125 3RD AVENUE

BROOKLYN, NEW YORK

Remedial Action Report

NYC VCP Project Number: 16CVCP006K

OER Project Number: 15EH-N349K

E-Designation: E-273

CEQR Number: 11DCP110K

Boerum Hill Rezoning Action

Prepared For:

8 St. Marks LLC

81 Prospect Street

Brooklyn, New York, 11201

718-360-4801

alex@barrettdesign.com

Prepared By:

Tarek Z. Khouri, P.E.

HydroTech Environmental Engineering and Geology, DPC

15 Ocean Avenue, 2nd Floor

Brooklyn, New York 11225

(718) 636-0800

aagnoor@hydrotechenvironmental.com

SEPTEMBER 2019

TABLE OF CONTENTS

FIGURES

TABLES

APPENDICES

Appendix 1: Remedial Investigation Report

Appendix 2: Remedial Action Work Plan and Stipulation List

Appendix 3: Community Air Monitoring Documentation

Appendix 4: Deviation Request and Approval

Appendix 5: Daily Reports to OER

Appendix 6: Photographs of Remedial Action

Appendix 7: Disposal Facility Requests, Historic Fill Notification Forms, and Approval Letters

Appendix 8: Shipping and Disposal Manifests

Appendix 9: Waste Characterization Report

Appendix 10: Endpoint Sampling Analytical Laboratory Results

Appendix 11: Documentation for Vapor Barrier System and Concrete Waterproofing

Appendix 12: Backfill Information

Appendix 13: As-built drawings

Appendix 14: Dewatering Permit Documentation

Appendix 15: As-built Architectural Plans of Interior Courtyard

Appendix 16: FDNY Affidavit for ASTs

LIST OF ACRONYMS

Acronym	Definition
CAMP	Community Air Monitoring Plan
DER-10	NYS DEC Division of Environmental Remediation Technical Guidance Manual 10
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 DEC	New York City Department of Environmental Conservation
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
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, Tarek Z. Khouri, 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 125 3rd Avenue, site number 16CVCP006K.
- 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 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 OER-approved Remedial Action Work Plan dated December 2015 and Stipulations in a letter dated November 25, 2015 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.

Name: Tarek Z. Khouri, P.E.

PE License Number: 086611

Signature: 

Date: 09/30/2019

EXECUTIVE SUMMARY

8 St. Marks LLC has enrolled in the New York City Voluntary Cleanup Program (NYC VCP) to investigate and remediate a property located at 125 3rd Avenue in the Boerum Hill neighborhood of Brooklyn, 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 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 125 3rd Avenue in the Boerum Hill section of Brooklyn, New York and is identified as Block 395 and Lot 3 on the New York City Tax Map. The Site is bounded by St. Marks Place to the north, Warren Street to the south, 4th Avenue to the east and 3rd Avenue to the west. The site was previously an unoccupied 1-story commercial building subdivided into three (3) commercial units, including a restaurant, a laundromat and a deli. Two (2) existing basements occupied the entire footprint of the building. A backyard with grass and bare soil was located in the eastern portion of the Site.

Summary of Redevelopment Plan

The Site is developed with an 8-story mixed use building with a cellar which includes fourteen (14) residential units, one commercial space, one common roof terrace and several private outdoor spaces. The cellar comprises of a recreation space for the ground floor residential unit, storage space for residents, and mechanical rooms. The first floor comprises two residential units, a commercial space and the building lobby. The second through eighth floors comprise the remaining 12 residential apartments.

The entire site was excavated to 13’- 5” below grade and this depth extended below the water table, which is approximately 11.5-12 feet bgs (1.5 feet below the existing basement slab). A small portion of property was excavated to the depth of 19’-2” bgs to

accommodate the construction of the elevator pit. Depth of the cellar floor is 10' below grade and cellar slab thickness varies from 5" to 3'. Approximately 1,640.44 tons of soil was excavated and removed from this Site. The site was backfilled with 6" layer of ¾-inch bluestone gravel. A new 1,203 SF open area also known as interior courtyard is developed in the south-east corner of the lot. This area has both a cellar level and a grade level (above cellar). The courtyard was first capped with a concrete slab and then a portion of the interior courtyard was backfilled with clean soil to bring it to grade and is a combination of paved and landscaped areas.

The current zoning designation is C2-4/R7A. The use is consistent with existing zoning for the property. Groundwater was encountered during the construction; thus, dewatering was performed at the elevator pit area.

Summary of Description of Surrounding Property

The Site is located on the west side of 3rd Avenue, between St. Marks Place to the north and Warren Street to the south. The vicinity of the Site consists of commercial and residential properties. The ground surfaces in the vicinity of the Site consist of asphalt and concrete. The results of the Site inspection and an evaluation of the United States Geological Survey (USGS) 7½-Minue Topographic Map containing the properties indicate there are three (3) sensitive receptors present within a 0.125-mile radius of the Site. The receptors are identified as Katie Stanback daycare, New York City Housing Authority Wyckoff Gardens Community Center and Wyckoff Youth Program.

Summary of Past Site Uses and Areas of Concern

Based upon the review of Sanborn Fire Rate Insurance Maps, Property Shark, the City Directory and the NYC Automated City Register Information System (ACRIS) database and the Phase I Environmental Site Assessment (ESA) Report prepared by Hydro Tech Environmental, Corp. (Hydro Tech) during March 2015, a Site history was established. According to Sanborn Fire Rate Insurance Maps, two (2) 3-story stores and one (1) 3-story dwelling occupied the Site prior to the site's current development during 1931. According to the City Directory, the occupants of the Site included residences, a butcher, a carpenter, a shirt finishing company, a laundromat and other various restaurants and retail. The

suspect historical use of dry-cleaning operations as indicated by a shirt finishing business recorded in the 1945 – 1970 City Directory entries may have involved petroleum and/or hazardous materials, potentially having had an adverse impact upon the environmental quality of the Site.

The AOCs identified for this site include:

1. The suspect historical use of the Site as a dry cleaner;
2. The presence of inactive aboveground storage tanks;
3. The presence of suspect asbestos-containing materials;
4. The presence of urban fill material.

Summary of the Work Performed under the Remedial Investigation

HydroTech performed the following scope of work at the Site in April of 2015:

1. Conducted a Site inspection to identify AOCs and physical obstructions (i.e. structures, buildings, etc.);
2. Installed five (5) soil borings across the entire project Site, and collected ten (10) soil samples for chemical analysis from the soil borings to evaluate soil quality;
3. Installed three (3) groundwater monitoring wells throughout the Site to establish groundwater flow and collected three (3) groundwater samples for chemical analysis to evaluate groundwater quality;
4. Installed four (4) soil vapor probes throughout the Site and collected six (6) samples for chemical analysis, including one (1) indoor air and one (1) outdoor ambient air sample; and
5. Two (2) 1,080-gallon ASTs encased in concrete were removed from the site as stated in the tank removal letter dated June 9, 2015. Following the removal of the encasement, the tanks were cut, cleaned and disposed of at certified facility. Upon completion of the tanks removal, a FDNY affidavit was obtained.

Summary of Findings of Remedial Investigation

1. Elevation of the property is 22 feet.

2. Depth to groundwater ranges from 1.55 to 1.92 feet beneath the cellar slab (11.5 to 12 feet bgs) at the Site.
3. Groundwater flow is generally from northwest to southeast beneath the Site.
4. Bedrock was not encountered at the site.
5. The stratigraphy of the Site, from the surface down to approximately 12 feet below grade, is classified as fill consisting of a mixture of gravel, sand, silt, bricks, concrete, ash and possibly other construction debris. Drilling extended to 20 feet bgs and bedrock was not encountered.
6. Soil/fill samples results were compared to New York State Department of Environmental Conservation (NYSDEC) Part 375 Table 375-6.8 Unrestricted Use (Track 1) and Restricted Residential Use (Track 2) Soil Cleanup Objectives (SCOs). No PCBs were detected in any soil samples. Soil/fill samples collected during the RI show one VOC, acetone (max. 100 µg/kg), at a concentration exceeding its Unrestricted Use SCO but below Track 2 SCOs in three deep samples and one shallow sample. Several SVOCs were detected in one shallow sample at concentrations exceeding Track 2 Restricted Residential Use SCOs, including Benzo[a]anthracene (max. 3,433 µg/kg), Benzo[k]fluoranthene (max. 1,200 µg/kg), Chrysene (max. 3,570 µg/kg), Dibenzo[a,h]anthracene (max. 536 µg/kg), and Indeno[1,2,3-cd]pyrene (max. 1,200 µg/kg). Two pesticides (4,4'-DDE (max. 18.4 µg/kg) and 4,4'-DDT (max. 45.1 µg/kg)) were detected in two shallow samples at concentrations greater than Track 1 SCOs but below Track 2 SCOs. Metals were detected at concentrations exceeding Track 1 SCOs including Arsenic (max. 15 mg/kg), Copper (max. 160 mg/kg), Nickel (max. 36.90 mg/kg), Selenium (max. 6.20 mg/kg) and Zinc (max. 782 mg/kg). Metals detected at concentrations exceeding their respective Track 2 SCOs include Barium (max. 1,080 mg/kg), Lead (max. 1,120 mg/kg) and Mercury (max. 2.05 mg/kg).
7. Groundwater sample results were compared to NYSDEC Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards (GQS) for Class GA (drinking water). Groundwater samples collected during the RI show no VOCs, SVOCs, pesticides or PCBs at concentrations exceeding their respective GQS in

any sample. Dissolved metals including Manganese (max. 1,150 µg/L), Selenium (max. 11 µg/L) and Sodium (max. 66,500 µg/L) were detected at concentrations exceeding their respective GQS.

8. Soil vapor samples collected during the 2014 EBC RI were compared to the New York State Department of Health (NYSDOH) Final Guidance on Soil Vapor Intrusion (October 2006) Matrix 1 and Matrix 2 values. Soil vapor results show low concentrations of petroleum related and associated derivatives in each sample. The total concentration of petroleum-related VOCs (BTEX) range from 33.89 µg/m3 to 53.2 µg/m3. The VOC Acetone was detected at 34 µg/m3. One chlorinated hydrocarbon, Tetrachloroethylene (PCE) (4.80 µg/m3) was also detected in the soil vapor samples, well below the 30 µg/m3 NYSDOH establish air guidance value.

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 all of 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: A Pre-Application Meeting was held on January 30, 2015. A Remedial Investigation (RI) was performed between April 21, 2015 and April 23, 2015. A RI Report was prepared to evaluate data and information necessary to develop a Remedial Action Work Plan (RAWP). A Site Contact List was established. A RAWP was prepared and released with a Fact Sheet for a 30-day public comment period on October 9, 2015. The neighboring building raised concerns regarding the support of excavation and air monitoring. OER contacted DOB and discussed safety issues. The applicant worked directly with the neighbors to address these concerns. The RAWP and Stipulation List dated December 2015 and November 25, 2015, respectively were approved by the New York City Office of Environmental Remediation (OER) on December 28, 2015. A Pre-Construction meeting was held on January 29, 2016. A Fact Sheet providing notice of the start of the

remedial action was issued on October 9, 2015. The remedial action was begun on March 27, 2017 and completed in December 2017.

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; completed utility mark outs; and marked and staked excavation areas (March 2017).
3. Performed Waste Characterization Study prior to excavation activities on February 4, 2016. The entire site was designated as one (1) grid, WC-1 and a total of one (1) 5- point composite sample and one (1) site grab sample were collected. One Waste Characterization sample was collected one per 800 cubic yards of material, as dictated by disposal facility(s).
4. Performed a Community Air Monitoring Program for particulates and volatile organic carbon compounds throughout the excavation between March 2017 and December 2017.
5. Established Track 4 Site-Specific Soil Cleanup Objectives (SCOs).
6. The following excavations were performed: The entire site was excavated to 13'-5" below grade and this depth extended below the water table, which is approximately 11.5-12 feet bgs (1.5 feet below the existing basement slab). A small portion of property was excavated to the depth of 19'-2" bgs to accommodate the elevator pit.
7. A total of 1,640.44 tons of non-hazardous soil/fill was excavated and transported to Clean Earth of Carteret, 24 Middlesex Avenue, Carteret, NJ 07008.
8. Imported 290 cu yds of clean soil from New York City Clean Soil Bank located at 143-18 Liberty Avenue, Queens, NY 11435 to backfill the portion of 1,203 SF open area located in the south-east corner of the lot also known as interior courtyard which is a combination of paved and landscaped. Soil from Clean Soil Bank was used only as backfill to bring interior courtyard area to grade. The backfilled soil was capped with concrete pavers.
9. Imported 95 tons of ¾-inch bluestone from H&F Restoration Construction located at Long Island City, NY 11101 and was used under the foundation mat

for the entire site including elevator pit. All Seasons located in Staten Island; NY provided truck service for bluestone import.

10. Screened excavated soil/fill during intrusive work for indications of contamination by visual means, odor, and monitoring with a 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 three (3) post-excavation confirmation samples to determine attainment of SCOs. Track 4 Site Specific SCOs were achieved.
14. Two (2) 1,080-gallon ASTs encased in concrete were removed from the site as stated in the tank removal letter dated June 9, 2015. Following the removal of the encasement, the tanks were cut, cleaned and disposed of at certified facility. Upon completion of the tank's removal, a FDNY affidavit was obtained.
15. Installed a Composite Cover System consisting of a 5" to 3' building slab underlain by two, 2" mud slabs and a 6" layer of ¾ inch bluestone for the entire site to prevent human exposure to residual soil/fill remaining under the Site. As seen from the as-built architectural plans of interior courtyard, the cellar level interior courtyard and Unit 1 Garden, was constructed with the same slab construction as the rest of the cellar slab. The ground floor level interior courtyard, terraces for 1A and 1B, was built above the cellar spaces which include accessory and mechanical spaces. A portion of the interior courtyard was backfilled with clean soil and the final cover in this area includes concrete pavers. The contractor for the cover construction was One Key LLC located at 241 Hudson Street, Hackensack, NJ 07601.
16. Installed a Vapor Barrier System (VBS) consisting of Stego Wrap 20-mil Vapor Barrier beneath the new building slab and along all below grade foundation walls and slabs including elevator pit. Hycrete W1000, a concrete waterproofing, was

used for foundation walls in addition to Stego Wrap 20-mil Vapor Barrier. The vapor barrier extended below the cellar level courtyard and then up the non-building exterior wall to grade. The vapor barrier beneath the slab was installed on top of 2" mud slab and protection board underlain by a 6" layer of ¾ inch bluestone. All penetrations through the slab for utility lines were sealed utilizing Stego Tape. The remedial engineer at HydroTech oversaw the installation of the vapor barrier and the contractor for the vapor barrier system was One Key LLC located at 241 Hudson Street, Hackensack, NJ 07601.

17. Residual soil is present beneath the cover layer and will be subject to Site Management under this Remedial Action.
18. Performed all activities required for the Remedial Action, including permitting requirements and pretreatment requirements, in compliance with applicable laws and regulations.
19. Implemented storm-water pollution prevention measures in compliance with applicable laws and regulations.
20. Imported the following materials in compliance with the Remedial Action Work Plan and in accordance with applicable laws and regulations:
    a. Approximately 95 tons of ¾-inch bluestone used under foundation mat underneath the building's footprint and in elevator pit;
    b. Approximately 290 cu yds of clean fill from New York City Clean Soil Bank was imported to the Site and utilized for backfill.
21. Submitted daily reports during construction oversight activities. Daily reports were submitted between March 27, 2017 to December 15, 2017.
22. Submitted a Sustainability Report.
23. Submitted an 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.
24. Submitted an approved 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. Inspections will be performed annually. Inspection and Certification reports will be submitted by July 30, 2021 (for the reporting period calendar years 2019-2020), July 30, 2031 (for the reporting period calendar years 2021-2030) and every 10 years thereafter (for the reporting period consisting of the prior 10 calendar years). Inspection and Certification Reports will cover all calendar years since the prior reporting period.

25. The property will continue to be registered with an E-Designation by the NYC Department of Buildings. 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 SITE BACKGROUND

The entity 8 St. Marks LLC has enrolled in the New York City Voluntary Cleanup Program (NYC VCP) to investigate and remediate a property located at 125 3rd Avenue in the Boerum Hill neighborhood of Brooklyn, 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 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.

1.1 SITE LOCATION AND BACKGROUND

The Site is located at 125 3rd Avenue in the Boerum Hill section of Brooklyn, New York and is identified as Block 395 and Lot 3 on the New York City Tax Map. **Figure 1** shows the Site location. The Site is bounded by St. Marks Place to the north, Warren Street to the south, 4th Avenue to the east and 3rd Avenue to the west. The site is approximately 4,000 square feet in area. A map of the site boundary is shown in **Figure 2**. The site was previously an unoccupied 1-story commercial building subdivided into three (3) commercial units, including a restaurant, a laundromat and a deli. Two (2) existing basements occupied the entire footprint of the building. A backyard with grass and bare soil was located in the eastern portion of the Site.

1.2 REDEVELOPMENT PLAN

The Site is developed with an 8-story mixed use building with a cellar which includes fourteen (14) residential units, one commercial space, one common roof terrace and several private outdoor spaces. The cellar comprises of a recreation space for the ground floor residential unit, storage space for residents, and mechanical rooms. The first

floor comprises two residential units, a commercial space and the building lobby. The second through eighth floors comprise the remaining 12 residential apartments.

The entire site was excavated to 13'- 5" below grade and this depth extended below the water table, which is approximately 11.5-12 feet bgs (1.5 feet below the existing basement slab). A small portion of property was excavated to the depth of 19'-2" bgs to accommodate the construction of the elevator pit. Depth of the cellar floor is 10' below grade and cellar slab thickness varies from 5" to 3'. Approximately 1,640.44 tons of soil was excavated and removed from this Site. The site was backfilled with 6" layer of ¾-inch bluestone gravel. A new 1,203 SF open area also known as interior courtyard is developed in the south-east corner of the lot. This area has both a cellar level and a grade level (above cellar). The courtyard was first capped with concrete slab and then a portion of the interior courtyard was backfilled with clean soil to bring it to grade and is a combination of paved and landscaped areas as seen in as-built architectural plans of interior courtyard included in **Appendix 15**.

The current zoning designation is C2-4/R7A. The use is consistent with existing zoning for the property. Groundwater was encountered during the construction; thus, dewatering was performed at the elevator pit area. Layout of the site development plan is provided in **Figure 3**.

1.3 DESCRIPTION OF SURROUNDING PROPERTY

The Site is located on the west side of 3rd Avenue, between St. Marks Place to the north and Warren Street to the south. The vicinity of the Site consists of commercial and residential properties. The ground surfaces in the vicinity of the Site consist of asphalt and concrete. The results of the Site inspection and an evaluation of the United States Geological Survey (USGS) 7½-Minue Topographic Map containing the properties indicate there are three (3) sensitive receptors present within a 0.125-mile radius of the Site. The receptors are identified as Katie Stanback daycare, New York City Housing Authority Wyckoff Gardens Community Center and Wyckoff Youth Program. **Figure 4** shows the surrounding land usage.

1.4 SUMMARY OF PAST SITE USES AND AREAS OF CONCERN

Based upon the review of Sanborn Fire Rate Insurance Maps, Property Shark, the

City Directory and the NYC Automated City Register Information System (ACRIS) database and the Phase I Environmental Site Assessment (ESA) Report prepared by Hydro Tech Environmental, Corp. (Hydro Tech) during March 2015, a Site history was established. According to Sanborn Fire Rate Insurance Maps, two (2) 3-story stores and one (1) 3-story dwelling occupied the Site prior to the site's current development during 1931. According to the City Directory, the occupants of the Site included residences, a butcher, a carpenter, a shirt finishing company, a laundromat and other various restaurants and retail. The suspect historical use of dry-cleaning operations as indicated by a shirt finishing business recorded in the 1945 – 1970 City Directory entries may have involved petroleum and/or hazardous materials, potentially having had an adverse impact upon the environmental quality of the Site.

The AOCs identified for this site include:

1. The suspect historical use of the Site as a dry cleaner;
2. The presence of inactive aboveground storage tanks;
3. The presence of suspect asbestos-containing materials;
4. The presence of urban fill material

1.5 SUMMARY OF WORK PERFORMED UNDER THE REMEDIAL INVESTIGATION

HydroTech performed the following scope of work at the Site in April of 2015:

1. Conducted a Site inspection to identify AOCs and physical obstructions (i.e. structures, buildings, etc.);
2. Installed five (5) soil borings across the entire project Site, and collected ten (10) soil samples for chemical analysis from the soil borings to evaluate soil quality;
3. Installed three (3) groundwater monitoring wells throughout the Site to establish groundwater flow and collected three (3) groundwater samples for chemical analysis to evaluate groundwater quality;

4. Installed four (4) soil vapor probes throughout the Site and collected six (6) samples for chemical analysis, including one (1) indoor air and one (1) outdoor ambient air sample; and

5. Two (2) 1,080-gallon ASTs encased in concrete were removed from the site as stated in the tank removal letter dated June 9, 2015. Following the removal of the encasement, the tanks were cut, cleaned and disposed of at certified facility. Upon completion of the tank's removal, a FDNY affidavit was obtained.

1.6 SUMMARY OF FINDINGS OF REMEDIAL INVESTIGATION

1. Elevation of the property is 22 feet.
2. Depth to groundwater ranges from 1.55 to 1.92 feet beneath the cellar slab (11.5 to 12 feet bgs) at the Site.
3. Groundwater flow is generally from northwest to southeast beneath the Site.
4. Bedrock was not encountered at the site.
5. The stratigraphy of the Site, from the surface down to approximately 12 feet below grade, is classified as fill consisting of a mixture of gravel, sand, silt, bricks, concrete, ash and possibly other construction debris. Drilling extended to 20 feet bgs and bedrock was not encountered.
6. Soil/fill samples results were compared to New York State Department of Environmental Conservation (NYSDEC) Part 375 Table 375-6.8 Unrestricted Use (Track 1) and Restricted Residential Use (Track 2) Soil Cleanup Objectives (SCOs). No PCBs were detected in any soil samples. Soil/fill samples collected during the RI show one VOC, acetone (max. 100 µg/kg), at a concentration exceeding its Unrestricted Use SCO but below Track 2 SCOs in three deep samples and one shallow sample. Several SVOCs were detected in one shallow sample at concentrations exceeding Track 2 Restricted Residential Use SCOs, including Benzo[a]anthracene (max. 3,433 µg/kg), Benzo[k]fluoranthene (max. 1,200 µg/kg), Chrysene (max. 3,570 µg/kg), Dibenzo[a,h]anthracene (max. 536 µg/kg), and Indeno[1,2,3-cd]pyrene (max. 1,200 µg/kg). Two pesticides (4,4'-DDE (max. 18.4 µg/kg) and 4,4'-DDT (max. 45.1 µg/kg)) were detected in two

shallow samples at concentrations greater than Track 1 SCOs but below Track 2 SCOs. Metals were detected at concentrations exceeding Track 1 SCOs including Arsenic (max. 15 mg/kg), Copper (max. 160 mg/kg), Nickel (max. 36.90 mg/kg), Selenium (max. 6.20 mg/kg) and Zinc (max. 782 mg/kg). Metals detected at concentrations exceeding their respective Track 2 SCOs include Barium (max. 1,080 mg/kg), Lead (max. 1,120 mg/kg) and Mercury (max. 2.05 mg/kg).

7. Groundwater sample results were compared to NYSDEC Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards (GQS) for Class GA (drinking water). Groundwater samples collected during the RI show no VOCs, SVOCs, pesticides or PCBs at concentrations exceeding their respective GQS in any sample. Dissolved metals including Manganese (max. 1,150 µg/L), Selenium (max. 11 µg/L) and Sodium (max. 66,500 µg/L) were detected at concentrations exceeding their respective GQS.

8. Soil vapor samples collected during the 2014 EBC RI were compared to the New York State Department of Health (NYSDOH) Final Guidance on Soil Vapor Intrusion (October 2006) Matrix 1 and Matrix 2 values. Soil vapor results show low concentrations of petroleum related and associated derivatives in each sample. The total concentration of petroleum-related VOCs (BTEX) range from 33.89 µg/m3 to 53.2 µg/m3. The VOC Acetone was detected at 34 µg/m3. One chlorinated hydrocarbon, Tetrachloroethylene (PCE) (4.80 µg/m3) was also detected in the soil vapor samples, well below the 30 µg/m3 NYSDOH establish air guidance value. **Appendix 1** includes the RIR.

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: A Pre-Application Meeting was held on January 30, 2015. A Remedial Investigation (RI) was performed between April 21, 2015 and April 23, 2015. A RI Report was prepared to evaluate data and information necessary to develop a Remedial Action Work Plan (RAWP). A Site Contact List was established. A RAWP was prepared and released with a Fact Sheet on October 9, 2015 for a 30-day public comment period. The neighboring building raised concerns regarding the support of excavation and air monitoring. OER contacted DOB and discussed safety issues. The applicant is working directly with the neighbors to address these concerns. The RAWP and Stipulation List dated December 2015 and November 25, 2015 were approved by the New York City Office of Environmental Remediation (OER) on December 28, 2015. A Pre-Construction meeting was held on January 29, 2016. A Fact Sheet providing notice of the start of the remedial action was issued on October 9, 2015. The remedial action was begun on March 27, 2017 and completed in December 2017.

Appendix 2 includes the RAWP and Stipulation Letter

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; completed utility mark outs; and marked and staked excavation areas (March 2017).

3. Performed Waste Characterization Study prior to excavation activities on February 4, 2016. The entire site was designated as one (1) grid, WC-1 and a total of one (1) 5- point composite sample and one (1) site grab sample were collected. One Waste Characterization sample was collected one per 800 cubic yards of material, as dictated by disposal facility(s).
4. Performed a Community Air Monitoring Program for particulates and volatile organic carbon compounds throughout the excavation between March 2017 and December 2017.
5. Established Track 4 Site-Specific Soil Cleanup Objectives (SCOs).
6. The entire site was excavated to 13'- 5" below grade (5.5 feet in the area of the existing basement and 3.5 feet in the area of the proposed basement) and this depth extended below the water table, which is approximately 11.5-12 feet bgs (1.5 feet below the existing basement slab). A small portion of property was excavated to the depth of 19'-2" bgs to accommodate the elevator pit.
7. A total of 1640.44 tons of non-hazardous soil/fill was excavated and transported to Clean Earth of Carteret, 24 Middlesex Avenue, Carteret, NJ 07008
8. Imported 290 cu yds of clean soil from New York City Clean Soil Bank located at 143-18 Liberty Avenue, Queens, NY 11435 to backfill the portion of 1,203 SF open area located in the south-east corner of the lot also known as interior courtyard, which is a combination of paved and landscaped. Soil from Clean Soil Bank was used only as backfill to bring courtyard area to grade. The backfilled soil was capped with concrete pavers.
9. Imported 95 tons of ¾-inch layer of bluestone from H&F Restoration Construction located at Long Island City, NY 11101 and under the foundation mat for the entire site including elevator pit. All Seasons located in Staten Island; NY provided truck service for bluestone import.
10. Screened excavated soil/fill during intrusive work for indications of contamination by visual means, odor, and monitoring with a 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 three (3) post-excavation confirmation samples to determine attainment of SCOs. Track 4 SCOs for Site Specific Use were achieved.
14. Two (2) 1,080-gallon ASTs encased in concrete were removed from the site as stated in the tank removal letter dated June 9, 2015. Following the removal of the encasement, the tanks were cut, cleaned and disposed of at certified facility. Upon completion of the tanks' removal, Mercury Tank & Pump Service, Inc. submitted an affidavit to FDNY that is included in the Tank Removal Report.
15. Installed a Composite Cover System consisting of a new 5"- 3' building slab underlain by two, 2" mud slabs and by a 6" layer of ¾ inch bluestone for the entire site to prevent human exposure to residual soil/fill remaining under the Site. As seen from the as-built architectural plans of interior courtyard, the cellar level interior courtyard, Unit 1 Garden, was constructed with the same slab construction as the rest of the cellar slab. The ground floor level interior courtyard, terraces for 1A and 1B, was built above the cellar spaces which include accessory and mechanical spaces. A portion of the interior courtyard was backfilled with clean soil and the final cover in this area includes concrete pavers. The contractor for the cover construction was One Key LLC located at 241 Hudson Street, Hackensack, NJ 07601.
16. Installed a Vapor Barrier System (VBS) consisting of Stego Wrap 20-mil Vapor Barrier beneath the new building slab and along all below grade foundation walls and slabs including elevator pit. Hycrete W1000, a concrete waterproofing, was used for foundation walls in addition to Stego Wrap 20-mil Vapor Barrier. The vapor barrier extended below the cellar level courtyard and then up the non-building exterior wall to grade. The vapor barrier beneath the slab was installed on top of 2" mud slab and protection board underlain by a 6" layer of ¾ inch bluestone. All penetrations through the slab for utility lines were sealed utilizing

Stego Tape. The remedial engineer at HydroTech oversaw the installation of the vapor barrier and the contractor for the cover vapor barrier system construction was One Key LLC located at 241 Hudson Street, Hackensack, NJ 07601.

17. Residual contaminated soil is present beneath the cover layer and will be subject to Site Management under this Remedial Action.
18. Performed all activities required for the Remedial Action, including permitting requirements and pretreatment requirements, in compliance with applicable laws and regulations.
19. Implemented storm-water pollution prevention measures in compliance with applicable laws and regulations.
20. Imported the following materials in compliance with the Remedial Action Work Plan and in accordance with applicable laws and regulations:
    a. Approximately 95 tons of ¾-inch bluestone used under foundation mat underneath the building's footprint and in elevator pit;
    b. 290 cu yds of clean fill from New York City Clean Soil Bank was imported to the Site and utilized for backfill.
21. Submitted daily reports during construction oversight activities. Daily reports were submitted from March 27, 2017 to December 15, 2017.
22. Submitted a Sustainability Report.
23. Submitted an 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.
24. Submitted an approved 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. Inspections will be performed annually. Inspection and Certification reports will be submitted by July 30, 2020 (for the reporting period calendar year 2019-2020), July 30, 2031 (for the reporting period calendar years 2021-2030) and every 10 years thereafter (for the reporting period consisting of the prior 10 calendar years). Inspection and Certification Reports will cover all calendar years

since the prior reporting period.

25. The property will continue to be registered with an E-Designation by the NYC Department of Buildings. 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 Coordinators were Adam P. Nasiatka and Carlos Quinonez.

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. Monitoring was performed between March 2017 and December 2017 in compliance with the Community Air Monitoring Plan in the approved RAWP. The results of Community Air Monitoring are shown in **Appendix 3**. No exceedances were found during the excavation thus no corrective action was performed.

3.3 SOIL/MATERIALS MANAGEMENT PLAN

The Soil/Materials Management Plan 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 STORM-WATER 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 are considered deviations from the approved RAWP:

1. The development of the site consisting of a 8-story mixed use building that includes thirteen (13) residential units and one (1) retail unit located on the first floor was proposed and approved in the RAWP. However, the site was developed with 14 residential units total, one commercial space, one common roof terrace and several private outdoor spaces. The first floor comprises two residential units, a commercial space and the building lobby. The second through eighth floors comprise the remaining 12 residential apartments.
2. The vapor barrier system consisting of a 47.2-mil Grace Preprufe 300R vapor barrier below the slab throughout the full building area and a 31.5-mil Grace Preprufe 160R vapor barrier outside all sub-grade foundation walls was proposed and approved in the RAWP. As requested by the client, Stego Wrap 20-mil vapor barrier by Stego Industries was proposed to replace the approved materials and installed underneath the slab and behind the foundation walls. Hycrete W1000, a concrete waterproofing, was used for foundation walls in addition to Stego Wrap 20-mil Vapor Barrier. The vapor barrier extended below the cellar level courtyard and then up the non-building exterior wall to grade. The related documents are included in **Appendix 11**. OER correspondence for concrete waterproofing was not saved on file. However, OER approved the vapor barrier change and the OER correspondence is included in **Appendix 4.**
3. Track 4 Site Specific SCOs were proposed in RAWP. However, end point sampling results exceed Mercury in two samples namely EP-2 and EP-3. In addition to the Track 4 exceedance of mercury, arsenic was detected in the endpoints above Track 2 Restricted Residential SCOs. Discrepancy has been addressed through the installation of two engineering controls which are composite cover system comprised of 5”- 3’inch building slab and vapor barrier. Exposure to any residual fill material will be prevented by the composite cover and vapor barrier installed at the site. Based on the implementation of these engineering controls, the cleanup objectives achieved at the site are protective of

human health and the environment. OER reviewed and approved management in place of soil exceeding the SCOs and the related documents are in **Appendix 4**

4. The entire site has been dug down to 13.5 feet. (5.5 feet past the old cellar, 3.5 feet past the proposed cellar). Also, RI sample SP‐6 had barium at 1,080 mg/kg above Track 2 Restricted Residential SCOs at 2'-4' below the existing cellar. Additionally, the previously existing cellars were noted to be 8 feet, so the barium exceedance from SP‐6 (2'-4') has been removed through the excavation.
5. Multiple stockpiles were maintained over the course of the project as seen from Daily Reports in **Appendix 5** and photographs in **Appendix 6**. These multiple stockpiles were not underlain and were not covered with poly sheeting. However, this is not considered an issue as the excavated soil that was stockpiled had same composition as that of soil on ground and clean soil that was later imported and stockpiled showed no evidence of soil erosion.
6. Dewatering Permit – the General Contractor (GC) is no longer reachable and client is unable to procure a copy of the dewatering permit. HydroTech has reached out to Diane Charan - Fazil from NYC DEP on May 31st, 2019 (Contact #718-595-7024) and was informed that dewatering permit was not saved on their files. However, the NYC DEP provided the dewatering permit number - #802701 and the related documents are included in **Appendix 14.**
7. Total 95 tons of ¾-inch layer of bluestone was imported to the site from H&F Restoration Construction located at Long Island City, NY 11101 and was under the foundation mat for the entire site including elevator pit. Approximately 47 tons out of 95 tons of bluestone was imported on September 1, 2017 and HydroTech was not notified about the import. The GC is no longer reachable and thus, client is unable to procure trucking/weight tickets for bluestone import. However, corresponding invoice from H&F Restoration Construction for total bluestone import is included in **Appendix 12** and All Seasons located in Staten Island, NY provided truck service for bluestone import.
8. Demarcation strategy for interior courtyard construction is unknown as the client is unable to procure a site survey from their GC documenting the depth of residual fill beneath landscaped/paved courtyard. Also, as seen in the last daily report

dated December 15, 2017, backfilling was not complete in the interior courtyard area and HydroTech was not present on site when interior courtyard was backfilled with clean soil. Thus, due to lack of information and absence of HydroTech on site during backfilling, as-builts for interior courtyard cannot be provided. However, as-built architectural plans for interior courtyard from the client are included in **Appendix 15.**

9. Three (3) end point samples were collected from the bottom of excavation on September 13, 2017. However, sampling depths were not noted.

The deviations implemented as part of the remedial action are protective of public health and the environment. **Appendix 4** provides correspondences with OER regarding the approved deviations.

4.0 REMEDIAL PROGRAM

4.1 PROJECT ORGANIZATION

Principal personnel who participated in the remedial action included Erica Johnston, Adam P. Nasiatka (Project Managers), Tarek Z. Khouri, the Professional Engineer (PE) and Mark E. Robbins, the Qualified Environmental Professionals (QEP). The principal contractor involved in the Remedial Action, who was responsible for the VBS, and composite cover installation was One Key LLC located at 241 Hudson Street, Hackensack, NJ 07601. The developer for the Site was 8 Saint Marks LLC located at 81 Prospect Street in Brooklyn, New York, 11201.

Remedial activities at the Site were overseen by NYC OER under the E-Designation program in accordance with the December 2015 RAWP addressing the HAZMAT E-designation (E-273; CEQR 11DCP110K) (NYC E-Designation Project Number 15EH-N349K). The NYC OER Project Managers involved in this project include Sarah Pong, Shaminder Chawla and Zachariah Schreiber.

4.2 SITE CONTROLS

Site Preparation

Prior to, and throughout, the different phases of remedial activities, all necessary construction permits were acquired and maintained on-site as per the New York City Department of Buildings (NYCDOB) and New York City Department of Environmental Protection (NYCDEP) rules and regulations. No site clearing and site grubbing of organic matter (wood, roots, stumps, etc.) or other solid waste were required prior to all remedial work.

A pre-construction meeting was held at the site on January 29, 2016. Site mobilization, including utility mark outs, site security setup, and marking and staking excavation areas was performed in March of 2017. A meeting between Hydro Tech, the developer, and the NYCOER was held prior to the start of remediation. An OER Project Notice was erected at the project entrance and was in place during all phases of the Remedial Action.

Soil Screening

All excavated soil was examined for visual/olfactory evidence of petroleum contamination and for organic vapors utilizing a Photoionization Detector (PID). No organic vapors (<0.1ppm) or visual/olfactory evidence of contamination were identified in the excavated soil.

Stockpile Management

All of the excavated soil material was live loaded directly into trucks and transported off-site.

Truck Inspection

An outbound-truck inspection station was set up close to the Site exit along 3rd Avenue. Before exiting the Site, trucks were required to stop at the truck inspection station and were examined for evidence of contaminated soil on the undercarriage, body, and wheels. Soil and debris were removed. Brooms, shovels and potable water were utilized for the removal of soil from vehicles and equipment, as necessary. Soil did not track onto streets as seen in photographs included in **Appendix 6**.

Site Security

Site security was maintained in accordance with NYCDOB code.

Nuisance Controls

All necessary means were employed to prevent on- and off-Site odor nuisances. At a minimum, procedures included: (a) limiting the area of open excavations; (b) shrouding open excavations with tarps and other covers; and (c) use of foams to cover exposed odorous soils. This odor control plan was capable of controlling emissions of nuisance odors. No odors were encountered in the excavation portion of this remedial action.

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

- Use of a dedicated water spray methodology for roads, excavation areas and stockpiles.
- Exercised extra care during dry and high-wind periods.
- Use of gravel or recycled concrete aggregate on egress and other roadways to provide a clean and dust-free road surface.

This dust control plan was capable of controlling emissions of dust. Nuisance dust emissions were not encountered during the remedial action.

Noise controls were exercised during the remedial program. All remedial work conformed, at a minimum, to NYC noise control standards.

Rodent control was provided, during Site clearing and grubbing, and during the remedial program, as necessary, to prevent nuisances.

Reporting

Daily reports providing a general summary of activities for each day of active remedial work were submitted to the OER Project Manager by the end of the following day via EPIC. The daily reports included the following contents:

- Project number and statement of the activities and an update of progress made, and locations of work performed;
- Quantities of material imported and exported from the Site, destination of the soil/fill exported from the Site, and the source of the soil/fill material imported to the Site.
- Status of on-Site soil/fill stockpiles if any;
- A summary of all citizen complaints, with relevant details (basis of complaint; actions taken; etc.);
- A summary of CAMP observations, including excursions, if any;
- Photograph(s) of notable Site conditions and activities;
- A summary of soil sampling performed during the Site excavation including sampling location, purpose, quantities and analytical parameter.
- A trucking log with copies of the signed manifests on the day of soil/fill importing/exporting

During general sub-grade construction and after the completion of the sub-grade construction, weekly reports were submitted to OER to report on Site activities and the

progress on the aboveground construction.

Daily reports are included in **Appendix 5**. Digital photographs of the Remedial Action are included in **Appendix 6**.

4.3 MATERIALS EXCAVATION AND REMOVAL ACTION

Soil/Fill Excavation and Removal

The entire site was excavated to 13'- 5" below grade across the entire site and this depth extended below the water table, which is approximately 11.5-12 feet bgs (1.5 feet below the existing basement slab). A small portion of property was excavated to the depth of 19'-2" bgs to accommodate the elevator pit. Depth of the cellar floor is 10' below grade and cellar slab thickness varies from 5" to 3'-0".

A map showing the approximate locations where excavations were performed, and approximate depths of excavation is shown in **Figure 5**. Approximately 1,640.44 tons of soil was excavated and removed from this Site and transported to Clean Earth, 24 Middlesex Avenue, Carteret, NJ 07008. The Removal Action was performed under the oversight of HydroTech.

Onsite Reuse

No soil was reused on this site. All of the 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.

AST Removal

Two (2) 1,080-gallon ASTs encased in concrete were removed from the site as stated in the tank removal letter dated June 9, 2015. Following the removal of the encasement, the tanks were cut, cleaned and disposed of at certified facility. Upon completion of the tank's removal, a FDNY affidavit was obtained and is included in **Appendix 16**.

NYSDEC Petroleum Spills

No existing spill was found associated with the Subject Property. No spills were reported during the Site excavation.

Dewatering

Dewatering was performed at the elevator pit area during the Site excavation. NYCDEP dewatering permit number #802701 was issued on May 9, 2017. Related

documents are included in **Appendix 14**.

Soil Cleanup Objectives

The SCOs for this Remedial Action are Site Specific (Track 4) SCOs. The following Site-Specific SCO's were established:

Contaminant	Site-Specific SCO's
Total SVOCs	100 ppm
Mercury	2.0 ppm
Lead	1,200 ppm

End Point Sample Results

Endpoint samples for soil/fill excavation and removal were collected on September 13, 2017 from the bottom of the excavation. The samples are designated as EP-1 through EP-3 and were analyzed for VOCs via EPA method 8260, SVOCs via EPA method 8270BNA, Pesticides/PCBs via EPA method 8081/8082 and TAL Metals at an ELAP certified laboratory - York Analytical Laboratories Inc. Analytical results for all these samples were compared to New York State Department of Environmental Conservation (NYSDEC) Part 375 Table 375-6.8 Restricted Residential Use (Track 2) SCOs and the Site-Specific SCOs.

No VOCs, SVOCs, PCBs, or pesticides were detected in any soil samples at concentrations exceeding their respective Restricted Residential Use SCOs. Two metals were detected at concentrations exceeding their Restricted Residential Use SCOs. Arsenic (max. 18.4 mg/kg) and Mercury (max. 5.41 mg/kg) were identified at concentrations in exceedance of the respective Restricted Residential Use SCOs. Mercury also exceeded the established Site-Specific SCOs. No site-specific SCO was previously set for Arsenic. The site did not achieve the Track 4 Site-Specific SCOs for soil; however, this is acceptable as all other Track 4 SCOs have been met with the exception of EP-2 and EP-3 which exceed the Track 4 SCOs for single analyte mercury.

A map of post-excavation confirmation sampling locations is shown in **Figure 6**. A tabular summary of endpoint sampling results compared to SCOs is included in **Table 1**. Full laboratory reports are included in **Appendix 10**.

End Point Data Usability Summary

Data Usability Summary Report (DUSR). As data usability evaluation was not proposed in the approved RAWP, the related sampling and evaluation was not performed and the Data Usability Summary Report was not prepared.

4.4 MATERIALS DISPOSAL

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

Disposal Location/Address	Type of Material	Quantity
Clean Earth of Carteret, 24 Middlesex Avenue, Carteret, NJ 07008.	Non-Hazardous Soil	1,640.44 tons

Letters from HydroTech to 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 7**. Manifests are included in **Appendix 8**. Waste characterization report is presented in **Appendix 9**. A table of individual truck transport and material disposal quantities is included in **Table 2**.

4.5 BACKFILL IMPORT

Approximately 95 tons of ¾-inch bluestone was imported from H&F Restoration Construction located at Long Island City, NY 11101 and under the foundation mat and in elevator pit in accordance with all Federal, State and City laws and regulations. All Seasons located in Staten Island; NY provided truck service for bluestone import.

Imported 290 cu yds of clean soil from New York City Clean Soil Bank located at 143-18 Liberty Avenue, Queens, NY 11435 to backfill the portion of 1,203 SF open area located in the south-east corner of the lot also known as interior courtyard which is a combination of paved and landscaped. Soil from Clean Soil Bank was only used as backfill to bring courtyard area to grade. The backfilled soil was capped with concrete pavers. Other photographs of interior courtyard are included in **Appendix 6**. Weight tickets for clean soil import and invoice for total bluestone import are included in

Appendix 12. A table of all sources of backfill with quantities for each source is shown in **Table 3**. The locations of backfill placement is shown in **Figure 7**.

4.6 DEMARACTION

Soil below the final cover is residual soil that will be addressed by Site Management under this Remedial Action.

5.0 ENGINEERING CONTROLS

Engineering Controls were employed in the Remedial Action to address residual soil, groundwater, and soil vapor remaining at the site. The Site has two (2) primary Engineering Control Systems. These are:

(1) Composite Cover System;

(2) Vapor Barrier System;

Composite Cover System

Exposure to residual soil/fill is prevented by an engineered Composite Cover System that has been built on the Site. The Composite Cover System is comprised of a 5"-3' building slab underlain by two, 2" mud slabs and by a 6" layer of ¾ inch bluestone for the entire site to prevent human exposure to residual soil/fill remaining under the Site. As seen from the as-built architectural plans of interior courtyard included in **Appendix 15**, the cellar level interior courtyard, Unit 1 Garden, was constructed with the same slab construction as the rest of the cellar slab. The interior courtyard has concrete cover because the cellar level courtyard shares the cellar slab and the first-floor courtyard is above the cellar. The ground floor level interior courtyard, terraces for 1A and 1B, was built above the cellar spaces which include accessory and mechanical spaces. The final cover layer in the interior courtyard is concrete pavers and concrete pavers were installed on the landscaped areas seen in photographs included in **Appendix 6**. The final as-builts for the cover system is included in **Figure 9**.

The contractor for the cover construction was One Key LLC located at 241 Hudson Street, Hackensack, NJ 07601.

Vapor Barrier System

Exposure to soil vapor is prevented by a Vapor Barrier System that has been built on the Site. This Vapor Barrier System (VBS) consists of Stego Wrap 20-mil Vapor Barrier beneath the new building slab and along all below grade foundation walls and slabs including elevator pit. Hycrete W1000, a concrete waterproofing, was used for foundation walls in addition to Stego Wrap 20-mil Vapor Barrier. The vapor barrier extended below the cellar level courtyard and then up the non-building exterior wall to

grade as seen in photographs included in **Appendix 6**. The vapor barrier beneath the slab was installed on top of 2" mud slab and protection board underlain by 6" layer of ¾ inch bluestone. All penetrations through the slab for utility lines were sealed utilizing Stego Tape. The professional engineer for the Vapor Barrier System was Tarek Z. Khouri. The contractor for the vapor barrier system was One Key LLC located at 241 Hudson Street, Hackensack, NJ 07601.

Figure 8A and Figure 8B show the as-built engineering diagram and cross section details respectively for the Vapor Barrier System used on this Site. Photographs of installation of the Vapor Barrier System are included in **Appendix 6**. A copy of manufacturer's specifications for the Vapor Barrier System and Concrete Waterproofing is included in **Appendix 11**.

6.0 INSTITUTIONAL CONTROLS

A series of Institutional Controls are required under this Remedial Action to assure permanent protection of public health by elimination of exposure 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 for this property are:

(1) The property will continue to be registered with an E-Designation by the NYC Department of Buildings. 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.

7.0 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 ensure that all Site Management responsibilities are performed. The penalty for failure to implement the SMP includes revocation of the Notice of Completion and all associated certifications and liability protections providing notice of the revocation to the NYC DOB.

Engineering Controls and Institutional Controls have been incorporated into this Remedial Action to ensure that the site remains 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 in accordance with the NYC Voluntary Cleanup Agreement with OER. This includes: (1) operation and maintenance of Engineering Controls; (2) inspection of ECs and ICs; and (3) certification of performance of ECs and ICs.

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;

Operation and Maintenance of Composite Cover System

Chapter 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 Engineering Control 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(s).

Operation and Maintenance of Vapor Barrier System

Chapter 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.

INSTITUTIONAL CONTROLS

A series of Institutional Controls are required under this Remedial Action to assure permanent protection of public health by elimination of exposure 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) The property will continue to be registered with an E-Designation by the NYC Department of Buildings. 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.

INSPECTIONS

Engineering Controls and Institutional Controls will be inspected on a periodic basis at a frequency established in this plan. 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.

Inspection of Composite Cover System

- The building slab must be inspected for cracks and damage. Any identified breaks should be repaired with concrete.

Inspection of Vapor Barrier System

- The vapor barrier will be visually inspected for any tears or breaks. If the vapor barrier is believed to be torn or broken, indoor air sampling may occur in order to verify that no occupants are being impacted.

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.

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. Inspection and Certification reports will be submitted by July 30, 2021 (for the reporting period calendar year 2019-2020), July 30, 2031 (for the reporting period calendar years 2021-2030) and every 10 years thereafter

(for the reporting period consisting of the 10 prior calendar years). 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. 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 registered as an E-Designated property by the NYC Department of Buildings;

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

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 is 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.

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 chapter 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.

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.

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.

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.

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.

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 Figure 8. This routing considers 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.

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.

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.

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.

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.

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 form 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.

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.

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.

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) shrouding open excavations with tarps and other covers; and (c) 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: (d) direct load-out of soils to trucks for off-Site disposal; and (e) 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.

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.

Noise

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

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.

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.

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 (µg/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 µg/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 µg/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 µg/m^3 of the upwind level and in preventing visible dust migration.

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

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 Mark E. Robbins. 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

Contact Numbers

Mark E. Robbins	(631) 462-5866 ext 102
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.

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 locally derived.

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.

The following means were used to reduce energy consumption in this project: Efficient loading times of trucks to prevent extensive idling times and consolidating the number of days that soil was shipped from the Site to reduce truck traffic in the neighborhood.

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.

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 method used to provide recontamination controls in the development included:

- The prevention of transport of contamination to the from off-site by ensuring that no unapproved materials were brought to the Site
- The use of natural gas instead of fuel oil to prevent any future leakage into the environment
- The placement of a composite cover under the building area to prevent future spills into the underlying soil.

The area of the Site that utilizes recontamination controls under this plan is 12,500 square feet.

Paperless Brownfield Cleanup Program. 8 Saint Marks LLC 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 20 pounds.

Low-Energy Project Management Program. 8 Saint Marks LLC 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 500 miles.