1730518-01		L1730518-02		L1730518-03		L1730518-04		L1730518-05	
DATE				6-Feb-17		7-Feb-17		7-Feb-17		7-Feb-17		7-Feb-17		7-Feb-17	
SAMPLE TYPE				SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
SAMPLE DEPTH (FT.)						5		5		5		5		5	
Units				Units	Qual	Units	Qual	Units	Qual	Units	Qual	Units	Qual	Units	Qual
TCLP Metals by EPA 1311															
Lead, TCLP	mg/L	5	5		0.946		0.325	J	1.51		0.372	J	1.19		

TABLE NOTES:

J	Estimated value. The analyte
U	Not detected at the reported
mg/kg	Milligrams per kilogram.
mg/L	Milligrams per liter



**Table 3 - Volatile Organic Compounds in
Imported Material
Millbrook Terrace, Bronx, New York**

SAMPLE LOCATION		Units	Part 375 Unrestricted Use Soil Cleanup Objectives	Part 375 Restricted Residential Use Soil Cleanup Objectives	DGA 1		DGA 2	
LAB SAMPLE ID	L1811799-01				L1811799-02			
DATE	4/5/2018				4/5/2018			
SAMPLE TYPE	SOIL				SOIL			
SAMPLE DEPTH (ft.)	5'				5'			
		Units	Qual	Units	Qual			
Volatile Organic Compounds (VOC) by 8260/5035								
Methylene chloride	mg/kg	0.05	51	0.011	U	0.0096	U	
1,1-Dichloroethane	mg/kg	0.27	19	0.0016	U	0.0014	U	
Chloroform	mg/kg	0.37	10	0.0016	U	0.0014	U	
Carbon tetrachloride	mg/kg	0.76	1.4	0.0011	U	0.00096	U	
1,2-Dichloropropane	mg/kg			0.0037	U	0.0034	U	
Dibromochloromethane	mg/kg			0.0011	U	0.00096	U	
1,1,2-Trichloroethane	mg/kg			0.0016	U	0.0014	U	
Tetrachloroethene	mg/kg	1.3	5.5	0.0011	U	0.00096	U	
Chlorobenzene	mg/kg	1.1	100	0.0011	U	0.00096	U	
Trichlorofluoromethane	mg/kg			0.0053	U	0.0048	U	
1,2-Dichloroethane	mg/kg	0.02	2.3	0.0011	U	0.00096	U	
1,1,1-Trichloroethane	mg/kg	0.68	100	0.0011	U	0.00096	U	
Bromodichloromethane	mg/kg			0.0011	U	0.00096	U	
trans-1,3-Dichloropropene	mg/kg			0.0011	U	0.00096	U	
cis-1,3-Dichloropropene	mg/kg			0.0011	U	0.00096	U	
1,3-Dichloropropene, Total	mg/kg			0.0011	U	0.00096	U	
1,1-Dichloropropene	mg/kg			0.0053	U	0.0048	U	
Bromoform	mg/kg			0.0043	U	0.0038	U	
1,1,2,2-Tetrachloroethane	mg/kg			0.0011	U	0.00096	U	
Benzene	mg/kg	0.06	2.9	0.0011	U	0.00096	U	
Toluene	mg/kg	0.7	100	0.0016	U	0.0014	U	
Ethylbenzene	mg/kg	1	30	0.0011	U	0.00096	U	
Chloromethane	mg/kg			0.0053	U	0.0048	U	
Bromomethane	mg/kg			0.0021	U	0.0019	U	
Vinyl chloride	mg/kg	0.02	0.21	0.0021	U	0.0019	U	
Chloroethane	mg/kg			0.0021	U	0.0019	U	
1,1-Dichloroethene	mg/kg	0.33	100	0.0011	U	0.00096	U	
trans-1,2-Dichloroethene	mg/kg	0.19	100	0.0016	U	0.0014	U	
Trichloroethene	mg/kg	0.47	10	0.0011	U	0.00096	U	
1,2-Dichlorobenzene	mg/kg	1.1	100	0.0053	U	0.0048	U	
1,3-Dichlorobenzene	mg/kg	2.4	17	0.0053	U	0.0048	U	
1,4-Dichlorobenzene	mg/kg	1.8	9.8	0.0053	U	0.0048	U	
Methyl tert butyl ether	mg/kg	0.93	62	0.0021	U	0.0019	U	
p/m-Xylene	mg/kg			0.0021	U	0.0019	U	
o-Xylene	mg/kg			0.0021	U	0.0019	U	
Xylenes, Total	mg/kg	0.26	100	0.0021	U	0.0019	U	
cis-1,2-Dichloroethene	mg/kg	0.25	59	0.0011	U	0.00096	U	
1,2-Dichloroethene, Total	mg/kg			0.0011	U	0.00096	U	
Dibromomethane	mg/kg			0.011	U	0.0096	U	
Styrene	mg/kg			0.0021	U	0.0019	U	
Dichlorodifluoromethane	mg/kg			0.011	U	0.0096	U	
Acetone	mg/kg	0.05	100	0.011	U	0.0096	U	
Carbon disulfide	mg/kg			0.011	U	0.0096	U	
2-Butanone	mg/kg	0.12	100	0.011	U	0.0096	U	
Vinyl acetate	mg/kg			0.011	U	0.0096	U	
4-Methyl-2-pentanone	mg/kg			0.011	U	0.0096	U	
1,2,3-Trichloropropane	mg/kg			0.011	U	0.0096	U	
2-Hexanone	mg/kg			0.011	U	0.0096	U	
Bromochloromethane	mg/kg			0.0053	U	0.0048	U	
2,2-Dichloropropane	mg/kg			0.0053	U	0.0048	U	
1,2-Dibromoethane	mg/kg			0.0043	U	0.0038	U	
1,3-Dichloropropane	mg/kg			0.0053	U	0.0048	U	
1,1,1,2-Tetrachloroethane	mg/kg			0.0011	U	0.00096	U	
Bromobenzene	mg/kg			0.0053	U	0.0048	U	
n-Butylbenzene	mg/kg	12	100	0.0011	U	0.00096	U	
sec-Butylbenzene	mg/kg	11	100	0.0011	U	0.00096	U	
tert-Butylbenzene	mg/kg	5.9	100	0.0053	U	0.0048	U	
o-Chlorotoluene	mg/kg			0.0053	U	0.0048	U	
p-Chlorotoluene	mg/kg			0.0053	U	0.0048	U	
1,2-Dibromo-3-chloropropane	mg/kg			0.0053	U	0.0048	U	
Hexachlorobutadiene	mg/kg			0.0053	U	0.0048	U	
Isopropylbenzene	mg/kg			0.0011	U	0.00096	U	
p-Isopropyltoluene	mg/kg			0.0011	U	0.00096	U	
Naphthalene	mg/kg	12	100	0.0053	U	0.0048	U	
Acrylonitrile	mg/kg			0.011	U	0.0096	U	
n-Propylbenzene	mg/kg	3.9	100	0.0011	U	0.00096	U	
1,2,3-Trichlorobenzene	mg/kg			0.0053	U	0.0048	U	
1,2,4-Trichlorobenzene	mg/kg			0.0053	U	0.0048	U	
1,3,5-Trimethylbenzene	mg/kg	8.4	47	0.0053	U	0.0048	U	
1,2,4-Trimethylbenzene	mg/kg	3.6	47	0.0053	U	0.0048	U	
1,4-Dioxane	mg/kg	0.1	9.8	0.043	U	0.038	U	
p-Diethylbenzene	mg/kg			0.0043	U	0.0038	U	
p-Ethyltoluene	mg/kg			0.0043	U	0.0038	U	
1,2,4,5-Tetramethylbenzene	mg/kg			0.0043	U	0.0038	U	
Ethyl ether	mg/kg			0.0053	U	0.0048	U	
trans-1,4-Dichloro-2-butene	mg/kg			0.0053	U	0.0048	U	

TABLE NOTES:

	Exceeds Part 375 Unrestricted Use Soil Cleanup Objectives
J	Estimated value. The analyte concentration is below the reporting limit (RL), but above the method detection limit (MDL) or estimated detection limit (EDL).
U	Not detected at the reported detection limit for the sample.
D	The reported value is from a secondary analysis with a dilution factor. The original analysis exceeded the calibration range.
--	No Guidance Value.
mg/kg	Milligrams per kilogram.



**Table 4 - Semivolatile Organic Compounds in
Imported Material
Millbrook Terrace, Bronx, New York**

SAMPLE LOCATION		Units	Part 375 Unrestricted Use Soil Cleanup Objectives	Part 375 Restricted Residential Use Soil Cleanup Objectives	Site Specific Soil Cleanup Objectives	DGA 1		DGA 2	
LAB SAMPLE ID	L1811799-01					L1811799-02			
DATE	4/5/2018					4/5/2018			
SAMPLE TYPE	SOIL					SOIL			
SAMPLE DEPTH (ft.)	5'					5'			
						Units	Qual	Units	Qual
Semivolatile Organics (SVOC) by GC/MS									
Acenaphthene		mg/kg	20	100		0.14	U	0.14	U
1,2,4-Trichlorobenzene		mg/kg				0.17	U	0.17	U
Hexachlorobenzene		mg/kg	0.33	0.33		0.1	U	0.1	U
Bis(2-chloroethyl)ether		mg/kg				0.16	U	0.16	U
2-Chloronaphthalene		mg/kg				0.17	U	0.17	U
1,2-Dichlorobenzene		mg/kg	1.1	100		0.17	U	0.17	U
1,3-Dichlorobenzene		mg/kg	2.4	17		0.17	U	0.17	U
1,4-Dichlorobenzene		mg/kg	1.8	9.8		0.17	U	0.17	U
3,3'-Dichlorobenzidine		mg/kg				0.17	U	0.17	U
2,4-Dinitrotoluene		mg/kg				0.17	U	0.17	U
2,6-Dinitrotoluene		mg/kg				0.17	U	0.17	U
Fluoranthene		mg/kg	100	100		0.1	U	0.1	U
4-Chlorophenyl phenyl ether		mg/kg				0.17	U	0.17	U
4-Bromophenyl phenyl ether		mg/kg				0.17	U	0.17	U
Bis(2-chloroisopropyl)ether		mg/kg				0.21	U	0.21	U
Bis(2-chloroethoxy)methane		mg/kg				0.19	U	0.19	U
Hexachlorobutadiene		mg/kg				0.17	U	0.17	U
Hexachlorocyclopentadiene		mg/kg				0.5	U	0.5	U
Hexachloroethane		mg/kg				0.14	U	0.14	U
Isophorone		mg/kg				0.16	U	0.16	U
Naphthalene		mg/kg	12	100		0.17	U	0.17	U
Nitrobenzene		mg/kg				0.16	U	0.16	U
NDPA/DPA		mg/kg				0.14	U	0.14	U
n-Nitrosodi-n-propylamine		mg/kg				0.17	U	0.17	U
Bis(2-ethylhexyl)phthalate		mg/kg				0.17	U	0.17	U
Butyl benzyl phthalate		mg/kg				0.17	U	0.17	U
Di-n-butylphthalate		mg/kg				0.17	U	0.17	U
Di-n-octylphthalate		mg/kg				0.17	U	0.17	U
Diethyl phthalate		mg/kg				0.17	U	0.17	U
Dimethyl phthalate		mg/kg				0.17	U	0.17	U
Benzo(a)anthracene		mg/kg	1	1		0.1	U	0.1	U
Benzo(a)pyrene		mg/kg	1	1		0.14	U	0.14	U
Benzo(b)fluoranthene		mg/kg	1	1		0.1	U	0.1	U
Benzo(k)fluoranthene		mg/kg	0.8	1		0.1	U	0.1	U
Chrysene		mg/kg	1	1		0.1	U	0.1	U
Acenaphthylene		mg/kg	100	100		0.14	U	0.14	U
Anthracene		mg/kg	100	100		0.1	U	0.1	U
Benzo(ghi)perylene		mg/kg	100	100		0.14	U	0.14	U
Fluorene		mg/kg	30	100		0.17	U	0.17	U
Phenanthrene		mg/kg	100	100		0.1	U	0.1	U
Dibenzo(a,h)anthracene		mg/kg	0.33	0.33		0.1	U	0.1	U
Indeno(1,2,3-cd)pyrene		mg/kg	0.5	0.5		0.14	U	0.14	U
Pyrene		mg/kg	100	100		0.1	U	0.1	U
Biphenyl		mg/kg				0.4	U	0.4	U
4-Chloroaniline		mg/kg				0.17	U	0.17	U
2-Nitroaniline		mg/kg				0.17	U	0.17	U
3-Nitroaniline		mg/kg				0.17	U	0.17	U
4-Nitroaniline		mg/kg				0.17	U	0.17	U
Dibenzofuran		mg/kg	7	14		0.17	U	0.17	U
2-Methylnaphthalene		mg/kg				0.21	U	0.21	U
1,2,4,5-Tetrachlorobenzene		mg/kg				0.17	U	0.17	U
Acetophenone		mg/kg				0.17	U	0.17	U
2,4,6-Trichlorophenol		mg/kg				0.1	U	0.1	U
p-Chloro-m-cresol		mg/kg				0.17	U	0.17	U
2-Chlorophenol		mg/kg				0.17	U	0.17	U
2,4-Dichlorophenol		mg/kg				0.16	U	0.16	U
2,4-Dimethylphenol		mg/kg				0.17	U	0.17	U
2-Nitrophenol		mg/kg				0.38	U	0.37	U
4-Nitrophenol		mg/kg				0.24	U	0.24	U
2,4-Dinitrophenol		mg/kg				0.83	U	0.83	U
4,6-Dinitro-o-cresol		mg/kg				0.45	U	0.45	U
Pentachlorophenol		mg/kg	0.8	2.4		0.14	U	0.14	U
Phenol		mg/kg	0.33	100		0.17	U	0.17	U
2-Methylphenol		mg/kg	0.33	100		0.17	U	0.17	U
3-Methylphenol/4-Methylphenol		mg/kg	0.33	34		0.25	U	0.25	U
2,4,5-Trichlorophenol		mg/kg				0.17	U	0.17	U
Benzoic Acid		mg/kg				0.56	U	0.56	U
Benzyl Alcohol		mg/kg				0.17	U	0.17	U
Carbazole		mg/kg				0.17	U	0.17	U
TOTAL SVOCs						U		U	
						200			

TABLE NOTES:

J	Estimated value. The analyte concentration is below the reporting limit (RL), but above the method detection limit (MDL) or estimated detection limit (EDL).
U	Not detected at the reported detection limit for the sample.
--	No Guidance Value.
ug/kg	Micrograms per kilogram.



Table 5 - Metals in
Imported Material

Mill Brook Terrace
Bronx, New York

SAMPLE LOCATION		Part 375 Unrestricted Use Soil Cleanup Objectives	Part 375 Restricted Residential Use Soil Cleanup Objectives	Site Specific Soil Cleanup Objectives	DGA 1		DGA 2	
LAB SAMPLE ID					L1811799-01		L1811799-02	
DATE					4/5/2018		4/5/2018	
SAMPLE TYPE					SOIL		SOIL	
SAMPLE DEPTH (FT.)					5'		5'	
Units					Units	Qual	Units	Qual
Total Metals								
Aluminum, Total	mg/kg	--	--	--	3860		4080	
Antimony, Total	mg/kg	--	--	--	4.09	U	4.02	U
Arsenic, Total	mg/kg	13	16	--	1.59		1.29	
Barium, Total	mg/kg	350	350	600	23.3		21	
Beryllium, Total	mg/kg	7.2	14	--	0.131	J	0.112	J
Cadmium, Total	mg/kg	2.5	2.5	--	0.818	U	0.804	U
Calcium, Total	mg/kg	--	--	--	18200		47600	
Chromium, Total	mg/kg	--	--	--	5.67		5.42	
Cobalt, Total	mg/kg	--	30	--	3.8		3.29	
Copper, Total	mg/kg	50	270	--	7.06		6.12	
Iron, Total	mg/kg	--	2000	--	6830		7460	
Lead, Total	mg/kg	63	400	800	5.08		2.54	J
Magnesium, Total	mg/kg	--	--	--	2420		3670	
Manganese, Total	mg/kg	1600	2000	--	141		161	
Mercury, Total	mg/kg	0.18	0.81	1.5	0.066	U	0.014	J
Nickel, Total	mg/kg	30	140	--	4.52		4.26	
Potassium, Total	mg/kg	--	--	--	1060		1160	
Selenium, Total	mg/kg	3.9	36	--	1.64	U	0.338	J
Silver, Total	mg/kg	2	36	--	0.818	U	0.804	U
Sodium, Total	mg/kg	--	--	--	165		148	J
Thallium, Total	mg/kg	--	--	--	1.64	U	1.61	U
Vanadium, Total	mg/kg	--	100	--	7.85		7.88	
Zinc, Total	mg/kg	109	2200	--	33.5		51	

J	Estimated value. The analyte concentration is below the reporting limit (RL), but above the method detection limit (MDL) or estimated detection limit (EDL).
U	Not detected at the reported detection limit for the sample.
--	No Guidance Value.
mg/kg	Milligrams per kilogram

**Table 6 - Pesticides, Polychlorinated Biphenyls, and General Chemistry
in Imported Material**

Mill Brook Terrace
Bronx, New York

SAMPLE LOCATION		Part 375 Unrestricted Use Soil Cleanup Objectives	Part 375 Restricted Residential Use Soil Cleanup Objectives	DGA 1		DGA 2	
LAB SAMPLE ID				L1811799-01		L1811799-02	
DATE				4/5/2018		4/5/2018	
SAMPLE TYPE				SOIL		SOIL	
SAMPLE DEPTH (ft.)				5'		5'	
Units				Units	Qual	Units	Qual
Organochlorine Pesticides by GC							
4,4'-DDD	mg/kg	0.0033	2.6	0.00161	U	0.00162	U
4,4'-DDE	mg/kg	0.0033	1.8	0.00161	U	0.00162	U
4,4'-DDT	mg/kg	0.0033	1.7	0.00301	U	0.00303	U
Aldrin	mg/kg	0.005	0.019	0.00161	U	0.00162	U
Alpha-BHC	mg/kg	0.02	0.097	0.00067	U	0.000674	U
Beta-BHC	mg/kg	0.036	0.072	0.00161	U	0.00162	U
Chlordane	mg/kg	--	--	0.0131	U	0.0131	U
cis-Chlordane	mg/kg	0.094	0.91	0.00201	U	0.00202	U
Delta-BHC	mg/kg	0.04	100	0.00161	U	0.00162	U
Dieldrin	mg/kg	0.005	0.039	0.001	U	0.00101	U
Endosulfan I	mg/kg	2.4	4.8	0.00161	U	0.00162	U
Endosulfan II	mg/kg	2.4	4.8	0.00161	U	0.00162	U
Endosulfan sulfate	mg/kg	2.4	4.8	0.00067	U	0.000674	U
Endrin	mg/kg	0.014	2.2	0.00067	U	0.000674	U
Endrin aldehyde	mg/kg	--	--	0.00201	U	0.00202	U
Endrin ketone	mg/kg	--	--	0.00161	U	0.00162	U
Heptachlor	mg/kg	0.042	0.42	0.000804	U	0.000809	U
Heptachlor epoxide	mg/kg	--	0.077	0.00301	U	0.00303	U
Lindane	mg/kg	0.1	0.28	0.00067	U	0.000674	U
Methoxychlor	mg/kg	--	100	0.00301	U	0.00303	U
Toxaphene	mg/kg	--	--	0.0301	U	0.0303	U
trans-Chlordane	mg/kg	--	0.54	0.00201	U	0.00202	U
Polychlorinated Biphenyls by GC							
Aroclor 1016	mg/kg	0.1	1	0.0329	U	0.0337	U
Aroclor 1221	mg/kg	0.1	1	0.0329	U	0.0337	U
Aroclor 1232	mg/kg	0.1	1	0.0329	U	0.0337	U
Aroclor 1242	mg/kg	0.1	1	0.0329	U	0.0337	U
Aroclor 1248	mg/kg	0.1	1	0.0329	U	0.0337	U
Aroclor 1254	mg/kg	0.1	1	0.0329	U	0.0337	U
Aroclor 1260	mg/kg	0.1	1	0.0329	U	0.0337	U
Aroclor 1262	mg/kg	0.1	1	0.0329	U	0.0337	U
Aroclor 1268	mg/kg	0.1	1	0.0329	U	0.0337	U
PCBs, Total	mg/kg	--	--	0.0329	U	0.0337	U
General Chemistry							
Solids, Total	%	--	--	95.7		94.6	

TABLE NOTES:

J	Estimated value. The analyte concentration is below the reporting limit (RL), but above the method detection limit (MDL) or estimated detection limit (FDL).
P	High spike recoveries excessively different.
E	Exceeds calibration range.
U	Not detected at the reported detection limit for the sample.
--	No Guidance Value.
mg/kg	Milligrams per kilogram.