July 28, 2008

## 1800 SOUTHERN BOULEVARD BRONX, NEW YORK

# **REMEDIAL ACTION WORK PLAN** NYSDEC BCP Number: Pending

**Prepared** for:

SB 1800 LLC 100 Park Avenue Suite 1600 New York, New York 11717

## Remedial Engineering, P.C. Environmental Engineers

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#### CERTIFICATION

I, Omar Ramotar, P.E., am currently a registered professional engineer licensed by the State of New York. I have primary direct responsibility for implementation of the remedial program for the 1800 Southern Boulevard Site (NYSDEC BCA Index No. Pending).

I certify that the Site description presented in this RAWP is identical to the Site descriptions presented in the Brownfield Cleanup Application for the 1800 Southern Boulevard Site and related amendments.

I certify that this plan includes proposed use restrictions, Institutional Controls, Engineering Controls, and plans for all operation and maintenance requirements applicable to the Site and provision for development of an Environmental Easement to be created and recorded pursuant ECL 71-3605 [if Track 1 is not achieved]. This RAWP requires that all affected local governments, as defined in ECL 71-3603, will be notified that such Easement has been recorded. This RAWP requires that a Site Management Plan must be submitted by the Applicant for the continual and proper operation, maintenance, and monitoring of all Engineering Controls employed at the Site, including the proper maintenance of all remaining monitoring wells, for approval by the Department [if Track 1 is not achieved].

I certify that this RAWP has a plan for transport and disposal of all soil, fill, fluids, and other material removed from the property under this Plan, and that all transport and disposal will be performed in accordance with all local, State and Federal laws and requirements. All exported material will be taken to facilities licensed to accept this material in full compliance with all Federal, State, and local laws.

I certify that this RAWP has a plan for import of all soils and other material from offsite and that all activities of this type will be in accordance with all local, State and Federal laws and requirements.

I certify that that this RAWP has a plan for nuisance control during the remediation and all invasive development work, including a dust, odor and vector suppression plan and that such plan is sufficient to control dust, odors and vectors and will prevent nuisances from occurring.

I certify that all information and statements in this certification are true. I understand that a false statement made herein is punishable as Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law.

 NYS Professional Engineer #
 Date
 Signature

It is a violation of Article 130 of New York State Education Law for any person to alter this document in any way without the express written verification of adoption by any New York State licensed engineer in accordance with Section 7209(2), Article 130, New York State Education Law.

## LIST OF ACRONYMS

Acronym	Definition
ARARs	Applicable or Relevant and Appropriate Requirements
ASP	Analytical Services Protocol
AWQSGVs	Ambient Water Quality Standards and Guidance Values
BCA	Brownfield Cleanup Agreement
ВСР	Brownfield Cleanup Program
bls	Below land surface
BSA	New York City Board of Standards and Appeals
BTEX	Benzene, toluene, ethylbenzene, and xylenes
C&D	Construction and Demolition
CAMP	Community Air Monitoring Plan
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
COC	Certificate of Completion
COCs	Compounds of Concern
СРР	Community Participation Plan
CQAP	Construction Quality Assurance Plan
CRZ	Contamination Reduction Zone
CY	Cubic Yards
DER	Division of Environmental Remediation
DO	Dissolved Oxygen
DRO	Diesel Range Organics
DSHM	Division of Solid and Hazardous Materials
DSNY	New York City Department of Sanitation

Acronym	Definition
DUSR	Data Usability Summary Report
EC	Engineering Control
ECL	Environmental Conservation Law
EDD	Electronic data deliverable
EZ	Exclusion Zone
FDNY	New York City Fire Department
FER	Final Engineering Report
FS	Feasibility Study
FSI	Focused Subsurface Investigation
GRA	General Response Action
HASP	Health and Safety Plan
HAZWOPER	Hazardous Waste Operation Worker
HDPE	High Density Polyethylene
HRO	Heavy Range Organics
IHWDS	Inactive Hazardous Waste Disposal Site
IC	Institutional Control
IRM	Interim remedial measures
L/min	Liters per minute
mg/kg	Milligrams per kilogram, equal to 1,000 µg/kg
µg/kg	Micrograms per kilogram, equal to 0.001 mg/kg
μg/L	Micrograms per liter
MS	Matrix Spike
MSDs	Matrix Spike Duplicates
MTBE	Methyl tertiary butyl-ether

Acronym	Definition
MW	Monitoring well
NYCDEP	New York City Department of Environmental Protection
NYCDOB	New York City Department of Buildings
NYCRR	New York Code of Rules and Regulations
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
NYSDOT	New York State Department of Transportation
OM&M	Operation, Maintenance and Monitoring
ORP	Oxidation Reduction Potential
OSHA	Occupational Safety and Health Administration
PAHs	Polycyclic aromatic hydrocarbons
PCBs	Polychlorinated biphenyls
PCE	Tetrachloroethene
PID	Photoionization detector
PPE	Personal protection equipment
ppm	Parts per million, equivalent to mg/kg
PVC	Polyvinyl chloride
QAPP	Quality Assurance Project Plan
QA/QC	Quality Assurance/Quality Control
RAOs	Remedial Action Objectives
RAWP	Remedial Action Work Plan
RCRA	Resource Conservation and Recovery Act
RI	Remedial Investigation
RSCOs	Recommended Soil Cleanup Objectives

Acronym	Definition
SCGs	Standards, Criteria and Guidance
SCOs	Soil Cleanup Objective
SF	Square feet
SMP	Site Management Plan
SoMP	Soil Management Plan
SOP	Site Operations Plan
SPH	Separate-Phase Petroleum Hydrocarbon
STARS	Spill Technology and Remediation Series
SVE	Soil Vapor Extraction
SVOCs	Semivolatile Organic Compounds
SWPPP	Stormwater Pollution Prevention Plan
SZ	Support Zone
TAL	Target Analyte List
TAGM	Technical and Administrative Guidance Memorandum
TBC	To Be Considered
TCE	Trichloroethene
TCL	Target Compound List
TCLP	Toxicity Characteristic Leaching Procedure
TOC	Total Organic Carbon
TPH	Total Petroleum Hydrocarbons
TSCA	Toxic Substance Control Act
USCS	United Soil Classification System
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey

Acronym	Definition
UST	Underground Storage Tank
VOCs	Volatile Organic Compounds

#### **EXECUTIVE SUMMARY**

SB 1800 LLC ("Requestor") has submitted an application to the Brownfield Cleanup Program (BCP) with the New York State Department of Environmental Conservation (NYSDEC) in August 2008, to remediate a 0.27-acre property located at 1800 Southern Boulevard in the Borough of the Bronx, New York City, New York (Site). The Requestor is a Volunteer in the BCP for the Site, identified as 1800 Southern Boulevard (BCP site number is pending).

The proposed Site redevelopment plan consists of construction of a ten story low income housing building that will include ground level retail space and a subgrade parking area.

#### Site Description/Physical Setting/Site History

The Site is located at 1800 Southern Boulevard, Borough of the Bronx, New York City, New York 10460 and is identified as Block 2984, Lots 1 and 7 on the New York City Tax Map. A Site Location Map (Figure 1) shows the Site location. The site is a triangular shaped parcel of land approximately 0.27-acres in size situated at the southern tip of a city block where Boston Road and Southern Boulevard cross with Southern Boulevard to the west and Boston Road to the east and south. Currently, the site includes an area occupied by a vacated gas station and a fenced lot largely covered with exposed soil or overgrown with vegetation. The vacated gas station was an Amoco gas station that has been vacant since 2003. The fenced area was a car wash that has been vacant since 1993. All of the facilities associated with the car wash have been demolished and this portion of the Site is currently a vacant open lot.

Historic storage, transfer, and usage of petroleum products have resulted in impacts to soil, soil vapor, and groundwater.

#### Summary of the Remedial Investigation

Roux Associates completed a RI of soil, groundwater, and soil vapor associated with the release of petroleum at the Site as identified by Delta Environmental Consultants in historic Site investigations. The RI was performed in June 2008, during which the following was performed:

- Seven soil borings were advanced;
- Eight soil samples were collected and submitted for laboratory analysis;

- Two soil vapor samples and 1 air sample were collected and submitted for laboratory analysis; and
- Six groundwater samples were collected from six soil borings and submitted for laboratory analysis.

The results of the RI indicate that onsite soil is contaminated with petroleum-related VOCs in excess of the NYSDEC Sub-part 375.6 unrestricted use and restricted residential use standards. Concentrations of VOCs, SVOCs, and metals in soil require remediation.

The investigation also indicated that gasoline related compounds were detected in soil vapor at concentrations above ambient air.

Onsite and offsite groundwater is impacted with gasoline related compounds in excess of the AWQSGVs. Concentrations of VOCs in groundwater require remediation.

#### **Qualitative Human Health Exposure Assessment**

A Qualitative Human Health Exposure Assessment was conducted as part of the RI. A summary of the findings are:

- Probable sources of contamination in soil and groundwater at the Site were spills or leaks from former USTs containing petroleum, direct discharge to the ground of petroleum associated with historical operations of the Site that included vehicular maintenance.
- The contaminants at the Site exist in the form of residual material adsorbed to soil particles in the saturated and unsaturated zones and compounds dissolved in groundwater. The leaching of contaminants from soil serves as an ongoing source of contamination to groundwater beneath portions of the Site. In addition, VOCs are migrating through volatilization of compounds into soil vapor.
- Potential onsite receptors include occupational workers, construction workers, visitors, or trespassers. Future onsite receptors are also expected to include residents, guests, and retail customers/workers, depending on the potential future use of the property. The potential offsite receptors include offsite workers, visitors, residents, and trespassers.
- Contaminated soil is limited to specific areas of the Site and at depths below the immediate surface. However, there is the potential for direct exposure to contaminated soil by anyone digging in the contaminated area.
- Volatilization of VOCs has been demonstrated at the Site. There is no current potential for migration of VOCs into indoor air because there are no existing buildings onsite.

• The potential and completed exposure pathways will be addressed by this RAWP through source removal and engineering and institutional controls.

#### Summary of the Remedy

The components of the selected remedy are as follows:

- 1. Excavation of soil/fill exceeding Track 2 restricted residential Soil Cleanup Objectives (SCOs) in the upper 15 feet of the Site;
- 2. Groundwater remediation during construction activities consisting of excavation dewatering, treatment and offsite disposal;
- 3. Site Monitoring of airborne VOCs and particulates in accordance with a NYSDEC approved Community Air Monitoring Plan (CAMP) for all intrusive and soil handling activities;
- 4. Implementation of proper dust and odor suppression techniques for all intrusive and soil handling activities;
- 5. Import of materials to be used for backfill and cover in compliance with: (1) the Sub-part 375-6 restricted residential SCOs, (2) all Federal, State and local rules and regulations for handling and transport of material;
- 6. Implementation of a Soil Erosion and Sediment Control Plan;
- 7. Screening for indications of contamination (by visual means, odor, and monitoring with PID) of all excavated soil during any intrusive Site work;
- 8. Collection and analysis of end-point soil samples to evaluate the performance of the remedy with respect to attainment of Track 2 restricted residential SCOs;
- 9. Appropriate offsite disposal of all material removed from the Site in accordance with all Federal, State and local rules and regulations for handling, transport, and disposal;
- 10. Post-remediation groundwater monitoring for a period of two years;
- 11. Post-remediation evaluation of potential soil vapor intrusion concerns;
- 12. Construction and maintenance of an engineered cover consisting of asphalt covered roads, concrete covered sidewalks, engineered landscaped areas, and concrete building slabs to prevent human exposure to residual contaminated soil/fill remaining under the Site (if Track 1 is not achieved);
- 13. Recording of an Environmental Easement, including Institutional Controls, to prevent future exposure to any residual contamination remaining at the Site (if Track 1 is not achieved);

- 14. Publication of a Site Management Plan for long term management of residual contamination as required by the Environmental Easement, including plans for: (1) Institutional and Engineering Controls, (2) monitoring, (3) operation and maintenance and (4) reporting (if Track 1 is not achieved);
- 15. All responsibilities associated with the Remedial Action, including permitting requirements and pretreatment requirements, will be addressed in accordance with all applicable Federal, State and local rules and regulations; and
- 16. Installation of a vapor barrier to prevent potential water seepage and vapor migration, if any, from the underlying and adjacent soils.

Although not a component of the selected remedy, the current proposed Site development plan includes a sub-grade parking garage that will have an active ventilation system designed to meet NYCDOB requirements. This ventilation system will provide further protection from potential accumulation of VOCs in the basement in the unlikely breach of the vapor barrier.

#### **1.0 INTRODUCTION**

SB 1800 LLC ("Requestor") submitted an application to the Brownfield Cleanup Program (BCP) with the New York State Department of Environmental Conservation (NYSDEC) in August 2008, to remediate a 0.27-acre property located at 1800 Southern Boulevard in the Borough of the Bronx, New York City, New York (Site). The Requestor is a Volunteer in the BCP for the Site, identified as 1800 Southern Boulevard (BCP site number is pending).

The proposed Site redevelopment plan consists of construction of a ten story low income housing building that will include ground level retail space and a subgrade parking area.

This Remedial Action Work Plan (RAWP) summarizes the nature and extent of contamination as determined from data gathered during the Remedial Investigation (RI), performed in June 2008 and historical site investigations. It provides an evaluation of a Track 1 cleanup and Track 2 Restricted Residential Remedial Action alternative, their associated costs, and the recommended and preferred remedy. The remedy described in this document is consistent with the procedures defined in DER-10 and complies with all applicable standards, criteria, and guidance. The remedy described in this document also complies with all applicable Federal, State and local laws, regulations and requirements. The NYSDEC and New York State Department of Health (NYSDOH) have not yet made a determination whether this Site poses a significant threat to human health and the environment. The RI for this Site did not identify fish and wildlife resources.

A formal Remedial Design document will not be prepared.

#### **1.1 Site Location and Description**

The Site is located at 1800 Southern Boulevard, Borough of the Bronx, New York City, New York 10460 and is identified as Block 2984, Lots 1 and 7 on the New York City Tax Map. A Site Location Map (Figure 1) shows the Site location. The site is a triangular shaped parcel of land approximately 0.27-acres in size situated at the southern tip of a city block where Boston Road and Southern Boulevard cross with Southern Boulevard to the west and Boston Road to the east and south (see Figure 2). A boundary map is attached to the BCP application.

-1-

Currently, the site includes an area occupied by a vacated gas station and a fenced lot largely covered with exposed soil or overgrown with vegetation. The property is also known by 1776-1778 Southern Boulevard and 1800 to 1808 Southern Boulevard.

The vacated gas station was an Amoco gas station that has been vacant since 2003. The fenced area was a car wash that has been vacant since 1993. All of the facilities associated with the car wash have been demolished and this portion of the Site is currently a vacant open lot.

#### **1.2 Contemplated Redevelopment Plan**

The Remedial Action to be performed under the RAWP is intended to make the Site protective of human health and the environment consistent with the contemplated end use. The proposed redevelopment plan and end use is described here to provide the basis for this assessment. However, the Remedial Action contemplated under this RAWP may be implemented independent of the proposed redevelopment plan.

The proposed Site redevelopment plan consists of construction of a ten story low income housing building that will include ground level retail space and a subgrade parking area.

## **1.3 Description of Surrounding Property**

The following sections provide a summary of the surrounding properties, including all adjoining properties and the general surrounding area.

## **1.3.1 Adjoining Property**

The land use surrounding the Site is a combination of commercial, recreational, and residential areas.

Sensitive receptors, including schools, daycare facilities, and hospitals, are not located on adjoining properties. Provided below is a description of the adjoining properties.

- <u>East</u>: East of the Site is Boston Road. There is an elevated MTA subway track running above Boston Avenue with a vacant parking lot and a mixture of commercial and residential properties beyond.
- <u>West</u>: West of the Site is Southern Boulevard with Crotona Park East road, Crotona Park, and a mixture of commercial and residential properties beyond.

<u>North</u>: North of the Site is a self storage center with East 175<sup>th</sup> Street and a vacant lot beyond.

South: South of the Site is the intersection of Boston Road and Southern Boulevard with the 174<sup>th</sup> Street MTA Station located above this intersection (elevated tracks) a vacant lot and a mixture of commercial and residential properties beyond.

#### **1.3.2 General Surrounding Area**

According to New York City zoning maps (last revised on May 9, 2007), the general area surrounding the Site is divided into residential and commercial zoning classifications.

#### 2.0 DESCRIPTION OF REMEDIAL INVESTIGATION FINDINGS

The Site was investigated by Roux Associates, Inc. in June 2008. A summary report was submitted to NYSDEC in July 2008 ] and has not yet been approved by NYSDEC.

#### 2.1 Summary of Remedial Investigation Performed

Roux Associates completed a RI of soil, groundwater, and soil vapor associated with the release of petroleum at the Site as identified by Delta Environmental Consultants in historic Site investigations. The RI was performed in June 2008, during which the following was performed:

- Seven soil borings were advanced;
- Eight soil samples were collected and submitted for laboratory analysis;
- Two soil vapor samples and 1 air sample were collected and submitted for laboratory analysis; and
- Six groundwater samples were collected from six soil borings and submitted for laboratory analysis.

A summary of the sampling locations and analyses performed is provided in Table 1. A figure showing sampling locations is included as Figure 2.

#### 2.1.1 Soil Boring and Sampling

Seven soil borings (SB-101 to SB-107) were completed during the RI in June 2008, five onsite and two offsite (SB-104 and SB-105). One soil sample was analyzed from six of the soil borings and two soil samples were analyzed from one soil boring (SB-101). At each soil boring location, soil samples were collected using a Geoprobe direct push sampler. Soil samples were collected in five-foot increments to the completion depth indicated in the Soil Boring Logs (Appendix A). Each five-foot increment was collected in dedicated acetate sleeves. The acetate sleeve was laid on a piece of polyethylene sheeting and opened. Soil in the acetate sleeve were separated into approximately two-foot long sections and screened with a PID. Following the PID screening, a portion of soil from each two-foot long section was placed into pre-cleaned sample jars and placed on ice in a cooler at 4°C. All remaining soils were visually characterized according to the Unified Soils Classification System (USCS) and placed into zip-lock plastic storage bags and homogenized. The bags were allowed to stand for approximately 30 minutes and the bag headspace was monitored for organic vapors with a PID. All soil samples were analyzed for volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), metals, PCBs, and pesticides. Analytical results for these compounds are summarized on Table 2 through Table 6, respectively. Ten VOCs (acetone, benzene, n-butylbenzene, ethylbenzene, n-propylbenzene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, toluene, m&p xylenes, and o-xylene), one SVOC (naphthalene), and six metals (chromium, copper, lead, mercury, nickel, and zinc) were identified in at least one soil boring at concentrations above NYSDEC Sub-part 375-6 unrestricted use standards (Figure 3). There were no additional compounds detected above NYSDEC unrestricted use standards in any soil boring.

Seven VOCs (benzene, ethylbenzene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, toluene, m&p xylenes, and o-xylene), and one metal (lead) were identified in soil boring SB-106 at concentrations above NYSDEC Sub-part 375-6 restricted residential use standards (Figure 4). Two metals (copper and lead) were also detected at concentrations above NYSDEC restricted residential use standards in soil boring SB-101. There were no additional compounds detected above NYSDEC unrestricted use standards in any soil boring.

#### 2.1.2 Soil Vapor Sampling

Two soil vapor samples were collected from the Site (SV-201 and SV-202). SV-201 was collected adjacent to MW-1, a monitoring well installed by Delta during a previous Site Investigation that identified concentrations of VOCs in groundwater. SV-202 was collected at the location of the former car wash. The soil vapor samples were collected from temporary soil vapor collection points. One ambient air sample was also collected.

Soil vapor and air samples collected during the RI were analyzed for VOCs using USEPA method TO 15. A summary of analytical results for soil vapor samples collected as part of the Roux Associates RI is presented as Table 7. Gasoline related VOCs were detected at concentrations above ambient air, however, NYSDEC and the NYSDOH do not have specific soil vapor standards or guidelines for comparison.

#### 2.1.3 Groundwater Sampling

Six groundwater samples were collected during the RI from six soil borings (SB-101 to SB-105 and SB-107). An attempt to collect groundwater from SB-106 was unsuccessful due to poor recovery of groundwater. Of these 6 samples, one was located hydraulically upgradient (SB-107W), and two were located offsite hydraulically downgradient (SB-104W and SB-105W). Hydraulic gradient was determined by Delta during previous Site investigations.

Groundwater samples SB-102W through SB-105W were analyzed for VOCs, SVOCs, metals, PCBs, and pesticides. Groundwater samples SB-101W and SB-107W were analyzed for VOCs only and VOCs and SVOCs, respectively, due to insufficient sample volume. Summaries of VOCs, SVOCs, metals, PCBs, and pesticides are presented as Table 8 through Table 12 respectively. Nine VOCs (acetone, benzene, ethylbenzene, MTBE, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, toluene, m&p xylenes, and o-xylene), one SVOC (naphthalene), eight metals (arsenic, beryllium, chromium, copper, lead, manganese, nickel, and sodium) were identified at concentrations above NYSDEC AWQSGV in at least one groundwater sample (Figure 5). At least one compound was detected above NYSDEC awQSGV in every sample. There were no additional compounds detected above NYSDEC unrestricted use standards in any groundwater sample.

Concentrations of Total BTEX compounds (benzene, toluene, ethylbenzene, and xylenes) ranged from  $1.5 \ \mu g/L$  in downgradient sample SB-105W to  $40,470 \ \mu g/L$  in upgradient sample SB-107W. Onsite groundwater samples (SB-107W is actually on the far upgradient property boundary) ranged from 391  $\mu g/L$  (SB-103W) to 4,710  $\mu g/L$  (SB-101W).

#### 2.1.4 Documentation and Summary of RI Findings

The results of the RI indicate that onsite soil is contaminated with petroleum-related VOCs in excess of the NYSDEC Sub-part 375.6 unrestricted use and restricted residential use standards. Concentrations of VOCs, SVOCs, and metals in soil require remediation.

The investigation also indicated that gasoline related compounds were detected in soil vapor at concentrations above ambient air.

Onsite and offsite groundwater is impacted with gasoline related compounds in excess of the AWQSGVs. Concentrations of VOCs in groundwater require remediation.

#### 2.2 Significant Threat

The NYSDEC and NYSDOH have not yet determined whether this Site poses a significant threat to human health and the environment. Notice of the determination will be provided for public review. A copy of the notice will be included in Appendix B upon receipt from NYSDEC.

#### 2.3 Site History

The following describes the operational history of the Site.

#### 2.3.1 Site Operational History

Based on a 2007 Phase I Environmental Site Assessment of the Site conducted by ATC Associates, prior to 1940 the Site was undeveloped with the surrounding areas being industrial and residential. Between 1940 and 1960, the Site was used as a filling station, auto repair facility, and a car wash. The surrounding areas were primarily commercial, professional, and residential. In approximately 1993, the car wash was no longer in service and, in 2003, the gas station was no longer in service.

The following is a list of the known previous operators and/or generic uses at the site, with approximate periods of operation.

#### **Former Gasoline Station**

- 2003 to Present Vacant
- 1988 to 2003 Amoco Oil Company
- 1972 to 1988 Getty Oil Company (Eastern Operations), Inc.
- 1958 to 1972 Getty Oil Company
- 1940 to 1958 Auto Repair Facility and Filling Station
- Prior to 1940 Undeveloped

#### Former Car Wash

- 1993 to Present Vacant
- 1956 to 1993 Car wash
- 1940 to 1956 Car wash, filling station, metal polishing facility
- upholstery shop, paint supply company
- Prior to 1940 Undeveloped

#### 2.3.2 Site Ownership

Ownership of the Site is presented in the BCP Application.

#### 2.3.3 Site Investigation and Remediation History

The following section provides a summary of the investigation and remediation history of areas that include the Site.

#### 2.3.3.1 2007 Phase I

A Phase I report, conducted in October 2007 by ATC Associates, Inc. identified the Site as a former gasoline station and considered the presence of historical tanks at the Site a recognized environmental concern. That report indicates that there were four 4,000-gallon capacity gasoline tanks at the Site that were closed/removed in August 2003.

#### 2.3.3.2 2003 Subsurface Hydrocarbon Assessment Report

Delta Environmental Consultants, Inc. (Delta) conducted a Subsurface Hydrocarbon Assessment at the Site between February 2003 and July 2003.

As part of a baseline divestment investigation, Delta advanced five soil borings in February 2003 and collecting soil and groundwater samples from each boring for analysis of VOCs. Analytical results of soil samples did not indicate any VOCs in soil that exceed NYSDEC unrestricted use standards. Groundwater samples identified between one and 13 VOCs that exceeded NYSDEC AWQSGVs. Total BTEX concentrations in groundwater samples ranged from 7  $\mu$ g/L in SB-4 to 11,273  $\mu$ g/L in SB-2.

In July 2003, four monitoring wells (MW-1 to MW-4) were installed at the Site and three groundwater samples were collected (MW-1 to MW-3). MW-4 was not sampled as it was dry. Groundwater samples identified between one and 13 VOCs that exceeded NYSDEC AWQSGVs. Total BTEX concentrations in groundwater samples ranged from 20  $\mu$ g/L in MW-3 to 22,512  $\mu$ g/L in MW-1.

Based on the presence of VOC concentrations in groundwater in excess of NYSDEC AWQSGVs NYSDEC Spill Number 02-12264 was opened on March 13, 2003. The spill number is still currently open.

#### 2.3.3.3 2003 Underground Storage Tank Excavation Assessment Report

Delta Environmental Consultants, Inc. (Delta) prepared an Underground Storage Tank Excavation Assessment Report to document the results of gasoline tank and pump island excavation at the Site between July 2003 and August 2003.

Between July 24, 2003 and August 1, 2003 Salamone Brothers, Inc. excavated four 4,000-gallon capacity double walled steel gasoline USTs from a single excavation. The gasoline tanks were observed to be in good condition with no visible holes or areas of pitting. Six post-excavation sidewall and four post-excavation bottom samples were collected for VOC analysis. Sidewall samples were collected from 7 feet bls and bottom samples were collected from 12 feet bls.

Five pump island dispensers and associated piping were excavated from the Site between July 24, 2003 and August 1, 2003. Following excavation five post excavation samples were collected from the pump island dispenser areas and three samples were collected from the piping run areas for analysis of VOCs. All samples were collected from two feet below land surface.

Analytical results of post excavation soil samples indicated that 14 of 18 post excavation samples exceeded NYSDEC TAGM 4046 soil cleanup objectives. Compared to Part 375 standards, 13 of 18 post excavation samples exceed Unrestricted Use standards and 4 of 18 samples exceed Restricted Residential standards. Groundwater samples identified between one and 13 VOCs that exceeded NYSDEC AWQSGVs. Total BTEX concentrations in groundwater samples ranged from 7  $\mu$ g/L in SB-4 to 11,273  $\mu$ g/L in SB-2.

During tank excavation, approximately 226 tons of petroleum impacted soil were transported from the Site and disposed of in Carteret, New Jersey.

#### 2.4 Geological Conditions

#### 2.4.1 Geology

The Site contains shallow occurring bedrock (approximately 24 feet bls) that is directly overlain by weathered rock and mix of sand, silt, and clay in varying thickness. Evidence of fill material was observed at depths ranging from zero to 5 feet bls. Soil boring logs generated during Roux Associates June 2008 RI are attached as Appendix A

#### 2.4.2 Hydrogeology

Groundwater at the Site has been measured from approximately 6 to 10 feet bls. In general, Delta determined during their 2003 subsurface hydrocarbon assessment that groundwater flows in a northeasterly direction, perpendicular to the long axis of the site.

#### **2.5** Contamination Conditions

The following sections provide a summary of the Site contamination identified during the RI.

#### 2.5.1 Conceptual Model of Site Contamination

Site soil and groundwater are contaminated with petroleum-related VOCs in excess of the NYCRR Sub-part 375 Unrestricted Use SCOs and AWQSGVs. Metals linked with urban fill have also been detected in soil in excess of the NYCRR Sub-part 375 Unrestricted Use SCOs. Petroleum disposal is likely attributable to a combination of leaks over time associated with one or more of the former USTs that were removed from the Site as part of the 2003 UST removal, leaks over time from underground piping associated with the USTs; or surface spills over time associated with fuel transfer or vehicular maintenance activities.

#### 2.5.2 Identification of Standards, Criteria and Guidance

SCGs are promulgated requirements ("standards" and "criteria") and non-promulgated guidance ("guidance") that govern activities that may affect the environment and are used by the DER at various stages in the investigation and remediation of a site. SCGs incorporate both the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended

by the Superfund Amendments and Reauthorization Act of 1986 (CERCLA) concept of "applicable or relevant and appropriate requirements" (ARARs) and the United States Environmental Protection Agency's (USEPA) "to be considered" (TBCs) category of non-enforceable criteria or guidance. SCGs applicable to the Site are as follows:

#### SCGs for Soil

The SCGs for soil were developed to remediate impacts that are the result of historic releases based on a restricted residential use scenario and the reasonably anticipated future use of the Site as a residential building with ground level retail. Therefore, the SCGs for soil are the restricted residential cleanup criteria, consistent with the criteria contained in the 6 NYCRR Part 375 Regulations. The selection of the appropriate SCG for soil will be determined based upon the results of the alternatives analysis presented in Section 3.1.

In addition, the unrestricted use criteria presented in the Part 375 Regulations are used in this RAWP to evaluate an unrestricted use remedial alternative, as required for the alternatives analysis portion of this document.

SCGs for soil for the protection of groundwater and the protection of ecological resources were considered, however, were determined to be not applicable based on site-specific conditions. In accordance with the Part 375 Regulations, the protection of groundwater soil cleanup objectives may not be applicable where:

- The groundwater standard contravention is the result of an onsite source which is addressed by the remedial program; and
- An environmental easement will be put in place which provides for a groundwater use restriction on the site as set forth in paragraph 375-1.8(h)(2).

The Department determines that contaminated groundwater at the site:

- Is not migrating, or likely to migrate, offsite; or
- Is migrating, or is likely to migrate, offsite, however, the remedy includes controls or treatment to address offsite migration; and
- The Department determines the groundwater quality will improve over time.

In this situation, one or more of these conditions will be met and therefore, use of SCGs for soil for protection of groundwater is not applicable.

In accordance with the Part 375 Regulations, protection of ecological resources soil cleanup objectives do not and/or will not apply to sites or portions of sites where the condition of the land (e.g., paved, covered by impervious surfaces, buildings and other structures) precludes the existence of an ecological resource that constitutes an important component of the environment. At this site, the entire onsite area will be either paved, covered by buildings, or be a landscaped area; therefore, use of SCGs for protection of ecological resources is not applicable.

In addition to the Part 375 Regulations, the following SCGs apply to soil:

- 6 NYCRR Part 371 Identification and Listing of Hazardous Wastes (November 1998);
- 6 NYCRR Part 364 NYS Waste Transporter Permits;
- 6 NYCRR Part 360 and Part 364 NYS Solid Waste Management Requirements; and
- 6 NYCRR Part 372 Hazardous Waste Manifest System and Related Standards for Generators, Transporters and Facilities (November 1998).

#### SCGs for Groundwater

Based upon the evaluation of the current groundwater data, the following SCGs for the groundwater were identified:

- New York State Groundwater Quality Standards 6 NYCRR Part 703; and
- NYSDEC Ambient Water Quality Standards and Guidance Values TOGS 1.1.1.

#### SCGs for Soil Vapor

The following SCGs for the soil vapor were identified:

- NYSDOH Indoor Air Sampling & Analysis Guidance (August 8, 2001 or subsequent update); and
- NYSDOH Guidance for Evaluating Soil Vapor Intrusion in the State of New York (draft October 2004 or subsequent final draft).

In addition, the following guidance documents are applicable to the Site for all media:

- NYSDEC Draft DER-10 Technical Guidance for Site Investigation and Remediation -December 2002 (or later version if available);
- NYSDEC Draft Brownfield Cleanup Program Guide May 2004; and
- New York State Department of Health (NYSDOH) Generic Community Air Monitoring Plan.

#### 2.6 Environmental and Public Health Assessments

#### 2.6.1 Qualitative Human Health Exposure Assessment

The objective of the qualitative exposure assessment is to describe how human and environmental receptors may be exposed to Site contaminants based upon the Site-specific conditions and to assess whether there are any complete or potentially complete exposure pathways.

As discussed above, the contaminants of concern (COCs) at the Site include petroleum related VOCs and to a lesser extent metals. The petroleum related VOCs were detected in soil and /or groundwater at concentrations exceeding their respective NYSDEC standards or guidance values. In addition, petroleum related VOCs were identified in soil vapor at concentrations above ambient air concentrations. The NYSDEC Class GA AWQSGVs were developed to be protective of public health based upon consideration of groundwater as a potential source of drinking water. This exposure scenario is not applicable to the Site given the current land use and the reasonably anticipated land use at the Site. As specified in ECL Article 27-1415(2), the exposure assessment should consider the current conditions, as well as the reasonably anticipated future land use of the Site and the affected offsite areas, and the reasonably anticipated future groundwater use.

An exposure pathway describes the means by which an individual may be exposed to contaminants originating from a site. An exposure pathway has five elements: (1) a contaminant source; (2) contaminant release and transport mechanisms; (3) a receptor population; (4) a point of exposure; and (5) a route of exposure. The following paragraphs provide an overview discussion of exposure pathways that may potentially exist associated with the Site.

#### Contaminant Sources

The probable sources of contamination in soil and groundwater at the Site were spills or leaks from former clusters of USTs containing petroleum and direct discharge to the ground associated with historical operations of the Site that included vehicular maintenance.

#### Contaminant Release and Transport Mechanisms

The contaminants at the Site exist in the form of residual material adsorbed to soil particles in the saturated and unsaturated zones and compounds dissolved in groundwater. The leaching of contaminants from soil serves as an ongoing source of contamination to groundwater beneath portions of the Site. In addition, VOCs are migrating through volatilization of compounds into soil vapor.

#### Receptor Population

The potential onsite receptors include occupational workers, construction workers, visitors, or trespassers. Future onsite receptors are expected to include also residents, guests, and retail customers/workers based on the potential future use of the property. The potential offsite receptors include offsite workers, visitors, residents, and trespassers.

#### Potential Points and Routes of Exposure

Contaminated soil is limited to specific areas of the Site and at depths below the immediate surface. However, there is the potential for direct exposure to contaminated soil by anyone digging in the contaminated area.

The Site and surrounding community are supplied by public sources of drinking water which meets all State and Federal standards for drinking water quality. As such, there is no potential for exposure to site contaminants from the public sources of drinking water. Although it has not been conclusively verified, it is highly unlikely that there are any private wells located near the Site.

There is no potential for migration of VOCs into indoor air because there are currently no existing buildings onsite. If buildings are constructed on the Site in the future (without source

removal prior to construction), site workers, or future residents, guests, or students could be exposed to contaminants via the indoor air inhalation route of exposure.

#### 2.7 Remedial Action Objectives

As described in Part 375 Regulations, the goal of the remedy selection process in the BCP is to select a remedy for a site that is fully protective of public health and the environment, taking into account the current, intended, and reasonably anticipated future land use of the site.

The remedial goals for soil at the Site are to meet the restricted residential criteria for onsite areas. The remedial goals for the groundwater are to obtain mass reductions of VOCs in onsite groundwater and thus mitigating potential offsite impacts to NYSDEC Water Quality Standards for Class GA groundwater, to the extent practicable. Consistent with the Part 375 Regulations, the proposed remedies for the Site will be fully protective of public health and the environment, taking into account the current, intended, and potential future land use.

According to Part 375 Regulations, for Track 1 cleanup remedies and all tracks in general:

- A generic table is utilized to identify soil cleanup objectives for unrestricted use remedies which allow the property to be developed for any use;
- The threat to public health and the environment resulting from contamination in environmental media (i.e., groundwater and soil vapor) other than soil shall be evaluated in the development of remedial alternatives;
- Restrictions on the use of the site are not permitted;
- Contaminated soil that generally exceeds the unrestricted use limits should be removed or treated; and
- Reliance upon institutional control/engineering controls to address exposure and achieve the RAOs for the site is not allowed, except one that allows for a groundwater use restriction if a Volunteer has taken steps to reduce groundwater contamination to asymptotic levels.

According to Part 375 Regulations, for Track 2 cleanup remedies and all tracks in general:

• A generic table is utilized to identify soil cleanup objectives for restricted use remedies. The lowest of the three applicable contaminant-specific soil cleanup objectives for all soils above bedrock shall apply, except as noted below.

- Requirements to achieve contaminant-specific soil cleanup objectives for all soil above bedrock greater than 15 feet below ground surface shall not apply assuming: soils below 15 feet do not represent a source of contamination, the environmental easement for the Site requires that any contaminated soils remaining at depth will be managed along with other Site soils, pursuant to a site management plan, offsite groundwater does not exceed standards, and onsite groundwater use is restricted.
- Contamination in environmental media other than soil (i.e., groundwater and soil vapor) shall meet applicable SCGs and applicable regulatory guidance, unless long-term institutional or engineering controls are implemented.
- Restrictions can be placed on the use of the site as residential, commercial, or industrial and on the use of site groundwater.
- Reliance upon long-term institutional control/engineering controls to address soil exposure and achieve the RAOs for the site is not allowed.
- A groundwater use restriction may be placed upon the site.

Based on the results of the Remedial Investigation, the following Remedial Action Objectives (RAOs) have been identified for this Site.

#### 2.7.1 Groundwater

#### RAOs for Public Health Protection

- Prevent contact with, or inhalation of, volatiles emanating from contaminated groundwater;
- RAOs for Environmental Protection;
- Restore ground water aquifer, to the extent practicable, to pre-disposal/pre-release conditions; and
- Remove the source of groundwater contamination.

#### 2.7.2 Soil

#### RAOs for Public Health Protection

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

## RAOs for Environmental Protection

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

#### 3.0 DESCRIPTION OF REMEDIAL ACTION PLAN

The following is a detailed description of the alternatives analysis and remedy selection process to address impacted onsite soil from historic releases. The onsite areas are defined as areas within the limits of the 1800 Southern Boulevard Site, which is shown on Figure 2.

In accordance with Part 375 Regulations, this section of the RAWP was prepared in accordance with Section 4.3[c] of DER-10. As required, a minimum of two remedial alternatives (one being an unrestricted use scenario) are evaluated, as follows:

- One alternative that will achieve unrestricted use relative to onsite soil without the use of institutional or engineering controls; and
- One alternative assuming a restricted residential cleanup scenario for onsite areas coupled with the use of institutional and engineering controls.

The following remedial action alternatives for the media of concern were developed based upon the remedial goals and RAOs identified in Section 2.7:

- <u>Remedial Alternative 1</u>: Track 1 Unrestricted cleanup: Excavation and offsite disposal of soil exceeding the unrestricted use criteria presented in the Part 375 Regulations at any depth above or below the water table for all onsite areas impacted from historic releases; and backfill of excavated areas as necessary for the construction of the proposed building foundation.
- <u>Remedial Alternative 2</u>: Track 2 Restricted Residential cleanup: Excavation and offsite disposal of soil exceeding the restricted residential use criteria for onsite areas above bedrock, but no greater than 15 feet below existing grade; backfill of excavated areas as necessary for the construction of the proposed building foundation; and institutional and engineering controls.
- <u>Remedial Alternative 3</u>: Track 4 Restricted Residential cleanup: Excavation and offsite disposal of soil exceeding the restricted residential use criteria for onsite areas above bedrock, but no greater than 2 feet below existing grade; backfill of excavated areas as necessary for the construction of the proposed building foundation; and institutional and engineering controls.
# **3.1 Evaluation Criteria**

Each alternative was evaluated based on the following eight evaluation criteria presented in Section 4.1 of the Draft DER-10 Technical Guidance and/or Part 375 Regulations:

- Overall protection of public health and the environment;
- Compliance with SCGs;
- Long-term effectiveness and permanence;
- Reduction of toxicity, mobility, or volume with treatment;
- Short-term effectiveness;
- Implementability;
- Cost; and
- Compatibility with land use.

Each of the criteria is described below. In addition, DER-10 and Part 375 Regulations require that the remedy be evaluated on the basis of Community Acceptance. In accordance with NYSDEC guidance, the proposed remedy will be evaluated for community acceptance once the public notice is issued and the public comment period is completed.

# 3.1.1 Overall Protection of Human Health and the Environment

### Description of Criteria

From DER-10: "This criterion is an evaluation of the remedy's ability to protect public health and the environment, assessing how risks posed through each existing or potential pathway of exposure are eliminated, reduced, or controlled through removal, treatment, engineering controls, or institutional controls. The remedy's ability to achieve each of the RAOs is evaluated."

# 3.1.2 Compliance with Remedial Goals, SCGs and RAOs

### Description of Criteria

From DER-10: "Compliance with SCGs addresses whether or not a remedy will meet applicable environmental laws, regulations, standards, and guidance. All SCGs for the site will be listed along with a discussion of whether or not the remedy will achieve compliance. For those SCGs that will not be met, provide a discussion and evaluation of the impacts of each and whether waivers are necessary."

## 3.1.3 Long-term Effectiveness and Permanence

### Description of Criteria

From DER-10: "This criteria evaluates the long-term effectiveness of the remedy after implementation. If wastes or treated residuals remain on site after the selected remedy has been implemented, the following items are evaluated:

- The magnitude of the remaining risks (i.e., will there be any significant threats, exposure pathways, or risks to the community and environment from the remaining wastes or treated residuals);
- The adequacy of the engineering and institutional controls intended to limit the risk;
- The reliability of these controls; and
- The ability of the remedy to continue to meet RAOs in the future."

## 3.1.4 Reduction in Toxicity, Mobility or Volume through Treatment

### Description of Criteria

From DER-10: "The remedy's ability to reduce the toxicity, mobility, or volume of site contamination is evaluated. Preference should be given to remedies that permanently and significantly reduce the toxicity, mobility, or volume of the wastes at the Site."

# 3.1.5 Short-term Effectiveness

### Description of Criteria

From DER-10: "The potential short-term adverse impacts and risks of the remedy upon the community, the workers, and the environment during the construction and/or implementation are evaluated. A discussion of how the identified adverse impacts and health risks to the community or workers at the site will be controlled and the effectiveness of the controls should be presented. Provide a discussion of engineering controls that will be used to mitigate short-term impacts (i.e., dust control measures). The length of time needed to achieve the remedial objectives is also estimated."

# 3.1.6 Implementability

### Description of Criteria

From DER-10: "The technical and administrative feasibility of implementing the remedy is evaluated. Technical feasibility includes the difficulties associated with the construction and the ability to monitor the effectiveness of the remedy. For administrative feasibility, the availability of the necessary personnel and material is evaluated along with potential difficulties in obtaining specific operating approvals, access for construction, etc."

## 3.1.7 Cost

## Description of Criteria

From DER-10: "Capital, operation, maintenance, and monitoring costs are estimated for the remedy and presented on a present worth basis."

## **3.1.8** Compatibility with Land Use

### Description of Criteria

From Part 375 Regulations: "Preliminary information regarding the land use factor was submitted as part of the application. The Department accepted this initial determination of use by approval of the application. This preliminary determination is confirmed and updated as necessary during the remedy selection process. Current, intended, or reasonably anticipated future land uses of the site and its surroundings must be considered in the selection of the remedy."

### 3.2 Onsite Soil Remedial Alternative 1

The following sections provide a description of Remedial Alternative 1. An evaluation based on the specific evaluation criteria is also presented below.

### 3.2.1 Description

Figure 6 shows the areas to be addressed under Remedial Alternative 1. Remedial Alternative 1 includes the following remedial elements:

- Mobilization and Site Preparation;
- Permitting;

- Storm Water Management and Erosion Control;
- Vapor, Odor, and Dust Control;
- Following Track 1 guidelines, excavation and offsite disposal of soil exceeding the unrestricted use criteria presented in the Part 375 Regulations at any depth above bedrock for soil impacted from historic releases;
- Temporary Staging and Stockpiling;
- Waste Characterization Sampling;
- Dewatering and Groundwater Treatment;
- Traffic Control;
- Offsite Disposal and Equipment Decontamination;
- End-point Sampling;
- Backfill of the excavated areas, as necessary to build the proposed building foundation with imported soil meeting the unrestricted use criteria presented in the Part 375 Regulations;
- Interim Site Restoration;
- Health and Safety and Community Air Monitoring;
- Post-remediation groundwater monitoring for a period of two years; and
- Post-remediation evaluation of potential soil vapor intrusion concerns.

Each of these elements is discussed in greater detail below.

# **3.2.1.1** Mobilization and Site Preparation

Prior to commencing the remediation construction activities, the Remediation and General Contractor will perform the following mobilization and Site preparation activities:

- Identification and markout of all aboveground and underground utilities;
- De-energizing, turning off and disconnecting existing subsurface utility services known to be present in the work area (e.g., water, gas, electric and sewer);
- Mobilization of remediation equipment and materials;
- Employ traffic control measures;

- Work zone demarcation;
- Installation of erosion control devices in accordance with the Soil Erosion and Sediment Control Plan;
- Conduct pre-construction survey prepared by a land surveyor licensed by the State of New York
- Removal of existing pavement, where applicable;
- Installation of perimeter air monitoring system;
- Installation of temporary facilities;
- Installation of dewatering and water treatment system; and
- Installation of the decontamination facilities.

The detailed description of the mobilization and site preparation activities and responsibilities will be presented in the Contractors' Site Operations Plan.

# 3.2.1.2 Permitting

The Remediation and General Contractor will be responsible for obtaining federal, state and New York City permits required for remediation prior to mobilization. At a minimum, the permits will include a New York City Building Department permit, Foundation permit and a New York City Department of Environmental Protection (NYCDEP) sewer discharge permit. The permit conditions will be complied with and copies of the permits will be maintained at the Site.

### **3.2.1.3 Storm Water Management and Erosion Control**

A stormwater pollution and prevention plan (SWPPP), discussed in Sections 4.1.5 and 5.4.10, will be prepared and implemented. All necessary measures to manage stormwater and temporarily control erosion will be employed. Soil erosion and sediment control measures will be installed prior to the implementation of the remediation and will be maintained throughout the duration of all remedial construction activities, as appropriate. Haybales and/or silt fences will be placed by the Contractor to control sediment around the disturbed area/excavations or other work areas. Erosion and sediment control measures (i.e., haybales, silt fences, etc.) will be used to protect any storm water drain in proximity to the construction activities.

In addition, the entrance and adjacent street areas will be swept and/or cleaned, as necessary, throughout the work day, and at the end of the workday, to keep the streets free of soil or other debris generated from the work site during the duration of all excavation activities.

### 3.2.1.4 Vapor, Odor and Dust Control

Vapor, odor and dust control measures will also be instituted, as necessary, to prevent any vapors, odors, or dust from migrating offsite and impacting the surrounding community. During the course of construction, odor suppressant and water will be used on an as-needed basis during excavation activities to control the dust, vapors, and/or odors generated. In addition, each entrance/egress point for trucks will be furnished with a stabilized construction entrance for the purpose of keeping trucks and equipment clean of soil and other materials during site remediation and redevelopment. The dust, vapor and odor control measures will be specified in the Contractor's Health and Safety Plan (HASP) and Community Air Monitoring Plan (CAMP).

Dust (particulate matter) will be controlled at the Site in accordance with the site specific CAMP, the NYSDEC Technical and Administrative Guidance Memorandum #4031 – Fugitive Dust Suppression and Particulate Monitoring Program at Inactive Hazardous Waste Sites (TAGM 4031), and all federal, state and local requirements. The Contractor will be required to maintain all excavations, stockpiles, and all other work areas to minimize dust that would cause a hazard or nuisance to others.

Dust will be monitored in accordance with the requirements of the Contractor's HASP, the CAMP, and the NYSDEC TAGM 4031. Based on the results of the monitoring, the Contractor will implement necessary measures to control dust to acceptable levels, including but not limited to, one or more of the following measures:

- Misting equipment and excavation fences;
- Spraying water (using atomizer) on buckets during excavation and dumping;
- Hauling materials in tarped or lined containers;
- Reducing speed of vehicles moving through the construction area;

- Covering excavated material stockpiles and/or portions of the stockpile, as necessary, throughout the day and after excavation activities cease each day; and
- Stopping work.

# 3.2.1.5 Excavation

A comparison of the available data to the unrestricted use criteria presented in the Part 375 Regulations was conducted for this alternative and a summary of the soil sampling locations and exceedances the unrestricted use criteria is provided on Figure 3. Based on the results of the RI, the impacted zone is located within the upper 10 to 24 feet of soil. Remedial Alternative 1 would require the excavation of all onsite soils from land surface to approximately 13 feet and additional hotspot excavation to between 15 feet and bedrock at approximately 24 feet, and end-point soil sampling to demonstrate removal of all soils in excess of the Track 1 Unrestricted SCOs. For the purpose of estimating the Remedial Alternative 1 excavation volume, a conservative excavation depth of 20 feet bls is assumed since the vertical limits of contamination were not confirmed during the RI. There are considerable physical limitations within the Site that will most likely hinder the excavation activities, including but not limited to:

- depth to bedrock;
- adjacent roadways and neighboring building, that will require a significant shoring system to prevent damage to those adjacent properties; and
- shallow depth to groundwater, which will require a significant dewatering and groundwater treatment system to access and remove the contaminated soil located below the water table.

The estimated volume of soil to be removed to achieve unrestricted use onsite would be approximately 8,900 cubic yards. The final horizontal and vertical limits of the excavation will be surveyed. This alternative is estimated to require two months to complete.

# 3.2.1.6 Temporary Staging and Stockpiling

All impacted materials are to be stored in stockpiles lined and covered with a single layer of minimum 6-mil plastic sheeting. Stockpiles will be routinely inspected and broken sheeting covers will be promptly replaced. Soil stockpiles will be continuously encircled with silt fence or haybales.

## **3.2.1.7** Waste Characterization Sampling

Soil samples will be collected and analyzed for waste characterization, based upon the sample frequency and analytical requirements of the approved disposal facility. It is likely that the selected disposal facility will require that samples will be analyzed for the following:

- Target compound list (TCL) VOCs and SVOCs according to USEPA Methods SW-846 8260 and 8270, respectively;
- TPH for gasoline and diesel range organics (by Method SW-846 8015B);
- TAL metals by Method SW-846 6010;
- PCBs by Method 8082; and
- The full list of toxicity characteristics leaching procedure (TCLP) analyses (metals, VOCs, SVOCs, pesticides, and herbicides).

# **3.2.1.8 Dewatering and Groundwater Treatment**

Dewatering will be required during excavation and foundation construction activities to facilitate work below the groundwater table. Extracted groundwater will either be containerized for offsite disposal or be treated as necessary to meet NYCDEP requirements, and discharged to the NYCDEP sewer system. The groundwater will be extracted through the use of drainage sumps and/or perimeter well points to maintain dry conditions within the excavation. Drainage sumps will be installed within the excavation, as necessary, to dewater the excavation area. The water from the drainage sumps will be pumped to either an onsite wastewater storage tank or an onsite treatment system. The Remediation Contractor will identify, in the Contractor's SOP, the means and methods for dewatering and treatment.

If required, the treatment system may entail a settling tank, oil/water separator, bag filters and carbon filter vessels, respectively. The effluent from the treatment system will be discharged to the NYCDEP sewer system under a sewer discharge permit that will be obtained from the NYCDEP following the submission of information regarding the proposed treatment system. The effluent from the treatment system will be sampled as required by NYCDEP. If wastewater is to be disposed of offsite, it will be stored onsite in an approved water storage tank pending characterization and transport for proper offsite disposal.

If the excavated soil contains free liquids, it may require rendering to satisfy the moisture content requirements of the selected disposal facility. The paint filter test using USEPA Method 9095 and/or visual observation may be used to determine if the excavated soil contains free liquids. The excavated soil will be rendered with stabilized soil from the excavation and/or kiln dust. The Remediation Contractor will identify the means and methods of soil stabilization to meet disposal requirements in the Contractor's SOP.

The quantity of groundwater to be extracted and treated will be determined based upon the following factors:

- Duration of excavation/foundation work below the water table;
- Depth of excavation beneath the water table; and
- Hydrogeologic factors including hydraulic permeability, hydraulic gradient and rate of recharge into the excavation.

The extracted and treated groundwater will serve a beneficial role in reducing the toxicity, mobility, and volume of contaminated groundwater beneath the Site. A two-year post-remediation groundwater monitoring plan would be implemented to confirm that there has been a bulk reduction in groundwater contamination to asymptotic levels based on the dewatering effort performed during the remedial action.

# **3.2.1.9 Traffic Control**

The Remediation Contractor/General Contractor will be responsible for providing all necessary personnel and materials (i.e., traffic lanes, safety cones) to control traffic entering and exiting the Site and for coordinating traffic control measures, as necessary. Detailed traffic control procedures will be developed when preparing the Contractor's HASP and Contractor's SOP.

# 3.2.1.10 Offsite Disposal and Equipment Decontamination

All impacted soil excavated from the Site and other remediation-derived waste will be transported and disposed of in accordance with all applicable federal, state, and local regulations. The remediation-derived waste that will be generated during the construction activities include:

- Soil impacted from historic releases;
- Personal Protective Equipment (PPE);

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- Dewatering groundwater; and
- Decontamination water, if any is generated.

Haul vehicles for bulk soil will be secured with appropriate covers prior to exiting the construction area to prevent a release of waste. PPE waste generated during the implementation of the remedy will be consolidated and stored in appropriate bulk containers and temporarily staged at the designated waste storage area. Any full or partially filled containers will be appropriately labeled.

All wastewater that is generated from equipment decontamination will be managed utilizing one of the following options:

- wastewater will be treated, if applicable and discharged to the New York City public sewer system in accordance with NYCDEP requirements, which include, at a minimum, correctly filing the necessary permits; or
- wastewater will be disposed of offsite at an approved disposal facility, pending quantity of wastewater generated.

# **3.2.1.11 End-point Sampling**

End-point bottom sampling (at a frequency of one sample per 900 square feet of bottom area in accordance with the guidance provided in NYSDEC DER-10 Sections 3.5 and 5.4 for excavations 20 to 300 feet in perimeter) would be conducted for constituents that exceeded the unrestricted use criteria in previous sampling events to confirm that the unrestricted criteria were met. Constituents or groups of constituents that did not exceed the criteria in previous investigations would not be sampled for. Areas that appear more heavily impacted, if any, will be given sampling preference. If the end-point bottom sample results indicate that concentrations of target constituents are detected below the unrestricted use criteria, the excavation activities will be considered complete. However, if concentrations of target constituents are detected use criteria, the excavation activities are detected at a level above the unrestricted use criteria, the excavation additional end-point bottom sampling, will continue deeper until these conditions are met or to the maximum depth reasonably attainable.

End-point sidewall samples (at a frequency of one sample per 30 linear feet or at least one sample per sidewall) would be conducted for the unrestricted use criteria. Areas that appear more heavily impacted, if any, will be given sampling preference. If the end-point sidewall sample results indicate that concentrations of target constituents are detected below the unrestricted use criteria, the excavation activities will be considered complete. However, if concentrations of target constituents are detected at a level above the unrestricted use criteria, the excavation activities, including additional end-point sidewall sampling, will continue until these conditions are met or to the extent feasible due to excavation limitations associated with underground utilities, adjacent building foundations and sidewalk or property boundaries.

The locations of the end-point samples will be surveyed.

End-point samples will be submitted to a New York State Environmental Laboratory Approval Program (ELAP) certified laboratory. Category B laboratory data deliverables, as defined in the analytical services protocol (ASP), will be requested. In addition, a Data Usability Summary Report (DUSR) will be prepared by a party independent from the laboratory performing the analysis in accordance with Appendix 2B of DER-10.

## 3.2.1.12 Backfilling

When excavation and removal of the impacted soil is complete, the excavation will be backfilled as necessary to prepare the Site for the building foundation installation. All backfill material (offsite common fill material and topsoil) will meet the requirements of the unrestricted use criteria presented in the Part 375 Regulations. The backfill material will be free of extraneous debris or solid waste. The source of the fill must be documented by the supplier, including the location where the fill was obtained and a brief history of the site that is the source of the fill. The fill material must be approved in advance by the NYSDEC. A minimum of one grab sample must be collected and analyzed per source and analyzed for VOCs, SVOCs, metals, PCBs, herbicides and pesticides. Analytical results will be submitted to the NYSDEC prior to use of the backfill.

# 3.2.1.13 Interim Site Restoration

After subsurface excavation and foundation activities are completed, the work area will be restored, as appropriate, to conduct the next phase of work. Once interim site restoration activities have been completed, all temporary work zone barriers, soil erosion, and sedimentation

controls and remedial construction equipment will be removed. The Contractor will then decontaminate all equipment in the established decontamination area prior to removal from the Site.

## 3.2.1.14 Health and Safety and Community Air Monitoring

All remedial construction activities will be performed in a manner consistent with 29CFR 1910 and 1926. Each consultant and contractor on site will operate under a site-specific HASP for the project. The HASP will be readily available during the work. During all phases of Site work, the Contractor will monitor safety and health conditions and fully enforce the site-specific HASP. The Contractor will be responsible for monitoring general Site conditions and for safety hazards. Specifically, monitoring will be performed to verify that all requirements of the Occupational Safety and Health Administration, as outlined on 29 CFR Part 1910 and 1926, are adhered to.

Ambient air will be monitored at the site perimeter throughout the course of the work for particulate matter and VOCs in accordance with the CAMP. During the course of the work, the Contractor will take abatement measures, as directed or as otherwise necessary, to minimize the levels of particulates at the limits of the work.

# 3.2.1.15 Post-Remediation Groundwater Monitoring

Following the completion of the remedial action, a groundwater monitoring plan will be implemented at the Site for a minimum of two years to allow the effectiveness of the remedy to be monitored with regards to any residual groundwater contamination. Specific details describing the number and location of monitoring wells and proposed analyses will be presented as part of a OM&M plan prepared during remedial construction.

It is anticipated that the post-remediation groundwater monitoring results will demonstrate that there has been a bulk reduction in groundwater contamination at the Site to asymptotic levels. If the results of this monitoring program indicate that residual groundwater contamination at the site has not reached asymptotic levels, an in-situ groundwater remediation program will potentially be developed and implemented at the Site. This program will be implemented until the remedial objectives for the Site has been achieved, or until it is determined that additional remedial action is technically impractical or not feasible.

## **3.2.1.16** Post-Remediation Evaluation of Potential Vapor Intrusion Concerns

Following the completion of the remedial action, subsurface soil vapor intrusion in accordance with applicable NYSDOH guidance will be evaluated. However, soil vapor intrusion is not expected to be a concern as a vapor barrier / water-proof barrier for the building foundation will be installed as part of the construction project since this basement will extend below the water table. Although not part of the remedy, the vapor barrier / water-proof barrier will provide the additional benefit of mitigating any potential migration of vapors associated with residual waste in the subsurface soil and/ or groundwater. During installation of a vapor barrier and prior to installing the concrete for the structural slab, the vapor barrier will be inspected to insure that the vapor barrier was properly installed and that any damage caused during the installation was repaired. The vapor barrier would consist of a minimum of 10 mil poly sheeting or approved equal product depending on the concrete forming application.

In addition, after construction of the building is completed, the current development plan includes an active ventilation system that will be installed in the building's subsurface parking garage as part of the building mechanical system. The active ventilation system will be designed by the Mechanical Engineer to meet NYCDOB requirements. Although not part of the remedy, the active ventilation system will provide further protection from potential accumulation of VOCs in the basement area in the unlikely event of a breach in the sub-slab water-proof barrier.

### **3.2.2 Evaluation**

The following sections provide an evaluation of Remedial Alternative 1 based on the seven specific evaluation criteria.

### 3.2.2.1 Overall Protection of Human Health and the Environment

Alternative 1 will be protective of human health and the environment by eliminating the concentrations in soil of constituents due to the historic releases through source removal. The potential for human and environmental exposure to these constituents onsite will be eliminated by excavation of the impacted soil with concentrations in excess of the unrestricted use criteria,

disposing of impacted material offsite and backfilling the area with material meeting the unrestricted use criteria. Potential post-remediation exposures from residual groundwater and soil vapor contamination, if present, cannot be evaluated until the remedial action has been completed. However, it is anticipated that groundwater use will be restricted at the redeveloped Site. Also, vapor intrusion should not be an issue at the redeveloped Site as a vapor barrier / water proof barrier is currently planned that will be in place in addition to an active ventilation system also currently planned in the basement parking garage as part of the building mechanical system.

During site-preparation work (e.g., excavation of subsurface soil) for remedial purposes (e.g., construction of building foundation, etc.) and other construction purposes, subsurface workers may be exposed to impacted soil and groundwater. Potential worker exposure to soil and groundwater during excavation activities will be mitigated through the required Occupational Safety and Health Administration (OSHA) training and appropriate health and safety plans (HASPs). Any potential environmental exposure will be mitigated by engineering controls implemented during construction.

### 3.2.2.2 Compliance with Remedial Goals, SCGs and RAOs

SCGs for the proposed remedy are presented in Section 2.5.2 and RAOs are presented in Section 2.7. Alternative 1 will achieve compliance with the remedial goals, SCGs and RAOs for onsite soil through source removal to Track 1 unrestricted cleanup levels. Although bulk removal of groundwater contamination is consistent with the RAOs established for the Site, there is a potential that SCGs for groundwater will not be achieved. Compliance with SCGs for soil vapor cannot be determined until the remedial action has been completed.

#### **3.2.2.3 Long-term Effectiveness and Permanence**

Alternative 1 is expected to remove all soil and the bulk of groundwater that was impacted by the historic releases. Therefore, incremental risk from soil impacts is eliminated and significantly reduced from groundwater impacts.

Alternative 1 will continue to meet RAOs in the future, thus providing a permanent long-term solution for the Site.

### 3.2.2.4 Reduction in Toxicity, Mobility or Volume through Treatment

By removing all soil with concentrations that exceeded the unrestricted use criteria, Alternative 1 will permanently eliminate the toxicity, mobility, and volume of contaminants from onsite soil and reduce the toxicity, mobility, and volume of contaminants within onsite soil vapor, if present. In addition, the removal and treatment of groundwater via dewatering will reduce the toxicity, mobility, and volume of impacted groundwater onsite.

## 3.2.2.5 Short-term Effectiveness

The health and environmental risks associated with implementation of Alternative 1 are minimal for the following reasons:

The excavation and handling of soil (i.e., urban fill) may pose a potential risk to onsite workers through direct contact with the soil, airborne particulates (dust), odors and organic vapors, and physical risks associated with the depth of excavation. However, potential short-term exposure to onsite workers will be addressed with a HASP and mitigated through use of appropriate personal protective equipment (PPE), conducting air monitoring, and implementing dust and vapor suppression activities.

Possible environmental risks to the community during the excavation and handling of soil include the potential for odors, dust and organic vapors resulting from the disturbance of soil and the uncontrolled migration of impacted soil by onsite workers and vehicles. In addition, other potential impacts to the community could include construction-related noise, vibrations and traffic. Community air monitoring activities will be conducted during all excavation and soil handling activities to identify the need for perimeter controls. In addition, decontamination procedures will minimize the potential for offsite migration of impacted soil beyond the Site boundary. An approved truck traffic plan will minimize disturbance to the local roads and community.

# 3.2.2.6 Implementability

The materials, equipment, and personnel associated with the implementation of Alternative 1 are commercially available and have been proven effective and reliable for remediation of the media of concern.

## 3.2.2.7 Cost

The construction and equipment costs associated with Alternative 1 are estimated at approximately \$1,700,000. The following assumptions were made to develop this cost estimate:

- It is anticipated that a short-term groundwater monitoring program will be implemented following the completion of Site redevelopment activities;
- Excavations will be to a depth of 20 feet bls and approximately 10 feet into the water table;
- CAMP monitoring is necessary for two months;
- Dewatering with water treatment is necessary for two months; and
- Excavations will be larger than necessary to construct the building foundation, to meet the unrestricted use criteria for all end-point samples.

# **3.2.2.8** Compatibility with Land Use

The anticipated future use of the Site is residential housing with commercial retail space on the ground floor. Following implementation of the remedy, the Site will be restored to unrestricted use conditions, which will exceed the cleanup standards for future residential land use. A groundwater use restriction will be implemented to prevent future exposure to impacted groundwater.

# 3.3 Onsite Soil Remedial Alternative 2

The following sections provide a description of Remedial Alternative 2. An evaluation based on the specific evaluation criteria is also presented below.

# 3.3.1 Description

Figure 7 shows the areas to be addressed under Remedial Alternative 2. Remedial Alternative 2 includes the following remedial elements:

- Mobilization and Site Preparation;
- Permitting;
- Storm Water Management and Erosion Control;
- Vapor, Odor, and Dust Control;

- Following Track 2 guidance, excavation and offsite disposal of the upper fifteen feet of soil exceeding the restricted residential use criteria for onsite areas impacted from historic releases;
- Temporary Staging and Stockpiling;
- Waste Characterization Sampling;
- Dewatering and Groundwater Treatment;
- Traffic Control;
- Offsite Disposal and Equipment Decontamination;
- End-point Sampling;
- Backfill of the excavated areas, as necessary to build the proposed building foundation with imported soil meeting the restricted residential use criteria presented in the Part 375 Regulations;
- Site Restoration;
- Health and Safety and Community Air Monitoring;
- Post-remediation groundwater monitoring for a period of two years; and
- Post-remediation evaluation of potential soil vapor intrusion concerns.

Each of these elements is discussed in greater detail below.

# 3.3.1.1 Mobilization and Site Preparation

Mobilization and site preparation will be the same as described in Section 3.2.1.1.

# 3.3.1.2 Permitting

Permitting will be the same as described in Section 3.2.1.2.

# 3.3.1.3 Storm Water Management and Erosion Control

Storm water management and erosion control will be the same as described in Section 3.2.1.3.

# **3.3.1.4** Vapor, Odor and Dust Control

Vapor, odor and dust control will be the same as described in Section 3.2.1.4.

## 3.3.1.5 Excavation

A comparison of the available data to the restricted residential use criteria presented in the Part 375 Regulations was conducted for this alternative and the locations and exceedances of the restricted residential use criteria for VOCs, SVOCs, Metals, Pesticides and PCBs in soil are provided on Figure 4.

Based on the results of the RI, soil surrounding the soil boring SB-101 and SB-106 must be excavated and disposed offsite. The sample collection depth for these soil borings varied from ground surface to 10 feet below grade. Since a Track 2 cleanup will require a site-wide excavation to an elevation of fifteen (15) feet below grade, this means that all of the soil that was detected in excess of the restricted residential use criteria during the RI will be excavated and disposed offsite during development.

The estimated volume of soil to be removed to achieve restricted residential use onsite would be approximately 6,675 cubic yards based on a conservative excavation depth of 15 feet below grade since vertical limits of contamination were not fully delineated during the performance of the RI.

The final horizontal and vertical limits of the excavation will be surveyed. This alternative is estimated to require one to two months to complete.

# 3.3.1.6 Temporary Staging and Stockpiling

Temporary staging and stockpiling will be the same as described in Section 3.2.1.6.

### 3.3.1.7 Waste Characterization Sampling

Waste characterization sampling will be the same as described in Section 3.2.1.7.

# **3.3.1.8 Dewatering and Groundwater Treatment**

Dewatering will be the same as described in Section 3.2.1.8, with the exception that the construction dewatering and groundwater treatment and disposal for Remedial Alternative 2 will be implemented to facilitate the excavation of soils exceeding the restricted residential criteria and to excavate and prepare the proposed development foundation.

## **3.3.1.9** Traffic Control

Traffic control will be the same as described in Section 3.2.1.9.

### 3.3.1.10 Offsite Disposal and Equipment Decontamination

Offsite disposal and equipment decontamination will be the same as described in Section 3.2.1.10.

## **3.3.1.11 End-point Sampling**

End-point bottom sampling (at a frequency of one sample per 900 square feet of bottom area in accordance with the guidance provided in NYSDEC DER-10 Sections 3.5 and 5.4 for excavations 20 to 300 feet in perimeter) would be conducted for constituents that exceeded the restricted residential criteria in previous sampling events to confirm that the restricted residential criteria were met. Areas that appear more heavily impacted, if any, will be given sampling preference. If the end-point bottom sample results indicate that concentrations of target constituents are detected below the proposed restricted residential use criteria, the excavation activities will be considered complete. However, if concentrations of target constituents are detected at a level above the restricted residential use criteria, the excavation activities, including additional end-point bottom sampling, will continue deeper until these conditions are met or to the maximum depth reasonably attainable.

End-point sidewall samples (at a frequency of one sample per 30 linear feet or at least one sample per sidewall) would be conducted for constituents that exceeded the restricted residential use criteria in previous sampling events to confirm that the restricted residential criteria were met. Areas that appear more heavily impacted, if any, will be given sampling preference. If the end-point sidewall sample results indicate that concentrations of target constituents are detected below the restricted residential use criteria, the excavation activities will be considered complete. However, if concentrations of target constituents are detected at a level above the restricted residential use criteria, the excavation activities, including additional end-point sidewall sampling, will continue until these conditions are met or to the extent feasible with underground utilities, adjacent building foundations and sidewalk or property boundary limitations.

The locations of the end-point samples will be surveyed.

End-point samples will be submitted to a New York State ELAP certified laboratory. Category B laboratory data deliverables, as defined in the analytical services protocol (ASP), will be requested. In addition, a Data Usability Summary Report (DUSR) will be prepared by a party independent from the laboratory performing the analysis in accordance with Appendix 2B of DER-10.

# 3.3.1.12 Backfilling

Backfilling will be the same as presented in Section 3.2.1.12.

# 3.3.1.13 Interim Site Restoration

Interim site restoration will be the same as described in Section 3.2.1.13.

# 3.3.1.14 Health and Safety and Community Air Monitoring

Health and safety and community air monitoring will be the same as described in Section 3.2.1.14.

# 3.3.1.15 Post-Remediation Groundwater Monitoring

Post-remediation groundwater monitoring will be the same as described in Section 3.2.1.15.

# 3.3.1.16 Post-Remediation Evaluation of Potential Vapor Intrusion Concerns

The post-remediation evaluation of potential vapor intrusion concerns will be the same as described in Section 3.2.1.16.

# **3.3.2 Evaluation**

The following sections provide a detailed evaluation of Remedial Alternative 2 based on the specific evaluation criteria.

# **3.3.2.1** Overall Protection of Human Health and the Environment

Alternative 2 will be protective of human health and the environment by removing soil above and below the water table that was impacted above the restricted residential criteria and the bulk of groundwater impacted by the historic onsite releases. The potential for human and environmental exposure to these constituents onsite will be mitigated by excavation of the impacted soil with concentrations in excess of the restricted residential use criteria to an elevation of fifteen feet below grade, disposing of impacted material offsite, backfilling the area with material meeting the unrestricted use criteria or construction of the proposed development's building slab and adjacent surface covers. Potential post-remediation exposures from residual groundwater and soil vapor contamination, if present, cannot be evaluated until the remedial action has been completed. However, it is anticipated that groundwater use will be restricted at the redeveloped Site. Also, vapor intrusion should not be an issue at the redeveloped Site has a vapor barrier / water proof barrier that will be in place in addition to an active ventilation system in the basement as part of the building mechanical system.

During site-preparation work (e.g., excavation of subsurface soil) for remedial purposes (e.g., construction of building foundation, etc.) and other construction purposes, subsurface workers may be exposed to impacted soil and groundwater. Potential worker exposure to soil and groundwater during excavation activities will be mitigated through the required Occupational Safety and Health Administration (OSHA) training and appropriate health and safety plans (HASPs). Any potential environmental exposure will be mitigated by engineering controls implemented during construction.

#### 3.3.2.2 Compliance with Remedial Goals, SCGs and RAOs

SCGs for the proposed remedy are presented in Section 2.5.2 and RAOs are presented in Section 2.7. Alternative 2 will achieve compliance with the remedial goals, SCGs and RAOs for onsite soil through source removal to Track 2 restricted residential cleanup levels. Although bulk removal of groundwater contamination is consistent with the RAOs established for the Site, there is a potential that SCGs for groundwater will not be achieved. Compliance with SCGs for soil vapor cannot be determined until the remedial action has been completed.

#### 3.3.2.3 Long-Term Effectiveness and Permanence

Alternative 2 removes most soil onsite that was impacted above the restricted residential criteria by the historic releases. Alternative 2 returns the Site to conditions that are compatible with the zoning and reasonably anticipated future use of the Site as residential housing with ground level commercial retail space.

Based upon the Site's location in an urban area and the potential presence of residual impacted groundwater and soil vapor onsite as well as on adjacent properties following excavation of onsite soils to restricted use standards, long term engineering and institutional controls will be necessary for Alternative 2 to ensure long term effectiveness and permanence. These engineering and institutional controls, in the form of a vapor barrier / water proof barrier below the bottom slab and outside foundation walls, the engineered cover composite system consisting of the proposed building's bottom slab, adjacent surface covers, and a groundwater use restriction will be necessary to prevent exposure from sources of soil, soil vapor, and groundwater.

Alternative 2 will continue to meet RAOs in the future, thus providing a permanent long-term solution for the Site.

## 3.3.2.4 Reduction in Toxicity, Mobility or Volume through Treatment

By removing soil impacted above the restricted residential use criteria, Alternative 2 will reduce the toxicity, mobility, and volume of contaminants at the Site. In addition, the removal and treatment of groundwater via dewatering will reduce the toxicity, mobility, and volume of impacted groundwater on Site.

### 3.3.2.5 Short-term Effectiveness

The health and environmental risks associated with implementation of Alternative 2 are minimal for the following reasons:

The excavation and handling of soil (i.e., urban fill) may pose a potential risk to onsite workers through direct contact with the soil, airborne particulates (dust), odors and organic vapors, and physical risks associated with the depth of excavation. However, potential short-term exposure to onsite workers will be addressed with a HASP and mitigated through use of appropriate personal protective equipment (PPE), conducting air monitoring, and implementing dust and vapor suppression activities.

Possible environmental risks to the community during the excavation and handling of soil include the potential for odors, dust and organic vapors resulting from the disturbance of soil and

the uncontrolled migration of impacted soil by onsite workers and vehicles. In addition, other potential impacts to the community could include construction-related noise, vibrations, and traffic. Community air monitoring activities will be conducted during all excavation and soil handling activities to identify the need for perimeter controls. In addition, decontamination procedures will minimize the potential for offsite migration of impacted soil beyond the Site boundary. An approved truck traffic plan will minimize disturbance to the local roads and community.

# **3.3.2.6 Implementability**

The labor, equipment, materials and supplies for the implementation of Alternative 2 are commercially available and have been proven effective and reliable for remediation of the media of concern at the Site under similar circumstances. Alternative 2 is implementable through source removal combined with engineering and institutional controls under a restricted residential cleanup. It is not anticipated that future remedial action following the proposed remedial construction will be required.

# 3.3.2.7 Cost

The construction and equipment costs associated with Alternative 2 are estimated at approximately \$793,000. The following assumptions were made to develop this cost estimate:

- It is anticipated that a short-term groundwater monitoring program will be implemented following the completion of Site redevelopment activities;
- Excavations will be dependent upon the depth and locations of previously identified soil with concentrations in excess of the restricted residential SCOs;
- CAMP monitoring will be necessary for one to two months;
- Dewatering will be necessary for one to two months; and
- Excavations will be smaller than required to meet the Alternative 1 unrestricted residential use criteria for all end-point samples.

### **3.3.2.8** Compatibility with Land Use

The present and reasonably anticipated future use of the Site is residential housing with commercial ground level retail. Following implementation of the remedy, the Site will be restored to residential use conditions, thereby meeting the cleanup standards for future residential

land use. A groundwater use restriction will be implemented to prevent future exposure to impacted groundwater, and in turn, soil vapor.

## 3.4 Onsite Soil Remedial Alternative 3

The following sections provide a description of Remedial Alternative 3. An evaluation based on the specific evaluation criteria is also presented below.

## 3.4.1 Description

Figure 8 shows the areas to be addressed under Remedial Alternative 3 (and Remedial Alternative 2). Remedial Alternative 3 includes the following remedial elements:

- Mobilization and Site Preparation;
- Permitting;
- Storm Water Management and Erosion Control;
- Vapor, Odor, and Dust Control;
- Following Track 4 guidance, excavation and offsite disposal of the upper two feet of soil exceeding the restricted residential use criteria for onsite areas impacted from historic releases;
- Temporary Staging and Stockpiling;
- Waste Characterization Sampling;
- Dewatering and Groundwater Treatment;
- Traffic Control;
- Offsite Disposal and Equipment Decontamination;
- End-point Sampling;
- Backfill of the excavated areas, as necessary to build the proposed building foundation with imported soil meeting the restricted residential use criteria presented in the Part 375 Regulations;
- Site Restoration;
- Health and Safety and Community Air Monitoring;
- Post-remediation groundwater monitoring for a period of two years; and

• Post-remediation evaluation of potential soil vapor intrusion concerns.

Each of these elements is discussed in greater detail below.

## 3.4.1.1 Mobilization and Site Preparation

Mobilization and site preparation will be the same as described in Section 3.2.1.1.

## 3.4.1.2 Permitting

Permitting will be the same as described in Section 3.2.1.2.

## 3.4.1.3 Storm Water Management and Erosion Control

Storm water management and erosion control will be the same as described in Section 3.2.1.3.

## 3.4.1.4 Vapor, Odor and Dust Control

Vapor, odor and dust control will be the same as described in Section 3.2.1.4.

## 3.4.1.5 Excavation

A comparison of the available data to the restricted residential use criteria presented in the Part 375 Regulations was conducted for this alternative and the locations and exceedances of the restricted residential use criteria for VOCs, SVOCs, Metals, Pesticides and PCBs in soil are provided on Figure 4. Based on the results of the RI, soil surrounding the soil boring SB-101 and SB-106 must be excavated and disposed offsite.

The estimated volume of soil to be removed to achieve restricted residential use onsite for this alternative would be approximately 890 cubic yards based on an excavation depth of 2 feet below grade.

The final horizontal and vertical limits of the excavation will be surveyed. This alternative is estimated to require one month to complete.

# 3.4.1.6 Temporary Staging and Stockpiling

Temporary staging and stockpiling will be the same as described in Section 3.2.1.6.

### 3.4.1.7 Waste Characterization Sampling

Waste characterization sampling will be the same as described in Section 3.2.1.7.

### 3.4.1.8 Dewatering and Groundwater Treatment

Dewatering will be the same as described in Section 3.2.1.8, with the exception that the construction dewatering and groundwater treatment and disposal for Remedial Alternative 3 will be implemented to facilitate the excavation of soils for the proposed development foundation.

#### **3.4.1.9 Traffic Control**

Traffic control will be the same as described in Section 3.2.1.9.

#### 3.4.1.10 Offsite Disposal and Equipment Decontamination

Offsite disposal and equipment decontamination will be the same as described in Section 3.2.1.10.

### **3.4.1.11 End-point Sampling**

End-point bottom sampling (at a frequency of one sample per 900 square feet of bottom area in accordance with the guidance provided in NYSDEC DER-10 Sections 3.5 and 5.4 for excavations 20 to 300 feet in perimeter) would be conducted for constituents that exceeded the restricted residential criteria in previous sampling events to confirm that the restricted residential criteria were met. Areas that appear more heavily impacted, if any, will be given sampling preference.

End-point sidewall samples (at a frequency of one sample per 30 linear feet or at least one sample per sidewall) would be conducted for constituents that exceeded the restricted residential use criteria in previous sampling events to confirm that the restricted residential criteria were met. Areas that appear more heavily impacted, if any, will be given sampling preference. If the end-point sidewall sample results indicate that concentrations of target constituents are detected below the restricted residential use criteria, the excavation activities will be considered complete. However, if concentrations of target constituents are detected at a level above the restricted residential use criteria, the excavation activities, including additional end-point sidewall

sampling, will continue until these conditions are met or to the extent feasible with underground utilities, adjacent building foundations and sidewalk or property boundary limitations.

The locations of the end-point samples will be surveyed.

End-point samples will be submitted to a New York State ELAP certified laboratory. Category B laboratory data deliverables, as defined in the analytical services protocol (ASP), will be requested. In addition, a Data Usability Summary Report (DUSR) will be prepared by a party independent from the laboratory performing the analysis in accordance with Appendix 2B of DER-10.

# 3.4.1.12 Backfilling

Backfilling will be the same as presented in Section 3.2.1.12.

# **3.4.1.13 Interim Site Restoration**

Interim site restoration will be the same as described in Section 3.2.1.13.

# 3.4.1.14 Health and Safety and Community Air Monitoring

Health and safety and community air monitoring will be the same as described in Section 3.2.1.14.

# 3.4.1.15 Post-Remediation Groundwater Monitoring

Post-remediation groundwater monitoring will be the same as described in Section 3.2.1.15.

# 3.4.1.16 Post-Remediation Evaluation of Potential Vapor Intrusion Concerns

The post-remediation evaluation of potential vapor intrusion concerns will be the same as described in Section 3.2.1.16.

# 3.4.2 Evaluation

The following sections provide a detailed evaluation of Remedial Alternative 3 based on the specific evaluation criteria.

### 3.4.2.1 Overall Protection of Human Health and the Environment

Alternative 3 will be protective of human health and the environment by removing soil that was impacted above the restricted residential criteria. The potential for human and environmental exposure to these constituents onsite will be mitigated by excavation of the impacted soil with concentrations in excess of the restricted residential use criteria to an elevation of two feet below grade, disposing of impacted material offsite, backfilling the area with material meeting the unrestricted use criteria or construction of the proposed development's building slab and adjacent surface covers. Potential post-remediation exposures from residual groundwater and soil vapor contamination, if present, cannot be evaluated until the remedial action has been completed. However, it is anticipated that groundwater use will be restricted at the redeveloped Site. Also, vapor intrusion should not be an issue at the redeveloped Site as a vapor barrier / water proof barrier will be in place in addition to an active ventilation system in the basement as part of the building's mechanical system.

During site-preparation work (e.g., excavation of subsurface soil) for remedial purposes (e.g., construction of building foundation, etc.) and other construction purposes, subsurface workers may be exposed to impacted soil and groundwater. Potential worker exposure to soil and groundwater during excavation activities will be mitigated through the required Occupational Safety and Health Administration (OSHA) training and appropriate health and safety plans (HASPs). Any potential environmental exposure will be mitigated by engineering controls implemented during construction.

# 3.4.2.2 Compliance with Remedial Goals, SCGs and RAOs

SCGs for the proposed remedy are presented in Section 2.5.2 and RAOs are presented in Section 2.7. Alternative 3 will achieve compliance with the remedial goals, SCGs and RAOs for onsite soil through source removal to Track 4 restricted residential cleanup levels. Compliance with SCGs for groundwater and soil vapor cannot be determined until the remedial action has been completed.

# 3.4.2.3 Long-Term Effectiveness and Permanence

Alternative 3 removes some soil onsite that was impacted above the restricted residential criteria by the historic releases. Alternative 3 returns the Site to conditions that are compatible with the

zoning and reasonably anticipated future use of the Site as residential housing with ground level commercial retail space.

Based upon the Site's location in an urban area and the potential presence of residual impacted groundwater and soil vapor onsite as well as on adjacent properties following excavation of onsite soils to restricted use standards, long term engineering and institutional controls will be necessary for Alternative 3 to ensure long term effectiveness and permanence. These engineering and institutional controls, in the form of a vapor barrier / water proof barrier below the bottom slab and outside foundation walls, the engineered cover composite system consisting of the proposed building's bottom slab, adjacent surface covers, and a groundwater use restriction will be necessary to prevent exposure from sources of soil, soil vapor, and groundwater.

Alternative 3 will continue to meet RAOs in the future, thus providing a permanent long-term solution for the Site.

### 3.4.2.4 Reduction in Toxicity, Mobility or Volume through Treatment

By removing soil impacted above the restricted residential use criteria, Alternative 3 will reduce the toxicity, mobility, and volume of contaminants at the Site.

#### **3.4.2.5** Short-term Effectiveness

The health and environmental risks associated with implementation of Alternative 3 are minimal for the following reasons.

The excavation and handling of soil (i.e., urban fill) may pose a potential risk to onsite workers through direct contact with the soil, airborne particulates (dust), odors and organic vapors, and physical risks associated with the depth of excavation. However, potential short-term exposure to onsite workers will be addressed with a HASP and mitigated through use of appropriate personal protective equipment (PPE), conducting air monitoring, and implementing dust and vapor suppression activities.

Possible environmental risks to the community during the excavation and handling of soil include the potential for odors, dust and organic vapors resulting from the disturbance of soil and the uncontrolled migration of impacted soil by onsite workers and vehicles. In addition, other potential impacts to the community could include construction-related noise, vibrations, and traffic. Community air monitoring activities will be conducted during all excavation and soil handling activities to identify the need for perimeter controls. In addition, decontamination procedures will minimize the potential for offsite migration of impacted soil beyond the Site boundary. An approved truck traffic plan will minimize disturbance to the local roads and community.

# 3.4.2.6 Implementability

The labor, equipment, materials and supplies for the implementation of Alternative 3 are commercially available and have been proven effective and reliable for remediation of the media of concern at the Site under similar circumstances. Alternative 3 is implementable through source removal combined with engineering and institutional controls under a restricted residential cleanup. It is not anticipated that future remedial action following the proposed remedial construction will be required.

# 3.4.2.7 Cost

The construction and equipment costs associated with Alternative 3 are estimated at approximately \$523,000. The following assumptions were made to develop this cost estimate:

- It is anticipated that a short-term groundwater monitoring program will be implemented following the completion of Site redevelopment activities;
- Excavations will be dependent upon the depth and locations of previously identified soil with concentrations in excess of the restricted residential SCOs;
- CAMP monitoring will be necessary for one to two months; and
- Excavations will be smaller than required to meet the Alternative 1 unrestricted residential use criteria for all end-point samples.

# 3.4.2.8 Compatibility with Land Use

The present and reasonably anticipated future use of the Site is residential housing with commercial ground level retail. Following implementation of the remedy, the Site will be

restored to residential use conditions, thereby meeting the cleanup standards for future residential land use. A groundwater use restriction will be implemented to prevent future exposure to impacted groundwater, and in turn, soil vapor.

# 3.5 Selected Soil Remedial Alternative

Remedial Alternative 2 was selected for implementation in onsite areas since it adequately meets each of the evaluation criteria, but is more easily implemented than Alternative 1 and as easily implemented as Alternative 3.

In summary, Alternative 2:

- Is protective of public health and the environment;
- Complies with the appropriate restricted residential criteria for soil;
- Provides long-term effectiveness and permanence through source removal and engineering and institutional controls;
- Reduces the toxicity, mobility, or volume of impacted material through source removal;
- Provides short-term effectiveness, including minimal impacts to workers or the surrounding neighborhood through the implementation of engineering controls during construction;
- Is readily implemented;
- Can be implemented at a lower cost than Alternative 1; and
- Is compatible with land use.

Alternative 2 is consistent with the approach for a restricted residential use scenario described in Part 375 Regulations.

# 3.6 Preferred Remedy land use factor evaluation

As described in Section 3.3, the preferred Remedial Alternative 2 proposes source removal for the excavation and offsite disposal of soil exceeding the restricted residential use criteria.

A land use factor evaluation of the preferred Remedial Alternative 2 is provided below based on the following criteria as required by Article 27, Title 14 of the Environmental Conservation Law 27-1415.

**REMEDIAL ENGINEERING, P.C.** 

# 3.6.1 Zoning

As described in the Project BCP Application "the proposed building will be constructed in a C8-3 commercial zone where it is permitted as-of-right.

## 3.6.2 Applicable comprehensive community master plans or land use plans

The proposed development has been discussed with the local Community Board and has received a very positive and favorable response. The Community Board has held a public hearing in accordance with the New York City Department of Planning's Uniform Land Use Review Procedure.

## **3.6.3** Surrounding property uses

From Section 1.3.1, land use surrounding the Site is a combination of commercial and residential areas. The presence of a residential building in the area is consistent with the surrounding property uses.

## 3.6.4 Citizen participation

Citizen participation will be pursued throughout the remedial process in accordance with Part 375 Regulations.

### **3.6.5** Environmental justice concerns

There are no environmental justice concerns for this Site.

### **3.6.6 Land use designations**

There are no federal or state land use designations pertaining to this Site.

### **3.6.7** Population growth patterns

Population growth patterns support the proposed use for the Site.

# 3.6.8 Accessibility to existing infrastructure

The Site is accessible to existing infrastructure. The close proximity of the Cross Bronx Expressway and the MTA's 174<sup>th</sup> Street Station to the Site will be beneficial during soil removal and enable Contractor access.

### **3.6.9 Proximity to cultural resources**

The Site contains cultural resources within one-half mile, including:

Herman Ridder Junior High School (Public School 98) 1619 Boston Road Bronx, New York 10460 New York City Landmark Preservation Commission – Designation List 230; LP-1628

The following New York City landmark is located approximately one-half mile to the west of the site:

Crotona Pool Complex and Bath House Crotona Park, between East 172nd Street and East 173rd Street

Cultural resources will not be endangered by the Remedial Alternative.

## **3.6.10 Proximity to natural resources**

The Site contains natural resources within one-half mile (see Attachment J of the BCP Application). Natural resources will not be endangered by the Remedial Alternative.

### **3.6.11** Offsite groundwater impacts

Onsite and offsite groundwater is impacted with VOCs in excess of the AWQSGVs for Class GA Groundwater. By removing the source of contaminated onsite soil in excess of the restricted residential use criteria and the pumping and treating of groundwater, Remedial Alternative 2 will reduce the toxicity, mobility, and volume of contaminants in offsite groundwater.

### **3.6.12 Proximity to floodplains**

The Site is located outside of the 500-year floodplain. The closest 100-year and 500-year flood zones are present along the Bronx River, approximately 1,800 feet to the east of the Site.

### 3.6.13 Geography and geology of the Site

The removal of subsurface soil material will be required to implement the preferred Remedial Alternative 2. The proposed development's design will take into account the geography and geology of the Site.

# **3.6.14 Current Institutional Controls**

There are currently no institutional controls on the property.

## 3.7 Summary of Selected Remedial Actions

The Remedial Action will consist of the following remedial elements:

- 1. Excavation of soil/fill exceeding Track 2 restricted residential SCOs listed in Table 2 through Table 6 and shown in Figure 4;
- 2. Groundwater remediation during construction activities consisting of excavation dewatering, treatment and offsite disposal;
- 3. Site Monitoring of airborne VOCs and particulates in accordance with a NYSDEC approved Community Air Monitoring Plan (CAMP) for all intrusive and soil handling activities;
- 4. Implementation of proper dust and odor suppression techniques for all intrusive and soil handling activities;
- 5. Import of materials to be used for backfill and cover in compliance with: (1) the Sub-part 375-6 unrestricted SCOs, (2) all Federal, State and local rules and regulations for handling and transport of material;
- 6. Implementation of a Soil Erosion and Sediment Control Plan;
- 7. Screening for indications of contamination (by visual means, odor, and monitoring with PID) of all excavated soil during any intrusive Site work;
- 8. Collection and analysis of end-point soil samples to evaluate the performance of the remedy with respect to attainment of Track 2 restricted residential SCOs;
- 9. Appropriate offsite disposal of all material removed from the Site in accordance with all Federal, State and local rules and regulations for handling, transport, and disposal;
- 10. Post-remediation groundwater monitoring for a period of two years;
- 11. Post-remediation evaluation of potential soil vapor intrusion concerns;
- 12. Construction and maintenance of a engineered cover consisting of concrete covered sidewalks, engineered landscaped areas, and concrete building slabs to prevent human exposure to residual contaminated soil/fill remaining under the Site;
- 13. Recording of an Environmental Easement, including Institutional Controls, to prevent future exposure to any residual contamination remaining at the Site (the Environmental Easement is discussed in Section 8.1);
- 14. Publication of a Site Management Plan for long term management of residual contamination as required by the Environmental Easement, including plans

for: (1) Institutional and Engineering Controls, (2) monitoring, (3) operation and maintenance and (4) reporting;

- 15. All responsibilities associated with the Remedial Action, including permitting requirements and pretreatment requirements, will be addressed in accordance with all applicable Federal, State and local rules and regulations; and
- 16. Installation of a vapor barrier to prevent potential water seepage and vapor migration, if any, from the underlying and adjacent soils.

Although not a component of the selected remedy, the current proposed Site development plan includes a basement that will be constructed below the water table. As such, there will be a vapor barrier or an application of waterproofing material on foundation bottom slab and outside foundation walls to prevent potential water seepage and vapor migration, if any, from the underlying and adjacent soils. The current Site development plan includes sub-grade parking garage in the basement that will have an active ventilation system designed to meet NYCDOB requirements. This ventilation system will provide further protection from potential accumulation of VOCs in the basement in the unlikely breach of the waterproofing material and/or vapor barrier.

Remedial activities will be performed at the Site in accordance with this NYSDEC-approved RAWP. All deviations from the RAWP will be promptly reported to NYSDEC for approval and fully explained in the FER.

## 4.0 REMEDIAL ACTION PROGRAM

The following sections provide a summary of the remedial action, including governing documents, general remedial construction information, Site preparation, and reporting requirements.

## 4.1 Governing Documents

Governing documents for this RAWP are introduced herein and are discussed generally. Some governing documents noted below will be developed with the aid of the Project's Construction Manager and foundation/earthwork subcontractors, whom are to be decided based upon future bidding and therefore, not included herein. This Plan review and approval process from the project subcontractors is essential to ensure that the key elements of the plans are properly implemented and receive total buy in. Key highlights of all plans are included here.

The following project plans are discussed in the sections below:

- Site Specific Health and Safety Plan
- Quality Assurance Project Plan
- Construction Quality Assurance Plan
- Soil/Materials Management Plan
- Stormwater Pollution Prevention Plan
- Community Air Monitoring Plan
- Contractors Site Operations Plan
- Community Participation Plan

# 4.1.1 Site Specific Health & Safety Plan (HASP)

All remedial work performed under this plan will be in full compliance with governmental requirements, including Site and worker safety requirements mandated by Federal Occupational Safety and Health Administration (OSHA). As defined in the health and safety plan (HASP), all Site workers conducting intrusive activities in the exclusion zone will be required to have 40-hour Hazardous Waste Operation Worker (HAZWOPER) training in accordance with the referenced regulations
The Volunteer and associated parties preparing the remedial documents submitted to the State and those performing the construction work, are completely responsible for the preparation of an appropriate Health and Safety Plan and for the appropriate performance of work according to that plan and applicable laws. The Site-Specific HASP will be used to protect all personnel working on the Site, as well as any Site visitors. The HASP shall be readily available at all times. The Excavation/Remedial Contractor performing the work will also be responsible for preparing his own Site-specific HASP. During all phases of work, the Excavation/Remedial Contractor shall monitor health and safety conditions and fully enforce all provisions of the Sitespecific HASP. The Excavation/Remedial Contractor shall also be responsible for monitoring general Site conditions and for safety hazards. Specifically, monitoring will be performed to verify that all requirements of 29 CFR 1910 and 1926 are adhered to.

The Health and Safety Plan (HASP) and requirements defined in this Remedial Action Work Plan pertain to all remedial and invasive work performed at the Site until the issuance of a Certificate of Completion.

As provided in the HASP, Site controls will be established to limit potential exposure to impacted materials. A support zone (SZ), contamination reduction zone (CRZ), and an exclusion zone (EZ) will be established to define specific areas of personal protective equipment (PPE) requirements. Site worker decontamination procedures will be adhered to when leaving the EZ. Personnel decontamination procedures will be conducted within the CRZ. Control zones and PPE requirements will be defined in the HASP.

Health and safety monitoring, including both worker and community monitoring, will be performed during all work activities. All monitoring activities will be performed in accordance with the NYSDEC TAGM 4031-Fugitive Dust Suppression and Particulate Monitoring Program at Inactive Hazardous Waste Sites (NYSDEC, 1989), the New York State Department of Health (NYSDOH) protocol for Community Air Monitoring (NYSDEC, 2002), and HASP for the Site.

The Site Safety Coordinator will be identified upon selection of an Excavation/Remedial Contractor. A resume will be provided to NYSDEC prior to the start of remedial construction.

Confined space entry will comply with all OSHA requirements to address the potential risk posed by combustible and toxic gasses.

# 4.1.2 Quality Assurance Project Plan (QAPP)

A Quality Assurance Project Plan (QAPP) provides a detailed description of site specific sampling and analytical methods and sample handling procedures for end-point soil sampling. The elements are provided in Section 5.2.

## 4.1.3 Construction Quality Assurance Plan (CQAP)

The Construction Quality Assurance Plan (CQAP) for all construction activities provides a detailed description of the observation and testing activities that will be used to monitor construction quality and confirm that remedy construction is in conformance with the remediation objectives and specifications. The CQAP will be prepared by the selected Excavation/Remedial Contractor and will include the following.

- Responsibilities and authorities of the organizations and key personnel involved in the design and construction of the remedy.
- Qualifications of the quality assurance personnel that demonstrate that they possess the proper training and experience necessary to fulfill project-specific responsibilities.
- The observations and tests that will be used to monitor construction and the frequency of performance of such activities.
- The sampling activities, sample size, sample locations, frequency of testing, acceptance and rejection criteria, and plans for implementing corrective measures as addressed in the plans and specifications.
- Requirements for project coordination meetings between Volunteer and its representatives, the Construction Manager, Excavation/Remedial Contractor, foundation subcontractors, and other involved parties.
- Description of the reporting requirements for quality assurance activities including such items as daily summary reports, schedule of data submissions, inspection data sheets, problem identification and corrective measures reports, evaluation reports, acceptance reports, and final documentation.

### 4.1.4 Soil/Materials Management Plan (SoMP)

The Soil/Materials Management Plan (SoMP) includes detailed plans for managing all soils/materials that are disturbed at the Site, including excavation, handling, storage, transport,

and disposal. The SoMP also includes all of the controls that will be applied to these efforts to assure effective, nuisance-free performance in compliance with all applicable Federal, State and local laws and regulations. The SoMP is provided in Section 5.4.

### **4.1.5** Storm-Water Pollution Prevention Plan (SWPPP)

The erosion and sediment controls will be in conformance with requirements presented in the New York State Guidelines for Urban Erosion and Sediment Control.

Haybales and/or silt fence will be placed by the remedial contractor at locations upgradient of excavation areas, within the perimeter plywood fencing, to control storm water runoff and surface water from entering or exiting the excavation. These control measures will be installed prior to initiating the soil excavation. Stormwater and collected surface water will be managed as discussed in Sections 5.4.7 and 5.4.10.

### 4.1.6 Community Air Monitoring Plan (CAMP)

All soil handling components of the remedial action will require air monitoring. The air monitoring program will be implemented during all intrusive remedial actions to measure the concentration of particulates in ambient air in the work zone.

The Community Air Monitoring Program (CAMP) will be developed in accordance with the NYSDOH Generic Community Air Monitoring Plan contained in Appendix 1A of the draft DER-10 (NYSDEC, 2002). The CAMP includes real-time continuous air monitoring at the Site's downwind perimeter for VOCs and particulates. Implementation and management procedures are specified within the CAMP. During all phases of work, the Excavation/Remedial Contractor will be responsible for mitigating any vapor and particulate issues, via suppression techniques defined in the CAMP.

### 4.1.7 Contractors Site Operations Plan (SOP)

A Contractors Site Operations Plan (SOP) will be developed with the selected Excavation/Remedial Contractor.

The Remediation Engineer shall review all plans and submittals for this remedial project (including those listed above and contractor and sub-contractor document submittals) and shall confirm that they are in compliance with this RAWP. The Remediation Engineer is responsible to ensure that all later document submittals for this remedial project, including contractor and sub-contractor document submittals, are in compliance with this RAWP. All remedial documents will be submitted to NYSDEC and NYSDOH in a timely manner and prior to the start of work.

# 4.1.8 Community Participation Plan (CPP)

A Community Participation Plan (CPP) was filed with NYSDEC concurrent to submission of the BCP Application.

A certification of mailing will be sent by the Volunteer to the NYSDEC project manager following the distribution of all Fact Sheets and notices that includes: (1) certification that the Fact Sheets were mailed, (2) the date they were mailed; (3) a copy of the Fact Sheet, (4) a list of recipients (contact list); and (5) a statement that the repository was inspected on (specific date) and that it contained all of applicable project documents.

No changes will be made to approved Fact Sheets authorized for release by NYSDEC without written consent of the NYSDEC. No other information, such as brochures and flyers, will be included with the Fact Sheet mailing.

A Community Participation Plan for this project is attached in Appendix C.

Document repositories have been established at the following locations and contain all applicable project documents:

The New York Public Library Morrisania Branch Library % Colbert Nembhard, Branch Manager 610 East 169th Street Bronx, New York 10456

## 4.2 General Remedial construction information

The following sections discuss general remedial construction information related to the 1800 SB LLC project including project organization, remedial engineer responsibilities, work schedule, and worker requirements and responsibilities.

## 4.2.1 Project Organization

The Excavation/Remediation contractor has not been selected to date. Once established, a listing of key personnel involved in the Remedial Action will be provided to the NYSDEC.

## 4.2.2 Remedial Engineer

The Remedial Engineer for this project will be Omar Ramotar, P.E. The Remedial Engineer is a registered professional engineer licensed by the State of New York. The Remedial Engineer will have primary direct responsibility for implementation of the remedial program for the project. The Remedial Engineer will certify in the Final Engineering Report that the remedial activities were observed by qualified environmental professionals under his supervision and that the remediation requirements set forth in the Remedial Action Work Plan and any other relevant provisions of ECL 27-1419 have been achieved in full conformance with that Plan. Other Remedial Engineer certification requirements are listed later in this RAWP.

The Remedial Engineer will coordinate the work of other contractors and subcontractors involved in all aspects of remedial construction, including soil excavation, stockpiling, characterization, removal and disposal, air monitoring, emergency spill response services, import of backfill material, and management of waste transport and disposal. The Remedial Engineer will be responsible for all appropriate communication with NYSDEC and NYSDOH.

The Remedial Engineer will review all pre-remedial plans submitted by contractors for compliance with this Remedial Action Work Plan and will certify compliance in the Final Remediation Report.

The Remedial Engineer will provide the certifications listed in Section 9.1 in the Final Engineering Report.

## 4.2.3 Remedial Action Construction Schedule

A schedule will be prepared and submitted following development and finalization of work sequencing with the Excavation/Remedial Contractor. It is currently assumed that the remedial action would be initiated within three months of NYSDEC approval of the RAWP.

## 4.2.4 Work Hours

The hours for operation of remedial construction will conform to the New York City Department of Buildings construction code requirements or according to specific variances issued by that agency. DEC will be notified by the Applicant of any variances issued by the Department of Buildings. NYSDEC reserves the right to deny alternate remedial construction hours.

# 4.2.5 Site Security

Security for the work, equipment, materials, supplies, facilities, personnel, and incidentals will be provided throughout the performance of the work at the Site. The Site will be surrounded by perimeter fencing in accordance with the New York City construction and building code requirements. The fences and gates will be closed and locked when there is no activity on the Site and any breaks or gaps will be repaired immediately. Any equipment that will operate after normal working hours will include the appropriate automatic shutoffs and/or alarms to prevent unsafe operation. Temporary fencing will supplement the perimeter fencing to delineate and secure the area of ongoing remediation activities within the Site such as soil stockpiles, and health and safety exclusion zones.

All personnel and visitors will be required to sign-in upon entering the Site and sign-out upon leaving. A sign-in/sign-out sheet will be maintained at the Site. To restrict access during remediation activities, warning signs and barrier tape will be installed at certain locations, such as open excavations.

The Site security, control and access measures will be described in more detail in the SOP.

# 4.2.6 Traffic Control

The truck route for ingress and egress will be determined with the Volunteer, Excavation/Remedial Contractor, and Project Manager in accordance with the NYSDEC

approved Contractors SOP. The route will be selected based on the existing access roads and an effort to limit transportation of work vehicles through neighboring residential and commercial areas.

## 4.2.7 Contingency Plan

A contingency plan describes procedures to be conducted in the event of an emergency, or the remedial work fails to meet any of its objectives or otherwise fails to protect human health or the environment. The Excavation/Remedial Contractor will prepare and submit a Contingency Plan prior to commencement of the remedial action.

## 4.2.8 Worker Training and Monitoring

As discussed in Section 4.1.1, all Site workers conducting intrusive activities in the exclusion zone will be required to have 40-hour HAZWOPER training in accordance with the referenced regulations.

## 4.2.9 Agency Approvals

The Volunteer has addressed all SEQRA requirements for this Site. All permits or government approvals required for remedial construction have been, or will be, obtained prior to the start of remedial construction.

The planned end use for the Site shall be in conformance with the proposed zoning for the property as determined by New York City Department of Planning. A Certificate of Completion will not be issued for the project unless conformance with zoning designation is demonstrated.

A complete list of all local, regional, and national governmental permits, certificates or other approvals or authorizations required to perform the remedial and development work will be provided to NYSDEC. This list includes a citation of the law, statute, or code to be complied with, the originating agency, and a contact name and phone number in that agency. This list will be updated in the Final Remediation Report.

### 4.2.10 NYSDEC BCP Signage

A project sign will be erected at the main entrance to the Site prior to the start of any remedial activities. The sign will indicate that the project is being performed under the New York State Brownfield Cleanup Program. The sign will meet the detailed specifications provided by the NYSDEC Project Manager.

### 4.2.11 Pre-Construction Meeting with NYSDEC

A pre-construction meeting will be conducted prior to the start of the remediation activities. This meeting will be attended by Volunteer representatives, the Contractor, the Remedial Engineer, and the NYSDEC. The meeting agenda will include: personnel roles, work hours, schedule, communications, training requirements, site preparation work status, and a discussion of upcoming activities with a focus on related environmental concerns of the NYSDEC.

## 4.2.12 Emergency Contact Information

An emergency contact sheet with names and phone numbers will be included in the HASP. That document will define the specific project contacts for use by NYSDEC and NYSDOH in the case of a day or night emergency.

### 4.2.13 Remedial Action Costs

The total estimated cost of the Remedial Action components of the project is \$1,814,000. An itemized and detailed summary of estimated costs for all remedial activity is attached as Appendix D This will be revised based on actual costs and submitted as an Appendix to the Final Remediation Report.

### 4.3 Site Preparation

Site preparation activities will include: identification of unmapped utilities, utility relocation (if required); Site survey for pre-existing conditions, establishment of temporary construction facilities, security and perimeter fencing inspection and installation (as necessary). The preparatory tasks are described in more detail below.

# 4.3.1 Mobilization

As described in Section 3.2.1.1, prior to commencing the remediation construction activities, the Remediation and General Contractor will perform the following mobilization and Site preparation activities:

- Identification and markout of all aboveground and underground utilities;
- De-energizing, turning off and disconnecting existing subsurface utility services known to be present in the work area (e.g., water, gas, electric and sewer);
- Mobilization of remediation equipment and materials;
- Traffic control measures;
- Work zone demarcation;
- Installation of erosion control devices in accordance with the Soil Erosion and Sediment Control Plan;
- Conduct pre-construction survey prepared by a land surveyor licensed by the State of New York
- Asphalt/ concrete pavement removal;
- Installation of perimeter air monitoring system;
- Installation of temporary facilities;
- Installation of dewatering and water treatment system; and
- Installation of the decontamination facilities.

The detailed description of the mobilization and site preparation activities and responsibilities will be presented in the Contractors' Site Operations Plan.

# **4.3.2** Erosion and Sedimentation Controls

Soil erosion and sediment control measures for management of storm water will be installed in accordance with the New York Guidelines for Urban Erosion and Sediment Control consistent with the SWPPP discussed in Section 4.1.5 and stormwater and collected surface water discussed in Sections 5.4.7 and 5.4.10. Haybales and/or silt fence will be placed by the remedial contractor at locations upgradient of excavation areas, within the perimeter fencing, to control stormwater

runoff and surface water from entering or exiting the excavation. These control measures will be installed prior to initiating the soil excavation.

### **4.3.3** Stabilized Construction Entrance(s)

If necessary, stabilized construction entrances will be installed at all points of vehicle ingress and egress to the Site. The truck wash and the stone-based egress path will be continuous so that trucks do not get recontaminated prior to departure from the Site.

## 4.3.4 Utility Marker and Easements Layout

The Volunteer and its contractors are solely responsible for the identification of utilities that might be affected by work under the RAWP and implementation of all required, appropriate, or necessary health and safety measures during performance of work under this RAWP. The Volunteer and its contractors are solely responsible for safe execution of all invasive and other work performed under this RAWP. The Volunteer and its contractors must obtain any local, State or Federal permits or approvals pertinent to such work that may be required to perform work under this RAWP. Approval of this RAWP by NYSDEC does not constitute satisfaction of these requirements.

The presence of utilities and easements on the Site will be investigated by the Volunteer and its Contractors. The utility survey shall assess and determine if any risks or impediments to the planned work under this Remedial Action Work Plan are posed by utilities or easements on the Site.

# 4.3.5 Sheeting and Shoring

Appropriate management of structural stability of onsite or offsite structures during onsite activities include excavation is the sole responsibility of the Volunteer and its contractors. The Volunteer and its contractors are solely responsible for safe execution of all invasive and other work performed under this Plan. The Volunteer and its contractors must obtain any local, State or Federal permits or approvals that may be required to perform work under this Plan. Further, the Volunteer and its contractors are solely responsible for the implementation of all required, appropriate, or necessary health and safety measures during performance of work under the approved Plan.

## 4.3.6 Equipment and Material Staging

All equipment and work materials will be staged in a location noted in the Contractors SOP.

## 4.3.7 Decontamination Area

A temporary decontamination pad will be constructed to decontaminate trucks and other vehicles/equipment leaving the Site. The decontamination pad will be constructed using 60-mil high density polyethylene (HDPE) liner with perimeter berms, sloped to a low-lying sump to contain any liquids. The decontamination pad will be sized to accommodate the largest construction vehicle used and located prior to the stabilized construction egress.

## 4.3.8 Site Fencing

A temporary fence will be installed around the perimeter of the Site. The perimeter fencing will be eight feet in height, with double access gates to allow ingress and egress of construction vehicles.

## 4.3.9 Demobilization

Following the completion of all remedial activities, the Site will be prepared for the subsequent construction activities required for the development project. All temporary structures not required for the subsequent construction work will be removed. Materials used in constructing the waste staging area (e.g., plastic sheeting, haybales) will be removed and disposed properly. Soil underlying the plastic sheeting in the waste staging area will be inspected for any visual staining or evidence of waste materials. Any impacts to the soil in this area will be removed and disposed as well. All equipment will be decontaminated prior to leaving the Site.

# 4.4 Reporting

All daily and monthly Reports will be included in the Final Engineering Report. The following sections provide a summary of reports that will be prepared and maintained throughout the remedial action.

### 4.4.1 Daily Reports

Daily activity reports will be prepared and maintained on site for compilation and record management.

Daily reports will be submitted to NYSDEC and NYSDOH Project Managers on a weekly basis and will include:

- Date and weather;
- A summary of work activities performed;
- A summary of samples collected;
- An update of progress made during the reporting day;
- Locations of work and quantities of material imported and exported from the Site;
- References to alpha-numeric map for Site activities;
- A summary of any and all complaints with relevant details (names, phone numbers);
- A summary of CAMP finding, including excursions; and
- An explanation of notable Site conditions.

Daily reports are not intended to be the mode of communication for notification to the NYSDEC of emergencies (accident, spill), requests for changes to the RAWP or other sensitive or time critical information. However, such conditions shall be included in the daily reports. Emergency conditions and changes to the RAWP will be addressed directly to NYSDEC Project Manager via personal communication.

Daily Reports will include a description of daily activities keyed to an alpha-numeric map for the Site that identifies work areas. These reports will include a summary of air sampling results, odor and dust problems and corrective actions, and all complaints received from the public.

A Site map will be prepared that shows a predefined alpha-numeric grid for use in identifying locations described in reports submitted to NYSDEC.

The NYSDEC assigned project number will appear on all reports.

## 4.4.2 Monthly Reports

Monthly reports will be submitted to NYSDEC and NYSDOH Project Managers within one week following the end of the month of the reporting period and will include:

- Activities relative to the Site during the previous reporting period and those anticipated for the next reporting period, including a quantitative presentation of work performed (i.e., tons of material exported and imported, etc.);
- Description of approved activity modifications, including changes of work scope and/or schedule;
- Sampling results received following internal data review and validation, as applicable; and,
- An update of the remedial schedule including the percentage of project completion, unresolved delays encountered or anticipated that may affect the future schedule, and efforts made to mitigate such delays.

# 4.4.3 Other Reporting

Photographs will be taken of all remedial activities and submitted to NYSDEC in digital (JPEG) format. Photos will illustrate all remedial program elements and will be of acceptable quality. Representative photos of the Site prior to any Remedial Actions will be provided. Representative photos will be provided of each contaminant source, source area, and Site structures before, during, and after remediation. Photos will be submitted to NYSDEC on CD or other acceptable electronic media and will be sent to NYSDEC's Project Manager (two copies) and to NYSDOH's Project Manager (one copy). CD's will have a label and a general file inventory structure that separates photos into directories and sub-directories according to logical Remedial Action components. A photo log keyed to photo file ID numbers will be prepared to provide explanation for all representative photos. Photos will be submitted as an Appendix to the Final Engineering Report.

Job-site record keeping for all remedial work will be appropriately documented. These records will be maintained by the Remedial Engineer at all times during the project and be available for inspection by NYSDEC and NYSDOH staff.

## 4.4.4 Complaint Management Plan

Any complaints received from the public regarding nuisances or other site conditions will be communicated within 24-hours to NYSDEC and NYSDOH, investigated and remedied, if required.

## 4.4.5 Deviations from the Remedial Action Work Plan

Any required deviations from this RAWP will be discussed by Volunteer's representatives with the NYSDEC. At that time, the reasons for necessary deviations from the approved RAWP will be explained and the effect of the required deviations on the overall remedy will be evaluated. If the deviation is deemed to be a significant change to the RAWP by the NYSDEC, a description and reasons for the proposed change will be emailed to the NYSDEC Project Manager for review and written approval.

### 5.0 REMEDIAL ACTION: MATERIAL REMOVAL FROM SITE

#### Soil Excavation

The Site will be excavated to remove all soil with concentrations in excess of the restricted residential SCOs noted in Section 5.1 and accommodate the proposed building foundation. This work will be conducted after the New York City Department of Buildings has issued a building permit and foundation permit for the Site.

Foundation piles will be installed by the Foundation Contractor retained for the building construction. Following the pile installation, the Remediation Contractor will perform the excavation activities. Note that limited shallow soil excavation (above the groundwater table) may be performed prior to pile installation. The actual sequencing of the foundation pile installation and excavation activities will be based on the final residential building design documents and/or the SOP. The excavation and pile installation will be conducted in a manner that protects the integrity of the adjacent structures. Soil excavation will generally be conducted using traditional excavation equipment. If any underground utilities or other subsurface piping are encountered, the excavation will be performed by hand.

All excavation work will be performed in accordance with the Contractor's SOP (including the Site-specific HASP, CAMP, CQAP). The depth of soil to be excavated and disposed offsite to meet the restricted residential SCOs will be 13 to 15 feet bls. The excavation required for construction of the proposed development will be dependent upon the foundation and sheeting and shoring design, which is yet to be completed.

Soil excavation activities will also be performed for the installation of pile caps, elevator pits, and any other subsurface structures and utilities. Because the excavation of the soil will involve removing soil from below the groundwater table, hydraulic control measures (i.e., excavation dewatering system) will be required to manage groundwater. Wastewater resulting from Site dewatering will be disposed in the public sewers in accordance with NYCDEP permitting procedures, which may require pretreatment, or will be disposed of offsite at an approved disposal facility, pending quantity of wastewater generated.

All trucks removing material from the Site will be loaded onsite and properly decontaminated before leaving the Site.

During the excavation activities, any existing subsurface structures will be demolished and removed when encountered to the extent required to construct the building foundation. The debris will be managed as discussed in the Section 5.4.5. Subsurface obstructions/conditions that may be encountered include former piles, and large pieces of demolition debris. This material, if encountered, will be managed as described below and disposed of in accordance with all federal, state and local regulations. If encountered within the excavation area, these materials will be cut or broken into lengths or pieces suitable for offsite disposal in accordance with approved disposal facility requirements. If this type of debris is not visually impacted, it will be disposed of as construction and demolition debris (C&D) at an approved licensed C&D disposal facility. If the debris is visually impacted, it will be either decontaminated (if possible) and managed as non-impacted C&D, or sampled for waste characterization purposes and disposed of at an appropriate approved facility. Any portion of former piles or structures that extend below the depth of the proposed excavation will be cut off and capped with concrete or clean backfill material.

Excavated material slated for offsite disposal will be temporarily staged on site and disposed in accordance with the Soil and Materials Management Plan discussed in Section 5.4.

Following excavation, end-point soil samples will be collected in accordance with the remedial performance evaluation described in Section 5.2.

### Groundwater

Dewatering will be required during excavation and foundation construction activities to facilitate work below the groundwater table. Extracted groundwater will either be containerized for offsite disposal or be treated as necessary to meet NYCDEP requirements, and discharged to the NYCDEP sewer system. The groundwater will be extracted through the use of drainage sumps and/or perimeter well points to maintain dry conditions within the excavation. Drainage sumps will be installed within the excavation, as necessary, to dewater the excavation area. The water from the drainage sumps will be pumped to either an onsite wastewater storage tank or an onsite

treatment system. The Remediation Contractor will identify, in the Contractor's SOP, the means and methods for dewatering and treatment.

If required, the treatment system may entail a settling tank, oil/water separator, bag filters and carbon filter vessels, respectively. The effluent from the treatment system will be discharged to the NYCDEP sewer system under a sewer discharge permit that will be obtained from the NYCDEP following the submission of information regarding the proposed treatment system. The effluent from the treatment system will be sampled as required by NYCDEP. If wastewater is to be disposed of offsite, it will be stored onsite in an approved water storage tank pending characterization and transport for proper offsite disposal.

The quantity of groundwater to be extracted and treated will be determined based upon the following factors:

- Duration of excavation/foundation work below the water table;
- Depth of excavation beneath the water table; and
- Hydrogeologic factors including hydraulic permeability, hydraulic gradient and rate of recharge into the excavation.

The extracted and treated groundwater will serve a beneficial role in reducing the toxicity, mobility and volume of contaminated groundwater beneath the Site.

Provided below is a more detailed description of the remedial action, including the soil cleanup objectives, remedial performance evaluation, estimated material removal quantities, and Soil and Materials Management Plan.

# 5.1 Soil Cleanup Objectives

The Track 2 restricted residential Soil Cleanup Objectives for this Site are listed in Table 2 through 4 for VOCs, SVOCs and Metals, respectively.

Soil and materials management onsite and offsite will be conducted in accordance with the Soil Management Plan as described below.

Table 2 though Table 6 also summarize all soil samples that exceed the SCOs proposed for this Remedial Action. A spider map that shows all soil samples that exceed the SCOs proposed for this Remedial Action are shown as Figure 4.

If encountered during excavation, UST closures will, at a minimum, conform to criteria defined in DER-10. Additional, USTs are not expected to be encountered due to the prior UST removal efforts documented in Section 2.3.6.3.

# 5.2 Remedial Performance Evaluation (End-Point Sampling)

End-point sampling and reporting will be conducted in accordance with the DER-10 and Section 3.3.1.11 and is discussed in the sections below.

# **5.2.1 End-Point Sampling Frequency**

End-point bottom sampling (at a frequency of one sample per 900 square feet of excavation bottom area in accordance with the guidance provided in NYSDEC DER-10 Section 5.4 for excavations 20 to 300 feet in perimeter) would be conducted in the vadose zone for constituents that exceeded the restricted residential criteria in previous sampling events to confirm that the restricted residential criteria were met. Areas that appear more heavily impacted, if any, will be given sampling preference.

End-point sidewall samples (at a frequency of one sample per 30 linear feet or at least one sample per sidewall) would be conducted for constituents that exceeded the restricted residential use criteria in previous sampling events to confirm that the restricted residential criteria were met. Areas that appear more heavily impacted, if any, will be given sampling preference.

Once clean end points are obtained, excavation will continue, where warranted, to the excavation depths consistent with the requirements of the foundation design.

# 5.2.2 Methodology

Each sample will be inspected for visual evidence of contamination (i.e., staining, presence of petroleum or odors) and field screened for VOCs using a portable photoionization detector

(PID). Soil samples to be submitted for analysis will be homogenized, placed in a laboratory sample jar, and transported to the laboratory in an iced container. Samples will be submitted for analysis for VOCs, SVOCs, and Metals. Laboratory analysis will be performed by a NYSDEC-approved laboratory using USEPA SW846 Method 8260 for TCL VOCs, USEPA SW846 Method 8270 for TCL SVOCs, and USEPA SW846 Method 6010 for TAL Metals.

### **5.2.3 Reporting of Results**

The laboratory will report analytical results in Analytical Services Protocol (ASP) Category B deliverable packages. An electronic data deliverable (EDD) will also be provided by the laboratory.

All end-point sample data generated for the Remedial Action will be logged in a database and organized to facilitate data review and evaluation. The electronic dataset will include the data flags provided in accordance with USEPA Laboratory Data Validation Functional Guidelines for Evaluating Organic Analysis and Inorganic Analyses, as well as additional comments of the data review for ASP/CLP analyses. The data flags include such items as: 1) concentration below required detection limit, 2) estimated concentration due to poor recovery below required detection limit, 3) estimated concentration due to poor spike recovery, and 4) concentration of chemical also found in laboratory blank.

# 5.2.4 QA/QC

Quality control (QC) samples serve as checks on both the sampling and measurements systems and assist in determining the overall data quality with regard to representation, accuracy, and precision. Field duplicates and matrix spike samples are analyzed to assess the quality of the data resulting from the field sampling. Field duplicate samples are individual portions of the same field sample. These samples can be used to estimate the overall precision of the data collection activity. Sampling error can be estimated by the comparison of field sample result and duplicated sample result. During end-point sampling, one field duplicate sample will be collected for each 20 grab samples collected. Matrix spike and matrix spike duplicates are used to evaluate analytical accuracy and precision, respectively. MS/MSDs will be analyzed by the laboratory at a frequency of one per preparation batch.

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## 5.2.5 DUSR

A Data Usability Summary Report (DUSR) will be prepared to evaluate the end-point samples by a party independent from the laboratory performing the analysis in accordance with Appendix 2B of DER-10.

## 5.2.6 Reporting of End-Point Data in FER

Chemical labs used for all end-point sample results and contingency sampling will be NYSDOH ELAP certified.

End point sampling, including bottom and side-wall sampling, will be performed in accordance with DER-10 sample frequency requirements. Side-wall samples will be collected a minimum of every 30 linear feet. Bottom samples will be collected at a rate of one for every 900 square feet. The FER will provide a tabular and map summary of all end-point sample results and exceedances of SCOs.

# **5.3 Estimated Material Removal Quantities**

The estimated quantity of material removed from the Site will be governed by the minimum quantity of soil to:

- Remove all onsite soil with VOC, SVOC and Metals concentrations in excess of the Sub-part 375-6 restricted residential SCOs; and
- Prepare the Site foundation for construction of the proposed redevelopment project.

The depth of soil to be excavated and disposed offsite to meet the restricted residential SCOs varies from 13 to 20 feet bls. The excavation required for construction of the proposed development will be dependent upon the foundation and sheeting and shoring design, which is yet to be completed. Maps showing the extent of materials to be removed, imported or re-used on Site for construction of the proposed development will be provided to NYSDEC in the Contractor's SOP and/or SoMP.

The estimated quantity of soil/fill to be removed from the Site to meet the restricted residential SCOs is approximately 6,675 cubic yards. The estimated quantity of soil to be imported into the

Site for backfill and cover soil is 100 cubic yards. The estimated quantity of soil/fill expected to be re-used/relocated on Site is 100 cubic yards.

The estimated quantity of construction wastewater (e.g., extracted and treated groundwater, decontamination water, runoff etc.) to be removed from the Site is 200,000 gallons. This volume will be highly dependent upon the construction duration, excavation depth, hydrogeologic conditions, and weather during the construction period.

## 5.4 Soil/Materials Management Plan

The following sections provide the Soil Management Plan to be implemented during the Remedial Action.

# **5.4.1 Soil Screening Methods**

Visual, olfactory and PID soil screening and assessment will be performed by a qualified environmental professional during all remedial and development excavations into known or potentially contaminated material (Residual Contamination Zone). Soil screening will be performed regardless of when the invasive work is done and will include all excavation and invasive work performed during the remedy and during development phase, such as excavations for foundations and utility work, prior to issuance of the COC.

All primary contaminant sources (including but not limited to tanks and hotspots) identified during Site Characterization, Remedial Investigation, and Remedial Action will be surveyed by a surveyor licensed to practice in the State of New York. This information will be provided on maps in the Final Engineering Report.

Screening will be performed by qualified environmental professionals. Resumes will be provided for all personnel responsible for field screening (i.e., those representing the Remedial Engineer) of invasive work for unknown contaminant sources during remediation and development work.

## **5.4.2 Stockpile Methods**

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

Stockpiles will be kept covered at all times with appropriately anchored tarps. Stockpiles will be routinely inspected and damaged tarp covers will be promptly replaced.

Soil stockpiles will be continuously encircled with silt fences. Haybales will be used as needed near catch basins, surface waters and other discharge points.

A dedicated water truck equipped with a water cannon will be available onsite for dust control.

# 5.4.3 Materials Excavation and Load Out

The Remediation Engineer or a qualified environmental professional under his supervision will oversee all invasive work and the excavation and load-out of all excavated material.

The Volunteer and its contractors are solely responsible for safe execution of all invasive and other work performed under this Plan.

The presence of utilities and easements on the Site will be investigated by the Volunteer and its Contractors. The utility survey shall assess and determine if any risks or impediments to the planned work under this Remedial Action Work Plan are posed by utilities or easements on the Site.

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

A truck wash will be operated onsite. The Remediation Engineer will be responsible for ensuring that all outbound trucks are inspected and will be washed at the truck wash, as required to remove loose soils before leaving the Site until the remedial construction is complete.

Locations where vehicles enter or exit the Site shall be inspected daily for evidence of offsite sediment tracking.

The Remediation Engineer will be responsible for ensuring that all egress points for truck and equipment transport from the Site will be clean of dirt and other materials derived from the Site during Site remediation and development. Cleaning of the adjacent streets will be performed as needed to maintain a clean condition with respect to Site -derived materials.

The Volunteer and associated parties preparing the remedial documents submitted to the State, and parties performing this work, are completely responsible for the safe performance of all invasive work, the structural integrity of excavations, and for structures that may be affected by excavations (such as building foundations and bridge footings).

The Remedial Engineer will ensure that Site development activities will not interfere with, or otherwise impair or compromise, remedial activities proposed in this Remedial Action Work Plan.

Each hotspot and structure to be remediated (USTs, vaults and associated piping, transformers, etc.) will be removed and end-point remedial performance sampling completed before excavations related to Site development commence proximal to the hotspot or structure.

Development-related grading cuts and fills will not be performed without NYSDEC approval and will not interfere with, or otherwise impair or compromise, the performance of remediation required by this plan.

Mechanical processing of historical fill and contaminated soil onsite is prohibited.

All primary contaminant sources (including but not limited to tanks and hotspots) identified during Site Characterization, Remedial Investigation, and Remedial Action 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 Final Engineering Report.

## **5.4.4 Materials Transport Offsite**

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.

Truck transport routes will be determined with the Construction Manager and Remediation Contractor and provided to NYSDEC prior to construction. All trucks loaded with Site materials will exit the vicinity of the Site using only these approved truck routes.

Proposed in-bound and out-bound truck routes to the Site will be provided to NYSDEC for review prior to construction. The most appropriate route shall take into account: (a) limiting transport through residential areas and past sensitive sites; (b) use of city mapped truck routes; (c) prohibiting off- Site queuing of trucks entering the facility; (d) limiting total distance to major highways; (e) promoting safety in access to highways; and (f) overall safety in transport.

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

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

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

# 5.4.5 Materials Disposal Offsite

The disposal locations will be established at a later date and will be reported to the NYSDEC Project Manager.

The total quantity of material expected to be disposed offsite was discussed in Section 5.3.

All soil/fill/solid waste excavated and removed from the Site will be treated as contaminated and regulated material and will be disposed in accordance with all local, State (including 6NYCRR Part 360) and Federal regulations. If disposal of soil/fill from this Site 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 offsite management of materials from this Site is prohibited without formal NYSDEC approval.

Material that does not meet Track 1 unrestricted SCOs is prohibited from being taken to a New York State recycling facility (6NYCRR Part 360-16 Registration Facility).

The following documentation will be obtained and reported by the Remedial Engineer for each disposal location used in this project to fully demonstrate and document that the disposal of material derived from the Site 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 chemical data for the material being transported (including Site Characterization data); and (2) a letter from all receiving facilities stating it is in receipt of the correspondence (above) and is approved to accept the material. These documents will be included in the FER.

Non-hazardous historic fill and contaminated soils taken offsite will be handled, at minimum, as a Municipal Solid Waste per 6NYCRR Part 360-1.2.

Historical fill and contaminated soils from the Site are prohibited from being disposed at Part 360-16 Registration Facilities (also known as Soil Recycling Facilities).

Soils that are contaminated but non-hazardous and are being removed from the Site 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 onsite or offsite 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 chemical data for the material being transported.

The Final Engineering Report will include an accounting of the destination of all material removed from the Site during this Remedial Action, including excavated soil, contaminated soil, historic fill, solid waste, and hazardous waste, non-regulated material, and fluids. Documentation associated with disposal of all material must also include records and approvals for receipt of the material. This information will also be presented in a tabular form in the FER.

Bill of Lading system or equivalent will be used for offsite movement of non-hazardous wastes and contaminated soils. This information will be reported in the Final Engineering Report.

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

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

Waste characterization will be performed for offsite 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 FER. 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.

### 5.4.6 Material Re-use Onsite

Chemical criteria for onsite re-use of material have been approved by NYSDEC. This criteria is the Sub-part 375-6 restricted residential use SCOs. The Remedial Engineer will ensure that procedures defined for material re-use in this RAWP are followed and that unacceptable material will not remain onsite.

Acceptable demolition material proposed for re-use onsite, if any, will be sampled for asbestos.

Concrete crushing or processing onsite is prohibited.

NYSDEC review and approval of specially designed self-contained misting devices for dust control may be requested by the Remedial Engineer. If dust-free operations are not achieved with such devices, this approval will be revoked by NYSDEC.

Organic matter (wood, roots, stumps, etc.) or other solid waste derived from clearing and grubbing of the Site is prohibited for re-use onsite.

Contaminated onsite material, including historic fill and contaminated soil, removed for grading or other purposes will not be re-used within a cover soil layer, within landscaping berms, or as backfill for subsurface utility lines. This will be expressed in the final Site Management Plan.

## **5.4.7 Fluids Management**

Construction wastewater will be generated from personnel/equipment decontamination and runoff/run-on in bermed soil stockpile and excavation areas. Construction wastewater will be collected and stored onsite in leak-tight drums, vacuum trucks or temporary storage tanks. The wastewater will be sampled and submitted for analysis for disposal/discharge characterization. Based on the laboratory analytical results, the construction wastewater will be disposed offsite at a permitted disposal/recycling facility or discharged to the public sewer system, if approved in writing by the New York City Department of Environmental Protection (NYCDEP). The remedial contractor will acquire any required permits.

All liquids that are not directly containerized and disposed offsite in vacuum trucks will be stored in temporary onsite tanks to await disposal. Containers used for storing construction wastewater will conform to both federal and state requirements. All storage tanks or containers will be decontaminated following disposal/discharge of wastewater.

All liquids to be removed from the Site, 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.

Dewatered fluids will not be recharged back to the land surface or subsurface of the Site. Dewatering fluids will be managed offsite.

Discharge of water generated during remedial construction to surface waters (i.e., a local pond, stream or river) is prohibited without a SPDES permit.

## 5.4.8 Demarcation of Residuals Management Zone

After the completion of soil removal and any other invasive remedial activities and prior to backfilling, a land survey will be performed by a New York State licensed surveyor. The survey will define the top elevation of residual contaminated soils. The proposed development's concrete structural floor slab subbase will serve as the top of the 'Residuals Management Zone,' the zone that requires adherence to special conditions for disturbance of contaminated residual soils defined in the Site Management Plan. The survey will measure the grade of residual contaminated soils before the placement of cover soils, pavement and sub-soils, structures, or other materials. This survey will constitute 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 Final Remediation Report and the Site Management Plan.

### **5.4.9 Backfill from Offsite Sources**

Clean fill will be imported onto the Site as necessary for utility bedding material and foundation sub-base. This material will meet the specifications of the geotechnical engineer, Remedial Engineer, and Redevelopment Construction Documents. The source approval process will require a review of the following information:

- 1. Sources of backfill material
  - Past usage of backfill material source site origin
  - Source area background check

- 2. Chemical sampling data
  - Source analytical data to confirm that material meets the unrestricted SCOs
  - Frequency to be determined by Remedial Engineer

All materials proposed for import onto the Site will be approved by the Remedial Engineer and will be in compliance with provisions in this RAWP prior to receipt at the Site.

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

The Final Engineering Report will include the following certification by the Remedial Engineer: "I certify that all import of soils from offsite, including source evaluation, approval and sampling, has been performed in a manner that is consistent with the methodology defined in the Remedial Action Work Plan."

All imported soils will meet NYSDEC approved backfill or cover soil quality objectives for this Site. Non-compliant soils will not be imported onto the Site without prior approval by NYSDEC. Nothing in the approved Remedial Action Work Plan 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 Site, will not be imported onto the Site without prior approval by NYSDEC. Nothing in this Remedial Action Work Plan should be construed as an approval for this purpose.

Solid waste will not be imported onto the Site.

Trucks entering the Site with imported soils will be securely covered with tight fitting covers.

### 5.4.10 Stormwater Pollution Prevention

Barriers and haybales checks will be installed and inspected once a week and after every storm event. Results of inspections will be recorded in a logbook and maintained at the Site 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 haybales check functional.

All undercutting or erosion of a 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 RAWP shall be observed to ensure that they are operating correctly. Where discharge locations or points are accessible, they shall be inspected to ascertain whether erosion control measures are effective in preventing significant impacts to receiving waters

Silt fencing or haybales will be installed around stockpile areas, around sewer inlets, where applicable, and the downgradient perimeter of construction area.

# 5.4.11 Contingency Plan

If underground tanks or other previously unidentified contaminant sources are found during onsite remedial excavation or development related construction, sampling will be performed on product, sediment and surrounding soils, etc., as described in Section 5.5 of DER-10. 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 Spill Technology and Remediation Series (STARS) parameters where tanks are identified without prior approval by NYSDEC. Analyses will not be otherwise limited without NYSDEC approval.

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 daily and periodic electronic media reports.

## 5.4.12 Community Air Monitoring Plan

Each of the components of the Remedial Action will require air monitoring. These activities include excavation and handling of petroleum-impacted material and historic urban fill impacted with metals. The air monitoring program will be implemented during all intrusive remedial actions to provide a measure of protection for the downwind community from potential airborne contaminant releases as a direct result of investigative or remedial work activities.

A CAMP will be developed in accordance with the NYSDOH Generic Community Air Monitoring Plan contained in Appendix 1A of the DER-10. The CAMP will include real-time continuous air monitoring at the Site's downwind perimeter for VOCs and particulates. Implementation and management procedures will be specified within the CAMP. During all phases of work, the remedial contractor will be responsible for mitigating any vapor and particulate issues, via suppression techniques defined in the CAMP.

A map showing the location of fixed and mobile sampling stations will be provided in the CAMP.

Exceedances observed in the CAMP will be reported to NYSDEC and NYSDOH Project Managers and included in the Daily Report.

# 5.4.13 Odor, Dust and Nuisance Control Plan

Dust will be controlled by spraying a water mist over the work area if perimeter action levels established in the CAMP are exceeded. The water mist will be generated by connecting a misting device to a hose, which will be connected to any potable water source. The degree to which these measures will be used will depend on particulate levels in ambient air at the Site perimeter as determined through implementation of the CAMP.

As necessary, a foam unit to suppress vapors and odors that are generated during the soil excavations will be employed. The foam unit, such as a Rusmar PFU-400, includes a self-contained 400-gallon tank for mixing foam concentrate. Foam will be applied, if warranted, to stockpiled soil and excavation sidewalls in an effort to maintain work zone and perimeter air monitoring criteria established in the HASP and CAMP. Tarps will also be employed to suppress vapor and odors from stockpiled soil in the staging area.

The Final Engineering Report will include the following certification by the Remedial Engineer: "I certify that all invasive work during the remediation and all invasive development work were conducted in accordance with dust and odor suppression methodology defined in the Remedial Action Work Plan."

### 5.4.13.1 Odor Control Plan

This odor control plan is capable of controlling emissions of nuisance odors offsite. Specific odor control methods to be used on a routine basis will include assigning a dedicated air monitoring technician to monitor odors, active removal of separate phase hydrocarbons (SPH) within excavations if encountered, backfilling excavations in a timely manner, and maintaining covers over stockpiled impacted soils. If nuisance odors are identified, work in that particular work area 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 Volunteer's Remediation Engineer, who is responsible for certifying the Final Engineering Report.

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

Where odor nuisances have developed during remedial work and cannot be corrected, or where the release of nuisance odors cannot otherwise be avoided due to onsite conditions or close proximity to sensitive receptors, odor control will be achieved by sheltering excavation and handling areas under tented containment structures equipped with appropriate air venting/filtering systems.

## 5.4.13.2 Dust Control Plan

A dust suppression plan that addresses dust management during invasive onsite work, will include, at a minimum, the items listed below:

Dust suppression will be achieved through spraying water directly onto soil including excavations and stockpiles.

## 5.4.13.3 Other Nuisances

A plan for rodent control will be developed and utilized by the contractor prior to and during Site clearing and Site grubbing, and during all remedial work.

A plan will be developed and utilized by the contractor for all remedial work and will conform, at a minimum, to NYCDEP noise control standards.

# 6.0 RESIDUAL CONTAMINATION TO REMAIN ONSITE

Since residual contaminated soil and groundwater will potentially exist beneath the Site after the remedy is complete, Engineering and Institutional Controls (ECs and ICs) are required to protect human health and the environment. These ECs and ICs are described hereafter. Long-term management of EC/ICs and of residual contamination will be executed under a Site specific Site Management Plan (SMP) that will be developed and included in the FER.

ECs and environmental monitoring will be implemented to protect public health and the environment by appropriately managing residual contamination. The Controlled Property (the Site) will have one primary EC system. This is:

• A composite cover system consisting of, concrete covered sidewalks and concrete building slabs;

Environmental monitoring will be performed through:

• Groundwater monitoring

The FER will report residual contamination on the Site in tabular and map form. This will include presentation of exceedances of both Track 1 and Track 2 sites.

## 7.0 ENGINEERING CONTROLS

This section provides a detailed description of the methods for implementation of the engineering controls.

### 7.1 Composite Cover System

Exposure to residual contaminated soils will be prevented by an engineered, composite cover system that will be built on the Site. This composite cover system will be comprised of concrete covered sidewalks and concrete building slabs.

The proposed composite cover system design will be reviewed with NYSDEC to come to agreement on the:

- Conceptual remedial approach
- General cover design and installation plan
- System OM&M requirements

A Soil [and Underground Structure] Management Plan will be included in the Site Management Plan and will outline the procedures to be followed in the event that the composite cover system and underlying residual contamination are disturbed after the Remedial Action is complete. 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.

### 7.2 Operation, Maintenance and Monitoring of Engineering Controls

The engineering controls will include the composite cover system (concrete covered sidewalks and concrete building slabs). The inspection of the engineering controls will be limited to inspection of the foundation floor and sidewalls in the basement level of the proposed building. Any cracks in the foundation floor or sidewalls will be addressed according to the procedures to be detailed in an OM&M plan that will be prepared upon completion of the construction phase of the remedy. An annual certification signed by a Professional Engineer licensed in the state of New York will be submitted to the NYSDEC to confirm that the building foundation is intact.

## 7.3 Groundwater Monitoring

All existing groundwater monitoring wells will be destroyed during soil excavation. Following building construction, new groundwater monitoring wells will be installed with NYSDEC approval and sampled quarterly for eight quarters for benzene, toluene, ethylbenzene and xylene (collectively identified as BTEX) and methyl tertiary butyl-ether (MTBE). Groundwater monitoring activities will continue, as determined by NYSDEC, until residual groundwater concentrations are found to be below NYSDEC standards or have become asymptotic. Monitoring will continue until permission to discontinue is granted in writing by NYSDEC. Monitoring activities shall be outlined in the Monitoring Plan of the SMP.
#### 8.0 INSTITUTIONAL CONTROLS

After the remedy is complete, the Site will have residual contamination remaining in place. Institutional Controls (ICs) for the residual contamination have been incorporated into the remedy to render the overall Site remedy protective of public health and the environment. Two elements have been designed to ensure continual and proper management of residual contamination in perpetuity: an Environmental Easement and a Site Management Plan. These elements are described in this Section. A Site-specific Environmental Easement will be recorded with Bronx County to provide an enforceable means of ensuring the continual and proper management of residual contamination and protection of public health and the environment in perpetuity or until released in writing by NYSDEC. It requires that the grantor of the Environmental Easement and the grantor's successors and assigns adhere to all Engineering and Institutional Controls (ECs/ICs) placed on this Site by this NYSDEC-approved remedy. ICs provide restrictions on Site usage and mandate operation, maintenance, monitoring and reporting measures for all ECs and ICs. The Site Management Plan (SMP) describes appropriate methods and procedures to ensure compliance with all ECs and ICs that are required by the Environmental Easement. Once the SMP has been approved by the NYSDEC, compliance with the SMP is required by the grantor of the Environmental Easement and grantor's successors and assigns.

### 8.1 Environmental Easement

An Environmental Easement, as defined in Article 71 Title 36 of the Environmental Conservation Law, is required when residual contamination is left onsite after the Remedial Action is complete. If the Site will have residual contamination after completion of all Remedial Actions than an Environmental Easement is required. As part of this remedy, an Environmental Easement approved by NYSDEC will be filed and recorded with the Bronx County Clerk. The Environmental Easement will be submitted as part of the Final Remediation Report.

The Environmental Easement renders the Site a Controlled Property. The Environmental Easement must be recorded with the Bronx County Clerk before the Certificate of Completion can be issued by NYSDEC. A series of Institutional Controls are required under this remedy to implement, maintain and monitor these Engineering Control systems, prevent future exposure to residual contamination by controlling disturbances of the subsurface soil and restricting the use

of the Site to restricted residential use(s) only. These Institutional Controls are requirements or restrictions placed on the Site that are listed in, and required by, the Environmental Easement. Institutional Controls can, generally, be subdivided between controls that support Engineering Controls, and those that place general restrictions on Site usage or other requirements. Institutional Controls in both of these groups are closely integrated with the Site Management Plan, which provides all of the methods and procedures to be followed to comply with this remedy.

The Institutional Controls that support Engineering Controls are:

- Compliance with the Environmental Easement by the Grantee and the Grantee's successors and adherence of all elements of the SMP is required;
- All Engineering Controls must be operated and maintained as specified in this SMP;
- A composite cover system consisting of concrete covered sidewalks and concrete building slabs must be inspected, certified and maintained as required in the SMP;
- All Engineering Controls on the Controlled Property must be inspected and certified at a frequency and in a manner defined in the SMP;
- Groundwater and other environmental or public health monitoring must be performed as defined in the SMP;
- Data and information pertinent to Site Management for the Controlled Property must be reported at the frequency and in a manner defined in the SMP;
- Onsite environmental monitoring devices, including but not limited to groundwater monitor wells, must be protected and replaced as necessary to ensure proper functioning in the manner specified in the SMP; and
- Engineering Controls may not be discontinued without an amendment or extinguishment of the Environmental Easement.

Adherence to these Institutional Controls for the Site is mandated by the Environmental Easement and will be implemented under the Site Management Plan (discussed in the next section). The Controlled Property (Site) will also have a series of Institutional Controls in the form of Site restrictions and requirements. The Site restrictions that apply to the Controlled Property are:

• 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 intended purpose.
- All future activities on the Controlled Property that will disturb residual contaminated material are prohibited unless they are conducted in accordance with the soil management provisions in the Site Management Plan.
- The Controlled Property may be used for restricted residential use only, provided the long-term Engineering and Institutional Controls included in the Site Management Plan are employed.
- Grantor agrees to submit to NYSDEC 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, (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.

## 8.2 Site Management Plan

Site Management is the last phase of remediation and begins with the approval of the Final Engineering Report and issuance of the Certificate of Completion (COC) for the Remedial Action. The Site Management Plan is submitted as part of the FER but will be written in a manner that allows its removal and use as a complete and independent document. Site Management continues in perpetuity or until released in writing by NYSDEC. The property owner is responsible to ensure that all Site Management responsibilities defined in the Environmental Easement and the Site Management Plan are performed.

The SMP is intended to provide a detailed description of the procedures required to manage residual contamination left in place at the Site following completion of the Remedial Action in accordance with the 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 any treatment, collection, containment, or recovery systems (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 Site information to NYSDEC; and (5) defining criteria for termination of treatment system operation.

To address these needs, this SMP will include four plans: (1) an Engineering and Institutional Control Plan for implementation and management of EC/ICs; (2) a Monitoring Plan for implementation of Site Monitoring; (3) an Operation and Maintenance Plan for implementation of remedial collection, containment, treatment, and recovery systems; and (4) a Site Management Reporting Plan for submittal of data, information, recommendations, and certifications to NYSDEC. The SMP will be prepared in accordance with the requirements in NYSDEC Draft DER-10 Technical Guidance for Site Investigation and Remediation, and the guidelines provided by NYSDEC.

Site management activities, reporting, and EC/IC certification will be scheduled on a certification period basis. The certification period will be annually. The Site Management Plan will be based on a calendar year and will be due for submission to NYSDEC by March 1 of the year following the reporting period.

The Site Management Plan in the Final Remediation Report will include a monitoring plan for groundwater at the down-gradient Site perimeter to evaluate Site -wide performance of the remedy.

No exclusions for handling of residual contaminated soils will be provided in the Site Management Plan (SMP). All handling of residual contaminated material will be subject to provisions contained in the SMP.

#### 9.0 FINAL ENGINEERING REPORT

A Final Engineering Report (FER) and Certificate of Completion (COC) will be submitted to NYSDEC following implementation of the Remedial Action defined in this RAWP. The FER provides the documentation that the remedial work required under this RAWP has been completed and has been performed in compliance with this plan. The FER will provide a comprehensive account of the locations and characteristics of all material removed from the Site including the surveyed map(s) of all sources. The Final Engineering Report will include as-built drawings for all constructed elements, certifications, manifests, bills of lading as well as the complete Site Management Plan (formerly the Operation and Maintenance Plan). The FER will provide a description of the changes in the Remedial Action from the elements provided in the RAWP and associated design documents. The FER will provide a tabular summary of all performance evaluation sampling results and all material characterization results and other sampling and chemical analysis performed as part of the Remedial Action. The FER will provide test results demonstrating that all mitigation and remedial systems are functioning properly. The FER will be prepared in conformance with DER-10.

Where determined to be necessary by NYSDEC, a Financial Assurance Plan will be required to ensure the sufficiency of revenue to perform long-term operations, maintenance, and monitoring tasks defined in the Site Management Plan and Environmental Easement. This determination will be made by NYSDEC in the context of the Final Engineering Report review.

The Final Remediation Report will include written and photographic documentation of all remedial work performed under this remedy.

The FER will include an itemized tabular description of actual costs incurred during all aspects of the Remedial Action.

The FER will provide a thorough summary of all residual contamination left on the Site after the remedy is complete. Residual contamination includes all contamination that exceeds the Track 1 Unrestricted Use SCO in 6NYCRR Part 375-6. A table that shows exceedances from Track 1 Unrestricted SCOs for all soil/fill remaining at the Site after the Remedial Action and a map that

shows the location and summarizes exceedances from Track 1 Unrestricted SCOs for all soil/fill remaining at the Site after the Remedial Action will be included in the FER.

The FER will provide a thorough summary of all residual contamination that exceeds the SCOs defined for the Site in the RAWP and must provide an explanation for why the material was not removed as part of the Remedial Action. A table that shows residual contamination in excess of Site SCOs and a map that shows residual contamination in excess of Site SCOs will be included in the FER.

The Final Engineering Report will include an accounting of the destination of all material removed from the Site, including excavated contaminated soil, historic fill, solid waste, hazardous waste, non-regulated material, and fluids. Documentation associated with disposal of all material must also include records and approvals for receipt of the material. It will provide an accounting of the origin and chemical quality of all material imported onto the Site.

Before approval of a FER and issuance of a Certificate of Completion, all project reports must be submitted in digital form on electronic media (PDF).

## 9.1 Certifications

The following certification will appear in front of the Executive Summary of the Final Engineering Report. The certification will be signed by the Remedial Engineer [Omar Ramotar, P.E.] who is a Professional Engineer registered in New York State This certification will be appropriately signed and stamped. The certification will include the following statements:

I, Omar Ramotar, P.E., am currently a registered professional engineer licensed by the State of New York. I had primary direct responsibility for implementation of the remedial program for the 1800 SB LLC Site (NYSDEC BCA Index No. Pending).

I certify that the Site description presented in this FER is identical to the Site descriptions presented in the Environmental Easement, the Site Management Plan, and the Brownfield Cleanup Agreement for the Site and related amendments.

I certify that the Remedial Action Work Plan dated [month day year] and Stipulations [if any] in a letter dated [month day year] and approved by the NYSDEC were implemented and that all requirements in those documents have been substantively complied with.

I certify that the remedial activities were observed by qualified environmental professionals under my supervision and that the remediation requirements set forth in the Remedial Action Work Plan and any other relevant provisions of ECL 27-1419 have been achieved.

I certify that all use restrictions, Institutional Controls, Engineering Controls, and all operation and maintenance requirements applicable to the Site are contained in an Environmental Easement created and recorded pursuant ECL 71-3605 and that all affected local governments, as defined in ECL 71-3603, have been notified that such easement has been recorded. A Site Management Plan has been submitted by the Volunteer for the continual and proper operation, maintenance, and monitoring of all Engineering Controls employed at the Site, including the proper maintenance of all remaining monitoring wells, and that such plan has been approved by the NYSDEC.

I certify that the export of all contaminated soil, fill, water or other material from the property was performed in accordance with the Remedial Action Work Plan, and were taken to facilities licensed to accept this material in full compliance with all Federal, State and local laws.

I certify that all import of soils from offsite, including source approval and sampling, has been performed in a manner that is consistent with the methodology defined in the Remedial Action Work Plan.

I certify that all invasive work during the remediation and all invasive development work were conducted in accordance with dust and odor suppression methodology and soil screening methodology defined in the Remedial Action Work Plan.

I certify that all information and statements in this certification are true. I understand that a false statement made herein is punishable as Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law.

It is a violation of Article 130 of New York State Education Law for any person to alter this document in any way without the express written verification of adoption by any New York State licensed engineer in accordance with Section 7209(2), Article 130, New York State Education Law.

## **10.0 SCHEDULE**

The Work is anticipated to begin approximately three months following NYSDEC approval of the RAWP and would be substantially completed within 12 months. The remedial elements of the Work would take place in the earlier phased of the Work. A revised schedule will be prepared and submitted following development and finalization of work sequencing with the Excavation/Remedial Contractor.

Respectfully submitted,

# ROUX ASSOCIATES, INC.

Michael Roux Principal Hydrogeologist

REMEDIAL ENGINEERING, P.C.

Omar Ramotar, P.E. Principal Engineer

Sample Designation	Sample Matrix	Sample Date	Sample Depth (feet below land surface)	Analyses Performed
			_	
SB-101	soil	06/12/08	0 - 2.5	VOCs, SVOCs, Metals, Pesticides, PCBs
SB-101	soil	06/12/08	12.5 - 15	VOCs, SVOCs, Metals, Pesticides, PCBs
SB-102	soil	06/12/08	12.5 - 15	VOCs, SVOCs, Metals, Pesticides, PCBs
SB-103	soil	06/12/08	12.5 - 15	VOCs, SVOCs, Metals, Pesticides, PCBs
SB-104	soil	06/12/08	12.5 - 15	VOCs, SVOCs, Metals, Pesticides, PCBs
SB-105	soil	06/12/08	12.5 - 15	VOCs, SVOCs, Metals, Pesticides, PCBs
SB-106	soil	06/12/08	7.5 - 10	VOCs, SVOCs, Metals, Pesticides, PCBs
SB-107	soil	06/12/08	12.5 - 15	VOCs, SVOCs, Metals, Pesticides, PCBs
SB-101W	groundwater	06/12/08	approximately 10	VOCs (poor recovery)
SB-102W	groundwater	06/12/08	approximately 10	VOCs, SVOCs, Metals, Pesticides, PCBs
SB-103W	groundwater	06/12/08	approximately 10	VOCs, SVOCs, Metals, Pesticides, PCBs
SB-104W	groundwater	06/12/08	approximately 10	VOCs, SVOCs, Metals, Pesticides, PCBs
SB-105W	groundwater	06/12/08	approximately 10	VOCs, SVOCs, Metals, Pesticides, PCBs
SB-107W	groundwater	06/12/08	approximately 10	VOCs, SVOCs (poor recovery)
SV-201	soil vapor	06/12/08	3.0	VOCs
SV-202	soil vapor	06/12/08	3.0	VOCs
AS-203	ambient air	06/12/08		VOCs

VOCs: Volatile Organic Compounds SVOCs: Semivolatile Organic Compounds PCBs: Biphenyls

Table 2.	Summary of '	Volatile Organic	Compounds	Detected in	Soil Samples,	1800 Southern	Boulevard,	Bronx, Ne	w York
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	Part 375	Part 375	Sample Designation:	SB-101	SB-101	SB-102	SB-103	SB-104	SB-105	SB-106
Parameter	Unrestricted Use	Restricted Residential	Sample Date:	06/12/08	06/12/08	06/12/08	06/12/08	06/12/08	06/12/08	06/12/08
incentrations in µg/kg)	Soil Cleanup Objectives	Soil Cleanup Objectives	Sample Depth (ft bis):	0-2.5	12.5-15	12.5-15	12.5-15	12.5-15	12.5-15	7.5-10
1,1,1-Trichloroethane	680	100000		5.6 U	5.7 U	27 U	6.4 U	120 U	6 U	2200 U
1,1,2,2-Tetrachloroethane				5.6 U	5.7 U	27 U	6.4 U	120 U	6 U	2200 U
1,1,2-Trichloroethane				5.6 U	5.7 U	27 U	6.4 U	1 <b>20</b> U	6 U	2200 U
1,1-Dichloroethane	270	26000		5.6 U	5.7 U	27 U	6.4 U	120 U	6 U	2200 U
1,1-Dichloroethene	330	100000		5.6 U	5.7 U	27 U	6.4 U	120 U	6 U	2200 U
1,2,3-Trichloropropane				5.6 U	5.7 U	27 U	6.4 U	120 U	6 U	2200 U
1,2,4-Trimethylbenzene	3600	52000		1.1 U	3.2	1100	1.3 U	120 U	1.2 U	310000
1,2-Dichlorobenzene	1100	100000		5.6 U	5.7 U	27 U	6.4 U	120 U	6 U	2200 U
1,2-Dichloroethane	20	3100		5.6 U	5.7 U	27 U	6.4 U	59 U	6 U	1100 U
1.2-Dichloropropane				5.6 U	5.7 U	27 U	6.4 U	120 U	6 U	2200 U
1.3.5-Trimethylbenzene	8400	52000		1.1 U	1.1 U	470	1.3 U	120 U	1.2 U	110000
1.3-Dichlorobenzene	2400	49000		5.6 U	5.7 U	27 U	6.4 U	120 U	6 U	2200 U
1.3-Dichloropropane				5.6 U	5.7 U	27 U	6.4 U	120 U	6 U	2200 U
1.4-Dichlorobenzene	1800	13000		5.6 U	5.7 U	27 U	6.4 U	120 U	6 U	2200 U
1.4-Dioxane	100	13000		280 U	290 U	1400 U	320 U	5900 U	300 U	110000 U
2-Butanone (MEK)	120	100000		5.6 U	5.7 U	27 U	6.4 U	120 U	6 U	2200 U
2-Chloroethylyinylether				5.6 U	5.7 U	27 U	6.4 U	120 U	6 U	2200 U
2-Hexanone				5.6 U	5.7 U	27 U	6.4 U	120 U	6 U	2200 U
4-lsopropyltoluene				1.1 U	1.1 U	66	3.3	710	1.2 U	5800
4-Methyl-2-pentanone				5.6 U	5.7 U	27 U	6.4 U	120 U	6 U	2200 U
Acetone	50	100000		30	57	170	78	590 U	30 U	11000 U
Acrolein				28 U	29 11	140 U	32 U	590 U	30 U	11000 U
Acrylonitrile				56U	5.7 U	27 U	6.4 U	120 U	6 U	2200 U
Benzene	60	4800		110	49	5.5 U	1.3 U	59 U	1.2 U	23000
Bromodichloromethane				56U	5711	27 U	6.4 U	120 U	6 U	2200 U
Bromoform				5.6 U	5.7 U	27 U	6.4 U	120 U	6 U	2200 U
Bromomethane				560	570	27 U	64 U	120 U	6 U	2200 U
Carbon disulfide				56U	5711	27 U	64 U	120 U	6 U	2200 U
Carbon tetrachloride	760	2400		5.6 U	5711	27 11	64U	120 U	6 U	2200 U
Chlorobenzene	1100	100000		5611	571	27 11	64U	120 U	611	2200 U
Chloroethane				561	5711	27 11	641	120 U	6U	2200 U
Chloroform	370	49000		56U	5711	27 1	64 U	120 U	6 U	2200 U
Chloromethane	570			561	5711	27 1	6411	120 U	6 U	2200 U
cis-1 2-Dichloroethene	250	100000		5.0 U	5711	27 1	6411	120 U	611	2200 []
cis-1 3-Dichloropropene				561	571	27 1	64 U	120 U	6 U	2200 U
Dibromochloromethane				5.0 U	571	27 11	64 U	120 U	6 U	2200 U
Dichlorodifluoromethane				5611	571	27 U	6411	120 U	6 U	2200 U
Ethylbenzene	1000	41000		1111	26	280	31	920	1211	77000
Freen 113				560	571	200	64 U	120 11	611	2200 U
Isonronylbenzene				1111	111	£70 81	29	970	1211	10000
m+n-Xylene	260	100000		2211	43	460	51	24011	2411	340000
Methylene chloride	50	100000		2.20 56U	57U	27 []	641	120 U	611	2200 U
MTRF	930	100000		1111	220	550	131	120 U	121	2200 U
n-Butylhenzene	12000	10000		111	1111	150	1.5 0	2000	120	30000
n-Dutyloenzene	2000	10000		1.1 U	1111	170	1 / 5 9	2000	120	38000
o-Yylene	3700 3700	10000		1.1 U	111	790	1 /	120 11	120	120000
o-Ayiolic sec Butylhenzene	11000	10000		1.1.0	1.1.0	30	0.4	720	120	5000
Styrene				561	5711	27 11	6411	120 U	611	2200 11

Table 2. Summary of Volatile Organic Compounds Detected in Soil Samples, 1800 Southern Boulevard, Bronx, New York

	Part 375	Part 375	Sample Designation:	SB-101	SB-101	SB-102	SB-103	SB-104	SB-105	SB-106
Parameter	Unrestricted Use	Restricted Residential	Sample Date:	06/12/08	06/12/08	06/12/08	06/12/08	06/12/08	06/12/08	06/12/08
oncentrations in µg/kg)	Soil Cleanup Objectives	Soil Cleanup Objectives	Sample Depth (ft bls):	0-2.5	12.5-15	12.5-15	12.5-15	12.5-15	12.5-15	7.5-10
t-Butyl Alcohol				28 U	400	140 U	32 U	590 U	30 U	11000 U
t-Butylbenzene	5900	100000		1.1 U	1.1 U	5.5 U	1.3 U	120 U	1.2 U	2200 U
Tetrachloroethene	1300	19000		5.6 U	5.7 U	27 U	6.4 U	120 U	6 U	2200 U
Toluene	700	100000		1.4	2	5.9	2	120 U	1. <b>2</b> U	120000
trans-1,2-Dichloroethene	190	100000		5.6 U	5.7 U	27 U	6.4 U	120 U	6 U	2200 U
trans-1,3-Dichloropropene				5.6 U	5.7 U	27 U	6.4 U	120 U	6 U	2200 U
Trichloroethene	470	21000		5.6 U	5.7 U	27 U	6.4 U	1 <b>20</b> U	6 U	2200 U
Trichlorofluoromethane				5.6 U	5.7 U	27 U	6.4 U	120 U	6 U	2200 U
Vinyl chloride	20	900		5.6 U	5.7 U	27 U	6.4 U	120 U	6 U	2200 U
Naphthalene	12000	100000								_

U - Analyte was not detected at or above the reporting limit

Bold - Concentration exceeds NYSDEC Part 375 Unrestricted Use Soil Cleanup Objectives

Shaded cells exceed NYSDEC Part 375 Restricted Residential Soil Cleanup Objectives

--- No standard available

µg/kg - micrograms per kilogram

	Part 375	Part 375	Sample Designation:	SB-107	SB-1	SB-2	SB-3	SB-4	SB-5	SW-1
Parameter	Unrestricted Use	Restricted Residential	Sample Date:	06/12/08	02/28/03	02/28/03	02/28/03	02/28/03	02/28/03	2003
incentrations in µg/kg)	Soil Cleanup Objectives	Soil Cleanup Objectives	Sample Depth (ft bls):	12.5-15	6-8	6-8	5-6	8-9	5-6	7
I,1,1-Trichloroethane	680	100000		130 U						
1,1,2,2-Tetrachloroethane				130 U						
1,1,2-Trichloroethane				130 U						
1,1-Dichloroethane	270	26000		130 U						
1,1-Dichloroethene	330	100000		130 U						
1,2,3-Trichloropropane				130 U						
1,2,4-Trimethylbenzene	3600	52000		15000	57 U	26 U	2.5 J	132	6.5 U	515000
1,2-Dichlorobenzene	1100	100000		130 U						
1,2-Dichloroethane	20	3100		64 U						
1,2-Dichloropropane				130 U						
1,3,5-Trimethylbenzene	8400	52000		4800	57 U	26 U	6.9 U	36.6	6.5 U	143000
1,3-Dichlorobenzene	2400	49000		130 U						
1,3-Dichloropropane				130 U						
1.4-Dichlorobenzene	1800	13000		130 U						
1.4-Dioxane	100	13000		6400 U						
2-Butanone (MEK)	120	100000		130 U						
2-Chloroethylyipylether				130 U						
2-Hexanone				130 U						
4-Isopropyltoluene				230	326	26 U	211	27.2	65 U	5020 J
4-Methyl-2-pentanone				130 U	520	200	2.1 5	27.2	0.5 0	
Acetone	50	100000		640 U						
Acrolein				640 U						
Acrylonitrile				130 U						
Benzene	60	4800		64 U	11 U	5 1 U	124	1.8	1311	930 I
Bromodichloromethane				130 U		5.10		1.0	1.5 0	2000
Bromoform				130 U						
Bromomethane				130 U						
Carbon disulfide				130 U						
Carbon tetrachloride	760	2400		130 U						
Chlorobenzene	1100	100000		130 U						
Chloroethane				130 U						
Chloroform	370	49000		130 U						
Chloromethane	570	43000		130 U						
cis_1 2-Dichloroethene	250	100000		130 U						
cis-1 3-Dichloropropene	250	100000		130 U						
Dibromochloromethane				130 U						
Dichlorodifluoromethane				130 U						
Ethylbenzene	1000	41000		3000	11.11	5111	15.0	0.1	1211	71100
Ereon 113	1000	41000		130 11	no	5.10	13.9	9.1	1.50	- FEADO
Isonronulbenzene				870	1560	25 4	661	671	6511	20500
m+n Xylong				0/0	1300	35.4 10.U	0.0 J	0.7J	0.5 U	20300
Methylene chloride	50	100000		12011	23 0	100	/.4	/3.1	2.0 U	
	50 020	100000		120 U	1111	5111	50.2	07	1 2 11	2510
n Dutulhangara	930	100000		130 U	110	5.1 U	50.5	U./	1.3 U	3510
n-Burylbenzene	2000	100000		130 0	2010	33.3	0.90	18./	0.3 U	24000
a Yulana	3900	100000		2900	1940	133	4./J	14.2	0.3 U	80200
U-Aylelle	200	100000		6200	2120	(0.1	60.11	0.2	6011	10100
Sturano	11000	10000		390	2120	00.0	0.9 U	9.3	0.3 U	12100
Styrene				130 U						

Parameter	Part 375 Unrestricted Use	Part 375 Restricted Residential	Sample Designation: Sample Date:	SB-107 06/12/08	SB-1 02/28/03	SB-2 02/28/03	SB-3 02/28/03	SB-4 02/28/03	SB-5 02/28/03	SW-1 2003
ncentrations in µg/kg)	Soil Cleanup Objectives	Soil Cleanup Objectives	Sample Depth (ft bls):	12.5-15	6-8	6-8	5-6	8-9	5-6	7
t-Butyl Alcohol				640 U						
t-Butylbenzene	5900	100000		130 U	1580	26 U	6.9 U	7.2 U	6.5 U	
Tetrachloroethene	1300	19000		130 U						
Toluene	700	100000		170	11 U	5.1 U	5.4	2.1	1.3 U	11000
trans-1,2-Dichloroethene	190	100000		130 U						
trans-1,3-Dichloropropene				130 U						
Trichloroethene	470	21000		130 U						
Trichlorofluoromethane				130 U						
Vinyl chloride	20	900		130 U						
Naphthalene	12000	100000			542	2 <u>6 U</u>	2.1	131	6.5 U	40700

U - Analyte was not detected at or above the reporting limit

Bold - Concentration exceeds NYSDEC Part 375 Unrestricted Use Soil Cleanup Objectives Shaded cells exceed NYSDEC Part 375 Restricted Residential Soil Cleanup Objectives

--- No standard available

µg/kg - micrograms per kilogram

Table 2. Summary of Volatile Organic Compounds Detected in Soil Samples, 1800 Southern Boulevard, Bronx, New	w Yo	ork
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Parameter     Unrestricted Use     Restricted Residential     Sample Date:     2003     2013	2003 12 5000 1560
nncentrations in µg/kg)     Soil Cleanup Objectives     Soil Popper (ht bit):     7<	12 5000 1560
1,1-Trichloroethane   680   100000     1,1,2.7-Teirachloroethane       1,1.2.7-Teirachloroethane       1,1.2.5-Trichloroethane   270   26000     1,1.Dichloroethane   330   100000     1,2.3-Trichloroethane   330   100000     1,2.3-Trichloroethane   3600   52000   286069   24500   102060   298   72.8   1760     1,2.3-Trichloroethane   20   3100	<b>5000</b> 1 <i>5</i> 60
1,1,17irchloroethane   680   100000     1,1,2,7-Tetachloroethane   -     1,1,2,7-Tirchloroethane   -     1,1-Dichloroethane   270   26000     1,2,3-Trinchloroethane   330   100000     1,2,3-Trinchloroethane   300   52000     1,2,3-Trinchloroethane   -   -     1,2,3-Trinchloroethane   -   -     1,2,3-Trinchloroethane   20   300   24500   102060   298   72.8   1760     1,2,4-Trinchloroethane   20   3100   250000   101000   8870   32300   170   30.5   448     1,3-Dichlorobenzene   8400   52000   101000   8870   32300   170   30.5   448     1,3-Dichlorobenzene   4400   49000   13000   2-   2-   14-Dicklorobenzene   14.4-Dicklorobenzene   100   13000     2-Butanone (MEK)   120   1000000   3220 J   309   926   23.1 J   1.1 J   270 U     4-Hexanone   -   -   -   -   -   -   -   -   -	<b>5000</b> 1560
1,1,2.2-Tictachloroethane   -     1,1.2-Tictachloroethane   270     1,1.2-Tictachloroethane   330     1,1.2-Tictachloroethane   330     1,2.3-Tictachloroethane   330     1,2.3-Tictachloroethane   360     2,3-Tictachloroethane   100     1,2.3-Tictachloroethane   100     1,2.3-Tictachloroethane   20     3600   52000     1,2.Dichloroethane   20     3.100   1.2.Dichloroethane     1,3-Dichloroethane   20     3.5-Tirmethylbenzene   8400     3.5-Tirmethylbenzene   8400     3.5-Tirmethylbenzene   8400     3.5-Tirmethylbenzene   8400     3.5-Tirmethylbenzene   70     3.5-Tirmethylbenzene   9000     1,3-Dichloroenzene   100     1,4-Dichloroenzene   100     1,4-Dichloroenzene   100     1,4-Dichloroenzene   100     1,4-Dichloroenzene   -     2-Chloroethylbinyleidetter   -     -   -     2-Chloroethylvinyleidetter   -     -   -	<b>5000</b> 1 <i>5</i> 60
1,1,2-Tirkhlorocethane   270   26000     1,1-Dichlorocethane   330   100000     1,2,3-Tirkhloropropane       1,2,3-Tirkhloropropane       1,2-Dichlorobetnzen   100   100000     1,2-Dichlorobetnzene   100   100000     1,2-Dichlorobetnzene   100   100000     1,2-Dichlorobetnzene   8400   52000   8870   32300   170   30.5   448     1,3-Dichlorobetnzene   8400   52000   101000   8870   32300   170   30.5   448     1,3-Dichlorobetnzene   8400   13000   13000   14-Dickhorobetnzene   100   13000     1,4-Dickhorobetnzene   1800   13000   13000   2-   1.1.1   270 U     2-Hexanone   -   -   -   -   -   -   -   -     2-Hexanone   - <td><b>5000</b> 1<i>5</i>60</td>	<b>5000</b> 1 <i>5</i> 60
1,1-Dicklorosethane   270   26000     1,1-Dicklorosethane   330   100000     1,2,3-Trickloropropane       1,2-Dicklorosethane   20   3100     1,2-Dicklorosethane   20   3100     1,2-Dicklorosethane   20   3100     1,2-Dicklorosethane   20   3100     1,3-Trinsthylbenzene   8400   52000   8870   32300   170   30.5   448     1,3-Dicklorosethane   20   13000   8870   32300   170   30.5   448     1,3-Dicklorosethane   200   13000   8870   32300   170   30.5   448     1,3-Dicklorosethane   7	<b>5000</b> 1 <i>5</i> 60
1,1-Dichloroethene   330   100000     1,2,3-Trinchlopopane       1,2-Dichlorobenzene   1100   100000     1,2-Dichlorobenzene   1100   100000     1,2-Dichloropopane       1,3-Dichloropopane       1,3-Dichloropopane       1,3-Dichloropopane       1,3-Dichloropopane       1,3-Dichloropopane       1,3-Dichloropopane       1,3-Dichloropopane       1,4-Dichloropopane       1,4-Dichlorobenzene   1800   13000     1,4-Dichlorobenzene   1800   13000     1,4-Dichlorobenzene   100   13000     1,4-Dichlorobenzene   100   100000     2-Butanone (MEK)   120   100000     2-Hexanone       4-Isopropytoluene         3220 J   309   926   23.1 J   1.1 J   270 U     4-Methyl-2-pentano	<b>5000</b> 1 <i>5</i> 60
1,2,3-Trichloropropane      1,2,4-Trimethylbenzene   3600   52000   24500   102060   298   72.8   1760     1,2-Dichloroptopane   100   100000   12-Dichloroptopane   20   3100   12-Dichloroptopane   100   12-Dichloroptopane   100   12-Dichloroptopane   100   10000   12-Dichloroptopane    12-Dichloroptopane   100   10000   8870   32300   170   30.5   448     1,3-Dichloroptopane   -	<b>5000</b> 1 <i>5</i> 60
1,2,4-Trimethylbenzene   3600   52000   24500   102060   298   72.8   1760     1,2-Dichlorobenzene   1100   1000000   3100   12.5   1170   30.5   448     1,2-Dichlorobenzene   8400   52000   101000   8870   32300   170   30.5   448     1,3-Dichlorobenzene   2400   49000   13000   141000   8870   32300   170   30.5   448     1,3-Dichlorobenzene   1800   13000   13000   140000   140000   12.5   110000   100000   110000   100000   1100000   1100000   1100000	<b>5000</b> 1 <i>5</i> 60
1,2-Dichlorobenzene   1100   100000     1,2-Dichloropropane      1,3,5-Trimethylbenzene   8400   52000     1,3-Dichlorobenzene   2400   49000     1,3-Dichlorobenzene   2400   49000     1,3-Dichlorobenzene   1300   13000     1,4-Dichlorobenzene   1800   13000     2-Butanone (MEK)   120   100000     2-Chlorobtylivnijkther       2-Hexanone       2-Hexanone       2-Hexanone       2-Hoxothore   50   100000     Acetone   50   100000     Acetone   50   100000     Acerolein       Acetone   50   100000     Acerolein       Benzene   60   4800   145   868   450   1.2 U   34.1 J     Bromodichloromethane <td< td=""><td>1560</td></td<>	1560
1,2-Dichloroethane   20   3100     1,2-Dichloropropane       1,3,5-Tirnethylberzene   8400   52000   8870   32300   170   30.5   448     1,3-Dichlorobenzene   2400   49000   13000   1,4-Dichlorobenzene   100   30.5   448     1,3-Dichlorobenzene   2400   49000	1560
1,2-Dichloropropane       1,3-5-Trimethylbenzene   8400   52000   8870   32300   170   30.5   448     1,3-Dichlorobenzene   2400   49000   13000   13000   14-Dichlorobenzene   1800   13000     1,4-Dichlorobenzene   1800   13000   140000   2-Butanone (MEK)   120   1000000     2-Butanone (MEK)   120   100000   2-Chloroethylvinylether       2-Hoxanone     3220 J   309   926   23.1 J   1.1 J   270 U     4-Nethyl-2-pentanone <td< td=""><td>1560</td></td<>	1560
1,3,5-Trimethylbenzene   8400   52000   101000   8870   32300   170   30.5   448     1,3-Dichlorobenzene   2400   49000   13000   140000   100000   1400000   1400000   1400000   1400000   1400000   1400000   1400000   1400000   1400000   1400000   1400000   1400000   1400000   1400000   1400000   1400000   1400000   170   30.5   448   1400000   1400000   170   30.5   448   1400000   1400000   1400000   1400000   170   30.5   11000000   170   30.5   11000000   170   30.5   11000000   170   30.5   11000000   170   30.5   111   270 U   111   270 U   111   270 U   111   111   270 U   11000000   11000000   11000000	1560
1,3-Dichlorobenzene   2400   49000     1,3-Dichloropropane   -   -     1,4-Dickorobenzene   1800   13000     2-Butanone (MEK)   120   1000000     2-Chloroethylvinylether   -   -     2-Hexanone   -   -     4-Isopropyloluene   -   -     4-Sopropyloluene   -   -     4-Sopropyloluene   -   -     Acerloni irile   -   -     Benzene   60   4800   4920   165   868   450   1.2 U   34.1 J     Bromodichloromethane   - <t< td=""><td></td></t<>	
1.3-Dichloropropane      1.3-Dichloropropane   1800     1.4-Dichloropropane   1800     1.4-Dichloropropane   100     1.4-Dichloropropane   100     1.4-Dichloropropane   100     2-Butanone (MEK)   120     2-Chloroethylvinylether      2-Hexanone      4-Isopropyltoluene      4-Isopropyltoluene      4-Sopropyltoluene      4-Sopropyltoluene      Acetone   50     1000000     Acetone   50     1000000     Acetone   50     1000000     Acetone   50     Bromodichloromethane          Bromodichloromethane          Bromodichloromethane          Bromodisulfide          Carbon tetrachloride   760     2400   Ciliorobenzene	
1.4-Dicklorobenzene   1800   13000     1.4-Dicklorobenzene   100   13000     2-Butanone (MEK)   120   100000     2-Chloroethylvinylether       2-Hexanone       2-Hexanone       4-Isopropyltoluene       4-Stopropyltoluene       4-Methyl-2-pentanone       Acetone   50   100000     Acrolein       Benzene   60   4800   4920   165   868   450   1.2 U   34.1 J     Bromodichloromethane	
1,4-Dioxane   100   13000     2-Butanone (MEK)   120   100000     2-Chloroethylvinylether       2-Hexanone       4-Isopropyltoluene    3220 J   309   926   23.1 J   1.1 J   270 U     4-Methyl-2-pentanone     3220 J   309   926   23.1 J   1.1 J   270 U     4-Methyl-2-pentanone	
1, 1, 1, 1, 1, 200     2-Butanone (MEK)   120     2-Chloroethylvinylether      2-Hexanone      4-Isopropyltoluene      3220 J   309   926   23.1 J   1.1 J   270 U     4-Methyl-2-pentanone          Acetone   50   100000         Acetone   50   100000          Acetone   50   100000   <	
2-Chloroethylvinylether      2-Chloroethylvinylether      2-Hexanone      4-Isopropyltoluene      4-Isopropyltoluene      4-Isopropyltoluene      4-Methyl-2-pentanone      Acctone   50     100000     Accrolein      Acrylonitrile      Benzene   60   4800     Bromodichloromethane      97      Bromodichloromethane      97      Bromodisulfide          Carbon tisulfide          Carbon tetrachloride   760     2400   1000000	
2-Hexanone     3220 J   309   926   23.1 J   1.1 J   270 U     4-Methyl-2-pentanone     3220 J   309   926   23.1 J   1.1 J   270 U     4-Methyl-2-pentanone	
4-Isopropyltoluene    3220 J   309   926   23.1 J   1.1 J   270 U     4-Methyl-2-pentanone           Acetone   50   100000          Acrylonitrile            Benzene   60   4800	
4-isopholy induct     4-Methyl-2-pentanone    Acetone 50   100000   Acrolein    Acrylonitrile    Benzene 60   60 4800   Bromodichloromethane    Bromoform    Bromomethane    Carbon disulfide    Carbon disulfide    Carbon disulfide    1100 100000	79.8 1
Action 100000   Acrolein    Acrylonitrile    Benzene 60   4800 4920   Bromodichloromethane    Bromodichloromethane    Bromodichloromethane    Bromodichloromethane    Carbon disulfide    Carbon tetrachloride 760   2400   Chlorobenzene 1100	17.00
Account50100000AcroleinAcrylonitrileBenzene604800BromodichloromethaneBromofernBromomethaneCarbon disulfideCarbon tetrachloride7602400Chlorobenzene1100100000	
AcrylonitrileAcrylonitrileBenzene604800BromodichloromethaneBromoformBromomethaneCarbon disulfideCarbon tetrachloride7602400Chlorobenzene1100100000	
ActionationBenzene604800BromodichloromethaneBromoformBromomethaneBromomethaneCarbon disulfideCarbon tetrachloride760Chlorobenzene11001100100000	
Benzene 60 4300 4300 120 34.13   Bromodichloromethane     Bromothane     Bromothane     Carbon disulfide     Carbon tetrachloride 760 2400   Chlorobenzene 1100 100000	55 11
Bromodichloromethane Bromothane Bromomethane Carbon tetrachloride 760 2400 Chloroberzene 1100 100000	33 0
Bromotorm Bromomethane Carbon disulfide Carbon tetrachloride 760 2400 Chlorobenzene 1100 100000	
Bromomethane Carbon disulfide Carbon tetrachloride 760 2400 Chlorobenzene 1100 100000	
Carbon disulfide Carbon tetrachloride 760 2400 Chlorobenzene 1100 100000	
Carbon tetrachloride 760 2400 Chlorobenzene 1100 100000	
Chlorohenzene 1100 100000	
Chloroethane	
Chloroform 370 49000	
Chloromethane	
cis-1,2-Dichloroethene 250 100000	
cis-1,3-Dichloropropene	
Dibromochloromethane	
Dichlorodifluoromethane	
Ethylbenzene 100 4100 53700 532 9080 157 7.4 146	591
Freon 113	
Isopropylbenzene 11300 294 2120 79.3 2.1 J 270 U	203 J
m+p-Xylene 260 100000 <b>348000 9250 105000 788</b> 74.8 <b>828</b>	3680
Methylene chloride 50 100000	
MTBE 930 100000 4200 433 23800 9670 25 389	216
n-Butylbenzene 12000 100000 12000 270 U 600 U 73.2 9.1 117 J	340
n-Propylbenzene 3900 100000 <b>48700</b> 1250 <b>7820</b> 218 6.2 178 J	880
o-Xylene 260 100000	
sec-Butylbenzene 11000 100000 5990 J 346 1320 29.2 J 5.8 U 270 U	
Styrene	145 J

Table 2. Summary of Volatile Organic Compounds Detected in Soil Samples, 1800 Southern Boulevard, Bronx, New York

Parameter incentrations in µg/kg)	Part 375 Unrestricted Use Soil Cleanup Objectives	Part 375 Restricted Residential Soil Cleanup Objectives	Sample Designation: Sample Date: Sample Depth (ft bls):	SW-2 2003 7	SW-3 2003 7	SW-4 2003 7	SW-5 2003 7	SW-6 2003 7	B-1 2003 12	B-2 2003 12
t-Butyl Alcohol										
t-Butylbenzene	5900	100000								
Tetrachloroethene	1300	19000								
Toluene	700	100000		118000	877	10700	112	8.1	108	53.6 J
trans-1,2-Dichloroethene	190	100000								
trans-1,3-Dichloropropene										
Trichloroethene	470	21000								
Trichlorofluoromethane										
Vinyl chloride	20	900								
Naphthalene	12000	100000		27500	3580	8980	65	35.6	595	768

Notes:

U - Analyte was not detected at or above the reporting limit

Bold - Concentration exceeds NYSDEC Part 375 Unrestricted Use Soil Cleanup Objectives

Shaded cells exceed NYSDEC Part 375 Restricted Residential Soil Cleanup Objectives

--- No standard available

µg/kg - micrograms per kilogram

	Part 375	Part 375	Sample Designation:			P-1	P-7	P-3	P_4	P_5
Parameter	Unrestricted Use	Restricted Residential	Sample Designation:	2003	2003	2003	2003	2003	2003	2003
$\frac{1}{2}$	Soil Cleanup Objectives	Soil Cleanup Objectives	Sample Depth (ft bls):	12	12	2	2	2	2	2
			<b>F</b> == - <b>F</b> == (/-							
1,1,1-Trichloroethane	680	100000								
1,1,2,2-Tetrachloroethane										
1,1,2-Trichloroethane										
1,1-Dichloroethane	270	26000								
1,1-Dichloroethene	330	100000								
1,2,3-Trichloropropane										
1,2,4-Trimethylbenzene	3600	52000		3030	185	2.4 J	5.9 U	9.4	1150	9450
1,2-Dichlorobenzene	1100	100000								
1.2-Dichloroethane	20	3100								
1.2-Dichloropropane										
1 3 5-Trimethylbenzene	8400	52000		1320	97.8	14.9	5.9 U	4.8 J	4280	7860
1.3-Dichlorobenzene	2400	49000			2.12					
1 3-Dichloropropane										
1 4-Dichlorobenzene	1800	13000								
1 4-Dioxane	100	13000								
2-Butanone (MEK)	120	100000								
2-Chloroethylyinylether										
2-Hevanone										
4-Isopropyltoluepe				11.7	271	6311	5911	5311	150 1	213 1
4 Mathyl 2 pentanone				11.7	2.75	0.5 0	5.70	5.5 0	1373	2155
A cotone	50	100000								
Account	50	100000								
Acrolonitrile										
Repare				1.4	26	1211	1211	2	16	100
Benzene	80	4800		1.4	2.0	1.5 0	1.2 U	Z	10	109
Bromodicitioromethane										
Bromotorm										
Bromometnane										
Carbon disulfide										
Carbon tetrachloride	/60	2400								
Chlorobenzene	1100	100000								
Chloroethane										
Chlorotorm	370	49000								
Chloromethane										
cis-1,2-Dichloroethene	250	100000								
cis-1,3-Dichloropropene										
Dibromochloromethane										
Dichlorodifluoromethane										
Ethylbenzene	1000	41000		39.5	5.1	1.6	1.2 U	1.4	205	499
Freon 113										
lsopropylbenzene				25.9	4.7 J	2.8 J	5.9 U	5.3 U	270 U	496
m+p-Xylene	260	100000		693	61.4	8.5	2.4 U	19.2	2050	1460
Methylene chloride	50	100000								
MTBE	930	100000		1440	2570	21.4	11.9	31.3	177	99.7
n-Butylbenzene	12000	100000		229	52.7	3.4 J	5.9 U	5.3 U	270 U	910
n-Propylbenzene	3900	100000		102	15.9	2.7 J	5.9 U	5.3 U	92.6 J	1380
o-Xylene	260	100000								
sec-Butylbenzene	11000	100000		25.6	6.8	1.8 J	5.9 U	5.3 U	56.6 J	681
Styrene										

Table 2. Summary of volatile Organic Compounds Detected in Son Samples, 1800 Southern Boulevard, Bronx, New Tol	Table 2.	Summary of	Volatile Organic (	Compounds Det	ected in Soil	Samples, 180	0 Southern B	oulevard, Bron	x, New Y	ork
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Parameter	Part 375 Unrestricted Use	Part 375 Restricted Residential	Sample Designation: Sample Date:	B-3 2003	B-4 2003	P-1 2003	P-2 2003	P-3 2003	P-4 2003	P-5 2003
incentrations in µg/kg)	Soil Cleanup Objectives	Soil Cleanup Objectives	Sample Depth (ft bls):	12	12	2	2	<u>2</u>	2	2
t-Butyl Alcohol										
t-Butylbenzene	5900	100000								
Tetrachloroethene	1300	19000								
Toluene	700	100000		34	7	1.3 U	1.2 U	1.1 U	1270	194
trans-1,2-Dichloroethene	190	100000								
trans-1,3-Dichloropropene										
Trichloroethene	470	21000								
Trichlorofluoromethane										
Vinyl chloride	20	900								
Naphthalene	12000	100000		391	<u> </u>	6.3 U	5.9 U	<u>5.3 U</u>	399	1120

Notes: U - Analyte was not detected at or above the reporting limit

Bold - Concentration exceeds NYSDEC Part 375 Unrestricted Use Soil Cleanup Objectives

Shaded cells exceed NYSDEC Part 375 Restricted Residential Soil Cleanup Objectives

--- No standard available

µg/kg - micrograms per kilogram

	Part 375	Part 375	Sample Designation:	P-6	P-7	P-8
Parameter	Unrestricted Use	Restricted Residential	Sample Date:	2003	2003	2003
incentrations in µg/kg)	Soil Cleanup Objectives	Soil Cleanup Objectives	Sample Depth (ft bls):	2	2	2
1,1,1-Trichloroethane	680	100000				
1,1,2,2-Tetrachloroethane						
1,1,2-Trichloroethane						
1,1-Dichloroethane	270	26000				
1,1-Dichloroethene	330	100000				
1,2,3-Trichloropropane						
1,2,4-Trimethylbenzene	3600	52000		5.8	12900	82200
1,2-Dichlorobenzene	1100	100000				
1,2-Dichloroethane	20	3100				
1,2-Dichloropropane						
1,3,5-Trimethylbenzene	8400	52000		5.8	2750	26500
1,3-Dichlorobenzene	2400	49000				
1,3-Dichloropropane						
1,4-Dichlorobenzene	1800	13000				
I,4-Dioxane	100	13000				
2-Butanone (MEK)	120	100000				
2-Chloroethylvinylether						
2-Hexanone						
4-1sopropyltoluene				5.8	38 U	948 J
4-Methyl-2-pentanone						
Acetone	50	100000				
Acrolein						
Acrylonitrile						
Benzene	60	4800		1.7	7.7 U	579
Bromodichloromethane						
Bromoform		-				
Bromomethane						
Carbon disulfide						
Carbon tetrachloride	760	2400				
Chlorobenzene	1100	100000				
Chloroethane						
Chloroform	370	49000				
Chloromethane						
cis-1.2-Dichloroethene	250	100000				
cis-1,3-Dichloropropene						
Dibromochloromethane						
Dichlorodifluoromethane						
Ethylbenzene	1000	41000		1.2 U	127	9660
Freon 113						
lsopropylbenzene				5.8	119	4120
m+p-Xvlene	260	100000		2 J	2260	68500
Methylene chloride	50	100000				
MTBE	930	100000		177	75.3	458
n-Butylbenzene	12000	100000		5.8	38 U	3630
n-Propylbenzene	3900	100000		5.8	503	8540
o-Xvlene	260	100000		0.0		00.0
sec-Butylbenzene	11000	100000		5.8	112	1190 J
Styrene				2.0		

Table 2. Summary of Volatile Organic Compounds Detected in Soil Samples, 1800 Southern Boulevard, Bronx, New York

Table 2.	Summary of	Volatile Organic	Compounds I	Detected in S	oil Samples.	1800 Southern	Boulevard.	Bronx. ?	New Y	York
					· · · · · · · · · · · · · · · · · · ·					

Parameter incentrations in µg/kg)	Part 375 Unrestricted Use Soil Cleanup Objectives	Part 375 Restricted Residential Soil Cleanup Objectives	Sample Designation: Sample Date: Sample Depth (ft bls):	P-6 2003 2	P-7 2003 2	P-8 2003 2
t-Butyl Alcohol						
t-Butylbenzene	5900	100000				
Tetrachloroethene	1300	19000				
Toluene	700	100000		1.2 U	52.2	3920
trans-1,2-Dichloroethene	190	100000				
trans-1,3-Dichloropropene						
Trichloroethene	470	21000				
Trichlorofluoromethane						
Vinyl chloride	20	900				
Naphthalene	12000	100000		5.8	2790	10400

U - Analyte was not detected at or above the reporting limit

Bold - Concentration exceeds NYSDEC Part 375 Unrestricted Use Soil Cleanup Objectives

Shaded cells exceed NYSDEC Part 375 Restricted Residential Soil Cleanup Objectives

---- No standard available

µg/kg - micrograms per kilogram

	Table 3.	Summary of	Semivolatile	Organic Co	mpounds Detect	ed in Soil Sample	s, 1800	Southern Boulevard.	Bronx, New	York
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	Part 375	Part 375	Sample Designation:	SB-101	SB-101	SB-102	SB-103	SB-104	SB-105	SB-106	SB-107
Parameter	Unrestricted Use	Restricted Residential	Sample Date:	06/12/08	06/12/08	06/12/08	06/12/08	06/12/08	06/12/08	06/12/08	06/12/08
(Concentrations in ug/kg)	Soil Cleanup Objectives	Soil Cleanup Objectives	Sample Depth (ft bis):	0-2.5	12.5-15	12.5-15	12.5-15	12.5-15	12.5-15	7.5-10	12.5-15
		Son oreanap objectives	Sumple Deptil (11 013)	0 2.0	12.0 10		12.5 10	12.0 10	12.5 15		12:0 10
1,2,4-Trichlorobenzene				74 U	77 U	73 U	<b>85</b> U	78 U	<b>79</b> U	750 U	85 U
1,2-Diphenylhydrazine				74 U	77 U	73 U	85 U	78 U	79 U	750 U	85 U
2,2-oxybis (1-chloropropane)				74 U	77 U	73 U	85 U	78 U	79 U	750 U	85 U
2,4,5-Trichlorophenol				74 U	77 U	73 U	85 U	78 U	79 U	750 U	<b>85</b> U
2,4,6-Trichlorophenol				74 U	77 U	73 U	85 U	78 U	<b>79</b> U	750 U	85 U
2,4-Dichlorophenol				74 U	77 U	73 U	<b>85</b> U	78 U	<b>79</b> U	750 U	<b>85</b> U
2,4-Dimethylphenol				74 U	77 U	73 U	<b>85</b> U	78 U	<b>79</b> U	750 U	85 U
2,4-Dinitrophenol				370 U	380 U	370 U	430 U	390 U	400 U	3700 U	430 U
2,4-Dinitrotoluene				74 U	77 U	73 U	85 U	78 U	<b>79</b> U	750 U	85 U
2,6-Dinitrotoluene				74 U	77 U	73 U	85 U	78 U	79 U	750 U	85 U
2-Chloronaphthalene				74 U	77 U	73 U	85 U	78 U	<b>79</b> U	750 U	85 U
2-Chlorophenol				74 U	77 U	73 U	85 U	78 U	79 U	750 U	85 U
2-Methylnaphthalene				74 U	77 U	2600	85 U	4900	<b>79</b> U	19000	1600
2-Methylphenol	330	100000		74 U	77 U	73 U	85 U	78 U	<b>79</b> U	750 U	85 U
2-Nitroaniline				74 U	77 U	73 U	85 U	78 U	<b>79</b> U	750 U	85 U
2-Nitrophenol				74 U	77 U	73 U	85 U	78 U	<b>79</b> U	750 U	85 U
3,3-Dichlorobenzidine				74 U	77 U	73 U	<b>85</b> U	78 U	<b>79</b> U	750 U	85 U
3-Nitroaniline				74 U	77 U	73 U	<b>85</b> U	78 U	79 U	750 U	85 U
4,6-Dinitro-2-methylphenol				370 U	380 U	370 U	430 U	390 U	400 U	3700 U	430 U
4-Bromophenyl phenyl ether				74 U	77 U	73 U	85 U	78 U	79 U	750 U	<b>85</b> U
4-Chloro-3-methylphenol				74 U	77 U	73 U	85 U	78 U	<b>79</b> U	750 U	<b>85</b> U
4-Chloroaniline				74 U	77 U	73 U	85 U	78 U	79 U	750 U	85 U
4-Chlorophenyl phenyl ether				74 U	77 U	73 U	85 U	78 U	<b>79</b> U	750 U	85 U
4-Methylphenol	330	100000		74 U	77 U	73 U	85 U	78 U	79 U	750 U	85 U
4-Nitroaniline				74 U	77 U	73 U	85 U	78 U	<b>79</b> U	750 U	<b>85</b> U
4-Nitrophenol				74 U	77 U	73 U	85 U	78 U	79 U	750 U	85 U
Acenaphthene	20000	100000		74 U	77 U	73 U	85 U	78 U	79 U	750 U	85 U
Acenaphthylene	100000	100000		89	77 U	73 U	85 U	78 U	79 U	750 U	85 U
Aniline				74 U	77 U	73 U	85 U	78 U	79 U	750 U	85 U
Anthracene	100000	100000		120	77 U	73 U	85 U	78 U	79 U	750 U	85 U
Benzidine				74 U	77 U	73 U	85 U	78 U	79 U	750 U	85 U
Benzolajanthracene	1000	1000		740	77 U	73 U	85 U	78 U	79 U	750 U	85 U
Benzo[a]pyrene	1000	1000		710	77 0	73 U	85 U	78 0	79 U	750 U	85 U
Benzo[b]Iluoranthene	1000	1000		910	770	73 U	85 U	78 U	79 U	750 U	85 U
Benzo[g,n,1]perylene	100000	100000		420	77 0	73 U	85 U	78 U	79 U	750 0	85 U
Benzo[k]fluoranthene	800	3900		280	770	73 U	85 U	78 U	79 U	750 U	85 U
Benzoic acid				3700	770	73 U	85 U	78 U	79 U	3700 0	85 U
Bis(2-chloroethoxy)methane				74 U	770	730	85 U	78 U	79 U	750 0	85 U
Bis(2-chloroethyl)ether				/4 U	770	73 U	85 U	78 U 79 U	79 U 70 U	750 0	85 U
Bis(2-euryinexyi)phinalale	~~			110	// U	/3 U	83 U	/8 U 70 II	/9 U 70 U	3200	85 U
Butyidenzyi phinalate				74 U	// U	/3 U	85 U	/8U	/9 U 70 U	/30 U	85 U
Cardazole		2000		74 U	// U	/3 U 72 U	83 U 95 TT	/8 U 70 1 1	/9 U 70 U	/30 U	85 U
Dihangola blanthrasana	1000	3900		130	//U	/3 U 72 U	83 U 96 T T	/8 U 70 TT	79 U 70 U	750 U	83 U 95 T
Dibenzola, njanunracene	33U 14000	<i>33</i> 0		120	// U	/3 U	83 U 95 1 1	/8 U 79 TT	/9 U 70 U	/30 U	85 U
	14000			<u>/4 U</u>		<u></u> 13 U	<u>65 U</u>	78 U	190	130 0	<u> </u>

Table 3.	Summary of Semivol	latile Organic Compoi	inds Detected in Soil Samples	s, 1800 Southern Boulevard	l, Bronx, New York
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	Part 375	Part 375	Sample Designation:	SB-101	SB-101	SB-102	SB-103	SB-104	SB-105	SB-106	SB-107
Parameter	Unrestricted Use	Restricted Residential	Sample Date:	06/12/08	06/12/08	06/12/08	06/12/08	06/12/08	06/12/08	06/12/08	06/12/08
(Concentrations in µg/kg)	Soil Cleanup Objectives	Soil Cleanup Objectives	Sample Depth (ft bls):	0-2.5	12.5-15	12.5-15	12.5-15	12.5-15	12.5-15	7.5-10	12.5-15
Diethyl phthalate				74 U	77 U	73 U	85 U	78 U	79 U	750 U	85 U
Dimethyl phthalate				74 U	77 U	73 U	85 U	78 U	79 U	750 U	<b>85</b> U
Di-n-butyl phthalate				74 U	77 U	73 U	85 U	78 U	79 U	750 U	85 U
Di-n-octyl phthalate				74 U	77 U	73 U	85 U	78 U	79 U	750 U	85 U
Fluoranthene	100000	100000		1100	77 U	73 U	85 U	78 U	79 U	1600	85 U
Fluorene	30000	100000		74 U	77 U	73 U	85 U	78 U	79 U	750 U	85 U
Hexachlorobenzene	330	1200		74 U	77 U	73 U	85 U	78 U	79 U	750 U	85 U
Hexachlorobutadiene				74 U	77 U	73 U	85 U	<b>78</b> U	79 U	750 U	85 U
Hexachlorocyclopentadiene				370 U	380 U	370 U	430 U	390 U	400 U	3700 U	430 U
Hexachloroethane				74 U	77 U	73 U	85 U	78 U	79 U	750 U	85 U
Indeno(1,2,3-cd)pyrene	500	500		340	77 U	73 U	85 U	78 U	79 U	750 U	85 U
lsophorone				74 U	77 U	73 U	85 U	78 U	79 U	750 U	85 U
Naphthalene	12000	100000		74 U	77 U	1800	85 U	2800	79 U	25000	3200
Nitrobenzene				74 U	77 U	73 U	85 U	78 U	79 U	750 U	85 U
n-Nitrosodimethylamine				74 U	77 U	73 U	85 U	78 U	79 U	750 U	85 U
n-Nitroso-di-n-propylamine				74 U	77 U	73 U	85 U	78 U	79 U	750 U	85 U
n-Nitrosodiphenylamine				74 U	77 U	73 U	85 U	78 U	79 U	750 U	85 U
Pentachlorophenol	800	6700		370 U	380 U	370 U	430 U	390 U	400 U	3700 U	430 U
Phenanthrene	100000	100000		690	77 U	73 U	85 U	78 U	79 U	1900	85 U
Phenol	330	100000		74 U	77 U	73 U	85 U	78 U	79 U	750 U	85 U
Pyrene	100000	100000		1400	_77 U	73 U	8 <u>5</u> U	7 <u>8 </u> U	<b>79</b> U	1700	<u>85 U</u>

U - Analyte was not detected at or above the reporting limit

Bold - Concentration exceeds NYSDEC Part 375 Unrestricted Use Soil Cleanup Objectives

Shaded cells exceed NYSDEC Part 375 Restricted Residential Soil Cleanup Objectives

--- No standard available

µg/kg - micrograms per kilogram

	Part 375	Part 375	Sample Designation:	SB-101	SB-101	SB-102	SB-103	SB-104	SB-105	SB-106	SB-107
Parameter	Unrestricted Use	<b>Restricted Residential</b>	Sample Date:	06/12/08	06/12/08	06/12/08	06/12/08	06/12/08	06/12/08	06/12/08	06/12/08
(Concentrations in mg/kg)	Soil Cleanup Objectives	Soil Cleanup Objectives	Sample Depth (ft bls):	0-2.5	12.5-15	12.5-15	12.5-15	12.5-15	12.5-15	7.5-10	12.5-15
Aluminum				9700	6900	9800	10000	11000	4100	8500	20000
Antimony				36	2.3 U	2.2 U	2.6 U	2.4 U	2.4 U	15	2.6 U
Arsenic	13	16		6.1	2.3 U	2.2 U	2.9	2.4 U	2.4 U	4.5	2.6 U
Barium	350	400		270	65	95	90	59	31	150	240
Beryllium	7.2	72		0.67 U	0.69 U	0.66 U	0.77 U	0.71 U	0.71 U	0.67 U	0.77 U
Cadmium	2.5	4.3		0.67 U	0.69 U	0.66 U	0.77 U	0.71 U	0.71 U	0.67 U	0.77 U
Calcium				71000	2000	4700	2500	1700	1200 U	2300	2600
Chromium				21	20	26	29	50	12	21	61
Cobalt				6.3	8.6	12	11	15	3.9	6.9	18
Copper	50	270			27	32	49	39	8.6	270	56
lron				16000	14000	20000	24000	20000	8000	20000	37000
Lead	63	400		580	5.7 U	7.4	6.4 U	10	6 U	490	18
Magnesium				5700	3200	5700	5700	8100	2100	2100	11000
Manganese	1600	2000		230	130	290	240	300	100	210	400
Mercury	0.18	0.81		0.7	0.096 U	0.092 U	0.11 U	0.098 U	0.099 U	0.18	0.11 U
Nickel	30	310		17	24	21	32	7 <b>2</b>	8.2	22	41
Potassium				1300	2500	3500	3600	1700	1700	1100	11000
Selenium	3.9	180		<b>2</b> U	2.1 U	2 U	2.3 U	<b>2</b> .1 U	<b>2</b> .1 U	<b>2</b> U	2.3 U
Silver	2	180		1. <b>7</b> U	1.7 U	1.6 U	1.9 U	1. <b>8</b> U	1.8 U	1.7 U	1.9 U
Sodium				280 U	<b>290</b> U	270 U	320 U	290 U	300 U	280 U	320 U
Thallium				1.3 U	1.4 U	1.3 U	1.5 U	1.4 U	1.4 U	1.3 U	1.5 U
Vanadium				33	26	35	69	43	16	26	82
Zinc	109	10000		280	40	46	55	73	20	270	92

U - Analyte was not detected at or above the reporting limit

Bold - Concentration exceeds NYSDEC Part 375 Unrestricted Use Soil Cleanup Objectives

Shaded cells exceed NYSDEC Part 375 Restricted Residential Soil Cleanup Objectives

--- No standard available

mg/kg - milligrams per kilogram

Table 5.	Summary of Pol	ychlorinated Bipheny	l Compounds	Detected in Soil Samples,	1800 Southern Boulevard	Bronx, New York
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	Part 375	Part 375	Sample Designation:	SB-101	SB-101	SB-102	SB-103	SB-104	SB-105	SB-106	SB-107
Analyte	Unrestricted Use	Restricted Residential	Sample Date:	06/12/08	06/12/08	06/12/08	06/12/08	06/12/08	06/12/08	06/12/08	06/12/08
(Concentrations in µg/kg)	Soil Cleanup Objectives	Soil Cleanup Objectives	Sample Depth (ft bis):	0-2.5	12.5-15	12.5-15	12.5-15	12.5-15	12.5-15	<u>7.5-10</u>	12.5-15
Aroclor-1016				28 U	29 U	27 U	32 U	29 U	30 U	28 U	32 U
Aroclor-1221				28 U	<b>29</b> U	27 U	32 U	<b>29</b> U	30 U	28 U	32 U
Aroclor-1232				28 U	29 U	27 U	32 U	<b>29</b> U	30 U	28 U	32 U
Aroclor-1242				28 U	<b>29</b> U	<b>27</b> U	32 U	<b>29</b> U	30 U	28 U	32 U
Aroclor-1248				28 U	<b>29</b> U	27 U	32 U	<b>29</b> U	30 U	28 U	32 U
Aroclor-1254				28 U	<b>29</b> U	27 U	32 U	<b>29</b> U	30 U	28 U	32 U
Aroclor-1260				28 U	<b>29</b> U	27 U	32 U	<b>29</b> U	30 U	28 U	32 U
Aroclor-1262				28 U	<b>29</b> U	27 U	32 U	29 U	30 U	28 U	32 U
Aroclor-1268				28 U	<b>29</b> U	27 U	32 U	29 U	30 U	28 U	32 U
Total PCBs:	100	1000		_0	0	0	0	0	0	0	0

 $\overline{U}$  - Analyte was not detected at or above the reporting limit

Bold - Concentration exceeds NYSDEC Part 375 Unrestricted Use Soil Cleanup Objectives

Shaded cells exceed NYSDEC Part 375 Restricted Residential Soil Cleanup Objectives

--- No standard available

µg/kg - micrograms per kilogram

	Part 375	Part 375	Sample Designation:	SB-101	SB-101	SB-102	SB-103	SB-104	SB-105	SB-106	SB-107
Parameter	Unrestricted Use	<b>Restricted Residential</b>	Sample Date:	06/12/08	06/12/08	06/12/08	06/12/08	06/12/08	06/12/08	06/12/08	06/12/08
(Concentrations in µg/kg)	Soil Cleanup Objectives	Soil Cleanup Objectives	Sample Depth (ft bls):	0-2.5	12.5-15	12.5-15	12.5-15	12.5-15	12.5-15	7.5-10	12.5-15
							_				
4,4'-DDD	3.3	13000		14	2.9 U	2.7 U	3.2 U	2.9 U	3 U	2.8 U	3.2 U
4,4'-DDE	3.3	8900		8	2.9 U	2.7 U	3.2 U	2.9 U	3 U	2.8 U	3.2 U
4,4'-DDT	3.3	7900		20	2.9 U	2.7 U	3.2 U	2.9 U	3 U	2.8 U	3.2 U
Aldrin	5	97		5.6 U	5.7 U	5.5 U	6.4 U	5.9 U	6 U	5.6 U	6.4 U
alpha-BHC	20	480		5.6 U	5.7 U	5.5 U	6.4 U	5.9 U	6 U	5.6 U	6.4 U
beta-BHC	36	360		5.6 U	5.7 U	5.5 U	6.4 U	5.9 U	6 U	5.6 U	6.4 U
Chlordane				50 D	11 U	11 U	13 U	12 U	12 U	11 U	13 U
delta-BHC	40	100000		5.6 U	5.7 U	5.5 U	6.4 U	5.9 U	6 U	5.6 U	6.4 U
Dieldrin	5	200		5.6 U	5.7 U	5.5 U	6.4 U	5.9 U	6 U	5.6 U	6.4 U
Endosulfan l	2400	24000		5.6 U	5.7 U	5.5 U	6.4 U	5.9 U	6 U	5.6 U	6.4 U
Endosulfan Il	2400	24000		5.6 U	5.7 U	5.5 U	6.4 U	5.9 U	6 U	5.6 U	6.4 U
Endosulfan sulfate	2400	24000		5.6 U	5.7 U	5.5 U	6.4 U	5.9 U	6 U	5.6 U	6.4 U
Endrin aldehyde				5.6 U	5.7 U	5.5 U	6.4 U	5.9 U	6 U	5.6 U	6.4 U
Endrin Ketone				5.6 U	5.7 U	5.5 U	6.4 U	5.9 U	6 U	5.6 U	6.4 U
Endrin	14	11000		5.6 U	5.7 U	5.5 U	6.4 U	5.9 U	6 U	5.6 U	6.4 U
gamma-BHC (Lindane)	100	1300		5.6 U	5.7 U	5.5 U	6.4 U	5.9 U	6 U	5.6 U	6.4 U
Heptachlor epoxide				5.6 U	5.7 U	5.5 U	6.4 U	5.9 U	6 U	5.6 U	6.4 U
Heptachlor	42	2100		5.6 U	5.7 U	5.5 U	6.4 U	5.9 U	6 U	5.6 U	6.4 U
Methoxychlor				5.6 U	5.7 U	5.5 U	6.4 U	5.9 U	6 U	5.6 U	6.4 U
Toxaphene				28 U	<b>29</b> U	27 U	<b>32</b> U	29 U	30 U	28 U	32 U

U - Analyte was not detected at or above the reporting limit

Bold - Concentration exceeds NYSDEC Part 375 Unrestricted Use Soil Cleanup Objectives

Shaded cells exceed NYSDEC Part 375 Restricted Residential Soil Cleanup Objectives

--- No standard available

µg/kg - micrograms per kilogram

	Sample Designation:	AS-203	SV-201	SV-202
Parameter	Sample Date:	6/12/2008	6/12/2008	6/12/2008
(Concentrations in $ug/m^3$ )				
1,1,1-Trichloroethane		1.1 U	1.6 U	1.1 U
1,1,2,2-Tetrachloroethane		1.4 U	2.1 U	1.4 U
1,1,2-Trichloroethane		1.1 U	1.6 U	1.1 U
1,1-Dichloroethane		0.81 U	1.2 U	0.81 U
1,1-Dichloroethene		0.79 U	1.2 U	0.79 U
1,2,4-Trichlorobenzene		3.7 U	5.6 U	3.7 U
1,2,4-Trimethylbenzene		0.98 U	18	20
1,2-Dibromoethane		1.5 U	2.3 U	1.5 U
1,2-Dichlorobenzene		1.2 U	1.8 U	1.2 U
1,2-Dichloroethane		0.81 U	1.2 U	0.81 U
1,2-Dichloroethene (total)		0.79 U	1.2 U	0.79 U
1,2-Dichloropropane		<b>0.92</b> U	1.4 U	<b>0.92</b> U
1,3,5-Trimethylbenzene		0.98 U	4.3	4.2
1,3-Butadiene		1.1 U	1.7 U	1.1 U
1,3-Dichlorobenzene		1.2 U	1. <b>8</b> U	1. <b>2</b> U
1,4-Dichlorobenzene		1.2 U	1. <b>8</b> U	1. <b>2</b> U
1,4-Dioxane		1 <b>8</b> U	27 U	18 U
2-Butanone (MEK)		2.7	17	7.1
2-Chlorotoluene		1. <b>0</b> U	1.6 U	1.0 U
2-Hexanone		<b>2.0</b> U	3.1 U	<b>2.0</b> U
2-Propanol		12 U	1 <b>8</b> U	12 U
3-Chloropropene		1.6 U	2.3 U	1.6 U
4-Ethyltoluene		0.98 U	12	14
4-Methyl-2-pentanone		2.0 U	3.1 U	2.0 U
Acetone		12	93	29
Benzene		0.64 U	28	5.1
Bromodichloromethane		1.3 U	2.0 U	1.3 U
Bromoethene		0.87 U	1.3 U	0.87 U
Bromoform		2.1 U	3.1 U	2.1 U
Bromomethane		0.78 U	1.2 U	0.78 U
Carbon Disulfide		1.6 U	2.5	4.7
Carbon tetrachloride		1.3 U	1.9 U	1.3 U
Chlorobenzene		0.92 U	1.4 U	0.92 U

Table 7. Summary of Volatile Organic Compounds Detected in Soil Vapor Samples, 1800 Southern Boulevard., Bronx, New York

	Sample Designation:	AS-203	SV-201	SV-202
Parameter	Sample Date:	6/12/2008	6/12/2008	6/12/2008
(Concentrations in $ug/m^3$ )				
Chloroethane		1.3 U	2.0 U	1.3 U
Chloroform		0.98 U	8.8	2.3
Chloromethane		1.1	1.5 U	1.0 U
cis-1,2-Dichloroethene		0.79 U	1.2 U	0.79 U
cis-1,3-Dichloropropene		0.91 U	1.4 U	0.91 U
Cyclohexane		0.76	5.2	4.1
Dibromochloromethane		1.7 U	2.6 U	1.7 U
Dichlorodifluoromethane		2.5 U	3.7 U	2.5 U
Ethylbenzene		0.87 U	6.9	6.9
Freon 113		1.5 U	2.3 U	1.5 U
Freon 114		1.4 U	2.1 U	1.4 U
Heptane		0.82 U	8.2	3.4
Hexachlorobutadiene		2.1 U	3.2 U	2.1 U
Hexane		1. <b>8</b> U	30	6.7
Isooctane		0.93 U	34	4.6
Methylene chloride		1.7 U	2.6 U	1.7 U
MTBE		1. <b>8</b> U	160	1.8 U
Styrene		0.85 U	3.7	3.9
t-Butyl Alcohol		15 U	23 U	15 U
Tetrachloroethene		1.4 U	6.8	10
Tetrahydrofuran		15 U	<b>22</b> U	15 U
Toluene		4.9	24	26
trans-1,2-Dichloroethene		0.79 U	1.2 U	0.79 U
trans-1,3-Dichloropropene		0.91 U	1.4 U	0.91 U
Trichloroethene		1.1 U	1.6 U	1.1 U
Trichlorofluoromethane		1.7	22	140
Vinyl chloride		0.51 U	0.77 U	0.51 U
Xylenes (Total)		0.87 U	39	43

Table 7. Summary of Volatile Organic Compounds Detected in Soil Vapor Samples, 1800 Southern Boulevard., Bronx, New York

## Notes:

U - Analyte was not detected at or above the reporting limit

 $\mu g/m^3$  - micrograms per cubic meter

	NYSDEC	Sample Designation:	SB-101W	SB-102W	SB-103W	SB-104W	SB-105W	SB-107W
Parameter	AWQSGVs	Sample Date:	06/12/08	06/12/08	06/12/08	06/12/08	06/12/08	06/12/08
ncentrations in µg/L)	(μg/L)							
1 1 1 Trial langed and	e.		100.11	60.11		20.11	1 1 1	<b>6</b> 0 11
1,1,1-1richloroethane	5		100 U	50 U	50	20 U		50 U
1,1,2,2-1 etrachloroethane	5		100 ()	50 U	50	20 0	10	50 U
1,1,2-1richloroethane	1		100 U	50 U	50	20 U	IU	50 U
1,1-Dichloroethane	5		100 U	50 U	5 U	20 U	10	50 U
1,1-Dichloroethene	5		100 U	50 U	5 U	20 U	10	50 U
1,2,3-Trichloropropane	0.04		100 U	50 U	5 U	20 U	1 U	50 U
1,2,4-Trimethylbenzene	5		130	2300	5 U	20 U	1 U	6900
1,2-Dichlorobenzene	3		100 U	50 U	5 U	20 U	1 U	50 U
1,2-Dichloroethane	0.6		50 U	25 U	2.5 U	10 U	0.5 U	25 U
1,2-Dichloropropane	1		100 U	50 U	5 U	20 U	1 U	50 U
1,3,5-Trimethylbenzene	5		100 U	1000	5 U	20 U	1 U	1900
1,3-Dichlorobenzene	3		100 U	50 U	5 U	20 U	1 U	50 U
1,3-Dichloropropane	5		100 U	50 U	5 U	20 U	1 U	50 U
1,4-Dichlorobenzene	3		100 U	50 U	5 U	20 U	1 U	50 U
1,4-Dioxane			25000 U	2500 U	1200 U	1000 U	50 U	12000 U
2-Butanone (MEK)	50		100 U	50 U	5 U	20 U	1 U	50 U
2-Chloroethylvinylether			100 U	50 U	5 U	20 U	1 U	50 U
2-Hexanone	50		100 U	50 U	5 U	20 U	10	50 U
4-Isopropyltoluene			100 U	110	51	21	111	50 11
4-Methyl-2-nentanone			100 U	50 U	5 U	2011	111	50 U
Acetone	50		500 U	250 11	88	100 U	5 U	880
Acrolein	5		500 U	250 U	25 11	100 U	50	250 11
Acrylonitrile	5		100 U	50 11	25 U	2011	111	50 11
Renzene	1		720	50 0	95	20 0	10	170
Bromodishloromethane	50		100 U	50.11	55 5 U	201	1.5	50.11
Bromoform	50		100 U	50 U	50	20 U		50 U
Dromonothana	50		100 U	50 U	50	20 0		50 U
Bromomethane	5		100 U	50 U	50	20 0		50 U
Carbon disulfide			100 U	50 U	50	20 0		50 U
Carbon tetrachioride	5		100 0	50 U	50	20 0	10	50 0
Chlorobenzene	2		100 U	50 0	50	20 0	10	50 U
Chloroethane	5		100 U	50 U	5 U	20 0	10	50 U
Chloroform	7		100 U	50 U	5 U	20 U	10	50 U
Chloromethane			100 U	50 U	5 U	<b>20</b> U	1 U	50 U
cis-1,2-Dichloroethene	5		100 U	50 U	5 U	<b>20</b> U	1 U	50 U
cis-1,3-Dichloropropene			100 U	50 U	5 U	<b>20</b> U	1 U	50 U
Dibromochloromethane	50		100 U	50 U	5 U	<b>20</b> U	1 U	50 U
Dichlorodifluoromethane	5		100 U	50 U	5 U	<b>20</b> U	1 U	50 U
Ethylbenzene	5		770	1200	140	1300	1 U	6000
Freon 113			100 U	50 U	5 U	<b>20</b> U	1 U	50 U
lsopropylbenzene			100 U	280	47	150	1 U	380
m+p-Xylene	5		2400	2200	100	150	2 U	23000
Methylene chloride	5		100 U	50 U	5 U	20 U	1 U	50 U
MTBE	10		7800	50 U	5 U	5000	2.9	50 U

Table 8. Summary of Volatile Organic Compounds Detected in Groundwater Samples, 1800 Southern Boulevard, Bror	x, New Y	ork
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	NYSDEC	Sample Designation:	SB-101W	SB-102W	SB-103W	SB-104W	SB-105W	SB-107W
Parameter	AWQSGVs	Sample Date:	06/12/08	06/12/08	06/12/08	06/12/08	06/12/08	06/12/08
ncentrations in µg/L)	(μg/L)							
n-Butylbenzene	5		100 U	50 U	5 U	20 U	1 U	50 U
n-Propylbenzene	5		180	760	81	270	1 U	1100
o-Xylene	5		540	1100	15	34	1 U	9200
sec-Butylbenzene	5		100 U	100	6.7	<b>20</b> U	1 U	130
Styrene	5		100 U	50 U	5 U	20 U	1 U	50 U
t-Butyl Alcohol			6100	250 U	210	11000	5 U	250 U
t-Butylbenzene	5		100 U	50 U	5 U	20 U	1 U	50 U
Tetrachloroethene	5		100 U	50 U	5 U	20 U	1 U	50 U
Toluene	5		280	50 U	41	180	1 U	2100
trans-1,2-Dichloroethene	5		100 U	50 U	5 U	20 U	1 U	50 U
trans-1,3-Dichloropropene			100 U	50 U	5 U	<b>20</b> U	1 U	50 U
Trichloroethene	5		100 U	50 U	5 U	20 U	1 U	50 U
Trichlorofluoromethane	5		100 U	50 U	5 U	20 U	1 U	50 U
Vinyl chloride	2		100 U	50 U	5 U	20 U	1 U	50 U
Napthalene	10		-	-	-	-	-	-
Total BTEX			4710	4566	391	2624	1.5	40470

U - Not Detected

µg/L - Micrograms per liter

NYSDEC - New York State Department of Environmental Conservation

AWQSGVs - Ambient Water Quality Standards and Guidance Values

Parameter	NYSDEC AWOSGVs	Sample Designation:	SB-1	SB-2 02/28/03	SB-3	SB-4	SB-5 02/28/03	SB-1 07/22/03
ncentrations in ug/L)	(ug/L)	Sampic Date.	02/28/05	02/20/05	02/20/05	02/20/05	02/20/05	01122105
1,1,1-Trichloroethane	5							
1,1,2,2-Tetrachloroethane	5							
1.1.2-Trichloroethane	1							
1.1-Dichloroethane	5							
1.1-Dichloroethene	5							
1.2.3-Trichloropropane	0.04							
1.2.4-Trimethylbenzene	5		1560	2310	6. 2 J	1.8 J	658	9090
1.2-Dichlorobenzene	3							
1.2-Dichloroethane	0.6							
1.2-Dichloropropane	1							
1.3.5-Trimethylbenzene	5		465	681	2 J	0.52 J	203	2840
1.3-Dichlorobenzene	3					••• - •		2010
1.3-Dichloropropane	5							
1.4-Dichlorobenzene	3							
1.4-Dioxane								
2-Butanone (MEK)	50							
2-Chloroethylvinylether								
2-Hexanone	50							
4-Isonronvitoluene			1331	20.7.1	25 U	181	581	91 7 J
4-Methyl-2-pentanone			10.00	20.7 0	25 0	1.0 0	5.00	<i></i>
Acetone	50							
Acrolein	5							
Acrylonitrile	5							
Benzene	1		127	111	26.9	0.54.1	115	64.4
Bromodichloromethane	50		127		20.7	0.54 0	115	01.1
Bromoform	50							
Bromomethane	5							
Carbon disulfide								
Carbon tetrachloride	5							
Chlorobenzene	5							
Chloroethane	5							
Chloroform	7							
Chloromethane	, 							
cis-1 2-Dichloroethene	5							
cis-1,3-Dichloropropene								
Dibromochloromethane	50							
Dichlorodifluoromethane	5							
Ethylbenzene	5		943	2160	481	0.95.1	267	4930
Freon 113			745	2100	1.0 5	0.75 5	207	4750
lsopropylbenzene			88.6	175	10 U	211	41 1	598
m+n-Xvlene	5		4540	8260	194	44	2310	16900
Methylene chloride	5		1210	0400		r.1	2010	10/00
MTBE	10		58	69.3	802	10.3	52.1	71.1

Table 8.	Summary of	Volatile Organic	Compounds Detect	ed in Groundwate	r Samples, 1800	Southern Boulevard,	Bronx, New York
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Parameter	NYSDEC AWQSGVs	Sample Designation: Sample Date:	SB-1 02/28/03	SB-2 02/28/03	SB-3 02/28/03	SB-4 02/28/03	SB-5 02/28/03	SB-1 07/22/03
ncentrations in µg/L)	(μg/L)							
n-Butylbenzene	5		20.9 J	53.1 J	25 U	5 U	7.6 J	201 J
n-Propylbenzene	5		224	445	25 U	5 U	92.1	1710
o-Xylene	5							
sec-Butylbenzene	5		16.5 J	35.2 J	25 U	5 U	5.1 J	141 J
Styrene	5							
t-Butyl Alcohol								
t-Butylbenzene	5		2.8 J	130 U	25 U	5 U	50 U	-
Tetrachloroethene	5							
Toluene	5		663	742	3.5 J	0.97 J	56.7	618
trans-1,2-Dichloroethene	5							
trans-1,3-Dichloropropene								
Trichloroethene	5							
Trichlorofluoromethane	5							
Vinyl chloride	2							
Napthalene	10		205	207	11.2 J	2.3 J	74.9	1050
Total BTEX			6273	11273	54.6	6.8	2748.7	22512.4

U - Not Detected

µg/L - Micrograms per liter

NYSDEC - New York State Department of Environmental Conservation

AWQSGVs - Ambient Water Quality Standards and Guidance Values

Parameter AWQSGVs Sample Date: 07/22/03   ncentrations in µg/L) (µg/L)   1,1,1-Trichloroethane 5   1,1,2,2-Tetrachloroethane 5   1,1,2-Trichloroethane 1   1:1 Dickloroethane 5
ncentrations in µg/L) (µg/L)   1,1,1-Trichloroethane 5   1,1,2,2-Tetrachloroethane 5   1,1,2-Trichloroethane 1   1:1 Dichloroethane 5
1,1,1-Trichloroethane51,1,2,2-Tetrachloroethane51,1,2-Trichloroethane11<1 Dickloroethane5
1,1,1-Trichloroethane51,1,2,2-Tetrachloroethane51,1,2-Trichloroethane11 1 Dickloroethane5
1,1,2,2-Tetrachloroethane51,1,2-Trichloroethane11 Diskloreethane5
1,1,2-Trichloroethane 1
1.1 Dickloweethane 5
1,1-Dichloroethene 5
1,2,3-Trichloropropane 0.04
1,2,4-Trimethylbenzene 5 1500 4.5 J
1,2-Dichlorobenzene 3
1,2-Dichloroethane 0.6
1,2-Dichloropropane 1
1,3,5-Trimethylbenzene 5 442 1.7 J
1,3-Dichlorobenzene 3
1,3-Dichloropropane 5
1,4-Dichlorobenzene 3
1,4-Dioxane
2-Butanone (MEK) 50
2-Chloroethylvinylether
2-Hexanone 50
4-Isopropyltoluene 13.7 J 13 U
4-Methyl-2-pentanone
Acetone 50
Acrolein 5
Acrylonitrile 5
Benzene l 2 J 17.2
Bromodichloromethane 50
Bromoform 50
Bromomethane 5
Carbon disulfide
Carbon tetrachloride 5
Chlorobenzene 5
Chloroethane 5
Chloroform 7
Chloromethane
cis-1.2-Dichloroethene 5
cis-1.3-Dichloropronene
Dibromochloromethane 50
Dichlorodifluoromethane 5
Ethylbenzene 5 482 0.94 J
Freen 113
lsopropylbenzene 120 5 U
m+p-Xvlene 5 1990 2.3 J
Methylene chloride 5
MTBE 10 26.3 626

Table 8. Summary of Volatile Organic Compounds Detected in Groundwater Samples, 1800 Southern Boulevard, Bronx, New York

	NYSDEC	Sample Designation:	SB-2	SB-3
Parameter	AWQSGVs	Sample Date:	07/22/03	07/22/03
ncentrations in µg/L)	(μg/L)			
n-Butylbenzene	5		25 U	13 U
n-Propylbenzene	5		301	1.2 J
o-Xylene	5			
sec-Butylbenzene	5		23.2 J	13 U
Styrene	5			
t-Butyl Alcohol				
t-Butylbenzene	5		-	-
Tetrachloroethene	5			
Toluene	5		17.8	2.5 U
trans-1,2-Dichloroethene	5			
trans-1,3-Dichloropropene				
Trichloroethene	5			
Trichlorofluoromethane	5			
Vinyl chloride	2			
Napthalene	10		98.6	13 U
Total BTEX			2491.8	20.44
Notes				

Table 8. Summary of Volatile Organic Compounds Detected in Groundwater Samples, 1800 Southern Boulevard, Bronx, New York

Notes:

U - Not Detected

µg/L - Micrograms per liter

NYSDEC - New York State Department of Environmental Conservation

AWQSGVs - Ambient Water Quality Standards and Guidance Values

Parameter	AWQSGVs	Sample Date:	06/12/08	06/12/08	06/12/08	06/12/08	06/12/08
(Concentrations in µg/L)	(μ <u>g/L)</u>						
						_	
1,2,4-Trichlorobenzene	5		20 U	2 U	20 U	2 U	20 U
1,2-Diphenylhydrazine			20 U	2 U	20 U	2 U	20 U
2,2-oxybis (1-chloropropane)			20 U	2 U	20 U	2 U	20 U
2,4,5-Trichlorophenol			20 U	2 U	20 U	2 U	20 U
2,4,6-Trichlorophenol			20 U	2 U	20 U	2 U	20 U
2,4-Dichlorophenol	5		20 U	2 U	20 U	2 U	20 U
2,4-Dimethylphenol	50		20 U	2 U	20 U	2 U	20 U
2,4-Dinitrophenol	10		100 U	10 U	100 U	10 U	100 U
2,4-Dinitrotoluene	5		20 U	2 U	20 U	2 U	<b>20</b> U
2,6-Dinitrotoluene	5		20 U	2 U	20 U	2 U	20 U
2-Chloronaphthalene	10		20 U	2 U	20 U	2 U	20 U
2-Chlorophenol			20 U	2 U	20 U	2 U	20 U
2-Methylnaphthalene			490	3.7	320	2 U	260
2-Methylphenol			20 U	2 U	20 U	2 U	20 U
2-Nitroaniline	5		20 U	2 U	20 U	2 U	20 U
2-Nitrophenol			20 U	2 U	20 U	2 U	20 U
3,3-Dichlorobenzidine			20 U	2 U	20 U	2 U	20 U
3-Nitroaniline	5		20 U	2 U	20 U	2 U	20 U
4,6-Dinitro-2-methylphenol			100 U	10 U	100 U	10 U	100 U
4-Bromophenyl phenyl ether			20 U	<b>2</b> U	20 U	2 U	20 U
4-Chloro-3-methylphenol			20 U	2 U	<b>20</b> U	2 U	20 U
4-Chloroaniline	5		20 U	2 U	20 U	2 U	20 U
4-Chlorophenyl phenyl ether			20 U	2 U	20 U	2 U	20 U
4-Methylphenol			20 U	2 U	20 U	<b>2</b> U	20 U
4-Nitroaniline	5		20 U	2 U	20 U	2 U	20 U
4-Nitrophenol			20 U	2 U	20 U	2 U	20 U
Acenaphthene	20		20 U	2 U	20 U	2 U	20 U
Acenaphthylene			20 U	<b>2</b> U	20 U	2 U	20 U
Aniline			20 U	2 U	20 U	<b>2</b> U	20 U
Anthracene	50		20 U	<b>2</b> U	20 U	<b>2</b> U	20 U
Benzidine	5		20 U	<b>2</b> U	20 U	2 U	20 U
Benzo[a]anthracene			20 U	2 U	<b>20</b> U	2 U	20 U
Benzo[a]pyrene	ND		20 U	2 U	20 U	<b>2</b> U	20 U
Benzo[b]fluoranthene			20 U	<b>2</b> U	20 U	2 U	20 U
Benzo[k]fluoranthene			20 U	<b>2</b> U	20 U	2 U	20 U
Benzo[g,h,i]perylene			20 U	2 U	20 U	2 U	20 U
Benzoic acid			100 U	2.1	100 U	4.3	100 U
Bis(2-chloroethoxy)methane	5		20 U	2 U	20 U	<b>2</b> U	20 U
Bis(2-chloroethyl)ether	1		20 U	2 U	20 U	2 U	20 U
Bis(2-ethylhexyl)phthalate	5		20 U	2 U	20 U	2 U	20 U
Butylbenzyl phthalate			20 U	2 U	20 U	2 U	20 U
Carbazole			20 U	2 U	20 U	2 U	20 U
Chrysene	0.002		20 U	2 U	20 U	2 U	20 U
Dibenzo[a,h]anthracene			20 U	2 U	20 U	2 U	20 U
Dibenzofuran			20 U	2 U	20 U	2 U	20 U

Table 9. Summary of Semivolatile Organic Compounds Detected in Groundwater Samples, 1800 Southern Boulevard, Bronx, New York

Sample Designation: SB-102W

SB-103W

SB-104W

SB-105W

SB-107W

NYSDEC

Table 9.	Summary of	Semivolatile	Organic C	Compounds ]	Detected in	Groundwater Samples.	1800 Southerr	Boulevard.	Bronx, Ne	w York
			· U					/		

	NYSDEC	Sample Designation:	SB-102W	SB-103W	SB-104W	SB-105W	SB-107W
Parameter	AWQSGVs	Sample Date:	06/12/08	06/12/08	06/12/08	06/12/08	06/12/08
(Concentrations in µg/L)	(µg/L)						
Diethyl phthalate	50		20 U	2 Ū	20 U	2 U	20 U
Dimethyl phthalate	50		20 U	2 U	20 U	2 U	20 U
Di-n-butyl phthalate	50		<b>20</b> U	2 U	20 U	<b>2</b> U	20 U
Di-n-octyl phthalate			20 U	2 U	20 U	2 U	20 U
Fluoranthene	50		<b>20</b> U	2 U	20 U	2 U	20 U
Fluorene	50		20 U	2 U	20 U	<b>2</b> U	20 U
Hexachlorobenzene	0.04		20 U	2 U	20 U	2 U	20 U
Hexachlorobutadiene	0.5		20 U	2 U	20 U	2 U	20 U
Hexachlorocyclopentadiene	5		100 U	10 U	100 U	10 U	100 U
Hexachloroethane	5		20 U	2 U	20 U	2 U	20 U
Indeno(1,2,3-cd)pyrene			20 U	2 U	20 U	2 U	20 U
Isophorone	50		<b>20</b> U	2 U	20 U	2 U	20 U
Naphthalene	10		400	15	330	2 U	650
Nitrobenzene	0.4		20 U	2 U	20 U	2 U	20 U
n-Nitrosodimethylamine			20 U	2 U	20 U	2 U	20 U
n-Nitroso-di-n-propylamine			20 U	2 U	20 U	2 U	20 U
n-Nitrosodiphenylamine	50		20 U	2 U	20 U	2 U	20 U
Pentachlorophenol	1		100 U	10 U	100 U	10 U	100 U
Phenanthrene	50		20 U	2 U	20 U	2 U	20 U
Phenol	1		20 U	2 U	20 U	2 U	20 U
Pyrene	50		20 U	2 U	20 U	2 U	20 U

U - Not Detected

μg/L - Micrograms per liter

NYSDEC - New York State Department of Environmental Conservation

AWQSGVs - Ambient Water Quality Standards and Guidance Values
	NYSDEC	Sample Designation:	SB-102W	SB-103W	SB-104W	
Parameter	AWQSGVs	Sample Date:	06/12/08	06/12/08	06/12/08	06/12/08
(Concentrations in µg/L)	(µg/L)					
Aluminum			9100	50000	90000	5600
Antimony	3		12 U	12 U	12 U	12 U
Arsenic	25		8.5	17	45	10
Barium	1000		210	580	670	230
Beryllium	3		4 U	4 U	6	4 U
Cadmium	5		3.5 U	3.5 U	3.5 U	3.5 U
Calcium			160000	180000	110000	120000
Chromium	50		50 U	140	350	50 U
Cobalt			20 U	50	76	20 U
Copper	200		63	240	360	50 U
Iron			33000	100000	130000	8700
Lead	25		56	340	200	37
Magnesium			32000	42000	49000	20000
Manganese	300		8700	2900	5900	500
Mercury	0.7		0.7 U	<b>0.7</b> U	0.7 U	0.7 U
Nickel	100		50 U	160	310	50 U
Potassium			8800	24000	15000	13000
Selenium	10		40 U	40 U	40 U	40 U
Silver	50		20 U	20 U	20 U	20 U
Sodium	20000		89000	55000	110000	240000
Thallium	0.5		10 U	10 U	10 U	10 U
Vanadium			50 U	180	310	50 U
Zinc	2000		68	270	320	50 U

Table 10. Summary of Metals Detected in Groundwater Samples, 1800 Southern Boulevard, Bronx, New York

Notes:

U - Not Detected

µg/L - Micrograms per liter

NYSDEC - New York State Department of Environmental Conservation

AWQSGVs - Ambient Water Quality Standards and Guidance Values

Bold - Exceeds NYSDEC AWQSGV

Parameter	NYSDEC AWQSGVs	Sample Designation: Sample Date:	SB-102W 06/12/08	SB-103W 06/12/08	SB-104W 06/12/08	SB-105W 06/12/08
(Concentrations in µg/L)	(µg/L)					
Aroclor-1016			0.5 U	0.5 U	0.5 U	0.5 U
Aroclor-1221			0.5 U	0.5 U	0.5 U	0.5 U
Aroclor-1232			0.5 U	0.5 U	0.5 U	0.5 U
Aroclor-1242			0.5 U	0.5 U	0.5 U	0.5 U
Aroclor-1248			0.5 U	0.5 U	0.5 U	0.5 U
Aroclor-1254			0.5 U	0.5 U	0.5 U	0.5 U
Aroclor-1260			0.5 U	0.5 U	0.5 U	0.5 U
Aroclor-1262			0.5 U	0.5 U	0.5 U	0.5 U
Aroclor-1268	<b></b>		0.5 U	0.5 U	0.5 U	0.5 U
Total PCBs	0.09		0	0	0	0

Table 11. Summary of Polychlorinated Biphenyl Compounds Detected in Groundwater Samples, 1800 Southern Boulevard, Bronx, New York

Notes:

NYSDEC AWQSGV for Total PCBs (sum of the Aroclors) is 0.09  $\mu$ g/L

U - Not Detected

μg/L - Micrograms per liter

NYSDEC - New York State Department of Environmental Conservation

AWQSGVs - Ambient Water Quality Standards and Guidance Values

Bold - Exceeds NYSDEC AWQSGV

	NYSDEC	Sample Designation:	SB-102W	SB-103W	SB-104W	SB-105W
Parameter	AWQSGVs	Sample Date:	06/12/08	06/12/08	06/12/08	06/12/08
(Concentrations in µg/L)	(µg/L)		- <u></u>			
4,4'-DDD	0.3		0.02 U	0.02 U	0.02 U	0.02 U
4,4'-DDE	0.2		0.02 U	0.02 U	0.02 U	0.02 U
4,4'-DDT	0.2		0.02 U	0.02 U	0.02 U	0.02 U
Aldrin	0		0.02 U	0.02 U	0.02 U	<b>0.02</b> U
alpha-BHC			0.02 U	0.02 U	0.02 U	0.02 U
beta-BHC			0.02 U	0.02 U	0.02 U	0.02 U
Chlordane			0.2 U	0.2 U	0.2 U	0.2 U
delta-BHC			0.02 U	0.02 U	0.02 U	0.02 U
Dieldrin	0.004		0.02 U	0.02 U	0.02 U	0.02 U
Endosulfan I			0.02 U	0.02 U	0.02 U	0.02 U
Endosulfan II			0.02 U	0.02 U	0.02 U	0.02 U
Endosulfan sulfate			0.02 U	0.02 U	0.02 U	0.02 U
Endrin aldehyde	5		0.02 U	0.02 U	0.02 U	0.02 U
Endrin ketone			0.02 U	0.02 U	0.02 U	0.02 U
Endrin	0		0.02 U	0.02 U	0.02 U	0.02 U
gamma-BHC (Lindane)			0.02 U	0.02 U	0.02 U	0.02 U
Heptachlor epoxide	0.03		0.02 U	0.02 U	0.02 U	0.02 U
Heptachlor	0.04		0.02 U	0.02 U	0.02 U	0.02 U
Methoxychlor	35		0.02 U	0.02 U	0.02 U	0.02 U
Toxaphene	0.06		0.5 U	0.5 U	0.5 U	0.5 U

Table 12. Summary of Pesticides Detected in Groundwater Samples, 1800 Southern Boulevard, Bronx, New York

#### Notes:

U - Not Detected

 $\mu g/L$  - Micrograms per liter

NYSDEC - New York State Department of Environmental Conservation

AWQSGVs - Ambient Water Quality Standards and Guidance Values

Bold - Exceeds NYSDEC AWQSGV



PROJECTS/EAC1741 Y/EAC01Y/104/EAC0110404

CDR



N:\PROJECTS\EAC1741Y\EAC01Y\104\EAC0110401.DWG



	LEGEND		
SB-103	LOCATION AND D OF SOIL BORING	ESIGNATION	
	SITE BOUNDARY		
SAMPLE LOCATION SB-102 (12. COMPOUND Acetone m+p-Xylene o-Xylene	5-15) 06/12/08 170 460 280	SAMPLE DATE CONCENTRATIONS IN MICROGRAMS PER KILOGRAMS UNLESS OTHERW SHOWN	ISE
	Î N		
Title: SOIL ABOV U	OUNDS DETER E NYSDEC UN SE STANDAR BRONX, NEW YORK 300 SOUTHERN BOULEY	CTED IN NESTRICTE DS	ΞD
Prepared For:	SB 1800 LLC		
REMEDIAL ENGINEERING, P.C. Environmental Engineers	Compiled by: M.R. Prepared by: R.K. Project Mgr: M.R. File No: EAC0110405	Date: 17JUN08 Scale; NONE Office: NY Project: 174101Y	FIGURE <b>3</b>

N:\PROJECTS\EAC1741Y\EAC01Y\104\EAC0110402.DWG











# **APPENDIX** A

Soil Boring Logs



209 Shafter Street Islandia, New York 11749 Telephone: (631) 232-2600 Fax: (631) 232-9898

Page <b>1</b> of	1	SO	IL BORING LOG				
WELL NO.		NORTHING	EASTING				
SB-101		Not Measured	Not Measured				
PROJECT NO./NAM	E		LOCATION				
1741.0001Y000	/ Southe	m Boulevard	1776 Southern Boulevard				
APPROVED BY		LOGGED BY					
	OTOD (DD)	M. Preissler	Bronx, New York				
DRILLING CONTRA		LER	GEOGRAPHIC AREA				
	PRITYPE			SAMPLING	METHOD	START-FINISH DATE	
2.in / Drive Sa	moler	4_inches	6610DT / Geoprobe	2" Macro	Com	6/12/08_6/12/08	
LAND SURFACE EL	EVATION	DEPTH TO WATER	BACKFILL	Z Macio			
Not Measured		Not Measured	Soil Cuttings				
Depth,	Graphic	Visu	al Description	Blow Counts	PID Values	REMARKS	
	Log		· · · · · · · · · · · · · · · · · · ·	per 6"	(ppm)		
	444	Dark Grey, Fine SAND, little	silt, trace gravel, trace brick, trace ash; moist		1301		
	DDD						
	444	· .				Sample SB-101/0-2.5 for	
	•••••	Crushed Rock				VOC, SVOC, Metals, PCB	
		Dark Brown and Black, Fine	SAND, little silt, trace gravel; moist			and resources	
		Crushed Concrete		$\square$	251		
		Dark Brown and Black, Fine	SAND, some Silt, trace gravel; wet				
		•] •]					
5							5
		•			0.0		
		Dark Grey, CLAY; wet					
	<i>\/////</i>						••••
	/////						
	<i>\/////</i>				11.3		
• • • • •	<i>\/////</i>						
	1111	Dark Grey and Orange, CLA	Y, trace F sand; wet				
	$\langle / / / /$						
10	V///						10
	$\langle / / / /$	1			1.8		
		4					
• • • • • •		1					••••
		Orangey Brown, Fine to Med	ium SAND, little silt, trace gravel; moist				
	· · · · ·		· · · -				
		Black, Fine SAND, trace grav	vel; wet		243	Black Staining; HC Odor	
		•				Sample SB-101/12.5-15 for	
	77777	Dark Grey, CLAY, trace grav	el; wet			VOC, SVOC, Metals, PCB	
15	1////		-			and Pesticides	15
				P		L	



209 Shafter Street Islandia, New York 11749 Telephone: (631) 232-2600 Fax: (631) 232-9898

Dage 4	of 1	90					
WELL NO			FASTING				
SR	8-102	Not Measured	Not Measured				
PROJECT NO	D./NAME		LOCATION	·			
1741.0001	Y000 / Southe	m Boulevard	1776 Southern Boulevard				
APPROVED I	BY	LOGGED BY					
		M. Preissler	Bronx, New York				_
DRILLING CO	ONTRACTOR/DRIL	LER	GEOGRAPHIC AREA				
ADT / Jam	ney Myers		East side of Vacant Lot				
DRILL BIT DI	AMETER/TYPE	BOREHOLE DIAMETER	DRILLING EQUIPMENT/METHOD	SAMPLING	METHOD	START-FINISH DATE	
<u>2-in. / Driv</u>	<u>e Sampler</u>	4-inches	6610DT / Geoprobe	2" Macro	-Core	6/12/08-6/12/08	
LAND SURFA	ACE ELEVATION	DEPTH TO WATER	BACKFILL				
NOT Measu	ured	NOT Measured	Soil Cuttings				
 Depth,	Graphic		ual Description	Blow Counts	PID Values	REMARKS	
				per 6"	(ppm)		
	0 0 0	Brown, Fine SAND, little sit	t, trace gravel, trace brick; moist		0.0		
	0.0.0						
	A A A	•					
	0.0.0	1					
	<u> </u>	· .					
	ŤXXXX	Brown, SILT and CLAY, tra	ce fine sand, trace gravel; moist		0.0		
	XXXXX						
	XXXX					1	
	XXXX						
5	XXXXX						5
	XXXX				83		_
	XXXXX						
				(			
	XXXXX						
	- XXXX						
		Crushed Brick		——	45.7		
• • • • •	7777	Grav CLAY trace fine san	d trace sitt: moist		40.7		••••
	V////						
• • • • •	(////	2				l	
		4					
10	4444	Brown to Crow Cl AX little	foo to modium anad little ait tongs arough up		40.40		10
		Brown to Grey, CLAT, Rue	nne to medium sand, inde sin, d'ace gravel, we		1846	a 	
· · · · ·		1					
		1					
		Black, Fine to Coarse SAN	D; moist			Black Staining; HC Odor	
		Brown, Fine SAND, some S	Silt, trace gravel; wet			Black Staining; HC Odor	
						Sample SB-102/12.5-15 for	
						VOC, SVOC, Metals, PCB	
15		•				and F CSULUCS	15



209 Shafter Street Islandia, New York 11749 Telephone: (631) 232-2600 Fax: (631) 232-9898

	of 1	S							
WELL NO.									
SB-	103	Not Measured	Not Measured						
PROJECT NO./	NAME		LOCATION						
1741.0001Y	<u> 000 / Southe</u>	m Boulevard	1776 Southern Boulevard						
APPROVED BY	(	LOGGED BY							
		M. Preissler	Bronx, New York						
DRILLING CON		.LER	GEOGRAPHIC AREA						
				SAMPLING	METHOD				
2 in / Drivo	Sampler	A inchos	6610DT / Gooprobo	2" Mooro		6142109 6142109			
LAND SURFAC	E FLEVATION	DEPTH TO WATER	BACKEIL			0/12/00-0/12/00			
Not Measur	edi	Not Measured	Soil Cuttings						
Depth, feet	Graphic Log	Vis	ualDescription	Blow Counts per 6"	PID Values (porm.)	REMARKS			
	00	Concrete			81	<u></u>			
	Q. Q. Q. C				0.1				
• • • • •		Dark Brown Fine to Mediu	m SAND little sitt trace gravel: moist						
			The date, little sin, bace gravel, motor						
•••••	<u></u>								
		Brown, Fine to Medium SA	ND, little sitt, little gravel; moist		2.0				
	A A A	. ]							
· · · · ·	000								
	A A A	. ]							
5							_5		
	AAA	. ]			5.3				
	ممما	<u>.                                    </u>							
		Grey, CLAY; moist							
		2							
					0.0				
	- 7777	Dark Grey and Orange, CL	AY, little fine sand; moist						
		1							
10		1					10		
					249				
	<u> </u>	Brown to Grey, Fine to Coa	arse SAND, little gravel, trace cobble; mosit						
			-						
		.							
							••••		
		Brown, Fine to Medium SA	ND. trace gravel: wet	— I	1656	Black Staining: HC Odor			
••••					1000	Didde Oldining, no oddi	••••		
		•				Sample SR 103/12 5-15 for			
						VOC, SVOC, Metals, PCB			
		Light Brown Fine to Coars	e SAND trace gravel: wet	— I		and Pesticides			
10					<u> </u>	<u> </u>	15		



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	NORTHING	EASTING				
	Not Measured	Not Measured				
		LOCATION				
Southe	m Boulevard	1776 Southern Boulevard	1			
	LOGGED BY					
	M. Preissier					
	LER	Southorn Blvd north of S	Sito			
TYPE	BOREHOLE DIAMETER	DRILLING EQUIPMENT/METHOD		LING	METHOD	START-FINISH DATE
pler	4-inches	6610DT / Geoprobe	2" M	acro	-Core	6/12/08-6/12/08
VATION	DEPTH TO WATER	BACKFILL				
	Not Measured	Soil Cuttings				
Graphic			B	ow	PID	
Log	VIS	Jai Description	Co pe	unts r 6"	Value: (ppm)	S REMARKS
0000	Concrete				0.0	1
000	Dark Brown, Fine to Medium	n SAND, little silt, trace gravel; moist				
0.0.0						
0 0 0	•					
D.D.D						
	Brown, SILT, little fine to me	idium sand, trace gravel; moist			0.0	
	-					
	4					
	-					
	Crushed Brick					
XXXX	Brown, SILT and CLAY, trac	e fine to medium sand; moist			0.0	
NNNN	Crushed Brick					
7777	Grey and Brown, CLAY, trac	æ gravel; moist				ļ
	1					
	1					
////			1		67.1	
<u> / / / /</u>	Denver First As Mardines CAN					
	Brown, Fine to Medium SAN	iD, trace gravei; wet				Black Staining; HC Odor
	Black, Fine SAND, wet		1		748	Black Staining; HC Odor
		<b>F</b>				
	Brown, SILI, little clay, trace	e fine sand; wet	)			
	Plack Cine to Marthum Cash					
	J Diack, Fine to Medium SAN	D, inthe graver, wet			4 40 4	Black Staining; HC Odor
					1401	
						Comple CD 404/40 5 45 5
			ļ			VOC, SVOC, Metals. PCB
						and Pesticides
	TOR/DRIL ars TYPE pler /ATION Graphic Log 2 0 0 0 0 4 4 4 4 4 4 4 4 4 4 4	Crushed Brick   Brown, SILT, little clay, trace	M. Preissler   Bronx, New York     FOR/DRILLER   GEOGRAPHIC AREA     ars   Southern Bivd. north of S     TYPE   BOREHOLE DIAMETER   DRILLING EQUIPMENT/METHOD     pler   4-inches   6610DT / Geoprobe     VATION   DEPTH TO WATER   BACKFILL     Not Measured   Soil Cuttings     Graphic   Log   Concrete     Log   Concrete   Soil Cuttings     Graphic   Dark Brown, Fine to Medium SAND, little sitt, trace gravel; moist     A A   Brown, SILT, little fine to medium sand, trace gravel; moist     Crushed Brick   Brown, SILT and CLAY, trace fine to medium sand; moist     Crushed Brick   Grey and Brown, CLAY, trace gravel; moist     Brown, Fine to Medium SAND, trace gravel; wet   Black, Fine to Medium SAND, trace gravel; wet     Black, Fine to Medium SAND, trace gravel; wet   Black, Fine to Medium SAND, little gravel; wet	Description Bronx, New York   CORDRILLER GEOGRAPHIC AREA   ars Southern Blvd. north of Site   TYPE BOREHOLE DIAMETER DRILLING EQUIPMENT/METHOD   pler 4-inches 6610DT / Geoprobe 2" M   VATION DEPTH TO WATER BACKFILL Soil Cuttings Graphic   Log V is u a 1 D e s c r i p t i o n Category   2:6:0:0:0 Concrete Concrete Concrete   2:6:0:0:0 Concrete Concrete Concrete Crushed Brick Gray and Brown, SILT, little fine to medium sand, trace gravel; moist Crushed Brick Grey and Brown, CLAY, trace fine to medium sand; moist Crushed Brick Brown, Fine to Medium SAND, trace gravel; wet Black, Fine SAND; wet Black, Fine to Medium SAND, little gravel; wet Black, Fine SAND; wet Black, Fine SAND; w	Description Bronx, New York   CORDRILLER GEOGRAPHIC AREA   grs Southern Bivd, north of Site   TYPE BOREHOLE DIAMETER   pler 4-inches   6610DT / Geoprobe 2" Macro   AATION DEPTH TO WATER   Not Measured Soil Cuttings	ICOSCIDIAT Bronx, New York   OR/DRULLER GEOGRAPHIC AREA   ars Southern Blvd. north of Site   TYPE BOREHOLE DIAMETER   Ainches G610DT / Geoprobe   2" Macro-Core   Antion Dern to WATER   Not Measured Soil Cuttings     Graphic V is u a 1 D e s c r i p t i o n   Log Concrete   0.0 Concrete   0.4 Dark Brown, Fine to Medium SAND, little silt, trace gravet, moist     0.0     Crushed Brick   Brown, SiLT, little fine to medium sand, trace gravet, moist     Crushed Brick   Crushed Brick   Crushed Brick   Brown, SiLT and CLAY, trace fine to medium sand, moist     Crushed Brick   Brown, SiLT, little fine to Medium SAND, trace gravet, moist     Crushed Brick   Brown, SiLT and CLAY, trace fine to medium sand, moist     Crushed Brick   Brown, SiLT, little clay, trace fine sand; wet     Black, Fine to Medium SAND, little gravet; wet     Black, Fine to Medium SAND, little gravet; wet     Black, Fine to Medium SAND, little gravet; wet



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	NORTHING Not Measured	EASTING Not Measured				
		LOCATION				
Southe	m Boulevard	1776 Southern Boulevard				
	LOGGED BY					
	M. Preissler	Bronx, New York				
TOR/DRIL	LER	GEOGRAPHIC AREA		-		
ers		Boston Rd. east of Site				
<b>VTYPE</b>	BOREHOLE DIAMETER	DRILLING EQUIPMENT/METHOD	SAMPLING	METHOD	START-FINISH DATE	
npler	4-inches	6610DT / Geoprobe	2" Macro	-Core	6/12/08-6/12/08	
VATION	DEPTH TO WATER	BACKFILL				
	Not Measured	Soil Cuttings				
Graphic Log	Visu	al Description	Blow Counts per 6"	PID Values (ppm)	REMARKS	
¢¢.	Concrete			88		
0. 1. 0. 1.	<b>,</b>			0.0		
- O O.	Brown Fine SAND and SILT	little gravel: moist	—			
		, new grotter, meine				
A. A. A.	1					
444		4				
444	Brown, Fine SAND, little sift,	trace gravel; moist		1.7		
. <u>.</u> . <u>.</u> . <u>.</u> . <u>.</u>						
	Brown, SILT, little clay; mois	t				
						•
	]					
	1			0.0		-
	1			0.0		
WNNN.	Brown to Cray CLAV some	Silt trace gravel: mojet	I			
XXXX	DIOWILLO GIEY, CLAT, SOME	on, uace graver, moist				
<u>IXXXX</u> II						
	Brown, Fine to Medium SAN	D; moist				
	Brown, Fine SAND, little silt;	moist		0.0		
					[	
	Dark Grey, Fine to Medium	SAND, some Silt, trace gravel; wet				
<b></b>	Brown, Fine SAND, little silt	moist	i	81		-
				0.1		
•••••	Brown to Grove Eine to Com	so SAND little gravel little silt: moist				
	. Sowit to Grey, Fine to Coan	Se Grand, Ittle graver, Ittle Silt, ITOISt			}	
	]					
	•			206		
•••••••	Grey, Fine SAND, trace grav	el; wet			Slight HC Odor.	
	•				Sample SB-105/12.5-15 for	
	1				VOC, SVOC, Metals, PCB	
	Southe TOR/DRILL ers ZTYPE pler VATION Graphic Log 0.0000 0.000 0.000 0.000 0.000 0.000 0.000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.000000	Southern Boulevard     LOGGED BY   M. Preissler     TOR/DRILLER   ers     VATION   BOREHOLE DIAMETER     Ipler   4-inches     VATION   DEPTH TO WATER     Not Measured   Image: State of the state of	Southern Boulevard   1776 Southern Boulevard     LOGGED BY   Bronx, New York     TOR/DRILLER   GEOGRAPHIC AREA     ers   BOREHOLE DIAMETER     VIYPE   BOREHOLE DIAMETER     DPTH TO WATER   BACKFILL     Not Measured   Soil Cuttings     Graphic   V is u a I D e s c r i p t i o n     0.0 © 0.0   Concrete     0.2 © 0.2   Concrete     0.2 © 0.2   Brown, Fine SAND and SILT, little gravet; moist     B b b   Brown, Fine SAND, little silt, trace gravet; moist     B b b   Brown, SILT, little day, moist     Brown, SILT, little day, moist   Brown, Fine SAND, little silt, trace gravet; moist     Brown, Fine to Medium SAND; moist   Brown, Fine SAND, little silt; moist     Brown, Fine SAND, little silt; moist   Brown, Fine SAND, little silt; moist     Brown, Fine to Medium SAND; some Silt, trace gravet; wet   Brown, Fine SAND, little silt; moist     Brown, Fine SAND, little silt; moist   Brown, Fine SAND, little silt; moist	Southern Boulevard   1776 Southern Boulevard     LOGGED BY   Bronx, New York     TORDRILLER   GEOGRAPHIC AREA     ers   BoRtHOLE DIAMETER     gler   4-inches     G610DT / Geoprobe   2" Macro     VATION   DEPTH TO WATER     BORGHOLE DIAMETER   BACKFILL     Not Measured   Soil Cuttings     Craphic   V i s u a 1 D e s c r i p t i o n     Log   Courts per 6"     0 © 0 ©   Concrete     0 © 0 ©   Brown, Fine SAND and SILT, little gravel; moist     A 4 4   Brown, Fine SAND, little silt, trace gravel; moist     Brown, Fine to Medium SAND; moist   Brown, Fine SAND, little silt; moist     Brown, Fine SAND, little silt; moist   Brown, Fine SAND, little silt; moist     Brown, Fine SAND, little silt; moist   Brown, Fine SAND, little silt; moist     Brown, Fine SAND, little silt; moist   Brown, Fine SAND, little silt; moist	Southern Boulevard   1776 Southern Boulevard     LOGGED BY   Bronx, New York     TOR/DRILLER   GEOGRAPHIC AREA     ers   Boston Rd. east of Site     VTYPE   BOREHOLE DIAMETER     DPILING METHOD   SAMPLING METHOD     JUTON   DEPTH TO WATER     Not Measured   Soil Cuttings     Graphic   V is u al D escription     Log   Oncrete     0.0   Concrete     0.2   0.2     0.4 0.2   Brown, Fine SAND and SILT, little gravet, moist     A A A   Brown, Fine SAND and SILT, little gravet, moist     A A A   Brown, Fine SAND, little silt, trace gravet, moist     B b A   Brown, SiLT, little clay, moist     B b Brown, SiLT, little clay, moist   0.0     B b Brown, Fine SAND, little silt, trace gravet, moist   0.0     B brown, Fine SAND, little silt, moist   0.0     B brown to Grey, Fine to Coarse SAND, little gravel, little silt, moist	Southern Boulevard     1776 Southern Boulevard     LOGGED BY     Bronx, New York     GEOGRAPHIC AREA     Edoston Rd, east of Site     SAMPLING METHOD     START-FINISH DATE     Diston Rd, east of Site     OPENDEE DAMETER     Deston Rd, east of Site     SAMPLING METHOD     START-FINISH DATE     GROPHIC JENDER     Action III.     Not Marce     Not Marce     Comprise     V is u al D es c r i p t i o n     Blow     PID     Concrete     Q & Q & Q     A d d d     A d d d     A d d d     A Brown, Fine SAND, little silt, trace gravel, moist     0.0     Brown, SiLT, little day, moist     Brown, Fine to Medium SAND, some Silt, trace gravel, wet     Brown, Fine SAND, little silt, moist     Brown to Grey,



209 Shafter Street Islandia, New York 11749 Telephone: (631) 232-2600 Fax: (631) 232-9898

Page 1 of	1	S	SOIL BORING LOG				
WELL NO.		NORTHING	EASTING				
SB-106		Not Measured	Not Measured				
PROJECT NO./NAM	NE -		LOCATION		_		
1741.0001Y000	/ Southe	m Boulevard	1776 Southern Boulevard				
APPROVED BY		LOGGED BY					
		M. Preissler	Bronx, New York				
DRILLING CONTRA	CTOR/DRIL	LER	GEOGRAPHIC AREA				
ADT / Jamey M	<u>yers</u>		Northwest side of Former	Gas Station			
DRILL BIT DIAMETE	ÊR/TYPE	BOREHOLE DIAMETER	DRILLING EQUIPMENT/METHOD	SAMPLING	METHOD	START-FINISH DATE	
2-in. / Drive Sa	m <u>pler</u>	4-inches	<u>6610DT / Geoprobe</u>	2" Macro	<u>-Core</u>	<u>6/12/08-6/12/08</u>	
LAND SURFACE EL	EVATION	DEPTH TO WATER	BACKFILL				I
Not Measured		Not Measured	Soil Cuttings				
Depth, feet	Graphic Log		isual Description	Blow Counts per 6"	PlD Values (ppm)	REMARKS	
					78.8		
	1 1 A						
	m	Light Brown, Fine to Me	dium SAND; moist		1336	Slight HC Odor	<b>.</b>
5					1536		-5-
		Grey, CLAY, little gravel	; wet			Sheen; HC Odor	
					1711		
						Sample SB-106/7.5-10 for VOC, SVOC, Metals, PCB	·
10							10



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Page 1	of <b>1</b>	SO	IL BORING LOG							
WELL NO.		NORTHING	EASTING							
	-107	Not Measured								
1741 0001	V000 / Southe	m Boulevard	1776 Southern Boulevard							
APPROVED B	Y	LOGGED BY								
-		M. Preissler	Bronx. New York	Bronx, New York						
DRILLING CO	NTRACTOR/DRIL	LER	GEOGRAPHIC AREA							
ADT / Jame	ey Myers		Southwest side of Former (	Gas Station						
DRILL BIT DIA	METER/TYPE	BOREHOLE DIAMETER	DRILLING EQUIPMENT/METHOD	SAMPLING	METHOD	START-FINISH DATE				
2-in. / Drive	e Sampler	4-inches	6610DT / Geoprobe	2" Macro	-Core	<u>6/12/08-6/12/08</u>				
LAND SURFAI		DEPTH TO WATER	BACKFILL							
NOT Measu		Not measured								
Depth.	Graphic			Blow	PID					
feet	Log	Vist	Jai Description	per 6"	values (pom.)	REMARKS				
		Concrete			38.8					
	.4.9.4.9 0.5.0.5				00.0					
	$\overline{}$	Dark Brown, Fine SAND and	SILT, trace gravel; moist							
	<u></u>		, , · · · · · · ·							
		.]								
	00.00	Crushed Concrete			52.4					
	.4.9.4.9									
		Dark Brown, CLAY, trace fin	ie sand, trace gravel; moist							
5							5			
<u> </u>		Dark Grey, SILT, trace fine :	sand; moist		2447	Slight HC Odor	<u> </u>			
		-1				<b>U</b> • • • • •				
		-								
		Dark Brown, SILT, little fine	sand; moist		1749					
		-								
10		-					10			
	TXXXX	Dark Brown, CLAY and SILT	, trace fine sand; moist		1681	Black Staining: HC Odor				
			,,							
	XXXX						••••			
	XXXXX									
••••	XXXXX	3								
		Crushed rock			3370					
		Dark Brown, Fine to Coarse	SAND, little gravel; moist							
			,			Sample SB-107/12 5-15 for				
* • • • • •	- <u>``-`</u>	Crushed rock				VOC, SVOC, Metals, PCB				
15						and Pesticides	15			
		L	······		-		10			

# **APPENDIX B**

Significant Threat Notice (To be included after receipt from NYSDEC)

# APPENDIX C

Community Participation Plan

July 28, 2008

# **COMMUNITY PARTICIPATION PLAN**

# 1800 SOUTHERN BOULEVARD BRONX, NEW YORK

Prepared for

SB 1800 LLC 100 Park Avenue Suite 1600 New York, New York 11717

# **ROUX ASSOCIATES, INC.**

**Environmental Consulting & Management** 



209 Shafter Street, Islandia, New York 11749 🔶 631-232-2600

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## FIGURE

1. Site Location Map

# APPENDICES

- A. Project Contact List
- B. Site Contact List
- C. Document Repositories

#### **1.0 INTRODUCTION**

On behalf of SB 1800 LLC ("Volunteer"), Roux Associates, Inc. ("Roux Associates") has prepared this Community Participation Plan ("CPP") for the 1800 Southern Boulevard Project located at 1800 Southern Boulevard, Bronx, New York (the "Site") (see Figure 1). The CPP was developed to provide a site specific outline and guidance for community participation as required by provisions of the New York State Department of Environmental Conservation ("NYSDEC") Brownfield Cleanup Program ("BCP").

The Volunteer and the NYSDEC are committed to a community participation program as a part of the BCP process at the Site. Community participation promotes public understanding of the responsibilities and remedial activities associated with this process. Community participation provides the Volunteer and the NYSDEC with an opportunity to gain public input to support a comprehensive investigation and remedial program that is protective of both public health and the environment. Consequently, the public's suggestions about this CPP and the CPP program for the Site are always welcome. Interested parties are encouraged to discuss their ideas and suggestions with project contacts listed in Appendix A.

#### 2.0 SITE DESCRIPTION AND HISTORY

The following section provides a physical description and a brief history of the Site.

#### 2.1 Physical Description

The Site is located at 1800 Southern Boulevard, Borough of the Bronx, New York City, New York 10460 and is identified as Block 2984, Lots 1 and 7 on the New York City Tax Map. A Site Location Map (Figure 1) shows the Site location. The site is a triangular shaped parcel of land approximately 0.27-acres in size situated at the southern tip of a city block where Boston Road and Southern Boulevard cross with Southern Boulevard to the west and Boston Road to the east and south.

Currently, the site includes an area occupied by a vacated gas station and a fenced lot largely covered with exposed soil or overgrown with vegetation. The property is also known by 1776-1778 Southern Boulevard and 1800 to 1808 Southern Boulevard.

The vacated gas station was an Amoco gas station that has been vacant since 2003. The fenced area was a car wash that has been vacant since 1993. All of the facilities associated with the car wash have been demolished and this portion of the Site is currently a vacant open lot.

#### 2.2 Site History

Based on a 2007 Phase I Environmental Site Assessment of the Site conducted by ATC Associates, prior to 1940 the Site was undeveloped with the surrounding areas being industrial and residential. Between 1940 and 1960, the Site was used as a filling station, auto repair facility, and a car wash. The surrounding areas were primarily commercial, professional, and residential. In approximately 1993, the car wash was no longer in service and, in 2003, the gas station was no longer in service.

Delta Environmental Consultants, Inc. ("Delta") conducted a Subsurface Hydrocarbon Assessment at the Site between February 2003 and July 2003 and oversaw gasoline tank and pump island excavation at the Site between July 2003 and August 2003. Between July 24, 2003 and August 1, 2003 Salamone Brothers, Inc. excavated four 4,000-gallon capacity double walled steel gasoline USTs from a single excavation. The gasoline tanks were observed to be in good

condition with no visible holes or areas of pitting. During tank excavation, approximately 226 tons of petroleum impacted soil were transported from the Site and disposed of in Carteret, New Jersey. An additional subsurface investigation was conducted by Roux Associates in 2008 as summarized in the July 2008 Remedial Action Work Plan.

Analytical results of soil and groundwater samples collected by Delta in 2003 and Roux Associates in 2008 indicated that some soil onsite exceeded both NYSDEC unrestricted use and restricted residential standards. Groundwater samples identified gasoline related volatile organic compounds that exceeded NYSDEC standards.

#### 3.0 COMMUNITY PARTICIPATION ACTIVITIES

Community participation activities are planned to promote communication between the community surrounding the Site, the NYSDEC, and the Volunteer. The community participation activities are intended to address the following questions:

- Who is interested in or affected by the Site?
- What issues of public concern relate to the Site?
- What information can the public contribute about the Site?

#### 3.1 Site Contact List

As required by the BCP, a comprehensive contact list has been established that includes local and state officials, adjacent property owners, occupants and residents, local news media, the public water supplier, and additionally requested contacts. The Site Contact List, including contact information, is provided in Appendix B.

#### 3.2 Document Repositories

Local document repositories have been established at the Region 2 office of the NYSDEC and at the Morrisania Branch Library of the New York Public Library. All documents pertaining to community participation activities and related notifications will be placed at the document repositories for public review. Site repository locations and hours are included in Appendix C.

#### 3.3 Issues of Public Concern

Issues of public concern at the Site include procedures for protection of public health and safety during remediation activities. During remediation (if necessary), worker and community health and safety activities will be conducted, including:

- Securing the work perimeter with a fence.
- Onsite air monitoring for worker protection.
- Perimeter air monitoring for community protection.
- Using odor, vapor, and dust controls such as water or foam sprays, as required during air monitoring.

Details on the Site Health and Safety Plan and the Community Air Monitoring Plan will be included in the documents generated in support of the remediation.

#### 3.4 Summary of Required Community Participation Activities

The following outlines the community participation program, as required by the BCP for this project.

#### 3.4.1 Application Notification

Upon determination by the NYSDEC that the BCP application is complete, the Volunteer shall provide formal notification to all entities on the Site Contact List, including local media outlets, prior to the 30-day public comment period.

#### 3.4.2 Remedial Work Plan

Before the NYSDEC approves a proposed remedial work plan or makes a determination that site conditions do not require remediation, the Volunteer and the Participant, in cooperation with the NYSDEC, will provide a fact sheet to the contact list describing the Remedial Work Plan and provide a 45-day public comment period. The NYSDEC will hold a public meeting, if requested, by the affected community and the NYSDEC has found that the Site constitutes a significant threat to the public health or the environment.

#### 3.4.3 Pre-Construction Activities

Prior to any remedial construction, the Volunteer and the Participant will provide notice to the contact list announcing the start of remedial construction.

#### 3.4.4 Final Engineering Report

Before the NYSDEC approves a proposed final engineering report, the Volunteer and the Participant will provide notice to the contact list, including a fact sheet describing the report or any proposed institutional or engineering controls.

#### 3.4.5 Certificate of Completion

Within 10 days of the issuance of a certificate of completion at the Site, the Volunteer will provide notice and a fact sheet describing any institutional or engineering controls.

## 3.4.6 Additional Community Participation Activities

Additional community participation activities including, but not limited to, public meetings, availability sessions, and mailing of additional fact sheets will occur as determined necessary by the NYSDEC to address public concerns.

# **COMMUNITY PARTICIPATION PLAN**

## APPENDIX A

Project Contact List

#### APPENDIX A

#### **Community Participation Plan**

#### **Project Contact List**

Jane O'Connell New York State Department of Environmental Conservation Region 2 1 Hunter's Point Plaza 47-40 21<sup>st</sup> Street Long Island City, New York 11101 Telephone (718) 482-4995

Shaminder Singh New York State Department of Environmental Conservation Region 2 1 Hunter's Point Plaza 47-40 21<sup>st</sup> Street Long Island City, New York 11101

Telephone (718) 482-4995

Geoffrey Lacetti New York State Department of Health Bureau of Environmental Exposure Investigation Flanigan Square 547 River Road Troy, New York 12180

Telephone (800) 458-1158 Extension 27890

# COMMUNITY PARTICIPATION PLAN

## **APPENDIX B**

Site Contact List

ROUX ASSOCIATES, INC.

EAC1741.0001Y.104/APC-CPP-AP-CV

#### **APPENDIX B**

#### **Community Participation Plan**

#### **Contact List Information**

#### 1. Government Representatives

Hon. Mayor Michael R. Bloomberg The City of New York, Mayor's Office City Hall New York, New York 10007 Telephone: (212) NEW-YORK or 311 within New York City Fax: (212) 788-2460

Amanda M. Burden Chair of the City Planning Commission and Director of the Department of City Planning New York City Planning Commission 22 Reade Street New York, New York 10007-1216 Telephone: (212) 720-3300 Fax: (212) 720-3219

Robert Kulikowski, Ph.D. Director of the Mayor's Office of Environmental Coordination 253 Broadway – 14th Floor New York, New York 10007 Telephone: (212) 788-9956 Fax: (212) 788-2941

Office of Bronx Borough President Adolfo Carrión, Jr. 851 Grand Concourse Bronx, New York 10451 Telephone: (718) 590-3557

Carol Samol Director, New York City Planning Commission Bronx Borough Office One Fordham Plaza, 5th Floor Bronx, New York 10458-5891 Telephone: (718) 220-8500 Fax: (718) 584-8628

#### 1. Government Representatives (Continued)

John Dudley District Manager Bronx Community Board 3 1426 Boston Road Bronx, New York 10456 Telephone: (718) 378-8054 Fax: (718) 378-8188

Joel Rivera New York City Council Member – District 15 1901 Southern Boulevard Bronx, New York 10460 Telephone: (718) 842-8100 Fax: (718) 842-6280

Assemblyman Michael Benjamin 79th Assembly District 1494 Boston Road Bronx, New York 10460 Telephone: (718) 589-6324

Senator Rev. Ruben Diaz, Sr. Senatorial District: 32 1733 East 172nd Street Bronx, New York 10472 Telephone: (718) 991-3161 Fax: (718) 991-0309

Representative José E. Serrano Congressional District: 16 788 Southern Boulevard Bronx, New York 10455 Telephone: (212) 620-0084 Fax: (718) 620-0658

Jane O'Connell New York State Department of Environmental Conservation Region 2 1 Hunter's Point Plaza 47-40 21st Street Long Island City, New York 11101 Telephone: (718) 482-4599

# 2. Residents, Owners, and Occupants of the Site and Properties Adjacent to the Site

a. Occupants of the Site

Vacant

#### b. Owners of the Properties Adjacent to the Site

#### North of Site

Vacant		
Block:	2984	
Lot:	7	
Owner:	1800 SB LLC	
Address:	Post Office Box 196	
	New York City, New York	10956

Block:	2984
Lot:	10
Operator:	Storage Deluxe
Address:	1810 Southern Boulevard
	Bronx, New York 10460

#### West of Site

Block:	2940
Lot:	38
Owner:	Don Quixote Redevelopment Associates, L.P.
Address:	1816 Crotona Park East
	Bronx, New York 10460

Note 1: This property is improved with a five-story walk-up apartment building. Considering the large amount of tenants (i.e., 25 units), and since update information on current tenants resides with the building owner/manager (i.e., Don Quixote Redevelopment Associates, L.P.), same will be contacted to arrange for the distribution of all pertinent Brownfield Program related documentation (e.g., Notices, Fact Sheets), as well as the display of such documentation in public area(s).

Block:	2940
Lot:	38
Owner:	Mid Bronx Desperadoes Community Housing Corporation
Address:	1762 Boston Road
	Bronx, New York 10460

Block:	2940
Lot:	37 & 40
Owner:	Southern Boulevard Contracting Corporation
Address:	1779 Southern Boulevard
	Bronx, New York 10460
Block:	2940
Lot:	36
Owner:	Southern Boulevard Contracting Corporation
Address:	1810 Crotona Park East
	Bronx, New York 10460

Note 2: The two properties listed above are improved with a six-story walk-up apartment building and a 2<sup>1</sup>/<sub>2</sub>-story two-family home. Considering the large total amount of tenants, and since updated information on current tenants resides with the building owner/manager (i.e., Southern Boulevard Contracting Corporation), same will be contacted to arrange for the distribution of all pertinent Brownfield Program related documentation (e.g., Notices, Fact Sheets), as well as the display of such documentation in public area(s).

Block:	2940
Lot:	40
Owner:	MJ Parking
Address:	1779 Southern Boulevard
	Bronx, New York 10460
Block:	2940
Lot:	42
Occupant:	Square Family Discount Furniture or Current Occupant
Address:	1775 Southern Boulevard
	Bronx, New York 10460
Block:	2940
Lot:	42
Occupant:	Total Blend Restaurant or Current Occupant
Address:	1773 Southern Boulevard
	Bronx, New York 10460
Block:	2940
Lot:	42
Occupant:	Bronx Hardware or Current Occupant
Address:	1771 Southern Boulevard
	Bronx, New York 10460
Block: Lot: Occupant: Address:	2940 42 US Convenient Store or Current Occupant 1769 Southern Boulevard Bronx, New York 10460
---	--
Block: Lot: Owner: Address:	2940 45 Sicbaldi Style LLC Attention: Peter Bourbeau 3092 Hull Avenue Bronx, New York 10467
Block: Lot: Occupant: Address:	2940 47 Southern Supermarket or Current Occupant 1761 Southern Boulevard Bronx, New York 10460
Block: Lot: Occupant: Address:	2940 47 International Restaurant or Current Occupant 1757 Southern Boulevard Bronx, New York 10460
Block: Lot: Owner: Address:	2942 East end of Lot No. 1 New York City Parks and Recreation Attention: Adrian Benepe, Commissioner The Arsenal Central Park 830 Fifth Avenue New York, New York 10021

## South and East of Site

Block:	2991					
Lot:	3					
Owner:	Mid Bronx Desperadoes Community Housing Corporation					
Address:	1762 Boston Road					
	Bronx, New York 10460					
Block:	2991					
Lot:	1					
Occupant:	SA Grocery & Tobacco					
Address:	927 East 174th Street					
	Bronx, New York 10460					

Block:	2991				
Lot:	1				
Owner:	Delta Assoc. LLC				
Address:	71A Cuttermill Road				
	Great Neck, New York 10007-1307				
Block:	2991				
Lot:	5				
Owner:	High Hawk LLC c/o PWC				
Address:	340 East 204th Street				
	Bronx, New York 10467				
Block:	Not Applicable				
Lot:	Not Applicable				
Operator:	MTA New York City Transit				
Address:	c/o Howard H. Roberts Jr., President				
	2 Broadway				
	New York, New York 10004				

### 3. Local News Media from which the Community Typically Obtains Information

Bronx Times Reporter, Inc. Post Office Box 905 Bronx, New York 10465 Telephone: (718) 597-1116 *Television – 1* 

News 12 The Bronx 930 Soundview Avenue Bronx, New York 10473 Telephone: (718) 861-6810 Television – 2

New York 1 News 75 Ninth Avenue New York, New York 10011 Telephone: (212) 379-3311

## 4. Public Water Supplier

New York City Department of Environmental Protection Bureau of Water and Sewer Operations 59-17 Junction Boulevard, 17th Floor Flushing, New York 11373 Telephone: (212) NEW-YORK or 311 within the City of New York only

## 5. Persons Requesting to be on the Contact List

No persons have requested to be on the contact list.

## 6. School/Day Care Administration near the Site

Saint Thomas Aquinas School 1909 Daly Avenue Bronx, New York 10460 Telephone: (718) 893-7600

Searbury Day Care Center 1680 Southern Boulevard Bronx, New York 10460 Telephone: (718) 991-1500

The Institutes of Applied Human Dynamics, Inc. % Stanley E. Silverstein, Executive Director 1680 Southern Boulevard Bronx, New York 10460 Telephone: (718) 483-7600

East Bronx Academy For The Future % Sarah Scrogin, Principal 1716 Southern Boulevard Bronx, New York 10460 Telephone: (718) 861-8641

Madison Square Boys & Girls Club % Frank B. Noboa, Unit Director 1665 Hoe Avenue Bronx, New York 10460 Telephone: (718) 328-3900

Public School 10 – P817 % Maura Haggerty, Unit Coordinator 1680 Hoe Avenue Bronx, New York 10460 Telephone: (718) 589-9650

Junior High School 098 Herman Ridder % Claralee Irobunda, Principal 1619 Boston Road Bronx, New York 10460 Telephone: (718) 589-8200

## 6. School/Day Care Administration near the Site (Continued)

Tremont-Monterey Day Care Center % Brenda Nowell, Director 887 Crotona Park North Bronx, New York 10460 Telephone: (718) 617-2211

Tremont Crotona Day Care Center % Patrick Rodriques, Director 1600 Crotona Parkway East Bronx, New York 10460 Telephone: (718) 378-5600

# COMMUNITY PARTICIPATION PLAN

## APPENDIX C

**Document Repositories** 

## APPENDIX C

## **Community Participation Plan**

## **Document Repositories**

Documents relevant to the environmental activities at the Site will be stored at the following document repositories:

New York State Department of Environmental Conservation (NYSDEC) Region 2 Office, New York City 1 Hunter's Point Plaza 47-40 21<sup>st</sup> Street Long Island City, New York 11101-5401 Contact: Shaminder Singh Phone: (718) 482-4995 Hours: 8:30 a.m. to 4:45 p.m., Monday to Friday.

Call in advance to make an appointment to view the documents at the NYSDEC office.

The New York Public Library Morrisania Branch Library % Colbert Nembhard, Branch Manager 610 East 169th Street Bronx, NY 10456

Hours: 10:00 p.m. to 8:00 p.m., Monday and Wednesday 10:00 a.m. to 6:00 p.m., Tuesday, Thursday and Friday 10:00 a.m. to 5:00 p.m., Saturday Closed Sunday

## APPENDIX D

Remedial Alternative 2 Cost Estimate

## REMEDIAL ALTERNATIVE 2 (Restricted Residential Cleanup Scenario) REMEDIATION ESTIMATE - July 2008

Item	Description	Unit	Quantity	U	nit Cost		Total
	Soil Handling and Removal						
1	Max)	Ton	2,100	\$	75	\$	157,500
C	Dewatering and Treatment Water Treatment Pental and Operational Cost	Month	2	¢	50.000	¢	100.000
2	water Treatment Kentar and Operational Cost			<u>.</u>			
	Soil Vapor Barrier						
3	Soil Vapor Barrier	Lump Sum	1	_\$	185,000	\$	185,000
	Supplemental Paradiation Costs						
4	Community Air Monitoring Plan (CAMP) Implementation (during excavation and soil handling)	Lump Sum	1	¢	42.000	\$	42,000
4 5	Vapor. Dust. and Odor Suppression		1	¢ D	42,000	\$	10.000
5	Post-Excavation End-Point Sampling Analytical Cost (bottom every 900 sf. sidewall every 30 lf)	Lump Sum	21	¢	10,000	\$	15,934
0	Excavation Screening End-Point Sampling and Disposal Supervision	Sample	31	э Э	514	\$	52 500
7	Storm Water Pollution Provention Plan (SWPR) Development	Lump Sum	l	\$	52,500	¢	10,000
8	Storm water Fondtion Frederition Fran (SWFF) Development	Lump Sum	1	\$	10,000	Ъ	10,000
9	SWPP Inspection	Month	2	_\$	2,000	\$	4,000
						\$	134,434
		Remediation Cost Subtotal \$576,					\$576,934
		15% remediation cost contingency \$8				\$86,540	
	Engineering and Institional Controls & BCP Record Keeping						
10	Final Engineering Report	Lump Sum	1	\$	25,000	\$	25,000
11	Environmental Easement	Lump Sum	1	\$	40,000	\$	40,000
12	Site Management Plan	Lump Sum	1	\$	15,000	\$	15,000
13	Annual Groundwater Monitoring and Reporting	Year	2	\$	25,000	\$	50,000
						\$	130,000

Total Remediation Costs plus Engineering and Institutional Controls \$ 793,474

### Notes:

1. Soil handling and removal quantities assume 1.5 ton per cubic yard.

2. CAMP implementation assumes one staff person onsite for 5 days/week over excavation duration.

3. Soil Handling and removal costs include transport and disposal only and do not include excavation subcontractor costs.

## **REMEDIAL ENGINEERING, P.C.**