

646 11th Avenue
MANHATTAN, NEW YORK

Remedial Action Report

NYC VCP Project Number 18CVCP074M
E-Designation Project Number 12EHAN263M

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REMEDIAL ACTION REPORT

TABLE OF CONTENTS

TABLE OF CONTENTS	2
LIST OF ACRONYMS	7
CERTIFICATION	8
EXECUTIVE SUMMARY	9
REMEDIAL ACTION REPORT	17
1.0 SITE BACKGROUND	17
1.1 SITE LOCATION AND BACKGROUND.....	17
1.2 REDEVELOPMENT PLAN	17
1.3 DESCRIPTION OF SURROUNDING PROPERTY	18
1.4 SUMMARY OF PAST SITE USES AND AREAS OF CONCERN	18
1.5 SUMMARY OF WORK PERFORMED UNDER THE REMEDIAL INVESTIGATION	19
1.6 SUMMARY OF FINDINGS OF REMEDIAL INVESTIGATION	19
2.0 DESCRIPTION OF REMEDIAL ACTIONS	22
3.0 COMPLIANCE WITH REMEDIAL ACTION WORK PLAN	25
3.1 CONSTRUCTION HEALTH & SAFETY PLAN	25
3.2 COMMUNITY AIR MONITORING PLAN	25
3.3 SOIL/MATERIALS MANAGEMENT PLAN	25
3.4 STORM-WATER POLLUTION PREVENTION	25
3.5 DEVIATIONS FROM THE REMEDIAL ACTION WORK PLAN	26
4.0 REMEDIAL PROGRAM	27
4.1 PROJECT ORGANIZATION	27
4.2 SITE CONTROLS	27
4.3 MATERIALS EXCAVATION AND REMOVAL ACTION	29
4.4 MATERIALS DISPOSAL	31
4.5 BACKFILL IMPORT	32
5.0 ENGINEERING CONTROLS	33
6.0 INSTITUTIONAL CONTROLS	35
7.0 SITE MANAGEMENT PLAN	36
8.0 SUSTAINABILITY REPORT	37

FIGURES

Figure 1: Site Location Map

Figure 2: Site Boundary Map

Figure 3: Development Plan

Figure 4: Map showing location and approximate depth of excavations

Figure 5: Map showing location of hotspot/tank source removal

Figure 6: Map of soil/fill reuse and backfill placement locations

Figure 7: Map of location of Composite Cover System

Figure 8: As-built design detail for Cover types

Figure 9: Map of location of Vapor Barrier System

Figure 10: As-built design detail for Vapor Barrier System

TABLES

Table 1: List of SCOs

Table 2: Disposal quantities and disposal facilities

Table 3: Backfill quantities and sources

Table 4: Summary of backfill analytical data

APPENDICES

Appendix 1: Remedial Investigation Report

Appendix 2: Remedial Action Work Plan & Stipulation List

Appendix 3: Daily and Monthly Reports to OER

Appendix 4: Disposal Facility Requests, Historic Fill Notification Forms, and Approval Letters

Appendix 5: Shipping and Disposal Manifests

Appendix 6: Disposal Characterization Sample Laboratory Testing Results

Appendix 7: Documentation for Vapor Barrier System

Appendix 8: UST Tank closure documentation

Appendix 9: Imported backfill laboratory analytical data reports

Appendix 10: As-built drawings and documentation for Engineering Controls

Appendix 11: Photographs of Remedial Action

LIST OF ACRONYMS

Acronym	Definition
CAMP	Community Air Monitoring Plan
DER-10	NYS DEC Division of Environmental Remediation Technical Guidance Manual 10
EC	Engineering Control
HASP	Health and Safety Plan
IC	Institutional Control
NYC VCP	New York City Voluntary Cleanup Program
NYC DEP	New York City Department of Environmental Protection
NYC DOHMH	New York City Department of Health and Mental Hygiene
NYC OER	New York City Office of Environmental Remediation
ORC	Oxygen Release Compound
PID	Photoionization Detector
QA/QC	Quality Assurance/Quality Control
QEP	Qualified Environmental Professional
RAR	Remedial Action Report
RAWP	Remedial Action Work Plan
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
RCA	Recycled Concrete Aggregate
SPDES	State Pollutant Discharge Elimination System
NYS DEC	New York State Department of Environmental Conservation

CERTIFICATION

I, Craig Puerta, 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 646 11th Avenue site, site number 18CVCP074M.
- I have reviewed this document, to which my signature and seal are affixed.
- The vapor barrier system and composite cover system constructed during this remedial action were designed by me or a person under my direct supervision and achieve the goals established in the Remedial Action Work Plan for this site.
- The vapor barrier system and composite cover system constructed during this remedial action were professionally observed by me or by a person under my direct supervision are accurately reflected in the text and drawings for as-built design reported in this Remedial Action Report.
- The OER-approved Remedial Action Work Plan dated May 29, 2018 and Stipulations in a letter dated in June 8, 2018 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

Craig Puerta, P.E.

PE License Number

087830

Signature

Date
6-29-2020



I, Levent Eskicakit, certify the following:

- I am a Qualified Environmental Professional. I had primary direct responsibility for implementation of the remedial program for the 646 11th Avenue site, site number 18CVCP074M.
- The OER-approved Remedial Action Work Plan dated May 29, 2018 and Stipulations in a letter dated June 8, 2018 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.

QEP Name

Levent Eskicakit.

QEP Signature

Date

Levent Eskicakit

June 29, 2020

EXECUTIVE SUMMARY

SGSB Developers, LLC has enrolled in the New York City Voluntary Cleanup Program (NYC VCP) to investigate and remediate a property located at 646 11th Avenue in the West Clinton section of Manhattan, New York. A Remedial Investigation (RI) was performed to compile and evaluate data and information necessary to develop a Remedial Action Work Plan (RAWP). A remedial action was performed pursuant to the OER-approved RAWP in a manner that has rendered the Site protective of public health and the environment consistent with the proposed use of the property. This RAR describes the remedial action performed under the RAWP. The remedial action described in this document provides for the protection of public health and the environment and complies with applicable environmental standards, criteria and guidance and applicable laws and regulations.

Site Location and Background

The Site is located at 646 11th Avenue in the West Clinton section of Manhattan, New York and is identified as Block 1076 and Lot 1 on the New York City Tax Map. The Site is 30,121-square feet and is bounded by commercial buildings to the east, 11th Avenue to the west, West 48th Street to the north, and West 47th Street to the south. The Site was used for retail automobile sales and service and contained two stories with commercial usage. The Site Location Map is shown in Figure 1. The Site Boundary Map is shown in Figure 2.

Summary of Redevelopment Plan

The foundation and superstructure of a twelve (12) story mixed use building with cellar and partial sub-cellar levels was built on property. The full cellar includes parking and storage. The partial sub-cellar includes storage. The first floor includes retail space as floors 2-12 are residential. The gross square footage of the building is 261,484-square feet. The retail space is 38,836-square feet. The residential total space is 161,415-square feet (222 units). There are no residential affordable units in the building. The area of the

property including building footprint, basement footprint, and open space was 30,121-square feet.

The entire footprint of the building area (about 100% of the property) was excavated to a depth of approximately thirty-three (33) feet below grade.

A map showing the building location, basement location and open space location is shown in the Development Plan in Figures 3.1 and 3.2.

Summary of Description of Surrounding Property

The Site is located in a mixed commercial/residential area of the West Clinton neighborhood in Manhattan. Neighborhood characteristics consisted of mixed-use commercial, light industrial, and residential applications. No immediate adjacent schools or daycares were identified within 250 feet of the Site.

Summary of Past Site Uses and Areas of Concern

The subject site has been developed since at least 1890, which is the first Sanborn map provided by EDR with a brewery and several low-rise buildings. These buildings were later razed and developed with the existing site building in 1946, which is a two-story automobile sales and servicing building. The review of city directories identified that the Site has been utilized as the Eleventh Avenue Service Station in 1942, United Park Corporation in 2000, and as automobile dealerships from 2006 to 2013. The adjacent properties have been used for residential, factory, commercial, and manufacturing use.

A Phase I ESA was prepared by NOVA Geophysical, dated March 2016, and identified the following Recognized Environmental Conditions (RECs):

1. The historical use of the area for manufacturing and automobile repair and servicing;
2. Presence of several open NY Spills of significance in close proximity to the site;
3. Presence of one (1) brownfield facility within close proximity to the Site with significant contamination

Summary of the Work Performed under the Remedial Investigation

This supplemental remedial investigation consisted of an investigation of soil, soil vapor and groundwater and was performed to further characterize the site for potential environmental impacts from historic on-site/off-site uses, operations, etc. Nova Geophysical & Environmental Services performed the following scope of work on behalf of the property owner:

1. Conducted a Site inspection to identify AOCs and physical obstructions (i.e. structures, buildings, etc.);
2. Installed three (3) soil borings across the entire project Site, and collected six (6) soil samples for chemical analysis from the soil borings to evaluate soil quality;
3. Installed two (2) groundwater monitoring wells throughout the Site and collected two (2) groundwater samples for chemical analysis to evaluate groundwater quality;
4. Installed three (3) soil vapor probes around Site perimeter and collected three (3) 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, 646 11th Avenue”, dated May, 2018 (RIR).

1. Elevation of the Site is estimated at 30’ above mean sea level.
2. Depth to groundwater ranges from fifteen (15) to eighteen (18) feet at the Site.
3. Groundwater flow direction is unknown but is assumed to be flowing in a westerly direction to towards the Hudson River beneath the Site.
4. Depth to bedrock is approximately twelve (12) feet to eighteen (18) feet at the Site.
5. The stratigraphy of the site, from the surface down, consists of historic urban fill to a depth of five (5) feet followed by native medium density clay to a depth of twelve (12) to eighteen (18) feet below the site.

6. Soil/fill samples collected during the RI were compared to NYSDEC Track 1 Unrestricted Use Soil Cleanup Objectives (SCOs) and Track 2 Restricted Residential Use SCOs as presented in 6NYCRR Part 375-6.8. No VOCs, metals, pesticides, or PCBs were detected above Unrestricted Use SCOs in any of the soil samples. Several SVOCs including benzo(a)anthracene (max. of 1 mg/kg), benzo(b)fluoranthene (max. of 1 mg/kg), and indeno(1,2,3-cd)pyrene (max. of 0.54 mg/kg) were detected above their respective Unrestricted Use SCOs in one sample. Of these contaminants, indeno(1,2,3-cd)pyrene also exceeded its Restricted Residential Use SCO. Overall, the soil results were consistent with data identified at Sites with historic fill in NYC.
7. Groundwater samples collected during the RI were compared to NYSDEC 6NYCRR Part 703.5 Class TA groundwater quality standards (GQS). No SVOCs, pesticides, or PCBs were detected above their GQS. VOC chloroform (at 36 µg/L) was detected above its GQS. Dissolved metals including iron (max. of 757 µg/L), magnesium (max. of 37,200 µg/L), and manganese (max. of 1,482 µg/L) were detected above their respective GQS. Total metals including aluminum (max. of 14,400 µg/L), iron (max. of 32,600 µg/L), magnesium (max. of 37,200 µg/L), and manganese (max. of 1,481 µg/L) were detected above their respective GQS. Metals detected are naturally occurring and are likely attributed to regional groundwater contamination and not from an on-site source.
8. Soil vapor samples collected during the RI were compared to the compounds listed in Table 3.1 of the Air Guideline Values derived by the NYSDOH located in the NYSDOH Final Guidance for Evaluating Soil Vapor Intrusion dated October 2006. Soil vapor results indicated low levels of petroleum related compounds and low levels of chlorinated VOCs (CVOCs) in each of the soil vapor samples. Total concentrations of petroleum related VOCs (BTEX) ranged from 127.8 µg/m³ to 223.4 µg/m³. Highest concentrations were detected for toluene to a maximum of 85.9 µg/m³. 1,1,1-trichloroethane, carbon tetrachloride, methylene chloride, tetrachloroethylene (PCE), trichloroethylene (TCE), and vinyl chloride were not detected during the RI.

Appendix 1 includes the RIR.

Summary of the Remedial Action

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

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

- A Pre-Application Meeting was held on March 23, 2018.
- A Remedial Investigation (RI) was performed from April to May 2018. A RI Report was prepared to evaluate data and information necessary to develop a Remedial Action Work Plan (RAWP).
- A Site Contact List was established. A draft RAWP was prepared and released with a Fact Sheet on May 30, 2018 for a 30-day public comment period.
- The RAWP and Stipulation List dated June 5, 2018 was approved by the New York City Office of Environmental Remediation (OER) on June 5, 2018.
- Site briefings were conducted with New York State Department of Environmental Conservation (NYSDEC) and NYCDOHMH on June 13, 2018.
- A Pre-Construction Meeting was held on October 24, 2018.
- A Fact Sheet providing notice of the start of the remedial action was issued on November 30, 2018.
- The remedial action was begun in December 1, 2018 and completed in September, 2019.

Appendix 2 contains the RAWP.

The remedial action consisted of the following tasks:

1. Prepared a Community Protection Statement and implemented a Citizen Participation Plan.
2. Mobilized site security and equipment (November 2018); completed utility mark outs; and marked and staked excavation areas.
3. Performed Waste Characterization Study prior to excavation activities. 42 of waste characterization soil samples were collected on August, 2018 to September, 2018. An additional 37 soil samples were collected from November, 2018 to December, 2018. Waste characterization samples were collected at a frequency dictated by disposal facility(s).
4. Performed a Community Air Monitoring Program (CAMP) for particulates and volatile organic carbon compounds. CAMP was performed from December 4th, 2018 to June 21st, 2019.
5. Selected NYSDEC Part 375 Unrestricted Use (Track 1) Soil Cleanup Objectives (SCOs).
6. The following excavations were performed: soil was removed to a depth of 11-25 feet from grade on the entire lot. A total of 25,176 cubic yards of soil, 1,800 cubic yards of concrete, and 28,200 cubic yards of rock were excavated and removed from the property down to approximately 33 feet below grade.
7. Excavated 5,376 cubic yards of non-hazardous soil/fill and transported to Coplay Aggregates, Inc., 5101 Beekmantown Rd, Whitehall, PA; excavated 15,312 cubic yards of petroleum impacted soil/fill and transported to Bayshore Soil Management, LLC, 75 Crows Mill Rd, Keasbey, NJ; excavated 4,488 cubic yards of clean soil and transported to Liberty Stone and Aggregate Clinton Quarry, 5 Frontage Rd, Clinton, NJ; excavated 27,600 cubic yards of rock and transported to Delancy St & Doremus Ave, Newark, NJ; excavated 600 cubic yards of rock and transported to ROCKTECH of New Jersey, LLC, 50 Caven Point Ave, Jersey City, NJ; excavated 1,728 cubic yards of concrete and transported to Tilcon New York, Inc., 411 Bergen Ave, Kearny, NJ; excavated 72 cubic yards of concrete and transported to Green Rock Recycling, LLC, 3 Frontage Dr, Clinton, NJ.

8. Screened excavated soil/fill during intrusive work for indications of contamination by visual means, odor, and monitoring with a PID.
9. Conducted materials management of excavated materials including temporarily stockpiling and segregating in accordance with defined material types and to prevent co-mingling of contaminated material and non-contaminated materials.
10. Appropriately segregated excavated media onsite prior to disposal. Transported and disposed all soil/fill material at permitted facilities in accordance with all applicable laws and regulations for handling, transporting, and disposing, and the RAWP.
11. End-point samples were not collected, as bedrock was encountered throughout the entire Site. Track 1 SCOs were achieved.
12. Removed five (5) underground storage tanks in compliance with applicable laws and regulations. One (1) 275-gallon and four (4) 550-gallon petroleum underground storage tanks (USTs) and associated soils were removed during construction. FDNY tank removal affidavit was obtained along with registration of tanks with NYSDEC.
13. As part of development, constructed an engineered Composite Cover System consisting of 34 to 40 inches of concrete slab underlain by bedrock. The contractor for the Composite Cover System construction was Trident Construction.
14. As part of development, installed a Vapor Barrier System that consisted of a 46-mil Preprufe 300R liner beneath the building slab and on top of mud slab. A 32-mil Preprufe 160R vapor barrier installed outside of one-faced foundation walls. A 59-mil Bituthene System 4000 installed outside of two-faced foundation walls. The contractor for the Vapor Barrier System construction was Trident Construction.
15. As part of development, installed a sub-grade ventilated parking garage.
16. Performed all activities required for the Remedial Action, including permitting requirements and pretreatment requirements, in compliance with applicable laws and regulations.

17. Implemented storm-water pollution prevention measures in compliance with applicable laws and regulations.
18. Imported soil to be used for backfill and cover in compliance with the Remedial Action Work Plan and in accordance with applicable laws and regulations.
19. Submitted daily reports during construction oversight activities. Intermittent daily reports were submitted from 12/3/18 to 8/21/2019.
20. Submitted a Sustainability Report.
21. Submitted this Remedial Action Report (RAR) that describes the Remedial Action; certifies that the remedial requirements defined in the RAWP have been achieved; defines the Site boundaries; and lists any changes from the RAWP.

REMEDIAL ACTION REPORT

1.0 SITE BACKGROUND

SGSB Developers, LLC has enrolled in the New York City Voluntary Cleanup Program (NYC VCP) to investigate and remediate a property located at 646 11th Avenue in the West Clinton section of Manhattan, New York. The boundary of the property subject to this Remedial Action is shown in Figure 1 and includes, in its entirety, Manhattan Block 1076 and Lot 1. The Remedial Action was performed pursuant to the OER-approved RAWP in a manner that has rendered the property protective of public health and the environment consistent with its intended use. This RAR describes the Remedial Action performed under the RAWP. The remedial action described in this document provides for the protection of public health and the environment and complies with applicable environmental standards, criteria and guidance (SCGs) and applicable laws and regulations.

1.1 SITE LOCATION AND BACKGROUND

The Site is located at 646 11th Avenue in the West Clinton section of Manhattan, New York and is identified as Block 1076 and Lot 1 on the New York City Tax Map. The Site is 30,121-square feet and is bounded by commercial buildings to the east, 11th Avenue to the west, West 48th Street to the north, and West 47th Street to the south. The Site was used for retail automobile sales and service and contained two stories with commercial usage. The Site Location Map is shown in Figure 1. The Site Boundary Map is shown in Figure 2.

1.2 REDEVELOPMENT PLAN

The foundation and superstructure of a twelve (12) story mixed use building with cellar and partial sub cellar levels was built on property. The full cellar includes parking and storage. The partial sub-cellar includes storage. The first floor includes retail space as

floors 2-12 are residential. The gross square footage of the building is 261,484-square feet. The retail space is 38,836-square feet. The residential total space is 161,415-square feet (222 units). There are no residential affordable units in the building. The area of the property including building footprint, basement footprint, and open space was 30,121-square feet.

The entire footprint of the building area (about 100% of the property) was excavated to a depth of approximately thirty-three (33) feet below grade.

A map showing the building location, basement location and open space location is shown in the Development Plan in Figures 3.1 and 3.2.

1.3 DESCRIPTION OF SURROUNDING PROPERTY

The Site is located in a mixed commercial/residential area of the West Clinton neighborhood in Manhattan. Neighborhood characteristics consisted of mixed-use commercial, light industrial, and residential applications. No immediate adjacent schools or daycares were identified within 250 feet of the Site.

1.4 SUMMARY OF PAST SITE USES AND AREAS OF CONCERN

The subject site has been developed since at least 1890, which is the first Sanborn map provided by EDR with a brewery and several low-rise buildings. These buildings were later razed and developed with the existing site building in 1946, which is a two-story automobile sales and servicing building. The review of city directories identified that the Site has been utilized as the Eleventh Avenue Service Station in 1942, United Park Corporation in 2000, and as automobile dealerships from 2006 to 2013. The adjacent properties have been used for residential, factory, commercial, and manufacturing use.

A Phase I ESA was prepared by NOVA Geophysical, dated March 2016, and identified the following Recognized Environmental Conditions (RECs):

1. The historical use of the area for manufacturing and automobile repair and servicing;
2. Presence of several open NY Spills of significance in close proximity to the site;
3. Presence of one (1) brownfield facility within close proximity to the Site with significant contamination

1.5 SUMMARY OF WORK PERFORMED UNDER THE REMEDIAL INVESTIGATION

This supplemental remedial investigation consisted of an investigation of soil, soil vapor and groundwater and was performed to further characterize the site for potential environmental impacts from historic on-site/off-site uses, operations, etc. Nova Geophysical & Environmental Services performed the following scope of work on behalf of the property owner:

1. Conducted a Site inspection to identify AOCs and physical obstructions (i.e. structures, buildings, etc.);
2. Installed three (3) soil borings across the entire project Site, and collected six (6) soil samples for chemical analysis from the soil borings to evaluate soil quality;
3. Installed two (2) groundwater monitoring wells throughout the Site and collected two (2) groundwater samples for chemical analysis to evaluate groundwater quality;
4. Installed three (3) soil vapor probes around Site perimeter and collected three (3) 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, 646 11th Avenue”, dated May, 2018 (RIR).

1. Elevation of the Site is estimated at 30’ above mean sea level.
2. Depth to groundwater ranges from fifteen (15) to eighteen (18) feet at the Site.
3. Groundwater flow direction is unknown but is assumed to be flowing in a westerly direction to towards the Hudson River beneath the Site.
4. Depth to bedrock is approximately twelve (12) feet to eighteen (18) feet at the Site.
5. The stratigraphy of the site, from the surface down, consists of historic urban fill to a depth of five (5) feet followed by native medium density clay to a depth of twelve (12) to eighteen (18) feet below the site.
6. Soil/fill samples collected during the RI were compared to NYSDEC Track 1 Unrestricted Use Soil Cleanup Objectives (SCOs) and Track 2 Restricted Residential Use SCOs as presented in 6NYCRR Part 375-6.8. No VOCs, metals, pesticides, or PCBs were detected above Unrestricted Use SCOs in any of the soil samples. Several SVOCs including benzo(a)anthracene (max. of 1 mg/kg), benzo(b)fluoranthene (max. of 1 mg/kg), and indeno(1,2,3-cd)pyrene (max. of 0.54 mg/kg) were detected above their respective Unrestricted Use SCOs in one sample. Of these contaminants, indeno(1,2,3-cd)pyrene also exceeded its Restricted Residential Use SCO. Overall, the soil results were consistent with data identified at Sites with historic fill in NYC.
7. Groundwater samples collected during the RI were compared to NYSDEC 6NYCRR Part 703.5 Class TA groundwater quality standards (GQS). No SVOCs, pesticides, or PCBs were detected above their GQS. VOC chloroform (at 36 µg/L) was detected above its GQS. Dissolved metals including iron (max. of 757 µg/L), magnesium (max. of 37,200 µg/L), and manganese (max. of 1,482 µg/L) were detected above their respective GQS. Total metals including aluminum (max. of 14,400 µg/L), iron (max. of 32,600 µg/L), magnesium (max. of 37,200 µg/L), and manganese (max. of 1,481 µg/L) were detected above their respective GQS. Metals detected are naturally occurring

and are likely attributed to regional groundwater contamination and not from an on-site source.

8. Soil vapor samples collected during the RI were compared to the compounds listed in Table 3.1 of the Air Guideline Values derived by the NYSDOH located in the NYSDOH Final Guidance for Evaluating Soil Vapor Intrusion dated October 2006. Soil vapor results indicated low levels of petroleum related compounds and low levels of chlorinated VOCs (CVOCs) in each of the soil vapor samples. Total concentrations of petroleum related VOCs (BTEX) ranged from 127.8 µg/m³ to 223.4 µg/m³. Highest concentrations were detected for toluene to a maximum of 85.9 µg/m³. 1,1,1-trichloroethane, carbon tetrachloride, methylene chloride, tetrachloroethylene (PCE), trichloroethylene (TCE), and vinyl chloride were not detected during the RI.

Appendix 1 includes the RIR.

2.0 DESCRIPTION OF REMEDIAL ACTIONS

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

A summary of the milestones achieved in the Remedial Action is as follows: A Pre-Application Meeting was held on March, 23, 2018. A Remedial Investigation (RI) was performed from April to May 2018. A RI Report was prepared to evaluate data and information necessary to develop a Remedial Action Work Plan (RAWP). A Site Contact List was established. A RAWP was prepared and released with a Fact Sheet on May 30, 2018 for a 30-day public comment period. The RAWP and Stipulation List dated June 5, 2018 was approved by the New York City Office of Environmental Remediation (OER) on June 5, 2018. Site briefings was conducted with New York State Department of Environmental Conservation (NYSDEC) on June, 13, 2018. A Pre-Construction meeting was held on October 24, 2018. A Fact Sheet providing notice of the start of the remedial action was issued on November 30, 2018. The remedial action was begun on December 1, 2018 and completed on August 23, 2019. Appendix 2 includes the RAWP.

The remedial action consisted of the following tasks:

1. Prepared a Community Protection Statement and implemented a Citizen Participation Plan.
2. Mobilized site security and equipment; completed utility mark outs; and marked and staked excavation areas.

3. Performed Waste Characterization Study prior to excavation activities. 42 of waste characterization soil samples were collected on August, 2018 to September, 2018. An additional 37 soil samples were collected from November, 2018 to December, 2018. Waste characterization samples were collected at a frequency dictated by disposal facility(s).
4. Performed a Community Air Monitoring Program for particulates and volatile organic carbon compounds.
5. Selected NYSDEC Part 375 Track 1 Soil Cleanup Objectives (SCOs).
6. The following excavations were performed: soil was removed to a depth of 11-25 feet from grade on the entire lot. A total of 25,176 cubic yards of soil, 1,800 cubic yards of concrete, and 28,200 cubic yards of rock were excavated and removed from the property down to approximately 33 feet below grade.
7. Excavated 5,376 cubic yards of non-hazardous soil/fill and transported to Coplay Aggregates, Inc., 5101 Beekmantown Rd, Whitehall, PA; excavated 15,312 cubic yards of petroleum impacted soil/fill and transported to Bayshore Soil Management, LLC, 75 Crows Mill Rd, Keasbey, NJ; excavated 4,488 cubic yards of clean soil and transported to Liberty Stone and Aggregate Clinton Quarry, 5 Frontage Rd, Clinton, NJ; excavated 27,600 cubic yards of rock and transported to Delancy St & Doremus Ave, Newark, NJ; excavated 600 cubic yards of rock and transported to ROCKTECH of New Jersey, LLC, 50 Caven Point Ave, Jersey City, NJ; excavated 1,728 cubic yards of concrete and transported to Tilcon New York, Inc., 411 Bergen Ave, Kearny, NJ; excavated 72 cubic yards of concrete and transported to Green Rock Recycling, LLC, 3 Frontage Dr, Clinton, NJ.
8. Screened excavated soil/fill during intrusive work for indications of contamination by visual means, odor, and monitoring with a PID.
9. Conducted materials management of excavated materials including temporarily stockpiling and segregating in accordance with defined material types and to prevent co-mingling of contaminated material and non-contaminated materials.
10. Appropriately segregated excavated media onsite prior to disposal. Transported and disposed all soil/fill material at permitted facilities in accordance with all

applicable laws and regulations for handling, transporting, and disposing, and the RAWP.

11. End-point samples were not collected, as bedrock was encountered throughout the entire Site. Track 1 SCOs were achieved.
12. Removed five (5) underground storage tanks in compliance with applicable laws and regulations. FDNY tank removal affidavit was obtained along with registration of tanks with NYSDEC.
13. As part of development, constructed an engineered Composite Cover System consisting of 34 to 40 inches of concrete slab underlain by bedrock. The contractor for the Composite Cover System construction was Trident Construction.
14. As part of development, installed a Vapor Barrier System that consisted of a 46-mil Preprufe 300R liner beneath the building slab and on top of mud slab. A 32-mil Preprufe 160R vapor barrier installed outside of one-faced foundation walls. A 59-mil Bituthene System 4000 installed outside of two-faced foundation walls. The contractor for the Vapor Barrier System construction was Trident Construction.
15. As part of development, installed a sub-grade ventilated parking garage.
16. Performed all activities required for the Remedial Action, including permitting requirements and pretreatment requirements, in compliance with applicable laws and regulations.
17. Implemented storm-water pollution prevention measures in compliance with applicable laws and regulations.
18. Imported soil to be used for backfill and cover in compliance with the Remedial Action Work Plan and in accordance with applicable laws and regulations.
19. Submitted daily reports during construction oversight activities. Daily reports were submitted from 12/3/18 to 8/21/2019.
20. Submitted an RAR that describes the Remedial Action; certifies that the remedial requirements defined in the RAWP have been achieved; defines the Site boundaries; and lists any changes from the RAWP.

3.0 COMPLIANCE WITH REMEDIAL ACTION WORK PLAN

3.1 CONSTRUCTION HEALTH & SAFETY PLAN

The remedial construction activities performed under this program were in compliance with the Construction Health and Safety Plan and applicable laws and regulations. The Site Safety Coordinator was Levent Eskicakit.

3.2 COMMUNITY AIR MONITORING PLAN

The Community Air Monitoring Plan provided for the collection and analysis of air samples during remedial construction activities to ensure proper protections were employed to protect workers and the neighboring community. Monitoring was performed from December 4th, 2018 to June 21st, 2019 in compliance with the Community Air Monitoring Plan in the approved RAWP. CAMP was achieved on June 21st, 2019 due to the completion of earth work. The results of Community Air Monitoring are shown in Appendix 3 (Environmental Daily Report).

3.3 SOIL/MATERIALS MANAGEMENT PLAN

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

3.4 STORM-WATER POLLUTION PREVENTION

Storm water pollution prevention included physical methods and processes to control and/or divert surface water flows and to limit the potential for erosion and migration of Site soils, via wind or water. Remedial construction activities performed under this

program were in full compliance with methods and processes defined in the RAWP for storm water prevention and applicable laws and regulations.

3.5 DEVIATIONS FROM THE REMEDIAL ACTION WORK PLAN

Deviations from the Remedial Action Work Plan include:

1. Vapor barrier from the RAWP consisted of a 20-mil Grace Industries vapor barrier beneath the building slab and outside of subgrade foundation walls. A 46-mil Preprufe 300R liner was installed beneath building slab and a 32-mil Preprufe 160R vapor barrier was installed outside of one-faced subgrade foundation walls. A 59-mil Bituthene System 4000 was installed outside of two-faced subgrade foundation walls. OER approved a 60-mil Grace Preprufe vapor barrier through email sent by Nova on 3/8/2019.
2. Composite cover from the RAWP consisted of a 12-inch thick concrete building slab with a 12-inch clean granular sub-base beneath all building areas. The constructed composite cover consists of 34 to 40 inches of concrete slab underlain by bedrock.
3. Excavation depth from the RAWP consisted of approximately twenty (20) feet below grade for development purposes. Actual excavation depth was approximately thirty-three (33) feet below grade.
4. Imported Dense Graded Aggregate (DGA) and Flowable Fill without approval by OER. Imported fill material consisted of Dense Graded Aggregate (DGA), ROCKTECH of New Jersey, LLC., 50 Caven Point Avenue, Jersey City, NJ and Flowable Fill, Impact Concrete & Control Inspections, INC., 15-46 129th Street, College Point, New York. Imported backfill was not native of the property. DGA and Flowable Fill were both placed between two-faced walls and GCP HYDRODUCT 220 geocomposite drainage board.
5. Separate CAMP logs were not prepared, but are present in the daily reports.
6. Separate Photographs of Remedial action were not prepared, but are present in the daily reports.

4.0 REMEDIAL PROGRAM

4.1 PROJECT ORGANIZATION

Principal personnel participated in the remedial action include Levent Eskicakit (QEP) and Craig Puerta (PE). Principle contractors involved in the Remedial Action include Eastern Environmental Solutions, Inc. Remedial Action was performed for SGSB Developers, LLC.

4.2 SITE CONTROLS

Site Preparation

Mobilization was conducted as necessary for each phase of work at the Site. Mobilization included field personnel orientation, equipment mobilization (included securing all sampling equipment needed for the field investigation), marking/staking sampling locations and utility mark-outs. Each field team member attended an orientation meeting to become familiar with the general operation of the Site, health and safety requirements, and field procedures.

The presence of utilities and easements on the Site were fully investigated prior to the performance of invasive work such as excavation or drilling under the plan by using, at a minimum, the One-Call System (811). All invasive activities were performed in compliance with applicable laws and regulations including NYC Building Code for assured 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 be 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. Proper safety and protective measures pertaining to utilities and easements, and compliance with

all laws and regulations were employed during invasive and other work contemplated under this RAWP. The integrity and safety of on-Site and off-Site structures were maintained during all invasive, excavation or other remedial activity performed under the RAWP.

All permits or government approvals required for remedial construction were obtained prior to the start of remedial construction. Erosion and sedimentation controls were not completed.

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

Soil Screening

Screening of excavated soil/fill during intrusive work for indications of contamination was conducted by visual means, odor, and monitoring with a PID. Visual and olfactory contamination was observed. PID readings never increased beyond the 15.0 ppm background.

Stockpile Management

Stockpiles were segregated regarding the waste characterization samples taken and were frequently inspected. Stockpiles were segregated into three categories, clean, regulated, and contaminated. Contaminated soil stockpiles were removed first from the Site to prevent co-mingling of clean and regulated soil. The piles were ultimately removed from the Site and disposed at a permitted facility.

Truck Inspection

All vehicles were properly inspected and/or decontaminated prior leaving the Site. An outbound-truck inspection station was set up close to the Site exit. Trucks were loaded on top of a gravel wash pad. Before exiting the Site, trucks were required to stop at the truck installation and were examined for evidence of contaminated soil on the undercarriage, body, and wheels. Soil and debris were removed from vehicles and equipment using brooms, shovels, and potable water, as necessary. Remaining soil from

wheel treads were rinsed and swept off of road. Trucks did not track soil or fill from the site into the surrounding community.

Site Security

Fencing was provided throughout the property perimeter. Security booth was stationed on Site with security guard present.

Nuisance Controls

No complaints were reported to the DOB/DEP data base. Noise blankets were installed prior to hammering to mitigate sound. Water was sprayed on bedrock to mitigate dust when drilling/hammering. Nuisance-free Remedial Action was achieved.

Reporting

Job-site record keeping for all remedial work has been performed. These records have been maintained on-Site during the project. Representative photographs of the Site have been taken prior to any remedial activities and during major remedial activities to illustrate remedial program elements and contaminant source areas.

All daily, weekly and monthly reports are included in Appendix 3 Digital photographs of the Remedial Action are included in Appendix 3.

4.3 MATERIALS EXCAVATION AND REMOVAL ACTION

Soil/Fill Excavation and Removal

The entire footprint of the building area (about 100% of the property) was excavated to a depth of approximately thirty-three (33) feet below grade for development purposes. A map showing the approximate locations where excavations were performed and approximate thickness of excavated material is shown in Figure 4. A total of 25,176 cubic yards of fill (soil), 1,800 cubic yards of concrete, and 28,200 cubic yards of rock were excavated and removed from the property during the Removal Action. Materials removed from the property under this Removal Action is generally classified, as follows: non-

hazardous soil/fill, 5,376 cubic yards; petroleum impacted soil/fill, 15,312 cubic yards; clean soil (native soil), 4,488 cubic yards; rock, 28,200 cubic yards; and concrete, 1,800 cubic yards. The Removal Action was performed under the oversight of Levent Eskicakit (QEP) and Craig Puerta (PE).

Petroleum impacted/fill material was removed to an approximate depth of 9 to 15 feet until there were no signs of olfactory or visual contamination. Regulated soil was removed to an approximate depth of 10 feet. Native soil was removed to an approximate depth of 11-25 feet. Bedrock was line-drilled and then hammered using excavators. Rock splitter was used in certain areas of harder rock. All soil/rock was segregated and removed by excavators.

Petroleum impacted/fill material consisted of ash/cinder/fragmented brick/oil. Color of soil was black/brown. Regulated soil consisted of ash/cinder/fragmented brick. Color of soil was brown/light brown. Native soil consisted of native rock. Color of soil was light brown/dark red/orange.

Onsite Reuse

No material was used for onsite reuse.

UST Removal

NOVA oversaw the excavation and removal of one (1) 275-gallon and four (4) 550-gallon petroleum underground storage tanks (USTs) at the Site. The USTs were removed by the Eastern Environmental Solutions, Inc. The four (4) 550-gallon tanks were incased in concrete and did not need to be cut to be emptied. The one (1) 275-gallon tank was cut with an electric saw and manually emptied with shovel into a 55-gallon drum. All USTs were cleaned with disposable wipes to prevent further contamination. No visual evidence of any spillage observed during this removal. Soil samples were collected and did not indicate the presence of petroleum related compounds. The USTs were administratively registered and closed with the NYSDEC and FDNY. All copies of the FDNY & NYSDEC forms and the end point samples related to the USTs removal are also included in Appendix 8.

A map showing the approximate location of hotspots removed in this Removal Action is shown in Figure 5.

Soil Cleanup Objectives

The SCO for this Remedial Action are Track 1 Unrestricted Use SCOs

End Point Sample Results

End point samples were not collected due to bedrock throughout the Site. The Unrestricted Use SCOs for this project were automatically achieved.

4.4 MATERIALS DISPOSAL

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

Disposal Location/Address	Type of Material	Quantity
Green Rock Recycling, LLC/ 3 Frontage Dr, Clinton, NJ	(Concrete)	72 [cubic yards]
Tilcon New York, INC/ 411 Bergen Ave, Kearny, NJ	(Concrete)	1,728 [cubic yards]
Rocktech of New Jersey, LLC/ 50 Caven Point Ave, Jersey City, NJ	(Rock)	600 [cubic yards]
Delancy St & Doremus Ave, Newark, NJ	(Rock)	27,600 [cubic yards]
Coplay Aggregates, INC/ 5101 Beekmantown Rd, Whitehall, PA	Non-Hazardous Soil/Fill	5,376 [cubic yards]
Bayshore Soil Management, LLC/ 75 Crows Mill Rd, Keasbey, NJ	Petroleum impacted soil/Fill	15,312 [cubic yards]

Liberty Stone and Aggregate Clinton Quarry/ 5 Frontage Rd, Clinton, NJ	Clean Soil	4,488 [cubic yards]
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Letters from SESI Consulting Engineers to disposal facility providing materials type, source and data, and acceptance letters from disposal facility stating it is approved to accept above materials are attached in Appendix 4. Manifests are included in Appendix 5. Waste characterization report is presented in Appendix 6. A table of truck transport and material disposal quantities is included in Table 2.

4.5 BACKFILL IMPORT

Imported fill material consisted of Dense Graded Aggregate (DGA), ROCKTECH of New Jersey, LLC., 50 Caven Point Avenue, Jersey City, NJ and Flowable Fill, Impact Concrete & Control Inspections, INC., 15-46 129th Street, College Point, New York. Imported backfill was not native of the property.

Dense Graded Aggregate (DGA) was placed on W 47th Street and W 48th Street. Flowable Fill was placed on W 47th Street and 11th Avenue. DGA and Flowable Fill were both placed between two-faced walls and GCP HYDRODUCT 220 geocomposite drainage board.

All soil imported to the property achieved the lower of 6NYCRR Part 375-6.8 Groundwater Protection Standards and Track 1 Unrestricted Use SCOs.

A table of all sources of backfill with quantities for each source is shown in Table 3. Tables summarizing chemical analytical results for backfill are included in Table 4.1-4.2 /Appendix 9. Full laboratory reports are included in Appendix 9. A map showing backfill placement locations at the Site is shown in Figure 6.

5.0 ENGINEERING CONTROLS

A Track 1 Remedial Action was achieved and Engineering Controls are not required. However, as part of construction, several protective systems were installed.

These are:

- (1) Composite Cover System
- (2) Vapor Barrier System
- (3) Sub-grade Ventilated Parking Garage

Composite Cover System

As part of development, an engineered Composite cover System has been built at the site. This Composite Cover System is 34 to 40 inches of reinforced concrete slab. The contractor for the Composite Cover System construction was Trident Construction.

Composite Cover sub-base consisted of 2-30 inches of concrete. Thickness fluctuates due to uneven surface of bedrock.

Figure 8 shows the as-built design for each cover type used in the Composite Cover System on this Site. Figure 7 shows a map of the location of each Composite Cover System type built at the Site. Photographs of construction of the Composite Cover System are included in Appendix 3.

Vapor Barrier System

As part of development, a Vapor Barrier System has been built at the site. This Vapor Barrier System consists of three different types:

GCP Bituthene System 4000, GCP Preprufe 160R, and GCP Preprufe 300R. The GCP Bituthene System 4000 (59 mil in thickness) was installed along the two-faced walls facing W 47th Street, W 48th Street, and 11th Avenue. The GCP Preprufe 160R (32 mil in thickness) was installed along the one-faced walls facing W 48th Street and 10th Avenue. Kingspan GreenGuard insulation boards and GCP HYDRODUCT 220 geocomposite drainage sheet served as protective layers for the GCP Bituthene System 4000 and GCP Preprufe 160R. Both GCP membranes were installed vertically along the substrate being overlapped. Preprufe tape was then sealed over the seams of the

overlapped layers. The GCP Preprufe 300R (46 mil in thickness) was installed on top of the composite cover. GCP membranes were installed horizontally along the substrate being overlapped. Preprufe tape was then sealed over the seams of the overlapped layers. The professional engineer for the Vapor Barrier System was Craig Puerta. The contractor for the Vapor Barrier System construction was Trident Construction.

Membrane layers were cleaned and dried before being overlapped by 75 mm. Plastic release liner between the overlaps were pulled back as the two layers were bonded together. A continuous bond was achieved without creases. Plastic release liner from membrane and tape was removed. Laps were taped with Preprufe Tape with an application temperature greater than 5°C using a heat gun.

Figure 10 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 3. A copy of manufacturer's specifications for the Vapor Barrier System is included in Appendix 7.

Sub-grade Ventilated Parking Garage

As part of development, the sub-grade parking garage was designed with active air exchanges to assist with air movement and circulation. The air exchanges were designed to meet current New York City mechanical code and Department of Building Code requirements.

6.0 INSTITUTIONAL CONTROLS

A Track 1 Remedial Action was achieved, and Institutional Controls are not required.

7.0 SITE MANAGEMENT PLAN

A Track 1 Remedial Action was achieved, and Site Management is not required.

8.0 SUSTAINABILITY REPORT

This Remedial Action provided for sustainable remediation through a variety of means that are defined in this Sustainability Report.

Reuse of Clean, Recyclable Materials and Conservation of Natural Resources.

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

An estimate of the tonnage of recycled material reused on this project is 500 US tons.

Reduced Energy Consumption and Promotion of Greater Energy Efficiency.

Reduced energy consumption lowers greenhouse gas emissions, improves local air quality, lessens in-city power generation requirements, and can lower traffic congestion and provide substantial cost savings.

Conversion to Clean Fuels. Use of clean fuel improves NYC's air quality by reducing harmful emissions.

Recontamination Control. Recontamination after cleanup and redevelopment is completed undermines the value of work performed, may result in a property that is less protective of public health or the environment, and may necessitate additional cleanup work later that could impede future redevelopment. Recontamination can arise from future releases that occur within the property or by influx of contamination from off-Site.

Prevention controls were implemented of contamination to the Site from off-Site. Composite cover and vapor barrier systems were installed to eliminate the risk of future migration of contamination from off-Site.

The area of the Site that utilizes recontamination controls under this plan is 30,121-square feet (100% of Site).

Paperless Brownfield Cleanup Program. SGSB Developers, LLC participated in OER's paperless Voluntary Cleanup Program. Under this program, submission of electronic documents replaced submission of hard copies for the review of project documents, communications and milestone reports. A best estimate of the mass (pounds) of paper saved under this plan is 50 pounds.

Low-Energy Project Management Program. SGSB Developers, LLC participated in OER's low-energy project management program. Under this program, whenever possible, meetings were held using remote communication technologies, such as videoconferencing and teleconferencing to reduce energy consumption and traffic congestion associated with personal transportation. A gross estimate of the number of miles of personal transportation that was conserved in this process is 200 miles.

Trees and Plantings. Trees and other plantings provide habitat and add to NYC's environmental quality in a wide variety of ways. Native plant species and native habitat provide optimal support to local fauna, promote local biodiversity, and require less maintenance. The number of trees planted as part of this redevelopment is 5-8.