14 White Street
MANHATTAN, NEW YORK
Remedial Closure Report

E-Designation Project Number: 24TMP1061M, 22TMP1124M, 22EHAZ264M

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MARCH 31, 2025

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LIST OF ACRONYMS

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

CERTIFICATION

I, Robert Jackson, 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 14 White Street site, site numbers 24TMP1061M, 22TMP1124M, 22EHAZ264M.
- 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 achieved 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 Closure Report.
- The OER-Approved Remedial Action Work Plan dated May 2022 and Stipulations in a letter dated June 17, 2022, 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: Robert Jackson

PE License Number
106372-01

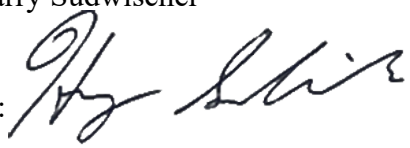
Signature

Date: 3/31/25

I, Harry Sudwischer, certify the following:

- I am a Qualified Environmental Professional. I had primary direct responsibility for implementation of the remedial program for the 14 White Street site, site numbers 24TMP1061M, 22TMP1124M, 22EHAZ264M.
- The OER-approved Remedial Action Work Plan dated May 2022 and Stipulations in a letter dated June 17, 2022, were implemented and that all requirements in those documents have been complied with substantively. 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.

QEP Name: Harry Sudwischer

QEP Signature: 

Date: March 31, 2025

EXECUTIVE SUMMARY

This Remedial Closure Report (RCR) has been developed to document investigation and remediation of the property located at the property located at 14 White Street in the Tribeca East section of Manhattan, New York. A Remedial Investigation (RI) was performed to compile and evaluate data and information necessary to develop a Remedial Action Plan (RAP/RAWP). The RIR is included in **Appendix A**, and the RAWP is included in **Appendix B**. 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 14 White Street in the Tribeca East section in Manhattan, New York and is identified as Block 191 and Lot 8 on the New York City Tax Map. **Figure 1** shows the Site location. The Site is 3,845-square feet and is bounded by commercial properties to the north, White Street with commercial and residential dwellings beyond to the south, 6th Avenue with commercial properties beyond to the east, and retail and multi-family residential dwellings to the west. A map of the site boundary is shown in **Figure 2**. The Site's most recent use prior to the current development was a parking lot.

Summary of Redevelopment Plan

The redevelopment project consisted of the construction of a new 26,488 gross square foot mixed-use building with seven total apartments, 2,500 square feet of commercial space on the ground floor and one parking space. The building footprint covers the entire parcel. The ground floor will be commercial space with commercial storage in the cellar, and the second through sixth floor will be residential with a seventh story residential penthouse. The ground floor will accommodate one parking spot. The foundation was set on caissons socketed into bedrock and topped with 2.5-foot-thick pile caps, which were installed to approximately 14 feet below ground surface (bgs). The cellar slab is 1.5 to 2.25 feet thick, and the bottom of the slab is approximately 13.15 feet bgs. A concrete button pit and an elevator pit extend to approximately 18 feet bgs.

The estimated depth of excavation was 15 feet and 4 inches for the cellar and approximately 18 feet for the elevator pit. The volume of soil that was excavated was 3,538.64 tons. Groundwater was measured at 13.11 to 13.69 feet below grade surface (bgs) perched atop silt during the 2022 RI. Groundwater was not encountered during excavation for redevelopment. During the remedial investigation, the groundwater table may have been perched in tight silts or dewatering may have been occurring offsite during development.

The current zoning designation is C6-2A. Zone C6-2A is a commercial zoning district with options for residential use. The use is consistent with existing zoning for the property.

A structure on the Lot has a permitted height limit of 85 feet under site zoning. The proposed building was built at full development potential under applicable zoning.

Summary of Description of Surrounding Property

The project site is located in the Tribeca East neighborhood in Manhattan within Community District 1. The land use within the surrounding areas consist of a variety of uses including residential, commercial, and mixed-use. The immediate surrounding area is primarily comprised of various sized mixed-use buildings and a hotel. The Church & White Street Plaza and park Tribeca Park are considered sensitive receptors and are located with a 250-foot radius of the Subject Property. A Surrounding Land Usage Map is included as **Figure 3**. The New York City Transit (NYCT) A, C, and E subway lines run adjacent to the site below 6th Avenue.

Summary of Past Site Uses and Areas of Concern

A Phase I Environmental Site Assessment (ESA) was conducted by EMG in January 2020. See **Appendix A** for the January 2020 Phase I document. Results from the Phase I identified no Recognized Environmental Conditions (RECs), Controlled Recognized Environmental Conditions (CRECs), Historical Recognized Environmental Conditions (HRECs) or Vapor Encroachment Conditions (VECs).

A Geotechnical Investigation Report by RA Consultants, LLC dated February 2016 was also conducted on the Subject Property. The Geotechnical Investigation included soil borings and test pits. The test pits determined the foundation depths of the adjoining properties, while the soil borings determined the subsurface conditions on the Subject Property.

According to the Historic Sanborn Fire Insurance Maps, City Directory, and Historic Aerial Photographs, the historic use of the Site consisted of mixed-use commercial and residential dwellings until the early 1950s. The Subject Property was later converted to a parking lot. The Surrounding Areas were developed with mixed-use properties with commercial and residential dwellings. In the Mid 1930s to late 1960s a gas station was documented to the east of the Subject Property in Phase I but was later determined to not be a REC due to remediation of that property.

No specific AOCs were identified through the Phase I Site inspection. During the Phase II Site investigation, no specific AOCs were identified. However, soil analyses revealed concentration of metals and SVOCs above regulatory thresholds in historic fill across the property as deep as 13 feet bg and a lead hotspot on northern portions of the Site.

Summary of the Work Performed under the Remedial Investigation

Environmental Consulting and Management Services, Inc. (ECMS), performed the following scope of work in April 2022:

1. Conducted a Site inspection to identify AOCs and physical obstructions (i.e., structures, buildings, etc.).

2. Installed five soil borings (SB-1 through SB-5) across the entire project Site and collected ten soil samples for chemical analysis from the soil borings to evaluate soil quality and one duplicate sample collected for Quality Assurance and Quality Control (QA/QC).

3. Installed two temporary groundwater monitoring wells (TPW-1 and TPW-2) throughout the Site and used a previously installed monitoring well (B-1W) to establish groundwater flow and collected three groundwater samples for chemical analysis to evaluate groundwater quality and one duplicate sample for QA/QC.

4. Installed four soil vapor probes (SV-1 through SV-4) around the Site perimeter and collected four samples for chemical analysis.

Summary of Findings of Remedial Investigation

A remedial investigation was performed, and the results are documented in a companion document called "Remedial Investigation Report, 14 White Street", dated May 2022 (RIR).

1. The elevation of the property ranged from 12.0 to 13.2 feet AMSL (Above Mean Sea Level).

2. Depth to groundwater ranged from 13.11 to 13.69 feet at the Site. The groundwater encountered was potentially perched atop a fine silt layer. Additionally, groundwater conditions and the water table conditions may be influenced by pumping associated with the neighboring subway tunnel along 6th Avenue.

3. Groundwater flows generally from east to west beneath the Site.

4. Depth to bedrock is approximately 69 to 74 feet below grade at the Site based on the geotechnical investigation conducted in November 2015.

5. The stratigraphy of the site, from the surface down, consisted of 13 feet of historic fill material underlain by 10 feet of silt and clay underlain by 40 feet of sand and till.

6. Soil/fill samples collected during the RI were compared to the New York State Department of Environmental Conservation (NYSDEC) Unrestricted Use Soil Cleanup Objectives (SCOs), Restricted Residential Use SCOs and Residential Use SCOs as presented in 6 NYCRR Part 375 Section 6.8. Soil samples showed the following:

    - No VOCs (Volatile Organic Compounds) were detected in soil samples at concentrations exceeding their Unrestricted Use SCOs in any of the soil samples. VOC were not analyzed within the standard holding time of 14 days from collection date. The samples were analyzed on April 20, 2022, 16 days after the collection date of April 4, 2022. All soil samples were non-detected for VOCs.

    - PCBs (Polychlorinated Biphenyls) including Aroclor 1260 (PCB 1260) in SB-4 (0-2') with a detection of 150 ug/kg.

- SVOCs (Semi-Volatile Organic Compounds) including Benz(a)anthracene (maximum of 2,400 ug/kg), Benzo(a)pyrene (maximum of 1,900 ug/kg), Benzo(b)fluoranthene (maximum of 1,700 ug/kg), Benzo(k)fluoranthene (maximum of 1,500 ug/kg), Chrysene (maximum of 2,500 ug/kg) and Indeno(1,2,3-cd)pyrene (maximum of 940 ug/kg) exceeded their respective Unrestricted Use as well as Restricted Residential Use SCOs in shallow soils within SB-2 (0-2') and SB-5 (0-2').

- Pesticides including 4,4'-DDD (at 21 ug/kg), 4,4'-DDE (at 16 ug/kg) and 4,4-DDT (maximum of 38 ug/kg) exceeded their Unrestricted Use SCOs. Exceedances occurred within SB-3 (0-2'), SB-3 (11-13'), and SB-4 (0-2').

- Metals including Barium (at 391 mg/kg) in SB-4 (0-2'), Chromium (at 44 mg/kg) in SB-5(0-2'), Copper (maximum 166 mg/kg) in SB-4(0-2'), Lead (maximum 1,630 mg/kg) in SB-4(0-2'), Mercury (maximum 7.41 mg/kg) in SB-3 (0-2'), Nickel (maximum 682 mg/kg) in SB-5(0-2'), and Zinc (maximum 698 mg/kg) in SB-4(0-2') exceeded their respective Unrestricted Use SCOs. Of these metals, barium, lead, mercury, and nickel were also detected at concentrations exceeding their Restricted Residential Use SCOs.

- Emerging contaminant Perfluorooctanoic Acid (PFOA) was detected at 0.299 ng/kg in the one soil sample analyzed for per- and polyfluoroalkyl substances (PFAS).

7. Groundwater samples collected during the RI were compared to the NYSDEC 6NYCRR Part 703.5 Class GA groundwater quality standards (GQS). Groundwater samples showed the following:

    - VOCs and PCBs were not detected at concentrations above their GQS in any of the groundwater samples.

    - Pesticides including 4,4-DDT were detected at a maximum level of 0.065 µg/L, which was above the GQS concentration.

    - SVOCs including Benzo(a)anthracene (maximum 15 µg/L) in B-1W, Benzo(a)pyrene (maximum 14 µg/L) in B-1W, Benzo(b)fluoranthene (maximum 8.6 µg/L) in B-1W, Benzo(k)fluoranthene (maximum 9.1 µg/L) in B-1W, Benzo(ghi)perylene (maximum 8.8 µg/L) in B-1W, Chrysene (maximum 17 µg/L) in B-1W, and Indeno(1,2,3-cd)pyrene (maximum 10 µg/L) in B-1W were exceeding their Restricted Residential Use SCOs.

    - Metals include Aluminum (maximum of 42.6 µg/L), Chromium (at 0.072 µg/L), Iron (maximum of 49.7 µg/L), Lead (maximum of 0.144 µg/L), Magnesium (maximum of 53.2 µg/L), Manganese (maximum of 1.29 µg/L) in B-1W, and Sodium (maximum of 520 µg/L) were detected

exceeding their respective GQSs. Dissolved groundwater samples were not taken.

- PFAS including perfluorobutanesulfonic acid (maximum of 13 ng/L) in TPW-2, perfluorodecanoic acid (maximum of 4.3 ng/L) in TPW-2, perfluoroheptanoic acid (maximum of 6.59 ng/L) in TPW-2, perfluorohexanesulfonic acid (maximum of 2.31 ng/L) in TPW-1, perfluorohexanoic acid (maximum of 22.2 ng/L) in TPW-2, perfluoro-n-butanoic acid (maximum of 24.8 ng/L) in TPW-1, perfluorononanoic acid (maximum of 3.06 ng/L) in both TPW-1 and TPW-2, perfluorooctanesulfonic acid (maximum of 32.1 ng/L) in TPW-1, perfluorooctanoic acid (maximum of 18.3 ng/L) in TPW-1, and perfluoropentanoic acid (maximum of 44.7 ng/L) in TPW-2 were exceeding their Restricted Residential Use SCOs.

8. Soil vapor samples collected during the RI were compared to the New York State Department of Health (NYSDOH) Final Guidance for evaluation Soil Vapor Intrusion matrices dated October 2006. Soil vapor results showed the following:

    - Soil vapor results indicated low levels of petroleum-related VOCs.
    - Total petroleum-related VOCs (Benzene, Toluene, Ethylbenzene, and Xylene (BTEX)) were detected at a maximum concentration of 65.5 $\mu g/m^3$ in SV-3.
    - Chlorinated VOC (CVOC) detections included tetrachloroethene (maximum 54.2 $\mu g/m^3$) in SV-2, methylene chloride (maximum 7.05 $\mu g/m^3$) in SV-2, carbon tetrachloride (maximum 0.34 $\mu g/m^3$) in SV-4, and trichloroethene (maximum 2.0 $\mu g/m^3$) in SV-2. Other CVOCs including 1,1,1-trichloroethane, and vinyl chloride were not detected in any of the soil vapor samples. Tetrachloroethene in soil vapor exceeds the Soil Vapor Intrusion Air Guidance Value in the State of New York Guidance (October 2006, updated May 2017) of 30 $\mu g/m^3$.

    For more detailed results, consult the RIR, which is included in **Appendix A**.

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 was effective in the short-term and long-term.

The remedial action consisted of the following tasks:

1. Preparation of a Community Protection Statement.
2. Performance of a Community Air Monitoring Program for particulates and volatile organic carbon compounds.

3. Establishment of Site Specific Soil Cleanup Objectives (SCOs).
4. Site mobilization involved Site security setup, equipment mobilization, utility mark outs and marking and staking excavation areas.
5. Completion of a Waste Characterization sampling prior to initial excavation activities. Waste characterization soil samples were collected at a frequency dictated by disposal facility(s). In addition, ten soil samples were subsequently collected from a lead hot spot and compared to EPA Toxicity Characteristics. Hazardous levels of lead were identified.
6. Excavation and removal of soil/fill exceeding Site Specific SCOs. The entire footprint of the Site was excavated to a depth of approximately 15 feet 4 inches below grade for development purposes. A small portion of property was excavated to the depths of 18 feet below grade.
7. Soil/fill were screened during excavations during intrusive work for indications of contamination by visual means, odor, and monitoring with a PID.
8. 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.
9. Transportation and offsite disposal of all soil/fill material at licensed or permitted facilities were conducted in accordance with applicable laws and regulations for handling, transport, and disposal, and this plan. The removal and transport of hazardous waste was properly reported to the EPA.
10. Collection and analysis of end-point samples were done to determine the performance of the remedy with respect to the attainment of SCOs.
    Either Residential Restricted or Site Specific SCOs were attained except for a minor exceedance of Alpha-chlordane of the Residential Restricted SCOs the slight exceedance of Alpha-chlordane was and continues to be addressed by the installation/inspection and maintenance of the composite cover system and vapor/waterproofing barrier. Site specific cleanup was accomplished.
11. Import of materials used for backfilling and cover were done in compliance with the RAWP and in accordance with applicable laws and regulations.
12. Performance of all activities required for the remedial action, including acquisition of required permits in compliance with applicable laws and regulations.
13. Construction of an engineered composite cover consisting of the new building foundation preventing human exposure to residual soil/fill. The cellar slab is 1.5 to 2.25 feet thick, and the bottom of the slab is 13.15 feet bgs. A concrete button pit and an elevator pit extended to approximately 18 feet bgs.

14. Installation of a vapor barrier system consisting of waterproofing outside of sub-grade foundation sidewalls and a vapor barrier underneath the building slab to mitigate soil vapor intrusion into the building. The waterproofing/vapor barrier system installed consisted of three waterproofing membranes manufactured by GCP Applied Technologies, Inc., Bituthene System 4000 1.5 millimeter thick, Bituthene Liquid Membrane, and Preprufe 300R. Preprufe 300r was a 20-Mil Vapor Barrier, that was sandwiched between a layer of 4-inch-thick Styrofoam and the building slab throughout the full building area. The Preprufe was extended upward along the foundation walls to street level on the west side of the building. Bituthene 4000 was used on the walls on the south and east sidewalls of the foundation and overlapped the Preprufe at the bottom of the walls. Liquid Bituthene was used to seal around any utility and pipe penetrations in the Preprufe membrane. All welds, seams and penetrations were properly sealed to prevent preferential pathways for vapor migration. The vapor barrier system was an Engineering Control for the remedial action. The remedial engineer has certified in the RAR that the vapor barrier system was designed and properly installed to mitigate soil vapor migration into the building.
15. The property will continue to be registered with an E-Designation at the NYC Buildings Department. Engineering Controls and Institutional Controls will be managed in compliance with an approved SMP. Institutional Controls will include prohibition of the following: (1) vegetable gardening and farming; (2) use of groundwater without treatment rendering it safe for the intended use; (3) disturbance of residual contaminated material unless it is conducted in accordance with the Site Management Plan; and (4) higher level of land usage without OER-approval.

REMEDIAL CLOSURE REPORT

1.0 SITE BACKGROUND

This Remedial Closure Report (RCR) has been developed to document investigation and remediation of the property located at 14 White Street in the Tribeca neighborhood of Manhattan, New York. An E-Designation for Hazardous Materials (E-544) was placed on the Site by the New York City Department of City Planning (DCP) as part of a July 2019 rezoning (18BSA058M) specific to the property. The remedial action was performed pursuant to the OER-approved Remedial Action Work Plan (RAWP) in a manner that has rendered the property protective of public health and the environment consistent with its intended use. This RCR describes the remedial action performed under the RAWP to satisfy the requirements of the Hazardous Materials E-Designation and obtain a Notice of Satisfaction. The remedial action described in this document provides for the protection of public health and the environment and complies with applicable environmental standards, criteria, and guidance (SCGs) and applicable laws and regulations.

1.1 SITE LOCATION AND BACKGROUND

The Site is a single triangular 3,845-square foot corner lot located at 14 White Street in the Tribeca neighborhood of Manhattan, New York and is identified as Block 191 and Lot 8 on the New York City Tax Map. **Figure 1** shows the Site location. The Site is 3,845-square feet and is bounded by commercial bar and restaurant property to the north, White Street with mixed commercial retail and multi-family residential dwellings beyond to the south, 6th Avenue with mixed commercial hotel and restaurants property beyond to the east, and mixed retail and multi-family residential dwellings to the west. A map of the site boundary is shown in **Figure 2**. The Site was most recently used as a parking lot prior to the current development.

1.2 REDEVELOPMENT PLAN

The Site is a 3,845-square feet parcel. The redevelopment project consisted of the construction of a new 26,488 gross square foot mixed-use building. The building footprint covers the entire parcel. The ground floor was planned as a commercial space with commercial storage in the cellar, and the second through sixth floor was planned as residential with a seventh story residential penthouse. The ground floor will also accommodate one parking space. The foundation was set on caissons socketed into bedrock and topped with 2.5-foot-thick pile caps, which are installed to approximately 14 feet below ground surface (bgs). The cellar slab is 1.5 to 2.25 feet thick, and the bottom of the slab is approximately 13.15 feet bgs. A concrete button pit and an elevator pit extend to approximately 18 feet bgs.

No open space was included as part of this development.

The entire site was excavated down to 15 feet 4 inches for the cellar. For the ejector sump and elevator pit an area of 112-square feet was excavated down to 18 feet below grade.

The excavations served a dual purpose to redevelop and remediate the site. These areas are illustrated in **Figures 4 and 5.**

The use of the basement consists of commercial/mercantile storage, utility metering, residential storage and building mechanicals. The ground-level usage consists of commercial/mercantile usage, parking, and residential access to second through seventh floors.

As part of development seven total apartments were constructed. The commercial area has a proposed 2,500 square footage. The rooftop consists of a stair bulkhead and elevator bulkhead. The seventh floor consists of residential use with a terrace on the north, east and south extents. On the north end of the site there is a small second-floor terrace. One parking spot was installed at grade.

A map showing the building location, basement location and uses of cellar and grade-level uses is enclosed as **Figure 4**.

1.3 DESCRIPTION OF SURROUNDING PROPERTY

The Site is located in the Tribeca neighborhood in Manhattan within Community District 1. The land used within the surrounding areas consists of a variety of uses including residential, commercial, and mixed-use. The surrounding area is primarily comprised of various sized mixed-use buildings and a hotel. The Church & White Street Plaza and the park Tribeca Park are considered sensitive receptors and are located with a 250-foot radius of the Subject Property. A Surrounding Land Usage Map is included as **Figure 3**.

The New York City Transit (NYCT) A, C, and E subway lines run adjacent to the site below 6th Avenue.

1.4 SUMMARY OF PAST SITE USES AND AREAS OF CONCERN

A Phase I Environmental Site Assessment Report (ESA) was conducted by EMG in January 2020. See **Appendix A** for the January 2020 Phase I document. Results from the Phase I identified no RECs (Recognized Environmental Conditions), CRECs (Controlled Recognized Environmental Conditions), HRECs (Historical Recognized Environmental Conditions) or VECs (Vapor Encroachment Conditions).

A Geotechnical Investigation Report by RA Consultants, LLC dated February 2016 was also conducted on the Subject Property. The Geotechnical Investigation included soil borings and test pits. The test pits determined the foundation depths of the adjoining properties, while the soil borings determined the subsurface conditions on the Subject Property.

According to the Historic Sanborn Fire Insurance Maps, City Directory, and Historic Aerial Photographs, the historic use of the Site consisted of mixed-use commercial and residential dwellings until the early 1950s. The Subject Property was later converted to a parking lot. The Surrounding Areas were developed with mixed-use properties with commercial and residential dwellings. In the Mid 1930s to late 1960s a gas station was

documented to the east of the Subject Property in the Phase I but, was later determined to not be a REC due to remediation of that property.

No specific AOCs were identified through the Phase I Site inspection. During the Phase II Site investigation, historic fill and lead contamination was detected.

1.5 SUMMARY OF WORK PERFORMED UNDER THE REMEDIAL INVESTIGATION

Environmental Consulting and Management Services, Inc. (ECMS), performed the following scope of work in April 2022:

1. Conducted a Site inspection to identify AOCs and physical obstructions (i.e., structures, buildings, etc.).
2. Installed five soil borings (SB-1 through SB-5) across the entire project Site and collected eleven total soil samples (including a duplicate) for chemical analysis from the soil borings to evaluate soil quality, with the one duplicate sample collected for Quality Assurance and Quality Control (QAQC).
3. Installed two temporary groundwater monitoring wells (TPW-1 and TPW-2) throughout the Site and used a previously installed monitoring well (B-1W) to establish groundwater flow and collected five groundwater samples (incl. duplicate and field blank) for chemical analysis to evaluate groundwater quality. One duplicate sample was collected for QA/QC. Additionally, a Field blank sample was collected to ensure sampling equipment was being maintained/cleaned.
4. Installed four soil vapor probes (SV-1 through SV-4) around the Site perimeter and collected four samples for chemical analysis.

1.6 SUMMARY OF FINDINGS OF REMEDIAL INVESTIGATION

A remedial investigation was performed, and the results are documented in a companion document called “Remedial Investigation Report, 14 White Street”, dated May 2022 (RIR).

1. The elevation of the property ranges from 12.0 to 13.2 feet AMSL (Above Mean Sea Level).
2. Depth to groundwater ranges from 13.11 to 13.69 feet at the Site.
3. Groundwater flow was generally from east to west beneath the Site.
4. Depth to bedrock was approximately 69 to 74 feet below grade at the Site based on the geotechnical investigation conducted in November 2015.

5. The stratigraphy of the site, from the surface down, consisted of 13 feet of historic fill material underlain by 10 feet of silt and clay underlain by 40 feet of sand and till.

6. Soil/fill samples collected during the RI were compared to the New York State Department of Environmental Conservation (NYSDEC) Unrestricted Use Soil Cleanup Objectives (SCOs), Restricted Residential Use SCOs and Residential Use SCOs as presented in 6 NYCRR Part 375 Section 6.8. Soil samples showed the following:

    - PCBs (Polychlorinated Biphenyls) including Aroclor 1260 (PCB 1260) in SB-4 (0-2') with a detection of 150 ug/kg.

    - SVOCs (Semi-Volatile Organic Compounds) including Benz(a)anthracene (maximum of 2,400 ug/kg), Benzo(a)pyrene (maximum of 1,900 ug/kg), Benzo(b)fluoranthene (maximum of 1,700 ug/kg), Benzo(k)fluoranthene (maximum of 1,500 ug/kg), Chrysene (maximum of 2,500 ug/kg) and Indeno(1,2,3-cd)pyrene (maximum of 940 ug/kg) exceeded their respective Unrestricted Use as well as Restricted Residential Use SCOs in shallow soils within SB-2 (0-2') and SB-5 (0-2').

    - Pesticides including 4,4'-DDD (at 21 ug/kg), 4,4'-DDE (at 16 ug/kg) and 4,4-DDT (maximum of 38 ug/kg) exceeded their Unrestricted Use SCOs. Exceedances occurred within SB-3 (0-2'), SB-3 (11-13'), and SB-4 (0-2').

    - Metals including Barium (at 391 mg/kg) in SB-4 (0-2'), Chromium (at 44 mg/kg) in SB-5(0-2'), Copper (maximum 166 mg/kg) in SB-4(0-2'), Lead (maximum 1,630 mg/kg) in SB-4(0-2'), Mercury (maximum 7.41 mg/kg) in SB-3 (0-2'), Nickel (maximum 682 mg/kg) in SB-5(0-2'), and Zinc (maximum 698 mg/kg) in SB-4(0-2') exceeded their respective Unrestricted Use SCOs. Of these metals, barium, lead, mercury, and nickel were also detected at concentrations exceeding their Restricted Residential Use SCOs.

    - Perfluorooctanoic Acid (PFOA) was detected at 0.299 ng/kg in the one sample analyzed, SB-2 (11-13').

    - VOC samples were collected; however, they were not analyzed by Phoenix Environmental Laboratories, Inc., within the standard holding time of 14 days from collection date. The samples were analyzed on April 20, 2022, 16 days after the collection date of April 4, 2022. All soil samples were non-detect for VOCs.

7. Groundwater samples collected during the RI were compared to the NYSDEC 6NYCRR Part 703.5 Class GA groundwater quality standards (GQS). Groundwater samples showed the following:

- VOCs and PCBs were not detected at concentrations above their GQS in any of the groundwater samples.
- Pesticides including 4,4-DDT were detected at a maximum level of 0.065 µg/L, which is above the GQS concentration.
- SVOCs including Benzo(a)anthracene (maximum 15 µg/L) in B-1W, Benzo(a)pyrene (maximum 14 µg/L) in B-1W, Benzo(b)fluoranthene (maximum 8.6 µg/L) in B-1W, Benzo(k)fluoranthene (maximum 9.1 µg/L) in B-1W, Benzo(ghi)perylene (maximum 8.8 µg/L) in B-1W, Chrysene (maximum 17 µg/L) in B-1W, and Indeno(1,2,3-cd)pyrene (maximum 10 µg/L) in B-1W were exceeding their Restricted Residential Use SCOs.
- Metals include Aluminum (maximum of 42.6 µg/L), Chromium (at 0.072 µg/L), Iron (maximum of 49.7 µg/L), Lead (maximum of 0.144 µg/L), Magnesium (maximum of 53.2 µg/L), Manganese (maximum of 1.29 µg/L) in B-1W, and Sodium (maximum of 520 µg/L) were detected exceeding their respective GQSs. Dissolved groundwater samples were not taken.
- PFAS including perfluorobutanesulfonic acid (maximum of 13 ng/L) in TPW-2, perfluorodecanoic acid (maximum of 4.3 ng/L) in TPW-2, perfluoroheptanoic acid (maximum of 6.59 ng/L) in TPW-2, perfluorohexanesulfonic acid (maximum of 2.31 ng/L) in TPW-1, perfluorohexanoic acid (maximum of 22.2 ng/L) in TPW-2, perfluoro-n-butanoic acid (maximum of 24.8 ng/L) in TPW-1, perfluorononanoic acid (maximum of 3.06 ng/L) in both TPW-1 and TPW-2, perfluorooctanesulfonic acid (maximum of 32.1 ng/L) in TPW-1, perfluorooctanoic acid (maximum of 18.3 ng/L) in TPW-1, and perfluoropentanoic acid (maximum of 44.7 ng/L) in TPW-2 were exceeding their Restricted Residential Use SCOs.

8. Soil vapor samples collected during the RI were compared to the New York State Department of Health (NYSDOH) Final Guidance for evaluation Soil Vapor Intrusion matrices dated October 2006. Soil vapor results showed the following:
    - Soil vapor results indicated low levels of petroleum-related VOCs.
    - Total petroleum-related VOCs (Benzene, Toluene, Ethylbenzene, and Xylene (BTEX)) were detected at a maximum concentration of 65.5 µg/m^3 in SV-3.
    - Chlorinated VOC (CVOC) detections included tetrachloroethene (maximum 54.2 µg/m^3) in SV-2, methylene chloride (maximum 7.05 µg/m^3) in SV-2, carbon tetrachloride (maximum 0.34 µg/m^3) in SV-4, and trichloroethene (maximum 2.0 µg/m^3) in SV-2. Other CVOCs including 1,1,1-trichloroethane, and vinyl chloride were not detected in any of the soil vapor samples. Tetrachloroethene was exceeding the Soil

Vapor Intrusion in the State of New York Guidance (Dated October 2006) of 30 $\mu g/m^3$.

For more detailed results, consult the RIR, which is included in **Appendix A**. Based on an evaluation of the data from the RIR and development plans outlined in the RAWP, disposal of significant amounts of hazardous waste was not suspected. However, there was potential for limited quantities of soil at the Site to contain hazardous levels of lead. A lead hot spot was delineated in January 2023 and results are discussed in section 4.3 of this RCR.

2.0 DESCRIPTION OF REMEDIAL ACTIONS

The remedial action was performed in accordance with an OER-approved Remedial Action Work Plan and a Stipulation List, both included under **Appendix B**. 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. The remedial action taken achieved the Remedial Action Objectives established for the project.

A summary of the milestones achieved in the remedial action is as follows:

- Phase I investigations were conducted in 2014 by P.W. Grosser Consulting, Inc. and IVI Assessment Services, Inc. and in 2020 by EMG.
- A Pre-Application Meeting was held on March 24, 2022.
- A Remedial Investigation (RI) was performed in April 2022 by ECMS. A Remedial Investigation Report was prepared to evaluate the data and information necessary to develop a Remedial Action Work Plan (RAWP).
- The RAWP and Stipulation List dated May 26, 2022, was approved by the New York City Office of Environmental Remediation (OER) on June 22, 2022.
- A Pre-Construction meeting was held on December 1, 2022.
- The remedial action began on December 27, 2022, and was completed on May 10, 2024.

The remedial action consisted of the following tasks:

1. Preparation of a Community Protection Statement.
2. Performance of a Community Air Monitoring Program (CAMP) for particulates and volatile organic carbon compounds. Air monitoring was conducted from December 28, 2022, to May 10, 2024, during ground intrusive activities. There were nine CAMP exceedances during soil removal or ground intrusive activities. Most of the few exceedances that were noted were for dust. During the exceedances ECMS promptly notified the site supervisor and dust suppression activities or source identification activities took place. As a result of monitoring effective mitigation measures were implemented. No complaints of odors or dust migrating off-Site were received.
3. Establishment of Site-Specific Soil Cleanup Objectives (SCOs). The following Site Specific SCOs were utilized: 100 ppm for total SVOCs, 650 ppm for lead, 1.5 ppm for mercury and 650 ppm for barium.
4. Site mobilization involved Site security setup, equipment mobilization, utility mark outs and marking and staking excavation areas.
5. Completion of a Waste Characterization Study prior to excavation activities and subsequently delineated a lead hotspot. Waste characterization soil samples were collected at a frequency dictated by disposal facilities.

6. Excavation and removal of soil/fill exceeding Site-Specific SCOs. The entire footprint of the Site was excavated to a depth of approximately 15 feet 4 inches below grade for development purposes. A small portion of property was excavated to depths of 18 feet below grade for an elevator pit.
7. Screening of excavated soil/fill during intrusive work for indications of contamination by visual means, odor, and monitoring with a PID.
8. 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.
9. Transportation and offsite disposal of all soil/fill material at licensed or permitted facilities in accordance with applicable laws and regulations for handling, transport, and disposal, and this plan. An estimated total of 3,538.64 tons of soil were removed. Approximately 75 cubic yards of concrete and asphalt were also removed from the site. The removal and transport of 52.9 tons of hazardous waste was properly reported to the EPA.
10. Collection and analysis of five end-point samples to determine the performance of the remedy. Site specific cleanup was achieved.
11. Import of materials used for backfilling and cover were in compliance with the RAWP and in accordance with applicable laws and regulations. The site imported 440 cubic yards of certified clean soils and 100 cubic yards virgin gravel as part of the remedial action and development.
12. Performance of all activities required for the remedial action, including acquisition of required permits in compliance with applicable laws and regulations.
13. Construction of an engineered composite cover consisting of the new building foundation, including a 1.5 to 2.25 feet thick cellar slab at approximately 10.9 feet below grade surface (bgs) and a concrete button pit and an elevator pit at approximately 18 feet bgs. The concrete will prevent human exposure to residual soil/fill remaining at the Site. The contractor for the cover construction was Shore Built Construction Corp.
14. Installation of a vapor barrier system consisting of waterproofing outside of sub-grade foundation sidewalls and a vapor barrier underneath the building slab to mitigate soil vapor intrusion into the building. The waterproofing/vapor barrier system consists of three waterproofing membranes manufactured by GCP Applied Technologies, Inc., Bituthene System 4000 1.5 millimeter thick, Bituthene Liquid Membrane, and Preprufe 300R. Preprufe 300r is a 20-Mil Vapor Barrier, that was sandwiched between a layer of 4-inch-thick Styrofoam and the building slab throughout the full building area. Preprufe 300R was extended upward along the foundation walls to street level on the west side of the building. Bituthene 4000 was used on the walls on the south and east sidewalls of the foundation and overlapped the Preprufe at the bottom of the walls. Liquid Bituthene and Preprufe Tape LT were used to seal around any utility and pipe penetrations in the Preprufe membrane. All welds, seams, and penetrations were properly sealed to prevent preferential pathways for vapor migration.
15. Submitted a Sustainability Report.

16. Submitted an RCR 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 deviations from the RAWP.
17. Submitted a Site Management Plan (SMP) for long-term management of residual soil, including plans for maintenance, inspection, and certification of the performance of Engineering Controls and Institutional Controls. Inspections will be performed every ten years.
18. The property will continue to be registered with an E-Designation at the NYC Buildings Department. Engineering Controls and Institutional Controls described in this RCR must be managed in compliance with the approved SMP. Institutional Controls will include prohibition of the following: (1) vegetable gardening and farming in residual soil; (2) use of groundwater without treatment rendering it safe for the intended use; (3) disturbance of residual contaminated material unless it is conducted in accordance with the SMP; and (4) higher level of land usage without OER-approval.

3.0 REMEDIAL ACTION WORK PLAN COMPLIANCE

3.1 CONSTRUCTION HEALTH & SAFETY PLAN

The remedial construction activities performed under this program were in compliance with the site-specific Construction Health and Safety Plan (HASP) and applicable laws and regulations. The Site Safety Coordinator was Harry Sudwischer during remedial work. Remedial work performed under the RAWP was in full compliance with applicable health and safety laws and regulations, including Site and OSHA worker safety requirements and HAZWOPER requirements. The HASP pertained to remedial and invasive work performed at the Site until the issuance of the Notice of Satisfaction.

All field personnel involved in remedial activities participated in training required under 29 CFR 1910.120, such as 40-hour hazardous waste operator training and annual 8-hour refresher training. The Site Safety Officer was responsible for maintaining workers' training records.

Personnel entering any exclusion zone were trained in the provisions of the HASP and complied with all requirements of 29 CFR 1910.120. Site-specific training was provided for field personnel. Emergency telephone numbers were posted at the site location before any remedial work began. A safety meeting was conducted before each shift began. Topics discussed include task hazards and protective measures (physical, chemical, environmental); emergency procedures; PPE levels and other relevant safety topics. Meetings will be documented in a logbook or specific form.

An emergency contact sheet with names and phone numbers was included in the HASP. That document defines the specific project contacts for use in case of emergency. The Health and Safety Plan is included in **Appendix J**.

3.2 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 was performed. Continuous monitoring was performed for all ground intrusive activities and during the handling of contaminated or potentially contaminated media. Ground intrusive activities included soil/waste excavation and handling, test pit excavation or trenching, and the importing of soil for use as backfill. Monitoring was performed from December 28, 2022, to May 10, 2024, during ground intrusive activities in compliance with the Community Air Monitoring Plan (CAMP) in the approved RAWP.

Exceedances of action levels observed during performance of the Community Air Monitoring Plan (CAMP) were reported to the OER Project Manager during remedial activities when they occurred. The air monitoring data are included with daily reports in in **Appendix C**. Excluding elevated dust readings attributed to the Canadian wildfires, 9 exceedances occurred as follows.

Date	Exceedance Detail (Time)	Suspected Cause	Response
1/6/2023	There were three dust exceedance events that exceeded the 15 minute threshold. The first event started at 8:20AM and lasted for 1 hour and 17 minutes. The second event started at 11:57AM and lasted for 1 hour and 21 minutes. The third event began at 1:52PM and lasted for 37 minutes.	High dust readings due to trucks loading out soil and sawing adjacent to AMS-1	The source of dust exceedance was due to the sawing adjactent to AMS-1. Due to trucks loading out soil, alternative areas for sawing wood were not available.
1/9/2023	There were four dust exceedance events that exceeded the 15 minute threshold. The first event started at 8:00AM and lasted for 1 hour and 46 minutes. The second event started at 10:30AM and lasted for 56 minutes. The third event began at 12:29PM and lasted for 2 hours and 38 minutes. The fourth event began at 4:14PM and lasted for 35 minutes.	High dust readings due to trucks loading out asphalt and excavation of concrete buttons adjacent to AMS-1	Due to the small nature of the site, asphalt trucking activity, excavating concrete buttons and the location of the dust monitors, activity could not be halted. The dust monitors' location did not accurately reflected dust levels. Dust control measures were applied and there was no visible dust in the air. ECMS scheduled to recalibrate equipment tomorrow.
1/10/2023	There were two dust exceedance events. The first event started at 8:40AM and lasted for 43 minutes. The second event started at 9:45AM and lasted for 1 hour and 59 minutes.	High dust readings due to sawing adjacent to AMS-1	The source of dust exceedance was due to the sawing adjactent to AMS-1. ECMS suspected that the instrument required zero-calibration and was on site calibrate AMS-1 dust meter.
1/11/2023	There were two dust exceedance events that exceeded the 15 minute threshold. The first event started at 8:40AM and lasted 42 minutes. The second event started at 9:45AM and lasted for 59 minutes.	High dust readings due to trucks loading out soil and sawing adjacent to AMS-1	The source of dust exceedance was due to the sawing adjactent to AMS-1. Due to trucks loading out soil, alternative areas for sawing wood were not available.
1/16/2023	There was one dust exceedance event that started at 8:44AM and lasted 21 minutes	High dust readings due to trucks loading out soil and sawing adjacent to AMS-2	The source of dust exceedance was due to the sawing adjactent to AMS-1. Due to trucks loading out soil, alternative areas for sawing wood were not available.
2/15/2023	There were three dust exceedance events. The first event started at 1:21PM and lasted 23 minutes. The second event started at 1:53PM and lasted for 22 minutes. The third event started at 2:32PM and lasted for 15 minutes.	High dust readings due to excavation of concrete buttons adjacent to AMS-1	Dust management practices were implemented.
5/25/2023	There was one dust exceedance event that exceeded the 15 minute threshold that started at 8:16AM and lasted for 20 minutes.	High dust readings due to drilling piles adjacent to AMS-1	Water was applied to mitigate dust.
8/1/2023	There was one dust exceedance event that started at 2:29PM and lasted for 26 minutes.	Pile delivery and subsequent material staging caused the brief elevated dust particulates at the site.	Work was halted while delivery occurred.
8/2/2023	There was one dust exceedance event that started at 3:15PM and lasted for 18 minutes.	High dust readings due to pile drilling.	Dust mitigation measures were used to reduce the elevated downwind dust concentrations at the site.

3.3 SOIL/MATERIALS MANAGEMENT PLAN

The Soil/Materials Management Plan (SMMP) in the RAWP 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 measures to ensure 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

Deviations from the Remedial Action Work Plan (RAWP) included the following:

1. The OER-approved RAWP and RAWP Stipulation List (an addendum to the RAWP) indicated that monthly reports are required on the project's status and schedule to the OER project manager after RAWP was approved and NTP issued until the Remedial Closure Report was received. However, based on discussions with the OER project manager, a written monthly report was not provided/required in June, July, or August 2024 and, given anticipated RCR submission timeline, no monthly report was provided for September 2024. The composite cover was completed prior to June 2024 and no remedial activities were conducted during the aforementioned months.

2. The OER-approved RAWP indicated that Stego Wrap 20-Mil Vapor Barrier was to be used as a below-slab vapor barrier, however, the waterproofing/vapor barrier system was altered and consists of waterproofing membranes: 1.5 millimeter thick Bituthene System 4000, and Preprufe 300R. Preprufe 300R was a 20-Mil Vapor Barrier, that was sandwiched between a layer of 4-inch-thick Styrofoam and the building slab throughout the full building area. Preprufe 300R was extended upward along the foundation walls to street level on the west side of the building and overlapped the horizontal Preprufe at the bottom of the walls. Bituthene 4000 was used on the walls on the south and east sidewalls of the foundation and overlapped the Preprufe at the bottom of the walls. Liquid Bituthene and Preprufe Tape LT were used to seal around any utility and pipe penetrations in the Preprufe membrane. All welds, seams, and penetrations were properly sealed to prevent preferential pathways for vapor migration. ECMS submitted data sheets for the newly proposed products and OER approved via email correspondence on November 3, 2024. **Figure 7** illustrates the construction of Vapor Barrier Membrane.

3. The OER-approved RAWP specified that the QA/QC for the vapor barrier installation, an Engineering Control, would include smoke testing involving pumping smoke under sections in order to visually indicate any deficiencies or confirm integrity of the barrier. However, smoke testing was not conducted. The remedial PE for the project inspected the vapor barrier installation and is certifying in this RCR that the Engineering Controls implemented achieved the goals established in the Remedial Action Work Plan for this site. The RAWP originally proposed Stegowrap. Due to product substitution the inspection was deemed sufficient to achieve the site goals.

4. The OER-approved RAWP included a contingency for hotspot post-excavation end-point sampling that included provisions for sidewall soil samples not precisely followed. Ten total soil samples were collected in two rounds of sampling to delineate the lead impacted soils during excavation. The **Table 5** and **Figure 10** provide sampling results and locations. The delineated extent of lead impacted soil approached property lines and/or locations of surficial samples collected during the RI and excavation for site development ultimately extended several feet beyond the excavation for of hazardous soil in all directions.

5. The OER-approved RAWP indicated that letters documenting disposal facility approval would be obtained prior to any transport and disposal of soil at a facility and

that all soil/fill waste characterization results would be provided in this RAR. An approval letter from Clean Earth of Hatfield dated February 14, 2023 indicated that they had determined their facility was appropriately permitted to accept a total of 25 tons of hazardous lead soils. During the excavation and trucking, a total of 52.9 tons of soil/fill materials from the site were shipped and disposed of at Clean Earth of Hatfield. No trucks carrying material from the site were rejected from the disposal facility. The facility likely collected an additional soil/fill sample for supplemental waste classification from an incoming load to comply with their permit. ECMS requested an updated approval letter from the soil broker. The soil broker indicated that they were not issued an updated letter and, therefore, neither an updated facility letter nor the supplemental waste characterization results are included in this RAR.

6. The OER-approved RAWP established Site-Specific SCOs for total SVOCs, lead, mercury, and barium with the expectation that other potential contaminants would achieve Restricted Residential SCOs. No Site-Specific SCO was established for pesticide compounds. However, the pesticide compound alpha-chlordane was detected in endpoint sample EP-1 (15'4") at 4.8 mg/Kg, above the applicable Restricted Residential SCO of 4.2 mg/Kg. Endpoint sample results were not provided to OER in advance of the submission of this RCR. Given the uncommon presence of a pesticide at a depth of 15 feet 4 inches, it was possible that the sample was cross contaminated with stormwater runoff or soil from shallower than the final excavation and sample collection depth.

   The pesticide compound, alpha-chlordane, in soil was detected in the RI sample SB-4 (0-2`) at 7.0 µg/kg, which was below the NYSDEC Unrestricted Use SCO limit of 94 µg/Kg. In the deeper sample SB-4 (11-13'), the level was below laboratory method detection limit of 3.6 µg/Kg. The closest RI soil sample location to EP-1 was SB-4. The pesticide compound chlordane in groundwater was also below method detection limits in the nearest well B-1W and other RI wells. The lack of a groundwater quality standard contravention for the pesticide parameter that exceed SCOs indicates the residual soil does not pose a significant threat to public health and the environment. On-site groundwater use prohibitions for potable supply ensure that there were no direct exposures.

   After careful review of all data and information, it was determined that the development would still be protective of public health and the environment by managing the remaining material in place. The majority of contaminated media was removed during the removal action, and all remaining material will be under a permanent cover, eliminating any potential for public health exposure. The cover will be inspected and maintained over the long term under a Site Management Plan, ensuring that it remains intact, and functions as designed. Additionally, any future excavation on the property will be controlled by continued registration of the E designation and adherence to the Soil and Materials Management Plan, ensuring safe handling and proper reconstruction of the cover upon completion of work.

7. The OER-approved RAWP indicated that a process would be established to evaluate sources of backfill and cover soil to be imported to the Site and all materials received for import to the Site would be approved by a PE/QEP. The RAWP also specified that required daily reports would include quantities of material imported to the Site. QEP approval of gravel was not obtained prior to import to the Site and import of the material was not noted in the daily report summary of activities when first imported on or around October 10, 2023. However, pictures of the gravel, a letter from the supplier indicating the gravel was virgin quarry material and sieve test results were later provided and approved by the QEP and OER on October 26, 2023.

4.0 REMEDIAL PROGRAM

4.1 PROJECT ORGANIZATION

Principal personnel involved in the remedial action include Harry Sudwischer, Project Manager and Qualified Environmental Professional (QEP). The Professional Engineer (PE) for this project are Robert Jackson, P.E. The general contractor during the remedial action was Central Interiors. The foundation contractor was Shore Built Construction Corp., which also installed the vapor barrier/waterproofing membrane and concrete cover system engineering controls.

4.2 SITE CONTROLS

Site Preparation

Site preparation included the following:

- Pre-construction meeting with OER and all parties involved in the remedial process.
- Utility mark-out and Easement Layouts; All invasive activities were performed incompliance with applicable laws and regulations including NYC Building Code to assure safety. Utility companies and other responsible authorities were contacted to locate and mark the locations, and a copy of the Mark-Out Ticket was retained by the contractor prior to the start of drilling, excavation, or other invasive subsurface operations. Overhead utilities may also have been present within the anticipated work zones. Electrical hazards associated with drilling in the vicinity of overhead utilities were prevented by maintaining a safe distance between overhead power lines and drill rig masts.
- Performance of a waste classification study on January 2, 2023. The study executed by ECMS consisted of the collection and analyses of three four-point composite soil/fill samples for disposal parameters. Waste characterization samples were analyzed for parameters and collected at a frequency dictated by disposal facility requirement.
- Acquisition of agency approvals (city permits, etc.):
    - NYC DEP Hydrant use permits (HUP) received November 14, 2022, January 20, 2023, April 18, 2023, and May 22, 2023.
    - OER approval of disposal facility approval documentation for Clean Earth, Hazelton, and Middlesex County Landfill, received February 14, 2023, January 31, 2023, and May 16, 2022, respectively. Facility soil disposal approval letters are enclosed in **Appendix D**. OER communications/ approvals are enclosed in **Appendix K**.
    - QEP approval of gravel was not obtained prior to importing it to the Site. However, sieve test results were later provided and approved by the QEP and OER on October 26, 2023.
    - QEP approval of soil to be imported from the Clean Soil Bank (CSB) Forbell Stockpile.

- An OER Project Notice was erected at the project entrance and was in place during all phases of the remedial action.

Soil Screening

Visual, olfactory, and Photoionization detector (PID) soil screening and assessment were performed under the supervision of the Qualified Environmental Professional, Harry Sudwischer. Soil screening was conducted during invasive work performed during the remedial actions and ground disturbance activities. An ECMS Environmental Scientist collected PID readings from observable subsurface materials as they were direct loaded into triaxles for offsite disposal.

Screening was particularly diligent during soil trucking and the ECMS Environmental Scientist would check excavator buckets, especially when different soils were observed being excavated. During these activities, the following observations were typically made:

Visual Screening- Varied soil colors and soil types were noted, indicating potential fill and native areas. In the event of any unusual discoloration, sheen, or debris, the team was alerted to further investigate. Minor amounts of construction and demolition debris were observed during excavations, with most materials being native sands, silts, and fill material.

Olfactory Screening- The presence of any distinct odors, such as petroleum or chemical smells, helped identify areas of concern that required additional testing. Occasionally, bog and petroleum-like odors were observed; however, field observations were generally not odorous during the remedial actions.

PID Screening- Elevated PID readings often suggested elevated levels of volatile organic compounds (VOCs), prompting further inspection and appropriate handling measures to maintain best site management practices. When reaching terminal depths, a PID was used to locate the area of most elevated PID measurements prior to collecting the respective endpoint samples in compliance with DER-10.

ECMS did not observe staining, free-phase petroleum, significantly elevated PID readings (>20 ppm) nor any other evidence of spill conditions requiring reporting to NYSDEC. These screenings ensured that all excavated materials were appropriately managed, segregated, and disposed of according to disposal facility and NYSDEC requirements.

During excavations of the hotspot hazardous lead soils observed what appeared to be flecks of red paint mixed in the soils. The visual cue helped remedially excavate the impacted soils.

Stockpile Management

Excavated soil from suspected areas of contamination (e.g., hot spots) were stockpiled separately and segregated from clean soil and construction materials. Stockpiles

were removed as soon as practicable. While stockpiles were in place, they were inspected daily. Results of inspections were recorded in a logbook, maintained at the Site, and available for inspection by OER during remedial actions. Excavated soils were stockpiled on, at minimum, double layers of a minimum 8-mil poly sheeting, kept covered at all times with appropriately anchored plastic tarps, and were routinely inspected. Broken or ripped tarps were promptly replaced.

All stockpile activities have been completed in compliance with applicable laws and regulations. No storm events occurred during stockpiling activities. Soil stockpile areas were appropriately graded to control run-off. Stockpiles of excavated soils and other materials were located at least 50 feet from the property boundaries, where possible. Hay bales or equivalent berms surrounded soil stockpiles except for areas where access to equipment was required.

Truck Inspection

An outbound-truck inspection was conducted close to the Site exit. Before exiting the Site, trucks were required to stop for truck inspection/ and examined for evidence of contaminated soil on the undercarriage, body, and wheels. Soil and debris were removed. Brooms, shovels, and clean water were utilized for the removal of soil from vehicles and equipment, as necessary. Trucks were required to cover the load before leaving the site.

Site Security

Site access was controlled by gated entrances to the fenced property. The gates were locked after hours.

Nuisance Controls

There were no civilian complaints pertaining to the odor and dust at the site. However, there were complaints about unauthorized or unpermitted construction, all of which have been resolved due to having valid permits. See **Appendix L** for all citizen complaints.

Reporting

Daily reports provided a general summary of activities for each day of active remedial work. They were uploaded to the OER EPIC portal for the OER Project Manager's review. In most cases they were uploaded by the end of the following business day. Those reports included:

- Project number and statement of the activities and an update of progress made, and locations of excavation and other remedial work performed;
- Upcoming work activities;
- Quantities of material imported and exported from the Site;
- Status of onsite soil/fill stockpiles;
- A summary of CAMP results noting all exceedances. CAMP data was enclosed during intrusive site activities;

- Photographs of notable site conditions and activities. See **Appendix N** for the remedial action Photo Log.

The frequency of the reporting period was revised in consultation with the OER project manager based on the scheduled work. When facility or material approvals, or changes to the RAWP, required timely approvals, additional communications were made with the project manager in addition to the daily reports. Emergency conditions and changes to the RAWP were communicated directly to the OER project manager through personal communication. Daily, weekly, and monthly reports are included in this RCR under **Appendix C**.

4.3 MATERIALS EXCAVATION AND REMOVAL ACTION

Soil/Fill Excavation and Removal

For site development, including the construction of the new building with a cellar and elevator pit, 15 feet 4 inches of material from the majority of the site and 18 feet of material from the elevator pit were excavated during the remedial action. **Figure 5** shows a map indicating the approximate location of the excavation and the depth of the excavated material. A total of 3,538.64 tons of soil were excavated and removed from the property during the Removal Action. The materials removed are classified as follows: concrete/asphalt, approximately 75 cubic yards; non-hazardous soil, 3,485.74 tons; and hazardous lead soil, 52.9 tons.

The soil containing hazardous levels of lead was excavated in stages, initially to a depth of 2 feet below grade (bg) and then to 10 feet bg. Non-hazardous levels were confirmed before further excavation for site development purposes. The initial excavation was conducted on January 18, 2023, to a depth of 2 feet bg in the affected area, with the excavated soil stockpiled on plastic sheeting at the northern point of the site. Upon receiving laboratory sample results, additional excavation was required. The follow-up excavation took place on February 6, 2023. The final dimensions of the excavation for the hazardous lead hotspot were approximately 16 feet by 10 feet by 10 feet bg.

To manage the hazardous materials, an EPA ID number NYR000259739 was obtained for the site. This process involved submitting the necessary forms and documentation to the United States Environmental Protection Agency (EPA) to comply with federal regulations. Once the EPA ID number was secured, coordination with the soil broker was critical for obtaining disposal facility approvals. The soil broker facilitated the approval process by liaising with approved disposal facilities to verify their acceptance of the contaminated soil and ensure that all transport and disposal activities adhered to regulatory requirements. The annual report submitted to the EPA is included in **Appendix F**.

The Removal Action was overseen by Harry Sudwischer, the QEP, for the project, respectively.

No dewatering was conducted during the remedial action, and no rock excavation was required for site development. The groundwater table identified in the remedial investigation must have been perched in the silty soils and/or temporarily elevated during the Remedial Investigation. Offsite dewatering of the 6th Avenue subway may have affected groundwater conditions on the site.

Soil Cleanup Objectives

The Site-Specific SCOs for this remedial action are for total SVOCs, lead, mercury, and barium. A list of the SCO values for individual analytes is included in **Table 2** as follows.

The following Site-Specific SCOs were established and achieved for this project:

TABLE 2

Contaminant	Site-Specific SCOs
Total SVOCs	100 ppm
Lead	650 ppm
Mercury	1.5 ppm
Barium	650 ppm

Soil and materials management onsite and offsite, including excavation, handling, and disposal, was conducted in accordance with the Soil/Materials Management Plan. Discrete contaminant sources (such as hotspots) identified during the remedial action were identified in the field and mapped accordingly. The lead hotspot sampling locations delineate the hotspot. It is enclosed as **Figure 10**. The Complete Hotspot Sampling Laboratory Report is enclosed as **Appendix M.**

4.4 END POINT SAMPLE RESULTS

End Point Sampling

End-point samples were analyzed for compounds and elements as described below utilizing the following methodology:

- Volatile organic compounds by EPA Method 8260;
- Semi-volatile organic compounds by EPA Method 8270;
- Target Analyte List metals; and
- Pesticides/PCBs by EPA Method 8081/8082.

Phoenix Environmental Laboratories was used for all end-point sample analyses. This RCR provides a tabular summary of all end-point sample results including non-detect results, as well as a tabular and map summary of all end-point sample results showing detections. A tabular and map summary of end-point sampling results are included in **Table 1a / Table 1b** and **Figure 9**. The tabular summaries also include the applicable standards and/or guidance values for the materials.

Analytical End Point Sampling Summary

Five endpoint samples were collected after the site was excavated down to about 15 feet 4 inches. Five endpoint samples were collected from the base of the excavation at locations which were determined by OER. The RAWP established Site-Specific SCOs for total SVOCs, lead, mercury, and barium with the expectation that other potential contaminants would achieve Restricted Residential SCOs.

The analytical results for the five endpoint soil samples indicate that the majority of detected analytes were below either the NYSDEC Part 375 Residential Restricted Use Soil Cleanup Objectives (SCOs) or the respective Site Specific SCOs, when applicable. The results are summarized in Table 1a and Table 1b. Below is a summary of the findings:

- **Metals**:
  Arsenic: Detected levels ranged from 0.93 to 3.22 mg/Kg, well below the residential restricted use SCO of 16 mg/Kg.
  Lead: Concentrations were between 56.3 and 354 mg/Kg, which was under the restricted residential use SCO of 400 mg/Kg and the established Site Specific SCO.
  Mercury: Detected levels ranged from 0.28 mg/Kg to 1.26 mg/Kg. The concentration in endpoint sample EP-1 exceeded the Restricted Residential SCO but is below the Site-Specific SCO established, 1.5 mg/Kg.
  Other metals such as barium, cadmium, and chromium were also below their respective residential restricted use SCOs.
- **Volatile Organic Compounds (VOCs)**:
  VOCs, including 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, and acetone, were either not detected or were below the residential restricted use SCOs.
- **Semi-Volatile Organic Compounds (SVOCs)**:
  The detected levels of benz(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene and indeno(1,2,3-cd)pyrene were above the residential restricted use SCOs, but the total SVOCs were below the established Site-Specific SCO. The detected levels of other SVOCs such as acenaphthene, anthracene, and pyrene were below the residential restricted use SCOs.
- **Pesticides**:
  The concentration of Alpha-chlordane in one endpoint soil sample, EP-1, exceeded the residential restricted use SCO of 4.2 mg/Kg, with a detected level of 4.8 mg/Kg. This was the only pesticide compound that exceeded the residential restricted use SCO.
- **Polychlorinated Biphenyls**:
  The total PCBs, including Aroclor 1260, were not detected in the soil endpoint samples. As such the PCB endpoint results are below residential restricted use SCOs.

No Site-Specific SCO was established for pesticide compounds. However, the pesticide compound alpha-chlordane was detected in endpoint sample EP-1 (15'4") at 4.8 mg/Kg, above the applicable Restricted Residential SCO of 4.2 mg/Kg. Given the uncommon presence of a pesticide at a depth of 15 feet 4 inches, it is possible that the sample was cross contaminated with stormwater runoff or soil from shallower than the final excavation and sample collection depth. The pesticide, alpha-chlordane, in soil was detected in the Phase II investigation at SB-4 (0-2`) at 7.0 µg/kg, which was below the NYSDEC Unrestricted Use SCO limit of 94 µg/Kg. In the deeper sample SB-4 (11-13'), the levels were below laboratory method detection limits of <3.6 µg/Kg. The closest Phase II soil sample location to EP-1 was SB-4. The pesticide compound chlordane in groundwater was also below method detection limits in the nearest well B-1W and undetected in other onsite wells. The lack of a groundwater quality standard contravention for the pesticide parameters that exceeded SCOs indicates the residual soil does not pose a significant threat to public health and the environment. On-site groundwater use prohibitions for potable supply will ensure that there is no direct exposure.

Overall, the targeted soil cleanup objectives were successfully met for the majority of analytes, indicating effective remediation efforts. The slight exceedance of Alpha-chlordane was and continues to be addressed by the installation/inspection and maintenance of the composite cover system and vapor/waterproofing barrier.

After review of all data and pertinent information, it was determined that the development would still be protective of public health and the environment by managing the remaining material in place. The majority of contaminated media was removed during the removal action, and all remaining material was under a permanent cover, eliminating any potential for public health exposure. The cover would be inspected and maintained over the long term under a Site Management Plan (SMP), ensuring that it remains intact, and functions as designed. Additionally, any future excavation on the property would be controlled by continued registration of the E designation and adherence to the Soil and Materials Management Plan (SMMP), ensuring safe handling and proper reconstruction of the cover upon completion of work.

The Site Specific SCOs for this property were drafted due to residual concentrations of metals and SVOCs identified in the remedial investigation phase. Site Specific SCOs were assigned based on the potential for environmental and public health impact. Despite elevated soil concentrations, groundwater does not exhibit exceedance of Groundwater Quality Standards for the metal mercury and there are no associated public health or environmental exposures. The groundwater did exhibit exceedances of select SVOCs identified in residual soil, but groundwater is not a source of drinking water in Manhattan. Finally, potential future exposures from soil excavation after the completion of the remedial action will be addressed by the development and implementation of the Site Management Plan in this RCR. Based on this evaluation, management of these soils in place was determined to be protective of public health and the environment.

A map of end point sample locations is enclosed in **Figure 9**. A tabular summary of end point sampling results compared to SCOs are included in **Tables 1a** and **1b**. Full laboratory reports are included in **Appendix G**.

Hot Spot End Point Sampling Summary

Ten soil samples were collected from a lead hot spot identified in the vicinity of investigation sample SB-4(0-2'), which had a lead concentration of 1,630 mg/kg. The area was delineated during remedial excavations. The samples were analyzed for total lead and Toxicity Characteristic Leaching Procedure (TCLP) lead. During remedial excavations five soil samples were taken from a depth of 2 feet and surrounding the spot in the respective compass direction.(HS-N, E, W, S and B), and five additional soil samples were later taken, with certain samples located in approximately the same spots as previous sampled as needed, from a deeper depth of 10 feet (OEHS-N, E, W, S and B). Excavations were advanced deeper to the west and south based on visual red "paint" markers in the soil. The deeper samples were collected slightly offset based on visual observations of what appeared to be red paint. The laboratory results showed the following:

- Total lead was detected at concentration ranging from 31.6 to 1,370 mg/kg in HS-N, E, W, S and B during the supplemental investigation. The Phase II sample SB-4(0-2') had a concentration of 1,630 mg/kg which shows the area was indicative of the same source.

- During the lead hotspot investigation TCLP lead was detected in exceedance of the criteria in HS-W 2' and HS-S 2'. The limit for TCLP lead was 5 mg/L, while the HS-W 2' detection was 9.25 mg/L and the HS-S 2' detection was 13.8 mg/L. Excavation to remove and segregate hazardous lead containing soil therefore advanced deeper and to the west and south based on visual red "paint" markers in the soil.

- Lead levels in OEHS-N, E, W, S, and B ranged from 56.9 to 222 mg/kg following hotspot-excavation. This shows lower lead concentrations compared to the original hot spot (HS) samples, indicating effective removal of the lead hot spot with depth. None of the 10-foot-deep samples exceeded the Site Specific SCO of 650 mg/Kg or EPA toxicity TCLP lead limit of 5 mg/L.

A map showing the location of hotspots sampled, along with the analytical results, is provided as **Figure 10. Table 5** summarizes the hot spot sample results. The complete hot spot sampling laboratory reports are enclosed in **Appendix M.** Excavation for site development ultimately extended beyond the location of all hot spot delineation and associated end point samples.

End Point Data Usability Summary

The laboratory procedures and Quality Assurance/Quality Control (QA/QC) results were evaluated by the Qualified Environmental Professional for the project, Harry Sudwischer. Results of the evaluation indicate that the samples received by Phoenix Environmental Laboratories were all received in proper condition, under chain-of-custody

protocol, and meeting the appropriate acceptance requirements for environmental samples. Trip blanks accompanied soil samples submitted for VOC analyses. A blind duplicate soil sample, Sample ID "DUP" was collected on October 24, 2023. Review of the data shows adequate similarities between the duplicate and parent Sample ID "EP-5(15' 4")". Method Detection Limits achieved were all or generally below regulatory thresholds. Based on this review by the QEP and lack of indication of any deviations from the proposed analyses methods or laboratory standards, the end-point data are usable.

4.5 MATERIALS DISPOSAL

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

Disposal Location/Address	Type of Material	Quantity
Middlesex County Landfill, East Brunswick NJ	Non-Hazardous Soils	3,398.01 tons
Hazleton Creek Properties, LLC., Hazleton PA	Non-Hazardous Soils	87.73 tons
Republic Environmental Systems, LLC., Clean Earth, Hatfield PA	Hazardous Lead Contaminated Soils	52.9 tons
Willets Point Asphalt Corporation and Carlson Corporation	Concrete and Asphalt	75 cubic yards

Letters from the applicant, detailing the type of materials and their sources, as well as acceptance letters from the disposal facility, which include data references and processing dates, are in **Appendix D.** Manifests, including transport documentation with material types and source information, are in **Appendix E**. Laboratory testing results, specifying the analysis methods and detected substances, are in **Appendix A and Appendix F**. Transport and disposal/import quantities, along with material classifications and source references, are listed in **Table 3**.

4.6 BACKFILL IMPORT

A process was established to evaluate sources of backfill and cover soil to be imported to the Site. Material from industrial sites, spill sites, environmental remediation sites or other potentially contaminated sites were not imported to the Site.

Sources of backfill included Evergreen Recycling of Corona, Impact Reuse Recovery Center (IRRC), and OER Clean Soil Bank – Forbell stockpile facilities. The materials were identified as either virgin gravel or Non-Hazardous Soils.

Source/ Address	Type of Material	Quantity
CSB Forbell Stockpile / 830 Forbell St., Brooklyn, NY 11208	Non-Hazardous Soils	360 cubic Yards
Impact Recovery and Reuse Center / 1000 Page Ave., Lyndhurst, New Jersey 07031	Non-Hazardous Soils	80 cubic Yards
Evergreen Recycling of Corona 127-50 Northern Blvd. Flushing, NY 11368 / Vulcan Materials Company Hamburg Quarry 3620 Route 23, Hamburg, NJ 07419	Virgin gravel - #57 Blue Stone	100 cubic Yards

The review and acceptance process for the backfill involved evaluation to ensure that the soil/gravel met the necessary requirements for use on the site. All imported soil underwent chemical testing to demonstrate its suitability. The frequency of chemical testing of the Non-Hazardous soil was more frequent than what was proposed as part of the RAWP, every 500 cubic yards. The results and frequency of chemical testing for soil was provided to OER for approval before receipt of material. In total 19 samples were collected of the Impact Recovery and Reuse Center Non-Hazardous Soils material prior to import. The soil was sampled for all analytes listed in 6NYCRR Part 375-6.8 (Volatile Organic Compounds - EPA 8260B, Polychlorinated Biphenyls – EPA 8082A, Semi-Volatile Organic Compounds – EPA 8270E, Herbicides/Pesticides – EPA 8151A/8081B, Metals – EPA 6010D/7471B/7196A/9012B, Emerging Contaminants – EPA 8260D/ 1633 Draft 3).

A letter from the generator of the virgin gravel was provided by Evergreen Recycling and Forbell Stockpile sieve analysis was evaluated prior to acceptance of the Non-Hazardous Soils material from the Clean Soil bank. The transfer number for the soil from CBS was 24CCSB078.

The Non-Hazardous Soils backfill was infilled around the foundation. These soils are covered with concrete ground floor level concrete slabs for the new building.

The location of the virgin gravel backfill was placed below the vapor barrier/ waterproofing and basement slab/concrete cover system across the footprint of the site. The distribution of soils and gravel are displayed on **Figure 11**.

All soil imported to the property achieved the lower of 6NYCRR Part 375-6.8 Protection of Groundwater Standards and Restricted Residential SCOs. A table of all sources of backfill with quantities for each source is enclosed as **Table 3**. Summarized chemical analytical results for backfill are included in **Table 4**., Full laboratory reports are included in **Appendix I**.

4.7 DEMARACTION

All soil below the final cover is residual soil that was addressed by Site Management under this remedial action. No demarcation other than the cellar slab was used. After the completion of hotspot removal and other invasive remedial activities, and prior to backfilling, the top of the residual soil/fill was established to be 15 feet 4 inches below sidewalk grade. This constitutes the top of the site management horizon. Materials within this horizon require adherence to special conditions during future invasive activities as defined in the Site Management Plan.

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 primary Engineering Control Systems.

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

Composite Cover System

Exposure to residual soil or fill was prevented by an engineered, composite cover system that was constructed on the site. The composite cover consists of the foundation being set on caissons socketed into bedrock and topped with 2.5-foot-thick pile caps, which were installed to approximately 14 feet bgs. The cellar slab is 1.5 to 2.25 feet thick, and the bottom of the slab was approximately 13.15 feet bgs. A concrete button pit and an elevator pit extend to approximately 18 feet bgs. This composite cover system was comprised of a cellar building slab with approximately 100 cubic yards of 0.75-inch, clean, granular sub-base gravel beneath the basement slab. Concrete covers the entire site including sidewalks, and concrete building slabs. A diagram of the composite cover system is enclosed in **Figure 6**

The composite cover system is a permanent engineering control. The system will be inspected, and its performance certified at specified intervals as required by the RAWP and the SMP. A Soil and Materials Management Plan was included in the SMP and outlines the procedures to be followed in the event that the composite cover system and underlying residual soil/fill is disturbed after the remedial action was complete. The contractor for the cover construction was Shore Built Construction Corp.

The figure for the basement has been completed and is enclosed as **Figure 6**. The currently provided plans are enclosed as **Appendix H.** Photographs of construction of the Composite Cover System are included in **Appendix N**.

Vapor Barrier System

Exposure to soil vapor was prevented by a Vapor Barrier System that has been built on the Site. The waterproofing/vapor barrier system consists of four waterproofing membrane components manufactured by GCP Applied Technologies, Inc., Bituthene System 4000 (1.5 millimeter thick), Bituthene Liquid Membrane, Preprufe 300R and Preprufe Tape LT. Preprufe 300r was a 20-Mil Vapor Barrier, which was sandwiched between a layer of 4-inch-thick Styrofoam and the building slab throughout the full building area. The Preprufe was extended upward along the foundation walls to street level on the west side of the building. Bituthene 4000 was used on the walls on the north, south and east sidewalls of the foundation and overlapped the Preprufe at the bottom of the walls. Liquid Bituthene was used to seal around any utility and pipe penetrations in the Preprufe membrane Preprufe Tape LT was also used to bond Preprufe 300R with itself. All welds, seams and penetrations were properly sealed to prevent preferential pathways for vapor migration. A cross-sectional diagram and map of the vapor barrier system is enclosed in **Figure 7**. The professional engineer for the Vapor Barrier System was Robert Jackson.

The Figure 7 shows the as-built engineering diagram for the Vapor Barrier System used on this Site. Photographs of installation of the Vapor Barrier System are included in **Appendix N**. A copy of manufacturer's product specifications data sheets for the Vapor Barrier System is included in **Appendix O**.

6.0 INSTITUTIONAL CONTROLS

A series of Institutional Controls (IC's) are required under this remedial action to ensure permanent protection of public health by eliminating 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. Institutional Controls will be implemented in accordance with a Site Management Plan included in this Remedial Closure Report (RCR). Institutional Controls are:

(1) Continued registration of the E-Designation for the property. This RCR includes a description of all ECs and ICs and summarizes the requirements of the SMP which notes that the property owner and property owner's successors and assigns must comply with the approved SMP;
(2) Compliance with the OER-approved SMP in the RCR that provides procedures for appropriate operation, maintenance, inspection, and certification of ECs and IC's. The SMP requires that the property owner and property owner's successors and assigns will submit to OER a periodic written statement that certifies that: (1) controls employed at the Site are unchanged from the previous certification or that any changes to the controls were approved by OER; and, (2) nothing has occurred that impairs the ability of the controls to protect public health and environment or that constitute a violation or failure to comply with the SMP. OER retains the right to enter the Site in order to evaluate the continued maintenance of any controls. This certification shall be submitted at a frequency to be determined by OER in the SMP and will comply with RCNY §43-1407(l)(3);
(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 gardening and farming in contact with residual soil materials on the Site are prohibited;
(6) Use of groundwater underlying the Site is prohibited without treatment rendering it safe for its intended use;
(7) All future activities on the Site that will disturb residual soil/fill must be conducted pursuant to the soil management provisions in an OER-approved SMP;
(8) The Site will be used for mixed-use commercial and residential purposes and will not be used for a higher level of use without prior approval by OER.

7.0 SITE MANAGEMENT PLAN

Site Management was the last phase of the remedial process and begins after the approval of the Remedial Closure Report (RCR) 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 and providing notice of the revocation to the NYC DOB as well as potential civil penalties pursuant to Subchapter 8 of Chapter 14 of Title 43 of the Rules of the City of New York.

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. 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 the long-term performance of ECs and ICs for this property. Because Site Specific SCOs were used, Site Management is required to manage residual soil.

The SMP provides a detailed description of procedures required to manage residual material at the Site following the completion of remedial construction. This includes: (1) maintenance of Engineering Controls; (2) inspection of ECs and ICs; and (3) certification of performance of ECs and ICs.

7.1 ENGINEERING CONTROLS

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

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

Maintenance of Composite Cover System

Section 5 describes the Composite Cover System utilized in this remedial action and provides 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 was included in this Site Management Plan in section 7.5 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 was completed.

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 would 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).

Maintenance of Vapor Barrier System

Section 5 describes the Vapor Barrier System utilized in this remedial action and provides as-built design details and the system location. The Vapor Barrier System is a permanent Engineering Control for the Site. The system would 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 was breached during future 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 and covered with the re-built concrete building slab.

7.2 INSTITUTIONAL CONTROLS

A series of Institutional Controls (IC's) are required under this remedial action to ensure permanent protection of public health by eliminating 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. Institutional Controls would be implemented in accordance with a Site Management Plan included in the Remedial Closure Report (RCR). Institutional Controls are:

(1) Continued registration of the E-Designation for the property. This RCR includes a description of all ECs and ICs and summarizes the requirements of the SMP which notes that the property owner and property owner's successors and assigns must comply with the approved SMP;
(2) Compliance with the OER-approved SMP in the RCR that provides procedures for appropriate operation, maintenance, inspection, and certification of ECs and IC's. The SMP requires that the property owner and property owner's successors and assigns will submit to OER a periodic written statement that certifies that: (1) controls employed at the Site are unchanged from the previous certification or that any changes to the controls were approved by OER; and, (2) nothing has occurred that impairs the ability of the controls to protect public health and environment or that constitute a violation or failure to comply with the SMP. OER retains the right to enter the Site in order to evaluate the continued maintenance of any controls. This certification shall be submitted at a frequency to be determined by OER in the SMP and will comply with RCNY §43-1407(l)(3);
(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 gardening and farming in contact with residual soil materials on the Site are prohibited;
(6) Use of groundwater underlying the Site is prohibited without treatment rendering it safe for its intended use;

(7) All future activities on the Site that will disturb residual soil/fill must be conducted pursuant to the soil management provisions in an OER-approved SMP;
(8) The Site will be used for mixed-use commercial and residential purposes and will not be used for a higher level of use without prior approval by OER.

7.3 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 completed 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

Inspections will include a visual evaluation of all accessible system components. Evidence of active or past invasive activity, such as patches and repairs, will be assessed. Photographs will document findings.

Annual inspections will ensure that the Engineering and Institutional Controls were functioning as designed and remain protective of human health and the environment. Records must be maintained. For the first two years post-construction, QEP certified inspections will be conducted annually, and subsequently every 10 years. Inspection and Certification Letter Reports will be submitted to OER in digital format by July each year, covering all calendar years since the prior reporting period. These reports will utilize a form established by OER, documenting the findings, and ensuring compliance.

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

During inspections, the composite cover system will be examined to determine its effectiveness in protecting human health and the environment. Inspectors will also assess whether any changes are needed for the remedial systems or controls, and if compliance with the SMP has been maintained. Complete and up-to-date records, along with certification

checklists, will be reviewed and recorded. See **Appendix O** for a blank site inspection checklist.

Inspection of Vapor Barrier System

If the composite cover system is found to be intact and functioning as designed (i.e., protecting the public from residual contamination left onsite), then the vapor barrier will generally be assumed to be intact and functioning as designed as well unless odors or indoor air sampling indicate otherwise. If there has been a puncture or other damage done to the composite cover system, the vapor barrier system must be inspected using the same guidelines detailed above.

Site Use Prohibitions

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

- whether there was vegetable gardening or farming in residual soil/fill (as opposed to in raised garden beds filled with clean soil/compost);
- 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 or commercial use addressed by the remedial action.

7.4 INSPECTION AND CERTIFICATION LETTER REPORT

Results of inspections performed during a reporting period and certification of performance of all Engineering Controls and Institutional Controls will be included in an Inspection and Certification Letter Report. Upon construction and project completion, QEP Certified inspections will be performed annually for two years after construction and every 10 years thereafter. Inspection and Certification Letter Reports will be submitted by July of each year thereafter. Inspection and Certification Reports will cover all calendar years from the prior reporting period. Inspection and Certification Letter Reports will be submitted to OER in digital format. The letter report will utilize a form established by OER. This form includes, at a minimum:

- Date of inspections;
- Personnel conducting inspections;
- Description of the inspection activities performed;
- Observations, conclusions, or recommendations;
- Copy of any monthly inspection forms;
- Photographs; and
- Certification of the performance of Engineering Controls and Institutional Controls executed by the P.E. or QEP responsible for this Inspection and Certification Letter Report, as discussed below.

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

- If Engineering Controls and Institutional Controls employed at the Site continued to be in place, performed as designed, and continued 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 was 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 or commercial use addressed by the remedial action;
- If inspection site records are complete and up to date; and
- If the Site continues to be registered as an E-Designated property by the NYC Department of Buildings;

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.
- 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.

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

7.5 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

Soil screening will be performed during any future intrusive work. Visual, olfactory, and Photo-ionization Detector (PID) soil screening and assessment would be performed under the supervision of a Qualified Environmental Professional (QEP). Soil screening will be conducted during invasive work performed during actions that expose soils at the site and ground disturbance activities. PID readings from observable subsurface materials will be screened, as necessary .

A QEP or site personnel under their jurisdiction would check soil as exposed, especially when different soils are observed being excavated. During these screening activities, the following observations will typically be made:

Visual Screening- Varied soil colors and soil types will be noted, indicating potential fill and native areas. In the event of any unusual discoloration, sheen, or debris sampling may be needed to determine if the materials can be reused and, if warranted properly disposed. Historically most materials were native sands, silts, and fill material.

Olfactory Screening- The presence of any distinct odors, such as petroleum or chemical smells, will help identify areas of concern that require additional testing.

PID Screening- Elevated PID readings often suggest elevated levels of volatile organic compounds (VOCs), prompting further inspection and appropriate handling measures to maintain best site management practices. When reaching terminal depths, a PID should be used to locate the area of most elevated PID measurements prior to collecting the respective samples in compliance with DER-10.

When implemented these screening methods, ensure that all excavated materials will be appropriately managed, segregated, and disposed of according to facility and NYSDEC disposal requirements.

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, kept covered at all times with appropriately anchored plastic tarps, and will routinely be inspected. Broken or ripped tarps will be promptly replaced.

All stockpile activities will comply 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 50 feet from the property boundaries, where possible. Hay bales or equivalent means will be used for 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 will be 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 QEP overseeing the remedial action will do the following:

- Oversee intrusive work and the excavation and load-out of excavated material;
- Ensure that there is a party responsible for the safe execution of intrusive and other work performed under this management plan;
- Ensure that Site maintenance activities and maintenance-related grading cuts did 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 were 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 are kept clean of Site-derived materials during Site intrusive work.

Locations where vehicles exit the Site will 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. When loads contain wet material capable of causing leakage from trucks, truck liners will be used. Queuing of trucks will be performed onsite, when possible, in order to minimize offsite disturbance. Outbound truck transport routes are shown in **Figure 8**. This route took into account the following factors: (a) limiting transport through residential areas and past sensitive sites; (b) use of mapped truck routes; (c) minimizing offsite 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 use these truck routes. Trucks will not stop or idle in the neighborhood after leaving the project Site.

Materials Disposal Off-Site

Documentation associated with disposal of all material includes 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 disposed of 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 of 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, sample maps, analytical results and QA/QC will be transmitted to the respective facility as part of the disposal facility approval process and will be retained and included in the following Inspection and Certification Report. A manifest system for offsite transportation of exported materials will be employed. Hazardous waste derived from onsite 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 purpose will be placed in the same excavation it was derived from or will potentially be disposed of offsite. If the PE/QEP deems advisable, the PE/QEP will request OER approve reuse elsewhere on-site 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. If remedial systems are repaired or altered, the QEP/ PE who oversaw repairs must inspect and certify the repairs are as protective as the original system in the Inspection and Certification Report.

Import of Backfill Soil from Off-Site Sources

In the event that soil importation is needed for the backfilling purposes after the remedial action, this Section presents the requirements for imported fill materials. All imported soils met OER-approved backfill and cover soil quality objectives for this Site. The backfill and cover soil quality objectives include NYSDEC Part 375 Residential SCOs and Protection of Groundwater SCOs. A process will be established to evaluate sources of backfill and cover soil to be imported to the Site, including 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 or equivalent as determined by QEP;
- Virgin quarried material or other materials with an approved Beneficial Use Determination (BUD) from NYSDEC for reuse as clean fill;
- Asphalt Millings from approved Park Department facilities for reuse as appropriate for surface coverings;

All materials received for import to the Site will be approved by a PE/QEP and will be in compliance with the applicable provisions in the 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 the backfill or soil cover was placed onsite.

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 enter the Site at designated locations;
- The PE/QEP are responsible for ensuring 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 taken at a minimum frequency of one sample for every 500 cubic yards of material. One composite sample will be collected from each source of virgin quarried material or other

material with an NYSDEC approved BUD, unless otherwise pre-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 can be delivered to the Site.

Recycled concrete aggregate (RCA) without fines may be imported from facilities permitted or registered by NYSDEC. A PE/QEP are responsible for ensuring that the facility was 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 a cover material.

Recycled Asphalt Millings may be imported from the NYC Asphalt Millings Bank and other permitted facilities for reuse as appropriate for surface coverings. Asphalt millings imported from compliant facilities will not require additional testing, unless required by NYSDEC under its terms for operation of the facility.

Fluids Management

All liquids removed from the Site, including dewatering fluids, will be handled, transported, and disposed of in accordance with applicable laws and regulations. When liquids are discharged into the New York City sewer system, prior approval by New York City Department of Environmental Protection (NYC DEP) must be obtained. 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 were managed by transportation and disposal at an off-Site treatment facility or some other means compliant with applicable laws and regulations. If the fluids are planned to be transported offsite for disposal, the receiving facility must be pre-approved by OER. Discharges of water generated during remedial construction to surface waters (e.g., a stream or river) are 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 invasive work. 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 include: (d) direct load-out of soils to trucks for off-Site disposal; and (e) use of chemical deodorants in spray or misting systems.

The odor control plan must be capable of controlling emissions of nuisance odors. If nuisance odors are identified, the work will be halted, and the source of odors identified and corrected. Work would not resume until all nuisance odors were abated. OER would be notified of all odor complaint events. Implementation of all odor controls, including halt of work, is 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 as well as when disturbing any cement;
- 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 identified and corrected. Work would not resume until all nuisance dust emissions were abated. OER will be notified of all dust complaints. Implementation of all dust controls, including halt of work, is the responsibility of the PE/QEPs.

Noise

All work will conform, at a minimum, to NYC noise control standards.

7.6 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, may 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 more than 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, was 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 would be shut down.

All 15-minute readings will be recorded and 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 will be visually assessed during all work activities.

> If the downwind PM-10 particulate level was 100 micrograms per cubic meter ($\mu g/m^3$) greater than background (upwind perimeter) for the 15-minute period or if airborne dust was observed leaving the work area, then dust suppression techniques will be employed. Work can continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 $\mu g/m^3$ above the upwind level and provided that no visible dust was migrating from the work area.
>
> If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 $\mu g/m^3$ above the upwind level, work will be stopped and a re-evaluation of activities initiated. Work will resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 $\mu g/m^3$ of the upwind level and in preventing visible dust migration.

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

7.7 CONTINGENCY PLAN

This contingency plan was 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 would be promptly communicated to OER's Project Manager. Petroleum spills would 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 would be performed on contaminated source material and surrounding soils and reported to OER. Chemical analytical testing would be performed for TAL metals, TCL volatiles and semi-volatiles, TCL pesticides/herbicides and PCBs, as appropriate.

Emergency Telephone Numbers

In the event of any emergency conditions 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 with Harry Sudwischer. These emergency contact lists must be maintained in an easily accessible location at the Site.

Emergency Contacts

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

Other Contact Information

Qualified Environmental Professional: Harry Sudwischer	harrys@ecmsny.com
Office of Environmental Remediation: Christopher Rooney	(212) 788-8841; 311
Developer: Central Interiors, Gen. Contractor Sarah Pereira	sarahpereira@central-interiors.com
Owner: 14 White Street Property Owner LLC, Vice Pres. Frank LePera	ftlepera@gmail.com

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

Reuse of clean, locally derived recyclable materials reduces consumption of non-renewable virgin resources and can provide energy savings and greenhouse gas reductions. The general contractor will reuse the granite sidewalks along White Street. The foundation contractor Shore Built Construction imported approximately 360 cubic yards of fill for reuse at the project site from the CSB Forbell Stockpile. The soils were used around the foundation. Additionally, Shore Built imported clean, non-virgin fill materials from IRRC in Lyndhurst, NJ for redevelopment for infilling around the foundations wherever possible. Approximately 440 cubic yards of clean, non-virgin materials was reused at this site.

Reduced Energy Consumption

Reduced energy consumption lowers greenhouse gas emissions, improves local air quality, lessens in-city power generation requirements, and can provide substantial cost savings. The remedial program selection of Site Specific SCOs allowed for less excavation of soil/fill and, consequently less backfill and truck trips were required. This reduced the energy consumption necessary for trucking and lowered traffic congestion. To further these goals, we also implemented a practice of turning off trucks and machinery when they were not in active use. This simple yet effective measure conserved fuel, lowered energy consumption, reduced emissions, and minimized noise pollution.

A total of 4,714.4 miles of truck trips were required for disposal of soil/fill and 473.1 miles for import of clean backfill.

Trees and Plantings

Trees, green roofs, and other plantings provide habitat and add to NYC's environmental quality in a wide variety of ways. As part of development a tree was planned for planting in the White Street sidewalk. The planned location is illustrated in **Figure 4** page 2.

Recontamination Controls

Recontamination after cleanup and redevelopment 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. Measures taken to control recontamination included:

- Properly handling and disposing of any residual waste or by-products from the remediation process to prevent potential recontamination. This included following regulations for hazardous waste management.

- Regularly maintaining and servicing equipment and systems used in the remediation process to ensure they functioned correctly and did not contribute to contamination.

- Installing physical barriers, such as caps or liners, to prevent the spread of contaminants. This also included implementing a cover system to manage and contain any remaining pollutants.

- Regularly monitoring the site to detect any signs of recontamination or environmental changes that could lead to contamination. This included routine inspections and environmental sampling.

  The entire area of the Site utilized recontamination controls, 3,845 square feet.