Flushing Industrial Park, Parcel 2

Tax Block 5066, Portions of Lots 1 and 100

QUEENS, NEW YORK

Site Management Plan

AKRF Project Number: 30141

NYSDEC BCP Number: C241078

Prepared for:

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DECEMBER 2007

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LIST OF ACRONYMS

Acronym	Definition
AKRF	AKRF Engineering, P.C.
ASP	Analytical Services Protocol
AST	Aboveground storage tank
BCA	Brownfield Cleanup Agreement
BCP	Brownfield Cleanup Program
C/D	Construction and Demolition
CAMP	Community Air Monitoring Plan
COC	Certificate of Completion
DER	Division of Environmental Remediation (of NYSDEC)
DOT	Department of Transportation
DSHM	Division of Solid & Hazardous Materials
EC	Engineering Control
ECL	Environmental Conservation Law
ELAP	Environmental Laboratory Accreditation Procedure
EM	Electromagnetic
EPA	United States Environmental Protection Agency
GA	Class of Ambient Water Quality Standard and Guidance Values for Protection of Drinking Water under TOGS 1.1.1 dated June 1998, with January 1999 Errata, and April 2000 and June 2004 Addenda
GPR	Ground penetrating radar
IC	Institutional Control
IRM	Interim Remedial Measure
IRMWP	Interim Remedial Measure Work Plan
LNAPL	Light non-aqueous phase liquid
MW	Monitoring well
NAPL	Non-aqueous phase liquid
NYCRR	New York Codes, Rules and Regulations
NYS	New York State
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
NYSDOT	New York State Department of Transportation
OU	Operable unit

LIST OF ACRONYMS (Cont'd)

Acronym	Definition
PCBs	Polychlorinated biphenyls
Part 375	6 NYCRR Part 375 dated December 14, 2006
PID	Photoionization detector
ppb	Parts per billion
ppm	Parts per million
QA/QC	Quality assurance / quality control
QAPP	Quality Assurance Project Plan
RAWP	Remedial Action Work Plan
RMZ	Recommended Management Zone
RSCO	Residual Soil Cleanup Objective
SCO	Soil Cleanup Objective
SESI	SESI Consulting Engineers, P.C.
SoMP	Soil Management Plan
SMP	Site Management Plan
SPDES	State Pollutant Discharge Elimination System
SSAL	Site-Specific Action Level
SSDS	Sub-slab depressurization system
STARS	Spill Technology and Remediation Series
STL	Severn Trent Laboratories, Inc.
SVOC	Semivolatile organic compound
SWPPP	Stormwater Pollution Prevention Plan
TAG	Technical Assistance Grant
TAGM 4046	NYSDEC Technical and Administrative Guidance Memorandum 4046, January 24, 1994
TAL	Target Analyte List
TOGS	Technical and Operational Guidance Series
TCL	Target Compound List
TCLP	Toxicity characteristic leaching potential
USEPA	United Stated Environmental Protection Agency
UST	Underground storage tank
$\mu g/m^3$	Micrograms per cubic meter
VCA	Voluntary Cleanup Agreement
VOC	Volatile organic compound

LIST OF ACRONYMS (Cont'd)

Acronym	Definition
Volunteer	All Volunteers included in the Brownfield Cleanup Agreement as of November 29, 2007: C.E. Flushing, LLC; Flushing Town Center III, L.P.; Allied Flushing Corporation; Home Depot U.S.A., Inc., FTC East Retail Company, L.P.; FTC West Retail Company, L.P.; FTC Residential Company I, L.P.; FTC Residential Company II, L.P.; FTC Residential Company III, L.P.; and AFC2, LLC.

1.0 INTRODUCTION AND DESCRIPTION OF REMEDIAL PROGRAM

1.1 INTRODUCTION

This document is required for fulfillment of Remedial Action at Flushing Industrial Park, Parcel 2 (hereafter referred to as the "Parcel 2") under the New York State (NYS) Brownfield Cleanup Program (BCP) administered by New York State Department of Environmental Conservation (NYSDEC). Parcel 2 was remediated in accordance with the Brownfield Cleanup Agreement (BCA) Index #W2-1028-04-10, Site #C241078, which was issued on December 23, 2004, and amended on June 14, 2005, April 27, 2007 and August 3, 2007. As of November 29, 2007, the Volunteers under this BCA include: C.E. Flushing, LLC, Flushing Town Center III, Allied Flushing Corporation, Home Depot U.S.A., Inc., FTC East Retail Company, L.P.; FTC West Retail Company, L.P.; FTC Residential Company I, L.P.; FTC Residential Company II, L.P.; FTC Residential Company III, L.P.; and AFC2, LLC.

1.1.1 General

Parcel 2 is a 6.99-acre portion of an approximately 13.6-acre Property located on the northwestern corner of College Point Boulevard and 40th Road, in Flushing, Queens, New York, as shown on Figure 1. The Property consists of Flushing Industrial Park (Eastern), Parcel 1 (BCP Site No. C241051); Flushing Industrial Park (Western), Parcel 2 (BCP Site No. C241078); Flushing Industrial Park (Western Waterfront), Parcel 3 (BCP Site No. C241079); and Flushing Industrial Park (Flushing River), Parcel 4 (BCP Site No. C241080). This SMP was prepared for Parcel 2; however, the remediation and planned development of this Parcel were tied to the Property as a whole. As such, Property-wide information is provided where appropriate.

In 2001, C.E. Flushing, LLC entered into a Voluntary Cleanup Agreement with the NYSDEC with regard to the Property. By letter dated April 2, 2004, C.E. Flushing, LLC requested transition from the Voluntary Cleanup Program to the Brownfield Cleanup Program (BCP) for completion of the remedial program for the Property. In December 2004, the Volunteer entered into separate BCAs with the NYSDEC for each of four Parcels – each one generally matching the former operable unit (OU). These BCAs required the Volunteer to investigate and remediate contaminated media at each Parcel prior to redevelopment of the Property for commercial and residential purposes. The boundary of this 6.99-acre BCP Site is more fully described in Appendix A – Metes and Bounds. A map of the Property location is shown in Figure 1. The Property with Parcel boundaries are shown in Figure 2.

After completion of the remedial work described in the Remedial Action Work Plan, some known contamination was left in the subsurface on Parcel 2, which is hereafter referred to as 'residual contamination.' This Site Management Plan (SMP) was prepared to manage known or potential residual contamination on Parcel 2 in perpetuity or until extinguishment of the Environmental Easement in accordance with 6 NYCRR Part 375. Remedial Action work on Parcel 2 began in December 2005, and was completed in November 2007. All reports associated with Parcel 2 can be viewed by contacting the NYSDEC or its successor agency managing environmental issues in New York State.

This SMP was prepared by AKRF Engineering, P.C. (AKRF), on behalf of C.E. Flushing, LLC and the other Volunteers referenced in Section 1.1, in accordance with the requirements in NYSDEC Draft DER-10 Technical Guidance for Site Investigation and Remediation, dated December 2002, and guidelines provided by NYSDEC via comments

on the approved work plans. This SMP addresses the means for implementation of Institutional Controls (ICs) and Engineering Controls (ECs), which are required by the Environmental Easement.

1.1.2 Purpose

Parcel 2 contains residual contamination left after completion of the Remedial Action performed under the BCP. ECs have been incorporated into the remedy to provide proper management of known and potential residual contamination in the future to ensure protection of public health and the environment. An Environmental Easement specific to Parcel 2 was filed on December 13, 2007 with the Queens County Clerk that provides an enforceable means to ensure the continued and proper management of residual contamination and protection of public health and the environment. It requires strict adherence to all Engineering Controls and all Institutional Controls placed on this Parcel by NYSDEC by the grantor of the Environmental Easement and any and all successors and assigns of the grantor. ICs provide restrictions on Parcel 2 usage and mandate operation, maintenance, monitoring and reporting measures for all ECs and ICs. This SMP includes all methods necessary to ensure compliance with all ECs and ICs required by the Environmental Easement for known and potential residual contamination on Parcel 2. The SMP has been approved by the NYSDEC, and compliance with this Plan is required by the grantor of the Environmental Easement and grantor's successors and assigns. This plan is subject to change by NYSDEC.

Site Management is the last phase of the remedial process and is triggered by the approval of the Final Engineering Report and issuance of the Certificate of Completion (COC) by NYSDEC. The SMP continues in perpetuity or until extinguished in accordance with 6 NYCRR Part 375. It is the responsibility of the Environmental Easement grantor, and its successors and assigns to ensure that all Site Management responsibilities under this plan are performed.

The SMP provides a detailed description of all procedures required to manage known and potential residual contamination on Parcel 2 following the completion of the Remedial Action in accordance with the NYS BCA with the NYSDEC. This includes: (1) development, implementation, and management of all Engineering and Institutional Controls; (2) development and implementation of monitoring systems and a Monitoring Plan; (3) development of a plan to operate and maintain the sub-slab depressurization system and the groundwater monitoring system (including, where appropriate, preparation of an Operation and Maintenance Manual); (4) submittal of Site Management Reports, performance of inspections and certification of results, and demonstration of proper communication of information to NYSDEC; and (5) defining criteria for termination of the sub-slab depressurization system and groundwater monitoring system operation.

To address these needs, this SMP includes four plans: (1) Section 2.0 is an Engineering and Institutional Control Plan for implementation and management of EC/ICs; (2) Section 3.0 is a Monitoring Plan for implementation of Site Monitoring; (3) Section 4.0 is an Operation and Maintenance Plan for implementation of the remedial cover, sub-slab venting system, and the groundwater monitoring system; and (4) Section 5.0 is a Site Management Reporting Plan for submittal of data, information, recommendations, and certifications to NYSDEC.

Site Management activities, reporting, and EC/IC certification will be completed on an annual basis.

Important notes regarding this SMP are as follows:

- This SMP defines Parcel-specific implementation procedures as required by the Environmental Easement. The penalty for failure to implement the SMP is revocation of the COC.
- The Brownfield Cleanup Agreement (Index #W2-1028-04-10; Site #C241078) for Parcel 2 requires conformance with this SMP, and therefore, serves as a contractual binding authority under which this SMP is to be implemented. The BCP law itself also requires the preparation of a SMP (formerly known as an Operation, Maintenance and Monitoring Plan) in ECL 27-1415 and 27-1419. Therefore, the BCA is a binding contract and the BCP law is statutory authority under which this SMP is required and is to be implemented.
- At the time this report was prepared, the NYSDEC-approved SMP and all documents related to Remedial Investigation and Remedial Action on Parcel 2 are maintained at the NYSDEC Region 2 offices in Long Island City. At the time of SMP submission in December 2007, the documents can also be found in the repository established for this project at:

  Queens Borough Public Library – Central Library
  89-11 Merrick Boulevard, Jamaica, NY 11432
  (718) 990-0700
  Mon.-Fri. 10 am – 9 pm; Sat. 10 am – 5:30 pm; Sun. 12 pm – 5 pm

1.2 PROPERTY BACKGROUND

Details regarding investigation activities on Parcel 2 of the Property are provided in the following reports:

- SESI; *Environmental Engineering Report*, dated June 8, 1989 (provided as an Appendix to the Voluntary Cleanup Program Application);
- AKRF; *Results of Soil Testing*, dated December 30, 1999 (provided as an Appendix to the Voluntary Cleanup Program Application);
- AKRF; *Remedial Investigation/Feasibility Study and OU-1 Remedial Work Plan*, dated September 2001 (provided as an Appendix to the Voluntary Cleanup Program Application);
- AKRF; *Revised Remedial Investigation Report*, Parcels 2 and 3, dated October 2004;
- AKRF; *Revised Supplemental Investigation Task Report No. 1*, Parcel 1 Soil Study and Parcels 1, 2 and 3 Groundwater Study, dated October 2004;
- AKRF; *Interim Remedial Measure Progress Report*, dated March 25, 2005; and
- AKRF; *Supplemental Remedial Investigation Report*, dated April 2006.

A general discussion of background information regarding Parcel 2 specifically, and the Property in general, is provided in the following subsections.

1.2.1 Property Location and Description

The Property is located in the County of Queens (New York City), New York. Parcel 2 consists of Block 5066, a portion of Lots 1 and 100 on the Queens Tax Map. Parcel 2 is

an approximately 6.99-acre area bounded by Roosevelt Avenue and Flushing Industrial Park, Parcel 3 to the north, 40th Road and Flushing Industrial Park, Parcel 3 to the south, Flushing Industrial Park, Parcel 1 to the east, and Flushing Industrial Park, Parcel 3 to the west (see Figure 2). The boundary of Parcel 2 is more fully described in Appendix A – Metes and Bounds.

1.2.2 Property History

Parcel 2 history is incorporated with the history of the larger Property. The Property history was based on historical maps from 1859 to 1995, historical aerial photographs from 1954 to 1994 and information provided by Consolidated Edison Company of New York, Inc. (Con Edison) regarding their former facility, which operated on the Property from approximately 1923 through 1989.

Much of the Property and vicinity was originally tidal marshlands. Filling of the wetlands and development of the area began in the late-19th century. By 1905, several dwellings were constructed on the southern side of the Property, along 40th Road. The majority of the Property served as a plumbing supply store circa 1917. New York & Queens Electric Light & Power Company (the precursor to Con Edison) purchased the majority of the Property from Remington Typewriter in 1923, and continued to acquire much of the remainder of the subject block (which then consisted of row houses in the southeastern portion of the Property) in the 1950s. Con Edison reportedly used the facility for the storage and maintenance of equipment (including PCB-containing transformers), for personnel training, for the storage and servicing vehicles, and for offices. C.E. Flushing Co. purchased a majority of the Property in 1989 (Lot 79 was acquired in September 2005) and leased it to various tenants primarily for light manufacturing of clothing (sewing, etc.) in the Main Building and automobile parking on the paved portion of the Property. The Property was vacated in 2005 to 2006 and all buildings on the Property were demolished in 2006 as part of remediation and development activities.

Historically, Parcel 2 of the Property has contained several transformers, a gasoline service station, equipment repair, automobile repair, a paint storage house, and several underground storage tanks (USTs) and aboveground storage tanks (ASTs).

1.2.3 Geological Conditions

At the time of the remedial investigation, the ground surface elevation of outdoor portions of Parcel 2 was generally at +4.5 to +6.0 feet. The elevations for the project are referenced to Queens Borough Datum (2.725 feet above mean sea level).

The remedial investigation included over 369 soil borings and 8 groundwater monitoring wells installed on Parcel 2 between 1989 and 2005. Results from the remedial investigation indicated that the top 8 to 12 feet of soil on Parcel 2 consisted of miscellaneous fill. The fill was variable, ranging from silty clay to sand with anthropogenic materials including brick, ash and cinders. The fill was underlain at some locations by a layer of old river deposits consisting of very soft silt and clay, with peat and organics in the top portions of the stratum. The layer of organic silt, clay and peat possibly acts as an aquitard, limiting vertical flow between the groundwater in the fill and the groundwater in the glacial till beneath the organic soil stratum. This stratum is about 30 feet thick near the Flushing River and thins out towards the east, ending about 200 to 300 feet from College Point Boulevard. A stiff silty clay/clayey silt stratum was occasionally encountered beneath the soft clayey soils. Occasional layers of sand, gravel,

cobbles and boulders were interspersed in these strata. The soil beneath the peat layer is dense glacial till characterized by variable layers of sands, and sand and gravel mixtures. At some boring locations, cobbles and boulders were identified in the glacial till. A pre-remediation geologic cross-section of Parcels 1, 2 and 3 of the Property is shown in Figure 3.

Based on water level measurements in the former Property monitoring wells, groundwater is present on Parcel 2 generally from 3 to 5.5 feet below the ground surface (elevation 0 to +2.5 feet). Groundwater elevations for both pre-remediation and post-remediation monitoring wells are included in Tables 1 and 2, respectively. In general, the direction of groundwater flow on Parcel 2 is to the west and northwest and appeared to be tidally influenced. Groundwater in the southeastern portion of Parcel 2 was locally influenced by a New York City Department of Environmental Protection (NYCDEP) sewer pump house located in the southwestern area of Parcel 1. A pre-remediation groundwater flow map of Parcels 1, 2 and 3 is shown in Figure 4.

1.3 DESCRIPTION OF REMEDIAL INVESTIGATION FINDINGS

The SMP and all Parcel 2 documents, including the Remedial Investigation Reports and Remedial Action Work Plan, are maintained by the NYSDEC (or successor agency). At the time of publication, these reports could be found at the Region 2 NYSDEC offices in Long Island City, New York and at the local document repository at the Queens Borough Pubic Library Central Library located in Jamaica, Queens, New York as mentioned in Section 1.1.2.

Several phases of environmental investigation were conducted between 1989 and 2005 to identify and characterize subsurface contamination. Detailed results of these investigations were provided in the reports cited in Section 1.2. Below is a summary of Remedial Investigation findings:

1.3.1 Soil

Based on the results of initial subsurface investigations performed between 1989 and 2001 summarized below, Soil Site-Specific Action Levels (SSALs) were established in the IRMWP and RAWP for the protection of human health and the environment, considering the contemplated use and anticipated institutional and engineering controls. The SSALs for Parcel 2 were as follows:

Soil Site-Specific Action Levels

Parameter	Criterion
Individual Volatile Organic Compounds (VOCs)	TAGM 4046 RSCO
Total Semivolatile Organic Compounds (SVOCs)	100 ppm
Total Polychlorinated Biphenyls (PCBs)	10 ppm
Individual Pesticides	1 ppm or TAGM 4046 RSCO, if higher
Arsenic	24 ppm
Cadmium	10 ppm
Lead	500 ppm
Mercury	4 ppm
Silver	100 ppm
Cyanide	Hazardous Waste Reactivity Criterion

Notes: TAGM 4046 RSCO – Technical and Administrative Guidance Memorandum #4046 Recommended Soil Cleanup Objectives, January 24, 1994
ppm – parts per million

The remedial investigation on Parcel 2 initially identified 28 hotspots (i.e., locations where soil sample concentrations exceeded one or more of the SSALs). From October 2004 to April 2005, the vertical and horizontal limits of the hotspots were determined prior to remediation by delineation borings. Given the widespread nature of PCB concentrations across Parcels 2 and 3, the remedial approach was adjusted and soil removal was expanded in lieu of further delineation..

Laboratory analytical results for remedial investigation soil samples collected on Parcel 2 are provided in Table 3. Soil sample locations are depicted on Figure 5. The SSALs, are also shown on Table 3 for reference. Concentrations in Table 3 are color-coded—pink indicates hazardous waste levels of contaminants, blue indicates contamination at levels greater than SSALs but non-hazardous waste, and green indicates soils levels of contaminant concentrations below the SSALs. The borings on Figure 5 are similarly color-coded based on the most contaminated interval analyzed in each boring. Although 6 NYCRR Part 375 Soil Cleanup Objectives (SCOs) were not developed until after remedial excavation of Parcel 2, Table 3 also shows Part 375 Track 1 Unrestricted Use SCOs and Restricted Residential Use SCOs for reference.

Exceedances of the SSALs identified on Parcel 2 during the remedial investigation were as follows:

- VOCs (acetone, benzene, sec-butylbenzene, chlorobenzene, ethylbenzene, methylene, chloride, naphthalene, xylenes) – Nineteen of 116 soil samples analyzed for VOCs had concentrations greater than the SSALs. The maximum VOC level detected on Parcel 2 during the remedial investigation was a concentration of 140 ppm for chlorobenzene.
- SVOCs – Fifteen of 105 soil samples analyzed for SVOCs had concentrations greater than the SSAL. The maximum total SVOC concentration detected on Parcel 2 during the remedial investigation was 127.18 ppm.
- PCBs – Three hundred thirty-eight of 731 soil samples analyzed for PCBs had concentrations greater than the SSAL of 10 ppm. Of the 338 samples with PCB concentrations greater 10 ppm, 188 samples had concentrations greater than 50 ppm. The maximum PCB concentration detected on Parcel 2 during the remedial investigation was 14,200 ppm.
- Pesticides (delta-BHC, dieldrin, endosulfan sulfate, endrin, 4,4-DDD, 4,4-DDT) – Ten of 69 soil samples analyzed for pesticides had concentrations greater than the SSALs. The maximum pesticide level detected on Parcel 2 during the remedial investigation was a concentration of 18 ppm for endrin.
- Arsenic – Six of 73 soil samples analyzed for arsenic had concentrations greater than the SSALs. The maximum arsenic concentration detected on Parcel 2 during the remedial investigation was 45 ppm.
- Cadmium – One of 66 soil samples analyzed for cadmium had concentrations greater than the SSALs. The maximum cadmium concentration detected on Parcel 2 during the remedial investigation was 10.3 ppm.
- Lead – Seven of 68 soil samples analyzed for lead had concentrations greater than the SSALs. The maximum lead concentration detected on Parcel 1 during the remedial investigation was 1,060 ppm.

- Mercury – Two of 66 soil samples analyzed for mercury had concentrations greater than the SSALs. The maximum mercury concentration detected on Parcel 2 during the remedial investigation was 378 ppm, and the other SSAL exceedance was 6.6 ppm.

The exceedances of SSALs appeared to be related to a combination of factors, including spills/leaks from storage and repairs of equipment and vehicles above grade, spills/leaks from underground storage tanks, transport of contaminants by the tidally influenced water table, and components in historic fill.

1.3.2 On-Site and Off-Site Groundwater

Two pre-remediation groundwater sampling events were conducted on the Property in April 2004 and August 2005. The monitoring wells were sampled for analysis of VOCs, base-neutral SVOCs, PCBs (both total and dissolved), pesticides, TAL metals (both total and dissolved), and non-redundant 6NYCRR Part 360 parameters. Groundwater data was evaluated relative to the Class GA Standards and Guidelines Values contained in NYSDEC Technical and Operational Guidance Series (TOGS) 1.1.1 Ambient Water Quality Handling, Guidance Values and Groundwater Effluent Limitations. A summary of Property-wide pre-remediation groundwater laboratory analytical results by analyte is provided in Tables 4a to 4g. Exceedances of Class GA groundwater standards in monitoring wells prior to the remedy are shown in Table 4h. Maps that indicate the locations and concentrations for samples with exceedances of Class GA groundwater standards for the most recent sampling event prior to the remedy are provided as Figures 6a and 6b.

The final pre-remediation groundwater sampling event (August 2005) remedial investigation sampling results on Parcel 2 compared to the Class GA standards are summarized as follows:

- Three VOCs (chlorobenzene, 1,3-dichlorobenzene and 1,4-dichlorobenzene) were identified above the Class GA standard in groundwater from one well on Parcel 2. No other samples exceeded the Class GA standards for VOCs.
- Total and dissolved metals were detected in all samples at concentrations greater than the Class GA groundwater standards. These exceedances consisted of common earth metals (barium, iron, magnesium, manganese, and sodium) which are typically not associated with contamination.
- No SVOCs, PCBs or pesticides were detected in groundwater samples from wells on Parcel 2 at levels greater than the Class GA standards.

Groundwater contaminant distribution and concentrations did not warrant active groundwater remediation given the extensive scope of the soil removal remediation performed. The detected groundwater concentrations were not clustered as in a typical contaminant plume. The risk of impact to human health or the environment from these elevated concentrations is very low given that the environmental easement on Parcel 2 prohibits future use of groundwater.

1.3.3 Light Non-Aqueous Phase Liquid

During groundwater sampling conducted in 2004, light non-aqueous phase liquid (LNAPL) was detected in one of the monitoring wells on Parcel 2 (MW-12). LNAPL was also identified in two monitoring wells on Parcel 3 (MW-5 and MW-6), in close

proximity to the Parcel 2 boundary. LNAPL sampled from MW-5 and MW-12 in 2004 indicated the product contained high levels of PCBs (11,000 ppm and 480 ppm, respectively) with some minor concentrations of VOCs and SVOCs. The product from MW-6 had no detection of VOCs and SVOCs and low concentration of PCBs (2 ppb).

The horizontal extent of the LNAPL was delineated around each of the three wells and the LNAPL was assessed to be limited in extent around MW-6 and MW-12. Because of the larger area of LNAPL around MW-5, a pumping test was performed on MW-5. Pumping did not draw in significant product and LNAPL thickness in nearby wells was not impacted. Actual LNAPL thickness in the soil formation has been documented in research by United Stated Environmental Protection Agency (USEPA) to be exaggerated in monitoring wells; therefore, no pre-excavation LNAPL recovery pumping was included in the remedy.

The LNAPL was removed from excavations during remedial activities, as summarized in Section 1.4.1.

1.3.4 Storage Tanks

Research conducted as part of the remedial investigation identified three ASTs and five potential USTs on Parcel 2. During remedial excavation, one additional UST and one additional basement-level AST were encountered and removed. Details regarding the tank contents, size and locations are provided in Table 5, and the tank locations are shown on Figure 7.

1.3.5 Drainage Structures

Catch basin locations on Parcel 2 were surveyed, and the piping locations were assessed based on maps from private and city records, the geophysical survey, and observations during remedial excavation. The discharge locations of the catch basins were similarly identified to the extent practicable. The drainage structures and corresponding piping prior to remediation are shown on Figure 7.

As can be seen on Figure 7, outfalls in the Flushing River appear to have been connected to stormwater catch basins located on Parcel 2. Four outfall pipes were observed in the Flushing River west of the bulkhead sheeting. In addition to the pipe extending off-site along the southern boundary of Parcel 3, a parallel NYCDEP pipe is located a short distance off-site to the south just beyond the Property boundary; connections to and interconnections with this off-site pipe are unknown.

All Parcel 2 drainage structures and piping were removed from excavations during remedial activities, as summarized in Section 1.4.3.

1.3.6 Geophysical Anomalies

A geophysical survey was completed across the entirety of the outdoor areas of Parcel 2 using a combination of an electromagnetic (EM) locator and ground penetrating radar (GPR). The locations of the geophysical anomalies were surveyed and mapped to facilitate investigation during remediation excavation.

1.4 DESCRIPTION OF REMEDIAL ACTIONS

Parcel 2 was remediated in accordance with the scope of work presented in the NYSDEC-approved Interim Remedial Measure Work Plan and Remedial Action Work Plan for Parcels 2 and 3 which consisted of the following documents:

1. Revised Interim Remedial Measure Work Plan – September 2005;
2. Addendum Items for Interim Remedial Measure Work Plan – September 15, 2005;
3. Revised Health and Safety Plan – September 2005;
4. Modification No. 1 to Revised Interim Remedial Measure Work Plan – December 14, 2005;
5. Clarification of Modification No. 1 to Revised Interim Remedial Measure Work Plan – January 11, 2006;
6. Modification No. 2 to Revised Interim Remedial Measure Work Plan – January 11, 2006;
7. Modification No. 3 to Revised Interim Remedial Measure Work Plan – February 7, 2006;
8. Modification No. 4 to Revised Interim Remedial Measure Work Plan – April 19, 2006;
9. Modification No. 5 to the Revised Interim Remedial Measure Work Plan – May 2, 2006;
10. Remedial Action Work Plan – February 2006; and
11. Stipulation List for the Remedial Action Work Plan – June 14, 2006.

Below is a summary of the Remedial Actions required and implemented at Parcel 2:

1. Excavation of soil exceeding the Site-Specific Action Levels listed in Section 1.3.1, to the extent practicable below the water table, with the exception of deeper excavation below the water table (with dewatering) in the MW-5 hotspot area;
2. Removal of LNAPL;
3. Removal of all ASTs and USTs;
4. Investigation, mapping and removal of drainage structures;
5. Investigation and, if necessary, remediation, of geophysical anomalies;
6. Installation and sampling of groundwater monitoring wells;
7. Installation of a vapor mitigation system, consisting of a vapor barrier and sub-slab depressurization system, beneath the portion of the Parcel 2 structure with retail use on the ground floor;
8. Construction and maintenance of a site cover consisting of concrete or asphalt to prevent human exposure to residual contaminated soil remaining under Parcel 2;
9. Recording of an Environmental Easement, including Institutional and Engineering Controls, to prevent future exposure to any residual contamination remaining on Parcel 2 (a copy of the Environmental Easement is provided in Appendix B);
10. Publication of a Site Management Plan for long term management of residual contamination as required by the Environmental Easement, which includes plans for: (1) Institutional and Engineering Controls, (2) groundwater and vapor monitoring, (3) operation and maintenance and (4) reporting;
11. Screening for indications of contamination (by visual means, odor, and monitoring with a photoionization detector (PID)) of all excavated soil during all intrusive work;
12. Performance of community air monitoring of dust and VOCs/odors in accordance with NYSDOH requirements.

13. Implementation of a Stormwater Pollution Prevention Plan (SWPPP) in accordance with NYSDEC requirements.
14. Collection and analysis of endpoint samples to evaluate the performance of the remedy with respect to attaining the SSAL goals;
15. Appropriate off-site disposal of all material removed from Parcel 2 in accordance with all Federal, State and local rules and regulations for handling, transport, and disposal;
16. Import of materials to be used for backfill and cover in compliance with: (1) TAGM 4046 RSCOs, or for which specific approval was given by NYSDEC; and, (2) all Federal, State and local rules and regulations in handling and transport of material;
17. All activities associated with the Remedial Action, including permitting requirements and pretreatment requirements, addressed in accordance with all applicable Federal, State and local rules and regulations;
18. Performance of all required BCP citizen participation activities (including development of a Citizen Participation Plan, public contact list, document repositories, public notices, and fact sheets); and
19. Certification of the completion of the remedy in the Final Engineering Report (FER).

Remedial activities completed on Parcel 2 were conducted in accordance with the NYSDEC-approved IRMWP for Parcels 2 and 3 dated September 2005, the RAWP for Parcels 2 and 3 dated February 2006, plus the NYSDEC-approved addendum, modifications and stipulations listed in Section 1.4. A CD with a digital copy of the approved IRMWP and RAWP documents is included in Appendix C. All deviations from the RAWP are noted below.

1.4.1 Removal of Contaminated Materials from the Site

The selected remedy for Parcel 2 included excavating (to the extent practicable below the water table), removing and disposing of soil containing contaminant concentrations exceeding the SSALs, which are shown in Section 1.3.1. A map of the areas where remedial excavation was performed is shown in Figure 8.

The entirety of the outdoor portions of Parcel 2 (outside of the former building footprints) was excavated at least to the groundwater table using a backhoe or excavator. Interlocking steel sheeting was driven around the MW-5 Hotspot Area, which consisted of an approximately 150-foot by 240-foot area on the southern side of Parcels 2 and 3, to facilitate the removal of soils containing PCB concentrations greater than the SSAL to a depth of up to 5 feet below the water table (approximately 10 feet below the street grade at that time). In addition, at other locations where existing data or endpoint sampling indicated hazardous waste PCB levels, excavation continued to remove hazardous waste soil from below the water table as Property conditions allowed.

The former building slabs were removed and previously identified hotspots and newly observed hotspots were excavated. Upon removal of observed contamination, bottom and sidewall endpoint samples were collected. Excavation continued until endpoint sample results indicated concentrations met the SSALs, or below the water table to the extent practicable.

LNAPL was encountered during remedial excavation in discrete locations across Parcel 2; however, no LNAPL was of measurable thickness (greater than 0.01 foot) using the oil-water interface probe. LNAPL saturated soils were excavated, and oil absorbent pads

and booms were placed on the water table to soak up the LNAPL. In some areas, groundwater with LNAPL was pumped from the open excavations into the on-site groundwater treatment system in order to capture residual LNAPL in this area.

Post-excavation endpoint samples were collected from outdoor portions of Parcel 2 on a predetermined grid, and from sidewalls and bottoms of hotspot excavations beneath the former buildings. Excavation of soil hotspots extended vertically until the bottom endpoint samples were less than the respective SSALs, or until excavation had proceeded as far below the water table as practicable. Laboratory analytical results of the endpoint samples are summarized in Table 6. Final post-excavation endpoint sampling results representative of soil left in place are detailed in Tables 7a to 7h. A Property-wide summary table of only the final endpoint samples with concentrations greater than the SSALs is provided as Table 8. Residual contamination areas where concentrations greater than the SSAL remained in place below the water table are discussed in Section 1.4.5, and are shown on Figure 9.

The excavated soil was managed as non-hazardous waste or hazardous waste based on previous analytical results. Hazardous waste identified on Parcel 2 consisted of soil with either PCB concentrations greater than 50 ppm or TCLP lead concentrations greater than 5 mg/l. Excavated material was either loaded directly into trucks for off-site disposal or temporarily stockpiled for later disposal. Remedial excavation was performed on Parcels 1, 2 and 3 of the Property within the same time frame, with soil from like characterization combined in stockpiles prior to disposal. Estimated quantities of soil removed from Parcel 2 and disposed of off-site consisted of the approximately 98,452,563 pounds (49,226 tons) of non-hazardous waste, approximately 33,998,837 pounds (16,999 tons) of PCB hazardous waste, and approximately 475,924 pounds (238 tons) of lead hazardous waste. A map of the areas where remedial excavation was performed is shown in Figure 8. A contour map showing the bottom elevation of remediation-related cuts is included as Figure 10.

The excavations were backfilled with imported material meeting TAGM 4046 RSCOs or specifically approved by NYSDEC, or on-site fill meeting the SSALs. Backfill of remediation excavations on Parcel 2 was placed to elevations ranging from approximately elevation +2 feet to +6 feet. Final grades on Parcel 2 in November 2007 after construction-related backfilling and grading ranged from about elevation +4 to +5 feet. The locations and elevations of the current site cover are shown on Figure 11a, and the final site cover as part of the anticipated development is shown on Figure 11b. Elevations of the current site cover are included as Figure 12.

The backfill was approved for import to the Property prior to promulgation of the Part 375 regulations in December 2006; however, the backfill sample results were compared to the Part 375 SCOs for Unrestricted Use and Restricted Residential Use for reference. The SCOs from the December 2006 Part 375 regulations are summarized in Table 9. There were exceedances of certain of the Part 375 SCOs for Unrestricted Use and Restricted Residential Use in categories of backfill material as detailed on Tables 10a to 13d, and summarized below:

- As shown on Tables 10a to 10d, soil samples characterizing Parcel 1 soil for reuse on Parcels 1, 2 and 3 exceeded the SCOs for Restricted Residential Use for SVOCs, PCBs and mercury. Track 1 SCOs for Unrestricted Use were exceeded for VOCs, SVOCs, PCBs, pesticides, lead and mercury.

- As shown on Tables 11a to 11d, the samples of concrete and brick from on-site demolition exceeded the SCOs for Restricted Residential Use for PCBs. Track 1 SCOs for Unrestricted Use were exceeded for VOCs, SVOCs, PCBs, pesticides, and metals (chromium, copper, lead and zinc).
- As shown on Tables 12a to 12d, the samples of buried concrete from on-site demolition exceeded the SCOs for Restricted Residential Use and Track 1 SCOs for Unrestricted Use for SVOCs.
- As shown on Tables 13a to 13d, the soil and rock imported from off-site sources exceeded the SCOs for Restricted Residential Use for barium and chromium only. The material with elevated barium and chromium concentrations were acceptable because such metals were determined to be naturally occurring. Track 1 SCOs for Unrestricted Use were exceeded for barium, chromium, copper, nickel and zinc.

Since the backfill material was commingled for use across the entirety of Parcels 1, 2 and 3 of the Property, all material beneath the site cover is considered to be in exceedance of Restricted Residential Use criteria.

1.4.2 Storage Tank Removal

As part of remediation, six USTs and four ASTs were properly cleaned and removed from Parcel 2 in accordance with applicable regulations. Tank registrations were updated as needed. Several tanks that were previously abandoned with concrete were therefore not cleaned before disposal. After cleaning, the tanks were disposed of off-site as scrap metal. Details regarding the tank contents, size and locations are provided in Table 5, and the tank locations are indicated on Figure 7. Confirmatory endpoint samples were collected from the UST excavations for analysis of STARS-list VOCs, STARS-list SVOCs and PCBs.

1.4.3 Sewer Investigation and Removal

All identified out-of-service storm and sanitary sewer piping, manholes and drainage structures were removed and disposed of off-site. As a precaution, the sewer piping and structures from Parcel 2 were disposed as hazardous waste along with the soil from areas where soil samples identified PCB concentrations greater than 50 ppm.

1.4.4 Geophysical Anomaly Investigation and Removal

Previously identified geophysical anomalies were investigated as part of the remedial excavation. The anomalies consisted of concentrated areas of distinct fill material, including concrete, cinder, slag, metal, rebar, and utility piping. No tanks, drums or other structures of environmental concern were identified during exploration of the anomalies.

1.4.5 Residual Contamination

The remediation activities implemented as part of the RAWP (summarized in Section 1.4.1 to 1.4.4) resulted in some residual contamination on Parcel 2. Residual Management Zones have been established with corresponding protocols for soil handling, oversight by a qualified environmental professional, and health and safety procedures, as defined elsewhere in this SMP. Specifically, the following known or potential residual soil contamination remains on Parcel 2:

- **Residual Management Zone C** – Soil with concentrations greater than the SSALs for VOCs, SVOS, PCBs, pesticides, arsenic, lead and/or mercury was identified in

bottom endpoint samples collected from discrete areas on Parcel 2. The locations and elevations of Residual Management Zone C are depicted on Figure 9.

- **Residual Management Zone B** – Endpoint samples indicated that soil in place beneath the remedial excavations largely met the SSALs; however, this would not preclude higher concentrations between the endpoint sample locations. As such, remaining soils may exceed the Part 375 SCOs for Restricted Residential Use and these soils are considered Residual Management Zone B. The elevations of the top of Residual Management Zone B are depicted on Figure 10.
- **Residual Management Zone A** – Soil with concentrations that meet SSALs, but that may be greater than the Part 375 SCOs for Restricted Residential Use was identified in backfill material used beneath the site cover across the Property (largely soil from Parcel 1 reused as backfill). The locations and elevations of the current site cover are shown on Figure 11a, and the final site cover as part of the anticipated development is shown on Figure 11b. The previously placed backfill directly beneath the site cover is considered Residual Management Zone A.

Groundwater with concentrations greater than the Class GA standards for PCBs, pesticides total metals, and/or dissolved metals was identified in samples collected in post-remediation monitoring wells on Parcel 2. Please note that this residual soil and/or groundwater contamination on Parcel 2 may extend outside of the Property boundaries.

1.4.5.1 Soil

The remedial excavation of soil extended vertically until the pre-excavation delineation or endpoint samples were less than the respective SSALs, or until the excavation proceeded as far below the water table as practicable. As such, soil endpoint samples identified several areas below the water table where residual contaminant concentrations were in exceedance of the SSALs for VOCs, SVOCs, PCBs, pesticides, arsenic, lead and/or mercury. As shown on Figure 2, Parcel 2 extends to the Property boundary in two limited areas. Sidewall samples collected in these areas did not indicate any concentrations greater than the SSALs. However, residual contamination above SSALs was identified in other sidewall samples collected on Parcel 3 at the perimeter of the Property, indicating that contamination most likely extends outside of the Property boundaries. The Parcel 2 bottom and sidewall endpoint sample results compared with SSALs, including the endpoint samples that were subsequently excavated, are summarized in Table 6. A Property-wide summary table of only the final endpoint samples with concentrations greater than the SSALs is provided as Table 8. Figure 9 (spider map) summarizes results of all final sidewall and bottom endpoint soil samples remaining at the Property after completion of Remedial Action, with highlighted concentrations that exceed the SSALs. Figure 9 also shows the surveyed elevations of the top of the Residual Management Zone C, the area of known contamination with concentrations greater than the SSALs.

The areas of residual contamination on Parcel 2 are below the water table, between 3 and 7 feet below the site cover. At one location (Endpoint CE-UST-NW-GARAGE-1), the residual contamination is approximately 10 feet below the current site cover. Exceedances of the SSALs in the post excavation bottom samples on Parcel 2 were identified as follows:

- VOCs – Benzene was detected above the SSALs in one of the bottom endpoint samples collected from beneath the tanks located in the central area of Parcel 2.
- SVOCs – One final bottom endpoint sample collected on Parcel 2 exceeded the SSAL for SVOCs with a concentration of 732 ppm.
- PCBs – Seven final bottom endpoint samples on Parcel 2 exceeded the SSAL for PCBs with a maximum concentration of 39 ppm.
- Pesticides – One final bottom endpoint sample on Parcel 2 exceeded the SSAL for pesticides with a maximum concentration of 3.0 ppm for 4,4-DDT.
- Arsenic – Six final bottom endpoint samples on Parcel 2 exceeded the SSAL for arsenic with a maximum concentration of 51.5 ppm.
- Lead – Three final bottom endpoint samples on Parcel 2 exceeded the SSAL for lead with a maximum concentration of 1,070 ppm.
- Mercury – Two final bottom endpoint samples on Parcel 2 exceeded the SSAL for mercury with a maximum concentration of 6.9 ppm (TCLP <0.0009 mg/l).

Although the SSALs were the comparison standard for remediation purposes, the soil analytical results were also compared to Part 375 SCOs for Unrestricted Use (Track 1) and Restricted Residential Use for informational purposes in accordance with current NYSDEC guidance. The Part 375 regulation was promulgated in December 2006, after remedial excavation and a majority of the backfilling was completed on Parcel 2. Parcel 2 has an Environmental Easement; therefore, the Restricted Residential SCOs would be the more applicable standard. The laboratory results of the post-excavation endpoint samples which represented the final extent of excavation compared to the Part 375 SCOs for Unrestricted Use (Track 1) and Restricted Residential Use are provided in Tables 7a to 7h (with exceedances of each SCO highlighted). Areas where endpoint samples indicated that soil in place beneath the excavations met the SSALs are considered Residual Management Zone B. In this area, there may be higher concentrations between the endpoint locations and this material may exceed the TAGM 4046 RSCOs and Part 375 SCOs for Restricted Residential Use. Future disturbance of soil in Residual Management Zone B will require screening and oversight by a qualified environmental professional, as outlined in Section 2.3.2.1.

As part of remediation, the excavations were backfilled to create a temporary cover using: (1) soil or fill from Parcel 1 which met the SSALs; (2) crushed asphalt, concrete and brick from on-site demolition which met the SSALs; (3) crushed buried concrete (e.g., former pile caps) from on-site demolition which met the SSALs; and (4) rock and soil obtained from off-site sources which generally met TAGM 4046 RSCO criteria. Backfill material was sampled prior to use and approved for reuse by NYSDEC. Some samples of imported backfill had exceedances of the TAGM 4046 RSCOs; however, the use of that material was specifically approved by NYSDEC. Since some backfill samples exceeded the TAGM 4046 RSCO and Part 375 SCOs for Restricted Residential Use criteria, and the backfill from a variety of sources was combined, this backfill is considered Residual Management Zone A. Figures 11a to 11c show the site cover materials and the final planned development; the previously placed backfill directly beneath the site cover is considered Residual Management Zone A. Future disturbance of this backfill material will require screening and oversight by a qualified environmental professional, as outlined in Section 2.3.2.1.

1.4.5.2 Groundwater

Prior to remediation, groundwater samples from monitoring wells on Parcel 2 contained low level exceedances of Class GA standards for VOCs, total metals, and/or dissolved metals. In addition, LNAPL containing PCBs was identified on Parcel 2. As described in Section 3.3, post-remediation groundwater sampling is being conducted to monitor the levels of residual groundwater contamination. Only one of the 16 post-remediation monitoring wells on the Property are located on Parcel 2. Post-remediation groundwater samples collected on Parcel 2 to date continue to indicate contaminant concentrations for PCBs, pesticides total metals, and/or dissolved metals at concentrations greater than the Class GA standards. It is anticipated that the removal of nearly all the identified contaminated soil from Parcel 2 (and Parcels 1 and 3) will result in a decrease in groundwater contaminant levels in the future. The post-remediation monitoring well locations are shown on Figure 13 and the analytical results for the post-remediation samples collected to date are provided in Tables 14a to 14f.

1.4.6 Groundwater Monitoring

Long-term site management will include periodic groundwater sampling to monitor dissolved contaminant concentrations on the upgradient, downgradient and crossgradient perimeter of the Property, including one monitoring well on Parcel 2. Groundwater monitoring is described in more detail in Section 3.3.

1.4.7 Engineering and Institutional Controls

Since residual contamination is present on Parcel 2, Engineering Controls and Institutional Controls will be implemented to protect public health and the environment in the future. The Property has the following two primary Engineering Controls:

- A composite cover system of asphalt, or concrete building slabs or other concrete. In the future, the cover system may also include a minimum of two (2) feet of clean fill (meeting the Part 375 SCO calculated as the lower of the SCOs for Residential Use or Protection of Groundwater, or for which specific approval was given by NYSDEC); and
- A vapor mitigation system, consisting of a vapor barrier and sub-slab depressurization system.

A series of Institutional Controls are required to implement, maintain and monitor these Engineering Controls. The Environmental Easement requires compliance with these Institutional Controls. These Institutional Controls consist of the following:

- Compliance with the Environmental Easement by the Grantor and the Grantor's successors and assigns with all elements of this SMP;
- All Engineering Controls must be operated and maintained as specified in this SMP;
- All Engineering Controls on the Controlled Property (Parcel 2) must be inspected and certified at a frequency and in a manner defined in this SMP;
- Groundwater and soil vapor monitoring must be performed as defined in this SMP;
- Data and information pertinent to Site Management for the Controlled Property must be reported at the frequency and in a manner defined in this SMP;

- On-Site environmental monitoring devices, including but not limited to, groundwater monitoring wells and soil vapor monitoring points, must be protected and replaced as necessary to ensure continued functioning in the manner specified in this SMP.

The Controlled Property has a series of Institutional Controls in the form of site restrictions as detailed in Section 2.3.1. Adherence to these Institutional Controls is required under the Environmental Easement. Site restrictions that apply to the Controlled Property are:

- Single family housing, vegetable gardens and farming on the Controlled Property are prohibited;
- Use of groundwater underlying the Controlled Property is prohibited without treatment rendering it safe for the intended use;
- All future activities on the Controlled Property that will disturb Residual Management Zones (i.e, penetrates fully through the site cover into the underlying soil) are prohibited unless they are conducted in accordance with the soil management provisions in this SMP;
- The Controlled Property may be used for Restricted Residential use as defined in 6 NYCRR 375-1.8(g)(2)(ii) only, provided that the long-term Engineering and Institutional Controls included in the SMP remain in use;
- The Controlled Property may not be used for a less restricted level of use, such as residential use, nor may the parking areas be converted to other enclosed purposes, without an amendment or the extinguishment of the Environmental Easement and NYSDEC and NYSDOH approval;
- Grantor agrees to submit to NYSDEC and NYSDOH a written statement that certifies, under penalty of perjury, that: (1) controls employed at the Controlled Property are unchanged from the previous certification or that any changes to the controls were approved by the NYSDEC and NYSDOH; and, (2) nothing has occurred that impairs the ability of the controls to protect public health and environment or that constitute a violation or failure to comply with the SMP. NYSDEC retains the right to access such Controlled Property at any time in order to evaluate the continued maintenance of any and all controls. This certification shall be submitted annually, or an alternate period of time that NYSDEC may allow. This annual statement must be certified by an expert that the NYSDEC finds acceptable.

These EC/ICs should:

- Prevent ingestion of groundwater with contamination levels that exceed drinking water standards;
- Prevent contact with or inhalation of potential volatile compounds from contaminated groundwater;
- Restore groundwater to pre-disposal/pre-release conditions, to the extent practicable;
- Prevent the discharge of contaminants to surface water;
- Prevent ingestion or direct contact with contaminated soil; and
- Prevent inhalation of or exposure to contaminants potentially volatilizing from residual contaminated soil.

2.0 ENGINEERING AND INSTITUTIONAL CONTROL PLAN

2.1 INTRODUCTION

2.1.1 General

Remedial activities on Parcel 2 were conducted in accordance with the NYSDEC-approved work plans, including the IRMWP dated September 2005, the RAWP dated February 2006, and the addendum, stipulation list, and modifications listed in Section 1.4. The remedial goals included attainment of SSALs that were approved by NYSDEC and are listed in Section 1.3.1. A summary of the remedial strategies and EC/ICs implemented on Parcel 2 are as follows:

- Excavation of soil exceeding the Site-Specific Action Levels listed in Section 1.3.1, to the extent practicable below the water table, with the exception of deeper excavation below the water table (with dewatering) in the MW-5 hotspot area;
- Removal of LNAPL;
- Removal of all ASTs and USTs;
- Investigation, mapping and removal of drainage structures;
- Investigation and, if necessary, remediation, of geophysical anomalies;
- Installation and sampling of groundwater monitoring wells;
- Installation of a vapor mitigation system, consisting of a vapor barrier and sub-slab depressurization system, beneath the portion of the Parcel 2 structure with retail use on the ground floor;
- Construction and maintenance of a site cover consisting of concrete or asphalt to prevent human exposure to residual contaminated soils remaining under Parcel 2;
- Recording of an Environmental Easement, including Institutional and Engineering Controls, to prevent future exposure to any residual contamination remaining on Parcel 2 (a copy of the Environmental Easement is provided in Appendix B);
- Publication of a Site Management Plan for long term management of residual contamination as required by the Environmental Easement, which includes plans for: (1) Institutional and Engineering Controls, (2) groundwater and vapor monitoring, (3) operation and maintenance and (4) reporting;
- Screening for indications of contamination (by visual means, odor, and monitoring with a photoionization detector (PID)) of all excavated soil during all intrusive work;
- Performance of community air monitoring of dust and VOCs/odors in accordance with NYSDOH requirements.
- Implementation of a SWPPP in accordance with NYSDEC requirements.
- Collection and analysis of endpoint samples to evaluate the performance of the remedy with respect to attaining the SSAL goals;
- Appropriate off-site disposal of all material removed from Parcel 2 in accordance with all Federal, State and local rules and regulations for handling, transport, and disposal;

- Import of materials to be used for backfill and cover in compliance with: (1) TAGM 4046 RSCOs, or for which specific approval was given by NYSDEC; and, (2) all Federal, State and local rules and regulations in handling and transport of material;
- All activities associated with the Remedial Action, including permitting requirements and pretreatment requirements, were addressed in accordance with all applicable Federal, State and local rules and regulations;
- Performance of all required BCP citizen participation activities (including development of a Citizen Participation Plan, public contact list, document repositories, public notices, and fact sheets); and
- Certification of the completion of the remedy in the FER.

Since residual contaminated soil, groundwater and, potentially, soil vapor exists beneath Parcel 2, Engineering Controls and Institutional Controls (EC/ICs) are required to protect human health and the environment. This Engineering and Institutional Control Plan describes the procedures for the implementation and management of all EC/ICs on Parcel 2. The EC/IC Plan is one component of the SMP and is subject to revision by NYSDEC.

2.1.2 Purpose

The purpose of this Plan is to provide:

- A description of all EC/ICs on Parcel 2;
- The basic operation and intended role of each implemented EC/IC;
- A description of the key components of the ICs created as stated in the Environmental Easement;
- A description of the features that should be evaluated during each annual inspection and compliance certification period;
- A description of plans and procedures to be followed for implementation of EC/ICs, such as the implementation of the Soil Management Plan for the safe handling of residual contamination that may be disturbed during maintenance or redevelopment work on Parcel 2; and
- Any other provisions necessary to identify or establish methods for implementing the EC/ICs required by the remedy, as determined by the NYSDEC.

2.2 ENGINEERING CONTROL COMPONENTS

2.2.1 Composite Cover

Exposure to residual contaminated soil/fill is prevented by an engineered composite cover system built on Parcel 2. This composite cover system is comprised of asphalt or concrete. In the future, the site cover may also include a minimum of two (2) feet of clean fill (meeting the Part 375 SCO calculated as the lower of the SCOs for Residential Use and for Protection of Groundwater, or for which specific approval was given by NYSDEC). Figure 11a shows the location of each current cover type on Parcels 1, 2 and 3 of the Property. As part of future development activities, a new, additional site cover may be placed at a revised ground surface elevation and the current site cover may remain intact as a subsurface layer. Imported backfill that may be placed over the former site cover would meet the requirements outlined in Section 2.3.2.9. Any changes in the site cover components or disturbance of the Residual Management Zones would meet the

requirements of this SMP and be detailed in the Annual Site Management Report. Figure 11b shows the location of the anticipated final cover on the Property. The final planned development is depicted on Figure 11c.

A Soil Management Plan included in Appendix D outlines the procedures required in the event the composite cover system and underlying residual contamination are disturbed. The Soil Management Plan is also discussed in greater detail in Section 2.3.2 of this EC/IC Plan. Issues related to maintenance of this cover are provided in the Monitoring Plan included in Section 4 of this SMP.

2.2.2 Vapor Mitigation System

Exposure to potential residual vapors is minimized by a sub-slab vapor mitigation system installed beneath the building on Parcel 2 which will have retail use on the ground floor. The mitigation system design consists of a network of PVC sub-slab depressurization piping placed beneath a vapor barrier and protected by an asphalt site cover. The vapor barrier is a 60-mil thick linear low-density polyethylene (LLDPE) geomembrane. The vapor barrier seams and perforations will be sealed with double sided tape per manufacturer specifications. Metal tension straps with neoprene-cushioned gaskets will be used on pile cap penetrations to hold tension on the double-sided tape. The sub-slab piping consists of a grid of 6-inch diameter perforated PVC pipe connected to eight pipe risers with in-line fans and sampling ports. The risers penetrate the asphalt site cover at eight locations on the northern and southern perimeter to connect to the aboveground, in-line fans and sampling ports located in the building stairwells. An additional 14 sampling ports and system clean-outs are located on the eastern and western building exterior. Warning indicator lights to confirm system operation are located adjacent to each of the ground floor in-line fans. As-built drawings and specifications for the vapor mitigation system are included in Appendix H.

Procedures for operating and maintaining the sub-slab depressurization system are documented in the Operation and Maintenance Plan (Section 4 of this SMP). Procedures for monitoring the system are included in the Monitoring Plan (Section 3 of this SMP). The Monitoring Plan also addresses inspections in the event that a severe condition occurs that may affect operation of the sub-slab depressurization system.

The planned development includes a parking garage on the eastern portion of Parcel 2 that is an open-air parking garage. The eastern retail building, a portion of which is on the eastern end of Parcel 2, has ventilated parking space at cellar level designed to prevent accumulation of potential vapors in accordance with parking garage requirements of the New York City building code. Accordingly, no vapor barrier or sub-slab venting system was required beneath these buildings. Any non-parking areas in the parking areas, such as storage areas or utility rooms, will be ventilated into the garage space. The New York City Department of Buildings requires certification that the ventilation system is operating. As outlined in Section 2.3.1, the environmental easement includes a provision that converting the parking areas to a higher level of use, such as residential use, or other enclosed purposes requires an amendment or the extinguishment of the Environmental Easement and NYSDEC and NYSDOH approval.

2.2.3 Criteria for Completion of Remediation/Termination of Remedial Systems

2.2.3.1 Composite Cover System

The composite cover system is a permanent control and the quality and integrity of this system will be inspected at defined, regular intervals in perpetuity as described in Section 3.2.1.

2.2.3.2 Sub-slab Depressurization System [SSDS]

The SSDS will be operated in active mode (with fans operating) under this SMP. The SSDS will not be turned off without written approval by NYSDEC and NYSDOH.

Prior to initial building occupancy, operation of the system may be temporarily suspended during construction without specific approval from NYSDEC and NYSDOH. After building occupancy, any temporary suspensions will require approval from NYSDEC and NYSDOH.

In order to determine whether the system can be converted to passive venting (i.e., without operating the in-line fans), a separate sampling protocol will be established for approval by NYSDEC and NYSDOH. Systems will remain in place and operational until permission to discontinue use is granted in writing by NYSDEC and NYSDOH.

2.3 INSTITUTIONAL CONTROLS COMPONENTS

2.3.1 Institutional Controls

A series of Institutional Controls are required under the RAWP to: (1) implement, maintain and monitor Engineering Controls; (2) prevent future exposure to residual contamination by controlling disturbances of the subsurface contamination; and, (3) restrict the use of Parcel 2 to Restricted Residential uses only. Adherence to these Institutional Controls on Parcel 2 (Controlled Property) is required under the Environmental Easement and will be implemented under this Site Management Plan. These Institutional Controls are:

- Compliance with the Environmental Easement by the Grantor and the Grantor's successors and assigns with all elements of this SMP;
- All Engineering Controls must be operated and maintained as specified in this SMP;
- The composite cover consisting of asphalt, concrete or a minimum of 2 feet of clean fill must be inspected, certified and maintained as required in this SMP;
- A soil vapor mitigation system consisting of a vapor barrier and sub-slab depressurization system under the western retail building must be inspected, certified, operated and maintained as required in this SMP;
- All Engineering Controls on the Controlled Property must be inspected and certified at a frequency and in a manner defied in the SMP;
- Groundwater and soil vapor monitoring must be performed as defined in this SMP;
- Data and information pertinent to Site Management for the Controlled Property must be reported at the frequency and in a manner defined in this SMP;
- Environmental monitoring devices, including but not limited to, groundwater monitoring wells and soil vapor probes, must be protected and replaced as necessary to ensure the devices function in the manner specified in this SMP; and

- Engineering Controls may not be discontinued without an amendment or the extinguishment of this Environmental Easement.

The Controlled Property has a series of Institutional Controls in the form of land use restrictions. Adherence to these Institutional Controls is required by the Environmental Easement. Site restrictions that apply to the Controlled Property are:

- Single family housing, vegetable gardens and farming on the Controlled Property are prohibited;
- A school or day care facility on the Controlled Property is prohibited;
- Use of the groundwater underlying the Controlled Property is prohibited without treatment rendering it safe for intended purpose;
- All future activities on the Controlled Property that will disturb Residual Management Zones (i.e., penetrates fully through the site cover into the underlying soil) are prohibited unless they are conducted in accordance with the soil management provisions in this SMP;
- The Controlled Property may only be used for Restricted Residential use as defined in 6 NYCRR 375-1.8(g)(2)(ii) only, provided that the long-term Engineering and Institutional Controls included in this SMP remain in use;
- The Controlled Property may not be used for a less restricted level of use, such as residential use, nor may the parking areas be converted to other enclosed purposes without an amendment or the extinguishment of this Environmental Easement and NYSDEC and NYSDOH approval.
- Grantor agrees to submit to NYSDEC and NYSDOH a written statement that certifies, under penalty of perjury, that: (1) controls employed at the Controlled Property are unchanged from the previous certification or that any changes to the controls were approved by the NYSDEC and NYSDOH; and, (2) nothing has occurred that impairs the ability of the controls to protect public health and environment or that constitute a violation or failure to comply with the SMP. NYSDEC retains the right to access such Controlled Property at any time in order to evaluate the continued maintenance of any and all controls. This certification shall be submitted annually, or an alternate period of time that NYSDEC may allow. This annual statement must be certified by an expert that the NYSDEC finds acceptable.

2.3.2 Soil/Materials Management Plan

Parcel 2 has been fully remediated for Restricted Residential use. Work performed beneath the site cover will follow the protocol for the following three Residuals Management Zones: Residual Management Zone A consists of backfill material placed during remediation and construction prior to issuance of the Certificate of Completion which meets the SSALs; Residual Management Zone B consists of the area beneath the limits disturbed during remediation and construction; and Residual Management Zone C consists of soil with known concentrations in exceedance of the SSALs. If evidence of contamination (such as staining, oily sheen, or chemical/petroleum odors) is noted on soil or groundwater in Residual Management Zones A or B, then the soil handling and health and safety procedures for Residual Management Zone C will apply.

Any future intrusive work that will disturb the Residual Management Zones (i.e., penetrates fully through the site cover into the underlying soil) and modifications or

repairs to the composite cover system, or vapor mitigation system will be performed in compliance with the Soil Management Plan (SoMP), which is included in this SMP. Intrusive construction work must also be conducted in accordance with the procedures defined in a Construction Health and Safety Plan (CHASP), which includes a Community Air Monitoring Plan (CAMP). The CHASP is the responsibility of the Property owner and should be in compliance with DER-10 Technical Guide and 29 CFR 1910 and 1926, and all other applicable Federal, State and local regulations. Any intrusive construction work must be certified as compliant with the SMP and included in the periodic inspection and certification reports submitted under the Site Management Reporting Plan (See Section 5). The SoMP is presented in Appendix D and the CHASP with CAMP is presented in Appendix E of this SMP. A summary of the plans is provided in the following subsections.

2.3.2.1 Soil Screening Methods

Visual, olfactory and PID soil screening and assessment will be performed by a qualified environmental professional during all development and post-construction excavations into known or potentially contaminated material (Residual Management Zone A (previously placed backfill), Residual Management Zone B (soil beneath previous excavations), and Residual Management Zone C (known contamination). Soil screening will be performed regardless of when the invasive work is done and will include all excavation and invasive work performed on Residual Management Zones A, B and C during development, such as excavations for foundations and utility work, after issuance of the COC.

Screening will be performed by qualified environmental professionals under the oversight of the Remedial Engineer. Resumes will be provided in the Annual Site Management Report for all personnel.

2.3.2.2 Stockpile Methods

Stockpiles of excavated material will be inspected at a minimum once each week and after every 5-year storm event (for Queens County, 4.5 inches of rain within a 24-hour period). Results of inspections will be recorded in a logbook and maintained at the Property and available for inspection by NYSDEC. The location of stockpiles will be selected based on the location and extent of excavation and activities on the Property at that time.

Soils will be stockpiled based on their known or anticipated type and/or level of contamination (based on previous data, PID readings, odor, staining, etc.). Stockpiles intended for off-site disposal may be mixed with other compatible stockpiles on-site (compatibility will be determined by the requirements of the receiving disposal facility), but should known hazardous wastes be mixed with non-hazardous wastes, the mixture would be managed as hazardous waste.

Soil exhibiting obvious contamination (e.g., staining, odors, elevated PID readings) will be stockpiled separately to prevent mixing with potentially uncontaminated excavated material. The location and classification of stockpiles (clean, contaminated or pending analysis) will be tracked in field notes and updated, if necessary, at the end of each workday. Suspect contaminated soil will be placed on a base consisting of rugged polyethylene tarp. Stockpiles will be kept fully covered whenever excavation and/or loading operations are not occurring with appropriately anchored tarps. Stockpiles will be routinely inspected and damaged tarp covers will be promptly replaced.

Soil stockpiles will have side slopes not to exceed 2:1. Soil stockpiles will be encircled with silt fences or other appropriate erosion control, and managed to minimize dust generation, run-off and erosion, using water and/or plastic covers, as necessary. Hay bales or other appropriate erosion control will be used as needed near catch basins, surface waters and other discharge points.

A dedicated water truck equipped with a water cannon or other similar wetting/misting device will be available on-site for dust control, as appropriate depending on the size and location of the soil disturbance area.

2.3.2.3 Materials Excavation and Load Out

The Remedial Engineer or a qualified environmental professional under his/her supervision will oversee all invasive work that will disturb the Residual Management Zones and the excavation and, if needed, load-out of such excavated material. During excavation and stockpiling, the on-site field personnel will continuously monitor the excavated soil for evidence of contamination and conduct periodic screening for VOCs using a PID. Soil excavated from the Property that has chemical or petroleum odors; visual chemical or petroleum staining; or elevated PID readings above 5 ppm will not be reused on-site but will be characterized for off-site disposal. Soil from Residual Management Zone A (previously placed backfill) is documented to meet SSALs; excavated material from this zone which does not exhibit evidence of contamination may be reused on-site as subsurface fill beneath the restored cover without additional sampling. Soil from Residual Management Zone B (beneath previous excavations) will be sampled and analyzed to confirm the soil meets SSALs prior to reused on-site as subsurface backfill material. Soil excavated from Residual Management Zone C (vicinity of known contamination) will be disposed of off-site. All excavations will be considered open excavations and will be managed according to applicable local, State, and Federal regulations. The contractors performing the work are solely responsible for safe execution of all invasive and other work performed under this Plan.

The presence of utilities and utility easements on the Property will be investigated by the Remedial Engineer or his/her representative. It will be determined whether a risk or impediment to the planned work is posed by utilities or easements on the Property.

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

Prior to leaving the excavation area, all contaminated material containers and transport vehicles will be inspected for evidence of exterior contamination (including inside of wheels and undercarriage), and the truck washed as necessary. A representative of the Remedial Engineer will be responsible for ensuring that all outbound trucks are inspected and that any contamination is removed before the truck leaves the Property. Wash waters will be collected and disposed off-site in accordance with applicable regulations.

Locations where vehicles enter or exit the Property shall be inspected daily for evidence of off-site sediment tracking. A representative of the Remedial Engineer will be responsible for ensuring that all egress points for truck and equipment transport from the Property will be clean of dirt and other materials derived from the Property during excavation work. Cleaning of the adjacent streets will be performed as needed to maintain a clean condition with respect to site-derived materials.

The parties performing the work are completely responsible for the safe performance of invasive work, and for maintaining the structural integrity of excavations and structures that may be affected by excavations (such as building foundations and bridge footings).

The Property owner will ensure that on-site development activities will not interfere with, or otherwise impair or compromise, remedial activities implemented under the Remedial Action Work Plan.

If buried tanks, drums or other containers are encountered during excavation, NYSDEC will be notified and the contingency plan in Section 2.3.2.11 should be implemented. The tank or container and any associated piping, transformers, etc. will be removed and endpoint sampling completed before excavations related to development commence proximal to the structure.

Mechanical processing of historical fill and contaminated soil on-site is prohibited.

All primary contaminant sources (including but not limited to tanks and contaminated soil) identified during excavation will be surveyed by a surveyor licensed to practice in the State of New York. The survey information will be shown on maps to be reported in the Annual Site Management Report.

2.3.2.4 Materials Transport Off-Site

All transport of materials 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.

Trucks will travel to and from the Property via 40th Road and College Point Boulevard. Depending on the final destination, trucks will travel north on College Point Boulevard to the Whitestone Expressway (I-678), or south on College Point Boulevard to the Long Island Expressway (I-495). All trucks loaded with site materials will exit the vicinity of the Property using only these approved truck routes.

Proposed in-bound and out-bound truck routes to the Property are shown in Figure D1 as part of the SoMP in Appendix D. 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 to the extent practicable; (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 idling in the neighborhood outside the Property and queuing of trucks will be performed on the Property to the extent practicable in order to minimize off-site disturbance.

Material transported by trucks exiting the Property 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.

Prior to leaving the excavation area, all contaminated material containers and transport vehicles will be inspected for evidence of exterior contamination (including inside of wheels and undercarriage), and washed, as necessary, prior to leaving the Property If truck wash is used, truck wash waters will be collected and disposed of off-site in an appropriate manner. Egress points for truck and equipment transport from the Property will be kept clean of dirt and other materials during excavation activities.

2.3.2.5 Materials Disposal Off-Site

Soil excavated from the Property that has chemical or petroleum odors; visual chemical or petroleum staining; or elevated PID readings above 5 ppm will not be reused on-site but will be segregated and samples collected prior to off-site disposal. If analytical results indicate that contaminant concentrations in excavated soil exceed the SSALs, the corresponding stockpile(s) will be disposed of off-site in a manner consistent with applicable laws and regulations. Fill material that meets the SSALs, but that cannot be used for backfill due to its mechanical properties or composition or because it is in excess of the volume required for backfilling, will be separately stockpiled for waste characterization analysis and off-site disposal. Waste characterization will be performed for off-site disposal in a manner suitable to the receiving facility and in conformance with applicable permits. Sampling and analytical methods, sampling frequency, analytical results and QA/QC will be reported in the Annual Site Management Report. All data available for soil/material to be disposed at a given facility must be submitted to the disposal facility with suitable explanation prior to shipment and receipt.

All soil/fill/solid waste excavated and removed from the Property, except soil which meets the Track 1 Unrestricted Use SCOs, will be treated as contaminated and regulated material and will be disposed in accordance with all local, State (including 6 NYCRR Part 360) and Federal regulations. Material that does not meet Track 1 Unrestricted Use SCOs is prohibited from being taken to a New York State recycling facility (6 NYCRR Part 360-16 Registration Facility).

Non-hazardous waste, historic fill and contaminated soils taken off-site will be handled, at minimum, as a Municipal Solid Waste per 6 NYCRR Part 360-1.2. Historical fill and contaminated soils from the Property are prohibited from being disposed at Part 360-16 Registration Facilities (also known as Soil Recycling Facilities).

If disposal of soil/fill from this Property is proposed for unregulated disposal (i.e. clean soil removed for development purposes), a formal request with an associated plan will be made to NYSDEC's Project Manager. Unregulated off-site management of materials from this Property is prohibited without formal NYSDEC approval.

Soils that are contaminated but non-hazardous waste and are being removed from the Property are considered by the Division of Solid & Hazardous Materials (DSHM) in NYSDEC to be Construction and Demolition (C/D) materials with contamination not typical of virgin soils. These soils may be sent to a permitted Part 360 landfill. They may be sent to a permitted C/D processing facility without permit modifications only upon prior notification of NYSDEC Region 2 DSHM. This material is prohibited from being sent or redirected to a Part 360-16 Registration Facility. In this case, as dictated by DSHM, special procedures will include, at a minimum, a letter to the C/D facility that provides a detailed explanation that the material is derived from a DER remediation site, that the soil material is contaminated and that it must not be redirected to on-site or off-site Soil Recycling Facilities. The letter will provide the project identity and the name and phone number of the Remedial Engineer. The letter will include as an attachment a summary of all analytical data for the material being transported.

Hazardous wastes derived from on-site will be stored, transported, and disposed of in full compliance with applicable local, State, and Federal regulations.

For large projects (i.e., greater than 1,000 cubic yards), the total quantity of material expected to be disposed off-site will be reported to NYSDEC prior to performance of

work. This will include quantity, 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.

The following documentation will be obtained and reported by the Remedial Engineer for each location used for off-site disposal of site soils in this project to fully demonstrate and document that the disposal of material derived from the Property conforms with all applicable laws:

1. a letter from the Remedial Engineer or BCP Applicant to the receiving facility describing the material to be disposed and requesting formal written acceptance of the material. This letter will state that material to be disposed is contaminated material generated at an environmental remediation site in New York State. The letter will provide the project identity and the name and phone number of the Remedial Engineer. The letter will include as an attachment a summary of all analytical data for the material being transported; and
2. a letter from all receiving facilities stating it is in receipt of the correspondence (above) and is approved to accept the material.

A Bill of Lading system or equivalent will be used for off-site movement of non-hazardous wastes and contaminated soils. The disposal locations will be identified and reported to NYSDEC in the Annual Site Management Report. The Annual Site Management Report will include an accounting of the destination of all material removed from the Property during work performed under this plan, including excavated soil, contaminated soil, historic fill, solid waste, and hazardous waste, non-regulated material, and fluids. Documentation associated with disposal of all material will include records and approvals for receipt of the material. A summary of this information will also be presented in a tabular form in the Annual Site Management Report.

Appropriately licensed haulers will be used for material removed from this Property and will be in full compliance with all applicable local, State and Federal regulations.

2.3.2.6 Materials Reuse On-Site

The SSAL criteria listed in Section 1.3.1 have been approved by NYSDEC for on-site reuse of material. The Remedial Engineer will ensure that procedures defined for materials reuse in this SMP are followed and that unacceptable material will not remain on-Site. Soil excavated from any Residual Management Zone on the Property that has chemical or petroleum odors; visual chemical or petroleum staining; or elevated PID readings above 5 ppm will not be reused on-site but will be characterized for off-site disposal.

Soil excavated from Residual Management Zone B (beneath previous excavation) that is proposed for reuse on-site will be analyzed at a minimum frequency of one composite sample per 500 cubic yards and analyzed for TCL VOCs, TCL SVOCs, TAL metals, PCBs and pesticides. Soil from Residual Management Zone B that meets the SSALs may be reused on-site as subsurface backfill beneath the restored site cover. Soil excavated from Residual Management Zone C (area known contamination) will not be reused on-site, but will be disposed off-site.

Material excavated from Residual Management Zone A (previously placed backfill) is documented to meet SSALs; therefore it may be reused on-site as subsurface fill beneath

the restored cover without additional sampling, provided that no evidence of contamination is noted.

Acceptable demolition material proposed for reuse on-site, if any, will also be sampled for asbestos and certified to be free of asbestos-containing materials.

Concrete crushing or processing on-site is prohibited without written approval by NYSDEC. NYSDEC will consider the use of specially designed crushing devices that are self-contained and capable of providing misting for dust control. NYSDEC approval must be obtained. If dust-free operations are not achieved with such devices, this exception will be revoked.

Organic matter (wood, tree roots, stumps, etc.) derived from clearing and grubbing of the Property is prohibited from burial on-site. Solid waste will not be reused on-site except for on-site soils reused in accordance with the requirements of this SMP.

Contaminated on-site material, including historic fill and contaminated soil, removed for grading or other purposes will not be reused within a cover soil layer, within landscaping berms, or as backfill for subsurface utility lines.

2.3.2.7 Fluids Management

All liquids to be removed from the Property, including dewatering fluids, will be handled, transported and disposed in accordance with applicable local, State, and Federal regulations. Liquids discharged into the New York City sewer system will be addressed through approval by NYCDEP. Discharge of water generated during remedial construction to surface waters (i.e., the Flushing River) is prohibited without a SPDES permit. Dewatered fluids will not be recharged back to the land surface or subsurface of the Property. Dewatering fluids will be managed off-site.

2.3.2.8 Demarcation

For the purposes of this SMP, the 'Residuals Management Zones' are divided into three areas beneath the site cover (i.e., asphalt, concrete or two feet of clean fill) that require adherence to special conditions for disturbance of contaminated residual soils defined in this Site Management Plan. After the completion of any residual soil removal from Residual Management Zones B or C, and prior to backfilling, as necessary, a land survey will be performed by a New York State licensed surveyor. The survey will redefine the top elevation of residual soils. A physical demarcation layer, consisting of orange snow fencing material or equivalent material will be placed on this surface to provide a visual reference if the excavation is to be backfilled. In areas where concrete will be poured directly into the open excavation for foundation elements (e.g., pile caps or footings), no demarcation barrier will be placed. No survey or demarcation layer will be required for excavation in Residual Management Zone A only (i.e., excavation that does not disturb soil in Residual Management Zone B or Zone C).

Although no landscaping is currently planned on Parcel 2, if landscaping is installed in the future, a demarcation layer will also be placed at the base of the final cover soil layer (minimum top two (2) feet) in any landscaped area.

The survey will measure the grade covered by the demarcation layer before the placement of cover soils. This survey and the demarcation layer placed on this grade surface will constitute a modification of the physical and written record of the upper surface of the 'Residuals Management Zone' in the Site Management Plan. A map

showing the survey results will be included in the Annual Site Management Report and updates to the Site Management Plan.

2.3.2.9 Backfill from Off-Site Sources

All materials proposed for import onto the Property will be approved by the Remedial Engineer as in compliance with provisions in this SMP prior to receipt at the Property.

Any imported off-site backfill material will be clean and free of debris, cinders, combustibles, wood, roots, and any staining or odors. Material from industrial sites, spill sites, or other environmental remediation sites or potentially contaminated sites will not be imported to the Property. Solid waste will not be imported onto the Property.

Imported material will be tested via collection of one composite sample per 500 cubic yards of material from each source. Samples will be analyzed for TCL VOCs using EPA Method 8260, TCL SVOCs using EPA Method 8270, PCBs using EPA Method 8082, pesticides using EPA Method 8081, and TAL metals using EPA Method 6000/7000 series.

Native material from a virgin quarry source need not be sampled prior to use as backfill on the Property, provided that detailed information regarding site history and chemical components of the quarry materials is available. If this detailed information is not available, samples will be collected for laboratory analysis as specified above.

Imported soils will be considered appropriate for use as on-site backfill if contaminant concentrations are less than the combined Part 375 SCO—the lower of the Restricted Residential Use and Protection of Groundwater SCOs established in December 2006 as shown on Table 9)—or specific approval has been given by NYSDEC. Off-site backfill sources which have inconsequential exceedances of the applicable SCOs may be considered by NYSDEC for use on-site on a case-by-case basis. Formal requests will be submitted for approval of sources with exceedances. Non-compliant soils will not be imported onto the Property without prior approval by NYSDEC. Nothing in the approved SMP or its approval by NYSDEC should be construed as an approval for this purpose.

Soils that meet 'exempt' fill requirements under 6 NYCRR Part 360, but do not meet backfill or cover soil objectives for this Property, will not be imported onto the Property without prior approval by NYSDEC. Nothing in this SMP should be construed as an approval for this purpose.

Trucks entering the Property with imported soils will be securely covered with tight fitting covers. Backfill material brought on-site will be stockpiled in an area separate from the excavated material stockpiles. The location and classification of stockpiles will be tracked on the Property drawings and updated, if necessary, at the end of each workday. Stockpiles will be surrounded with silt fences, hay bales, berms or equivalent barriers to limit any sediment-laden runoff.

2.3.2.10 Stormwater Pollution Prevention

For all activities involving disturbance of the Residual Management Zones, work will be performed in compliance with the existing permit under the NYSDEC General Stormwater Permit (Number GP-02-01), and a Stormwater Pollution Prevention Plan (SWPPP) will be implemented. The SWPPP applicable to construction activities is provided in Appendix F.

Barriers and hay bales will be installed at the perimeter of soil stockpiles to be maintained on-site overnight or longer, and inspected once a week and after every storm event. Results of inspections will be recorded in a log book and maintained at the Property and available for inspection by NYSDEC. All necessary repairs shall be made immediately.

Accumulated sediments will be removed as required to keep the barrier and hay bales functional. All undercutting or erosion of the barrier (e.g., 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, hay bales or equivalent barriers will be installed around the entire perimeter of the excavation and stockpile area(s). Nearby sewer inlets will be protected with hay bales, silt geofabrics, "silt sack" inserts, or equivalent barriers. Any alterations to the above plan must first be approved by NYSDEC.

2.3.2.11 Contingency Plan

All excavation will be continuously monitored for the presence of buried tanks, drums or other containers, sludges, or soil which shows evidence of obvious contamination, such as heavy staining, sheen, or strong odors. The affected area will be cordoned off and no further work will be performed at that location until the appropriate contingency response action is implemented. 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. These findings will be also included in the Annual Site Management Report.

If underground tanks or other previously unidentified contaminant sources are found during on-site remedial excavation or development-related construction, sampling to characterize the contamination will be performed on product, sediment and soils, as appropriate. Post-excavation endpoint samples will be collected from the sides and bottom of the excavated area, if required for tank closure. The tanks will be registered in accordance with the NYSDEC Petroleum Bulk Storage regulations. Chemical analytical work will be for full scan parameters (TAL metals; TCL VOCs and SVOCs, TCL pesticides and PCBs). These analyses will not be limited to STARS parameters where tanks are identified without prior approval by NYSDEC. Analyses will not be otherwise limited without NYSDEC approval.

Buried tanks, drums or other containers will be removed in accordance with all applicable Federal, State and local regulations. Spill reporting to the NYSDEC Spill Hotline (800-457-7362) will be conducted as necessary. Copies of all testing results, correspondence with disposal facilities concerning classification of materials, and permits/approvals will be maintained by the Remedial Engineer and will be submitted to the NYSDEC in a Tank Closure Report or Spill Closure Report, as appropriate.

2.3.2.12 Community Air Monitoring Plan

The CAMP is intended to protect the health of community residents who have the potential to be exposed to on-site contaminants as a result of fugitive discharge of dusts,

vapors, and/or nuisance odors. The CAMP detailed in the CHASP provided in Appendix E will be implemented if work zone air monitoring conducted in contaminated work zones exhibits evidence of elevated VOCs, particulate, and/or nuisance odors. Specifically, the community air monitoring is required if the 15-minute time-weighted average readings within the Work Zone are more than 4 ppm above background for VOCs, or more than 75 ug/m3 above background for particulates.

Due to the size of the Property and the large footprint of the buildings, the perimeter air monitoring locations will be determined based on the area and extent of soil disturbance. Exceedances observed in the CAMP will be reported to NYSDEC and NYSDOH Project Managers.

2.3.2.13 Odor, Dust and Nuisance Control Plan

2.3.2.13.1 Odor Control Plan

Based on the soil and groundwater data collected and observations during remediation at the Property, no elevated levels of VOCs or odorous soils are anticipated. If the work zone or community air monitoring reveal persistent elevated VOC levels, or if nuisance odors are present, this odor control plan is capable of controlling emissions of nuisance odors off-site and on-site. If nuisance odors are identified, work will be halted and the source of odors will be identified and corrected. Work will not resume until all nuisance odors have been abated. NYSDEC and NYSDOH will be notified of all odor events and of all other complaints about the project. Implementation of all odor controls, including the halt of work, will be the responsibility of the Controlled Property owner's Remedial Engineer, who is responsible for certifying the Annual Site Management Report.

All necessary means will be employed to prevent on- and off-site nuisances. Emissions of odors will be controlled by minimizing, to the extent possible, the exposure of contaminated soil to the atmosphere. Specific measures that will be implemented are:

- Limiting the area of open excavations – Contaminated soil will be excavated by sections to minimize the size of the excavation that is open at any time. Excavations exhibiting odors will be promptly backfilled and adequate volumes of on-site or off-site fill material will be available if it is not possible to backfill with excavated material.
- Hauling soil only in covered trucks – Contaminated material transported by trucks exiting the Property will be secured with tight-fitting covers. Loose-fitting canvas-type truck covers will be prohibited. All trucks loaded with site materials will exit the vicinity of the Property using only these approved truck routes.
- Shrouding open excavations and stockpiles with tarps and other covers.

If odors develop and cannot be otherwise controlled, additional means to eliminate odor nuisances will include:

- Direct loading-out of contaminated soils to trucks for off-site disposal to the extent feasible – If possible, pre-approval will be obtained from disposal facilities to minimize delay in moving soil off-site. Stockpiling of odorous contaminated soil will be avoided to the extent practicable. If contaminated materials cannot be immediately loaded and transported off-site (in accordance with applicable federal

and state requirements), these materials would be stockpiled on and covered with polyethylene sheeting.

- Using water or foams to cover exposed odorous soils – A biodegradable, non-hazardous, non-flammable foam, such as Rusmar A-600, Allied AFT-400 will be used to cover stockpiles and exposed soil surfaces if necessary.
- Using chemical odorants in spray or misting systems – Odor neutralizing agents (such as Ecosorb 606 by Lenntech Water) will be applied directly to the soil, or in the air, if odors persist.
- Using staff to monitor odors in surrounding neighborhood.

Work performed under this SMP will not result in persistent odor nuisances.

2.3.2.13.2 Dust Control Plan

Soil disturbances for future utility maintenance and landscaping conducted after the completion of site redevelopment are not anticipated to require large-scale excavations. This dust suppression plan addresses dust management to be implemented appropriate to the extent of invasive on-site work. Dust control measures will include, at a minimum, the items listed below:

- The excavation size and/or number of excavations will be minimized as practicable.
- Excavated areas and stockpiled material will be covered with polyethylene sheeting after activity ceases.
- Dust suppression will be achieved though the use of a dedicated on-site water truck or similar wetting/misting device appropriate to reach the full extent of the area of soil disturbance, stockpiles and on-site haul roads. If excavation activities are generating dust, the work area, including equipment and excavation faces, will be wetted.
- 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 unpaved 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. Construction vehicle speeds will be restricted to a maximum of ten miles per hour.

Under the CHASP (Appendix E), soil disturbance work will stop if particulate concentrations reach 125 milligrams per cubic meter (mg/m^3) in the work zone or greater than 0.15 mg/m^3 above background at the downwind perimeter. Additional dust control measures will be applied. Work will resume when particulate concentrations are less than 125 mg/m^3 in the work zone, less than 0.15 mg/m^3 above background levels at the downwind perimeter, and no visible dust is migrating from the work area.

2.3.2.13.3 Other Nuisances

A plan for rodent control will be developed and utilized by the contractor prior to and during clearing and grubbing work in accordance with local regulatory requirements.

All future soil disturbance work will conform, at a minimum, to applicable city noise control standards. If necessary based on the work to be performed, a written noise control plan will be prepared.

2.4 INSPECTIONS AND NOTIFICATIONS

2.4.1 Inspections

Inspections of all systems installed on-site will be conducted at the frequency specified in SMP Monitoring Plan schedule outlined in Section 3.1.3. A comprehensive Property-wide inspection will be conducted annually. The inspections will determine and document the following:

- Whether Engineering Controls 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;
- Sampling and analysis of appropriate media during monitoring events;
- If site records are complete and up to date; and
- Changes, or needed changes, to the remedial or monitoring system.

Inspections will be conducted in accordance with the procedures set forth in the Monitoring Plan of this SMP (Section 3). The reporting requirements are outlined in the Site Management Reporting Plan (Section 5).

If an emergency, such as a natural disaster or an unforeseen failure of any of the ECs occurs, an inspection of the Property will be conducted to verify the effectiveness of the EC/ICs implemented at the Property by a qualified environmental professional as determined by NYSDEC.

2.4.2 Notifications

2.4.2.1 NYSDEC-Acceptable Electronic Database

The following information is presented in Appendix G in an electronic database format:

- A site summary;
- The name of the current Property owner and/or the remedial party implementing the SMP for Parcel 2;
- The location of Parcel 2;
- The current status of remedial activity;
- A copy of the Environmental Easement; and
- A contact name and phone number of a person knowledgeable about the Environmental Easement's requirements, in order for NYSDEC to obtain additional information, as necessary.

This information should be: (1) modified as conditions change; (2) revised in Appendix G of this document; and, (3) submitted to NYSDEC in the Annual Site Monitoring Report. Should the Environmental Easement be modified or terminated, the copy of the revised Environmental Easement will also be updated in this manner.

2.4.2.2 Non-routine Notifications

Non-routine notifications are to be submitted by the Property owner(s) to the NYSDEC on an as-needed basis for the following reasons:

- 60-day advance notice of any proposed changes in land use that are consistent with the terms of the Brownfield Cleanup Agreement.
- 10-day advance notice of any proposed ground-intrusive activities, except those required to address urgent or emergency situations.
- Notice within 48 hours of any damage or defect to the foundations structures that reduces or has the potential to reduce the effectiveness of other Engineering Controls and likewise any action taken to mitigate the damage or defect.
- Notice within 48 hours of any emergency, such as a fire, flood, or earthquake that reduces or has the potential to reduce the effectiveness of Engineering Controls in place on Parcel 2, including a summary of action taken and the impact to the environment and the public.
- Follow-up status reports on actions taken to respond to any emergency event requiring ongoing responsive action shall be submitted to the NYSDEC within 45 days and shall describe and document actions taken to restore the effectiveness of the ECs.

3.0 MONITORING PLAN

3.1 INTRODUCTION

3.1.1 General

The Monitoring Plan describes the measures for evaluating the performance and effectiveness of the remediation and implemented ECs (a composite cover and vapor mitigation system) and groundwater monitoring system in reducing or mitigating contamination at the Property. This Monitoring Plan is subject to revision by NYSDEC.

3.1.2 Purpose

This Monitoring Plan describes the methods to be used for:

- Sampling and analysis of on-site groundwater and soil vapor;
- Evaluating Parcel 2 information periodically to confirm that the remedy continues to be effective as per the design; and
- Assessing compliance with NYSDEC groundwater standards and Part 375 Restricted Residential SCOs for soil;
- Preparing the necessary reports for the monitoring activities; and
- Assessing achievement of the remedial performance criteria.

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

- Sampling locations, protocol, and frequency;
- Information on all designed monitoring systems (e.g., well logs);
- Analytical sampling program requirements;
- Reporting requirements;
- Quality Assurance/Quality Control (QA/QC) requirements;
- Inspection and maintenance requirements for monitoring wells;
- Monitoring well decommissioning procedures; and
- Annual inspection and certification.

3.1.3 Monitoring Schedule

Groundwater monitoring frequency under this SMP is quarter-annually. Quarterly groundwater monitoring of the performance of the remedy and overall reduction in contamination on-site is currently being conducted. Quarterly vapor sampling will be conducted for the first year of SSDS operation. Changes in frequency must be approved by NYSDEC. Sampling frequency for subsequent years will be determined by NYSDEC. Trends in contaminant levels in vapor and groundwater in the affected areas, will be evaluated to determine if the remedy continues to be effective in achieving remedial goals and will include time-concentration plots. Monitoring programs are summarized below and outlined in detail in Sections 3.2 through 3.3, below.

Monitoring/Inspection Schedule

Monitoring Program	Frequency*	Matrix	Analysis
Site Cover Inspection	Annual, or after flooding or storm event	No samples collected	Visual inspection
Site-Wide Inspection	Annual, or after flooding or storm event	No samples collected	Visual and paperwork inspection
Vapor Mitigation System Inspection	Quarterly, or after flooding or storm event	Vapor	Visual inspection
Groundwater Monitoring	Quarterly	Groundwater	TCL VOCs, TCL SVOCs, total and dissolved PCBs, pesticides, total and dissolved TAL metals and total cyanide
Vapor Monitoring	Quarterly	Vapor	VOCs (TO-15)

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

3.2 ENGINEERING CONTROL SYSTEM MONITORING

Parcel 2 has the following two primary Engineering Controls:

- A composite cover system of asphalt or concrete building slabs or other concrete – In the future, the cover system may also include a minimum of two (2) feet of clean fill (meeting lower of the Part 375 Residential SCOs or SCOs for Protection of Groundwater, or otherwise approved by NYSDEC). Figures 11a and 11b show the locations and construction of each current and anticipated cover type on Parcels 1, 2 and 3 of the Property.
- A vapor mitigation system, consisting of a vapor barrier and sub-slab depressurization system – As-built drawings for the SSDS are included in Appendix H.

3.2.1 Site Cover Inspection

A visual inspection of the complete cover will be performed on an annual basis in accordance with Section 4.2. A complete list of components to be checked is provided in the Site Cover Inspection Log presented in Appendix I. Cracking, erosion of other signs of wear will be repaired as per the Operation and Maintenance Plan in Section 4.2.

Unscheduled inspections and/or sampling may take place when a suspected failure of the site cover has been reported or an emergency occurs that is deemed likely to affect the site cover. Inspection frequency is subject to change by NYSDEC and NYSDOH. Monitoring deliverables are specified in Section 3.6.

Inspection logs and records of any repairs made to the site cover will be included in the Annual Site Management Report. An example Site Cover Inspection Log is included in Appendix I.

3.2.2 Sub-Slab Depressurization System Monitoring

A visual inspection of the accessible portions of the SSDS will be performed on a quarterly basis in accordance with Section 4.2. Unscheduled inspections and/or sampling may take place when a suspected failure of the SSDS has been reported or an emergency occurs that is deemed likely to affect the SSDS. Inspection frequency is subject to change by NYSDEC and NYSDOH. Monitoring deliverables are specified in Section 3.6.

A complete list of components to be checked is provided in the Periodic Inspection Log presented in Appendix I. Monitoring of the SSDS will also include quarterly vapor sampling as discussed in Section 3.2.3.

3.2.3 Vapor Sampling Event Protocol

Vapor samples will be collected directly from sample ports in the vent risers for the vapor mitigation system. The samples will be collected using 1- or 6-liter Summa canisters equipped with flow regulators to allow sample collection over a 15-minute period. A 15-minute sample duration would ensure that the sample is representative of the volume of air of the entire sub-slab piping length and not just a discrete area. The venting system is designed with each of the fans operating at a rate of 90 to 150 cubic feet per minute. The vapor samples will be collected using the following procedure:

- Attach new, clean 1/8-inch inside diameter polyethylene tubing to the sampling port and open the sample port valve.
- Open the inlet on a labeled Tedlar bag and attach it to the discharge end of the tubing. Allow the bag to fill approximately two-thirds full and close the inlet valve. Detach the bag and close the valve on the vent stack sample port.
- Field screen the Tedlar bag for VOCs by attaching the sample port to the PID probe using a new section of polyethylene tubing. Allow the PID pump to draw the soil gas sample into the meter; record the measurement once the readings have stabilized.
- Connect the tubing on the stack sample port to the inlet of a labeled Summa canister equipped with a flow regulator and vacuum gauge. Record the vacuum reading from the vacuum gauge on the canister at the beginning of the sampling period. Open the valve of the canister first, and then open the valve on the system sample port to initiate sample collection. Record the initial vacuum reading and sampling start time in the log book.
- At the end of the sampling period and prior to the vacuum gauge returning to ambient pressure, close valve, remove flow-rate controller and vacuum gauge, install cap on canister, and record time.
- Place canister in shipping container for transportation to laboratory.
- Document sample locations and measurements in the field logbook and on field data sheets presented in Appendix I.

Ambient air samples will be collected using 6-liter Summa canisters equipped with flow regulators to allow sample collection over a 15-minute period. The ambient air samples will be collected using the following procedure:

- Place Summa canister at ground level at an upwind or downwind location.
- Record the vacuum reading from the vacuum gauge on the canister at the beginning of the sampling period. Open the valve of the canister, and record the initial vacuum reading and sampling start time in the log book. Allow the canister to fill with ambient air.
- At the end of the sampling period and prior to the vacuum gauge returning to ambient pressure, close valve, remove flow-rate controller and vacuum gauge, install cap on canister, and record time.
- Place canister in shipping container for transportation to laboratory.
- Document sample locations and measurements in the field logbook and on field data sheets presented in Appendix I.

3.3 GROUNDWATER MONITORING PROGRAM

The remedial activities included the removal of contaminated soil and storage tanks and are anticipated to result in improvements to groundwater quality. Groundwater monitoring will be performed on a regular basis to assess the performance of the remedy.

3.3.1 Monitoring System Design

The network of monitoring wells is designed to monitor both up-gradient and down-gradient groundwater conditions at accessible locations on the perimeter of the Property, at the locations shown on Figure 13. Based on the pre-remediation groundwater investigation, the general groundwater flow direction on Parcel 2 is westerly. Post-remediation groundwater flow direction will continue to be assessed in the Annual Site Management Report.

3.3.2 Groundwater Monitoring Well Construction

The wells were constructed of two-inch PVC with a ten-foot length of 0.10-slotted screen spanning the water table. In determining the amount of screen located beneath the water table, changes in water table elevations due to seasonal fluctuations and dewatering were considered. The well screen was situated to provide sufficient water in the well for sampling and to limit sample collection close to the base of the well. A one-foot blind-pipe sediment trap was placed at the bottom of the well. The wells were constructed to total depths ranging from 12 to 15 feet below grade at the time of drilling, with the top of casing approximately two to three feet above grade. Any wells damaged during continued grading and construction activities will be replaced, as outlined in Section 3.3.5. The wells installation details are provided in Table 2, and well construction logs are included in Appendix J.

3.3.3 Monitoring Schedule

Groundwater monitoring will be conducted to assess post-remediation groundwater conditions and trends. Wells have been sampled quarterly for one year and will continue to be sampled quarterly unless the sampling frequency is modified by NYSDEC. The SMP will be modified to reflect changes in sampling plans approved by NYSDEC.

Deliverables for the groundwater monitoring program are specified in Section 3.6.

3.3.4 Sampling Event Protocol

All sampling and analyses will be performed in accordance with the requirements of the Quality Assurance Project Plan (QAPP) prepared for the Property (Appendix K). Low flow sampling techniques will be used, as described in U.S. EPA's Ground-Water Sampling Guidelines for Superfund and RCRA Project Managers [EPA 542-S-02-001, May 2002]. Laboratory samples will be collected for the following analytical parameters: TCL VOCs, TCL SVOCs, total and dissolved PCBs, total and dissolved TAL metals, total cyanide, and pesticides. All well sampling activities will be recorded in a field book and on a groundwater sampling log presented in Appendix I. Other observations (e.g., well integrity, etc.) will be noted on the well sampling log. The well sampling log will serve as the inspection form for the groundwater monitoring well network.

3.3.5 Well Replacement/Repairs and Decommissioning

Repairs and/or replacement of wells in the monitoring well network will be performed based on assessments of structural integrity and overall performance. Well decommissioning, for the purpose of replacement, should be reported to NYSDEC prior to performance and in the Annual Site Management Report. Well decommissioning without replacement must receive prior approval by NYSDEC. Monitoring wells that are decommissioned because they have been rendered unusable will be reinstalled in the nearest available location, unless otherwise approved by the NYSDEC and NYSDOH. Well abandonment will be performed in accordance with NYSDEC's "Groundwater Monitoring Well Decommissioning Procedures," as outlined in the QAPP (Appendix K).

3.3.6 Termination of Groundwater Monitoring

Groundwater monitoring activities will continue, as determined by NYSDOH and NYSDEC, until residual groundwater concentrations are found to be below NYSDEC standards or have become asymptotic over an extended period. Monitoring will continue until permission to discontinue is granted in writing by NYSDEC and NYSDOH.

3.4 SITE-WIDE INSPECTION

Site-wide inspections will be performed on a regular schedule at a minimum of once a year. Site-wide inspections should also be performed after all severe weather conditions that may affect Engineering Controls or monitoring devices. During these inspections, an inspection form will be completed (Appendix I). The form will compile sufficient information to assess the following:

- Compliance with all ICs, including Parcel 2 usage;
- An evaluation of the condition and continued effectiveness of ECs;
- General conditions at the time of the inspection;
- The site management activities being conducted including, where appropriate, confirmation sampling and a health and safety inspection;
- Compliance with permits and schedules included in the Operation and Maintenance Plan; and
- Confirm that records maintained on the Property are up to date.

3.5 MONITORING QUALITY ASSURANCE/QUALITY CONTROL

All sampling and analyses will be performed in accordance with the requirements of the Quality Assurance Project Plan (QAPP) prepared for the Property (Appendix K). Main Components of the QAPP include:

- QA/QC Objectives for Data Measurement;
- Sampling Program:
  - Sample containers will be properly washed, decontaminated, and appropriate preservative will be added (if applicable) prior to their use by the analytical laboratory. Containers with preservative will be tagged as such.
  - Sample holding times will be in accordance with the NYSDEC ASP requirements.
  - Field QC samples (e.g., trip blanks, coded field duplicates, and matrix spike/matrix spike duplicates) will be collected as necessary.
- Sample Tracking and Custody;
- Calibration Procedures:
  - All field analytical equipment will be calibrated immediately prior to each day's use. Calibration procedures will conform to manufacturer's standard instructions.
  - The laboratory will follow all calibration procedures and schedules as specified in USEPA SW-846 and subsequent updates that apply to the instruments used for the analytical methods.
- Analytical Procedures;
- Data Reduction and Validation: As part of the laboratory deliverables, data validation will be performed in accordance with the USEPA ASP Category B guidelines. Since ASP Category B deliverables will be provided by the laboratory, a Data Usability Summary Report (DUSR) for data validation will not be prepared.
- Internal QC and Checks;
- QA Performance and System Audits;
- Preventative Maintenance Procedures and Schedules; and
- Corrective Action Measures.

3.6 MONITORING REPORTING REQUIREMENTS

Forms and any other information generated during regular monitoring events and inspections will be kept on file on the Property. All forms, and other relevant reporting formats used during the monitoring/inspection events, will be (1) subject to approval by NYSDEC and (2) submitted at the time of the Annual Site Management Report, as specified in the Reporting Plan of the SMP.

All monitoring results will be reported to NYSDEC on an annual basis in the Site Management Report. A report or letter will be prepared for submission subsequent to each sampling event. The monitoring information provided in the Annual Site Management Report will include, at a minimum:

- Date of event;

- Personnel conducting sampling;
- Description of the activities performed;
- Type of samples collected (e.g., groundwater, vapor);
- Copies of all field forms completed (e.g., well sampling logs, chain-of-custody documentation);
- 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 (may be submitted electronically in the NYSDEC-identified format);
- A copy of the laboratory certification;
- Any observations, conclusions, or recommendations; and
- A determination as to whether conditions have changed since the last reporting event.
- Data will be reported in hard copy or digital format as determined by NYSDEC.

Monitoring/Inspection Deliverables

Task	**Frequency***	**Quarterly Reporting Requirement**	**Annual Reporting Requirement**
Site Cover Inspection	Annual, or after flooding or other natural disaster	NA	In Annual Site Management Report
Site-Wide Inspection	Annual, or after flooding or other natural disaster	NA	In Annual Site Management Report
Vapor Mitigation System Inspection	Quarterly, or after flooding or storm event	After each sampling event	In Annual Site Management Report
Groundwater Monitoring	Quarterly	After each sampling event	In Annual Site Management Report

* The frequency of events will be conducted as specified until otherwise approved by NYSDEC and NYSDOH

3.7 CERTIFICATIONS

Site inspections and sampling activities will take place as outlined above. Frequency of inspection is subject to change by NYSDEC. Inspection certification for all ICs and ECs will be submitted to NYSDEC on a calendar year basis and must be submitted by February 1 of the following year. A qualified environmental professional, as determined by NYSDEC, will perform inspection and certification. Further information on the certification requirements are outlined in the Reporting Plan of the SMP.

4.0 OPERATION AND MAINTENANCE PLAN

4.1 INTRODUCTION

The Operation and Maintenance Plan describes the measures necessary to operate and maintain the remedy selected for the Property (i.e., composite cover, vapor mitigation system, and groundwater monitoring). This Operation and Maintenance Plan:

- Includes the steps necessary to allow individuals unfamiliar with the Property to maintain the site cover, SSDS, and monitoring wells;
- Includes an operation and maintenance contingency plan; and,
- Will be updated periodically to reflect changes in Property conditions or the manner in which the site cover, SSDS, or monitoring wells are maintained.

Information on non-mechanical Engineering Controls (i.e. composite cover) can also be found in Section 2.0 - Engineering and Institutional Control Plan. A copy of this Operation and Maintenance Plan, along with the complete SMP, will be kept on the Property. This Operation and Maintenance Plan is not to be used as a stand-alone document, but as a component document of the SMP. The Operation and Management Plan is subject to NYSDEC revision.

4.2 ENGINEERING CONTROL SYSTEM OPERATION AND MAINTENANCE

4.2.1 Site Cover Maintenance

A visual inspection of the site cover will be performed by a qualified environmental professional on an annual basis as outlined in Section 3.2.1. If minor cracking or damage is observed over less than 25 percent of the paved areas, cracks and/or holes will be patched or repaired as required. If cracking and/or other damage is observed over greater than 25 percent of the paved areas, the area will be repaved with asphalt or concrete to restore a thickness of at least four inches.

An example Site Cover Inspection Log is included in Appendix I. Inspection logs and records of any repairs made to the site cover will be included in the Site Management Report.

4.2.2 Sub-slab Depressurization System

4.2.2.1 System Start-Up and Testing

Prior to activating the system, the engineer measured the voltage to the fans to ensure proper operation. The blowers should be operated using the following procedures:

- Check to ensure that all valves are open;
- Turn on the fans;
- Collect vacuum readings and flow rates until steady state condition is reached;
- Adjust valves to balance system with equitable flow rates and vacuums in each branch of system.

At the initial start-up, all gauge readings, including vacuums and flow rates, will be recorded in the system log book, which will be maintained on the Property. During system start-up, the Design Engineer trained a site representative in system inspection and O&M procedures.

Operation of the system will be temporarily suspended during construction. The system will be reactivated and tested as described above prior to occupancy of the building. Any subsequent start-up of the system (e.g., following an emergency shut-down) will be conducted using the same procedures described above.

The system testing described above will be conducted if, in the course of the sub-slab depressurization system lifetime, significant changes are made to the system, and the system restarted.

4.2.2.2 System Operation: Routine Operation Procedures

The Site Representative will conduct system checks on a routine basis. The routine check will consist of collecting flow rate and vacuum readings to ensure that all fans are operational, and noting any unusual conditions such as leaks or odors. If the system is not functioning properly (i.e., the fans not operational or leaks are noted), the Site Representative will immediately notify an emergency contact of the condition. Phone numbers for the emergency contacts will be posted on-site and on the Routine System Check log sheet provided in Appendix I. Routine checks will be conducted weekly during the first month of operation and quarterly thereafter.

4.2.2.3 System Operation: Routine Equipment Maintenance

Routine inspections will be conducted by the O&M Technician, and will consist of adjusting system components to optimize system efficiency and recording all gauge and meter readings (i.e., flow meter, vacuum/pressure gauges) in the system log book and on Routine Inspection Forms (provided in Appendix I). The vapor sampling ports will be inspected on a quarterly basis at the time of each scheduled vapor sampling event. Any minor damage (e.g., broken valve, cracked piping) will be repaired and documented. Vapor sampling ports will be replaced if leaking or unusable. Quarterly vapor discharge sampling and any required maintenance will also be conducted during routine inspections. The quarterly analytical data will be compared to the emissions standards in the NYSDEC publication "Air Guide 1" to assess the need for treatment units as part of the vapor mitigation system. Routine inspections will be conducted on a weekly basis during the first month of system operation, and on a quarterly basis thereafter.

4.2.2.4 System Operation: Non-Routine Equipment Maintenance

An inspection and evaluation of the system will occur whenever there is a shutdown of the vapor mitigation system or after any severe condition such as flooding occurs on the Property. Any damage or operational problems and steps taken to correct the problems will be noted in the field book and reported in the Annual Site Management Report.

4.3 GROUNDWATER MONITORING WELL INSPECTION AND MAINTENANCE

The Property groundwater monitoring wells will be inspected by a qualified environmental professional on a quarterly basis at the time of each scheduled well gauging event. Inspection will consist of lowering a weighted measuring tape to the bottom of the well to ensure that it has not been filled in with silt, and visual assessment of the well casing, cap, and road box. Any minor damage (e.g., missing well cap, cracked riser) will be repaired and documented. If biofouling or silt accumulation has occurred in the monitoring wells, the wells will be physically agitated/surged and redeveloped. Additionally, monitoring wells will be properly decommissioned and replaced (as per the Monitoring Plan), if an event renders the wells unusable.

4.4 MAINTENANCE REPORTING REQUIREMENTS

Maintenance reports and any other information generated during regular operations will be kept on-file on the Property. All reports, forms, and other relevant information generated will be available upon request to the NYSDEC and submitted as part of the Annual Site Management Report, as specified in the Section 5 of this SMP.

4.4.1 Routine Maintenance Reports

Checklists or forms (see Appendix I) will be completed during each routine maintenance event. If damage requiring repair is identified during the inspections, the repair will be documented in a logbook. Records of any repairs made to the site cover or monitoring wells will be included in the Annual Site Management Report. Checklists/forms documenting the maintenance will include, but not be limited to, the following information:

- Date;
- Name, company, and position of person(s) conducting maintenance activities;
- Maintenance activities conducted;
- 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. will be attached to the checklist/form.

4.4.2 Non-Routine Maintenance Reports

During each non-routine maintenance event, a form will be completed which will include, but not be limited to, the following information:

- Date;
- Name, company, and position of person(s) conducting non-routine maintenance/repair activities;
- Presence of leaks;
- Date of repair or other maintenance activities;
- Other repairs or adjustments made to the system;
- 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. will be attached to the checklist/form.

4.5 CONTINGENCY PLAN

Emergencies may include injury to personnel, fire or explosion, environmental release, or serious weather conditions.

4.5.1 Emergency Telephone Numbers

In the event of any environmentally related situation or unplanned occurrence requiring assistance the Owner or Owner's representative(s) should contact the appropriate party from the contact list below. For emergencies, appropriate emergency response personnel should be contacted. Prompt contact should also be made to one of the Property owner's representatives; contact information for current representatives is identified below. These emergency contact lists must be maintained in an easily accessible location on the Property.

Emergency Contact Numbers

Medical, Fire, and Police:	911
One Call Center:	811 OR (800) 272-4480 (3-day notice required for utility markout)
Poison Control Center:	(800) 222-1222
Pollution Toxic Chemical Oil Spills:	(800) 424-8802
NYSDEC Spills Hotline	(800) 457-7362

Other Contact Numbers

Michael Brenner (Owner's Representative)	718-263-3800
Marcus Simons (AKRF)	646-388-9527
Kate Brunner (AKRF)	646-388-9525

* Note: Contact numbers subject to change and should be updated as necessary

4.5.2 Map and Directions to Nearest Health Facility

Site Location: 40-22 College Point Boulevard, at 40th Road

Nearest Hospital Name: Flushing Hospital Center

Hospital Location: 4500 Parsons Boulevard, near 45th Avenue

Hospital Telephone: (718) 670-5000

Directions to the Hospital:

1. Drive NORTH on College Point Boulevard
2. Turn RIGHT onto Roosevelt Avenue
3. Turn RIGHT onto Parsons Boulevard
4. Proceed about 7 blocks to the intersection with 45th Avenue; hospital will be on the left-hand (east) side

Total Distance: 1 mile

Total Estimated Time: 5 to 10 minutes

A map showing the route from the Property to the Hospital is attached as Figure 14.

4.5.3 Response Procedures

4.5.3.1 Emergency Contacts/Notification System

As appropriate, the fire department and other emergency response group will be notified immediately by telephone of the emergency. The emergency telephone number list is found in Section 4.5.1. The list is also posted prominently on the Property and made readily available to maintenance personnel at all times. The route to the hospital is shown on Figure 14.

4.5.3.2 Contamination Contingency Response Actions

All excavation will be continuously monitored for the presence of buried tanks, drums or other containers, sludges, or soil that shows evidence of suspected contamination, such as discoloration, staining, or odors. If any of these are detected, excavation in the area will be halted, and a representative of the Remedial Engineer will notify the NYSDEC immediately. The affected area will be cordoned off and no further work will be performed at that location until the appropriate contaminated materials contingency response is implemented.

Soil management is detailed in Appendix D of this SMP. Any unregistered underground storage tanks will be registered as required by applicable regulations. Any petroleum releases identified, regardless of tank size, must be reported to NYSDEC's Spill Hotline. Any tanks encountered will be cleaned and removed in accordance with Federal, State and local regulations.

5.0 SITE MANAGEMENT REPORTING PLAN

5.1 INTRODUCTION

An Annual Site Management Report will be submitted to NYSDEC following the calendar year reporting period, by February 1. The Site Management Report will be prepared in accordance with NYSDEC Draft DER-10 Technical Guidance for Site Investigation and Remediation requirements. This Site Management Reporting Plan and its requirements are subject to revision by NYSDEC.

This report will include the following:

- Identification of all required EC/ICs required by the Remedial Action Work Plan for Parcel 2;
- An evaluation of the Engineering and Institutional Control Plan and the Monitoring Plan for adequacy in meeting remedial goals;
- Assessment of the continued effectiveness of all Institutional and Engineering Controls for Parcel 2;
- Certification of the EC/ICs;
- Results of the required periodic inspections; and
- All deliverables generated during the reporting period, as specified in Section 2 EC/IC Plan, Section 3 Monitoring Plan and Section 4 Operation and Maintenance Plan.

The Site Management Reporting Plan is subject to NYSDEC revision.

5.2 CERTIFICATION OF ENGINEERING AND INSTITUTIONAL CONTROLS

Information of EC/ICs can be found in the Engineering and Institutional Control Plan portion of the SMP. Inspection of the EC/ICs will occur at a frequency described in Section 3 Monitoring Plan and Section 4 Operation and Maintenance Plan. After the last inspection of the reporting period, the Remedial Engineer (a Professional Engineer licensed to practice in New York State) will sign and certify the document. The document will certify that:

- ECs/ICs are unchanged from the previous certification;
- They remain in-place and effective;
- The systems are performing as designed;
- Nothing has occurred that would impair the ability of the controls to protect the public health and environment;
- Nothing has occurred that would constitute a violation or failure to comply with any operation and maintenance plan for such controls;
- Access is available to the Property by NYSDEC and NYSDOH to evaluate continued maintenance of such controls; and
- Site usage is compliant with the environmental easement.

The signed certification will be included in the Annual Site Management Report (see Section 5.4). A copy of a blank certification form is included in Appendix I.

5.3 SITE INSPECTIONS

5.3.1 Inspection Frequency

All inspections will be conducted at the frequency specified in the schedules provided in Section 3 Monitoring Plan and Section 4 Operation and Maintenance Plan of this SMP. At a minimum, a Property-wide inspection will be conducted:

- Annually;
- When a breakdown of the treatment systems has occurred; and
- Whenever a severe condition has taken place, such as a 5-year storm event (greater than 4.5 inches of rain within a 24-hour period) or flooding event that may affect the EC.

5.3.2 Inspection Forms, Sampling Data, and Maintenance Reports

All inspections and monitoring events will be recorded on the appropriate forms – Site Cover Inspection Form, SSDS Inspection Form, Well Sampling and Inspection Log, and Vapor Sampling Form (Appendix I). Additionally, a general Property-wide inspection form will be completed during the Property-wide inspection (see Appendix I). These forms are subject to NYSDEC revision.

All applicable inspection forms and other records (including all sampling data of any media on Parcel 2 and system maintenance reports) generated for Parcel 2 during the calendar year will be included in the Annual Site Management Report.

5.3.3 Evaluation of Records and Reporting

The results of the inspection and monitoring data will be evaluated as part of the EC/IC certification to confirm that the:

- EC/ICs are in place, are performing properly, and remain effective;
- The Monitoring Plan is being implemented;
- Operation and maintenance activities are being conducted properly; and, based on the above items;
- The remedy continues to be protective of public health and the environment and is performing as designed in the RAWP and FER.

5.4 SITE MANAGEMENT REPORT

The Site Management Report will be submitted annually and will be submitted by February 1 of the calendar year following the reporting period. Groundwater and soil vapor monitoring reports will be submitted quarterly after each sampling event for the first year, and as determined by NYSDEC thereafter, with those results also incorporated into the Annual Site Management Report. The Annual Site Management Report will include:

- EC/IC certification;
- All applicable inspection forms and other records generated for Parcel 2 during the reporting period;
- A summary of any discharge monitoring data and/or information generated during the reporting period with comments and conclusions;

- Cumulative data summary tables and/or graphical representations of contaminants of concern by media (groundwater, soil vapor), which include a listing of all compounds analyzed along with the applicable standards, with all exceedances highlighted;
- Results of all analyses, copies of all laboratory data sheets, and the required laboratory data deliverables required for all points sampled during the calendar year (also to be submitted electronically in the NYSDEC-specified format);
- A performance summary for all treatment systems at the Property during the calendar year, including information such as:
  - The number of days the system was run for the reporting period;
  - The recorded flow rates;
  - A description of breakdowns and/or repairs along with an explanation for any significant downtime;
  - A summary of the performance and/or effectiveness monitoring;
  - Comments, conclusions, and recommendations based on data evaluation; and
  - Description of the resolution of performance problems.
- An evaluation, which will address the following:
  - The compliance of the remedy with the requirements of the Parcel 2 RAWP and FER;
  - The performance and effectiveness of the remedy;
  - The operation and the effectiveness of the site cover and vapor mitigation system, including identification of any needed repairs or modifications;
  - Any new conclusions or observations regarding contamination based on inspections or data generated by the Monitoring Plan for the media being monitored; and
  - Recommendations regarding any necessary changes to the remedy and/or Monitoring Plan.
- A figure showing sampling and well locations, and significant analytical values at sampling locations; and
- Comments, conclusions, and recommendations, based on an evaluation of the information included in the report, regarding EC/ICs at Parcel 2.

The Site Management Report will be submitted, in hard-copy format, to the Region 2 NYSDEC offices, located at 41-40 21st Street, Long Island City, New York, and in electronic format to NYSDEC and NYSDOH.

TABLES

FIGURES

APPENDIX A
PARCEL 2 METES AND BOUNDS

APPENDIX B

ENVIRONMENTAL EASEMENT (CD)

APPENDIX C

INTERIM REMEDIAL MEASURE WORK PLAN AND REMEDIAL ACTION WORK PLAN (INCLUDING STIPULATIONS, ADDENDUM AND MODIFICATIONS) (CD)

APPENDIX D
SOIL MANAGEMENT PLAN

APPENDIX E
CONSTRUCTION HEALTH AND SAFETY PLAN

APPENDIX F

STORM WATER POLLUTION PREVENTION PLAN (CD)

APPENDIX G
ELECTRONIC DATABASE INFORMATION

APPENDIX H
VAPOR MITIGATION SYSTEM DOCUMENTATION

APPENDIX I

SITE INSPECTION AND MONITORING FORMS

APPENDIX J
MONITORING WELL CONSTRUCTION LOGS

APPENDIX K
QUALITY ASSURANCE PROJECT PLAN