

50 GREENPOINT AVENUE

BROOKLYN, NEW YORK

Remedial Action Report

NYC VCP Project Number 13CVCP155K

E-Designation Project Number 13EHAZ341K

CEQR Number: 04DCP003K

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REMEDIAL ACTION REPORT

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LIST OF ACRONYMS

Acronym	Definition
CAMP	Community Air Monitoring Plan
DER-10	NYS DEC Division of Environmental Remediation Technical Guidance Manual 10
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

CERTIFICATION

I, Stephen Morse, 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 50 Greenpoint Avenue, site number 13CVCP155K
- I have reviewed this document, to which my signature and seal are affixed.
- Engineering Controls implemented during this remedial action were designed by me or a person under my direct supervision and achieve the goals established in the Remedial Action Work Plan for this site.
- The Engineering Controls constructed during this remedial action were professionally observed by me or by a person under my direct supervision and (1) are consistent with the Engineering Control design established in the Remedial Action Work Plan and (2) are accurately reflected in the text and drawings for as-built design reported in this Remedial Action Report.
- The OER-approved Remedial Action Work Plan dated June 2013 and Stipulations in a letter dated March 27, 2015 were implemented and that all requirements in those documents have been substantively complied with. I certify that contaminated soil, fill, liquid or other material from the property was taken to facilities licensed to accept this material in full compliance with applicable laws and regulations.

Name Stephen A. Morse

PE License Number 0839181

Signature 

Date 05/15/2017



I, Stephen A. Morse, certify the following:

- I am a Qualified Environmental Professional. I had primary direct responsibility for implementation of the remedial program for the site at 50 Greenpoint Avenue, Brooklyn, NY, site number 13CVCP155K.
- The OER-approved Remedial Action Work Plan dated June 2013 and Stipulations in a letter dated March 27, 2015 were implemented and that all requirements in those documents have been substantively complied with. I certify that contaminated soil, fill, liquid or other material from the property was taken to facilities licensed to accept this material in full compliance with applicable laws and regulations.

QEP Name Stephen A. Morse

QEP Signature' 

Date 05/15/2017

EXECUTIVE SUMMARY

Skyview Manor LLC., has enrolled in the New York City Voluntary Cleanup Program (NYC VCP) to investigate and remediate a property located at 50 Greenpoint Avenue in Greenpoint section of Brooklyn, New York. A Remedial Investigation (RI) was performed to compile and evaluate data and information necessary to develop a Remedial Action Work Plan (RAWP)/ Stipulation List. 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 50 Greenpoint Avenue in the Greenpoint section of Brooklyn, New York, and is identified as Block 2562 and Lot 1 on the New York City Tax Map. The Site is 15,600-square feet and is bounded by Greenpoint Avenue and Block 2557 Lot 1 (multi-story commercial building) to the north, Milton Street and Block 2565 Lot 1 (multi-story industrial building) to the south, Block 2562 Lots 10, 37 and 39 (lot 10 is a multi-story industrial building and lots 37 and 39 are single story industrial buildings) to the east, and West Street and Block 2556 Lot 1 (single story industrial building) to the west. Prior to remedial development, the Site was undeveloped vacant and uncapped, the lot was most recently used for container storage.

Summary of Redevelopment Plan

The Site now consists of a seven-story mixed-use commercial and residential building, with a one-story basement below grade for use as a pet spa gym and elevator mechanical room. The new building footprint is approximately 9,078.30 square feet. The cellar is approximately 3,280.30 square feet. The remaining 6,521.70 square feet consists of a driveway and parking spaces for building residents.

The Site was excavated to 4.5 feet below grade within the building footprint with additional excavation to 10 feet below grade for the installation of the basement foundation and to 17 feet below grade for the elevator pit; 10 inches below grade for the driveway/ slab on grade. Soil excavation for the remainder of the site that was not covered by the building was completed on two (2) separate occasions. The soil from 0-10 inches along the northeast side of the site was removed to allow a driveway/ slab on grade to be installed. All soil to 10 inches along the northeast side was delivered to Clean Earth of Philadelphia.

Groundwater was encountered at the site at approximately 9 feet below grade. A dewatering plan was implemented at the site in order to continue work. Prior to dewatering the site, the water was sampled and sent to an Accredited ELAP laboratory for analysis. The groundwater sample appeared to be below all NYDEP discharge limits. Approval for groundwater discharge to sanitary of combined sewer from DEP was obtained. The dewatering plan included a 500 gallon fracking tank for holding the groundwater until the particles were able to settle.

The structure is comprised of a pet spa and gym in the cellar and parking and recreational rooms for residents on the first floor. On floors two (2) through seven (7) there are residential spaces. The current zoning designation is M1-2/R6A, mixed use light manufacturing and residential. The parking garage located in the first floor will be ventilated as per the New York City Department of Building Code.

Summary of Description of Surrounding Property

The area surrounding the Site consists of a mix of commercial, industrial and residential properties. The property to the North of the site (opposite of Greenpoint Avenue) is developed with a five-story industrial/ manufacturing building. The building to the North was built in 1931 and contains no residential units. The property to the South of the site (opposite of Milton Street) includes three (3) seven-story industrial/manufacturing buildings with no residential units. The properties to the East of the site are developed with a two-story and a single-story industrial/ manufacturing

buildings. Both buildings were built in approximately 1931 and do not contain any residential units. The West of the site is developed with a four (4) single-story industrial/ manufacturing buildings built in approximately 1960. The buildings do not contain any residential units. No hospitals, daycare facilities or schools are located within a 250 ft radius of the Site.

Summary of Past Site Uses and Areas of Concern

A Phase I was completed by Hydrotech Environmental (HTE) in November 2003 which identified the Site as being utilized as a gas station and automobile repair facility from 1942 to 1965. Three (3) underground storage tanks were identified on Fire Insurance maps prior to 1978. There are no records that the tanks were ever registered or removed. Two (2) above ground storage tanks, a 550 gallon diesel fuel tank and a 275 gallon waste oil tank were also present in 2003. A "drain" was noted in the work yard south of the former office area and west of the former garage area. Both above ground storage tanks identified in the 2003 Phase I had been removed prior to a subsurface investigation completed in 2006.

Summary of the Work Performed under the Remedial Investigation

Environmental Business Consultants performed the following scope of work for the Remedial Investigation in June 2013.

1. Conducted a Site inspection to identify AOCs and physical obstructions (i.e. structures, buildings, etc.);
2. Installed six soil borings across the entire project Site, and collected twelve soil samples and one duplicate soil sample for chemical analysis from the soil borings to evaluate soil quality;
3. Installed four groundwater monitoring wells throughout the Site to establish groundwater flow and collected four groundwater samples and one duplicate groundwater sample for chemical analysis to evaluate groundwater quality; and
4. Installed five soil vapor probes around Site perimeter and collected five samples for chemical analysis.

Summary of Findings of Remedial Investigation

1. Elevation of the property is approximately 21 feet.
2. Depth to groundwater ranges from 8.97 to 10.18 feet at the Site.
3. Groundwater flow is generally from northeast to southwest beneath the Site.
4. Depth to bedrock is at the Site is greater than 100 feet.
5. The stratigraphy of the Site, from the surface down, consists of 3 feet of historic fill underlain by native brown silty sand.

Soil/fill samples collected during the RI were compared to New York State Department of Environmental Conservation (NYSDEC) Part 375 Table 375-6.8 Restricted Residential Use Soil Cleanup Objectives (SCOs). The samples showed several VOCs, 1,2-dichlorobenzene, tetrachloroethene (1,700 µg/Kg), dichlorobenzene, naphthalene, xylene and TCE detected below Restricted Residential Use SCOs. No other VOCs were detected in any soil sample. Seven SVOCs including benzo(a)anthracene (max. of 21,100 µg/Kg), benzo(a)pyrene (max. of 16,000 µg/Kg), benzo(k)fluoranthene (max. of 6,700 µg/Kg), chrysene (max. of 22,000 µg/Kg), dibenzo(a,h)anthracene (max. of 1,300 µg/Kg), and indeno(1,2,3-cd)pyrene (max. of 3,800 µg/Kg) were detected above their respective Track 2 Restricted Residential Use SCOs within five of the six shallow samples. The SVOCs detected above Restricted Residential SCOs are all PAH compounds and their concentrations and distribution indicate that they are associated with historic fill material observed during the sampling. Pesticide and PCB concentrations were well below Restricted Residential SCOs. Six metals including barium (785 µg/Kg), cadmium (max. of 6.41 µg/Kg), copper (max. of 1,660 µg/Kg), lead (max. of 2,850 µg/Kg), mercury (max. of 3.2 µg/Kg), and zinc (max. of 5,150 µg/Kg) exceeded Restricted Residential Use SCOs. Other than two metals, VOCs, SVOCs, pesticides and PCBs were not detected above Unrestricted Use SCOs within any of the six deep soil samples. Overall, the findings were consistent with observations for historical fill sites in the areas throughout NYC.

Groundwater samples collected during the RI showed no detectable concentrations of pesticides or PCBs in any of the four samples. Three VOCs were detected slightly above GQS within two of the four monitoring wells and included 1,1,2,2-tetrachloroethene (maximum 6.5 ppb), tetrachloroethene (maximum 5.3 ppb) and trichloroethene (maximum 13 ppb). Eleven SVOCs were detected in one or more of the four monitoring wells, but only five were detected at a concentration above GQS. Metals including iron, lead (maximum 63 ppm and 46 ppm), manganese, and sodium were detected above their respective NYSDEC Groundwater Quality Standards in all four dissolved groundwater samples.

Soil vapor samples collected during the RI showed petroleum and chlorinated VOCs at moderate to high concentrations. Tetrachloroethene (PCE) was identified in all five soil vapor samples; concentrations were detected above the State DOH monitor guidance values in four of the five samples, at a maximum concentration of 983 $\mu\text{g}/\text{m}^3$. Trichloroethene was also detected in all five samples, and was detected above the State DOH mitigation guidance value in four of the five samples, at a maximum concentration of 865 $\mu\text{g}/\text{m}^3$. 1,1,1-TCA (max. of 11.7 $\mu\text{g}/\text{m}^3$) and carbon tetrachloride (max. of 2.39 $\mu\text{g}/\text{m}^3$) were also detected in Site soil vapor at concentrations below State DOH guidance values in all samples. Concentrations of petroleum-related VOCs (BTEX) ranged from 192 $\mu\text{g}/\text{m}^3$ in SG4 to 496.3 $\mu\text{g}/\text{m}^3$ in SG1. Overall the highest reported concentrations were for PCE (maximum of 983 $\mu\text{g}/\text{m}^3$) and TCE (maximum of 865 $\mu\text{g}/\text{m}^3$).

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 Remedial Investigation (RI) was performed in June 2013. 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 July 2013 for a 30-day public comment period. The RAWP and Stipulation List dated March 27, 2015 was approved by the New York City Office of Environmental Remediation (OER) on March 27, 2015. Site briefings were conducted with New York State Department of Environmental Conservation (NYSDEC) on August, 2013. A Pre-Construction Meeting was held on April 22, 2015. A Fact Sheet providing notice of the start of the remedial action was issued on April 27, 2015. The remedial action began in May, 2015 and completed in October, 2015, and the Engineering controls were finalized at the site in October, 2016.

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 a Community Air Monitoring Program for particulates and volatile organic carbon compounds.
4. Performed Waste Characterization Study prior to excavation activities. Eleven (11) of waste characterization soil samples were collected on April 2, 2015. An additional nine (9) waste characterization samples were taken on May 11, 2015. The waste characterization samples collected were at a frequency dictated by disposal facility.
5. Established Track 4 Site Specific Soil Cleanup Objectives (SCOs). The following Track 4 SCOs were utilized: Total SVOCs (250 ppm), barium (700 ppm), lead (1,200 ppm), and mercury (2.0 ppm).

6. The following excavations were performed: For development purposes, soil/fill was excavated to a depth of 4.5 feet across the building footprint with additional excavation to 10 feet for the new cellar level and to 17 feet for the elevator pit. The remainder of the site, outside the building envelope, was excavated 10 inches below grade for the rear open. The rear open space will be utilized as a parking/ driveway area for building occupants. A total of 4,243.27 tons of soil/fill was removed during the remedial action.
7. Excavated 4,243.27 tons of non-hazardous soil/fill and transported it to Clean Earth of Philadelphia located at 3201 South 61st Street, Philadelphia, PA. 19153.
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. Collected and analyzed five end-point samples to evaluate the performance of the remedy with respect to attainment of SCOs. Track 4 SCOs were achieved.
12. Removed five (5) underground storage tanks in compliance with applicable laws and regulations. All tanks were registered with NYDEC. An FDNY Tank Affidavit was not obtained.
13. Remediation of NYSDEC Petroleum Spill number 1502141 which was opened on May 28, 2015 during excavation activities. The spill was listed as gasoline with a release of approximately 5 gallons into the soil. The spill number 1502141 was listed as Closed on November 8, 2015. In order to obtain the spill closure approximately nine (9) end point samples were obtained.
14. Constructed an engineered composite cover:

- a. Grids A1 and A2, sections excavated to 4.5 ft bg on the north and south portions of the site, the composite cover consisted of a 6in concrete building slab underlain by 120R Florprufe Vapor barrier, 12in of 3/4in bluestone gravel, and a compacted mud slab. .
- b. Grids B1 and B2, sections excavated to 10 ft bg, central to the site, the composite cover consisted of a 6in building slab underlain by 300R GRACE Waterproofing membrane, and a compacted mud slab.
- c. Grid C, section excavated to approximately 17 ft bg in the center of the planned development, the composite cover consisted of a 6in building slab underlain by 300R GRACE waterproofing membrane, and concrete water proofing blocks (mafia blocks).
- d. Outside the building envelope, east side of the site. The composite cover system was comprised of 6in Recycled Concrete Aggregate overlain by approximately 3in of asphalt material.

The composite cover was constructed to prevent human exposure to residual soil/fill remaining under the Site; The contractor for the cover construction was Pine Builders.

15. Installed a Vapor Barrier System that consisted of GRACE Florprufe 120 vapor barrier system. This vapor barrier protection is designed for slabs on grade. The system is 0.021 inches and has a water vapor permeance of 0.03 perms and 65 lbs/in of Tensile strength. The Florprufe 120 works in conjunction with the Preprufe Tape. The GRACE Florprufe 120 system was also utilized alongside the GRACE waterproofing barrier surrounding all excavations below the groundwater level. The 300R GRACE waterproofing membrane was used along foundation walls and was interlocked with the Florprufe 120 membrane in grids A1 and A2, where the slab was placed above a compacted mud slab and 12 inches of 3/4" Bluestone gravel. The contractor for the Vapor Barrier System was Pine Builders.

16. Installed and operated an active Sub-Slab Depressurization System consisting of two loops connected along the eastern building foundation edge. The SSDS

system was comprised of 4inch Schedule 40 perforated PVC pips aligned horizontally beneath the building slab and attached to two (2) vertical pipes that transverse the building slab. Vapors are conveyed vertically though solid 4inch PVC piping in two (2) locations. Piping is run vertically on the outside of the building and is protected by a surrounding frame constructed of plywood. The vapors are vented above the roof of the building and directed away from all HVAC and fans that have air going into the building. There are two (2) Grainger Dayton Blower fans that are located on the roof of the building. An alarm system set to trigger if pressure from the system is lost is located on the 5th floor. Six (6) manometers' are permanently installed at each of the six (6) sampling points to enable measurement of the vacuum pressure established by the system. The contractor for the Active Sub-Slab Depressurization System construction was Express Piping and Heating. The contractor for the alarm, blower fans and mechanical electrical work associated with the SSDS system was All Time Detection Incorporated.

17. Performed all activities required for the Remedial Action, including permitting requirements and pretreatment requirements, in compliance with applicable laws and regulations.
18. Implemented storm-water pollution prevention measures in compliance with applicable laws and regulations.
19. Dewatering performed in full compliance with applicable laws, rules and regulations.
20. Residual soil is present beneath the cover layer and will be subject to Site Management under this Remedial Action.
21. Imported materials to be used for backfill and cover in compliance with OER approved plan and in accordance with applicable laws and regulations. All backfill samples achieved Unrestricted Use SCOs.
22. Submitted a Sustainability Report.

23. Submitted an RAR that describes the Remedial Action; certifies that the remedial requirements defined in the RAWP have been achieved; defines the Site boundaries; describes all Engineering and Institutional Controls applicable to the Site; and describes any changes from the RAWP.
24. Submitted a Site Management Plan (SMP) for long-term management of residual soil, including plans for operation, maintenance, inspection and certification of the performance of Engineering Controls and Institutional Controls. Inspections will be performed annually. Inspection and Certification reports will be submitted by July 1, 2018 (for the reporting period calendar year 2017), July 31, 2019 (for the reporting period calendar year 2018) and every year thereafter (for the reporting period consisting of the prior calendar year). Inspection and Certification Reports will cover all calendar years since the prior reporting period.
25. The property will continue to be registered with an E-Designation by the NYC Department of Buildings. Engineering Controls and Institutional Controls will be managed in compliance with the SMP. Institutional Controls will include prohibition of the following: (1) prohibition of vegetable gardening and farming in residual soil; (2) prohibition of the use of groundwater beneath the site without treatment rendering it safe for the intended use; (3) prohibition of disturbance of residual soil material unless it is conducted in accordance with the SMP; and (4) prohibition of higher levels of land usage than the restricted residential uses addressed by this remedial action without prior notification and approval by OER.

REMEDIAL ACTION REPORT

1.0 SITE BACKGROUND

Skyview Manor LLC., has enrolled in the New York City Voluntary Cleanup Program (NYC VCP) to investigate and remediate a property located at 50 Greenpoint Avenue in the Greenpoint section of Brooklyn, New York. The boundary of the property subject to this Remedial Action is shown in Figure 1 and includes, in its entirety, Brooklyn Block 2562 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 Remedial Action Report has been developed for 50 Greenpoint Avenue located in the Greenpoint section of Brooklyn, New York (the Site). This project has been assigned project number 13CVCP155K by OER. This RAR describes the remediation and/or mitigation activities implemented at the Site in coordination with the New York City Office of Environmental Remediation (OER) for the purposes of satisfying the requirements of the Hazardous Materials E-Designation Program and obtaining a Notice of Satisfaction. An E-Designation for Hazardous Materials (13EHAZ341K) was placed on the Site by the New York City Department of City Planning (DCP) as part of the 5/11/2005, Greenpoint rezoning action (CEQR number 04DCP003K).

The Site is located at 50 Greenpoint Avenue in the Greenpoint section of Brooklyn, New York, and is identified as Block 2562 and Lot 1 on the New York City Tax Map. **Figure 1** and **Figure 2** show the Site Boundary and Site location Map. The Site is 15,600-square feet and is bounded by Greenpoint Avenue and Block 2557 Lot 1 (multi-story commercial building) to the north, Milton Street and Block 2565 Lot 1 (multi-story industrial building) to the south, Block 2562 Lots 10, 37 and 39 (lot 10 is

a multi- story industrial building and lots 37 and 39 are single story industrial buildings) to the east, and West Street and Block 2556 Lot 1 (single story industrial building) to the west. Prior to remedial development, the Site was undeveloped vacant and uncapped, the lot was used for container storage.

1.2 REDEVELOPMENT PLAN

The Site consists of a seven-story mixed-use commercial and residential building, with a one-story basement below grade for use as a pet spa gym and elevator mechanical room. The footprint of the planned residential structure will comprise approximately 9,078.30 sq ft remaining 6,521.70 consists of the driveway and parking spaces. The maximum excavation depth was approximately 15 ft bg for the installation of the basement foundation and elevator pit. The current zoning designation is M1-2/R6A, mixed use light manufacturing and residential. The parking garage located in the first floor will be ventilated as per the New York City Department of Building Code. The structure will be comprised of a pet spa and gym in the cellar and parking and recreational rooms for residents on the first floor. On floors two (2) through seven (7) there will be residential spaces. All proposed design specifications are certified by the designer of record to be in conformance with applicable codes, laws, and regulations.

A map showing the building location is shown in the Development Plan in **Figure 3**.

1.3 DESCRIPTION OF SURROUNDING PROPERTIES

The area surrounding the Site consists of a mix of commercial, industrial and residential properties. **Figure 4** shows the properties that are within a 500 ft radius of the site and the current uses. No hospitals, daycare facilities or schools are located within a 250 ft radius of the Site.

Surrounding Property Usage

Direction	Property Description
North – Opposite side of Greenpoint Avenue	<u>Block 2557, Lot 1</u> (37 Greenpoint Avenue) – Developed with a multi-story commercial building.
South – Opposite side of Milton Street	<u>Block 2565, Lot 1</u> (62 West Street) – Developed with a multi-story industrial building.

East – Adjacent property	<u>Block 2562, Lots 10, 37 and 39</u> (56 Greenpoint Avenue, 53/55 and 57/59 Milton Street) – Lot 10 is developed with a multi-story industrial building and Lots 37 and 39 are developed with single story industrial buildings.
West – Opposite side of West Street	<u>Block 2556, Lot 1</u> (97 West Street) – Developed with a single story industrial building.

1.4 SUMMARY OF PAST SITE USES AND AREAS OF CONCERN

A remedial investigation was performed and the results are documented in a companion document called “*Remedial Investigation Report, 50 Greenpoint Avenue, Brooklyn, NY*”, dated June, 2013 (RIR).

A Phase I was completed by Hydrotech Environmental (HTE) in November 2003 which identified the Site as being utilized as a gas station and automobile repair facility from 1942 to 1965. Three (3) underground storage tanks were identified on Fire Insurance maps prior to 1978. There are no records that the tanks were ever registered or removed. Two (2) above ground storage tanks, a 550 gallon diesel fuel tank and a 275 gallon waste oil tank were also present in 2003. A "drain" was noted in the work yard south of the former office area and west of the former garage area. Both above ground storage tanks identified in the 2003 Phase I had been removed prior to a subsurface investigation completed in 2006.

A Phase II Environmental Subsurface Investigation (ESI) was completed in 2006 by P.W. Grosser Consulting. A geophysical survey was conducted to address the RECs identified by HTC's 2003 Phase I ESA. Additional soil and groundwater testing was performed throughout the Site in 2006.

The Remedial Investigation Report can be found in **Appendix A**.

1.5 SUMMARY OF WORK PERFORMED UNDER THE REMEDIAL INVESTIGATION

Euro Builders performed the following scope of work for the Remedial Investigation:

1. Conducted a Site inspection to identify AOCs and physical obstructions (i.e. structures, buildings, etc.);
2. Installed six soil borings across the entire project Site, and collected twelve

soil samples and one duplicate soil sample for chemical analysis from the soil borings to evaluate soil quality;

3. Installed four groundwater monitoring wells throughout the Site to establish groundwater flow and collected four groundwater samples and one duplicate groundwater sample for chemical analysis to evaluate groundwater quality; and
4. Installed five soil vapor probes around Site perimeter and collected five samples for chemical analysis.

1.6 SUMMARY OF FINDINGS OF REMEDIAL INVESTIGATION

1. Elevation of the property is approximately 21 feet.
2. Depth to groundwater ranges from 8.97 to 10.18 feet at the Site.
3. Groundwater flow is generally from northeast to southwest beneath the Site.
4. Depth to bedrock at the Site is greater than 100 feet.
5. The stratigraphy of the Site, from the surface down, consists of 3 feet of historic fill underlain by native brown silty sand.
6. Soil/fill samples collected during the RI showed two VOCs, 1,2-dichlorobenzene (1,206 µg/Kg) and tetrachloroethene (1,700 µg/Kg) detected above Track 1 Unrestricted Use SCOs in one of the six shallow samples. Six other VOCs (including dichlorobenzene, naphthalene, xylene and TCE) were detected below Unrestricted Use SCOs. No other VOCs were detected in any soil sample. Seven SVOCs including benzo(a)anthracene (max. of 21,100 µg/Kg), benzo(a)pyrene (max. of 16,000 µg/Kg), benzo(k)fluoranthene (max. of 6,700 µg/Kg), chrysene (max. of 22,000 µg/Kg), dibenzo(a,h)anthracene (max. of 1,300 µg/Kg), and indeno(1,2,3-cd)pyrene (max. of 3,800 µg/Kg) were detected above their respective Track 2 Restricted Residential Use SCOs within five of the six shallow samples. The SVOCs detected above Restricted Residential SCOs are all PAH compounds and their concentrations and distribution indicate that they are associated with historic fill material observed during the sampling. One pesticide, 4,4'-DDT, was detected slightly above Unrestricted

Use SCOs in two of the six shallow samples at a maximum concentration of 3.8 µg/Kg and one PCB, PCB-1260, was detected above its Unrestricted Use SCO at a concentration of 520 µg/Kg in one of the six shallow samples. Both pesticide and PCB concentrations were well below Restricted Residential SCOs. Eight metals including barium (785 µg/Kg), cadmium (max. of 6.41 µg/Kg), chromium (31.2 µg/Kg), copper (max. of 1,660 µg/Kg), lead (max. of 2,850 µg/Kg), mercury (max. of 3.2 µg/Kg), nickel (max. of 48.4 µg/Kg) and zinc (max. of 5,150 µg/Kg) exceeded Unrestricted Use SCOs in all six shallow samples and one deep sample. Of these metals, barium, cadmium, copper, lead, mercury and zinc also exceeded Restricted Residential SCOs. Other than two metals, VOCs, SVOCs, pesticides and PCPs were not detected above Unrestricted Use SCOs within any of the six deep soil samples. Overall, the findings were consistent with observations for historical fill sites in the areas throughout NYC.

7. Groundwater samples collected during the RI showed no detectable concentrations of pesticides or PCBs in any of the four samples. Three VOCs were detected slightly above GQS within two of the four monitoring wells and included 1,1,2,2-tetrachloroethene (maximum 6.5 ppb), tetrachloroethene (maximum 5.3 ppb) and trichloroethene (maximum 13 ppb). Eleven SVOCs were detected in one or more of the four monitoring wells, but only five were detected at a concentration above GQS. Metals including iron, lead (maximum 63 ppm and 46 ppm), manganese, and sodium were detected above their respective NYSDEC Groundwater Quality Standards in all four dissolved groundwater samples.
8. Soil vapor samples collected during the RI showed petroleum and chlorinated VOCs at moderate to high concentrations. Tetrachloroethene (PCE) was identified in all five soil vapor samples; concentrations were detected above the State DOH monitor guidance values in four of the five samples, at a maximum concentration of 983 µg/m³. Trichloroethene was also detected in all five samples, and was detected above the State DOH mitigation guidance value in four of the five samples, at a maximum concentration of 865 µg/m³. 1,1,1-TCA (max. of 11.7

$\mu\text{g}/\text{m}^3$) and carbon tetrachloride (max. of $2.39 \mu\text{g}/\text{m}^3$) were also detected in Site soil vapor at concentrations below State DOH guidance values in all samples. Concentrations of petroleum-related VOCs (BTEX) ranged from $192 \mu\text{g}/\text{m}^3$ in SG4 to $496.3 \mu\text{g}/\text{m}^3$ in SG1. Overall the highest reported concentrations were for PCE (maximum of $983 \mu\text{g}/\text{m}^3$) and TCE (maximum of $865 \mu\text{g}/\text{m}^3$).

Appendix A 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 Remedial Investigation (RI) was performed in June 2013. 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 July 2013 for a 30-day public comment period. The RAWP and Stipulation List dated March 27, 2015 was approved by the New York City Office of Environmental Remediation (OER) on March 27, 2015. Site briefings were conducted with New York State Department of Environmental Conservation (NYSDEC) on August, 2013. A Pre-Construction Meeting was held on April 22, 2015. A Fact Sheet providing notice of the start of the remedial action was issued on April 27, 2015. The remedial action was began in May, 2015 and completed in October, 2015.

The Remedial Action Work Plan and Stipulation List can be found in **Appendix B**.

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 a Community Air Monitoring Program for particulates and volatile organic carbon compounds.

4. Performed Waste Characterization Study prior to excavation activities. Eleven (11) waste characterization soil samples were collected on April 2, 2015. An additional nine (9) waste characterization samples were taken on May 11, 2015. The waste characterization samples collected were at a frequency dictated by disposal facility.
5. Established Track 4 Site Specific Soil Cleanup Objectives (SCOs). The following Track 4 SCOs were utilized: Total SVOCs (250 ppm), barium (700 ppm), lead (1,200 ppm), and mercury (2.0 ppm).
6. The following excavations were performed: For development purposes, soil/fill was excavated to a depth of 4.5 feet across the building footprint with additional excavation to 10 feet for the new cellar level and to 17 feet for the elevator pit. The remainder of the site, outside the building envelope, was excavated 10 inches below grade for the rear open space. The rear open space will be utilized as a parking/ driveway area for building occupants. A total of 4,243.27 tons of soil/fill was removed during the remedial action.
7. Excavated 4,243.27 tons of non-hazardous soil/fill and transported it to Clean Earth of Philadelphia located at 3201 South 61st Street, Philadelphia, PA. 19153.
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. Collected and analyzed five end-point samples to evaluate the performance of the remedy with respect to attainment of SCOs. Track 4 SCOs were achieved.

12. Removed five (5) underground storage tanks in compliance with applicable laws and regulations. All tanks were registered with NYDEC. An FDNY tank removal affidavit was not obtained.
13. Remediation of NYSDEC Petroleum Spill number 1502141 which was opened on May 28, 2015 during excavation activities. The spill was listed as gasoline with a release of approximately 5 gallons into the soil. The spill number 1502141 was listed as Closed on November 8, 2015. In order to obtain the spill closure approximately nine (9) end point samples were obtained.
14. Constructed an engineered composite cover:
 - a. Grids A1 and A2, excavated to 4.5 ft bg on the north and south portions of the site, the composite cover consisted of a 6in concrete building slab underlain by 120R Florprufe Vapor barrier, 12in of 3/4in bluestone gravel, and a compacted mud slab. .
 - b. Grids B1 and B2, sections excavated to 10 ft bg, central to the site, the composite cover consisted of a 6in building slab underlain by 300R GRACE Waterproofing membrane, and a compacted mud slab.
 - c. Grid C, section excavated to approximately 17 ft bg in the center of the planned development, the composite cover consisted of a 6in building slab underlain by 300R GRACE waterproofing membrane, and concrete water proofing blocks (mafia blocks).
 - d. Outside the building envelope, east side of the site. The composite cover system was comprised of 6in Recycled Concrete Aggregate overlain by approximately 3in of asphalt material.

The composite cover was constructed to prevent human exposure to residual soil/fill remaining under the Site. The contractor for the cover construction was Pine Builders.

15. Installed a Vapor Barrier System that consisted of GRACE Florprufe 120 vapor barrier system. This vapor barrier protection is designed for slabs on grade. The

system is 0.021 inches and has a water vapor permeance of 0.03 perms and 65 lbs/in of Tensile strength. The Florprufe 120 works in conjunction with the Preprufe Tape. The GRACE Florprufe 120 system was also utilized alongside the GRACE waterproofing barrier surrounding all excavations below the groundwater level. The 300R GRACE waterproofing membrane was used along foundation walls and was interlocked with the Florprufe 120 membrane in grids A1 and A2, where the slab was placed above a compacted mud slab and 12 inches of $\frac{3}{4}$ " Bluestone gravel. The contractor for the Vapor Barrier System was Pine Builders.

16. Installed and operated an active Sub-Slab Depressurization System consisting of two loops connected along the eastern building foundation edge. The SSDS system was comprised of 4inch Schedule 40 perforated PVC pips aligned horizontally beneath the building slab and attached to two (2) vertical pipes that transverse the building slab. Vapors are conveyed vertically through solid 4inch PVC piping in two (2) locations. Piping is run vertically on the outside of the building and is protected by a surrounding frame constructed of plywood. The vapors are vented above the roof of the building and directed away from all HVAC and fans that have air going into the building. There are two (2) Grainger Dayton Blower fans that are located on the roof of the building. An alarm system set to trigger if pressure from the system is lost is located on the 5th floor. Six (6) manometers are permanently installed at each of the six (6) sampling points to enable measurement of the vacuum pressure established by the system. The contractor for the Active Sub-Slab Depressurization System construction was Express Piping and Heating. The contractor for the alarm, blower fans and mechanical electrical work associated with the SSDS system was All Time Detection Incorporated.
17. Performed all activities required for the Remedial Action, including permitting requirements and pretreatment requirements, in compliance with applicable laws and regulations.

18. Implemented storm-water pollution prevention measures in compliance with applicable laws and regulations.
19. Dewatering performed in full compliance with applicable laws, rules and regulations.
20. Residual soil is present beneath the cover layer and will be subject to Site Management under this Remedial Action.
21. Imported materials to be used for backfill and cover in compliance with OER approved plan and in accordance with applicable laws and regulations. All backfill samples achieved Unrestricted Use SCOs.
22. Submitted a Sustainability Report.
23. Submitted an RAR that describes the Remedial Action; certifies that the remedial requirements defined in the RAWP have been achieved; defines the Site boundaries; describes all Engineering and Institutional Controls applicable to the Site; and describes any changes from the RAWP.
24. Submitted a Site Management Plan (SMP) for long-term management of residual soil, including plans for operation, maintenance, inspection and certification of the performance of Engineering Controls and Institutional Controls. Inspections will be performed annually. Inspection and Certification reports will be submitted by July 31, 2018 (for the reporting period calendar year 2017), July 31, 2019 (for the reporting period calendar year 2018) and every year thereafter (for the reporting period consisting of the prior calendar year). Inspection and Certification Reports will cover all calendar years since the prior reporting period.
25. The property will continue to be registered with an E-Designation by the NYC Department of Buildings. Engineering Controls and Institutional Controls will be managed in compliance with the SMP. Institutional Controls will include prohibition of the following: (1) prohibition of vegetable gardening and farming in residual soil; (2) prohibition of the use of groundwater beneath the site without treatment rendering it safe for the intended use; (3) prohibition of disturbance of

residual soil material unless it is conducted in accordance with the SMP; and (4) prohibition of higher levels of land usage than the restricted residential uses addressed by this remedial action without prior notification and approval by OER.

3.0 COMPLIANCE WITH REMEDIAL ACTION WORK PLAN

3.1 CONSTRUCTION HEALTH & SAFETY PLAN

The remedial construction activities performed under this program were in compliance with the site-specific CHASP and applicable laws and regulations. The Site Safety Coordinator was Pine Builders. The Site Safety Coordinator was Liam Featherstone of Pine Builders.

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 daily from April 2015 to August 2015 and as needed until November 2015 in compliance with the Community Air Monitoring Plan in the approved RAWP. The monitors were set to record reading every minute for the duration of the work day. Throughout the duration of the project from April 2015 until November 2015 there were no exceedances in the CAMP. The results of Community Air Monitoring are shown in **Appendix C**.

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 in the remedial activities from the OER approved RAWP and RAWP Stipulation List includes:

1. The excavation throughout the extent of the property was proposed to be 4 ft bg. The contractor decided to remove an additional 6in of soil, totaling 4.5 ft bg excavated within the proposed building footprint. PINE builders removed additional soil in the hopes to remove all remaining contaminants at the site and develop the property without the E designation.
2. A 46-mil Grace Preprufe 300R membrane was proposed to be installed horizontally beneath the building slab on the North and South grids (a1 and A2) and a 32-mil Grace Preprufe® 160 was proposed to be installed vertically around the sidewalls. The vapor barrier installed beneath the new development consists of a 20-mil Grace Florprufe 120® below the foundation slab and along the sidewalls. The installation of the vapor barrier also was sealed to the Grace 300R and Grace Bituthene Liquid Membrane Waterproofing system that was located beneath the structure's slab in grid C1 and along the foundation side walls connecting the basement sidewalls to the foundation slab in grids A1 and A2. The water level was not of concern for grid A1 and A2 therefore the Grace 120 Florprufe was utilized.
3. The elevator pit, in Grid C1, was proposed to be excavated to 15 feet bg. The depth that the elevator pit was excavated to was approximately 17 feet below grade due to reaching the water table level at approximately 9 feet below grade. The elevator pit was excavated deeper in order to incorporate the mafia blocks and additional waterproofing measures into the design.
4. The SSDS system was proposed to have two (2) loops that extended outside the building envelope and underneath the adjacent properties building. The system had two (2) blower fans located on the roof and the piping extended within the building. The SSDS system was redesigned to have both loops remain within the

- building envelope and have the piping system connect in the rear of the facility (along the east side of the building) and have both vertical pipes extend to the roof beginning on the outside of the building and thread through the building's east wall. This change was warranted due to the piping's original design going beneath the adjacent building to the east.
5. Continuous oversight/ reporting for this project was required. Due to a turn-over in management at GRANT during the project, a lack of reporting to OER occurred. In order to rectify for the lack of reporting, GRANT was diligent about documenting and making the necessary records of issues that may have occurred during construction activities. Daily Field Reports were completed each day following an inspection. Typically, the reports were then distributed to OER on a weekly/ bi-weekly basis.

4.0 REMEDIAL PROGRAM

4.1 PROJECT ORGANIZATION

The remedial program was carried out by the contractor, Pine Builders., under the supervision of the PE, the QEP, GRANT engineering, for the Client, Skyview Manor LLC.

4.2 SITE CONTROLS

Site Preparation

Prior to the commencement of remediation activities in April 2015, the contractor acquired all permitting and agency approvals required. Construction fencing was installed along the perimeter of the site to restrict access. A truck washing station was provided using crushed stone near the entrance where trucks enter and exit the Site. Utility mark outs were coordinated by the contractor and performed prior to excavation. Utility marks were refreshed as needed during excavation activities. Erosion controls were not provided as all excavation activities occurred below grade. Any soils that migrated offsite due to construction activities were swept and deposited onsite for removal.

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

Soil Screening

All soils leaving the site were considered non-hazardous contaminated fill and were removed and disposed of at a permitted receiving facility (Clean Earth of Philadelphia). Soil stains and odors, when observed, were noted in daily field reports. PID soil screening was conducted throughout the excavation process to ensure the safety of onsite personnel. The documented elevated readings of the PID occurred during the spill from one (1) of the five (5) tanks that were uncovered. The surrounding soil had elevated PID readings up to 0.2ppm in the area around the tanks, and 94.5ppm inside the tanks on May 28, 2015.

Stockpile Management

During excavation, soil was either directly loaded into tri-axel dump trucks or

temporarily stockpiled on-site for later off-site disposal. Stockpiles were only used when necessary and were typically removed as soon as practicable. The stockpiles were inspected daily, and before and after every storm event. The stockpiles were placed on tarps and covered completely. Soil was stockpiled at the site in accordance to NYSDEC regulations while disposal options were determined.

When soil beneath the 4.5 ft bg mark was to be reused onsite, it was stockpiled on tarps and covered until its final placement.

Truck Inspection

Trucks removing contaminated material from the site were logged in and out of the site and manifests were collected. Prior to leaving the site, truck tires were cleaned to remove contaminated soil. A wash area was constructed utilizing gravel and a water hose to remove all excess dirt on the truck. Any soils that were tracked onto the streets were swept up and deposited onsite near the truck wash area for later removal.

Site Security

Perimeter of site along West Street and Milton Street was barricaded and marked as an active construction area. The entry point on Greenpoint Avenue was gated and secured. Access was limited to construction personnel.

Appropriate training and planning was developed for the protection of workers and the public during construction within the Site. All construction personnel working in contaminated areas were trained, qualified, and medically cleared pursuant to OSHA 29 CFR parts 1910.1200 Hazardous Communication Requirements and OSHA 29 CFR 1926.28. The Contractor followed the provisions outlined in the CHASP and all applicable local, state, and federal regulations, including the health and safety requirements of OSHA 29 CFR parts 1910 and 1926. The working conditions during all contaminated soil excavation activities were monitored for conformance with the CHASP and applicable regulations.

Nuisance Controls

No odor or dust complaints were made during the remediation process. Dust levels did

not exceed the limits set forth in the CAMP for the entirety of the excavation activities. Minimal to no dust that was associated with the excavation activities was observed to leave the site. Dust suppression methods to minimize the generation of particulates during active construction activities were implemented. The dust suppression methods that were utilized included applying water to the surface to minimize suspended particulates. Dust suppression methods were minimally used due to ongoing dewatering at the Site.

Reporting

Daily field reports throughout the duration of the project were distributed to the OER project manager on a weekly to bi-weekly basis. When installing the engineering controls daily field reports were distributed to the OER project manager within 24 hours. The daily field reports that were generated included the daily field activities, work locations, number of truck present to remove soil from the site, location of stockpiles, CAMP locations, site photographs, and all site-specific OER identification numbers. Daily reports of all inspections and observations by GRANT can be found in **Appendix D**. A photo log of all inspections and observations by GRANT each month can be found in **Appendix E**.

4.3 MATERIALS EXCAVATION AND REMOVAL ACTION

Soil/Fill Excavation and Removal

Excavation and removal of soil to the depth of 4.5 ft bg throughout the building footprint was performed for the proposed foundation. Excavation of contaminated soils and the subsurface structures identified in the Phase I report was completed by Pine Builders.

Environmental sampling and analysis was performed to determine the classification of the excavated site soils (ie. non-hazardous, non-hazardous contaminated, petroleum-impacted or hazardous). Sampling requirements and facility acceptance contaminants for the disposal site can be found in **Appendix F** and disposal manifests are located in **Appendix G**.

Provisions to properly handle waste materials were outlined in the Construction Health

and Safety Plan (CHASP) in accordance with 29 CFR 1910, 29 CFR 1926. Excavation activities were performed in accordance to the CHASP.

Excavated historic fill material associated with the site was classified as a non-hazardous petroleum contaminated solid waste. As such, all excavated soils were managed in accordance with the requirements of the NYSDEC DER 10 guidance document. The contractor working on behalf of the client provided all personnel, materials and equipment needed to undertake soil excavation as required so that work is completed in a safe manner that is protective of human health and the environment. The contractor handled all excavated waste materials in a manner that protects site personnel, the public, and the environment in accordance with all applicable federal, state, and local laws and regulations.

Track 1 Site-Specific SCOs were proposed for this project, but Track 4 Site-Specific SCOs were achieved. During the remedial action, 4,243.27 tons (153 trucks) of soil was excavated and disposed of at one (1) disposal facility, Clean Earth of Philadelphia, located at 3201 South 61st Street, Philadelphia, PA. 19153.

The remediation of the site began in May 2015. The contractor began excavating the soil across the Site between approximately zero (0) and four and a half (4.5) ft bg. All soil was removed from the site and transported to Clean Earth of Philadelphia, located at 3201 South 61st Street, Philadelphia, PA. 19153 for disposal. Excavation activities within the proposed building footprint were conducted from May 2015 until August 2015. The top soil remaining at the site, outside the building envelope, underneath the proposed driveway, was excavated in September 2015. A total of 10in of soil outside the proposed envelope was removed from the site and was transported to Clean Earth of Philadelphia, located at 3201 South 61st Street, Philadelphia, PA. 19153. A map depicting the locations of excavation is shown in **Figure 5**.

Throughout the duration of the excavation activities the contractor utilized an excavator to break up the soil and transport it to the disposal trucks. Surface debris and excavated materials that were within the building footprint were moved directly into the transport vehicles without the need to stockpile. No soil excavated above 4.5 ft bg was marked for

re-use or placed back onto the Site. All soil excavated was removed and disposed of off-site at Clean Earth of Philadelphia, located in Philadelphia, Pennsylvania.

By the beginning of August 2015, all Site excavation activities within the building envelope were completed. A total of 4,243.27 tons of soil/fill were excavated and removed from the property. Materials removed from the property under this Removal Action is generally classified, as follows: Non DOT regulated/ RCRA Non-Hazardous Non Petroleum Contaminated Soil. The quantity of native soil recycled at the Site consisted of utilizing the NYC Clean Soil Bank. The approximate total of soil recycled at the Site was 255 cubic yards. The Removal Action was performed under the oversight of Stephen Morse, PE, of GRANT Engineering.

UST Removal

Five (5) USTs were discovered on the property during excavation. Four (4) tanks were uncovered on May 28, 2015 and one (1) tank was uncovered on June 2, 2015. Prior to the discovery, two (2) of the five (5) USTs were recorded as anomalies in the Phase II RIR. It was suspected that three (3) were still according to a review of the Fire Insurance maps. One (1) of the tanks at the site was punctured leaking approximately 5 to 15 gallons of petroleum containing waste into the soil. OER and NYSDEC were contacted to report the findings and spill. Construction activities for the remainder of the day were postponed. The Phase I and Phase II report were then reviewed to determine the possible number of tanks that may be uncovered. The excavator then began to uncover the remaining four (4) tanks without puncturing them.

On June 1 and June 3, 2015, AB Environmental tank removal services were onsite to clean out the contents and remove the five (5) tanks from the site (AB Environmental Waste Transporter Permit NO. 1A-002; EPA ID: NYD987023371). AB Environmental assumed that the liquid substance in each of the five (5) tanks was gasoline. A petroleum liquid test conducted by AB Environmental revealed that the contents of the tanks contained petroleum. AB Environmental utilized a pump to remove liquid contents, in addition, two (2) 50 gallon drums, shovels, metal cutters, plastic tarps surrounding the tanks, and oil spill kit pads were used to, remove and dispose of each of the five (5)

tank's solid contents. The tanks were all 550 gallon tanks that were either empty or were approximately 50% full. AB Environmental removed a total of 1,310 gallons of petroleum contaminated water. On June 4 and June 5, 2015 AB Environmental removed all tanks from the site. Any holes in the tanks were plugged with oil spill kit pad to ensure no additional spillage would occur. Tanks were transported in a water tight 15 yard container.

Following the removal activities, all five (5) tanks were registered with the NYS DEC PBS unit. The approximate location of USTs are shown in **Figure 6**. Disposal Manifests from AB Environmental and the NYSDEC PBS registration document is included in **Appendix H**.

NYSDEC Petroleum Spills

On May 28, 2015 the onsite excavator punctured a hole in an UST located in grid A1. Approximately 5 gallons of liquid was released onto the underlying soil. OER and NYSDEC were contacted to report the spill. PID readings surrounding the soil of the tank were elevated. Waste characterization samples were taken from the location of the spill to determine if the soil would be accepted by Clean Earth of Philadelphia, located in Philadelphia, Pennsylvania. End point samples were taken on June 1, 2016 and were sent to Phoenix Laboratories of Connecticut for analysis. Soil impacted by the petroleum and surrounding the tanks was excavated and stockpiled and quarantined on a large tarp in grid A2 while waiting for the disposal facility acceptance. On June 11, 2015 petroleum contaminated soil that was stockpiled in grid A2 was taken in one (1) disposal truck to Clean Earth of Philadelphia, located in Philadelphia, PA.

The NYS DEC Petroleum Spill Number is 15-02141. The spill was recorded as closed on November 8, 2016. Correspondence associated with the NYS DEC Petroleum Spill is located in **Appendix H**.

Dewatering

On June 24, 2015 the groundwater level was reached at approximately 9 ft bg while excavating the proposed 15 feet for grid C1. In order to meet the required depth the contractor braced all soil surrounding grid C1. On June 25, 2015 the contractor began pumping the water from the pit into an onsite frack tank for holding. Once capacity of the

tank was reached, the groundwater was pumped to other areas throughout the site while the excavator was removing soil. On June 29, 2015 groundwater samples were taken to classify the contaminants and determine if the concentration would allow the water to be disposed of in the NYC sewer system. Due to the delay in progress, the water was never deposited into the NYC sewer system. An NYCDEP water sewer permit was never attained. On July 9, 2015 a water filtration system (Starr Water Treatment Systems) was utilized at the site to begin filtering out larger particles and any other potential contamination in the groundwater before depositing the contents of the tank back onto the site. Two (2) 50,000 gallon frack tanks from Aqualete Industries were utilized to pump water from the elevator pit and hold for a 24 hour period or until the contents settled and then would be deposited back onto the Site.

The quantity of fluid dewatered during this project was approximately 800 gallons per day from June 25, 2015 until July 16, 2015.

Soil Cleanup Objectives

The SCO's for this Remedial Action are Track 4 SCO's.

The following Track 4 Site-Specific SCO's were utilized for this project:

<u>Contaminant</u>	<u>Track 4 SCO's</u>
Total SVOCs	250 ppm
Lead	1200 ppm
Mercury	2.0 ppm
Barium	700ppm

End Point Sample Results

Following the completion of the excavation to a depth of 4.5 ft bg throughout the building footprint at the Site, thirty-five (35) end point samples were collected from evenly distributed quadrants by Matthew Bevilacqua of GRANT Engineering. The end point samples taken on May 11, 2015 (EP-1 to EP-10) and May 29, 2015 (EP2-1 to EP2-6, EP2-8 and EP2-9) were taken along Milton Street, at the southern end of the property within the building footprint. On June 22, 2015, endpoint samples (EPA1-1 to EPA1-8 and EPB-1 to EPB-9) were taken from the central area of the building footprint along

West Street and to the north of the property along Greenpoint Avenue. All end point samples were taken at approximately 4.5 ft bg. See **Figure 5: End Point Sampling**. A photoionization detector (PID) was used to screen the end point samples for indications of contamination. No visual, olfactory, or levels of volatile organic compounds (VOCs) were detected with the PID during sampling. The end point samples were collected to determine the performance of the remedial remedy with respect to attainment of site-specific SCOs. Therefore, endpoint samples were not taken from the areas outside of the building footprint of the Site beneath the driveway/ parking area. Samples taken during the Remedial Investigation in the areas outside the building footprint are representative of the current conditions of those areas.

End point samples were analyzed for Volatile Organic Compounds (VOCs) by EPA Method 8260, Semi-volatile organic compounds (SVOCs) by EPA Method 8270, Pesticides/polychlorinated biphenyls (PCBs) by EPA Method 8081/8082, and Target Analyte List (TAL) metals analysis by Phoenix Laboratories which is a New York State Department of Health ELAP certified lab. Sample blanks and controls were distributed alongside the samples to verify the laboratories QA/QC procedures.

The Stipulation List originally called for five (5) endpoint samples to be completed throughout the Site. Additional samples were taken following the NYSDEC Spill and UST removal events to insure that soil was not exposed to the contents of the tanks during the clean-up and removal activities. According to the Stipulation List the Site was to meet Restricted Residential Use SCOs with the exception of Total SVOCs (max. 250 ppm), Lead (max. 1200 ppm), Mercury (max. 2.0 ppm) and Barium (max. 700 ppm) which were proposed to meet Track 4 SCOs Use levels. Additional samples were taken in hopes to remove the E designation from the property.

The results of the end point samples revealed no detections of VOCs, SVOCs, TAL Metals, pesticides or PCBs above the New York State Department (NYSDEC) Part 375 Restricted Residential SCOs. Total SVOCs, lead, mercury and barium were not detected above the respective Track 4 SCOs. Endpoint Sample EPB-3, had the highest detection of Lead with 161ppm under the specified 1200ppm Site Specific SCO limit. Endpoint sample EPA1-8 had the highest level of mercury at 0.08ppm. End point sample EPA1-6

recorded the highest level of Barium at 68.8ppm. Finally, EPA1-8 and EPB-8 had the highest concentrations of Total SVOCs, EPA1-8: Benz(a)anthracene: 2,300ppm, Benzo(a)pyrene: 1,900ppm, Benzo(b)fluranthene: 1,700ppm, Benzo(k)fluoranthene: 1,500ppm, and Chrysene: 2,600ppm. EPB-8: Benz(a)anthracene: 1,600ppm, Benzo(a)pyrene: 1,500ppm, Benzo(b)fluranthene: 1,500ppm, Benzo(k)fluoranthene: 1,200ppm, and Chrysene: 2,000ppm.

The SCOs for this project were achieved.

Soil samples SB2 and SB3 taken during the RI are representative of the conditions that will remain in those areas. These max concentrations of exceedances in Restricted Residential use SCOs include - Benz(a)anthracene: 21,000 ug/kg, Benzo(a)pyrene: 16,000 ug/kg, Benzo(b)fluoranthene: 25,000 ug/kg, Benzo(k)fluoranthene: 6,700 ug/kg, Chrysene: 22,000 ug/kg, Dibenz(a,h)anthracene: 1,300 ug/kg, Hexachloroethane: 3,800 ug/kg, Barium: 785 ug/kg, Cadmium: 6.41 ug/kg, Copper: 1,660 ug/kg, Lead: 2,850 ug/kg, Mercury: 3.2 ug/kg, Zinc: 2,630 ug/kg

A map of end-point sample locations is shown in **Figure 5**. A tabular summary of end-point sampling results compared to SCOs is included in **Table 1** attached. Full laboratory reports are included in **Appendix I**. The Remedial Investigation Report with results from the laboratory analysis can be found in **Appendix A**.

End Point Data Usability Summary

Endpoint samples were collected in accordance with all applicable federal state and local regulations. Samples were sent to an accredited ELAP laboratory for analysis. Each set of samples taken at the Site had an additional duplicate sample and lab blank taken in order to maintain proper QA/QC of the samples. Lab duplicates/ Lab blanks received from Phoenix Labs did not have any data that came back different than the actual samples. Lab duplicates and lab blanks were consistent with the analysis completed at the property.

4.4 MATERIALS DISPOSAL

Surface debris and excavated materials including contaminated soils and subsurface

concrete structures were transported to one facility;

1. Clean Earth, Philadelphia, PA (Contaminated Soil Solid)

A total of 4,243.27 tons of contaminated soil was removed from the site. **Table 2** below summarizes the destination and quantities of the disposal of historic fill at the Site. **Table 3** attached shows the Trucking Log information.

Table 2:

Destination	Type of Material	Quantity
Clean Earth of Philadelphia 3201 South 61 st Street Philadelphia, PA	Non-hazardous Contaminated Soil Solid	4,243.27 Tons

Letters from Pine Builders to disposal facility providing materials type, source and data; and acceptance letters from disposal facility stating it is approved to accept these materials are attached in **Appendix F**. Manifests are included in **Appendix G**. Table above shows the total quantities of each class of material removed from the Site and the disposal locations. Waste characterization report is presented in **Appendix J**.

4.5 BACKFILL IMPORT

On May 26, 2015, GRANT oversaw the installation of a dry well system. The dry wells were located near the northwest corner of the adjacent one-story brick building. The dry well was approximately 15 ft north and 0 ft west of the adjacent buildings corner. The rim of the dry well elevation was established at 13 ft, leaving approximately 10 in between the top of the drywell and grade. Approximately 81.11 tons of sand was imported to the site to install the dry well system.

On June 12, 2015 Pine Builders imported approximately 51.19 tons of Limestone #57 stone for compaction beneath the composite cover system of the building. This stone was laid within the building envelopment in the areas excavated to approximately 10 ft bg.

In August 2015, ¾" recycled stone was imported to the site. The contractor was directed to not place recycled material within the building envelope. The stone was utilized as fill between the sidewalk and building foundation along Milton Street, to the south of the building. GRANT was onsite to observe the import of approximately 82 cubic yards (yd³)

of 3/4in bluestone for the use in grids A1 and A2 to be incorporated into the SSDS.

In September 2015 GRANT oversaw the importing of 255 yd³ of backfill which was generated from a Site located at North 6th Street in Williamsburg, NY. The fill is associated with OER Project Number 15CVCP028K, and was part of the New York City Clean Soil Bank, CSB# 16CCSB046. James Cressy of Cider Environmental, a qualified environmental professional, certified the soil as clean, containing only native soil with no visual, olfactory, or PID evidence of contamination. Soil data from Phoenix Laboratories was provided to GRANT from Cider Environmental which shows that the backfill material generated from the site at North 6th Street Williamsburg, NY met all the criteria for Restricted Residential Use SCO's. Soil chemistry and sample data from North 6th Street only had lead levels exceeding UUSCO.

GRANT was onsite to sign the haul tickets and collect the manifests. The soil was used as backfill against the foundation walls along West Street, Greenpoint Avenue and along the foundation on the east side of the building in front of grids A2, B2 and B1. The soil placed along the foundation walls of the site was compacted to a depth of 6 ft bg. A summary of the backfill quantities can be found in **Table 4** below. Lab data and haul tickets can be found in **Appendix K**.

Table 4A: 50 Greenpoint Clean Soil Bank Backfill Quantities							
Generating Facility	North 6 th Street Williamsburg, NY		OER Project Number	15CVCP028K		SB #	16CCSB046
Qualified Env. Professional	James Cressy		Company	Cider Environmental		NYC Clean Soil Bank	
Date	9/11/2014	9/15/2015	9/24/2015				
Vol Delivered (yd³)	120 yd ³	105 yd ³	30 yd ³				
Total Backfill Quantity:						255	yds³

Table 4B: 50 Greenpoint Backfill Quantities
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Backfill Type	Date Imported	Facility Information	Quantity
Lime #3	5/27/15 & 5/28/15	NY Sand and Stone	81.11 tons
Limestone #57	6/12/15	NY Sand and Stone	51.19 tons
¾" Recycled Stone	8/17/15	Tilcon New York, Inc.	41.50 yd ³
¾" Bluestone	8/18/2015	Tilcon New York, Inc.	41.5 yd ³
¾" Bluestone	8/24/15	Tilcon New York, Inc.	40.5 yd ³

All soil imported to the property achieved the lower of 6NYCRR Part 375-6.8 Groundwater Protection Standards and Restricted. Residential SCOs. Tables summarizing chemical analytical results for backfill are included in **Appendix K**. Full laboratory reports are included in **Appendix K**. A map showing backfill placement locations at the Site is shown in **Figure 8**.

4.6 DEMARACTION

The Site was known to have contaminated fill material followed by native soils at a depth of four (4) feet below grade. Therefore, the area within the building footprint at the Site was excavated to a depth of 4.5 ft bg to insure historical fill was removed. Soil below the final cover is residual soil that will be addressed by Site Management under this Remedial Action.

5.0 ENGINEERING CONTROLS

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

- (1) a composite cover system consisting of the concrete building slabs;
- (2) active sub slab depressurization system; and
- (3) vapor barrier system

Composite Cover System

Exposure to residual soil is prevented by an engineered Composite Cover System that has been built on the Site. This composite cover system on the North and South sections of the site excavated to 4.5ftbg is comprised of a 1 foot reinforced concrete building slab which was inspected on August 19, 2015 and August 25, 2015. The slab sits on an estimated twelve (12) inch layer of gravel which is placed on top of a five (5) foot compacted mud slab, compacted to a density of at least 95% of maximum soil density. The vapor barrier (Grace 120 Florprufe) sits on top of the gravel, and compacted earth.

The Composite Cover System in the central section of the building envelope outside of the elevator pit excavated to approximately 10ftbg is comprised of native soil, followed by a compacted mud slab which was compacted to a density of at least 95% of maximum soil density. The cover includes the Grace 360R Waterproofing Barrier and the Grace Bituthane Liquid membrane followed by a 12 in reinforced concrete slab.

The area outside the building footprint to the east of the building in the remaining section of the lot is comprised of 6in of gravel followed by 3in of asphalt.

Figure 9 (Details 1 through 3) show the as-built design for each cover type used in the Composite Cover System on this Site. **Figure 9** shows a map of the location of each Composite Cover System type built at the Site.

Active Sub Slab Depressurization System

The design engineer for the Active SSDS is Stephen A. Morse of GRANT Engineering. The contractor for construction of the active SSDS was Express Plumbing and Heating. **Figure 10** shows the as-built design for the Active SSDS installed in this Remedial Action and includes the location and layout of sub-slab vapor collection piping, blower, alarm, pressure gauge and effluent. The location of the pressure test and sampling locations is shown in **Figure 10**. The pressure test locations are within the SSDS piping and flush to the concrete on the ground floor within the garage area of the building. These locations also serve as sampling ports. A fitted air tight cap allows for a sampling tube to be inserted into the piping allowing a pressure reading and/or sample to be taken. Data for the pressure testing is included in **Table 5**. Photographs showing the installation of the Active SSDS are shown in **Appendix E**.

Exposure to soil vapor is prevented by an active Sub-Slab Depressurization System (SSDS) that has been built on the Site. The SSDS system consists of two loops which extend the perimeter of grids A1 and A2 and connect outside of the foundation under the buildings rear beneath the driveway. Each SSDS loop is comprised of $\frac{3}{4}$ " bluestone and 4-inch slotted PVC piping installed under the at-grade portions of the building. The SSDS system required trenching the perimeter of A1 and A2 to allow 6 inches of $\frac{3}{4}$ " bluestone to lay beneath the 4-inch slotted PVC pipe and 6 inches of $\frac{3}{4}$ " bluestone to be placed on top of the slotted PVC pipe. Two (2) vertical risers (4 in solid PVC) were installed to connect to the Grainger Dayton Blowers located on the roof of the building. The vertical pipes start outside and then continue inside the building's walls. The piping that is located outside the building is encompassed by a sheetrock cover along with a sign stating "Do Not Tamper – SSDS Piping". The vertical piping inside the building runs within the East wall. Six (6) vapor sampling points were installed in the parking area for monthly/annual vapor sampling once the building is completed. These sampling ports are able to be accessed readily for real time pressure monitoring and air sampling.

An alarm system, to trigger when either of the fans shut off, was installed to ensure the system maintained air movement beneath the building. The alarm system control box of

the SSDS system is located on the 6th floor, and the alert for the alarm is located on the 1st floor. The alert will allow the doorman/ site supervisor to address the issue and return power to the system in a timely manner. The alarm is connect to a central control center which will notify the SSDS alarm installation company, and all respective parties to address the issue in a timely manner.

The SSDS is an active system, therefore, two (2) high pressure blower fans were installed on top of the building's roof. The blower fans are Grainger Dayton Blowers, Wit Drive Package 115/208-230 volt. These blower fans are able to circulate the vapors from the soil and remove them from beneath the buildings foundation. The blower fans are set at the maximum strength of 60 Hz to distribute enough movement to remove vapors from beneath the building. The blower fans were set on the roof of the building to discharge the air away from all operable windows and air intakes. The distance of discharge was greater than 10 feet away.

The installation of the SSDS was in compliance with all applicable federal, state, and local laws and regulations. The approved design and placement of sampling points for this system are shown on **Figure 10**.

GRANT was onsite on October 27, 2016 to conduct the SSDS's sample port testing to insure the system was functioning properly. Monometers were set up at each sampling point for readings every 15 minutes for one hour. The alarm system was tested as well on October 27, 2016. The blower fans were shut down to determine if the alarm would trigger in the instance of a power outage or a deficiency with the blower fans. The results of the manometer sampling conducted on October 27, 2016 is shown in **Table 5**.

Table 5	Initial	15 minutes	30 minutes	45 minutes	60 minutes
#1	0.12 in WC	0.12 in WC	0.12 in WC	0.12 in WC	0.12 in WC
#2	0.28 in WC	0.28 in WC	0.27 in WC	0.28 in WC	0.27 in WC
#3	0.12 in WC	0.12 in WC	0.12 in WC	0.12 in WC	0.13 in WC
#4	0.27 in WC	0.28 in WC	0.28 in WC	0.29 in WC	0.28 in WC

#5	0.29 in WC	0.28 in WC	0.26 in WC	0.28 in WC	0.28 in WC
#6	0.19 in WC	0.18 in WC	0.18 in WC	0.18 in WC	0.18 in WC

Additional documentation can be found in **Appendix E** for photos of sampling ports, piping, alarm system, wiring, and the fan on the roof.

Vapor Barrier System

Exposure to soil vapor is prevented by a Vapor Barrier System that has been built beneath the structure. The vapor barrier system consists of Florprufe 120 which is a high performance vapor barrier. The Florprufe is approximately 0.021in (0.5mm) thick with a water vapor permeance of 0.03 perms. The Florprufe 120 seals to the underside of the concrete floor slab and is comprised of durable polyolefin sheet. The vapor barrier is made by Grace and was installed at the Site beneath the foundation and wrapped approximately four and a half feet (or street grade) up the side walls of the foundation slab between the dates of August 18, 2015 and August 24, 2015. Installation of the vapor barrier followed the manufacturer's recommendations.

The installation of the vapor barrier also was sealed to the Grace 300R Preprufe Membrane Water proofing system that was located beneath the structure's slab in grid C1 and along the foundation side walls connecting the basement sidewalls to the foundation slab. This membrane continued up the walls of the structure to the roof. The Grace 300R Preprufe Waterproofing system has a thickness of 1/24in (1.2mm). The adhesive side of the Preprufe material was applied to the fresh concrete and formed an integral bond.

GRACE Bituthene Liquid Membrane was applied as needed in corners and penetrations. It is approximately 3/32in (1.2mm) thick and required approximately 24 hour curing time. On corners the liquid membrane was applied 6in in all directions.

These products were applied according to the manufacturer's recommendations. A plan view depicting the as-built vapor barrier's connection to the GRACE 300R Preprufe is provided in **Figure 11** and **Appendix M**. The connection of the Grace 300R to the Florprufe 120 Membrane can be seen in **Figure 11**.

Photographs of installation of the Vapor Barrier System are included in **Appendix E**. A copy of manufacturer's specifications for the Vapor Barrier System is included in **Appendix M**.

The professional engineer for the Vapor Barrier System was Stephen A. Morse of GRANT Engineering . The contractor for the Vapor Barrier System construction was Pine Builders.

As-built drawings and documentation for all Engineering Controls can be found in **Appendix L**.

6.0 INSTITUTIONAL CONTROLS

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

Institutional Controls for this property are:

- (1) The property will continue to be registered with an E-Designation by the NYC Department of Buildings. Property owner and property owner's successors and assigns are required to comply with the approved SMP;
- (2) Compliance with an OER-approved SMP including procedures for appropriate operation, maintenance, inspection, and certification of performance of ECs and ICs. The property owner and property owner's successors and assignees will inspect ECs and ICs and submit to OER a written certification that evaluates their performance in a manner and at a frequency to be determined by OER;
- (3) Engineering Controls will not be discontinued without prior OER approval;
- (4) OER has the right to enter the Site upon notice for the purpose of evaluating the performance of ECs and ICs;
- (5) Vegetable gardens and farming in residual soil/fill on the Site are prohibited;
- (6) Use of groundwater underlying the Site without treatment rendering it safe for its intended use is prohibited;
- (7) All future activities on the Site that will disturb residual soil/fill must be conducted pursuant to the Soil/Materials Management provisions of the SMP, or otherwise approved by OER;
- (8) The Site is intended to be used for restricted residential use and will not be used for a higher level of use without prior approval by OER.

7.0 SITE MANAGEMENT PLAN

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

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

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

7.1 ENGINEERING CONTROLS

Engineering Controls were employed in the remedial action to address residual materials remaining at the site. The Site has three (3) Engineering Control System. Engineering Controls for this property are:

- (1) a composite cover system consisting of the concrete building slabs;
- (2) active sub slab depressurization system; and
- (3) vapor barrier system;

Operation and Maintenance of Composite Cover System

Chapter 5 describes the Composite Cover System utilized in this Remedial Action and provides as-built design details and the location of each cover type. The Composite Cover System is a permanent Engineering Control for the Site. The system will be inspected and its performance certified at specified intervals defined in this SMP. A Soil/Materials Management Plan is included in this Site Management Plan and outlines the procedures to be followed in the event that the composite cover system and underlying residual soil/material must be disturbed after the Remedial Action is complete.

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

Operation and Maintenance of Vapor Barrier System

Chapter 5 describes the Vapor Barrier System utilized in this Remedial Action and provides as-built design details and the system location. The Vapor Barrier System is a permanent Engineering Control for the Site. The system will be inspected and its performance certified at specified intervals defined in this SMP. The Vapor Barrier System does not require any special operation or maintenance activities. If the system is breached during future construction activities, the system will be rebuilt by reconstructing the vapor barrier layers and sealing the newly constructed materials with existing barrier materials in accordance with manufacturer specifications.

Operation and Maintenance of Active Sub-Slab Depressurization System

Chapter 5 describes the Active Sub-Slab Depressurization System utilized in this Remedial Action and provides as-built design details and the system location. The SSDS is a permanent Engineering Control for the Site. The system will be inspected and its performance certified at specified intervals defined in this SMP.

The Active SSDS will be operated and maintained as prescribed below.

The SSDS system is comprised of two (2) high pressure blowers with drive packages, slotted PVC piping, solid PVC piping, and manometers. The high pressure blower manufacturer is Grainger, and will be in continuous operation at full strength (60Hz). If the blower were to shut off and pressure was not detected within the PVC piping an alarm system would trigger.

The SSDS systems should be regularly maintained with applicable products as specified by the manufacturer. Routine maintenance activities may consist of the following:

- Replacement of blades
- Replacement of vertical PVC piping
- Replacement of Manometer batteries

Manuals for the operation and maintenance of the SSDS and Alarm System guidelines are located in **Appendix N**.

7.2 INSTITUTIONAL CONTROLS

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

Institutional Controls are also designed to prevent future exposure to residual soil/materials by controlling disturbances in the subsurface, restricting higher uses of the property than those addressed by the Remedial Action and establishing restrictions on activities and site usage. Institutional Controls for this property are:

- (1) The property will continue to be registered with an E-Designation by the NYC Department of Buildings. Property owner and property owner's successors and assigns are required to comply with the approved SMP;
- (2) Compliance with an OER-approved Site Management Plan including procedures for appropriate operation, maintenance, inspection, and certification of performance of ECs and ICs. The property owner and property owner's

successors and assigns will inspect ECs and ICs and submit to OER a written certification that evaluates their performance in a manner and at a frequency to be determined by OER;

- (3) Engineering Controls will not be discontinued without prior OER approval;
- (4) OER has the right to enter the Site upon notice for the purpose of evaluating the performance of ECs and ICs;
- (5) Vegetable gardens and farming in residual soil/fill on the Site are prohibited;
- (6) Use of groundwater underlying the Site without treatment rendering it safe for its intended use is prohibited;
- (7) All future activities on the Site that will disturb residual soil/fill must be conducted pursuant to the Soil/Materials Management provisions of the SMP, or otherwise approved by OER;
- (8) The Site is intended to be used for restricted residential use and will not be used for a higher level of use without prior approval by OER.

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 complete and up to date; and
- General Site conditions at the time of inspection.

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

Inspection of Composite Cover System

A site inspection will be completed to evaluate the condition of the Composite Cover system. Inspection will include photographic documentation of the Composite Cover System to confirm that the cover layers are intact and in good condition. If the system is observed to have been breached, the system will be rebuilt by reconstructing the system according to the original design and connecting newly constructed cover layers with existing cover layers to form a continuous layer(s).

Inspection of Vapor Barrier System

A site inspection will be conducted to evaluate the condition of the Vapor Barrier System. Since the Vapor Barrier System was installed as part of the Composite Cover System (the middle barrier underlying the concrete foundation slab and overlying the compacted RCA layer), visual inspection cannot be performed directly. Instead, inspection will include photographic documentation of the Composite Cover System to confirm that the cover layers are intact and in good condition. If the system is observed to have been breached, the system will be rebuilt by reconstructing the vapor barrier layers and sealing the newly constructed material with existing barrier materials in accordance with manufacturer specifications.

Inspection of Active Sub-Slab Depressurization System

A site inspection will be conducted to evaluate the condition of the Sub Slab Depressurization System. Since the SSDS was installed as part of the Composite Cover System and the Vapor Barrier System, visual inspection cannot be performed except in the areas of vertical piping. Inspection of the system will include photographic documentation of the overlying systems and verifying that the system is indeed running properly by testing each sampling point with a manometer to verify that there is negative air pressure pulling the air up the vertical piping and out of the building envelope. If the system is not functioning properly the SSDS will be reconstructed and sealed to the newly constructed material in accordance to the original approved plan. A monthly inspection should be conducted on the SSDS to confirm the system is functioning properly. Upon monthly inspection completion, an annual report will be submitted to the QEP for review and then submitted to OER for review. A detailed description of how to

inspect the SSDS system and checklist to be submitted from the site super can be found in **Appendix N**.

Site Use Prohibitions

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

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

7.4 INSPECTION AND CERTIFICATION LETTER REPORT

Results of inspections performed during a reporting period and certification of performance of all Engineering Controls and Institutional Controls will be included in an Inspection and Certification Letter Report. Inspections will be performed in 2017, 2018 and every year thereafter. Inspection and Certification Letter Reports will be submitted by July 31, 2018 (for the reporting period calendar year 2017), July 31, 2019 (for the reporting period calendar year 2018) and every year thereafter. Inspection and Certification Reports will cover the calendar year since the prior reporting period. Inspection and Certification Letter Reports will be submitted to OER in digital format. The letter report will utilize a form established by OER. This form includes, at a minimum:

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

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

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

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

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

7.5 NOTIFICATIONS

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

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

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

7.6 SOIL/MATERIALS MANAGEMENT PLAN

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

Soil Screening Methods

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

Stockpile Methods

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

All stockpile activities were compliant with applicable laws and regulations. Soil stockpile areas are appropriately graded to control run-off in accordance with applicable laws and regulations. Stockpiles of excavated soils and other materials were located at

least of 50 feet from the property boundaries, where possible.

Characterization of Excavated Materials

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

Materials Excavation, Load-Out and Departure

The PE/QEP overseeing the remedial action:

- Oversaw intrusive work and the excavation and load-out of excavated material;
- Ensured that there was a party responsible for the safe execution of invasive and other work performed under this management plan;
- Ensured that Site maintenance activities and maintenance-related grading cuts were not interfered with, or otherwise impaired or compromised the remedial measures established during the remediation construction phase;
- Ensured that the presence of utilities and easements on the Site has been investigated and that any identified risks from work under the plan were properly addressed by appropriate permits or authorized notifications.
- Ensured that all loaded outbound trucks were inspected and cleaned if necessary before leaving the Site; and
- Ensured that all egress points for truck and equipment transport from the Site were kept clean of Site-derived materials during Site intrusive work.
- Locations where vehicles exit the Site were inspected daily for evidence of soil tracking off premises. Cleaning of the adjacent streets was performed as needed.

Off-Site Materials Transport

Loaded vehicles leaving the Site complied 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.. Queuing of trucks was performed on-Site, when possible, in order to minimize off Site disturbance.

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

Materials Disposal Off-Site

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

Documentation associated with disposal of all material was included records and approvals for receipt of the material. All impacted soil/fill or other waste excavated and removed from the Site was managed as regulated material and disposed in accordance with applicable laws and regulations. Historic fill and contaminated soils were taken off-Site to be handled as solid waste and not be disposed at a Part 360-16 Registration Facility (also known as a Soil Recycling Facility).

Waste characterization was performed for off-Site disposal in a manner required by the receiving facility and in conformance with its applicable permits. Waste characterization sampling and analytical methods, sampling frequency, analytical results and QA/QC will

be retained and included in the following Inspection and Certification Report. A manifest system for off-Site transportation of exported materials will be employed. Hazardous wastes derived from on-Site will be stored, transported, and disposed of in compliance with applicable laws and regulations.

Materials Reuse On-Site

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

Repair of Remedial Systems

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

Import of Backfill Soil from Off-Site Sources

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

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

- Clean soil from construction projects at non-industrial sites in compliance with applicable laws and regulations;
- Clean soil from roadway or other transportation-related projects in compliance with applicable laws and regulations;

- Clean recycled concrete aggregate (RCA) from facilities permitted or registered by the regulations of NYS DEC; and
- Virgin quarried material or other materials with an approved Beneficial Use Determination (BUD) from NYSDEC for reuse as clean fill.
- Asphalt Millings from approved Park Department facilities

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

Source Screening and Testing

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

- Trucks with imported fill material will be in compliance with applicable laws and regulations and will enter the Site at designated locations;
- The PE/QEP is responsible to ensure that every truck load of imported material is inspected for evidence of contamination; and
- Fill material will be free of solid waste including pavement materials, debris, stumps, roots, and other organic matter, as well as ashes, oil, perishables or foreign matter.
- Composite samples of imported material from the identified clean soil sources will be taken at a minimum frequency of one sample for every 500 cubic yards of material. One composite sample will be collected from each source of virgin quarried material or other material with an NYSDEC approved BUD, unless otherwise approved by OER. Once it is determined that the fill material meets imported backfill or cover soil chemical requirements, is non-hazardous, and lacks petroleum contamination, the material will be loaded onto trucks for delivery to the Site.

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

Fluids Management

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

Storm-water Pollution Prevention

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

Odor Control

All necessary means will be employed to prevent on- and off-Site odor nuisances. At a minimum, procedures will include: (a) limiting the area of open excavations; (b) shrouding open excavations with tarps and other covers; and (c) use of foams to cover exposed odorous soils. If odors develop and cannot be controlled by these means, additional means to eliminate odor nuisances will include: (d) direct load-out of soils to trucks for off-Site disposal; and (e) use of chemical odorants in spray or misting systems.

The odor control plan must be capable of controlling emissions of nuisance odors. If

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

Dust Control

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

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

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

Noise

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

7.7 COMMUNITY AIR MONITORING PLAN

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

Periodic monitoring for VOCs will be performed during non-intrusive activities such as the collection of soil and sediment samples or the collection of groundwater samples from existing monitoring wells. Periodic monitoring during sample collection, for

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

VOC Monitoring, Response Levels, and Actions

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

- If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 parts per million (ppm) above background for the 15-minute average, work activities will be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities will resume with continued monitoring.
- If total organic vapor levels at the downwind perimeter of the work area or exclusion zone persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities will be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities will resume provided that the total organic vapor level 200 feet downwind of the exclusion zone or half

the distance to the nearest potential receptor or residential/commercial structure, whichever is less, but in no case less than 20 feet, is below 5 ppm over background for the 15-minute average.

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

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

Particulate Monitoring, Response Levels, and Actions

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

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

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

7.8 CONTINGENCY PLAN

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

Emergency Telephone Numbers

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

Emergency Contact Numbers

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

Contact Numbers

Stephen A. Morse, PE GRANT Engineering	(212) 464-8689
Office of Environmental Remediation	(212) 788-8841; 311

8.0 SUSTAINABILITY REPORT

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

The following means were used to reduce energy consumption in this project:

Recontamination Control.

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

The area of the Site that utilizes recontamination controls under this plan is 100% square feet.

Paperless Brownfield Cleanup Program.

Skyview Manor 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 500 pounds.

Low-Energy Project Management Program.

Skyview Manor 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 150 miles.