FORMER CASCADE LAUNDRY

KINGS COUNTY

BROOKLYN, NEW YORK

SITE MANAGEMENT PLAN

NYSDEC Site Number: C224194

Prepared for:

Cascade 553 LLC
264 Lynch Street, Unit 1A
Brooklyn, NY 11206

Prepared by:

Goldberg-Zoino Associates of New York P.C. d/b/a
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Revisions to Final Approved Site Management Plan:

Revision No.	Date Submitted	Summary of Revision	NYSDEC Approval Date
1	11-29-18	Per NYSDEC Comments of 11-21-18	
2	12-18-18	Per NYSDEC Comments of 12-11-18	

DECEMBER 18, 2018

CERTIFICATION STATEMENT

I ERNEST HANNA certify that I am currently a NYS registered professional engineer as is defined in 6 NYCRR Part 375and that this Site Management Plan was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10).

Ernest Hanna

Ernest Hanna, P.E. No. 065440

December 17, 2018

DATE

TABLE OF CONTENTS

List of Tables

List of Figures

List of Appendices

LIST OF ACRONYMS

AS	Air Sparging
ASP	Analytical Services Protocol
BCA	Brownfield Cleanup Agreement
BCP	Brownfield Cleanup Program
BGS	Below Grade Surface
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CAMP	Community Air Monitoring Plan
C/D	Construction and Demolition
CFR	Code of Federal Regulation
CLP	Contract Laboratory Program
COC	Certificate of Completion
CO2	Carbon Dioxide
CP	Commissioner Policy
DER	Division of Environmental Remediation
EC	Engineering Control
ECL	Environmental Conservation Law
ELAP	Environmental Laboratory Approval Program
ERP	Environmental Restoration Program
EWP	Excavation Work Plan
FT	Feet
GHG	Green House Gas
GWE&T	Groundwater Extraction and Treatment
HASP	Health and Safety Plan
IC	Institutional Control
ISCO	In-Situ Chemical Oxidation
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
NYCRR	New York Codes, Rules and Regulations
O&M	Operation and Maintenance
OM&M	Operation, Maintenance and Monitoring
OSHA	Occupational Safety and Health Administration
OU	Operable Unit
PFAS	Per- and Poly-Fluoroalkyl Substances
PID	Photoionization Detector
PRP	Potentially Responsible Party
PRR	Periodic Review Report
QA/QC	Quality Assurance/Quality Control
QAPP	Quality Assurance Project Plan
RAO	Remedial Action Objective
RAWP	Remedial Action Work Plan

RCRA	Resource Conservation and Recovery Act
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
RP	Remedial Party
RSO	Remedial System Optimization
SAC	State Assistance Contract
SCG	Standards, Criteria and Guidelines
SCO	Soil Cleanup Objective
SMP	Site Management Plan
SOP	Standard Operating Procedures
SOW	Statement of Work
SPDES	State Pollutant Discharge Elimination System
SSDS	Sub-slab Depressurization System
SVE	Soil Vapor Extraction
SVI	Soil Vapor Intrusion
TAL	Target Analyte List
TCL	Target Compound List
TCLP	Toxicity Characteristic Leachate Procedure
USEPA	United States Environmental Protection Agency
UST	Underground Storage Tank
VCA	Voluntary Cleanup Agreement
VCP	Voluntary Cleanup Program

ES EXECUTIVE SUMMARY

The following provides a brief summary of the controls implemented for the Site, as well as the inspections, monitoring, maintenance and reporting activities required by this Site Management Plan: (A) for the soil beneath Lots 1 and 2 (the soil on the rest of the Site, i.e., Lots 3, 4, 54, 55 and 57, meets Unrestricted Use Soil Cleanup Objectives), and (B) for the contaminated groundwater from off-site, upgradient sources migrating through and beneath the entire Site:

Site Identification: Site No.C224194, 553 Marcy Avenue, Brooklyn, New York

Institutional Controls:	1. The property may be used for restricted residential and commercial use consistent with zoning; use of the groundwater is prohibited.	
	2. An Environmental Easement was filed with the Kings County Clerk	
	3. All Engineering Controls (ECs) must be inspected at a frequency and in a manner defined in this SMP.	
Engineering Controls:	1. Concrete cover system on Lots 1 and 2.	
	2. Contingent EC: If a bulk reduction in groundwater contamination from on-site sources on Lots 1 and 2 to asymptotic levels has not been demonstrated to the Department's satisfaction, further injection of In-Situ Chemical Oxidant.	
	3. Contingent EC: If required by the results of the post-construction soil vapor intrusion evaluation, activation of the Sub-Slab Depressurization System (SSDS) piping installed beneath all buildings constructed on the Site, and possible injection of an amendment to address CVOCs from the upgradient source(s).	
Inspections:		Frequency
1. Groundwater Sampling upgradient, on and downgradient of Lots 1 and 2		Quarterly, until another frequency is authorized by the Department

2. Soil Vapor Intrusion Evaluation prior to occupancy of any building constructed on the Site to determine whether a blower needs to be installed and the SSDS needs to be activated	Upon completion of each building and before that building is occupied
3. Re-evaluation of Soil Vapor Intrusion in all Buildings to determine whether a blower needs to be installed and the SSDS needs to be activated	Upon completion of all seven (7) buildings
4. Concrete cover system inspections on Lots 1 and 2	
Maintenance:	
1. Concrete Cover System Maintenance on Lots 1 and 2	As needed
2. Active SSDS Maintenance, if a blower had to be installed	As needed
Reporting:	
1. Periodic Review Report	Annually

Further descriptions of the above requirements are provided in detail in the latter sections of this Site Management Plan (SMP)

1.0 INTRODUCTION

1.1 General

This Site Management Plan (SMP) is a required element of the remedial program for the Former Cascade Laundry Site located at 553 Marcy Avenue in Brooklyn, New York (hereinafter referred to as the "Site"). See Figure 1. The Site is currently in the New York State (NYS) Brownfield Cleanup Program (BCP) Site No. C224194, which is administered by the New York State Department of Environmental Conservation (NYSDEC).

The initial BCP Volunteer, 553 Marcy Avenue Owner LLC, entered into a Brownfield Cleanup Agreement, Index Number C224194-12-14 BCA), on February 13, 2015 with the NYSDEC to remediate the Site during redevelopment. A figure showing the Site location, the seven (7) tax lots comprising the Site, and the boundaries of this site is provided in Figure 2. Because Cascade 553 LLC acquired a small adjoining (non-BCP Site) lot and merged that lot into Lots 54 and 55, the eastern border of both Lots 54 and 55 extends out beyond the BCP Site a distance of 20 feet to the east. Nevertheless, the Site itself still has the same boundaries, the same use, and the same acreage, both before and after these lot line adjustments.

The boundaries of the Site are more fully described in the metes and bounds site description that is part of the Environmental Easement provided in Appendix D. 553 Marcy Avenue Owner LLC sold the Site to Cascade 553 LLC on March 16, 2015, and the BCA was amended on March 30, 2015 to add Cascade 553 LLC as an additional Volunteer. All lots on the Site were remediated to effectively achieve NYSDEC's Soil Cleanup Objectives (SCOs) protective of Unrestricted Use (UUSCOs) for all Contaminants of Concern identified in NYSDEC's Decision Document through implementation of the excavation and in-situ chemical oxidation remedy selected in the Decision Document dated March, 2016.

The Site will be used for mixed-use commercial and residential apartment use. At full buildout, seven (7) multi-story building comprised of 8-11 stories each plus the

associated sidewalks, driveways and parking will encompass the entire footprint of the Site from property boundary to property boundary.

After completion of the remedial work, some non-Contaminants of Concern remained in the soil of Lots 1 and 2 at depths of 15-32 ft. bgs at the Site at concentrations exceeding the UUSCOs, and remained in groundwater due to migration through and beneath the Site from upgradient off-site sources, which is hereafter referred to as "remaining contamination". Institutional and Engineering Controls (ICs and ECs) have been incorporated into the Site remedy to control exposure to remaining contamination and to protect public health and the environment.

The Engineering Controls for Lots 1 and 2 are long term. Engineering Controls for Lots 3, 4, 54, 55 and 57 are contingent upon the post-construction soil vapor intrusion evaluation unexpectedly requiring activation of one or more SSDSs. Those SSDSs are not anticipated to require activation because the post-construction soil vapor intrusion evaluation already conducted for Buildings A, B and C have to date not required activation of their respective SSDSs.

An Environmental Easement granted by Cascade 553 LLC to the NYSDEC, and recorded with the Kings County Clerk, requires compliance with this SMP and all ECs and ICs placed on the Site.

This SMP was prepared to manage remaining contamination at the Site until the Environmental Easement is extinguished in accordance with Environmental Conservation Law (ECL) Article 71, Title 36. This plan has been approved by the NYSDEC, and compliance with this plan is required by the grantor of the Environmental Easement and the grantor's successors and assigns. This SMP may only be revised with the approval of the NYSDEC.

It is important to note that:

- This SMP details the Site-specific implementation procedures that are required by the Environmental Easement. Failure to properly implement the SMP is a violation of the Environmental Easement, which is grounds for revocation of the Certificate of Completion (COC);

- Failure to comply with this SMP is also a violation of Environmental Conservation Law, 6 New York Code of Rules and Regulations (NYCRR), Part 375 and the BCA for Site No. C224194, and thereby subject to applicable penalties.

All reports associated with the Site can be viewed by contacting the NYSDEC or its successor agency managing environmental issues in New York State. A list of contacts for persons involved with the Site is provided in Appendix A of this SMP.

This SMP was prepared by Goldberg-Zoino Associates of New York P.C. d/b/a GZA GeoEnvironmental of New York (GZA), on behalf of Cascade 553 LLC, in accordance with the requirements of the NYSDEC's Division of Environmental Remediation (DER)-10 ("Technical Guidance for Site Investigation and Remediation"), dated May 2010, and the Site-specific guidelines provided by the NYSDEC. This SMP addresses the means for implementing the ICs and/or ECs that are required by the Environmental Easement for the Site.

1.2 Revisions

Revisions to this plan will be proposed in writing to the NYSDEC's project manager. Revisions will be necessary upon, but not limited to, the following occurring: a change in media monitoring requirements, upgrades to or shut-down of a remedial system, post-remedial removal of contaminated sediment or soil, or other significant change to the Site conditions. In accordance with the Environmental Easement for the Site, the NYSDEC will provide a notice of any approved changes to the SMP, and append these notices to the SMP that is retained in its files.

1.3 Notifications

Notifications will be submitted by the property owner to the NYSDEC, as needed, in accordance with NYSDEC's DER – 10 for the following reasons:

- 60-day advance notice of any proposed changes in site use or ownership that are required under the terms of the BCA, 6NYCRR Part 375 and/or Environmental Conservation Law.

- 7-day advance notice of any field activity associated with the remedial program.

- 15-day advance notice of any proposed ground-intrusive activity pursuant to the Excavation Work Plan.

- Notice within 48-hours of any damage or defect to the foundation, structures or EC that reduces or has the potential to reduce the effectiveness of an EC, and likewise, any action to be taken to mitigate the damage or defect.

- Verbal notice by noon of the following day of any emergency, such as a fire; flood; or earthquake that reduces or has the potential to reduce the effectiveness of ECs in place at the Site, with written confirmation within 7 days that includes a summary of actions taken, or to be taken, and the potential impact to the environment and the public.

- Follow-up status reports on actions taken to respond to any emergency event requiring ongoing responsive action submitted to the NYSDEC within 45 days describing and documenting actions taken to restore the effectiveness of the ECs.

Any change in the ownership of the Site or the responsibility for implementing this SMP will include the following notifications:

- At least 60 days prior to the change, the NYSDEC will be notified in writing of the proposed change. This will include a certification that the prospective purchaser/Remedial Party has been provided with a copy of the BCA, and all approved work plans and reports, including this SMP.

- Within 15 days after the transfer of all or part of the Site, the new owner's name, contact representative, and contact information will be confirmed in writing to the NYSDEC.

Table 1, on the following page, includes contact information for the above notification. The information on this table will be updated as necessary to provide accurate contact information. A full listing of Site-related contact information is provided in Appendix A.

Table 1: Notifications*

Name	**Contact Information**
Joseph Jones Project Manager, NYSDEC	Phone: (518) 402-9621 Email: joseph.jones@dec.ny.gov
Thomas V. Panzone NYSDEC Regional 2 Hazardous Waste Engineer	Phone: (718)-482-4953 Email: tvpanzon@gw.dec.state.ny.us
Chief, NYSDEC Site Control	Phone: (518) 402-9553 Email: derweb@dec.ny.gov

* Note: Notifications are subject to change and will be updated as necessary.

2.0 SUMMARY OF PREVIOUS INVESTIGATIONS AND REMEDIAL ACTIONS

2.1 Site Location and Description

The Site is located in the Bedford Stuyvesant section of Kings County, New York; Census Tract 257, the census tract in which the BCP Site is located, is a Type A EnZone. At the time the Site entered the BCP, the Poverty Rate for Census Tract 257 was 30% and its Unemployment Rate was 16.5% while the New York State Unemployment Rate was 11.5%.

The Site was originally identified as Block 1747, Lot 1, and now after subdivision, and is identified as Block 1747, and Lots 1, 2, 3, 4, 54, 55 and 57 on the Kings County Tax Map (see Figure 2). The Site is an approximately 2.1577-acre area and is bounded by Stockton Street to the north, Myrtle Avenue to the south, a residential building and a church to the east, and Marcy Avenue to the west (see Figure 2 – Site Layout Map). The boundaries of the Site, including the legal metes and bounds, are more fully described in Appendix D –Environmental Easement. The owner(s) of the Site parcel(s) at the time of issuance of this SMP is Cascade 553 LLC, which has executed the Environmental Easement. The Site boundary matches the tax map boundaries for 1, 2, 3, 4, and 57.

Cascade 553 LLC acquired a small adjoining (non-BCP Site) lot and merged that lot into Lots 54 and 55. The non-BCP Site lot was formerly designated tax map Lot 49 and was once known as 857 Myrtle Street. The northern lot line of Lot 54 was shifted 23 feet to the north (shrinking Lot 55) and the western lot line of Lot 54 was shifted 20 feet to the east (expanding Lot 55). Second, through the merger of what was previously designated as Lot 49 into Lots 54 and 55, the eastern border of both Lots 54 and 55 expanded out beyond the BCP Site a distance of 20 feet to the east. Nevertheless, the Site itself still has the exact same boundaries, the exact same use, and the exact same acreage, both before and after these lot line adjustments.

Prior to being incorporated into Lots 54 and 55, Lot 49 measured 100 feet by 20 feet. As a result of the merger, a 20' x 20' portion of former Lot 49 was merged into Lot 55, although that 20' x 20' portion of Lot 55 is still not part of the BCP Site, and a 20' x 80' portion of former Lot 49 was merged into Lot 54, although that 20' x 80' portion of Lot 54 is still not part of the BCP Site. Accordingly, Lot 54 which once had 0.1635 acre in the Site, now has 0.2295 acre in the Site. Similarly, Lot 55 which once had 0.5366 acre in the Site, now has 0.4706 acre in the Site. Thus, the Site still comprises the same +/- 2.1577 acres.

2.2 Physical Setting

2.2.1 Land Use

The overall redevelopment project consisted of the demolition of the existing laundry facility buildings and will ultimately conclude with the construction of seven (7) new 8-11 story buildings. The Site previously included several attached commercial/industrial buildings which were demolished for redevelopment in 2015 and 2016. The Site is zoned as mixed commercial-residential and is currently under construction. To date, three of the new buildings with their associated driveways, parking and sidewalks have been constructed and cover Lots 2, 3 and 4. Redevelopment plans include a full-height basement level in each building which required excavation of the entire Site to a depth of approximately 15 feet (ft.) below grade. The basement level will contain meter rooms, residential storage space, and bicycle racks; the first floor will be commercial and the upper floors will be used for residential. The surrounding area includes multi-family residential buildings, schools, churches and retail stores. The properties adjoining the Site and in the neighborhood surrounding the Site primarily include commercial and residential properties.

2.2.2 Geology

The geologic setting of Long Island, New York (including the Borough of Brooklyn) is well-documented and consists of crystalline bedrock overlain by layers of

unconsolidated deposits. According to geologic maps of the area created by the United States Geologic Survey (USGS), the bedrock in this area of Brooklyn is an igneous intrusive classified as the Ravenswood grano-diorite of middle Ordovician to middle Cambrian age. Unconsolidated sediments overlie the bedrock and consist of Pleistocene aged sand, gravel and silty clays, deposited by glacial-fluvial activity. Non-native fill materials consisting of dredge spoils, rubble and / or other materials have historically been used to reinforce and extend shoreline areas and to raise and improve the drainage of low-lying areas.

Subsurface soils at the Site consisted of historic fill materials to a depth of approximately 8 ft. below grade surface (bgs). Silty sand and gravel is present immediately below this layer. According to the USGS topographic map for the area (Brooklyn Quadrangle), the elevation of the property is approximately 30 ft. above mean sea level. The topography within the immediate area slopes gradually downward from southeast to northwest.

Geologic cross-sections are shown in Figures 9A through 9D. Site specific boring logs are provided in Appendix H.

2.2.3 Hydrogeology

Kings County is part of the Long Island Hydrogeologic System. Groundwater is the sole source of drinking water for Nassau and Suffolk Counties, but in Kings and Queens Counties potable water is supplied by New York City. Groundwater is approximately 28 to 32 ft. bgs at the Site and generally flows towards the west and northwest. Slug Testing indicates that the hydraulic conductivity values for the Site's unconfined aquifer ranges from 0.426 ft. per day (ft./day) to 12.440 ft./day, with a geometric mean of 3.285 ft./day. The hydraulic gradient is approximately 0.006.

Groundwater contour maps are shown in Figures 3A and 3B, representing measurements made in March 2015 and September 2015, respectively. On-Site groundwater monitoring wells were abandoned prior to remediation and construction activities. Groundwater monitoring well construction logs are provided in Appendix J.

2.3 Investigation and Remedial History

The Site is currently under construction and the former on-Site buildings have been demolished. The surrounding area includes multi-family residential buildings, schools, churches and retail stores. Commercial and residential development at the Site began prior to 1887. Cascade Laundry, a commercial laundry, began operating on part of the Site prior to 1918 and expanded onto the other parts of the Site over the succeeding decades before closing in 2010. Other past uses of the Site include various retail stores, an oil paint factory, a carpet cleaning facility, a bakery, an upholstery factory, a furniture manufacturer, and a chemical factory.

The following narrative provides a remedial history timeline and a brief summary of the available project records to document key investigative and remedial milestones for the Site. Full titles for each of the reports referenced below are provided in Section 8.0 - References.

- Limited Phase II Subsurface Investigation - EBC (April 2011)
- Site Characterization Investigation Data Summary - CCE (December 2011)
- Remedial Investigation Report - CCE (May 2012)
- Phase I Environmental Site Assessment Screening- AEI (January 2013)
- Remedial Action Work Plan - EBC (April 2015, revised December 2015).
- Petroleum Delineation Finding Report - GZA (August 2016)
- Sub-slab Soil Vapor and Indoor Air Sampling Results - GZA (April 2018)

2.3.1 April 2011 – Limited Phase II Subsurface Investigation (EBC)

In April 2011, EBC conducted a limited Phase II subsurface investigation. The work included the installation of 17 soil borings and 10 groundwater wells on the western lots with 8 borings and 2 groundwater wells on the eastern lots. Soil and groundwater samples were analyzed for volatile organic compounds (VOCs) by USEPA 8260 and semi-volatile organic compounds (SVOCs) by USEPA 8270 (CP-51 list only).

Laboratory services were provided by York Environmental Laboratories of Stratford, CT, a NYS Certified Environmental Laboratory (Certification No. 10854).

The depth to groundwater at the Site was approximately 26 ft. bgs. Soil at the Site was described as historic fill materials to a depth ranging from 4 to 8 ft. bgs followed by native brown coarse to fine sand and gravel.

Results indicated petroleum-related VOCs were detected in soil at a maximum concentration of 597,900 µg/kg and chlorinated VOCs were detected as high as 46,570 µg/kg. SVOCs were reported in soil at a maximum concentration of 71,870 µg/kg. Groundwater contained total petroleum VOCs up to 24,770 µg/L and chlorinated VOCs up to 170 µg/L.

2.3.2 December 2011 - Site Characterization Investigation Data Summary (CCE)

A Site Characterization/Remedial Investigation Work Plan was developed by CCE and submitted to NYSDEC. CCE performed the following scope of work:

1. Identified a suspected underground storage tank;
2. Sampled liquid from the suspected underground storage tank for identification;
3. Advanced 15 soil borings for soil sampling purposes;
4. Constructed and developed four (4) monitoring wells;
5. Constructed three soil vapor sampling points;
6. Performed two rounds of groundwater sampling from the four monitoring wells;
7. Survey of the Site, to locate the monitoring wells and soil boring locations, by a NY Licensed Surveyor; and
8. Conducted soil vapor and ambient air sampling at the Lot 1 location.

Specifically, the following work was conducted:

- Underground Storage Tank (UST)

During the investigation of Lot 1, an UST was identified that had not been closed. An investigation of this UST was undertaken by removing a small section of the concrete

floor and exposing the top of the UST. Access to the interior of the UST was gained through the top. The UST diameter was approximately 40 inches and was approximately half full with an unidentified liquid. A sample of this liquid identified the product as Mineral Spirits.

- Soil Samples

A total of 15 soil borings were advanced and soil samples were collected on-Site. Soil samples were also collected from four borings advanced for the installation of monitoring wells. A total of 35 soil samples were obtained for analysis of a limited set of parameters previously identified as being present at the Site: 1,2,4-Trimethylbenzene, 1,3,5-Trimethylbenzene, Benzene, Ethylbenzene, n-Butylbenzene, n-Propylbenzene, o-Xylene, m&p-xylene, sec-Butylbenzene, Tetrachloroethylene, Toluene, Fluoranthene, Fluorene, Naphthalene, Phenanthrene, and Pyrene. The following is a brief presentation of the CCE findings:

1. Soil analytical results indicated that contaminants of concern were limited to a subsection of Lot 1.
2. The regulated substances identified were consistent with the compounds identified in the EBC Phase II subsurface investigation.
3. The regulated substances identified appeared to be primarily related to historic use of fuel oil and dry cleaning solvents on-Site.

- Groundwater Samples

A total of four (4) monitoring wells were installed at the Site. Three of the wells were located in the sidewalk, outside of the building, and one was located inside the building. Two of the outside wells were located south and west of the identified source areas in a cross gradient position. Following well development, the four monitoring wells were gauged and sampled on September 15, 2011 and October 13, 2011. Samples were analyzed for a limited set of parameters. The following is a brief presentation of the CCE findings:

1. Based on the September 15, and October 13, 2011 sampling results, the direction of groundwater flow was towards the north-northwest;
2. The results indicate that the parameters detected above groundwater quality standards are the same as the parameters identified in soil;
3. Regulated substances identified in both sampling events were consistent with respect to the type and concentrations; and
4. Regulated substances identified in groundwater appear to "attenuate rapidly" in the direction of groundwater flow.

- Soil Vapor

A total of three (3) sub-slab soil vapor implants were installed within the subsurface at the Site. Sub-slab air sampling was conducted on September 15, 2011 and an ambient air sample was collected on the first floor of the Lot 1 building. CCE concluded that the ambient air concentrations were below the concentrations identified in the sub-slab soil vapor. Sub-slab soil vapor and ambient air analytical results indicated detections for the same parameters identified from the soil and groundwater samples. The results suggested that mitigation measures to address the soil vapor intrusion at Lot 1 were necessary.

2.3.3 May 2012 - Remedial Investigation Report (CCE)

CCE prepared a Remedial Investigation Report (RIR) based upon its additional investigations. This RIR investigation included a second sub-slab / indoor air vapor study. This study consisted of four (4) subs-lab and four (4) indoor air samples, a second round of groundwater sampling from the four (4) existing monitoring wells, slug testing of monitoring wells, a limited fate and transport model, and an exposure assessment. The following is a brief presentation of the RIR findings:

1. The sub-slab vapor contaminant concentration required mitigation in order to minimize current or potential exposure.

2. Slug Testing indicated that hydraulic conductivity values for the Site's unconfined aquifer ranged from 0.426 ft./day to 12.440 ft./day, with a geometric mean of 3.285 ft./day.
3. Groundwater flow was to the north. The hydraulic gradient was approximately 0.006.
4. Groundwater gauging and sampling indicated an overall decreasing contaminant trend from September 15, 2011 to March 15, 2012.
5. Results of the groundwater contaminant fate and transport analysis indicated that groundwater contaminant migration from the Site is not a potential exposure pathway to receptors due to its limited migration beyond the Site (55 ft.).
6. A review of a Qualitative Exposure Assessment indicated that Direct Contact (and incidental ingestion) with surface and subsurface soils is not a concern due to the thick (12-inch) concrete slab that underlies Lot 1 and was present prior to the more recent development.
7. Direct contact with groundwater was not a concern due to the use of publicly supplied water within the community. Impacted surface water, impacted sediments and consumption of fish at this location was not a possibility due to the urban environment. Inhalation of air is a current concern; this exposure pathway will be mitigated when a SSDS is constructed underneath the building on Lot 1.

2.3.4 January 2013 – Phase I Environmental Site Assessment (AEI)

AEI performed a Phase I Environmental Site Assessment (ESA) in January 2013. In the report, AEI noted that "The subject Property was identified in the regulatory database under a former tenant named Cascade on the USEPA RCRA Non-Generator, Facility Index System/Facility Registry System (FINDS), US Aerometric Information Retrieval System (AIRS) New York State Department of Environmental Conservation (NYSDEC) NY Spills, Underground Storage Tank (UST), Historical UST, Aboveground

Storage Tank (AST), Historical AST, Chemical Bulk Storage (CBS), CBS AST, Manifest, and Dry Cleaners databases."

AEI concluded that "This assessment has revealed no evidence of Recognized Environmental Conditions in connection with the Property." AEI also identified the following as de minimis conditions:

The four groundwater monitoring wells advanced at the Site by CCE to address NY Spills Case #1100223 were found to remain in-place at the time of the reconnaissance. Two of the wells were identified within the sidewalk along Marcy Avenue at the western side of the Site, one was identified within the sidewalk fronting Stockton Street near the northwest corner of the Site, and one was identified within the ground-floor level of parcel 1. AEI interviewed Mr. Sharif Rahman, Environmental Engineer I and Case Manager with the NYSDEC. Mr. Rahman stated that, since the NYSDEC issued closure to NY Spills Case #1100223, these groundwater monitoring wells were required to be properly closed. However, Mr. Rahman further stated that neither CCE nor the Site ownership was required to notify the NYSDEC of the well closure, and he did not indicate a specific time-frame under which his office required the well closure to be completed. AEI also interviewed Mr. Terry MacDonald with CCE, who stated CCE was aware the NYSDEC had closed NY Spills Case #1100223 and indicated CCE planned to properly close these wells as soon as feasible.

Three groundwater production wells used in association with the former onsite commercial laundry operations are present. One is located within the ground floor of the building at parcel 1, a second is located within the basement of the building at parcel 2, and the third is located within the building at parcel 7. According to Mr. Kris Bloniarz, President of The Laundry Cycle, Ltd., the most recent commercial laundry operator at the Site, these wells were used to supply water to the commercial laundry operations only. Mr. Bloniarz stated water service from the wells has been shut off; however, the wells remained in operational condition to his knowledge. Mr. Bloniarz also stated that the wells were registered with the New York City Department of Health (NYCDOH); however, as the laundry operations at the Site ceased in 2010, the NYCDOH registrations had not been renewed since that time. AEI contacted Mr. Allen Aigen with the NYCDOH Bureau of Public Health Engineering. Mr. Aigen confirmed the Site was registered under

the name General Linen, a former onsite commercial laundry operator name, for non-drinking wells under registration number H330002065, ID #40421160, which expired on December 31, 2010.

Two active diesel fuel aboveground storage tanks (ASTs) were present at the Site. One was a 15,000-gallon heating oil AST present in the exterior lot at parcel 9 within secondary containment. The second was a 1,500-gallon diesel fuel AST present in the ground-floor of the building at parcel 4 within secondary containment. AEI identified the NYSDEC registrations for these ASTs expired on July 10, 2012. These ASTs were also subject to the registration requirements of the Fire Department of New York (FDNY). No FDNY registration information was provided; however, Mr. Bloniarz indicated that, as the commercial laundry operations onsite ceased in 2010, pertinent equipment registrations had not been renewed since that time.

AEI offered no assessment of residual contamination including chlorinated solvents and petroleum remaining in place or of the chlorinated solvents detected in soil vapor.

2.3.5 April 2015 - Remedial Investigation Report - EBC (revised December 2015).

A Remedial Investigation (RI) was completed by EBC at the Site from August 2014 through March 2015 and documented in a RIR dated April 2015 (revised December 2015). The goals of the Remedial Investigation were to define the nature and extent of contamination in soil, groundwater and any other impacted media; to identify the source(s) of the contamination detected; to assess the impact of the contamination on public health and/or the environment; and to provide information to support the development of a Remedial Action Work Plan to address the contamination.

Activities completed under the RI included:

- Sampling and analysis for VOCs and SVOCs in soil samples from soil boring locations;
- The installation of temporary groundwater monitoring wells;

- The collection and analysis of groundwater samples for VOCs and SVOCs;
- Sampling for non-petroleum contaminants such as pesticides, PCBs and metals in soil and groundwater; and
- The collection and analysis of soil vapor samples for VOCs.

The RI identified petroleum VOC and SVOC contamination in soil in the vicinity of an onsite 20,000 gallon underground fuel oil tank (Figure 4A). The contamination extended from approximately 10 ft. bgs to the water table interface at 28-32 ft. bgs. Light non-aqueous phase liquids (LNAPL) were also present in this area.

Chlorinated VOC (CVOC) contamination was also present in shallow soil in the vicinity of an on-Site 550 gallon UST (Figure 4A). Releases have likely occurred from the 20,000 gallon fuel oil tank and also from the 550 gallon tank. CVOCs may also have been released through surface spills associated with a dry cleaning machine(s) formerly located in this area for a short period of time in the 1990's.

Historic fill material was identified across the Site to depths as great as 8 ft. bgs. The historic fill material contained metals, SVOCs and pesticides above the NYSDEC's unrestricted and / or restricted use soil cleanup objectives (SCOs).

Groundwater was impacted with petroleum VOCs immediately downgradient of the 20,000 gallon UST source area with a total concentration of 147 µg/L in well 14MW-10; but, well 14MW-9 could not be sampled because of LNAPL (Figure 5A).

CVOC impacts were not reported in groundwater within or downgradient of the CVOC source area indicating that CVOC contamination has neither migrated as a solvent or in dissolved form to the groundwater. The primary CVOC detected in soil was tetrachloroethylene (PCE).

Although PCE impacted groundwater was reported at other locations on-Site, the highest concentration (130 µg/L) was reported in an upgradient position suggesting an off-Site source. Soil vapor on the Site contained VOCs, including CVOCs (Figure 6A).

2.3.6 August 2016- Petroleum Delineation Finding Report (GZA)

To further delineate the petroleum contamination in the vicinity of the on-Site 20,000 gallon UST tank area, GZA performed an additional investigation on May 31, 2016 and from June 6, 2016 to June 10, 2016. Details of the report are provided in Appendix L. The investigation was focused on the deep soil. GZA supervised the installation of 31 deep soil borings. Soil samples were retrieved in five-foot core lengths from 15 to 30 ft. bgs, or until the groundwater table was encountered, whichever occurred first. GZA visually assessed each soil sample for the presence of petroleum impacts and screened each with a Portable MiniRAE 2000 photoionization detector (PID) equipped with a 10.6 eV lamp.

When visual petroleum contamination was observed, GZA adjusted each boring approximately 5 ft. directly away from the assumed plume area to continue field observations. Sample collection was only performed in borings where no visual evidence of petroleum was observed. GZA collected and analyzed samples from the 15-20, 20-25 and 25-30 foot intervals for VOC and SVOCs. Soil sample collection depths were biased toward the areas of greatest field evidence of contamination based on visual, olfactory, and PID readings.

During this investigation event, PID readings ranged as high as 15,000 parts per million (ppm) at one location from 20' – 25' bgs, while thirteen other borings had PID readings observed up to 1,200 ppm. In addition, strong petroleum-like odors were noted in 18 of the 31 borings done as part of this assessment. Residual petroleum was identified in numerous borings, which were installed in the former 20,000 gallon UST area. Petroleum was also identified downgradient of the former 20,000 gallon UST area in both the unsaturated and saturated soils. Petroleum VOCs were detected at concentrations that exceeded the NYSDEC Unrestricted Use SCOs in four of the soil boring locations. Based on the visual observation and lab results, the nature and extent of the petroleum contamination at the Site has been identified. NYSDEC Track 1 and Track 2 cleanup delineation limits were established and are depicted in Figures 4B and 4C.

The contaminants of the concern identified at this Site, in soil and groundwater, are: PCE, 1,3,5--trimethylbenzene, lead, chrysene, 1,2,4-trimethylbenzene, ethylbenzene, xylene(mixed), methylene chloride, naphthalene, TCE, benzene, toluene.

2.3.7 Sub-slab Soil Vapor and Indoor Air Sampling Results - GZA (April 2018)

Soil vapor intrusion sampling of the three installed sub-slab depressurization piping and vapor barrier systems was completed in the spring of 2018 for each of the three buildings (Buildings A, B and C) which have been constructed on the Site. Figure 6B shows the sampling locations for the post-remedial soil vapor intrusion sampling. Table 4 illustrates the results of the sub-slab/indoor sampling in Buildings A, B, and C after completion of the remediation and installation of the passive basement ventilation system.

That sampling detected concentrations in the sub-slab vapor of Tetrachloroethene (PCE), Acetone, Chloroform, 1,1,1-Trichloroethane, Dichlorodifluoromethane, Chloromethane, 1,3-Butadiene, Ethyl Alcohol, Trichlorofluoromethane, Iso-Propyl Alcohol, Tert-Butyl Alcohol, Carbon Disulfide, 2-Butanone, Tetrahydrofuran, n-Hexane, Benzene, Cyclohexane, 1-4 Dioxane, 2,2,4-Trimethylpentane, Heptane, 4-Methyl-2-Pentanone, Toluene, 2-Hexanone, Ethylbenzene, p/w-Xylene, o-Xylene, 1,3,5-Trimethylbenzene, and 1,2,4-Trimethylbenzene.

PCE was detected in the sub-slab soil vapor collected in Building A at a concentration of 441 $\mu g/m^3$ and in the indoor air in Building A at concentrations of 1.16 $\mu g/m^3$, 0.8 $\mu g/m^3$, and 0.312 $\mu g/m^3$, in the basement, cellar and first floor, respectively. These results, when taken together indicated that "no further action" was required for the PCE intrusion in Building A per NYSDOH's Guidance for Evaluating Soil Vapor Intrusion in the State of New York (NYSDOH SVI Guidance). Blowers were not installed.

None of the samples analyzed from the Buildings B and C exhibited PCE or Trichloroethylene (TCE) at concentrations above any the respective minimal values for "Sub-Slab Vapor Concentration" or "Indoor Air Concentration" in NYSDOH Air Guidance's decision Matrices A and B.

2.4 Remedial Action Objectives

The Remedial Action Objectives (RAOs) for the Site as listed in the BCP Decision Document dated March, 2016, are as follows:

Groundwater

RAOs for Public Health Protection

- Prevent ingestion of groundwater with contaminant levels exceeding drinking water standards.
- Prevent contact with, or inhalation of, volatiles from contaminated groundwater.

RAOs for Environmental Protection

- Restore groundwater aquifer to pre-disposal/pre-release conditions, to the extent practicable.
- Remove the source of ground or surface water contamination.

Soil

RAOs for Public Health Protection

- Prevent ingestion/direct contact with contaminated soil.
- Prevent inhalation of or exposure from contaminants volatilizing from contaminants in soil.

RAOs for Environmental Protection

- Prevent migration of contaminants that would result in groundwater or surface water contamination.

Soil Vapor

RAOs for Public Health Protection

- Mitigate impacts to public health resulting from existing, or the potential for, soil vapor intrusion into buildings at a site.

2.5 Remaining Contamination

This section provides a summary of contamination remaining at the Site following remediation and redevelopment. This information is presented for informational purposes should future excavations or development be performed at the Site and the disclosed environmental conditions encountered. Please note that temporal changes in concentrations and distributions of contaminants can occur; the user should verify existing and current Site conditions prior to performing any work that disturbs such soil.

2.5.1 Remaining Soil Contamination

During the RI phase of work, the predominant classes of contamination found in Site soils consisted of the following:

- Petroleum-related VOC contamination at the Site consisting of contaminants in soil to a depth of 30 ft. bgs in the northwestern portion of the Site related to a 20,000 gallon fuel oil UST located in this area of the Site. LNAPL was observed in the wells adjacent to the fuel oil tank.
- Chlorinated-related VOC (CVOC) impacted soil was present in shallow soils in the vicinity of a 550 gallon UST, reportedly containing mineral spirits, located in the northwest corner of the Site (Lot 1). Data from the RI indicated that the vertical extent of CVOCs was limited to 16 ft. bgs and appeared not to have reached groundwater.
- Historic fill material was identified across the entire Site to depths of 8 ft. bgs beneath the slab-on-grade areas of the Site and to 2 ft. bgs below the basement slab level in the areas with basements. The fill material contained contaminants, such as SVOCs and pesticides.

The remediation of the Site consisted of excavation and off-site disposal of all

subsurface materials within the property boundary of the Site to a depth of approximately 15-16 ft. bgs, and in the northwest corner (Lots 1 and 2), a deeper excavation followed by the placement of an in-situ chemical oxidant (ISCO). In order to achieve the soil cleanup objectives for the northwest corner, excavation depths were increased to approximate 32-35 ft. bgs in the 20,000 UST area.

The Site-wide excavation achieved UUSCOs for all Contaminants of Concern identified by NYSDEC in the Decision Document except for a single detection of Chrysene at +30 ft. bgs beneath Lot 2. Six other parameters (4,4'-DDD, 4,4'-DDT, 4,4'-DDE, Mercury, Selenium and Acetone) are sporadically detected in the remaining soils in Lots 1, 2 and 54 at depths ranging from 15 ft. bgs to 32 ft. bgs. All of the detections of 4,4'-DDD, 4,4'-DDT, 4,4'-DDE, Mercury, and Acetone meet the applicable Restricted Residential Soil Cleanup Objectives (RRSCOs). None of these six parameters are detected in groundwater.

The remaining soil contamination in Lot 1 is beneath a concrete rat slab and the recently poured concrete basement floor for Building D which is under construction. The remaining soil contamination in Lot 2 is beneath the concrete basement floor slab of Building C and associated driveways and sidewalks. Table 2 summarize the results of end point confirmation soil samples collected. Figure 4A summarizes the results of end point confirmation soil samples collected for Lots 1 and 2 and Figure 4B summarizes the results of end point confirmation soil samples collected for Lots 3, 4, 54, 55 and 57.

2.5.2 Groundwater

Due to the effectiveness of the excavation/ISCO remedy, groundwater beneath the Site meets or will meet the applicable standards, criteria and guidance values (SCGs) for all site-sourced contaminants. The petroleum compounds still being detected in the groundwater approximate the ambient water quality standards. The CVOCs still being detected in the groundwater are consistent with the upgradient off-site source documented in the RI and the RAWP, and beneath Lots 1 and 2, evidence a bulk reduction due to the excavation and ISCO placed in Lots 1 and 2 during the remedy.

There are also Per- and Poly-Fluoroalkyl Substances (PFAS) being detected as a result of a plume of off-site sourced groundwater contamination migrating through and beneath the Site (Figure 5C).

GZA installed post-excavation performance monitoring wells MW-1, 2, 3, and 4 at the Site per the RAWP in the northwest corner of the Site. On August 22, 2018, October 4, 2018, and November 1, 2018, GZA collected three rounds of groundwater samples from these wells (Figure 5B). By the 3rd round of performance groundwater sampling in November, dissolved petroleum VOCs or Naphthalene are no longer present in the on-site groundwater beneath the Lot 1 source area, and of all CVOCs, only PCE was still being detected on-site, and then only at 2.3 ug/L.

In addition, although fill material related contaminants (Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Chrysene, Indeno(1,2,3-cd)pyrene, and Phenol) were not detected in on-site well MW-3 during the 1st and 2nd rounds of groundwater sampling, since Lot 1 has been under active construction, there were estimated and minor sporadic detections in well MW-3 during the 3rd round. It is likely that detections will abate after construction is completed. The turbidity reading in MW-3 during the 3rd round was 45 ntu at the time of sampling due to ongoing construction activities. Further, the following parameters (that were detected during the RI in the groundwater above their respective water quality standard) are no longer detected in the Lot 1 groundwater above the applicable SCGs: 2- Isopropyltoluene, N-Butylbenzene, 4,4'-DDD, and Dieldrin.

Tables 3A through C summarize the results of all samples of groundwater that exceeded an SCG. Figure 5A illustrates the pre-remediation Site-related plume of groundwater contamination beneath Lots 1 and 2, as well as the plume of off-site sourced groundwater concentration beneath Lots 3, 4, 54, 55, and 57. Figure 5B shows the post-remediation groundwater results collected beneath Lots 1 and 2 on August, October and November, 2018. The CVOCs still being detected in the groundwater are consistent with the upgradient off-site source documented in the RI and the RAWP and evidence that a bulk reduction of on-site sourced contaminants due to the ISCO placed in Lots 1 and 2 during the remedy has been or will be achieved. The data demonstrates the effectiveness of the excavation/ISCO remedy at achieving a bulk reduction of contaminants potentially

emanating from Site groundwater and that asymptotic conditions satisfactory to the NYSDEC have been or will be achieved for contaminants sourced on the Site and that long term (for greater than 5 years) institutional or engineering controls are not needed for groundwater for any contaminants sourced on the Site.

2.5.3 Soil Vapor

The results of the soil vapor intrusion sampling conducted during the RI which exceeded NYSDOH guidance values are illustrated in **Figure 6**A. The locations of the post-construction soil vapor intrusion sampling of the installed SSDS piping and vapor barrier in each of the three buildings which have been completed on the Site are illustrated in **Figure 6B**.

Several VOCs, were detected during the RI in soil vapor and sub-slab vapor samples collected on-Site, although most of compounds detected in the soil vapor were not detected in the on-Site soil and groundwater. However, PCE and TCE were detected in the on-Site soil, groundwater, and in the soil vapor. PCE and TCE were detected in sub-slab and soil vapor samples at maximum concentrations of 453 µg/m^3 and 25.8 µg/m^3, respectively. One RI soil vapor sample exhibited detections of benzene, toluene, ethylbenzene and xylene (BTEX) totaling 1,466 µg/m^3. This sample was collected at the northwest corner of the Site north of a 20,000-gallon UST. Based on the NYSDOH soil vapor/indoor air decision matrices and guidance, mitigation was required if the former (and now demolished) building was to be reoccupied.

Although the building was demolished and existing soil was removed to 15 feet bgs, as a precaution**,** SSDS piping and a vapor barrier was and will be installed beneath the slab of any new building constructed on the Site to address any remaining potential soil vapor intrusion on-Site. The SSDS will only be completed with a blower and turned on if the results of a soil vapor intrusion evaluation to be completed under the SMP program require it.

The post-construction soil vapor intrusion evaluation of the installed sub-slab depressurization piping and vapor barrier was completed for each of the three buildings, which have been constructed on the Site. That soil vapor intrusion sampling detected

concentrations in the sub-slab vapor of PCE, Acetone, Chloroform, 1,1,1-Trichloroethane, Dichlorodifluoromethane, Chloromethane, 1,3-Butadiene, Ethyl Alcohol, Trichlorofluoromethane, Iso-Propyl Alcohol, Tert-Butyl Alcohol, Carbon Disulfide, 2-Butanone, Tetrahydrofuran, n-Hexane, Benzene, Cyclohexane, 1-4 Dioxane, 2,2,4-Trimethylpentane, Heptane, 4-Methyl-2-Pentanone, Toluene, 2-Hexanone, Ethylbenzene, p/w-Xylene, o-Xylene, 1,3,5-Trimethylbenzene, and 1,2,4-Trimethylbenzene. Details of the report are provided in Appendix M.

The building on Lot 2 is known as Building C, the building on Lot 3 is known as Building B and the building on Lot 4 is known as Building A. The only VOC detected in sub-slab vapor that exceeded the minimum value for "Sub-Slab Vapor Concentration" listed along the vertical axis of the applicable Soil Vapor/Indoor Air Matrices dated May 2017 of the NYSDOH's Guidance for Evaluating Soil Vapor Intrusion in the State of New York (NYSDOH SVI Guidance) was PCE. It was detected in the sub-slab soil gas collected in Building A at a concentration of 441 µg /m^3, which is above the Matrix B minimum value of 100 µg/m^3.

The indoor air in Building A, however, showed PCE at concentrations of 1.16 µg/m^3, 0.8 µg/m^3, and 0.312 µg/m^3, in the basement, cellar and first floor, respectively. These results are below the minimum value of 3 µg/m^3 in the "Indoor Air Concentration" listed along the horizontal axis of Matrix B. As per the NYSDOH decision Matrix B, taken together the combined sub-slab/indoor air results indicate that "no further action" is required for the PCE. TCE was not detected in the soil vapor (or indoor air) for Building A. None of the samples analyzed from the Buildings B and C exhibited PCE or TCE at concentrations above the respective minimal values for "Sub-Slab Vapor Concentration" or "Indoor Air Concentration" in Matrix B and Matrix A.

Further, the entire footprint of Lots 2, 3 and 4 have a concrete cover with a vapor barrier (the passive basement ventilation system) installed to address soil vapor intrusion from the remaining contaminants in groundwater and soil originating off-Site. Table 4 illustrates the results of the sub-slab/indoor sampling in Buildings A, B, and C after completion of the remediation and installation of the passive basemen ventilation system.

Nevertheless, since off-site, upgradient groundwater with contamination continues to migrate through and beneath the Site after completion of the remedial action, a prohibition on using groundwater and installation of SSDS piping and vapor barrier followed by a soil vapor intrusion evaluation of any new building to be constructed on the Site is required under this SMP to ensure protection of human health and the environment.

3.0 INSTITUTIONAL AND ENGINEERING CONTROL PLAN

3.1 General

Since remaining contamination exists at the Site in groundwater and in the soil, ICs and ECs are required to protect human health and the environment. This IC/EC Plan describes the procedures for the implementation and management of all IC/ECs at the Site. The IC/EC Plan is one component of the SMP and is subject to revision by the NYSDEC.

This plan provides:

- A description of all IC/ECs on the Site;
- The basic implementation and intended role of each IC/EC;
- A description of the key components of the ICs set forth in the Environmental Easement;
- A description of the controls to be evaluated during each required inspection and periodic review;
- A description of plans and procedures to be followed for implementation of IC/ECs, such as the implementation of the Excavation Work Plan (EWP) (as provided in Appendix B) for the proper handling of remaining contamination that may be disturbed during maintenance or redevelopment work on the Site; and
- Any other provisions necessary to identify or establish methods for implementing the IC/ECs required by the Site remedy, as determined by the NYSDEC.

3.2 Institutional Controls

A series of ICs are required by the Decision Document and RAWP to: (1) implement, maintain and monitor Engineering Control systems; (2) prevent future exposure to remaining contamination; and, (3) limit the use and development of the Site to restricted residential, commercial and industrial uses only. Adherence to these ICs on the Site is required by the Environmental Easement and will be implemented under this SMP. ICs identified in the Environmental Easement may not be discontinued without an amendment to or extinguishment of the Environmental Easement. The IC boundaries are shown on Figure 7. These ICs are:

- The property may be used for restricted residential， commercial, and industrial use;
- All ECs must be operated and maintained as specified in this SMP;
- All ECs must be inspected at a frequency and in a manner defined in this SMP.
- The use of groundwater underlying the property is prohibited without necessary water quality treatment as determined by the NYSDOH or the New York City Department of Health and mental hygiene to render it safe for use as drinking water or for industrial purposes, and the user must first notify and obtain written approval to do so from the NYSDEC.
- Groundwater and other environmental or public health monitoring must be performed as defined in this SMP;
- Data and information pertinent to site management must be reported at the frequency and in a manner as defined in this SMP;
- All future activities that will disturb remaining contaminated material must be conducted in accordance with this SMP;

- Monitoring to assess the performance and effectiveness of the remedy must be performed as defined in this SMP;

- Operation, maintenance, monitoring, inspection, and reporting of any mechanical or physical component of the remedy shall be performed as defined in this SMP;

- Access to the Site must be provided to agents, employees or other representatives of the State of New York with reasonable prior notice to the property owner to assure compliance with the restrictions identified by the Environmental Easement.

- The potential for vapor intrusion must be evaluated for any buildings developed in the area within the IC boundaries noted on Figure 7, and any potential exposures that are identified must be monitored or mitigated; and

- Vegetable gardens and farming on the Site are prohibited;

The NYSDEC-approved environmental easement for the Site was executed by Cascade 553 LLC on July 20, 2017 and by NYSDEC on September 9, 2017. The environmental easement was filed with the NYS Department of Finance, Office of City Register, on November 30, 2017. The Document Identifier number for this filing is 2017111300343001. A copy of the environmental easement and proof of filing and mailing is provided in Appendix C.

3.3 Engineering Controls

3.3.1 Cover System for Lots 1 and 2

Exposure to remaining soil contamination on Lots 1 and 2, which are located at depths of 15-32 ft. bgs, is prevented by a cover system comprised of the concrete rat slab and the recently poured concrete basement floor slab for Building D (Lot 1), and the concrete basement floor slab and paved driveway and parking (Lot 2/Building C).

Further, the area of Lot 1 that will not be covered by the concrete floor slab will be covered by paved driveway and parking in addition to the concrete rat slab. The maintenance of the cover systems for Lots 1 and 2 is an EC for the Site. Procedures for the inspection of this concrete and pavement are provided in the Monitoring and Sampling Plan included in Section 4.0 of this SMP.

Because the soils at Lots 3, 4, 54, 55 and 57 meet UUSCOs for all contaminants analyzed for, a cover system is not required for those Lots as an EC for the Site.

Although not part of the Site's cover system, it is noted that immediately adjacent to the Site where pedestrians and the public have access consists of a concrete sidewalk, the reference to which is included here for completeness and not because the public sidewalk is part of the cover system.

The Excavation Work Plan (EWP) provided in Appendix B outlines the procedures required to be implemented only in the event the concrete covering Lots 1 and/or 2 is breached, penetrated or temporarily removed, and any underlying remaining soil contamination located at depths greater than 15 ft. bgs is disturbed such that the excavated soils could come into contact with ecological resources.

Any work conducted pursuant to the EWP must also be conducted in accordance with the procedures defined in a Health and Safety Plan (HASP) (Appendix F) and associated Community Air Monitoring Plan (CAMP) prepared for the Site and provided in Appendix I.

3.3.2 Further Injections are a Contingent EC

The Monitoring Plan included in Section 4.0 of this SMP requires quarterly groundwater monitoring of the seven performance monitoring wells (the four existing post-remediation performance wells and three proposed monitoring wells) to assess the performance of the excavation and ISCO remedy on and downgradient of Lots 1 and 2, as well as upgradient of the Site. The results of that monitoring will be evaluated to determine whether additional injection of PersulfOX® as a contingent EC are required to achieve asymptotic conditions for contaminants in the groundwater originating from on-Site.

The results will also be used to determine whether an additional remedy is required to achieve a decrease in the CVOCs in groundwater originating from one or more off-Site sources such that any SSDS that is temporarily activated (due to the results of the post-construction soil vapor intrusion evaluation indicating that further monitoring or mitigation is required) may be permanently turned off prior to 5 years elapsing from the date that the Certificate of Completion is issued.

3.3.3 Activation of a Building SSDS is a Contingent EC

Since remaining CVOC contaminated groundwater exists beneath the entire Site as a result of the upgradient, off-site contaminated water continuing to migrate through and beneath the Site, an SVI evaluation is required for any building built on the Site to ensure conditions will be protective of human health and the environment. Piping for a SSDS and a vapor barrier has been or will be installed beneath the basement slab of each building constructed on the Site.

As discussed above, the buildings constructed on Lots 2, 3 and 4 (Building C, B, and A, respectively) and the foundations for the buildings being constructed on Lots 1, 55 and 57 (Buildings D, F and E, respectively) already have had piping for a SSDS and a vapor barrier installed beneath their basement floor slabs.

Piping for an SSDS will be placed under Building G foundation when it is constructed but not a parking garage, if any. The sub-grade parking garage's soil vapor intrusion pathway will be adequately addressed by the NYC Mechanical Code which requires proper ventilation.

The piping for a SSDS installed beneath the vapor barrier intercepts some or all of the soil vapors emanating from contaminants remaining in the soil and/or groundwater before those vapors can intrude into the buildings. Specifically, perforated schedule 40 PVC pipe was or will be installed in a minimum 10-inch thick gas permeable aggregate layer beneath the respective building's basement floor slab. A cushion geotextile and then a vapor barrier shall be placed on top of the aggregate layer. Then vertical riser pipes fitted to allow a blower (suction fan) to be installed, if required by the results of the

required soil vapor intrusion evaluation (using paired sub-slab vapor and indoor air sampling).

The results of the soil vapor intrusion sampling conducted on Buildings A, B and C indicated that the vapor intrusion condition that exists did not call for the SSDSs to be activated per the RAWP because the paired sub-slab soil gas/indoor air samples collected when evaluated pursuant to the applicable decision matrices in the NYSDOH SVI Guidance indicated that "no further action" was required.

A post-remedial soil vapor intrusion evaluation must be completed prior to occupying any buildings developed on the Site, including Buildings D, E, F and G. The relevant SSDS will be activated if future needs require or if the post-remedial soil vapor intrusion sampling under this SMP indicates it is necessary.

In addition, after all seven of the proposed buildings have been constructed (likely in November 2019), a site wide soil vapor intrusion evaluation will be performed on the Site. Specifically, paired indoor air and sub-slab soil vapor samples, and ambient outdoor air samples will be collected from each building (Building A through Building G). In the event that both the sub-slab soil vapor and paired indoor air samples are below both monitoring and mitigation levels, as presented in the Decision Matrices A, B, and C, dated May 2017, of the NYSDOH SVI Guidance, the SSDSs will not be activated. In the event that the sub-slab soil vapor and paired indoor air samples indicate that further monitoring or mitigation is required per the Decision Matrices A, B, and C, dated May 2017, of the NYSDOH SVI Guidance, the relevant SSDS will be activated prior to the building being occupied as a contingent EC.

Procedures for periodically monitoring, operating and maintaining an activated SSDS are documented in the Operation and Maintenance Plan (Section 5.0 of this SMP). Record (as built) drawings, signed and sealed by a professional engineer, will be included in Appendix K – Operations and Maintenance Manual. Figure 7 shows the boundary applicable to the SVI Abatement plan EC for the Site.

Furthermore, should any of the SSDSs be activated, an evaluation may be conducted as to whether additional injections of PersulfOX® or some other amendment

as another contingent EC could achieve enough of a decrease in the CVOCs in groundwater originating from one or more off-Site sources such that any SSDS that is temporarily activated may be permanently turned off prior to 5 years elapsing from the date that the Certificate of Completion is issued, all while periodically monitoring and maintaining the activated SSDS pursuant to the procedures set forth below in Section 5. If it is determined that additional injections of PersulfOX® or some other amendment as a contingent EC could achieve such a decrease in the CVOCs, a supplemental remedial action work plan will be prepared for the Department's review and approval.

3.3.4 Criteria for Completion of Remediation/Termination of Remedial Systems

Generally, remedial processes are considered completed when monitoring indicates that the remedy has achieved the remedial action objectives identified by the decision document. The framework for determining when remedial processes are complete is provided in Section 6.4 of NYSDEC DER-10.

3.3.4.1 – Concrete Cover for Lots 1 and 2

The quality and integrity of the concrete and pavement cover for Lots 1 and 2 will be inspected at defined, regular intervals in accordance with this SMP.

3.3.4.2 - Sub-Slab Depressurization System (SSDS)

Although the SSDS piping and vapor barrier will remain in place in perpetuity, they are not an EC for the Site. Any SSDS that is activated based on the results of the post-remedial soil vapor intrusion sampling will be an EC for the Site unless discontinued after written approval is granted by the NYSDEC and the NYSDOH. In the event that monitoring data indicates that an activated SSDS may no longer be required, a proposal to discontinue that SSDS will be submitted by the remedial party to the NYSDEC and NYSDOH.

4.0 MONITORING AND SAMPLING PLAN

4.1 General

This Monitoring and Sampling Plan describes the measures for evaluating the overall performance and effectiveness of the remedy. This Monitoring and Sampling Plan may only be revised with the approval of the NYSDEC. Details regarding the sampling procedures, data quality usability objectives, analytical methods, etc. for all samples collected as part of site management for the Site are included in the Quality Assurance Project Plan provided in Appendix E.

This Monitoring and Sampling Plan describes the methods to be used for:

- Sampling and analysis of all appropriate media (e.g., groundwater, indoor air, and soil vapor);
- Assessing compliance with applicable NYSDEC standards, criteria and guidance (SCGs), particularly groundwater standards and Part 375 SCOs for soil; and
- Evaluating Site information periodically to confirm that the remedy continues to be effective in protecting public health and the environment;

To adequately address these issues, this Monitoring and Sampling Plan provides information on:

- Sampling locations, protocol and frequency;
- Information on all designed monitoring systems;
- Analytical sampling program requirements;

- Inspection and maintenance requirements for monitoring wells;
- Monitoring well decommissioning procedures; and
- Annual inspection and periodic certification.

Reporting requirements are provided in Section 7.0 of this SMP.

4.2 Site–wide Inspection

Site-wide inspections will be performed at a minimum of once per year. Modification to the frequency or duration of the inspections will require approval from the NYSDEC. Site-wide inspections will also be performed after all severe weather conditions that may affect ECs or monitoring devices. During these inspections, an inspection form will be completed as provided in Appendix G – Site Management Forms. The form will compile sufficient information to assess the following:

- Compliance with all ICs, including site usage;
- An evaluation of the condition and continued effectiveness of ECs;
- General site conditions at the time of the inspection;
- The Site management activities being conducted including, where appropriate, confirmation sampling and a health and safety inspection; and
- Confirm that Site records are up to date.

Inspections of all remedial components installed at the Site will be conducted. A comprehensive site-wide inspection will be conducted and documented according to the SMP schedule, regardless of the frequency of the Periodic Review Report. The inspections will determine and document the following:

- Whether ECs continue to perform as designed;
- If these controls continue to be protective of human health and the environment;
- Compliance with requirements of this SMP and the Environmental Easement;
- Achievement of remedial performance criteria; and
- If site records are complete and up to date.

Reporting requirements are outlined in Section 7.0 of this plan.

Inspections will also be performed in the event of an emergency. If an emergency, such as a natural disaster or an unforeseen failure of any of the ECs occurs that reduces or has the potential to reduce the effectiveness of ECs in place at the Site, verbal notice to the NYSDEC must be given by noon of the following day. In addition, an inspection of the Site will be conducted within 5 days of the event to verify the effectiveness of the IC/ECs implemented at the Site by a qualified environmental professional, as determined by the NYSDEC. Written confirmation must be provided to the NYSDEC within 7 days of the event that includes a summary of actions taken, or to be taken, and the potential impact to the environment and the public.

4.3 System Monitoring and Sampling

4.3.1 Remedial System Monitoring

Performance monitoring of any activated SSDS in a building on the Site and inspection of the concrete and pavement cover over the soils in Lots 1 and 2 will be performed on a routine basis, as identified in Table 5 Remedial System Monitoring Requirements and Schedule (see below). Modification to the frequency or other requirements will require approval from the NYSDEC. A visual inspection of the complete system will be conducted during each performance monitoring/inspection

event. Unscheduled performance monitoring and/or inspections may take place when a suspected failure has been reported or an emergency occurs that is deemed likely to affect the operation of the system. The components to be monitored include, but are not limited to, the components included in Table 5 below.

Table 5 – Remedial System Performance Monitoring Requirements and Schedule

Remedial System Component	**Monitoring Parameter**	**Operating Range**	**Monitoring Schedule**
Activated SSDS	Blower operation and sub-slab vacuum, and visible penetrations, openings or consequential cracks in basement floor slab	Manometer readings and differential pressure measurements	Annually, unless and until an SSDS is activated, then the SSDS system effluent will be sampled quarterly for the first year, then semiannually thereafter to monitor effluent levels
Cover over remaining contaminated soils in Lots 1 and 2	Visible penetrations, openings or consequential cracks in concrete floor slab and sidewalks and/or driveway and parking pavement on Lots 1 and 2	Not Applicable	Annually
In-Situ Chemical Oxidant beneath source area in Lots 1 and 2, and/or other amendment to address CVOCs in groundwater requiring activation of SSDS	Groundwater quality sampling of the seven (7) post-remedial performance monitoring wells	Bulk reduction in groundwater contamination to NYSDEC's satisfaction	Quarterly

A complete list of components to be inspected is provided in the Inspection Checklist, provided in Appendix G - Site Management Forms. If the system is not performing within specifications; maintenance and repair, as per the Operation and Maintenance Plan, is required immediately.

4.3.2 Sub-Slab Depressurization System Sampling

Sub-slab soil vapor samples, indoor air samples, and ambient outdoor air samples will be collected from each new building developed on the Site after approval of the Final Engineering Report prior to occupation to evaluate whether the SSDS is required to be activated with a blower as part of the SMP. Sampling will consist of one sub-slab soil vapor and one co-located indoor air sample per building. One outdoor air sample will also be collected. In addition, after all seven of the proposed buildings have been constructed (likely in November 2019), a site wide soil vapor intrusion evaluation will be performed. Specifically, paired indoor air and sub-slab soil vapor samples, and one ambient outdoor air samples will be collected from each building (Building A through Building G) of the Site. Sample collection will follow the October 2006 Guidance for Evaluating Soil Vapor Intrusion in the State of New York (SVI Guidance) and will be collected over a 24-hour time period.

Each of the sampling event results of the soil vapor intrusion sampling will be evaluated based upon the applicable decision matrices from NYSDOH SVI Guidance. If the SSDS is required to be activated, then the SSDS system effluent will be sampled quarterly for the first year, then semiannually thereafter to monitor effluent levels. Should the PCE concentrations and other related VOC concentrations in the SSDS effluent appear to be below NYSDOH AGVs, grab paired indoor air and sub-slab soil vapor samples will be collected while the system is operating. In the event that both the sub-slab soil vapor and paired indoor air samples are below both monitoring and mitigation levels, as presented in the Decision Matrices A, B, and C, dated May 2017, of the NYSDOH SVI Guidance, the blower will be turned off and the SSDS de-activated after written approval by the NYSDEC and NYSDOH.

4.4 Post-Remediation Groundwater Monitoring and Sampling

In addition to the post-remediation soil vapor intrusion sampling discussed in subsection 4.3.2 above (when a building is developed), four monitoring wells were reinstalled on Lot 1 and downgradient of the former on-site source area on Lots 1 and 2 to evaluate the post-remediation impact of the soil excavation/ISCO remedy on groundwater quality beneath and adjacent to the Lot 1 source area (Figure 5B). Three monitoring wells are also proposed to be installed to evaluate the CVOCs entering the Site from the upgradient source(s) noted in the Decision Document. Samples shall be collected from the seven (7) monitoring wells on a routine basis. Three post-injection groundwater sampling events were performed monthly (see Tables 3A, 3B and 3C and Figure 5B), then quarterly if necessary. Sampling locations required analytical parameters and schedule are provided in Table 6 – Post-Remediation System Sampling Requirements and Schedule below. Modification to the frequency or sampling requirements will require approval from the NYSDEC.

Table 6 – Post Remediation Sampling Requirements and Schedule in accordance with DEC's Emerging Contaminant Sampling Guidance (July 2018)

Sampling Location	**Analytical Parameters**				**Schedule**
	VOCs including 1-4 Dioxane (Method 8260C)	SVOCs (Method 8270D)	ISCO parameters (persulfate, iron2, and pH)	1,4-Dioxane via EPA 8270D Per-fluorinated Alkyl Acids by EPA 537 PFAS	
Monitoring Well # MW-1	X	X	X		Quarterly, until NYSDEC determines a different frequency is appropriate

Monitoring Well # MW-2	X	X	X		Quarterly, until NYSDEC determines a different frequency
Monitoring Well # MW-3	X	X	X		Quarterly, until NYSDEC determines a different frequency
Monitoring Well # MW-4	X	X	X		Quarterly, until NYSDEC determines a different frequency
Monitoring Well # MW-5	X				Quarterly, until NYSDEC determines a different frequency
Monitoring Well # MW-6	X				Quarterly, until NYSDEC determines a different frequency
Monitoring Well # MW-7	X				Quarterly, until NYSDEC determines a different frequency

Detailed sample collection and analytical procedures and protocols are provided in Appendix E– Quality Assurance Project Plan.

Samples will be collected from the three (3) off-Site wells and the four (4) on-Site wells. Groundwater samples will be collected from each monitoring well by utilizing a low-flow submersible stainless steel pump with dedicated Teflon® or Teflon®-lined polyethylene tubing connected to a transparent flow cell. The samples will be collected in laboratory prepared sample bottles (pre-preserved, if appropriate), placed in iced coolers and removed from light immediately after collection. In addition, all sample bottles must be filled to the top so that no aeration of the samples occurs during transport. All bottles will be filled to avoid cascading and aeration of the samples, the goal being to minimize

any precipitation of colloidal matter. All samples will be analyzed by a NYSDOH ELAP certified environmental laboratory certified in the appropriate category.

Results of the groundwater monitoring will be used to determine whether additional in-situ oxidant chemical (ISCO) injections will be required to adequately address the remaining contaminants in groundwater from the former on-site source beneath Lots 1 and 2 in order to attain a bulk reduction in groundwater contamination to asymptotic levels to NYSDEC's satisfaction, and/or to determine whether the injection of additional ISCO or some other amendment is required to address the CVOC concentrations entering the Site from upgradient source(s) such that any SSDS that has been activated as a contingent EC can be permanently turned off.

4.4.1 Groundwater Sampling

Post-remedial performance groundwater monitoring has been performed three times on a monthly basis per the RAWP and will be performed on a quarterly basis for as long as necessary to assess the performance of the excavation and ISCO remedy for the former source area on at Lots 1 and 2. Modification to the frequency or sampling requirements will require approval from the NYSDEC.

The network of monitoring wells was installed to monitor the Lots 1 and 2 source area (MW-3) and off-Site downgradient groundwater conditions (MW-1, MW-2 and MW-4). Three additional groundwater monitoring wells (MW-5, MW-6 and MW-7) will be installed to monitor the upgradient conditions (Figure 12). The network of on-Site and off-Site wells has been designed to evaluate the effectiveness of the remedy (excavation and application of in situ chemical oxidation compound) on the bulk reduction of dissolved petroleum constituents to asymptotic levels to NYSDEC's satisfaction on the downgradient side of the Site and below the floor slabs of the buildings that have been (Building C on Lot 2) and will be (Building D on Lot 1) developed. Upgradient groundwater monitoring wells (MW-5, MW-6, and MW-7) are designed to assist in the evaluation of the effectiveness of the remedy and to assess the concentrations of CVOCs continuing to enter the Site from upgradient source(s).

Table 7 summarizes the wells' identification number, as well as the purpose, location, depths, diameter and screened intervals of the wells. As part of the groundwater monitoring, one (1) on-Site well (MW-3), three (3) downgradient wells (MW-1, MW-2 and MW-4), and three (3) upgradient wells MW-5, MW-6, and MW-7) will be sampled to evaluate the effectiveness of the remedy.

Table 7 – Monitoring Well Construction Details

Monitoring Well ID	Well Location	Coordinates (longitude/ latitude)	Well Diameter (inches)	Elevation (ft)			
				Ground	RIM	PVC	Screen Botto

							m (bgs)
MW-1	Downgradient	40°41'45.82"/73°56'57.06"	2	27.53	27.51	27.36	43
MW-2	Downgradient	40°41'45.69"/73°56'57.23"	2	27.81	27.89	27.57	42
MW-3	Source/on Site	40°41'45.92"/73°56'56.27"	2	28.17	28.06	28.13	40 feet
MW-4	Downgradient	40°41'45.42"/73°56'56.79"	2	5.88	N/A	8.32	42 feet
MW-5	Upgradient	TBD	TBD	TBD	TBD	TBD	TBD
MW-6	Upgradient	TBD	TBD	TBD	TBD	TBD	TBD
MW-7	Upgradient	TBD	TBD	TBD	TBD	TBD	TBD

The monitoring well installed in the former source area on the Lot 1 (MW-3) was installed to a depth of approximately 40 ft. bgs. As this area has been developed with a building foundation, the on-site well was re-installed through the bottom slab of the building in a location that is accessible now and in the future. The wellhead is protected. This on-site well was screened within the upper glacial aquifer in the first water bearing unit. The screen level is from 5 ft. above the water table (25 ft. bgs) to 10 ft. below water table (40 ft. bgs). The downgradient monitoring wells were installed along the off-Site sidewalk area. The screens extended from 26 ft. bgs to approximate 42 ft. bgs (16 ft). below water table. These wells will be used to monitor the groundwater conditions leaving the Site. It is noted that the wells were sealed tightly to prevent oxygen from entering into them. Three (3) additional monitoring wells will be installed in the upgradient area. The proposed well locations are provided in Figure 12.

Groundwater elevations and flow patterns were discussed in Section 2.0. Post-remedial performance monitoring well locations are depicted in Figures 5B and 12. Monitoring well construction details are included in Appendix E. Monitoring well construction logs of previously installed wells are included in Appendix J of this document.

If biofouling or silt accumulation occurs in the on-site and/or off-site performance monitoring wells, the wells will be physically agitated/surged and redeveloped. Additionally, the performance monitoring wells will be properly decommissioned and replaced, if an event renders the wells unusable.

Repairs and/or replacement of wells in the monitoring well network will be performed based on assessments of structural integrity and overall performance.

The NYSDEC will be notified prior to any repair or decommissioning of any performance monitoring well for the purpose of replacement, and the repair or decommissioning and replacement process will be documented in the subsequent Periodic Review Report. Well decommissioning without replacement will be done only with the prior approval of the NYSDEC. Well abandonment will be performed in accordance with NYSDEC's guidance entitled "CP-43: Groundwater Monitoring Well Decommissioning Procedures", or other method approved by NYSDEC prior to well abandonment. Monitoring wells that are decommissioned because they have been rendered unusable will be replaced in kind in the nearest available location, unless otherwise approved by the NYSDEC.

The sampling frequency may only be modified with the approval of the NYSDEC. This SMP will be modified to reflect changes in sampling plans approved by the NYSDEC.

Deliverables for the groundwater monitoring program are specified in Section 7.0 – Reporting Requirements.

4.4.2 Soil Vapor Intrusion Sampling

As discussed in Subsection 4.3.2 above, soil vapor intrusion sampling will be performed prior to occupancy to assess the performance of the remedy when a building is developed on the Site after NYSDEC approval of the Final Engineering Report to assess whether the SSDS piping and vapor barrier required to be installed beneath the building's floor slab should be activated. In addition, after all seven of the proposed buildings have

been constructed (likely in November 2019), a site wide soil vapor intrusion testing will be performed. Paired indoor air and sub-slab soil vapor samples, and ambient outdoor air samples will be collected from each building (Building A through Building G) of the Site. Sample collection will follow the NYSDOH SVI Guidance and will be collected over a 24-hour time period.

Paired indoor air/sub slab vapor samples will be taken. The sub-slab vapor sample will be taken at a depth of two inches below of the bottom of the concrete slab and analyzed for the analytical parameter listed in Table 6, which table also describes the detection limits and minimum reporting limits to be achieved by the ELAP-certified laboratory. One ambient outdoor air sample will also be collected. The proposed sampling locations are provided in Figure 10.

The results of the sampling will be compared to the applicable Matrices A, B and C of the NYSDOH SVI Guidance for evaluating soil vapor intrusion in New York State. Any finding requiring either further monitoring or mitigation will result in activation of the SSDS as a contingent EC. Modification to the frequency or sampling requirements will require approval from the NYSDEC, and this SMP will be modified to reflect changes in sampling plans approval by the NYSDEC. Deliverables for the soil vapor intrusion sampling program are specified in Section 7- Reporting Requirements.

4.4.3 Monitoring and Sampling Protocol

All sampling activities will be recorded in a field book and associated sampling log as provided in Appendix G - Site Management Forms. Other observations (e.g., groundwater monitoring well integrity, etc.) will be noted on the sampling log. The sampling log will serve as the inspection form for the monitoring network. Additional detail regarding monitoring and sampling protocols are provided in the site-specific Field Activities Plan provided as Appendix E of this document.

5.0 OPERATION AND MAINTENANCE PLAN

5.1 General

The Site remedy does not rely on any mechanical systems, such as groundwater treatment systems, or air sparge/soil vapor extraction systems, to protect public health and the environment other than the concrete cover system over the remaining contaminated soils at depth beneath Lots 1 and 2. The possible activation of the SSDS piping being installed beneath the basement floor slab of each building being developed on the Site is a contingent EC, as is the possibility of supplemental injections of PersulfOX® to address groundwater quality beneath the Lots 1 and 2 source area or of PersulfOX® and/or another amendment to address CVOC concentrations entering the Site from upgradient source(s).

Nevertheless, to date, the post-remedial soil vapor intrusion sampling of the SSDS piping installed beneath Buildings A, B, and C has not required activation of the respective SSDS and/or the possible injection of amendment to address CVOC concentrations entering the Site from upgradient source(s). Similarly, to date, the post-remedial performance groundwater monitoring has not required additional PersulfOX® injections to address the former on-Site source area.

The implication is that none of the SSDS piping installed under any other new building will likely require activation and that the excavation/ISCO remedy has successfully addressed the former on-Site source area. Therefore, the operation and maintenance of such components is not included in this SMP. Should mechanical systems be needed as part of the SSDS, this SMP will be modified accordingly following discussions with NYSDEC.

5.1.1 Maintenance of Concrete Cover System over Lots 1 and 2

The integrity of the concrete floor slab and sidewalks and the pavement of the driveways and parking covering the remaining soil contamination located at depth below Lots 1 and 2 will be maintained. Annually, the cover will be inspected and its cover

integrity documented. Any deficiencies will be noted and corrective actions recommended. Inspections, deficiencies and corrective actions completed will be documented in the Periodic Review Report.

6.0 PERIODIC ASSESSMENTS/EVALUATIONS

6.1 Climate Change Vulnerability Assessment

Increases in both the severity and frequency of storms/weather events, an increase in sea level elevations along with accompanying flooding impacts, shifting precipitation patterns and wide temperature fluctuation, resulting from global climactic change and instability, have the potential to significantly impact the performance, effectiveness and protectiveness of a given site and associated remedial systems. Vulnerability assessments provide information so that the Site and associated remedial systems are prepared for the impacts of the increasing frequency and intensity of severe storms/weather events and associated flooding.

A vulnerability assessment will not be performed for the Site for the following reasons:

- According to Federal Emergency Management Agency Flood Map Service, the Site is not located in a flood plain, low-lying or low-groundwater recharge area;
- Site Drainage and Storm Water Management is and will be connected to New York City municipal systems;
- There are no exposed soils on the Site; therefore, the Site is not susceptible to erosion during severe rain events;
- Because there are no active remedial systems in place, and the Site is not susceptible to damage from the wind itself or falling objects, such as trees or utility structures during periods of high wind; and

- Because the remaining contaminants at the Site are located at depth and because there are no active remedial systems, the Site is not susceptible to a spill or contaminant release due to storm-related damage caused by flooding, erosion, high winds, loss of power etc.

6.2 Green Remediation Evaluation

NYSDEC's DER-31 Green Remediation requires that green remediation concepts and techniques be considered during all stages of the remedial program including site management, with the goal of improving the sustainability of the cleanup and summarizing the net environmental benefit of any implemented green technology. This section of the SMP provides a summary of any green remediation evaluations to be completed for the Site during site management, and as reported in the Periodic Review Report (PRR).

The Green Remediation Evaluation will include the following items:

Fuel usage associated with travel to and from the Site for sampling and monitoring activities.

Modifications resulting from the Green Remediation Evaluations will be routinely implemented and scheduled to occur during planned/routine operation and maintenance activities. Reporting of these modifications will be presented in the PRR.

6.2.1 Frequency of System Checks, Sampling and Other Periodic Activities

Transportation to and from the Site and use of consumables in relation to visiting the Site in order to conduct system checks, inspections and/or collect samples and shipping samples to a laboratory for analyses have direct and/or inherent energy costs. The schedule and/or means of these periodic activities have been prepared so that these

tasks can be accomplished in a manner that does not impact remedy protectiveness but reduces expenditure of energy or resources.

6.2.2 Metrics and Reporting

As discussed in Section 7.0 and as shown in Appendix G – Site Management Forms, information on energy usage, solid waste generation, transportation and shipping, water usage and land use and ecosystems will be recorded to facilitate and document consistent implementation of green remediation during site management and to identify corresponding benefits; a set of metrics has been developed.

6.3 Remedial System Optimization

A Remedial Site Optimization (RSO) study will be conducted any time that the NYSDEC or the remedial party requests in writing that an in-depth evaluation of the remedy is needed. An RSO may be appropriate if any of the following occur:

- The remedial actions have not met or are not expected to meet RAOs in the time frame estimated in the Decision Document;
- The management and operation of the remedial system is exceeding the estimated costs;
- The remedial system is not performing as expected or as designed;
- Previously unidentified source material may be suspected;
- Plume shift has potentially occurred;
- Site conditions change due to development, change of use, change in groundwater use, etc.;
- There is an anticipated transfer of the site management to another remedial party or agency; and
- A new and applicable remedial technology becomes available.

An RSO will provide a critique of a site's conceptual model, give a summary of past performance, document current cleanup practices, summarize progress made toward the site's cleanup goals, gather additional performance or media specific data and information and provide recommendations for improvements to enhance the ability of the present system to reach RAOs or to provide a basis for changing the remedial strategy.

The RSO study will focuses on overall site cleanup strategy, process optimization and management with the intent of identifying impediments to cleanup and improvements to site operations to increase efficiency, cost effectiveness and remedial time frames. Green remediation technology and principals are to be considered when performing the RSO.

7.0. REPORTING REQUIREMENTS

7.1 Site Management Reports

All site management inspection, maintenance and monitoring events will be recorded on the appropriate site management forms provided in Appendix G. These forms are subject to NYSDEC revision.

All applicable inspection forms and other records, including media sampling data and system maintenance reports, generated for the Site during the reporting period will be provided, in electronic format, to the NYSDEC in accordance with the requirements of Table 8 and summarized in the Periodic Review Report.

Table 8: Schedule of Monitoring/Sampling/Inspection Reports

Task/Report	Reporting Frequency*
Concrete Cover over Lots 1 and 2 Inspection Report	Annually
Periodic Review Report	Annually, or as otherwise determined by the Department
Performance Groundwater Monitoring Report	Quarterly
SVI Evaluation Report (for each SSDS Piping prior to occupancy)	Prior to Occupancy of Building; and upon construction of all seven (7) buildings (likely November 2019)

* The frequency of events will be conducted as specified until otherwise approved by the NYSDEC.

All monitoring/sampling/inspections reports will include, at a minimum:

- Date of event or reporting period;

- Name, company, and position of person(s) conducting monitoring/sampling/inspection activities;
- Description of the activities performed;
- Where appropriate, color photographs or sketches showing the approximate location of any problems or incidents noted (included either on the checklist/form or on an attached sheet);
- Type of samples collected (e.g., sub-slab vapor, indoor air, outdoor air, etc.);
- Copies of all field forms completed (e.g., well sampling logs, chain-of-custody documentation, etc.);
- Sampling results in comparison to appropriate standards/criteria;
- A figure illustrating sample type and sampling locations;
- Copies of all laboratory data sheets and the required laboratory data deliverables required for all points sampled (to be submitted electronically in the NYSDEC-identified format);
- Any observations, conclusions, or recommendations; and
- A determination as to whether contaminant conditions have changed since the last reporting event.

Routine maintenance event reporting forms will include, at a minimum:

- Date of event;
- Name, company, and position of person(s) conducting maintenance activities;
- Description of maintenance activities performed;
- Any modifications to the system;

- Where appropriate, color photographs or sketches showing the approximate location of any problems or incidents noted (included either on the checklist/form or on an attached sheet); and,

- Other documentation such as copies of invoices for maintenance work, receipts for replacement equipment, etc., (attached to the checklist/form).

Non-routine maintenance event reporting forms will include, at a minimum:

- Date of event;

- Name, company, and position of person(s) conducting non-routine maintenance/repair activities;

- Description of non-routine activities performed;

- Where appropriate, color photographs or sketches showing the approximate location of any problems or incidents (included either on the form or on an attached sheet); and

- Other documentation such as copies of invoices for repair work, receipts for replacement equipment, etc. (attached to the checklist/form).

Data will be reported in digital format as determined by the NYSDEC. Currently, data is to be supplied electronically and submitted to the NYSDEC EQuIS™ database in accordance with the requirements found at the following link.

http://www.dec.ny.gov/chemical/62440.html

7.2 Periodic Review Report

A Periodic Review Report (PRR) will be submitted to the Department beginning sixteen (16) months after the Certificate of Completion is issued. After submittal of the initial Periodic Review Report, the next PRR shall be submitted annually to the

Department or at another frequency as may be required by the Department. In the event that the Site is subdivided into separate parcels with different ownership, a single Periodic Review Report will be prepared that addresses the Site described in Appendix D -Environmental Easement. The report will be prepared in accordance with NYSDEC's DER-10 and submitted within 30 days of the end of each certification period. Performance groundwater sampling and soil vapor intrusion sampling results will also be incorporated into the Periodic Review Report and submitted in electronic format as described in **Section 7.1 above**. The report will include:

- Identification, assessment and certification of all ECs/ICs required by the remedy for the Site.
- Results of the required annual site inspections and severe condition inspections, if applicable.
- All applicable site management forms and other records generated for the Site during the reporting period in the NYSDEC-approved electronic format, if not previously submitted.
- A summary of any discharge monitoring data and/or information generated during the reporting period, with comments and conclusions.
- Data summary tables and graphical representations of contaminants of concern by media (groundwater, soil vapor, etc.), which include a listing of all compounds analyzed, along with the applicable standards, with all exceedances highlighted. These will include a presentation of past data as part of an evaluation of contaminant concentration trends.
- Results of all analyses, copies of all laboratory data sheets, and the required laboratory data deliverables for all samples collected during the reporting period will be submitted in digital format as determined by the NYSDEC. Currently, data is supplied electronically and submitted to the NYSDEC EQuIS™ database in accordance with the requirements found at this link:

http://www.dec.ny.gov/chemical/62440.html

- A site evaluation, which includes the following:
  - The compliance of the remedy with the requirements of the site-specific RAWP or Decision Document;
  - The operation and the effectiveness of all treatment units, etc., including identification of any needed repairs or modifications;
  - Any new conclusions or observations regarding site contamination based on inspections or data generated by the Monitoring and Sampling Plan for the media being monitored;
  - Recommendations regarding any necessary changes to the remedy and/or Monitoring and Sampling Plan; and
  - Trends in contaminant levels in the affected media will be evaluated to determine if the remedy continues to be effective in achieving remedial goals as specified by the Decision Document.
  - The overall performance and effectiveness of the remedy.

7.2.1 Certification of Institutional and Engineering Controls

Following the last inspection of the reporting period, a NYS Professional Engineer will prepare, and include in the Periodic Review Report, the following certification as per the requirements of NYSDEC DER-10:

"*For each institutional or engineering control identified for the Site, I certify that all of the following statements are true:*

- *The inspection of the Site to confirm the effectiveness of the institutional and engineering controls required by the remedial program was performed under my direction;*

- *The institutional control and/or engineering control employed at this site is unchanged from the date the control was put in place, or last approved by the Department;*

- *Nothing has occurred that would impair the ability of the control to protect the public health and environment;*

- *Nothing has occurred that would constitute a violation or failure to comply with any site management plan for this control;*

- *Access to the Site will continue to be provided to the Department to evaluate the remedy, including access to evaluate the continued maintenance of this control;*

- *If a financial assurance mechanism is required under the oversight document for the Site, the mechanism remains valid and sufficient for the intended purpose under the document;*

- *Use of the Site is compliant with the environmental easement;*

- *The engineering control systems are performing as designed and are effective;*

- *To the best of my knowledge and belief, the work and conclusions described in this certification are in accordance with the requirements of the Site remedial program and generally accepted engineering practices; and*

- *The information presented in this report is accurate and complete.*

- *No new information has come to my attention, including groundwater monitoring data from wells located at the Site boundary, if any, to indicate that the assumptions made in the qualitative exposure assessment of off-site*

contamination are no longer valid; and the assumptions made in the qualitative exposure assessment remain valid.

I certify that all information and statements in this certification form are true. I understand that a false statement made herein is punishable as a Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law. I, Ernest Hanna, of 104 West 29th Street 10th Floor New York, NY 10001, am certifying as Owner's/Remedial Party's Designated Site Representative: I have been authorized and designated by all site owners/remedial parties to sign this certification for the Site."

The signed certification will be included in the Periodic Review Report.

The Periodic Review Report will be submitted, in electronic format, to the NYSDEC Project Manager, in the Central Office, and the Regional Office in which the Site is located and the NYSDOH Bureau of Environmental Exposure Investigation. The Periodic Review Report may need to be submitted in hard-copy format, as requested by the NYSDEC project manager.

7.3 Corrective Measures Work Plan

If any component of the remedy is found to have failed, or if the periodic certification cannot be provided due to the failure of an institutional or engineering control, a Corrective Measures Work Plan will be submitted to the NYSDEC for approval. This plan will explain the failure and provide the details and schedule for performing work necessary to correct the failure. Unless an emergency condition exists, no work will be performed pursuant to the Corrective Measures Work Plan until it has been approved by the NYSDEC.

7.4 Remedial Site Optimization Report

In the event that a RSO is to be performed (see Section 6.3), upon completion of the RSO, a RSO report must be submitted to the Department for approval. The RSO report will document the research/ investigation and data gathering that was conducted, evaluate the results and facts obtained, present a revised conceptual site model and present recommendations. RSO recommendations are to be implemented upon approval from the NYSDEC. Additional work plans, design documents, HASPs etc., may still be required to implement the recommendations, based upon the actions that need to be taken. A final engineering report and update to the SMP may also be required.

8.0 REFERENCES

Phase I Environmental Site Assessment Screening, 553 Marcy Avenue, Brooklyn New York, Prepared by AEI (January 2013)

Limited Phase II Subsurface Investigation, 553 Marcy Avenue, Brooklyn New York, Prepared by EBC (April 2011)

Site Characterization Investigation Data Summary - 553 Marcy Avenue, Brooklyn New York, Prepared by CCE (December 2011)

Remedial Investigation Report -553 Marcy Avenue, Brooklyn New York, Prepared by CCE (May 2012)

Remedial Investigation Report -Former Cascade Laundry Site, 553 Marcy Avenue, Brooklyn New York, Prepared by EBC (April 2015, revised December 2015).

Remedial Action Work Plan-Former Cascade Laundry Site, 553 Marcy Avenue, Brooklyn New York, Prepared by EBC (April 2015, revised December 2015).

6NYCRR Part 375, Environmental Remediation Programs. December 14, 2006.

NYSDEC DER-10 – "Technical Guidance for Site Investigation and Remediation".

NYSDEC, 1998. Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations Division of Water Technical and Operational Guidance Series (TOGS) 1.1.1. June 1998 (April 2000 addendum).

NYSDOH, 2006. Guidance for Evaluating Soil Vapor Intrusion in the State of New York (and Decision Matrices revised as of May 2017).

TABLES

FIGURES

APPENDIX A – LIST OF SITE CONTACTS

APPENDIX B – EXCAVATION WORK PLAN (EWP)

B-1 NOTIFICATION

This Excavation Work Plan (EWP) applies to the remaining soil contamination located at depths greater than 15 ft. bgs on Lots 1 and 2. With respect to that remaining soil contamination, all confirmation samples met the SCOs protective of public health for residential (single family) use, except for one parameter (Chrysene) in one sample (EP-51) collected 30 ft. bgs roughly on the boundary line between Lots 1 and 2.

The remaining soil contamination at depth on Lots 1 and 2, nevertheless, did not meet the SCOs protective of ecological resources and in some cases protective of groundwater quality for 4,4'-DDD, Acetone, Chrysene, Mercury, and 4,4'-DDT. Therefore, if any of the remaining soil contamination is ever disturbed and waste is generated, the waste soil must be treated as contaminated for disposal purposes unless subsequent testing demonstrates otherwise.

Therefore, this EWP applies to excavations to depths greater than 15 ft. bgs on Lots 1 and 2, and then, largely to the extent that any soils excavated from depths greater than 15 ft. bgs must be handled and disposed in a manner such that it will not come into contact with ecological resources or groundwater.

At least 15 days prior to the start of any activity on Lots 1 and 2 that is anticipated to encounter remaining soil contamination, the site owner or their representative will notify the NYSDEC. Table B-1 includes contact information for the above notification. The information on this Table will be updated as necessary to provide accurate contact information. A full listing of Site-related contact information is provided in Appendix A.

Table B-1: Notifications*

Name	Contact Information
Joseph Jones Project Manager, NYSDEC	Phone: (518) 402-9621 Email: joseph.jones@dec.ny.gov

Thomas V. Panzone NYSDEC Regional 2 Hazardous Waste Engineer	Phone: (718)-482-4953 Email: tvpanzon@gw.dec.state.ny.us
Chief, NYSDEC Site Control	Phone: (518) 402-9553 Email: derweb@dec.ny.gov

* Note: Notifications are subject to change and will be updated as necessary.

This notification will include:

- A detailed description of the work to be performed, including the location and areal extent of excavation, plans/drawings for site re-grading, intrusive elements or utilities to be installed below the concrete cover, estimated volumes of contaminated soil to be excavated and any work that may impact an engineering control;
- A summary of environmental conditions anticipated to be encountered in the work areas, including the nature and concentration levels of contaminants of concern, potential presence of grossly contaminated media, and plans for any pre-construction sampling;
- A schedule for the work, detailing the start and completion of all intrusive work;
- A summary of the applicable components of this EWP;
- A statement that the work will be performed in compliance with this EWP and 29 CFR 1910.120;

- A copy of the contractor's health and safety plan (HASP), in electronic format, if it differs from the HASP provided in Appendix F of this SMP;
- Identification of disposal facilities for potential waste streams; and
- Identification of sources of any anticipated backfill, along with all required chemical testing results.

B-2 SOIL SCREENING METHODS

Visual, olfactory and instrument-based (e.g. photoionization detector) soil screening will be performed by a qualified environmental professional during all excavations into known or potentially contaminated material (remaining soil contamination). Soil screening will be performed when invasive work is done and will include all excavation and invasive work performed during development, such as excavations for foundations and utility work, after issuance of the COC.

Soils will be segregated based on previous environmental data and screening results into material that requires off-site disposal and material that requires testing to determine if the material can be reused on-site as soil beneath a cover. Further discussion of off-Site disposal of materials and on-Site reuse is provided in Section B-7 of this Appendix.

B-3 SOIL STAGING METHODS

Soil stockpiles stored outside will be continuously encircled with a berm and/or silt fence. Hay bales will be used as needed near catch basins, surface waters and other discharge points.

Stockpiles of any soils excavated from depths greater than 15 ft. bgs on Lots 1 and 2 will be kept covered at all times with appropriately anchored tarps. Stockpiles will be routinely inspected and damaged tarp covers will be promptly replaced.

Stockpiles will be inspected at a minimum once each week and after every storm event. Results of inspections will be recorded in a logbook, maintained at the Site and available for inspection by the NYSDEC.

B-4 MATERIALS EXCAVATION AND LOAD-OUT

A qualified environmental professional or person under their supervision will oversee all invasive work and the excavation and load-out of all excavated material excavated from depths greater than 15 ft. bgs on Lots 1 and 2.

The owner of the property and remedial party (if applicable) and its contractors are responsible for safe execution of all invasive and other work performed under this Plan.

The presence of utilities and easements on the Site will be investigated by the qualified environmental professional. It will be determined whether a risk or impediment to the planned work under this SMP is posed by utilities or easements on the Site.

Loaded vehicles leaving the Site will be appropriately lined, tarped, securely covered, manifested, and placarded in accordance with appropriate Federal, State, local, and NYSDOT requirements (and all other applicable transportation requirements).

A truck wash will be operated on-site, as appropriate. The qualified environmental professional will be responsible for ensuring that all outbound trucks will be washed at the truck wash before leaving the Site until the activities performed under this section are complete. Truck wash waters will be collected and disposed of off-site in an appropriate manner.

Locations where vehicles enter or exit the Site shall be inspected daily for evidence of off-Site soil tracking.

The qualified environmental professional will be responsible for ensuring that all egress points for truck and equipment transport from the Site are clean of dirt and other materials derived from the Site during intrusive excavation activities. Cleaning of the adjacent streets will be performed, as needed, to maintain a clean condition with respect to Site-derived materials.

B-5 MATERIALS TRANSPORT OFF-SITE

All transport of materials excavated from depths greater than 15 ft. bgs on Lots 1 and 2 will be performed by licensed haulers in accordance with appropriate local, State, and Federal regulations, including 6 NYCRR Part 364. Haulers will be appropriately licensed and trucks properly placarded.

Material transported by trucks exiting the Site will be secured with tight-fitting covers. Loose-fitting canvas-type truck covers will be prohibited. If loads contain wet material capable of producing free liquid, truck liners will be used.

Truck transport routes are shown in Figure B-1. All trucks loaded with site materials from depths greater than 15 ft. bgs beneath Lots 1 and 2 will exit the vicinity of the Site using only these approved truck routes. This is the most appropriate route and takes into account: (a) limiting transport through residential areas and past sensitive sites; (b) use of city mapped truck routes; (c) prohibiting 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;

Trucks will be prohibited from stopping and idling in the neighborhood outside the project site.

Egress points for truck and equipment transport from the Site will be kept clean of dirt and other materials during site remediation and development.

Queuing of trucks will be performed on-site in order to minimize off-site disturbance. Off-site queuing will be prohibited.

B-6 MATERIALS DISPOSAL OFF-SITE

All material excavated from depths greater than 15 ft. bgs on Lots 1 and 2 and removed from the Site will be treated as contaminated and regulated material and will be transported and disposed in accordance with all local, State (including 6NYCRR Part 360) and Federal regulations. If disposal of material from Lots 1 and 2 is proposed for unregulated off-Site disposal (i.e. clean soil removed for development purposes), a formal request with an associated plan will be made to the NYSDEC. Unregulated off-Site management of materials from this Site will not occur without formal NYSDEC approval.

Off-Site disposal locations for excavated soils will be identified in the pre-excavation notification. This will include estimated quantities and a breakdown by class of disposal facility, if appropriate, i.e. hazardous waste disposal facility, solid waste landfill, petroleum treatment facility, C/D recycling facility, etc. Actual disposal quantities and associated documentation will be reported to the NYSDEC in the Periodic Review Report. This documentation will include: waste profiles, test results, facility acceptance letters, manifests, bills of lading and facility receipts.

Non-hazardous historic fill and contaminated soils taken off-Site will be handled, at minimum, as a Municipal Solid Waste per 6NYCRR Part 360-1.2. Material that does not meet Unrestricted SCOs is prohibited from being taken to a New York State recycling facility (6NYCRR Part 360-16 Registration Facility).

B-7 MATERIALS REUSE ON-SITE

The qualified environmental professional will ensure that procedures defined for materials reuse in this SMP are followed and that unacceptable material does not remain on-site. Contaminated material from depths greater than 15 ft. bgs beneath Lots 1 and 2, including historic fill and contaminated soil, that is acceptable for reuse on-site will be placed below the demarcation layer or impervious surface, and will not be reused within a cover soil layer, within landscaping berms, or as backfill for subsurface utility lines.

Any demolition material proposed for reuse on-site will be sampled for asbestos and the results will be reported to the NYSDEC for acceptance. Concrete crushing or processing on-site will not be performed without prior NYSDEC approval. Organic matter (wood, roots, stumps, etc.) or other solid waste derived from clearing and grubbing of the Site will not be reused on-site.

B-8 FLUIDS MANAGEMENT

All liquids to be removed from the Site associated with the excavation of soil from depths greater than 15 ft. bgs on Lots 1 and 2, including but not limited to, excavation dewatering, decontamination waters and groundwater monitoring well purge and development waters, will be handled, transported and disposed in accordance with applicable local, State, and Federal regulations. Dewatering, purge and development fluids will not be recharged back to the land surface or subsurface of the Site, and will be managed off-site, unless prior approval is obtained from NYSDEC.

Discharge of water generated during large-scale construction activities to surface waters (i.e. a local pond, stream or river) will be performed under a SPDES permit.

B-9 CONCRETE COVER SYSTEM RESTORATION

After the completion of soil removal and any other invasive activities on Lots 1 and 2, the concrete and/or driveway/parking pavement will be restored in a manner that complies with the Decision Document.

B-10 BACKFILL FROM OFF-SITE SOURCES

All materials proposed for import onto the Site will be approved by the qualified environmental professional and will be in compliance with provisions in this SMP prior to receipt at the Site. A Request to Import/Reuse Fill or Soil form, which can be found at http://www.dec.ny.gov/regulations/67386.html, will be prepared and submitted to the NYSDEC project manager allowing a minimum of 5 business days for review.

Material from industrial sites, spill sites, or other environmental remediation sites or potentially contaminated sites will not be imported to the Site.

All imported soils will meet the backfill and cover soil quality standards established in 6NYCRR 375-6.7(d). Based on an evaluation of the land use, protection of groundwater criteria, the resulting soil quality standards are listed in Table B-2. Soils that meet 'exempt' fill requirements under 6 NYCRR Part 360, but do not meet backfill or cover soil objectives for this Site, will not be imported onto the Site without prior approval by NYSDEC. Solid waste will not be imported onto the Site.

Trucks entering the Site with imported soils will be securely covered with tight fitting covers. Imported soils will be stockpiled separately from excavated materials and covered to prevent dust releases.

B-11 STORMWATER POLLUTION PREVENTION

Barriers and hay bale checks will be installed and inspected once a week and after every storm event if the excavation takes place outdoors. Results of inspections will be recorded in a logbook and maintained at the Site and available for inspection by the NYSDEC. All necessary repairs shall be made immediately.

Accumulated sediments will be removed as required to keep the barrier and hay bale check functional.

All undercutting or erosion of the silt fence toe anchor shall be repaired immediately with appropriate backfill materials.

Manufacturer's recommendations will be followed for replacing silt fencing damaged due to weathering.

Erosion and sediment control measures identified in the SMP shall be observed to ensure that they are operating correctly. Where discharge locations or points are accessible, they shall be inspected to ascertain whether erosion control measures are effective in preventing significant impacts to receiving waters.

Silt fencing or hay bales will be installed around the entire perimeter of the construction area.

B-12 EXCAVATION CONTINGENCY PLAN

If underground tanks or other previously unidentified contaminant sources are found during post-remedial subsurface excavations or development related construction anywhere on the Site, excavation activities will be suspended until sufficient equipment is mobilized to address the condition.

Sampling will be performed on product, sediment and surrounding soils, etc. as necessary to determine the nature of the material and proper disposal method. Chemical analysis will be performed for a full list of analytes (TAL metals; TCL volatiles and semi-volatiles, TCL pesticides and PCBs), unless the Site history and previous sampling results provide a sufficient justification to limit the list of analytes. In this case, a reduced list of analytes will be proposed to the NYSDEC for approval prior to sampling.

Identification of unknown or unexpected contaminated media identified by screening during invasive site work will be promptly communicated by phone to NYSDEC's Project Manager. Reportable quantities of petroleum product will also be reported to the NYSDEC spills hotline. These findings will be also included in the Periodic Review Report.

B-13 COMMUNITY AIR MONITORING PLAN

Real-time air monitoring for VOCs and particulate levels at the perimeter of the work area will be performed during excavation to depths greater than 15 ft. bgs outdoors on Lots 1 and 2. All curing/intrusive work will be performed using wet methods to prevent the release of dust. Continuous air monitoring will be performed during ground intrusive activities and during the handling of contaminated or potentially contaminated media.

A figure showing the location of air sampling stations based on generally prevailing wind conditions is shown in Figure B-2. These locations will be adjusted on a daily or more frequent basis based on actual wind directions to provide an upwind and at least two downwind monitoring stations.

Exceedances of action levels listed in the CAMP will be reported to NYSDEC and NYSDOH Project Managers.

B-14 DUST CONTROL PLAN

A dust suppression plan that addresses dust management during invasive on-site work to depths greater than 15 ft. bgs outdoors on Lots 1 and 2 will include, at a minimum, the items listed below:

- Dust suppression will be achieved through the use of a dedicated on-site water truck for road wetting. The truck will be equipped with a water cannon capable of spraying water directly onto off-road areas including excavations and stockpiles.
- Clearing and grubbing of larger sites will be done in stages to limit the area of exposed, unvegetated soils vulnerable to dust production.

- Gravel will be used on roadways to provide a clean and dust-free road surface.
- On-site roads will be limited in total area to minimize the area required for water truck sprinkling.

B-15 OTHER NUISANCES

A plan for rodent control will be developed and utilized by the contractor prior to and during site clearing and site grubbing, and during all remedial work, disturbing remaining soil contamination located at depths greater than 15 ft. bgs on Lots 1 and 2.

A plan will be developed and utilized by the contractor for all remedial work, disturbing remaining soil contamination located at depths greater than 15 ft. bgs on Lots 1 and 2, to ensure compliance with local noise control ordinances.

APPENDIX C

RESPONSIBILITIES of

OWNER and REMEDIAL PARTY

Responsibilities

The responsibilities for implementing the Site Management Plan ("SMP") for the Former Cascade Laundry BCP site (the "Site"), number C244194, are divided between the Site owner(s) and a Remedial Party, as defined below. The owner(s) is/are currently listed as:

Cascade 553 LLC, 264 Lynch Street, Unit 1A, Brooklyn, NY 11206.

Solely for the purposes of this document and based upon the facts related to a particular site and the remedial program being carried out, the term Remedial Party ("RP") refers to any of the following: certificate of completion holder, volunteer, applicant, responsible party, and, in the event the New York State Department of Environmental Conservation ("NYSDEC") is carrying out remediation or site management, the NYSDEC and/or an agent acting on its behalf. The RPs are currently:

553 Marcy Avenue Owner LLC, 266 Broadway, Suite 501, Brooklyn, NY 11211 and

Cascade 553 LLC, 264 Lynch Street, Unit 1A, Brooklyn, NY 11206.

Nothing on this page shall supersede the provisions of an Environmental Easement, Consent Order, Consent Decree, agreement, or other legally binding document that affects rights and obligations relating to the Site.

Site Owner's Responsibilities:

1) The owner shall follow the provisions of the SMP as they relate to future construction and excavation at the Site.

2) In accordance with a periodic time frame determined by the NYSDEC, the owner shall periodically certify, in writing, that all Institutional Controls set forth in the Environmental Easement remain in place and continue to be complied with. The

owner shall provide a written certification to the RP, upon the RP's request, in order to allow the RP to include the certification in the Site's Periodic Review Report (PRR) certification to the NYSDEC.

3) In the event the Site is delisted, the owner remains bound by the Environmental Easement and shall submit, upon request by the NYSDEC, a written certification that the Environmental Easement is still in place and has been complied with.

4) The owner shall grant access to the Site to the RP and the NYSDEC and its agents for the purposes of performing activities required under the SMP and assuring compliance with the SMP.

5) The owner is responsible for assuring the security of the remedial components located on its property to the best of its ability. In the event that damage to the remedial components or vandalism is evident, the owner shall notify the Site's RP and the NYSDEC in accordance with the timeframes indicated in Section 1.3 of this SMP.

6) In the event some action or inaction by the owner adversely impacts the Site, the owner must: (i)notify the Site's RP and the NYSDEC in accordance with the time frame indicated in Section 1.3 and (ii) coordinate the performance of necessary corrective actions with the RP.

7) The owner must notify the RP and the NYSDEC of any change in ownership of the seven (7) Lots comprising the Site property (identifying the tax map numbers in any correspondence) and provide contact information for the new owner of the Site properties. 6 NYCRR Part 375 contains notification requirements applicable to any construction or activity changes and changes in ownership. Among the notification requirements is the following: Sixty days prior written notification must be made to the NYSDEC. Notification is to be submitted to the NYSDEC Division of Environmental Remediation's Site Control Section. Notification requirements for a

change in use are detailed in Section 2.4 of the SMP. A 60-Day Advance Notification Form and Instructions are found at http://www.dec.ny.gov/chemical/76250.html.

8) Until such time as the NYSDEC deems any activated vapor mitigation system(s) unnecessary, the owner shall operate the system, pay for the utilities for the system's operation, and report any maintenance issues to the RP and the NYSDEC.

9) In accordance with the tenant notification law, within 15 days of receipt, the owner must supply a copy of any vapor intrusion data, that is produced with respect to structures and that exceeds NYSDOH or OSHA guidelines on the Site, whether produced by the NYSDEC, RP, or owner, to the tenants on the property. The owner must otherwise comply with the tenant and occupant notification provisions of Environmental Conservation Law Article 27, Title 24.

Remedial Party Responsibilities

1) The RP must follow the SMP provisions regarding any construction and/or excavation it undertakes at the Site.

2) The RP shall report to the NYSDEC all activities required for remediation, inspection, operation, maintenance, monitoring, and reporting. Such reporting includes, but is not limited to, periodic review reports and certifications, electronic data deliverables, corrective action work plans and reports, and updated SMPs.

3) Before accessing the Site property to undertake a specific activity, the RP shall provide the owner advance notification that shall include an explanation of the work expected to be completed. The RP shall provide to (i) the owner, upon the owner's request, (ii) the NYSDEC, and (iii) other entities, if required by the SMP, a copy of any data generated during the Site visit and/or any final report produced.

4) If the NYSDEC determines that an update of the SMP is necessary, the RP shall update the SMP and obtain final approval from the NYSDEC. Within 5 business days after NYSDEC approval, the RP shall submit a copy of the approved SMP to the owner(s).

5) The RP shall notify the NYSDEC and the owner of any changes in RP ownership and/or control and of any changes in the party/entity responsible for the inspection, operation, maintenance, and monitoring of and reporting with respect to any remedial system (Engineering Controls). The RP shall provide contact information for the new party/entity. Such activity constitutes a Change of Use pursuant to 375-1.11(d) and requires 60-days prior notice to the NYSDEC. A 60-Day Advance Notification Form and Instructions are found at http://www.dec.ny.gov/chemical/76250.html .

6) The RP shall notify the NYSDEC of any damage to or modification of the systems (Engineering Controls) as required under Section 1.3 of the SMP.

7) The RP is responsible for the proper maintenance of any activated vapor intrusion mitigation systems associated with the Site, as required in Section 5.0

8) Prior to a change in use that impacts the remedial system or requirements and/or responsibilities for implementing the SMP, the RP shall submit to the NYSDEC for approval an amended SMP.

9) Any change in use, change in ownership, change in site classification (*e.g.*, delisting), reduction or expansion of remediation, and other significant changes related to the Site may result in a change in responsibilities and, therefore, necessitate an update to the SMP and/or updated legal documents. The RP shall contact the Department to discuss the need to update such documents.

Change in RP ownership and/or control and/or site ownership does not affect the RP's obligations with respect to the Site unless a legally binding document executed by the NYSDEC releases the RP of its obligations.

Future site owners and RPs and their successors and assigns are required to carry out the activities set forth above.

APPENDIX D

ENVIRONMENTAL EASEMENT

APPENDIX E

FIELD SAMPLING PLAN/ QUALITY ASSURANCE PROJECT PLAN

APPENDIX F
HEALTH AND SAFETY PLAN

APPENDIX G
SITE MANAGEMENT FORMS

APPENDIX H
SOIL BORING LOGS

APPENDIX I
COMMUNITY AIR MONITORING PLAN

APPENDIX J

MONITORING WELL BORING AND CONSTRUCTION LOGS

APPENDIX K
OPERATIONS AND MAINTENANCE MANUAL

APPENDIX L

FORMER CASCADE LAUNDRY PETROLEUM DELINEATION REPORT

APPENDIX M

SOIL GAS AND INDOOR AIR BUILDING TEST LETTER