

**BROADWAY PLAZA**

**BRONX, NEW YORK**

---

# **Remedial Action Work Plan**

**NYC BCP Number: 12CVCP062X**

**Prepared for:**

Equity One (Northeast Portfolio) Inc.  
410 Park Avenue, 12<sup>th</sup> Floor  
New York, New York 10022

**Prepared by:**

Remedial Engineering, P.C. and Roux Associates, Inc.  
209 Shafter Street  
Islandia, New York 11749  
631-232-2600

---

**May 2012**

# REMEDIAL ACTION WORK PLAN

## TABLE OF CONTENTS

LIST OF ACRONYMS .....	iv
CERTIFICATION .....	vi
EXECUTIVE SUMMARY .....	vii
COMMUNITY PROTECTION STATEMENT.....	x
REMEDIAL ACTION WORK PLAN.....	1
1.0 SITE BACKGROUND.....	1
1.1 Site Location and Current usage.....	1
1.2 Proposed Redevelopment Plan .....	1
1.3 Description of Surrounding Property.....	2
1.4 Remedial Investigation .....	3
2.0 REMEDIAL ACTION OBJECTIVES .....	5
3.0 REMEDIAL ALTERNATIVES ANALYSIS .....	6
3.1 Threshold Criteria .....	7
3.2. Balancing Criteria .....	8
4.0 REMEDIAL ACTION.....	15
4.1 Summary of Preferred Remedial Action.....	15
4.2 Soil Cleanup Objectives and Soil/Fill Management.....	16
4.3 Engineering Controls .....	18
4.4 Institutional Controls .....	19
4.5 Site Management plan.....	20
4.6 Qualitative Human Health Exposure Assessment .....	20
4.6.1 Potential Routes of Exposure .....	22
4.6.2 Receptor Populations.....	22
4.6.3 Existence of Human Health Exposure.....	23
5.0 REMEDIAL ACTION MANAGEMENT.....	24
5.1 Project Organization and oversight .....	24
5.2 Site Security.....	24
5.3 Work Hours .....	24
5.4 Construction Health and Safety Plan.....	24

5.5 Community Air Monitoring Plan.....	25
5.6 Agency Approvals .....	27
5.7 Site Preparation.....	27
5.8 Traffic Control .....	29
5.9 Demobilization .....	29
5.10 Reporting and Record Keeping .....	29
5.11 Complaint Management.....	30
5.12 Deviations from the Remedial Action Work Plan.....	31
5.13 Data Usability Summary Report.....	31
6.0 REMEDIAL ACTION REPORT .....	32
7.0 SCHEDULE.....	34

## FIGURES

- Figure 1 - Site Location Map
- Figure 2 - Site Plan
- Figure 3 - Redevelopment Plan
- Figure 4 – Surrounding Land Use

## TABLES

- Table 1 - Site Soil Cleanup Objectives
- Table 2-Summary of Volatile Organic Compounds in Groundwater
- Table 3 - Summary of Semivolatile Organic Compounds in Groundwater
- Table 4 - Summary of Metals in Groundwater
- Table 5 - Summary of Polychlorinated Biphenyls in Groundwater
- Table 6 - Summary of Pesticides in Groundwater
- Table 7 - Summary of General Chemistry in Groundwater
- Table 8 - Summary of Volatile Organic Compounds in Soil
- Table 9 - Summary of Semivolatile Organic Compounds in Soil
- Table 10 -Summary of Metals in Soil

- Table 11 - Summary of Polychlorinated Biphenyls in Soil
- Table 12 - Summary of Pesticides and Herbicides in Soil
- Table 13 - Summary of General Chemistry in Soil
- Table 14 - Summary of Volatile Organic Compounds in Soil Vapor

## APPENDICES

### List of Appendices

- Appendix 1 - Citizen Participation Plan
- Appendix 2 - Sustainability Statement
- Appendix 3 - Soil/Materials Management Plan
- Appendix 4 - Construction Health and Safety Plan

## LIST OF ACRONYMS

<b>Acronym</b>	<b>Definition</b>
AOC	Area of Concern
AS/SVE	Air Sparging/Soil Vapor Extraction
BLS	Below Land Surface
BOA	Brownfield Opportunity Area
CAMP	Community Air Monitoring Plan
C/D	Construction/Demolition
COC	Certificate of Completion
CQAP	Construction Quality Assurance Plan
CSOP	Contractors Site Operation Plan
DCR	Declaration of Covenants and Restrictions
ECs/ICs	Engineering and Institutional Controls
HASP	Health and Safety Plan
IRM	Interim Remedial Measure
BCA	Brownfield Cleanup Agreement
MNA	Monitored Natural Attenuation
NOC	Notice of Completion
NYC BCP	New York City Brownfield Cleanup Program
NYC DEP	New York City Department of Environmental Protection
NYC DOHMH	New York State Department of Health and Mental Hygiene
NYCRR	New York Codes Rules and Regulations
NYC OER	New York City Office of Environmental Remediation
NYS DEC	New York State Department of Environmental Conservation
NYS DEC DER	New York State Department of Environmental Conservation Division of Environmental Remediation
NYS DOH	New York State Department of Health
NYS DOT	New York State Department of Transportation
ORC	Oxygen-Release Compound
OSHA	United States Occupational Health and Safety Administration
PE	Professional Engineer

<b>Acronym</b>	<b>Definition</b>
PID	Photo Ionization Detector
QEP	Qualified Environmental Professional
QHHEA	Qualitative Human Health Exposure Assessment
RAOs	Remedial Action Objectives
RAR	Remedial Action Report
RAWP	Remedial Action Work Plan or Plan
RCA	Recycled Concrete Aggregate
RCC	Restricted Commercial Soil Cleanup Objectives (Part 375)
RD	Remedial Design
RI	Remedial Investigation
RMZ	Residual Management Zone
SCOs	Soil Cleanup Objectives
SCG	Standards, Criteria and Guidance
SMP	Site Management Plan
SPDES	State Pollutant Discharge Elimination System
SVOC	Semi-Volatile Organic Compound
USGS	United States Geological Survey
UST	Underground Storage Tank
UUC	Unrestricted Use Soil Cleanup Objectives (Part 375)
VOC	Volatile Organic Compound

# CERTIFICATION

I, Charles J. McGuckin, P.E. am a Professional Engineer licensed in the State of New York. I have primary direct responsibility for implementation of the remedial action for the Broadway Plaza Site 12CVCP 062X.

I, Craig A. Werle, P.G., am a Qualified Environmental Professional as defined in §43-140. I have primary direct responsibility for implementation of the remedial action for the Broadway Plaza Site 12CVCP 062X.

I certify that this Remedial Action Work Plan (RAWP) has a plan for handling, transport and disposal of soil, fill, fluids and other materials removed from the property in accordance with applicable City, State and Federal laws and regulations. Importation of all soil, fill and other material from off-Site will be in accordance with all applicable City, State, and Federal laws and requirements. This RAWP has provisions to control nuisances during the remediation and all invasive work, including dust and odor suppression.

Charles J. McGuckin, P.E.  
Name

069509  
NYS PE License Number

Charles J. McGuckin  
Signature

6/12/12  
Date



Craig A. Werle, P.G.  
Qualified Environmental Professional Name

Craig A. Werle  
Qualified Environmental Professional Signature

6/12/12  
Date

# **EXECUTIVE SUMMARY**

Equity One (Northeast Portfolio) Inc. has enrolled in the New York City Brownfield Cleanup Program (NYC BCP) to investigate and remediate an 80,000-square foot site located at 189 West 230<sup>th</sup> Street in the Kingsbridge section of Bronx, New York. A remedial investigation (RI) was performed to compile and evaluate data and information necessary to develop this Remedial Action Work Plan (RAWP). The remedial action described in this document provides for the protection of public health and the environment consistent with the intended property use, complies with applicable environmental standards, criteria and guidance and conforms with applicable laws and regulations.

## **Site Location and Current Usage**

The Site is located at 189 West 230<sup>th</sup> Street in the Kingsbridge section of Bronx, New York and is identified as Block 3266 and Lot 13 on the New York City Tax Map. Figure 1 shows the Site location. The Site is 75,000-square feet and is bounded by Verveelen Place to the northeast, West 230<sup>th</sup> Street to the southwest, Putnam Railroad Easement and Major Deegan Expressway to the southeast, and a retail gasoline station, a contractors storage yard, and several retail shops to the northwest. The Site also includes Kimberly Place, a 5,000 square foot demapped street that links the site to Broadway. A map of the site boundary is shown in Figure 2. Currently, the Site is used for parking and contains an asphalt paved lot with an attendant booth.

## **Summary of Proposed Redevelopment Plan**

The proposed redevelopment plan is to build a multi-level retail center with parking at grade, and two levels of retail above the parking area totaling approximately 130,000 gross square feet. The site consists of two lots, Block 3266, Lots 13 and 25. Lot 13 is approximately 80,000 sq. ft. and the building will cover almost the entire footprint. Lot 25 is a demapped street that will be used as an “urban plaza” leading to the development. Excavation is required for the installation of piles and pile caps and to construct a retaining wall. Layout of the proposed site development is presented in Figure 3. The current zoning designation is commercial C 4-4, which allows for specialty and department stores, theatres and other commercial and office uses. The proposed use is consistent with existing zoning for the property.

## Summary of the Remedy

The proposed remedial action achieves protection of public health and the environment for the intended use of the property. The proposed remedial action achieves all of the remedial action objectives established for the project and addresses applicable standards, criterion, and guidance; is effective in both the short-term and long-term and reduces mobility, toxicity and volume of contaminants; is cost effective and implementable; and uses standards methods that are well established in the industry.

The proposed remedial action will consist of:

1. Preparation of a Community Protection Statement and implementation of a Citizen Participation Plan.
2. Perform a Community Air Monitoring Program for particulates and volatile organic compounds.
3. Establish Track 4 Soil Cleanup Objectives (SCOs). Excavation and removal of soil/fill exceeding SCOs.
4. Construction and maintenance of an engineered composite cover consisting of the paved parking area and the de-mapped street that will prevent human exposure to residual soil/fill remaining under the Site;
5. Import of materials to be used for backfill and cover in compliance with this plan and in accordance with applicable laws and regulations.
6. Transportation and off-Site disposal of all soil/fill material at permitted facilities in accordance with applicable laws and regulations for handling, transport, and disposal, and this plan. Sampling and analysis of excavated media as required by disposal facilities. Appropriate segregation of excavated media onsite.
7. Screening of excavated soil/fill during intrusive work for indications of contamination by visual means, odor, and monitoring with a PID.
8. Site mobilization involving Site security setup, equipment mobilization, utility mark outs and marking & staking excavation areas.
9. Implementation of storm-water pollution prevention measures in compliance with applicable laws and regulations.
10. Performance of all activities required for the remedial action, including permitting requirements and pretreatment requirements, in compliance with applicable laws and regulations.

11. Submission of a RAR that describes the remedial activities, certifies that the remedial requirements have been achieved, defines the Site boundaries, and describes all Engineering and Institutional Controls to be implemented at the Site, and lists any changes from this RAWP.
12. Submission of an approved Site Management Plan (SMP) in the RAR for long-term management of residual contamination, including plans for operation, maintenance, monitoring, inspection and certification of Engineering and Institutional Controls and reporting at a specified frequency.
13. Recording of a Declaration of Covenants and Restrictions that includes a listing of Engineering Controls and a requirement that management of these controls must be in compliance with an approved SMP; and Institutional Controls including prohibition of the following: (1) vegetable gardening and farming; (2) use of groundwater without treatment rendering it safe for the intended use; (3) disturbance of residual contaminated material unless it is conducted in accordance with the SMP; and (4) higher level of land usage without OER-approval.

# COMMUNITY PROTECTION STATEMENT

The Office of Environmental Remediation created the New York City Brownfield Cleanup Program (NYC BCP) to provide governmental oversight for the cleanup of contaminated property in NYC. This Remedial Action Work Plan (“cleanup plan”) describes the findings of prior environmental studies that show the location of contamination at the site, and describes the plans to clean up the site to protect public health and the environment.

This cleanup plan provides a very high level of protection for neighboring communities. This cleanup plan also includes many other elements that address common community concerns, such as community air monitoring, odor, dust and noise controls, hours of operation, good housekeeping and cleanliness, truck management and routing, and opportunities for community participation. The purpose of this Community Protection Statement is to explain these community protection measures in non-technical language to simplify community review.

**Remedial Investigation and Cleanup Plan.** Under the NYC BCP, a thorough cleanup study of this property (called a remedial investigation) has been performed to identify past property usage, to sample and test soils, groundwater and soil vapor, and identify contaminant sources present on the property. The cleanup plan has been designed to address all contaminant sources that have been identified during the study of this property.

**Identification of Sensitive Land Uses.** Prior to selecting a cleanup, the neighborhood was evaluated to identify sensitive land uses nearby, such as schools, day care facilities, hospitals and residential areas. The cleanup program was then tailored to address the special conditions of this community.

**Qualitative Human Health Exposure Assessment.** An important part of the cleanup planning for the Site is the performance of a study to find all of the ways that people might come in contact with contaminants at the Site now or in the future. This study is called a Qualitative Human Health Exposure Assessment (QHHEA). A QHHEA was performed for this project. This assessment has considered all known contamination at the Site and evaluated the potential for people to come in contact with this contamination. All identified public exposures will be addressed under this cleanup plan.

**Health and Safety Plan.** This cleanup plan includes a Health and Safety Plan (presented in the RIR) that is designed to protect community residents and on-Site workers. The elements of this plan are in compliance with safety requirements of the United States Occupational Safety and Health Administration. This plan includes many protective elements including those discussed below.

**Site Safety Coordinator.** This project has a designated Site safety coordinator to implement the Health and Safety Plan. The safety coordinator maintains an emergency contact sheet and protocol for management of emergencies. The Site safety coordinator will be provided by the remedial contractor.

**Worker Training.** Workers participating in cleanup of contaminated material on this project are required to be trained in a 40-hour hazardous waste operators training course and to take annual refresher training. This pertains to workers performing specific tasks including removing contaminated material and installing cleanup systems in contaminated areas.

**Community Air Monitoring Plan.** Community air monitoring will be performed during this cleanup project to ensure that the community is properly protected from contaminants, dust and odors. Air samples will be tested in accordance with a detailed plan called the Community Air Monitoring Plan or CAMP. Results will be regularly reported to the NYC Office of Environmental Remediation. This cleanup plan also has a plan to address any unforeseen problems that might occur during the cleanup (called a ‘Contingency Plan’).

**Odor, Dust and Noise Control.** This cleanup plan includes actions for odor and dust control. These actions are designed to prevent off-Site odor and dust nuisances and include steps to be taken if nuisances are detected. Generally, dust is managed by application of physical covers and by water sprays. Odors are controlled by limiting the area of open excavations, physical covers, spray foams and by a series of other actions (called operational measures). The project is also required to comply with NYC noise control standards. If you observe problems in these areas, please contact the NYC Office of Environmental Remediation Project Manager Shaminder Chawla at 212-788-8841.

**Quality Assurance.** This cleanup plan requires that evidence be provided to illustrate that all cleanup work required under the plan has been completed properly. This evidence will be

summarized in the final report, called the Remedial Action Report. This report will be submitted to the NYC Office of Environmental Remediation and will be thoroughly reviewed.

**Storm-Water Management.** To limit the potential for soil erosion and discharge, this cleanup plan has provisions for storm-water management. The main elements of the storm water management include physical barriers such as tarp covers and erosion fencing, and a program for frequent inspection.

**Hours of Operation.** The hours for operation of cleanup will comply with the NYC Department of Buildings construction code requirements or according to specific variances issued by that agency. For this cleanup project, the general hours of operation are 7 am to 3 pm Monday through Friday unless specific circumstances require short term modification.

**Signage.** While the cleanup is in progress, a placard will be prominently posted at the main entrance of the property with a laminated project Fact Sheet that states that the project is in the NYC Brownfield Cleanup Program, provides project contact names and numbers, and locations of project documents can be viewed.

**Complaint Management.** The contractor performing this cleanup is required to address all complaints. If you have any complaints, you can call the facility Project Manager (to be provided by the remedial contractor), the NYC Office of Environmental Remediation Project Manager Shaminder Chawla at 212-788-8841, or call 311 and mention the Site is in the NYC Brownfield Cleanup Program.

**Utility Mark-outs.** To promote safety during excavation in this cleanup, the contractor is required to first identify all utilities and must perform all excavation and construction work in compliance with NYC Department of Buildings regulations.

**Soil and Liquid Disposal.** All soil and liquid material removed from the Site as part of the cleanup will be transported and disposed of in accordance with all applicable City, State and Federal regulations and required permits will be obtained.

**Soil Chemical Testing and Screening.** All excavations will be supervised by a trained and properly qualified environmental professional. In addition to extensive sampling and chemical testing of soils on the Site, excavated soil will be screened continuously using hand-held

instruments, by sight, and by smell to ensure proper material handling and management, and community protection.

**Stockpile Management.** Soil stockpiles will be kept covered with tarps to prevent dust, odors and erosion. Stockpiles will be frequently inspected. Damaged tarp covers will be promptly replaced. Stockpiles will be protected with silt fences. Hay bales will be used, as needed to protect storm water catch basins and other discharge points.

**Trucks and Covers.** Loaded trucks leaving the Site will be covered in compliance with applicable laws and regulations to prevent dust and odor. Trucks will be properly recorded in logs and records and placarded in compliance with applicable City, State and Federal laws, including those of the New York State Department of Transportation. If loads contain wet material that can leak, truck liners will be used. All transport of materials will be performed by licensed truckers and in compliance with all laws and regulations.

**Imported Material.** All fill materials proposed to be brought onto the Site will comply with rules outlined in this cleanup plan and will be inspected and approved by a qualified worker located on-Site. Waste materials will not be brought onto the Site. Trucks entering the Site with imported clean materials will be covered in compliance with applicable laws and regulations.

**Equipment Decontamination.** All equipment used for cleanup work will be inspected and washed, if needed, before it leaves the Site. Trucks will be cleaned at a truck inspection station on the property before leaving the Site.

**Housekeeping.** Locations where trucks enter or leave the Site will be inspected every day and cleaned regularly to ensure that they are free of dirt and other materials from the Site.

**Truck Routing.** Truck routes have been selected to: (a) limit transport through residential areas and past sensitive nearby properties; (b) maximize use of city-mapped truck routes; (c) limit total distance to major highways; (d) promote safety in entry to highways; (e) promote overall safety in trucking; and (f) minimize off-Site line-ups (queuing) of trucks entering the property. Operators of loaded trucks leaving the Site will be instructed not to stop or idle in the local neighborhood.

**Final Report.** The results of all cleanup work will be fully documented in a final report (called a Remedial Action Report) that will be available for you to review in the public document repositories located at the Kingsbridge Branch of the New York Public Library.

**Long-Term Site Management.** To provide long-term protection after the cleanup is complete, the property owner will be required to comply with an ongoing Site Management Plan that calls for continued inspection of protective controls, such as Site covers. The Site Management Plan is evaluated and approved by the NYC Office of Environmental Remediation. Requirements that the property owner must comply with are defined in the property's deed. A certification of continued protectiveness of the cleanup will be periodically required to show that the approved cleanup is still effective.

# **REMEDIAL ACTION WORK PLAN**

## **1.0 SITE BACKGROUND**

Equity One (Northeast Portfolio), Inc. has enrolled in the New York City Brownfield Cleanup Program (NYC BCP) to investigate and remediate a property located at 189 West 230<sup>th</sup> Street in the Kingsbridge section of Bronx, New York (the Site). A Remedial Investigation (RI) was performed to compile and evaluate data and information necessary to develop this Remedial Action Work Plan (RAWP) in a manner that will render the Site protective of public health and the environment consistent with the contemplated end use. This RAWP establishes remedial action objectives, provides a remedial alternatives analysis that includes consideration of a permanent cleanup, and provides a description of the selected remedial action. The remedial action described in this document provides for the protection of public health and the environment, complies with applicable environmental standards, criteria and guidance and applicable laws and regulations.

### **1.1 Site Location and Current usage**

The Site is located at 189 West 230<sup>th</sup> Street in the Kingsbridge section of Bronx, New York and is identified as Block 3266 and Lot 13 on the New York City Tax Map. Figure 1 shows the Site location. The Site is 90,000-square feet and is bounded by Verveelen Place to the northeast, West 230<sup>th</sup> Street to the southwest, Putnam Railroad Easement and Major Deegan Expressway to the southeast, and a retail gasoline station, a contractors storage yard, and several retail shops to the northwest. The Site also includes Kimberly Place, a short demapped street linking the site to Broadway. A map of the site boundary is shown in Figure 2. Currently, the Site is used for parking and contains an asphalt paved lot with an attendant booth.

### **1.2 Proposed Redevelopment Plan**

The proposed redevelopment plan is to build a retail center with two levels of retail above a ground-level parking garage. The proposed building will total approximately 130,000 gross square feet. The parking garage will consist of approximately 130 spaces. The parking garage will be designed to prevent accumulation of potential vapors in accordance with the New York City building code. Prior to issuance of a Certificate of Occupancy for the building, the New

York City Department of Buildings requires certification that the ventilation system is operating. Accordingly, no vapor barrier or sub-slab venting system will be installed beneath the building.

The upper two levels of retail will consist of approximately four “big-box” tenants and there will be a common area with vertical transportation connecting all three levels of the center. The only landscaped area will be the urban plaza.

It is anticipated that between 8,000 to 10,000 cubic yards of soil will be excavated with an average depth of four feet across the Site. The excavation is required for the installation of piles and pile caps and to construct a retaining wall. The groundwater table is approximately 12 feet below grade so the piles will be driven deeper than the water table but it is not anticipated that excavation below the groundwater table will be necessary for construction. The only demolition will consist of removing the existing asphalt and removing the existing retaining wall to allow for the piles to be driven in an organized grid. Layout of the proposed site development is presented in Figure 3. The current zoning designation is commercial C 4-4, which allows for specialty and department stores, theatres and other commercial and office uses. The proposed use is consistent with existing zoning for the property.

### **1.3 Description of Surrounding Property**

To the west-northwest, the property is bounded by a former retail gasoline and service station, a vacant contractor storage lot, a strip of retail stores and Broadway. The No. 1 elevated subway line runs above Broadway. Further west-northwest across Broadway are retail/commercial spaces, residential properties including several apartment complexes, and Public School 207. To the east, the property is bounded by the Putnam Railroad Easement, and the Major Deegan Expressway. To the north, the property is bounded by Verveelen Place. Further north across Verveelen Place are commercial buildings including a bank, a Walgreens drug store and the continuation of the Putnam Railroad Easement. To the south, the property is bounded by West 230<sup>th</sup> Street. Across West 230<sup>th</sup> street, are commercial and light industrial buildings and the continuation of the Putnam Railroad Easement. Figure 4 shows the surrounding land usage.

## 1.4 Remedial Investigation

A remedial investigation was performed and the results are documented in a companion document called “*Remedial Investigation Report Broadway Plaza* dated April 2012 (RIR).

The Site is currently owned by the New York City Department of Transportation and operated as a parking lot. Previous Phase I investigations reported a Sanborn fire insurance map review that showed the Site to be vacant or used as a parking lot since at least 1950. Sanborn maps from the years 1896, 1900, and 1914 are reported to show three residential structures located in the southern portion of the Site. A railroad line identified as the N.Y. Central and Hudson River R.R. travelling through the south and southwestern portion of the site is depicted in the 1896 and 1900 Sanborn maps, but not present in the 1914 Sanborn map.

The following list summarizes the work that was performed during the RI:

1. A Site inspection was conducted to identify AOCs and physical obstructions (i.e., structures, buildings, etc.).
2. NAEVA Geophysics Inc. (NAEVA) performed a geophysical survey to identify potential underground storage tanks (USTs), and marked out detectable utilities prior to soil boring activities.
3. Installed ten soil borings across the entire project Site, and collected 14 soil samples for chemical analysis from the soil borings to evaluate soil quality.
4. Collected four groundwater samples for chemical analysis to evaluate groundwater quality.
5. Installed four soil vapor probes around the Site perimeter and collected four samples for chemical analysis.
6. Evaluated four existing drywell structures with open storm-water collection grates and determined these structures to be hard-bottomed and connected to the New York City public combined sewer system.

The following list summarizes the findings of the RI:

1. Elevation of the property ranges from 18 to 20 feet.
2. Average depth to groundwater is 12 feet with a range of 8 to 15 feet below land surface (bls) at the Site.
3. Groundwater flow is generally from northeast to southwest beneath the Site.

4. Depth to bedrock is unknown as bedrock was not encountered during this RI or previous investigations.
5. The stratigraphy of the site, from the surface down to the maximum soil boring depth of 15 feet bls, consists of fine sand with some gravel. The Site has had fill material historically placed for grading purposes.
6. Soil/fill samples collected during the RI showed several VOCs in soil samples at low concentrations and all well below Track 1 SCOs. BTEX are common but are typically found at trace concentrations and do not exceed 7.5 ppb. PCE and TCE are generally found at low concentrations (below 10 ppb) although one sample had PCE at a maximum of 306 ppb. TCE was detected in two soil samples with a maximum concentration of 3 ppb. One of 15 soil samples marginally exceeded Track 1 for total PCBs and did not exceed Track 2 Restricted Commercial SCOs. Similarly, three pesticides including DDT and its degradation products exceed Track 1 SCOs but are well below Track 2 Restricted Commercial SCOs. SVOCs are relatively low and exceed Track 1 for at least 7 PAH compounds with only one PAH exceeding Track 2 Restricted Commercial SCOs. Seven metals exceeded Track 1 SCOs and of these barium (maximum 433 ppm), lead (maximum 11,900 ppm) and mercury (maximum 9.3 ppm) also exceed Track 2 Restricted Commercial SCOs in two soil samples each. Overall, these results are consistent with field findings of historical fill in the upper few feet of soil and don't indicate a substantial contaminant source onsite.
7. Groundwater samples collected during the RI showed no SVOCs, pesticides or PCBs in any sample. No VOCs were identified above Part 703.5 Class GA groundwater quality standards (GQS). Several VOCs were identified in groundwater including petroleum and chlorinated hydrocarbons, however, most concentrations were found at trace or estimated concentrations below 1 ppb and all were below 2.5 ppb. Only sodium and manganese exceeded GQS in dissolved groundwater samples. Overall, groundwater samples are consistent with soil samples and do not indicate a contaminant source on this property.
8. Soil vapor samples collected during the RI showed a variety of VOCs including petroleum hydrocarbons and chlorinated hydrocarbons. Concentrations of petroleum hydrocarbons were generally low with maximum value of 57 ug/m<sup>3</sup> for 1,2,4-trimethylbenzene. PCE and TCE were detected in most samples with maximum concentrations of 201 and 25 ug/m<sup>3</sup>, respectively.

For more detailed results, consult the RIR. Based on an evaluation of the data and information from the RIR and this RAWP, disposal of significant amounts of hazardous waste is not suspected at this site.

## **2.0 REMEDIAL ACTION OBJECTIVES**

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

### **Soil**

Prevent direct contact with contaminated soil.

### **Soil Vapor**

Prevent direct contact with contaminated soil vapor.

### **3.0 REMEDIAL ALTERNATIVES ANALYSIS**

The goal of the remedy selection process is to select a remedy that is protective of human health and the environment taking into consideration the current, intended and reasonably anticipated future use of the property. The remedy selection process begins by establishing RAOs for media in which chemical constituents were found in exceedance of applicable standards, criteria and guidance values (SCGs). A remedy is then developed based on the following nine criteria:

- Protection of human health and the environment;
- Compliance with SCGs;
- Short-term effectiveness and impacts;
- Long-term effectiveness and permanence;
- Reduction of toxicity, mobility, or volume of contaminated material;
- Implementability;
- Cost effectiveness;
- Community Acceptance; and
- Land use.

The following is a detailed description of the alternatives analysis and remedy selection to address impacted media at the Site. As required, a minimum of two remedial alternatives (including a Track 1 scenario) are evaluated.

Two remedial action alternatives are considered in this alternatives analysis. Alternative 1 is Track 1 alternative that involves attainment of Track 1 SCOs and complete removal of all soil and fill material that exceed the unrestricted Track 1 SCOs. Alternative 2 is a Track 4 alternative that involves establishment of Track 4 SCOs and removal of the soil and fill material that exceed the site specific Track 4 SCOs. Following soil removal, the entire Site will be covered with a composite cover layer consisting of the building slab, concrete walkways and asphalt paved parking areas. This composite cover layer will serve as an engineering control to reduce

exposure to contaminants in the groundwater and any residual contaminant in soils. Soil vapors would be managed by the operation of a ventilated parking area at grade and below the retail area. Institutional controls would also include groundwater use restrictions, a deed notice, and a site management plan.

### **3.1 Threshold Criteria**

#### **Protection of Public Health and the Environment**

This criterion is an evaluation of the remedy's ability to protect public health and the environment and an assessment of how risks posed through each existing or potential pathway of exposure are eliminated, reduced, or controlled through removal, treatment, and implementation of Engineering Controls (ECs) or Institutional Controls (ICs). Protection of public health and the environment must be achieved for all approved remedial actions.

The Track 1 alternative would result in removal of all soil/fill with contaminant concentrations above Track 1 SCOs. As such, this alternative would be consistent with the RAOs and provide overall protection of public health and the environment in consideration of current and potential future land use by:

- Eliminating the potential for direct contact with contaminated on-site soils and groundwater; and
- Eliminating potential sources for on-site production of soil vapors.

Alternative 2 would achieve comparable protections of human health and the environment and would be consistent with the RAOs and would provide overall protection of public health and the environment in consideration of current and potential future land use by:

- Removing soil/fill with contaminant concentrations above Track 4 SCOs.
- Placement of institutional and engineering controls, including a composite cover system.
- Eliminating the potential for direct contact with contaminated soil or groundwater by placement of a composite cover system and via institutional controls.

- Minimizing the potential for migration of soil vapor into occupied structures and associated inhalation exposures by operation of a ventilated parking garage beneath the building.
- Minimizing the potential for direct contact with contaminated on-site soils during the remediation by implementing an approved soil and materials management plan and Community Air Monitoring Plan (CAMP).

### **3.2. Balancing Criteria**

#### **Compliance with Standards, Criteria and Guidance (SCGs)**

The Track 1 alternative would comply with the SCG, as all soil/fill in excess of Track 1 SCOs would be removed. All soil/fill excavated from the Site would be managed and disposed of in accordance with all applicable regulations.

The Track 4 alternative would address the chemical-specific SCGs for soil and soil vapor by establishment of Track 4 SCOs and removal of an average of 4 feet of soil for development purposes. Similar to the Track 1 alternative, focused attention on means and methods employed during the remedial action would ensure that handling and management of contaminated material would be in compliance with applicable SCGs.

#### **Short-term effectiveness and impacts**

This evaluation criterion assesses the effects of the alternatives during the construction and implementation phase until remedial action objectives are met. Under this criterion, alternatives are evaluated with respect to their effects on public health and the environment during implementation of the remedial action, including protection of the community, environmental impacts, time until remedial response objectives are achieved, and protection of workers during remedial actions.

The Track 1 alternative would provide short-term effectiveness with the removal of all soil/fill above Track 1 SCOs. All potential exposure pathways for site-derived contaminants would be incomplete following construction. Implementation of this RAWP would prevent unacceptable exposure during remediation and construction activities.

Alternative 2 would result in marginally fewer short-term impacts associated with excavation, handling, load out of materials, and truck traffic than a Track 1 remediation but would still result in removal of a large quantity of soil for development purposes. Focused attention to means and methods during the remedial action during a Track 1 or Track 4 removal action, including community air monitoring and appropriate truck routing, would minimize or negate the overall impact of these activities.

Alternatives 1 and 2 are both considered to be effective in protecting human health and the environment in the short term. Alternative 1 would eliminate and alternative 2 would reduce exposure to contaminant sources. Alternatives 1 and 2 would both employ appropriate measures to prevent short term impacts, including a Community Air Monitoring Plan (CAMP) and a Soil/Materials Management Plan (SMMP), during all on-site soil disturbance activities and would effectively prevent the release of significant contaminants into the environment. Both alternatives provide short term effectiveness in protecting the surrounding community by decreasing the risk of contact with on-site contaminants. Construction workers operating under appropriate management procedures and a Health and Safety Plan (CHASP) will be protected from on-site contaminants (personal protective equipment would be worn consistent with the documented risks within the respective work zones).

### **Long-term effectiveness and permanence**

This evaluation criterion addresses the results of a remedial action in terms of its permanence and quantity/nature of waste or residual contamination remaining at the Site after response objectives have been met, such as permanence of the remedial alternative, magnitude of remaining contamination, adequacy of controls including the adequacy and suitability of ECs/ICs that may be used to manage contaminant residuals that remain at the Site, and assessment of containment systems and ICs that are designed to eliminate exposures to contaminants, and long-term reliability of ECs.

As with the short-term effectiveness, the Track 1 alternative would provide the highest level of long-term effectiveness with the removal of all soil/fill above Track 1 SCOs.

Alternative 2 would also be effective over the long-term by attaining Track 4 SCOs through the placement of a concrete slab under the building and cover materials elsewhere, establishing use restrictions, establishing a Site Management Plan (SMP) to ensure long-term management of

ECs/ICs, and placing a deed restriction to memorialize these controls for the long term. Groundwater use restrictions will eliminate potential exposure to groundwater and establishment of an SMP and a deed restriction will ensure that this protection remains effective for the long-term. The SMP will ensure long-term effectiveness of all ECs/ICs by requiring periodic inspection and certification that these controls and use restrictions continue to be in place and functioning as they were intended, assuring that protections designed into the remedy will provide continued high levels of protection in perpetuity. Operation of a ventilated parking garage will minimize the potential for accumulation of vapors with the occupied structure and eliminate associated inhalation exposures.

### **Reduction of toxicity, mobility, or volume of contaminated material**

This evaluation criterion assesses the remedial alternative's use of remedial technologies that permanently and significantly reduce toxicity, mobility, or volume of contaminants as their principal element. The following is the hierarchy of source removal and control measures that are to be used to remediate a Site, ranked from most preferable to least preferable: removal and/or treatment, containment, elimination of exposure, and treatment of source at the point of exposure. It is preferred to use treatment or removal to eliminate contaminants at a Site, reduce the total mass of toxic contaminants, cause irreversible reduction in contaminants mobility, or reduce the total volume of contaminated media.

Alternative 1 would permanently eliminate the toxicity, mobility, and volume of contaminants from on-site soil by removing all soil in excess of unrestricted use SCOs. Removal of soil to a depth of approximately 12 feet would be required. Alternative 2 would greatly reduce the toxicity, mobility, and volume of contaminants from on-site soil because it would include removal of as much as 4 feet of soil/fill for development purposes and will achieve Track 4 SCOs. Placement of a building slab asphalt pavement and other cover and ventilated parking below grade will lower toxicity by eliminating potential exposures with remaining soil and vapors. Groundwater does not exhibit impact from the property but use restrictions will reduce any toxicity by ensuring that there is no use of on-Site groundwater for potable purposes.

## **Implementability**

This evaluation criterion addresses the technical and administrative feasibility of implementing an alternative and the availability of various services and materials required during its implementation, including technical feasibility of construction and operation, reliability of the selected technology, ease of undertaking remedial action, monitoring considerations, administrative feasibility (e.g., obtaining permits for remedial activities), and availability of services and materials.

The Track 1 alternative is implementable. The remedial methods used are easily implemented using standard construction technologies.

Similarly, Alternative 2 is also both feasible and implementable. It uses standard materials and services and well established technology. The reliability of the remedy is also high. There are no special difficulties associated with any of the activities proposed, which utilize standard industry methods.

For implementation of both remedies, standard construction equipment utilized for the overall earthwork would be used. OSHA trained personnel will complete all activities that include excavation and handling of impacted soils. No special permits other than earthwork permits required for completion of the required site redevelopment scope are required for implementation of the remedy.

## **Cost effectiveness**

This evaluation criterion addresses the cost of alternatives, including capital costs (such as construction costs, equipment costs, and disposal costs, engineering expenses) and site management costs (costs incurred after remedial construction is complete) necessary to ensure the continued effectiveness of a remedial action.

The capital costs associated with the Track 1 alternative are 2-3 times higher than the Track 4 alternative in that a higher volume of soil/fill will be excavated for off-site disposal to achieve a Track 1 status over the entire site. In both cases, however, appropriate public health and environmental protections are achieved.

The cost associated with Alternative 2 is estimated at approximately \$650,000. The following assumptions were made to develop this cost estimate:

- The proposed redevelopment of the Site as a commercial property will require excavation for construction purposes. An incremental cost increase has been estimated to account for the increased handling requirements of the excavated soil due to health and safety requirements, and equipment and worker decontamination beyond normal construction practices on clean sites.
- CAMP monitoring will be necessary for the duration of the excavation activities.
- Dewatering will be not be necessary.
- As most of the Site will be covered by the parking area and the de-mapped street as part of the redevelopment of the Site, the cost for capping any exposed surface soil is not included.
- Transportation and disposal of the excavated soil assuming non-hazardous soil.

### **Community Acceptance**

This evaluation criterion addresses community opinion and support for the remedial action. Observations here will be supplemented by public comment received on the RAWP.

Based on the overall goals of the remedial program and initial observations by the project team, both of the alternatives appear to be acceptable to the community. This RAWP will be subject to, and undergo public review under the NYC VCP and will provide the opportunity for detailed public input on the remedial alternatives and the selected remedial action. This public comment will be considered by OER prior to approval of this plan.

### **Land use**

This evaluation criterion addresses the proposed use of the property. This evaluation has considered reasonably anticipated future uses of the Site and takes into account: current use and historical and/or recent development patterns; applicable zoning laws and maps; NYS Department of State's Brownfield Opportunity Areas (BOA) pursuant to section 970-r of the general municipal law; applicable land use plans; proximity to real property currently used for residential use, and to commercial, industrial, agricultural, and/or recreational areas; environmental justice impacts; Federal or State land use designations; population growth patterns and projections; accessibility to existing infrastructure; proximity of the site to important cultural

resources and natural resources; potential vulnerability of groundwater to contamination that might emanate from the site; proximity to flood plains, geography and geology; and current ICs applicable to the site.

Because of the complete soil removal, the Track 1 alternative provides protection of public health and the environment for both the proposed use of the Site and any future use. The Track 1 alternative provides a remedial action that is beneficial to the surrounding community and is consistent with the goals of the City for remediating and redeveloping brownfield sites. The Track 4 alternative also provides protection for the intended use.

Both alternatives for remedial action at the site are comparable with respect to the proposed use and to land uses in the vicinity of the Site. The proposed use is consistent with the existing zoning designation for the property. Both alternatives provide comprehensive protection of public health and the environment for surrounding land uses. Improvements in the current brownfield condition of the property achieved by both alternatives are also consistent with the City's goals for cleanup of contaminated land and bringing such properties into productive reuse. Both alternatives are equally protective of natural resources and cultural resources. This RAWP will be subject to undergo public review under the NYC BCP and will provide the opportunity for detailed public input on the land use factors described in this section. This public comment will be considered by OER prior to approval of this plan.

### **Sustainability of the Remedial Action**

This criterion evaluates the overall sustainability of the remedial action alternatives and the degree to which sustainable means are employed to implement the remedial action including those that take into consideration NYC's sustainability goals defined in *PlaNYC: A Greener, Greater New York*. Sustainability goals may include: maximizing the recycling and reuse of non-virgin materials; reducing the consumption of virgin and non-renewable resources; minimizing energy consumption and greenhouse gas emissions; improving energy efficiency; and promotion of the use of native vegetation and enhancing biodiversity during landscaping associated with Site development.

Both remedial alternatives are comparable with respect to the opportunity to achieve sustainable remedial action. The selection of the disposal facility for the excavated soil will be based on proximity to the Site to reduce the fuel usage of the transportation vehicles.

## **4.0 REMEDIAL ACTION**

### **4.1 Summary of Preferred Remedial Action**

The preferred remedial action alternative is Alternative 2, the Track 4 Alternative. The preferred remedial action alternative achieves protection of public health and the environment for the intended use of the property. The preferred remedial action alternative will achieve all of the remedial action objectives established for the project and addresses applicable SCGs. The preferred remedial action alternative is effective in both the short-term and long-term and reduces mobility, toxicity and volume of contaminants. The preferred remedial action alternative is cost effective and implementable and uses standard methods that are well established in the industry.

The proposed remedial action will consist of:

1. Preparation of a Community Protection Statement and implementation of a Citizen Participation Plan.
2. Perform a Community Air Monitoring Program for particulates and volatile organic compounds.
3. Establish Track 4 Soil Cleanup Objectives (SCOs). Excavation and removal of soil/fill exceeding SCOs.
4. Construction and maintenance of an engineered composite cover consisting of the paved parking area and the de-mapped street that will prevent human exposure to residual soil/fill remaining under the Site.
5. Import of materials to be used for backfill and cover in compliance with this plan and in accordance with applicable laws and regulations.
6. Transportation and off-Site disposal of all soil/fill material at permitted facilities in accordance with applicable laws and regulations for handling, transport, and disposal, and this plan. Sampling and analysis of excavated media as required by disposal facilities. Appropriate segregation of excavated media onsite.
7. Screening of excavated soil/fill during intrusive work for indications of contamination by visual means, odor, and monitoring with a PID.
8. Site mobilization involving Site security setup, equipment mobilization, utility mark outs and marking & staking excavation areas.

9. Implementation of storm-water pollution prevention measures in compliance with applicable laws and regulations.
10. Performance of all activities required for the remedial action, including permitting requirements and pretreatment requirements, in compliance with applicable laws and regulations.
11. Submission of a RAR that describes the remedial activities; certifies that the remedial requirements have been achieved, defines the Site boundaries, and describes all Engineering and Institutional Controls to be implemented at the Site, and lists any changes from this RAWP.
12. Submission of an approved Site Management Plan (SMP) in the RAR for long-term management of residual contamination, including plans for operation, maintenance, monitoring, inspection and certification of Engineering and Institutional Controls and reporting at a specified frequency.
13. Recording of a Declaration of Covenants and Restrictions that includes a listing of Engineering Controls and a requirement that management of these controls must be in compliance with an approved SMP; and Institutional Controls including prohibition of the following: (1) vegetable gardening and farming; (2) use of groundwater without treatment rendering it safe for the intended use; (3) disturbance of residual contaminated material unless it is conducted in accordance with the SMP; and (4) higher level of land usage without OER-approval.

#### **4.2 Soil Cleanup Objectives and Soil/Fill Management**

Track 4 Soil Cleanup Objectives (SCOs) are proposed for this project. The SCOs for this Site are listed in Table 1. Soil and materials management on-Site and off-Site, including excavation, handling and disposal, will be conducted in accordance with the Soil/Materials Management Plan in Appendix 3. The location of planned excavations is shown in Figure 2.

Discrete contaminant sources (such as hotspots) identified during the remedial action will be identified by GPS or surveyed. This information will be provided in the Remedial Action Report.

#### **Estimated Soil/Fill Removal Quantities**

The total quantity of soil/fill expected to be excavated and disposed off-Site is approximately 15,000 tons (approximately 8,000 to 10,000 cubic yards).

Disposal facilities will be reported to OER when they are identified and prior to the start of remedial action.

## End-Point Sampling

Removal actions under this plan will be performed in conjunction with remedial end-point sampling. End-point sampling frequency will consist of the following:

1. For the “hot spot” excavation, one bottom sample and two sidewall samples will be collected and analyzed for lead.
2. For the Site wide excavation, *in situ* soil sampling at four locations with the collection of soil samples at 5 to 6 feet below land surface. Samples will be analyzed for VOCs, SVOCs, metals, PCBs, and pesticides (VOC samples will be taken within 24 hours of excavation, and will be taken from the zero to six-inch interval at the excavation floor. Samples taken after 24 hours will be taken at six to twelve inches.)
3. For contaminated soil removal, post remediation soil samples for laboratory analysis should be taken immediately after contaminated soil removal. If the excavation is enlarged horizontally, additional soil samples will be taken pursuant to the bullets above.

Post-remediation sample locations and depth will be biased towards the areas and depths of highest contamination identified during previous sampling episodes unless field indicators such as field instrument measurements or visual contamination identified during the remedial action indicate that other locations and depths may be more heavily contaminated. In all cases, post-remediation samples should be biased toward locations and depths of the highest expected contamination.

New York State ELAP certified labs will be used for all end-point sample analyses. Labs for end-point sample analyses will be reported in the RAR. The RAR will provide a tabular and map summary of all end-point sample results and will include all data including non-detects and applicable standards and/or guidance values. End-point samples will be analyzed for trigger analytes (those for which SCO exceedance is identified) utilizing the following methodology:

Soil analytical methods will include:

- Volatile organic compounds by EPA Method 8260;
- Semivolatile organic compounds by EPA Method 8270;
- Target Analyte List metals; and
- Pesticides/PCBs by EPA Method 8081/8082.

If either LNAPL and/or DNAPL are detected, appropriate samples will be collected for characterization and “finger print analysis” and required regulatory reporting (i.e., spills hotline) will be performed.

### **Quality Assurance/Quality Control**

The end point sampling will follow the same procedures and protocols used during the RI. This will include duplicate, field and laboratory blank samples.

### **Import and Reuse of Soils**

Import of soils onto the property will be performed in conformance with the Soil/Materials Management Plan in Appendix 3. The estimated quantity of soil to be imported into the Site for backfill in the area of the SB-9 excavation is 60 tons. There will be no relocation of soil on Site.

### **4.3 Engineering Controls**

Engineering Controls were employed in the remedial action to address residual contamination remaining at the Site. The Site has one primary Engineering Control System. It is:

- A composite cover system consisting of the building and hard-scaping of the de-mapped street.

### **Composite Cover System**

Exposure to residual soil/fill will be prevented by an engineered, composite cover system to be built on the Site. This composite cover system is comprised of:

- Paved hard-scaping of the de-mapped street; and
- Concrete slab for the parking area and building.

The composite cover system is a permanent engineering control for the Site. The system will be inspected and reported at specified intervals as required by this RAWP and the SMP. A Soil 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 soil/fill is disturbed after the remedial action is complete. Maintenance of this composite cover system will be described in the Site Management Plan in the RAR.

In addition, as part of building construction, the ground floor parking area will have a mechanical ventilation system installed and will therefore not need any engineering controls related to soil vapor migration. The mechanical ventilation system will supply fresh air to the parking area in accordance with parking garage requirements of the New York City building code. Accordingly, no vapor barrier or sub-slab venting system will be required beneath this building.

#### **4.4 Institutional Controls**

Institutional Controls (IC) have been incorporated in this remedial action to manage residual soil/fill and other media and render the Site protective of public health and the environment. Institutional Controls are listed below. Long-term employment of EC/ICs will be established in a Declaration of Covenant and Restrictions (DCR) assigned to the property by the title holder and will be implemented under a site-specific Site Management Plan (SMP) that will be included in the RAR.

Institutional Controls for this remedial action are:

- Recording of an OER-approved Declaration of Covenant and Restrictions (DCR) with the City Register. The DCR will include a description of all ECs and ICs, will summarize the requirements of the Site Management Plan, and will note that the property owner and property owner's successors and assigns must comply with the DCR and the approved SMP. The recorded DCR will be submitted in the Remedial Action Report. The DCR will be recorded prior to OER issuance of the Notice of Completion.
- Submittal of a Site Management Plan in the RAR for approval by OER that provides procedures for appropriate operation, maintenance, monitoring, inspection, reporting and certification of ECs. SMP will require that the property owner and property owner's successors and assigns will submit to OER a periodic written statement that certifies that: (1) controls employed at the Site are unchanged from the previous certification or that any changes to the controls were approved by OER; 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. OER retains the right to enter the Site in order to evaluate the continued maintenance of any controls. This certification shall be submitted periodically and will comply with RCNY §43-1407(1)(3).
- Vegetable gardens and farming on the Site are prohibited.
- Use of groundwater underlying the Site is prohibited without treatment rendering it safe for its intended use.
- All future activities on the Site that will disturb residual material must be conducted pursuant to the soil management provisions in an approved SMP.

- The Site will be used for commercial use and will not be used for a higher level of use without prior approval by OER. Converting the parking areas to a less restricted level of use, such as residential use, or converting the parking areas to other enclosed purposes requires an approval by OER.

#### **4.5 Site Management plan**

Site Management is the last phase of remediation and begins with the approval of the Remedial Action Report and issuance of the Notice of Completion (NOC) for the Remedial Action. The Site Management Plan (SMP) describes appropriate methods and procedures to ensure implementation of all ECs and ICs that are required by the DCR and this RAWP. The Site Management Plan is submitted as part of the RAR but will be written in a manner that allows its use as an independent document. Site Management continues until terminated in writing by OER. The property owner is responsible to ensure that all Site Management responsibilities defined in the DCR and the Site Management Plan are implemented.

The SMP will provide a detailed description of the procedures required to manage residual soil/fill left in place following completion of the remedial action in accordance with the Brownfield Cleanup Agreement with OER. This includes a plan for: (1) implementation of EC's and ICs; (2) implementation of monitoring programs; (3) operation and maintenance of EC's; (4) inspection and certification of EC's; and (5) reporting.

Site management activities, reporting, and EC/IC certification will be scheduled on a periodic basis to be established in the SMP and will be subject to review and modification by OER. The Site Management Plan will be based on a calendar year and certification reports will be due for submission to OER by March 31 of the year following the reporting period.

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

Investigations reported in the RIR are sufficient to complete a QHHEA. As part of the VCP process, a QHHEA was performed to determine whether the Site poses an existing or future health hazard to the Site's exposed or potentially exposed population. The sampling data from the RI were evaluated to determine whether there is any health risk by characterizing the exposure setting, identifying exposure pathways, and evaluating contaminant fate and transport. This EA was prepared in accordance with Appendix 3B and Section 3.3 (b) 8 of the NYSDEC Draft DER-10 Technical Guidance for Site Investigation and Remediation.

## **Known and Potential Sources**

Based on the results of the RIR, the contaminants of concern are:

### **Soil:**

- VOCs do not exceed Track 1 SCOs and are not a concern in soil;
- 4,4-DDE, 4,4-DDD and 4,4-DDT exceed Track 1 SCO but not Track 2 Restricted Commercial (RC) SCOs;
- Seven SVOC (all PAH) exceed Track 1 SCOS and one of these also exceeds Track 2 RC SCOs;
- One PCB sample exceeds Track 1 SCOs but not Track 2 RC SCOs; and
- Seven metals, including Copper, Lead, Mercury, Zinc, Barium, Chromium and Nickel exceed Track 1 SCO and of these Lead and Mercury also exceed Track 2 RC SCOs.

### **Groundwater:**

- No VOCs exceeded Part 703.5 Class GA Groundwater Quality Standards (GQS);
- Two metals (Manganese and Sodium) exceed GQS; and
- SVOC, pesticides and PCBs were not detected in groundwater.

### **Soil Vapor:**

- A variety of VOCs, including moderate concentrations of PCE (maximum 201 ug/m<sup>3</sup>) and TCE (maximum 25 ug/m<sup>3</sup>), and lower levels of petroleum hydrocarbon compounds (generally under 60 ug/m<sup>3</sup>) were detected in the soil vapor samples.

## **Nature, Extent, Fate and Transport of Contaminants**

Contaminants identified in soil in this remedial investigation are associated with historical fill placed beneath the ground surface at this site. Historical fill is widespread and distributed throughout the property. Groundwater is not affected by onsite contaminants and exhibits minor regional influences, perhaps associated with saline intrusion. Soil vapor impact is widespread across the site but is relatively low in most areas. One location (SV-4) exhibits moderate concentrations of chlorinated compounds relative to low level findings on the remainder of the site.

#### **4.6.1 Potential Routes of Exposure**

The five elements of an exposure pathway are: (1) a contaminant source; (2) contaminant release and transport mechanisms; (3) a point of exposure; (4) a route of exposure; and, (5) a receptor population. An exposure pathway is considered complete when all five elements of an exposure pathway are documented. A potential exposure pathway exists when any one or more of the five elements comprising an exposure pathway cannot be documented. An exposure pathway may be eliminated from further evaluation when any one of the five elements comprising an exposure pathway has not existed in the past, does not exist in the present, and will never exist in the future. Three potential primary routes exist by which chemicals can enter the body:

- Ingestion of water, fill, or soil;
- Inhalation of vapors and particulates; and
- Dermal contact with water, fill, soil, or building materials.

#### **4.6.2 Receptor Populations**

##### *On-Site Receptors*

The Site is currently a parking lot and there are human receptors under current conditions. During construction and remediation activities, receptors will include construction and remediation workers. Under future conditions, receptors will include employees and customers of the proposed commercial establishments.

##### *Off-Site Receptors*

Potential off-site receptors within a 0.25-mile radius of the Site include adult and child residents, commercial and construction workers, pedestrians, trespassers, and cyclists, based on the following:

1. Commercial Businesses (up to 0.25 mile) – existing and future
2. Residential Buildings (up to 0.25 mile) – existing and future
3. Building Construction/Renovation (up to 0.25 mile) – existing and future
4. Pedestrians, Trespassers, Cyclists (up to .25 mile) – existing and future
5. Schools (up to .25 mile) – existing and future

### **4.6.3 Existence of Human Health Exposure**

#### *Current Conditions*

The site is currently a parking lot. In the areas where human exposure to contaminated soil is possible, potential migration pathway is likely complete for dermal absorption, ingestion, and inhalation. Groundwater is not exposed at the site and, because the site is served by the public water supply, groundwater is not used at the site.

#### *Construction/ Remediation Activities*

The potential exposure pathways to on-site contamination are by ingestion, dermal, or inhalation exposure by on-site workers during the remedial action. During the remedial action, on-site exposure pathways will be eliminated by preventing access to the site and through implementation of soil/materials management, stormwater pollution prevention, dust controls, employment of a community air monitoring plan, and implementation of a Construction Health and Safety Plan (CHASP).

#### *Proposed Future Conditions*

Under future remediated conditions, the site will be fully capped, limiting potential direct exposure to soil and groundwater remaining in place, and the ventilated parking garage will prevent potential for inhalation via soil vapor intrusion. There are no plausible off-site pathways for oral, inhalation, or dermal exposure to contaminants derived from the site.

### **Overall Human Health Exposure Assessment**

Complete on-site exposure pathways appear to be present only during the construction and remediation phase. During the remedial action, on-site exposure pathways will be eliminated by: preventing access to the site; through implementation of soil/materials management, stormwater pollution prevention, and dust controls; employment of a community air monitoring plan; and, implementation of a CHASP.

Investigations reported in the Remedial Investigation Report (RIR) are sufficient to complete a Qualitative Human Health Exposure Assessment (QHHEA).

## **5.0 REMEDIAL ACTION MANAGEMENT**

### **5.1 Project Organization and oversight**

Principal personnel who will participate in the remedial action include Craig Werle, Principal Hydrogeologist, who will be the QEP and Charles McGuckin, Principal Engineer who will be the professional engineer.

### **5.2 Site Security**

Site access will be controlled by construction fencing.

### **5.3 Work Hours**

The general hours for operation of remedial construction will be from 7 am to 3 pm however specific circumstances may require short term modification to these hours as needed. These hours conform to the New York City Department of Buildings construction code requirements.

### **5.4 Construction Health and Safety Plan**

The Construction Health and Safety Plan is included in Appendix 4. The Site Safety Coordinator will be provided by the Remedial Contractor. Remedial work performed under this RAWP will be in full compliance with applicable health and safety laws and regulations, including Site and OSHA worker safety requirements and HAZWOPER requirements. Confined space entry, if any, will comply with OSHA requirements and industry standards and will address potential risks. The parties performing the remedial construction work will ensure that performance of work is in compliance with the HASP and applicable laws and regulations. The HASP pertains to remedial and invasive work performed at the Site until the issuance of the Notice of Completion.

All field personnel involved in remedial activities will participate in training required under 29 CFR 1910.120, including 40-hour hazardous waste operator training and annual 8-hour refresher training. The Site Safety Officer will be responsible for maintaining workers training records.

Personnel entering any exclusion zone will be trained in the provisions of the HASP and be required to sign an HASP acknowledgment. Site-specific training will be provided to field

personnel. Additional safety training may be added depending on the tasks performed. Emergency telephone numbers will be posted at the site location before any remedial work begins. A safety meeting will be conducted before each shift begins. Topics to be discussed include task hazards and protective measures (physical, chemical, environmental); emergency procedures; PPE levels and other relevant safety topics. Meetings will be documented in a log book or specific form.

An emergency contact sheet with names and phone numbers is included in the HASP. That document will define the specific project contacts for use in case of emergency.

### **5.5 Community Air Monitoring Plan**

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

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

### **VOC Monitoring, Response Levels, and Actions**

Volatile organic compounds (VOCs) will be monitored at the downwind perimeter of the immediate work area (i.e., the exclusion zone) on a continuous basis during invasive work.

Upwind concentrations will be measured at the start of each workday and periodically thereafter to establish background conditions. The monitoring work will be performed using equipment appropriate to measure the types of contaminants known or suspected to be present. The equipment will be calibrated at least daily for the contaminant(s) of concern or for an appropriate surrogate. The equipment will be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below.

- If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 parts per million (ppm) above background for the 15-minute average, work activities will be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities will resume with continued monitoring.
- If total organic vapor levels at the downwind perimeter of the work area or exclusion zone persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities will be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities will resume provided that the total organic vapor level 200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less - but in no case less than 20 feet, is below 5 ppm over background for the 15-minute average.
- If the organic vapor level is above 25 ppm at the perimeter of the work area, activities will be shutdown.

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

### **Particulate Monitoring, Response Levels, and Actions**

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

- If the downwind PM-10 particulate level is 100 micrograms per cubic meter ( $\text{mcg}/\text{m}^3$ ) greater than background (upwind perimeter) for the 15-minute period or if airborne dust

is observed leaving the work area, then dust suppression techniques will be employed. Work will continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 mcg/m<sup>3</sup> above the upwind level and provided that no visible dust is migrating from the work area.

- If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 mcg/m<sup>3</sup> above the upwind level, work will be stopped and a re-evaluation of activities initiated. Work will resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 mcg/m<sup>3</sup> of the upwind level and in preventing visible dust migration.

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

## **5.6 Agency Approvals**

All permits or government approvals required for remedial construction have been or will be obtained prior to the start of remedial construction. Approval of this RAWP by OER does not constitute satisfaction of these requirements and will not be a substitute for any required permit.

## **5.7 Site Preparation**

### **Pre-Construction Meeting**

OER will be invited to attend the pre-construction meeting at the Site with all parties involved in the remedial process prior to the start of remedial construction activities.

### **Mobilization**

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

### **Utility Marker Layouts, Easement Layouts**

The presence of utilities and easements on the Site will be fully investigated prior to the performance of invasive work such as excavation or drilling under this plan by using, at a minimum, the One-Call System (811). Underground utilities may pose an electrocution,

explosion, or other hazard during excavation or drilling activities. All invasive activities will be performed in compliance with applicable laws and regulations to assure safety. Utility companies and other responsible authorities will be contacted to locate and mark the locations, and a copy of the Markout Ticket will be retained by the contractor prior to the start of drilling, excavation or other invasive subsurface operations. Overhead utilities may also be present within the anticipated work zones. Electrical hazards associated with drilling in the vicinity of overhead utilities will be prevented by maintaining a safe distance between overhead power lines and drill rig masts.

Proper safety and protective measures pertaining to utilities and easements, and compliance with all laws and regulations will be employed during invasive and other work contemplated under this RAWP. The integrity and safety of on-Site and off-Site structures will be maintained during all invasive, excavation or other remedial activity performed under the RAWP.

### **Dewatering**

At present, intrusive work planned for the Site will take place above the observed groundwater table. Dewatering will not be required during the remedial construction or redevelopment of the Site.

### **Equipment and Material Staging**

Equipment and materials will be stored and staged in a manner that complies with applicable laws and regulations. The location of proposed equipment and material staging areas, truck inspection station, stockpile areas, and other pertinent remedial management features is to be determined and will be provided by the Remedial Contractor.

### **Stabilized Construction Entrance**

Steps will be taken to ensure that trucks departing the site will not track soil, fill or debris off-Site. Such actions may include use of cleaned asphalt or concrete roads or use of stone or other aggregate-based egress paths between the truck inspection station and the property exit. Measures will be taken to ensure that adjacent roadways will be kept clean of project related soils, fill and debris.

## **Truck Inspection Station**

An outbound-truck inspection station will be set up close to the Site exit. Before exiting the NYC BCP Site, trucks will be required to stop at the truck inspection station and will be examined for evidence of contaminated soil on the undercarriage, body, and wheels. Soil and debris will be removed. Brooms, shovels and potable water will be utilized for the removal of soil from vehicles and equipment, as necessary.

## **5.8 Traffic Control**

Drivers of trucks leaving the NYC BCP Site with soil/fill will be instructed to proceed without stopping in the vicinity of the site to prevent neighborhood impacts. The planned route on local roads for trucks leaving the site is West 230<sup>th</sup> Street to the Major Deegan Expressway.

## **5.9 Demobilization**

Demobilization will include:

- As necessary, restoration of temporary access areas and areas that may have been disturbed to accommodate support areas (e.g., staging areas, decontamination areas, storage areas, temporary water management areas, and access area);
- Removal of sediment from erosion control measures and truck wash and disposal of materials in accordance with applicable laws and regulations;
- Equipment decontamination; and
- General refuse disposal.

Equipment will be decontaminated and demobilized at the completion of all field activities. Investigation equipment and large equipment (e.g., soil excavators) will be washed at the truck inspection station as necessary. In addition, all investigation and remediation derived waste will be appropriately disposed.

## **5.10 Reporting and Record Keeping**

### **Daily Reports**

Daily reports providing a general summary of activities for each day of *active remedial work* will be emailed to the OER Project Manager by the end of the following day. Those reports will include:

- Project number and statement of the activities and an update of progress made and locations of work performed;
- Quantities of material imported and exported from the Site;
- Status of on-Site soil/fill stockpiles;
- A summary of all citizen complaints, with relevant details (basis of complaint; actions taken; etc.);
- A summary of CAMP excursions, if any; and
- Photograph of notable Site conditions and activities.

The frequency of the reporting period may be revised in consultation with OER project manager based on planned project tasks. Daily email reports are not intended to be the primary mode of communication for notification to OER of emergencies (accidents, spills), requests for changes to the RAWP or other sensitive or time critical information. However, such information will be included in the daily reports. Emergency conditions and changes to the RAWP will be communicated directly to the OER project manager by personal communication. Daily reports will be included as an Appendix in the Remedial Action Report.

### **Record Keeping and Photo-Documentation**

Job-site record keeping for all remedial work will be performed. These records will be maintained on-Site during the project and will be available for inspection by OER staff. Representative photographs will be taken of the Site prior to any remedial activities and during major remedial activities to illustrate remedial program elements and contaminant source areas. Photographs will be submitted at the completion of the project in the RAR in digital format (i.e., jpeg files).

### **5.11 Complaint Management**

All complaints from citizens will be promptly reported to OER. Complaints will be addressed and outcomes will also be reported to OER in daily reports. Notices to OER will include the nature of the complaint, the party providing the complaint, and the actions taken to resolve any problems.

### **5.12 Deviations from the Remedial Action Work Plan**

All changes to the RAWP will be reported to the OER Project Manager and will be documented in daily reports and reported in the Remedial Action Report. The process to be followed if there are any deviations from the RAWP will include a request for approval for the change from OER noting the following:

- Reasons for deviating from the approved RAWP;
- Effect of the deviations on overall remedy; and
- Determination that the remedial action with the deviation(s) is protective of public health and the environment.

### **5.13 Data Usability Summary Report**

The primary objective of a Data Usability Summary Report (DUSR) is to determine whether or not data meets the site specific criteria for data quality and data use. The DUSR provides an evaluation of analytical data without third party data validation. The DUSR for post-remedial samples collected during implementation of this RAWP will be included in the Remedial Action Report (RAR).

## **6.0 REMEDIAL ACTION REPORT**

A Remedial Action Report (RAR) will be submitted to OER following implementation of the remedial action defined in this RAWP. The RAR will document that the remedial work required under this RAWP has been completed and has been performed in compliance with this plan. The RAR will include:

- Information required by this RAWP.
- As-built drawings for all constructed remedial elements, required certifications, manifests and other written and photographic documentation of remedial work performed under this remedy.
- Site Management Plan.
- Description of any changes in the remedial action from the elements provided in this RAWP and associated design documents.
- Tabular summary of all end point sampling results and all material characterization results, QA/QC results for end-point sampling, and other sampling and chemical analysis performed as part of the remedial action and DUSR.
- Test results or other evidence demonstrating that remedial systems are functioning properly.
- Account of the source area locations and characteristics of all contaminated material removed from the Site including a map showing source areas.
- Account of the disposal destination of all contaminated material removed from the Site. Documentation associated with disposal of all material will include transportation and disposal records, and letters approving receipt of the material.
- Account of the origin and required chemical quality testing for material imported onto the Site.
- Recorded Declaration of Covenants and Restrictions.
- Reports and supporting material will be submitted in digital form.

## **Remedial Action Report Certification**

The following certification will appear in front of the Executive Summary of the Remedial Action Report. The certification will include the following statements:

*I, Charles J. McGuckin, P.E., am currently a professional engineer licensed by the State of New York. I had primary direct responsibility for implementation of the remedial program for the Broadway Plaza Site No. 12CVCP 062X.*

*I, Craig A. Werle, P.G., am a qualified Environmental Professional. I had primary direct responsibility for implementation remedial program for the Broadway Plaza Site No. 12CVCP 062X.*

*I certify that the OER-approved Remedial Action Work Plan dated month day year and Stipulations in a letter dated month day, year; if any were implemented and that all requirements in those documents have been substantively complied with. I certify that contaminated soil, fill, liquids or other material from the property were taken to facilities licensed to accept this material in full compliance with applicable laws and regulations.*

## 7.0 SCHEDULE

The table below presents a schedule for the proposed remedial action and reporting. If the schedule for remediation and development activities changes, it will be updated and submitted to OER. Currently, a one month remediation period is anticipated.

<b>Schedule Milestone</b>	<b>Weeks from Remedial Action Start</b>	<b>Duration (weeks)</b>
OER Approval of RAWP	0	-
Fact Sheet 2 announcing start of remedy	0	-
Mobilization	1	1
Remedial Excavation	5	4
Demobilization	6	1
Record Declaration of Covenants and Restrictions	10	4
Submit Remedial Action Report	14	4

# APPENDIX 1

## CITIZEN PARTICIPATION PLAN

The NYC Office of Environmental Remediation and Equity One (Northeast Portfolio) Inc. (Equity One) have established this Citizen Participation Plan because the opportunity for citizen participation is an important component of the NYC Brownfield Cleanup Program. This Citizen Participation Plan describes how information about the project will be disseminated to the Community during the remedial process. As part of its obligations under the NYC BCP, Equity One will maintain a repository for project documents and provide public notice at specified times throughout the remedial program. This Plan also takes into account potential environmental justice concerns in the community that surrounds the project Site.

Under this Citizen Participation Plan, project documents and work plans are made available to the public in a timely manner. Public comment on work plans is strongly encouraged during public comment periods. Work plans are not approved by the NYC Office of Environmental Remediation (OER) until public comment periods have expired and all comments are formally reviewed. An explanation of cleanup plans in the form of a public meeting or informational session is available upon request to OER's project manager assigned to this Site, Shaminder Chawla, who can be contacted about these issues or any others questions, comments or concerns that arise during the remedial process at (212) 788-8841.

**Project Contact List.** OER has established a Site Contact List for this project to provide public notices in the form of fact sheets to interested members of the Community. Communications will include updates on important information relating to the progress of the cleanup program at the Site as well as to request public comments on the cleanup plan. The Project Contact List includes owners and occupants of adjacent buildings and homes, principal administrators of nearby schools, hospitals and day care centers, the public water supplier that serves the area, established document repositories, the representative Community Board, City Council members, other elected representatives and any local Brownfield Opportunity Area (BOA) grantee organizations. Any member of the public or organization will be added to the Site Contact List on request. A copy of the Site Contact List is maintained by OER's project

manager. If you would like to be added to the Project Contact List, contact NYC OER at (212) 788-8841 or by email at [brownfields@cityhall.nyc.gov](mailto:brownfields@cityhall.nyc.gov).

**Repositories.** A document repository is maintained in the nearest public library that maintains evening and weekend hours. This document repository is intended to house, for community review, all principal documents generated during the cleanup program including Remedial Investigation plans and reports, Remedial Action work plans and reports, and all public notices and fact sheets produced during the lifetime of the remedial project. Equity One will inspect the repositories to ensure that they are fully populated with project information. The repository for this project is:

New York Public Library - Kingsbridge Library  
291 West 231<sup>st</sup> Street, Bronx, New York 10463  
(718) 548-5656

Repository Hours of Operation:

<b>Monday</b>	<b>Tuesday</b>	<b>Wednesday</b>	<b>Thursday</b>	<b>Friday</b>	<b>Saturday</b>	<b>Sunday</b>
11:00 AM - 7:00 PM	10:00 AM - 6:00 PM	11:00 AM - 7:00 PM	10:00 AM - 6:00 PM	10:00 AM - 5:00 PM	10:00 AM - 5:00 PM	CLOSED

**Digital Documentation.** NYC OER strongly encourages the use of digital documents in repositories as a means of minimizing paper use while also increasing convenience in access and ease of use.

**Public Notice and Public Comment.** Public notice to all members of the Project Contact List is required at three major steps during the performance of the cleanup program (listed below) and at other points that may be required by OER. Notices will include Fact Sheets with descriptive project summaries, updates on recent and upcoming project activities, repository information, and important phone and email contact information. All notices will be prepared by Equity One, reviewed and approved by OER prior to distribution and mailed by Equity One. Public comment is solicited in public notices for all work plans developed under the NYC Brownfield Cleanup Program. Final review of all work plans by OER will consider all public comments. Approval will not be granted until the public comment period has been completed.

**Citizen Participation Milestones.** Public notice and public comment activities occur at several steps during a typical NYC BCP project. See flow chart on the following page, which identifies when during the NYC BCP public notices are issued. These steps include:

- **Public Notice of the availability of the Remedial Investigation Report and Remedial Action Work Plan and a 30-day public comment period on the Remedial Action Work Plan.**

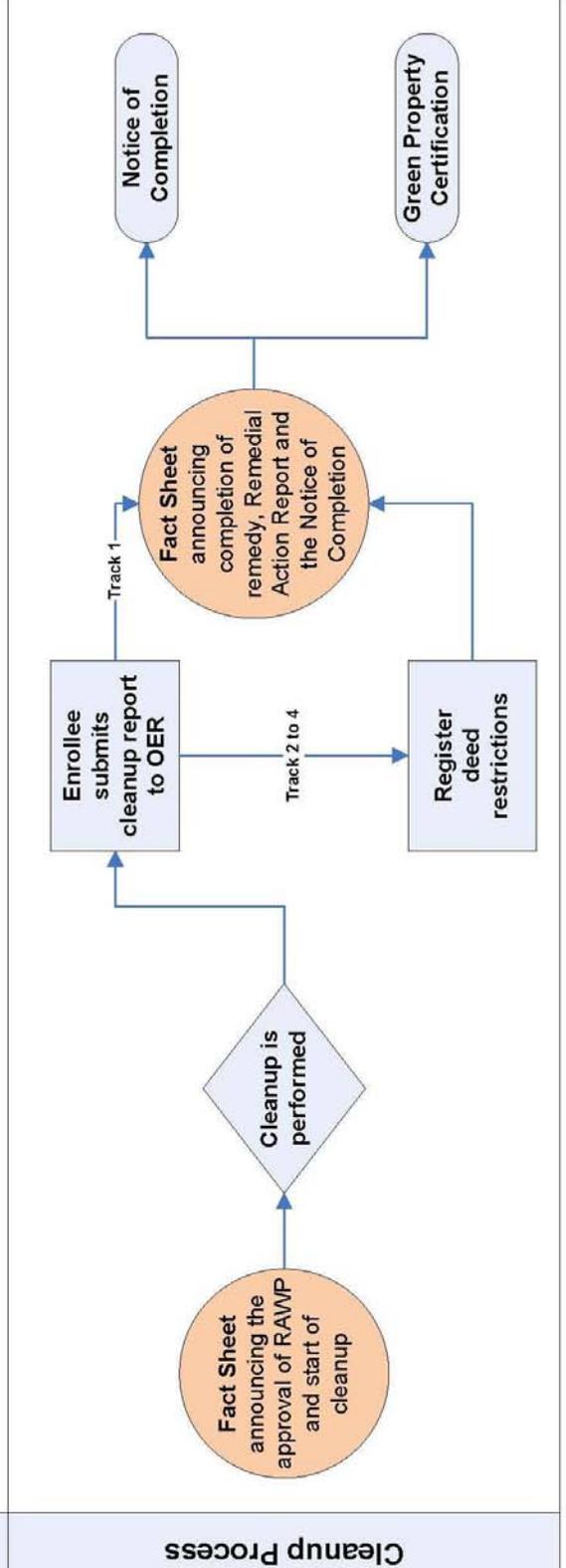
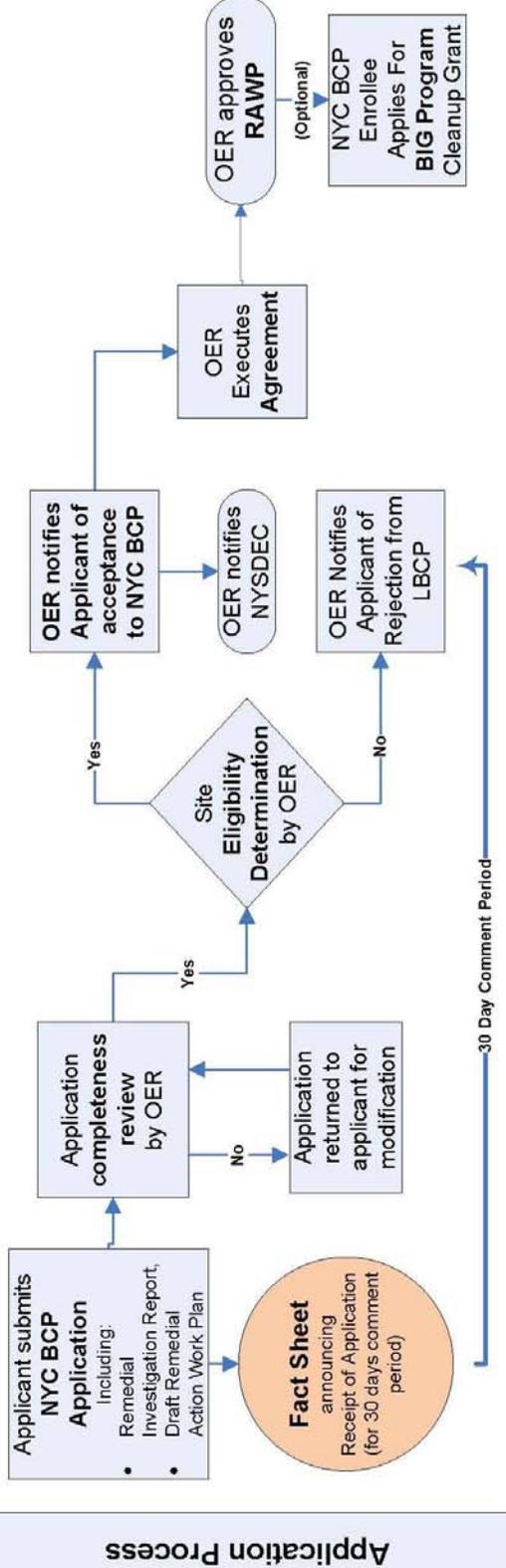
Public notice in the form of a Fact Sheet is sent to all parties listed on the Site Contact List announcing the availability of the Remedial Investigation Report and Remedial Action Work Plan and the initiation of a 30-day public comment period on the Remedial Action Work Plan. The Fact Sheet summarizes the findings of the RIR and provides details of the RAWP. The public comment period will be extended an additional 15 days upon public request. A public meeting or informational session will be conducted by OER upon request.

- **Public Notice announcing the approval of the RAWP and the start of remediation.**

Public notice in the form of a Fact Sheet is sent to all parties listed on the Site Contact List announcing the approval of the RAWP and the start of remediation.

- **Public Notice announcing the completion of remediation, designation of Institutional and Engineering Controls and issuance of the Notice of Completion.**
- **Public notice in the form of a Fact Sheet is sent to all parties listed on the Site Contact List announcing the completion of remediation, providing a list of all Institutional and Engineering Controls implemented for to the Site and announcing the issuance of the Notice of Completion.**

# Flow Chart For NYC Brownfield Cleanup Program (NYC BCP)



## APPENDIX 2

### SUSTAINABILITY STATEMENT

This Sustainability Statement documents sustainable activities and green remediation efforts planned under this remedial action.

**Reuse of Clean, Recyclable Materials.** Reuse of clean, locally-derived recyclable materials reduces consumption of non-renewable virgin resources and can provide energy savings and greenhouse gas reduction.

An estimate of the quantity (in tons) of clean, non-virgin materials (reported by type of material) reused under this plan will be quantified and reported in the RAR.

**Reduce Consumption of Virgin and Non-Renewable Resources.** Reduced consumption of virgin and non-renewable resources lowers the overall environmental impact of the project on the region by conserving these resources.

An estimate of the quantity (in tons) of virgin and non-renewable resources, the use of which will be avoided under this plan, will be quantified and reported in the RAR.

**Reduced Energy Consumption and Promotion of Greater Energy Efficiency.** Reduced energy consumption lowers greenhouse gas emissions, improves local air quality, lessens in-city power generation requirements, can lower traffic congestion, and provides substantial cost savings.

The selection of the disposal facility for the excavated soil will be based on proximity to the Site to reduce the fuel usage of the transportation vehicles.

Best efforts will be made to quantify energy efficiencies achieved during the remediation and will be reported in the Remedial Action Report (RAR). Where energy savings cannot be easily quantified, a gross indicator of the amount of energy saved or the means by which energy savings was achieved will be reported.

**Recontamination Control.** Recontamination after cleanup and redevelopment is completed undermines the value of work performed, may result in a property that is less protective of public health or the environment, and may necessitate additional cleanup work later or impede future

redevelopment. Recontamination can arise from future releases that occur within the property or by influx of contamination from off-Site.

This project includes the installation of a parking garage with a mechanical ventilation system that will eliminate the risk of future migration of soil vapor contamination from off-Site sources.

An estimate of the area of the Site that utilizes recontamination controls under this plan will be reported in the RAR in square feet.

**Storm-water Retention.** Storm-water retention improves water quality by lowering the rate of combined storm-water and sewer discharges to NYC's sewage treatment plants during periods of precipitation, and reduces the volume of untreated influent to local surface waters.

An estimate of the enhanced storm-water retention capability of the redevelopment project will be included in the RAR.

**Paperless Brownfield Cleanup Program.** Equity One is participating in OER's Paperless Brownfield Cleanup Program. Under this program, submission of electronic documents will replace submission of hard copies for the review of project documents, communications and milestone reports.

**Low-Energy Project Management Program.** Equity One is participating in OER's low-energy project management program. Under this program, whenever possible, meetings are held using remote communication technologies, such as videoconferencing and teleconferencing to reduce energy consumption and traffic congestion associated with personal transportation.

# APPENDIX 3

## SOIL/MATERIALS MANAGEMENT PLAN

### 1.1 Soil Screening Methods

Visual, olfactory and PID soil screening and assessment will be performed under the supervision of a Qualified Environmental Professional and will be reported in the RAR. Soil screening will be performed during invasive work performed during the remedy and development phases prior to issuance of the Notice of Completion.

### 1.2 Stockpile Methods

Excavated soil from suspected areas of contamination (e.g., hot spots, USTs, drains, etc.) will be stockpiled separately and will be segregated from clean soil and construction materials. Stockpiles will be used only when necessary and will be removed as soon as practicable. While stockpiles are in place, they will be inspected daily, and before and after every storm event. Results of inspections will be recorded in a logbook and maintained at the Site and available for inspection by OER. Excavated soils will be stockpiled on, at minimum, double layers of 8-mil minimum sheeting, will be kept covered at all times with appropriately anchored plastic tarps, and will be routinely inspected. Broken or ripped tarps will be promptly replaced.

All stockpile activities will be compliant with applicable laws and regulations. Soil stockpile areas will be appropriately graded to control run-off in accordance with applicable laws and regulations. Stockpiles of excavated soils and other materials shall be located at least of 50 feet from the property boundaries, where possible. Hay bales or equivalent will surround soil stockpiles except for areas where access by equipment is required. Silt fencing and hay bales will be used as needed near catch basins, surface waters and other discharge points.

### 1.3 Characterization of Excavated Materials

Soil/fill or other excavated media that is transported off-Site for disposal will be sampled in a manner required by the receiving facility, and in compliance with applicable laws and regulations. Soils proposed for reuse on-Site will be managed as defined in this plan.

## **1.4 Materials Excavation, Load-Out and Departure**

The PE/QEP overseeing the remedial action will:

- oversee remedial work and the excavation and load-out of excavated material;
- ensure that there is a party responsible for the safe execution of invasive and other work performed under this work plan;
- ensure that Site development activities and development-related grading cuts will not interfere with, or otherwise impair or compromise the remedial activities proposed in this RAWP;
- ensure that the presence of utilities and easements on the Site has been investigated and that any identified risks from work proposed under this plan are properly addressed by appropriate parties;
- ensure that all loaded outbound trucks are inspected and cleaned if necessary before leaving the Site; and
- ensure that all egress points for truck and equipment transport from the Site will be kept clean of Site-derived materials during Site remediation.

Locations where vehicles exit the Site shall be inspected daily for evidence of soil tracking off premises. Cleaning of the adjacent streets will be performed as needed to maintain a clean condition with respect to Site-derived materials.

Open and uncontrolled mechanical processing of historical fill and contaminated soil on-Site will not be performed without prior OER approval.

## **1.5 Off-Site Materials Transport**

Loaded vehicles leaving the Site will comply with all applicable materials transportation requirements (including appropriate covering, manifests, and placards) in accordance with applicable laws and regulations, including use of licensed haulers in accordance with 6 NYCRR Part 364. If loads contain wet material capable of causing leakage from trucks, truck liners will be used. Queuing of trucks will be performed on-Site, when possible in order to minimize off Site disturbance. Off-Site queuing will be minimized.

Outbound truck transport routes are via West 230<sup>th</sup> Street and the Major Deegan Expressway. This routing takes into account the following factors: (a) limiting transport through residential areas and past sensitive sites; (b) use of mapped truck routes; (c) minimizing off-Site

queuing of trucks entering the facility; (d) limiting total distance to major highways; (e) promoting safety in access to highways; and (f) overall safety in transport. To the extent possible, all trucks loaded with Site materials will travel from the Site using these truck routes. Trucks will not stop or idle in the neighborhood after leaving the project Site.

## **1.6 Materials Disposal Off-Site**

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

The Remedial Action Report will include an itemized account of the destination of all material removed from the Site during this remedial action. Documentation associated with disposal of all material will include records and approvals for receipt of the material. This information will be presented in the RAR.

All impacted soil/fill or other waste excavated and removed from the Site will be managed as regulated material and will be disposed in accordance with applicable laws and regulations. Historic fill and contaminated soils taken off-Site will be handled as solid waste and will not be disposed at a Part 360-16 Registration Facility (also known as a Soil Recycling Facility).

Waste characterization will be performed for off-Site disposal in a manner required by the receiving facility and in conformance with its applicable permits. Waste characterization sampling and analytical methods, sampling frequency, analytical results and QA/QC will be reported in the RAR. A manifest system for off-Site transportation of exported materials will be employed. Manifest information will be reported in the RAR. Hazardous wastes derived from

on-Site will be stored, transported, and disposed of in compliance with applicable laws and regulations.

If disposal of soil/fill from this Site is proposed for unregulated disposal (i.e., clean soil removed for development purposes), including transport to a Part 360-16 Registration Facility, a formal request will be made for approval by OER with an associated plan compliant with 6NYCRR Part 360-16. This request and plan will include the location, volume and a description of the material to be recycled, including verification that the material is not impacted by site uses and that the material complies with receipt requirements for recycling under 6NYCRR Part 360. This material will be appropriately handled on-Site to prevent mixing with impacted material.

### **1.7 Materials Reuse On-Site**

Soil and fill are not planned for reuse during redevelopment of the Site.

### **1.8 Demarcation**

After completion of hotspot removal and any other invasive remedial activities, and prior to backfilling, the top of the residual soil/fill will be defined by one of three methods: (1) placement of a demarcation layer. The demarcation layer will consist of geosynthetic fencing or equivalent material to be placed on the surface of residual soil/fill to provide an observable reference layer. A description or map of the approximate depth of the demarcation layer will be provided in the SMP; or (2) a land survey of the top elevation of residual soil/fill before the placement of cover soils, pavement and associated sub-soils, or other materials or structures or, (3) all materials beneath the approved cover will be considered impacted and subject to site management after the remedy is complete. Demarcation may be established by one or any combination of these three methods. As appropriate, a map showing the method of demarcation for the Site and all associated documentation will be presented in the RAR.

This demarcation will constitute the top of the site management horizon. Materials within this horizon require adherence to special conditions during future invasive activities as defined in the Site Management Plan.

## **1.9 Import of Backfill Soil from Off-Site Sources**

This Section presents the requirements for imported fill materials to be used below the cover layer and within the clean soil cover layer. All imported soils will meet OER-approved backfill and cover soil quality objectives for this Site. The backfill and cover soil quality objectives are listed in Table 1.

A process will be established to evaluate sources of backfill and cover soil to be imported to the Site, and will include an examination of source location, current and historical use(s), and any applicable documentation. Material from industrial sites, spill sites, environmental remediation sites or other potentially contaminated sites will not be imported to the Site.

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

- Clean soil from construction projects at non-industrial sites in compliance with applicable laws and regulations;
- Clean soil from roadway or other transportation-related projects in compliance with applicable laws and regulations; and
- Clean recycled concrete aggregate (RCA) from facilities permitted or registered by the regulations of NYS DEC.

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

### **Source Screening and Testing**

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

- Trucks with imported fill material will be in compliance with applicable laws and regulations and will enter the Site at designated locations;

- The PE/QEP is responsible to ensure that every truck load of imported material is inspected for evidence of contamination; and
- Fill material will be free of solid waste including pavement materials, debris, stumps, roots, and other organic matter, as well as ashes, oil, perishables or foreign matter.

Composite samples of imported material will be taken at a minimum frequency of one sample for every 500 cubic yards of material. Once it is determined that the fill material meets imported backfill or cover soil chemical requirements and is non-hazardous, and lacks petroleum contamination, the material will be loaded onto trucks for delivery to the Site.

Recycled concrete aggregate (RCA) will be imported from facilities permitted or registered by NYSDEC. Facilities will be identified in the RAR. A PE/QEP is responsible to ensure that the facility is compliant with 6NYCRR Part 360 registration and permitting requirements for the period of acquisition of RCA. RCA imported from compliant facilities will not require additional testing, unless required by NYSDEC under its terms for operation of the facility. RCA imported to the Site must be derived from recognizable and uncontaminated concrete. RCA material is not acceptable for, and will not be used as cover material.

## **1.10 Fluids Management**

All liquids to be removed from the Site, including dewatering fluids, will be handled, transported and disposed in accordance with applicable laws and regulations. Liquids discharged into the New York City sewer system will receive prior approval by New York City Department of Environmental Protection (NYC DEP). The NYC DEP regulates discharges to the New York City sewers under Title 15, Rules of the City of New York Chapter 19. Discharge to the New York City sewer system will require an authorization and sampling data demonstrating that the groundwater meets the City's discharge criteria. The dewatering fluid will be pretreated as necessary to meet the NYC DEP discharge criteria. If discharge to the City sewer system is not appropriate, the dewatering fluids will be managed by transportation and disposal at an off-Site treatment facility.

Discharge of water generated during remedial construction to surface waters (i.e., a stream or river) is prohibited without a SPDES permit issued by New York State Department of Environmental Conservation.

### **1.11 Storm-water Pollution Prevention**

Applicable laws and regulations pertaining to storm-water pollution prevention will be addressed during the remedial program. Erosion and sediment control measures identified in this RAWP (silt fences and barriers, and hay bale checks) will be installed around the entire perimeter of the remedial construction area and inspected once a week and after every storm event to ensure that they are operating appropriately. Discharge locations will be inspected to determine whether erosion control measures are effective in preventing significant impacts to receptors. Results of inspections will be recorded in a logbook and maintained at the Site and available for inspection by OER. All necessary repairs shall be made immediately. Accumulated sediments will be removed as required to keep the barrier and hay bale check functional. Undercutting or erosion of the silt fence toe anchor will be repaired immediately with appropriate backfill materials. Manufacturer's recommendations will be followed for replacing silt fencing damaged due to weathering.

### **1.12 Contingency Plan**

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

## **1.13 Odor, Dust and Nuisance Control**

### **Odor Control**

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

This odor control plan is capable of controlling emissions of nuisance odors. If nuisance odors are identified, work will be halted and the source of odors will be identified and corrected. Work will not resume until all nuisance odors have been abated. OER will be notified of all odor complaint events. Implementation of all odor controls, including halt of work, will be the responsibility of the PE/QEP's certifying the Remedial Action Report.

### **Dust Control**

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

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

This dust control plan is capable of controlling emissions of dust. If nuisance dust emissions are identified, work will be halted and the source of dusts will be identified and corrected. Work will not resume until all nuisance dust emissions have been abated. OER will be notified of all dust complaint events. Implementation of all dust controls, including halt of work, will be the responsibility of the PE/QEP's responsible for certifying the Remedial Action Report.

**Other Nuisances**

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

Rodent control will be provided, during Site clearing and grubbing, and during the remedial program, as necessary, to prevent nuisances.

# **APPENDIX 4**

## **HEALTH AND SAFETY PLAN**

April 30, 2012

## HEALTH AND SAFETY PLAN

189 West 230th Street  
Bronx, New York

*Prepared for*

**EQUITY ONE (NORTHEAST PORTFOLIO) INC.**  
410 Park Avenue, 12th Floor  
New York, New York 10022

**ROUX ASSOCIATES, INC.**

*Environmental Consulting & Management*

---



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

## TABLE OF CONTENTS

---

APPROVALS.....	iv
1.0 INTRODUCTION .....	1
1.1 Scope of Work.....	2
1.2 Emergency Numbers.....	2
1.2.1 Emergency Phone Numbers.....	2
1.2.2 Project Management/Health and Safety Personnel.....	3
1.2.3 Other Important Phone Numbers.....	3
1.2.4 Directions to New York Presbyterian Hospital.....	3
2.0 HEALTH AND SAFETY STAFF.....	4
2.1 Project Principal (PP) – Craig Werle – Roux Associates.....	4
2.2 Corporate Health and Safety Manager (CHSM) – Joe Gentile – Roux Associates.....	4
2.3 Site Safety and Health Officer (SSO) – Joseph Gavin – Roux Associates.....	4
2.4 Field Personnel and Subcontractors.....	5
3.0 SITE LOCATION, DESCRIPTION, AND HISTORY.....	6
3.1 Property Location and Description.....	6
4.0 WASTE DESCRIPTION/CHARACTERIZATION.....	7
4.1 General.....	7
4.2 Chemical Data Sheets.....	7
4.2.1 Contaminants of Concern.....	7
5.0 HAZARD ASSESSMENT.....	9
5.1 Chemical Hazards.....	9
5.1.1 Exposure Pathways.....	10
5.1.2 Operational Action Levels.....	10
5.1.3 Additional Precautions.....	10
5.2 Physical Hazards.....	10
5.2.1 Noise.....	11
5.2.2 Heat Stress.....	11
5.2.3 Cold Stress.....	13
5.2.4 Asbestos.....	13
5.2.5 Structural Integrity.....	14
5.2.6 Lockout/Tagout.....	14
5.3 Biological Hazards.....	14
5.3.1 Insect Stings.....	15
5.3.2 Animals and Animal Wastes.....	15
5.3.3 Mold.....	16
5.3.4 Bloodborne Pathogens.....	17
5.4 Hazard Assessment.....	18
6.0 TRAINING.....	19
6.1 General Health and Safety Training.....	19
6.2 Annual Eight-Hour Refresher Training.....	19
6.3 Site-Specific Training.....	19
6.4 Onsite Safety Meetings.....	20

## TABLE OF CONTENTS

(Continued)

6.5 First Aid and CPR .....	20
6.6 Additional Training .....	20
6.7 Subcontractor Training .....	20
7.0 MEDICAL SURVEILLANCE PROCEDURES.....	21
7.1 General.....	21
8.0 SITE CONTROL, PERSONAL PROTECTIVE EQUIPMENT, AND COMMUNICATIONS .....	22
8.1 Site Control.....	22
8.1.1 Support Zone.....	22
8.1.2 Contamination Reduction Zone .....	23
8.1.3 Exclusion Zone .....	23
8.2 Personal Protective Equipment.....	23
8.2.1 General.....	23
8.2.2 Personal Protective Equipment Specifications .....	24
8.2.3 Initial Levels of Protection.....	26
8.3 Communications .....	26
9.0 MONITORING PROCEDURES.....	27
9.1 General.....	27
9.2 Exclusion Zone Monitoring .....	27
9.2.1 Instrumentation .....	27
9.2.2 Action Levels .....	28
9.2.3 Monitoring During Field Activities .....	28
10.0 SAFETY CONSIDERATIONS .....	29
10.1 General.....	29
10.2 Traffic Control .....	30
10.3 Sample Handling.....	30
11.0 DECONTAMINATION AND DISPOSAL PROCEDURES.....	31
11.1 Contamination Prevention.....	31
11.2 Personnel Decontamination .....	31
11.3 Equipment Decontamination.....	32
11.4 Decontamination during Medical Emergencies .....	32
11.5 Disposal Procedures.....	32
12.0 EMERGENCY PLAN .....	34
12.1 Evacuation.....	34
12.2 Personnel Injury .....	35
12.3 Accident/Incident Reporting .....	35
12.4 Personnel Exposure.....	36
12.5 Adverse Weather Conditions.....	36
13.0 LOGS, REPORTS AND RECORD KEEPING.....	38
13.1 Medical and Training Records.....	38

## TABLE OF CONTENTS

---

(Continued)

13.2 Onsite Log.....	38
13.3 Exposure Records .....	38
13.4 Accident/Incident Reports.....	38
13.5 OSHA Form 300 .....	38
13.6 Daily Safety Logs .....	39
13.7 Weekly Safety Reports.....	39
13.8 Close-Out Safety Report.....	39
14.0 FIELD TEAM REVIEW .....	40

### TABLES

1. Toxicological, Physical and Chemical Properties of Compounds Potentially Present at the Site
2. Action Levels for Worker Breathing Zone

### FIGURES

1. Site Location Map
2. Hospital Route Map

### APPENDICES

- A. Activity Hazard Analysis and Material Safety Data Sheets
- B. Heat and Cold Stress Guidelines
- C. Medical Data Form
- D. Community Air Monitoring Plan
- E. Health and Safety Briefing/Tailgate Meeting Form
- F. Accident Report and Investigation Form
- G. Acord Form
- H. OSHA 300
- I. Weekly Safety Report
- J. Job Safety and Health Protection Poster

**APPROVALS**

By their signature, the undersigned certify that this Health and Safety Plan (HASP) is approved and will be utilized at the project site located at 900 Old Country Road, Garden City, New York.



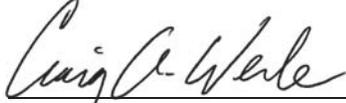
\_\_\_\_\_  
Joseph Gentile  
Corporate Health and Safety Manager  
Roux Associates, Inc.

\_\_\_\_\_  
Date



\_\_\_\_\_  
Joseph Gavin  
Site Health and Safety Officer  
Roux Associates, Inc.

\_\_\_\_\_  
Date



\_\_\_\_\_  
Craig Werle  
Project Principal  
Roux Associates, Inc.

\_\_\_\_\_  
Date

Note: This HASP was updated April 30, 2012.

## **1.0 INTRODUCTION**

This Site-specific and Safety Plan (HASP) has been prepared in accordance with 29 CFR 1910.120 Occupational Safety and Health Administration (OSHA) Hazardous Waste Operations and Emergency Response (HAZWOPER) and Roux Associates, Inc. (Roux Associates) Standard Operating Procedures (SOPs). It addresses all activities to be performed during the implementation of Remedial Investigation (RI) activities, and Remedial Actions (RA) at 189 West 230<sup>th</sup> Street, Bronx, New York (Site) (Figure 1). The HASP will be implemented by the designated Site Health and Safety Officer (SSO) during work at the Site. The HASP attempts to identify all potential hazards at the Site; however, Site conditions are dynamic and new hazards may appear constantly. Personnel must remain alert to existing and potential hazards as Site conditions change and protect themselves accordingly.

Compliance with this HASP is required of all persons and subcontractors who perform fieldwork or enter the Site. The contents of this HASP may change or undergo revision based upon additional information made available to health and safety personnel, monitoring results, or changes in the technical scope of work. Any changes proposed must be reviewed and approved by the Corporate Health and Safety Manager (CHSM), with the SSO implementing the changes to the HASP.

Upon entering the Site, all visitors are required to sign in. All visitors entering the Contamination Reduction Zone (CRZ) (defined in Section 8.1.2), the Contamination Reduction Corridor (CRC) (defined in Section 8.1.2), or the Exclusion Zone (EZ) (defined in Section 8.1.3) will be required to read and comply with the provisions of this HASP. Visitors will be required to comply with applicable OSHA requirements such as training, medical monitoring, and respiratory protection.

In the event that a visitor does not adhere to the provisions of this HASP, he or she will be required to leave the Site. Mobilization activities not requiring intrusive activities (e.g., survey, equipment staging, etc.) or exposure to potentially impacted areas may only be performed if supervised by a competent Roux Associates employee.

## 1.1 Scope of Work

The Scope of Work activities will include the implementation of RI activities.

The Scope of Work activities are as follows:

1. Obtain necessary permits and approvals.
2. Preparation and implementation of an approved Health and Safety Plan (HASP).
3. Implementation of RI activities, consisting of site inspection/reconnaissance, geophysical survey, drilling, soil boring and sampling, groundwater sampling, and soil vapor sampling.
4. Implementation of the Remedial Action Work Plan (RAWP).
5. Mobilization and demobilization.
6. Maintain good site housekeeping procedures at all times.
7. Identification, protection, and/or relocation of any utilities within the work area.
8. Construct a decontamination pad with proper containment and collection system, if necessary.

## 1.2 Emergency Numbers

### 1.2.1 Emergency Phone Numbers

Emergency Medical Service .....	911
<u>Police</u> : New York Police Department (NYPD).....	911
<u>Fire</u> : Fire Department of New York (FDNY) .....	911
<u>Hospital</u> : New York Presbyterian Hospital .....	212-932-4461
National Response Center.....	800-424-8802
Poison Control Center.....	800-222-1222
Chemtrec .....	800-262-8200
Center for Disease Control.....	800-311-3435
USEPA (Region II).....	212-637-5000
NYSDEC Emergency Spill Response .....	800-457-7362

### 1.2.2 Project Management/Health and Safety Personnel

<b>Title</b>	<b>Contact</b>	<b>Telephone/Cell</b>
<u>Roux Associates</u>		
Project Director	Craig Werle	631-232-2600 Cell – 631-793-1535
Site Health and Safety Officer	Joseph Gavin	631-232-2600 Cell - 516-754-6671
Corporate Health and Safety Manager	Joseph Gentile	856-423-8800 Cell – 610-844-6911

### 1.2.3 Other Important Phone Numbers

No additional numbers.

### 1.2.4 Directions to New York Presbyterian Hospital

See Figure 2 for street map.

- Start at 189 West 230<sup>th</sup> Street, Bronx, New York
- Head northwest on West 230<sup>th</sup> Street
- Turn Left on Broadway
- Arrive at 5141 Broadway, New York Presbyterian Hospital on your right

## **2.0 HEALTH AND SAFETY STAFF**

This section briefly describes all site personnel and their health and safety responsibilities for the RI work to be implemented at the Site. All personnel are responsible for ensuring compliance with the HASP.

### **2.1 Project Principal (PP) – Craig Werle – Roux Associates**

- Has the overall responsibility for the health and safety of Site personnel.
- Ensures that adequate resources are provided to the field health and safety staff to carry out their responsibilities as outlined below.

### **2.2 Corporate Health and Safety Manager (CHSM) – Joe Gentile – Roux Associates**

- Implements the HASP.
- Performs or oversees site-specific training and approves revised or new safety protocols or field operations.
- Coordinates revisions of this HASP with Project Principal.
- Responsible for the development of new task safety protocols and procedures and resolution of any outstanding safety issues which may arise during the conduction of site work.
- Review and approve all health and safety training and medical surveillance records for personnel and subcontractors.

### **2.3 Site Safety and Health Officer (SSO) – Joseph Gavin – Roux Associates**

- Directs and coordinates health and safety monitoring activities.
- Ensures that field teams utilize proper personal protective equipment.
- Conducts initial onsite specific training prior to personnel and/or subcontractors commencing work.
- Conducts and documents periodic safety briefings.
- Ensures that field team members comply with this HASP.
- Completes and maintains Accident Report and Investigation Forms.
- Notifies PP and CHSM of all accident/incidents.

- Notifies PP of daily field operations and work progress, who will then communicate at the end of the day to the designated representative the following:
  1. End of day tasks completed
  2. Next day's planned activities
  3. Third party issues
  4. Change of Plans – approvals
- Change in level of personal protective equipment (PPE).
- Maintains contact with Contractors.
- Determines upgrade or downgrade of PPE based on Site conditions and/or real time monitoring results.
- Ensures that monitoring instruments are calibrated daily or as manufacturers suggested instructions determine.
- Submits and maintains health and safety field log books, daily safety logs, training logs, air monitoring result reports, weekly safety report.

#### **2.4 Field Personnel and Subcontractors**

- Report any unsafe or potentially hazardous conditions to the SSO.
- Maintain knowledge of the information, instructions, and emergency response actions contained in the HASP.
- Comply with rules, regulations, and procedures as set forth in this HASP and any revisions, which are instituted.
- Prevent admittance to work Site by unauthorized personnel.

### **3.0 SITE LOCATION, DESCRIPTION, AND HISTORY**

Descriptions of the Site and surrounding property usage are included in the following sections. The location of the Site is presented in Figure 1.

#### **3.1 Property Location and Description**

The Site is located at 189 West 189<sup>th</sup> Street, Bronx, New York. According to the information provided by Equity One (Northeast Portfolio) Inc., the Site is comprised of a 1.85-acre (or approximately 90,000 square foot) parcel located on the north side of West 230<sup>th</sup> Street. The Site is bordered by a vacated gasoline service station, an empty lot (former contractor's yard), Kimberly Place, and two commercial properties to the west; Verveelen Place to the north; and the Conrail Putnam Division / Major Deegan to the east. The entire Site utilized as a paved parking lot with a wood framed attendance booth located at the entrance from Kimberly Place. No vegetated areas exist on-site. Electricity is provided to the attendance booth, yet no heat or water service the attendance booth.

According to previous reports, the Site was utilized as a parking since as far back as 1989 and was noted as vacant from at least 1950 through 1989. Three residential structures were noted on the south portion of the Site on fire insurance maps from 1896, 1900 and 1914, according to review of a previous Phase I Environmental Site Assessment (ESA). In addition, a railroad line (N.Y. Central and Hudson) was present on the south and southwesterly portions of the Site on the 1896 and 1900 fire insurance maps. No additional information regarding the historical uses of the property is known.

According to additional searches, the Site is currently owned by The Department of Transportation.

## **4.0 WASTE DESCRIPTION/CHARACTERIZATION**

### **4.1 General**

The following information is presented in order to identify the types of materials that may be encountered at the Site. The detailed information on these materials was obtained from:

- SAX's Dangerous Properties of Industrial Materials – Lewis Eight Edition
- Chemical Hazards of the Workplace – Proctor/Hughes
- Condensed Chemical Dictionary – Hawley
- Rapid Guide to Hazardous Chemical in the Workplace – Lewis 1990
- NIOSH Pocket Guide to Chemical Hazards – 2005
- ACGIH TLV Values and Biological Exposure Indices
- OSHA 29 CFR 1910.1000

### **4.2 Chemical Data Sheets**

Several chemicals that may potentially be present in soils and groundwater at the Site, based on previous soil, soil vapor and groundwater sampling results and historic operations conducted at the Site that have been identified. The Summary of Toxicological Data is found in Table 1 and is provided for review of chemicals that may be encountered. The Summary of Toxicological Data Sheets provides information such as the chemicals characteristics, health hazards, protection, and exposure limits.

#### **4.2.1 Contaminants of Concern**

Soil and groundwater contaminants that may be encountered during drilling and sampling activities include both organic and inorganic compounds.

According to previous investigation reports, semi-volatile organic compounds (SVOCs) were detected above guidance values in soil and groundwater. The four storm water drains were accessed and laboratory analysis found that volatile organic compounds (VOCs), SVOCs and metals were found above guidance values.

According to Roux investigations at the Site, VOCs, SVOCs, metals and pesticides were detected in soil and groundwater at the Site. No detections of polychlorinated biphenyls (PCBs) and

herbicides were noted in soil and groundwater analytical data. Exceedances of NYSDEC Part 375 Unrestricted Use Criteria in soil analytical results were noted in several SVOCs, metals, pesticides and VOCs (Acetone only). Several metals and benzo[a]pyrene exceeded the NYSDEC Part 375 Commercial Criteria. VOCs and metals were detected in groundwater analytical results; no detections of SVOCs, PCBs and Pesticides were noted. The only groundwater exceedances were benzene and manganese. In addition, several VOCs were detected in soil vapor samples.

The toxicological, physical, and chemical properties of potential contaminants are presented in Table 1.

## **5.0 HAZARD ASSESSMENT**

The potential to encounter chemical hazards is dependent upon the work activity performed (intrusive versus non-intrusive), and the duration and location of the work activity. Such hazards could include inhalation and/or skin contact with chemicals/gases that could cause: dermatitis, skin burns, being overcome by vapors or asphyxiation.

Physical hazards that may be encountered during Site work include; heat and cold stress, exposure to excessive noise, loss of limbs, being crushed, head injuries, punctures, cuts, falls, electrocution, and bruises, structural integrity of buildings, asbestos and lead paint exposure, and other physical hazards due to motor vehicle operation, heavy equipment and power tools.

Biological hazards may exist during Site activities. These hazards include exposure to insect bites/stings, animals and animal wastes, mold and bloodborne pathogens.

Prior to the beginning of each new phase of work, an activity hazard analysis will be prepared by the SSO with assistance from the CHSM. The analysis will address the hazards for each activity performed in the phase and will present the procedures and safeguards necessary to eliminate the hazards or reduce the risk. The Activity Hazard Analysis Sheets are located in Appendix A.

### **5.1 Chemical Hazards**

The potential for personnel and subcontractors to come in contact with chemical hazards may occur during the following tasks:

- Drilling Activities
- *In situ* Chemical Injection Activities
- Decontamination Activities

For chronic and acute toxicity data, refer to Summary of Toxicological Data Sheets in Table 1 for further details on compound characteristics. The Material Safety Data Sheets for the injection chemicals are also included in Appendix A.

### **5.1.1 Exposure Pathways**

Exposure to these compounds during ongoing activities may occur through inhalation of contaminated dust particles, inhalation of VOCs, SVOCs or inorganics, dermal absorption, and accidental ingestion of the contaminant by either direct or indirect cross-contamination activities.

Inhalation of contaminated dust particles (VOCs, SVOCs, and inorganics) can occur during adverse weather conditions (high or changing wind directions) or during operations that may generate airborne dust such as excavation and loading of contaminated soils. Dust control measures such as applying water to roadways and excavations will be implemented where visible dust is generated. Where dust control measures are not feasible or effective, respiratory protection will be used when necessary (see Section 9.2.2 for monitoring procedures and action levels).

### **5.1.2 Operational Action Levels**

A decision-making protocol for an upgrade in levels of protection and/or withdrawal of personnel from an area based on atmospheric hazards is outlined in Table 2.

### **5.1.3 Additional Precautions**

Dermal absorption or skin contact with chemical compounds is possible during intrusive activities or *in situ* chemical injections at the Site. The use of PPE in accordance with Section 8.2 and strict adherence to proper decontamination procedures should significantly reduce the risk of skin contact.

The potential for accidental ingestion of potentially hazardous chemicals is expected to be remote, when good hygiene practices are used.

## **5.2 Physical Hazards**

A variety of physical hazards may be present during Site activities. These hazards include typical construction activities: operation of motor vehicles and heavy equipment operation, the use of power and hand tools, the use of pressurized pumps for *in situ* injections, roping and rigging of steel sheeting, walking on objects, tripping over objects, working on surfaces which have the potential to promote falling, skin burns, crushing of fingers, toes, limbs, head injuries caused by falling objects, temporary loss of one's hearing and/or eyesight. The referenced hazards are not

unique and are generally familiar to most hazardous waste site workers at construction sites. Task specific safety requirements for each phase will be covered during safety briefings. Activity Hazard Analysis summaries are contained in Appendix A.

### **5.2.1 Noise**

Noise is a potential hazard associated with operation of heavy equipment, power tools, pumps, and generators. High noise equipment operators will be evaluated at the discretion of the SSO. Employees with an 8-hour time weighted average exposure exceeding 85 dBA will be included in the hearing conservation program in accordance with 29 CFR 1910.95 and 1926.52.

It is mandated that employees working around heavy equipment or using power tools that produce noise levels exceeding 90 dBA are to wear hearing protection that shall consist of earplugs or protective earmuffs.

### **5.2.2 Heat Stress**

Heat stress is a significant potential hazard, associated with the use of protective equipment in a hot weather environment. The human body is designed to function at a certain internal temperature. When metabolism or external sources (fire or hot summer day) cause the body temperature to rise, the body seeks to protect itself by triggering cooling mechanisms. The SSO will monitor the air temperature (as described later in this section) to determine potential adverse affects the weather can cause onsite personnel. Excess heat is dissipated by two means:

- Changes in blood flow to dissipate heat by convection, which can be seen as "flushing" or reddening of the skin in extreme cases.
- Perspiration is the release of water through skin and sweat glands. While working in hot environments, evaporation of perspiration is the primary cooling mechanism.

Protective clothing worn to guard against chemical contact effectively stops the evaporation of perspiration. Thus the use of protective clothing increases heat stress problems.

The major disorders due to heat stress are heat cramps, heat exhaustion, and heat stroke. Heat cramps are painful spasms, which occur in the skeletal muscles of workers who sweat profusely in the heat and drink large quantities of water, but fail to replace the bodies lost salts or electrolytes. Drinking water while continuing to lose salt tends to dilute the body's extracellular fluids.

Soon water seeps by osmosis into active muscles and causes pain. Muscles fatigued from work are usually most susceptible to cramps.

Extreme weakness or fatigue, dizziness, nausea, and headache characterize heat exhaustion. In serious cases, a person may vomit or lose consciousness. The skin is clammy and moist, complexion pale or flushed, and body temperature normal or slightly higher than normal. Treatment is rest in a cool place and replacement of body water lost by perspiration. Mild cases may recover spontaneously with this treatment; severe cases may require care for several days. There are no permanent effects.

Heat stroke is a very serious condition caused by the breakdown of the body's regulating mechanisms. The skin is very dry and hot with red mottled or bluish appearance. Unconsciousness, mental confusion, or convulsions may occur. Without quick and adequate treatment, the result can be death or permanent brain damage. As first aid treatment, the person should be moved to a cool place. Body heat should be reduced artificially, but not too rapidly, by soaking the person's clothes in water and fanning them.

Steps that can be taken to reduce heat stress are:

- Acclimate the body. Allow a period of adjustment to make further heat exposure endurable.
- Drink more liquids to replace the body water lost during sweating.
- Rest is necessary and should be conducted under the direction of the SSO.
- Wear personal cooling devices. These are two basic designs; units with pockets for holding frozen packets and units that circulate fluid from a reservoir through tubes to different parts of the body. Both designs can be in the form of a vest, jacket, or coverall. Some circulating units also have a cap for cooling the head.
- Wear long cotton underwear under chemical protective clothing. The cotton will absorb perspiration and will hold it close to the skin. This will provide the body with the maximum cooling available from the limited evaporation that takes place beneath chemical resistant clothing. It also allows for rapid cooling of the body when the protective clothing is removed.

Heat stress is a significant hazard associated with using protective equipment in hot weather environments. Local weather conditions may produce conditions, which will require restricted work schedules in order to protect employees.

Appendix B contains procedures for heat stress; these will be used as a guideline and to provide additional information.

### **5.2.3 Cold Stress**

Cold temperatures are a significant potential hazard. Examples of cold temperature hazards are frostbite and hypothermia.

Frostbite is the most common injury resulting from exposure to cold. The extremities of the body are most often affected. The signs of frostbite are:

- The skin turns white or grayish-yellow.
- Pain is sometimes felt early but subsides later. Often there is no pain.
- The affected parts feel intensely cold and numb.

Hypothermia is characterized by shivering, numbness, drowsiness, muscular weakness, and a low internal body temperature when the body feels extremely warm. This can lead to unconsciousness and death. With both frostbite and hypothermia, the affected areas need to be warmed quickly. Immersion in warm water is an effective means of warming the affected areas quickly. In such cases, medical assistance will be sought.

To prevent these effects from occurring, persons working in the cold should wear adequate clothing and reduce the time spent in the cold area. The field SSO is responsible for determining appropriate time personnel should spend in adverse weather conditions and will monitor this.

Appendix B, which contains the Heat and Cold Stress Guidelines, provides additional information.

### **5.2.4 Asbestos**

Asbestos is a widely used, mineral-based material that is resistant to heat and corrosive chemicals. Depending on the chemical composition, fibers may range from coarse to silky. The properties

that make asbestos fibers so valuable to industry are its high-tensile strength, flexibility, heat and chemical resistance, and good frictional properties. Asbestos is a common naturally occurring group of fibrous minerals. Asbestos fibers have been used in a variety of building materials; generally, most asbestos is found in pipe insulation, doors, textures, paints and plasters, structural fireproofing, and floor tiles. Friable asbestos (that is, material that contains more than 0.1% asbestos by weight and can be crumbled by hand) is a potential hazard because it can release fibers into the air if damaged. Roux Associates' personnel will not disturb any suspected asbestos material.

### **5.2.5 Structural Integrity**

The structural integrity of a building and the safety of the individuals inside depend on meeting and maintaining national and local building codes. Structural integrity can range from minor defects such as loose floorboards and roof leaks to major defects such as floors and walls sagging and collapsed roofs. Numerous other structural defects can exist with or without consequence to the occupants. If Roux Associates personnel detect a problem, they should notify their supervisor, who in turn, should seek the opinion of a qualified structural engineer to offer an opinion regarding the integrity of the building. If in the opinion of the qualified engineer it is unsafe, no work can proceed until a solution to rectify the situation has been performed.

The only structures present at the site are a small attendant booth, two portable sheds and a portable restroom. All of these structures appear to be structurally sound at present and are scheduled for demolition during the course of the redevelopment at the Site.

### **5.2.6 Lockout/Tagout**

Roux Associates and all Site contractors will develop a lockout/tagout plan in the event of the repair of electrical, pneumatic, hydraulic, mechanical systems, per OSHA requirements under 29 CFR 1910.147.

## **5.3 Biological Hazards**

The biological hazards, which have the potential to cause adverse health effects, are from exposure to domestic flies, mosquitoes, insects, animals and animal wastes, mold and bloodborne

pathogens. The Activity Hazard Analysis (Appendix A) suggests controls for various hazards to be potentially encountered onsite.

### **5.3.1 Insect Stings**

Stings from insects are often painful, cause swelling and can be fatal if a severe allergic reaction such as anaphylactic shock occurs. If a sting occurs, the stinger should be scraped out of the skin, opposite of the sting direction. The area should be washed with soap and water followed by application of an ice pack.

If the victim has a history of allergic reaction, he should be taken to the nearest medical facility. If the victim has medication to reverse the effects of the sting, it should be taken immediately.

If the victim experiences a severe reaction, a constricting band should be placed between the sting and the heart. The bitten area should be kept below the heart if possible. A physician should be contacted immediately for further instructions.

### **5.3.2 Animals and Animal Wastes**

Due to most of the onsite structures being abandoned for several years, there lies the potential for various wildlife to reside within the structures, including, but not limited to, pigeons, bats, mice, rats, squirrels, raccoons, and feral cats. Certain animals can represent significant sources (vectors) of disease transmission. Precautions to avoid or minimize potential contact with (biting) animals (such as some of the above listed) or animal waste and/or deceased animals should be considered prior to all field activities. Rats, squirrels, raccoons, feral cats, and other wild animals can inflict painful bites which can also cause disease (as in the case of rabid animals). Site personnel should avoid contact with any of the above.

If contact occurs, be sure to clean the area thoroughly with soap and water as soon as possible. If a bite occurs, the area should be cleaned thoroughly immediately with soap and water and medical attention should be sought.

### **5.3.3 Mold**

Although mold affects individuals differently and to different degrees, the following are some of the most common adverse health effects:

- Respiratory problems – wheezing, difficulty breathing;
- Nasal and sinus congestion;
- Eyes – burning, watery, reddened, blurry vision, light sensitivity;
- Dry, hacking cough;
- Sore throat;
- Nose and throat irritation;
- Shortness of breath and lung disease;
- Chronic fatigue;
- Skin irritation;
- Central nervous system (headaches, loss of memory, and mood changes);
- Aches and pains;
- Fever;
- Headaches;
- Diarrhea; and
- Immune suppression.

Decisions about removing individuals from an affected area must be based on the results of a medical evaluation, and be made on a case-by-case basis.

Workers that discover the visible presence of mold in excess of 10 sq. feet need to notify the SSO for consultation. If a worker smells mold and feels that he/she is experiencing symptoms of exposure, he/she should retreat and report the symptoms to the SSO.

### **5.3.4 Bloodborne Pathogens**

The majority of the occupational tasks onsite will not involve a significant risk of exposure to blood, blood components, or body fluids. The highest risk of acquiring any bloodborne pathogen for employees onsite will be following an injury. When administering first aid care, there are potential hazards associated with bloodborne pathogens that cause diseases such as Human Immunodeficiency Virus (HIV), Hepatitis B (HBV), Hepatitis A (HAV), Hepatitis C (HCV), or the Herpes Simplex Virus (HSV). An employee who has not received the appropriate certification should never execute first aid and/or CPR.

In order to minimize any potential pathogen exposure, all employees should use the hand washing facilities on a regular basis. Additionally, the following universal precautions should be followed to prevent further potential risk:

- Direct skin or mucous membrane contact with blood should be avoided.
- Open skin cuts or sores should be covered to prevent contamination from infectious agents.
- Body parts should be washed immediately after contact with blood or body fluids that might contain blood, even when gloves or other barriers have been used.
- Gloves and disposable materials used to clean spilled blood shall be properly disposed of in an approved hazardous waste container.
- First aid responders shall wear latex or thin mil nitrile gloves when performing any procedure risking contact with blood or body substances.
- Safety glasses will be worn to protect the eyes from splashing or aerosolization of body fluids.
- A CPR mask will be worn when performing CPR to avoid mouth-to-mouth contact.
- Work gloves will be worn to minimize the risk of injury to the hands and fingers when working on all equipment with sharp or rough edges.
- Never pick up broken glass or possible contaminated material with your unprotected hands.
- Never handle wildlife (living or deceased) encountered onsite.

## 5.4 Hazard Assessment

<b>Task</b>	<b>Hazards</b>	<b>Risk of Exposure</b>
<u>Decontamination</u>	Inhalation/Skin Contact	Moderate
	Heat Stress/Cold Stress	Moderate
	Physical Injury	Moderate
	Noise	Low
<u>In situ Injections</u>	Inhalation/ Skin Contact	Moderate
	Heat Stress/Cold Stress	Moderate
	Physical Injury	Moderate
	Noise	Low/Moderate
<u>Drilling/Sampling</u>	Inhalation/ Skin Contact	Moderate
	Heat Stress/Cold Stress	Moderate
	Noise	Moderate/High
	Physical Injury	Moderate

## **6.0 TRAINING**

### **6.1 General Health and Safety Training**

In accordance with Roux Associates' corporate policies, and pursuant to 29 CFR 1910.120, hazardous waste site workers shall, at the time of the job assignment, have received a minimum of 40 hours of initial health and safety training for hazardous waste site operations. As a minimum, the training shall have consisted of instruction in the topics outlined in the above reference. Personnel who have not met the requirements for initial training will not be allowed to work in any Site activities in which they may be exposed to hazards (chemical or physical).

Completion of a 40-hour Health and Safety Training Course for Hazardous Waste Operations or an approved equivalent will fulfill the requirements of this section.

In addition to the required initial training, each employee shall have received 3 days of directly supervised on-the-job training. This training will address the duties the employees are expected to perform.

Roux Associates' SSO has the responsibility of ensuring that personnel assigned to this project comply with these requirements.

### **6.2 Annual Eight-Hour Refresher Training**

Annual 8-hour refresher training will be required of all hazardous waste site field personnel in order to maintain their qualifications for fieldwork. The following topics will be reviewed; toxicology, respiratory protection, including air purifying devices and self-contained breathing apparatus (SCBA), medical surveillance, decontamination procedures, and personal protective clothing. In addition, topics deemed necessary by Roux Associates' Health and Safety Director may be added to the above list.

### **6.3 Site-Specific Training**

Site personnel will receive training that will specifically address the activities, procedures, monitoring, and equipment for Site operations. It will include Site and facility layout, hazards, first aid equipment locations and emergency services at the Site, and will highlight all provisions contained within this HASP. This training will also allow field workers to clarify anything they do

not understand and to reinforce their responsibilities regarding safety and operations for their particular activity.

#### **6.4 Onsite Safety Meetings**

Daily safety meetings will be presented each morning to discuss potential safety concerns for the upcoming activities.

The briefings will also provide a forum to facilitate conformance with safety requirements and to identify performance deficiencies related to safety during daily activities or as a result of safety audits by Roux Associates or other involved parties.

#### **6.5 First Aid and CPR**

The SSO will identify those individuals having first aid and CPR training in order to ensure that emergency medical treatment is available during field activities. The training will be consistent with the requirements of the American Red Cross Association. Certification and appropriate training documentation will be kept with the Site personnel records.

#### **6.6 Additional Training**

The CHSM may require additional or specialized training throughout the project. Such training shall be in the safe operation of heavy or power tool equipment or hazard communication training or other topic deemed Site appropriate.

#### **6.7 Subcontractor Training**

All subcontractor personnel working on the Site shall have completed the 40-hour training requirement and meet the medical surveillance requirements found in Section 7.1. Subcontractor training shall be performed in accordance with 29 CFR 1910.120 and HASP specifications. In certain unique situations (e.g., mechanical failure of equipment), the non-trained individual performing emergency repairs may be allowed, at the discretion of the SSO, to perform repairs when no intrusive activities are being performed, and provisions have been made to mitigate potential exposure.

## **7.0 MEDICAL SURVEILLANCE PROCEDURES**

### **7.1 General**

A Medical Surveillance Program has been established as part of this plan and is included in Appendix C. Roux Associates and subcontractor personnel performing field work at the Site are required to have passed a complete medical surveillance examination in accordance with 29 CFR 1910.120(f). A physician's medical release for work will be confirmed by the SSO before an employee can begin Site activities. Such examinations shall include a statement as to the worker's present health status, the ability to work in a hazardous environment (including any required PPE, which may be used during temperature extremes), and the worker's ability to wear respiratory protection.

Appendix C, "Medical Data Sheet," will be completed by all permanent, onsite personnel and will be kept in Roux Associates offices during the conduct of Site operations. Completion is required in addition to compliance with Roux Associates' Health and Safety Program. This data sheet will be available through the Roux Associates Human Resources Department if medical assistance is needed or if transport to hospital facilities is required.

## **8.0 SITE CONTROL, PERSONAL PROTECTIVE EQUIPMENT, AND COMMUNICATIONS**

A modified Site control approach may be utilized since activities will be limited to site inspection/geophysical survey, drilling and sampling only during this phase of work. If remedial work is necessary, the following four-zone approach will be used.

### **8.1 Site Control**

Based on the Site history and operations, a potential for the presence of hazardous material does exist. During drilling and sampling, work areas will be delineated with high visibility cones and/or caution tape. A dedicated decontamination area will be established to decontaminate all equipment used for sampling.

If remedial activities are necessary, a four-zone approach will be employed in order to prevent the spread of contamination from the disturbed areas onsite. The four zones include: the Exclusion Zone (EZ), the Contamination Reduction Zone (CRZ), Contamination Reduction Corridor (CRC) and the Support Zone (SZ). A stepped remedial approach will be managed, and the zones modified as the work progresses. Each of the areas will be defined through the use of control barricades and/or construction/hazard fencing. A clearly marked delineation between the SZ and the remaining three zones, the CRZ and CRC and the EZ will be maintained. The preferred method will utilize high visibility orange fencing and hand driven metal posts, or orange cones. Signage will be posted to further identify and delineate these areas.

#### **8.1.1 Support Zone**

The Support Zone (SZ) is an uncontaminated area that will be the field support area for the Site operations. The SZ will contain the temporary project trailers and provides for field team communications and staging for emergency response. Appropriate sanitary facilities and safety equipment will be located in this zone. Potentially contaminated personnel or materials are not allowed in this zone. The only exception will be appropriately packaged/decontaminated and labeled samples. Meteorological conditions will be observed and noted from this zone, as well as those factors pertinent to heat and cold stress.

### **8.1.2 Contamination Reduction Zone**

A Contamination Reduction Zone (CRZ) is established between the exclusion zone and the support zone. The CRZ contains the Contamination Reduction Corridor (CRC) and provides an area for decontamination of personnel and equipment. The CRZ will be used for general Site entry and egress in addition to access for heavy equipment and emergency support services. Personnel are not allowed in the CRZ without:

- A buddy (co-worker);
- Appropriate PPE;
- Medical authorization;
- Training certification; and
- A need to be in the zone.

### **8.1.3 Exclusion Zone**

The area where contamination exists is considered to be the Exclusion Zone (EZ). All areas where excavation and handling of contaminated materials take place are considered the EZ. This zone will be clearly delineated by orange high visibility fencing. Safety tape may be used as a secondary delineation within the EZ. The zone delineation markings may be opened in areas for varying lengths of time to accommodate equipment operation or specific construction activities. The SSO may establish more than one EZ where different levels of protection may be employed or where different hazards exist. Personnel are not allowed in the EZ without:

- A buddy (co-worker);
- Appropriate PPE;
- Medical authorization;
- Training certification; and
- A need to be in the zone.

## **8.2 Personal Protective Equipment**

### **8.2.1 General**

The level of protection worn by field personnel will be enforced by the SSO. Levels of protection for general operations are provided below and are defined in this section. Levels of protection

may be upgraded at the discretion of the SSO. All decisions on the level of protection will be based upon a conservative interpretation by the SSO of the information provided by air monitoring results, environmental results and other appropriate information. Any changes in the level of protection shall be recorded in the health and safety field logbook.

### **8.2.2 Personal Protective Equipment Specifications**

The initial level of personal protective equipment is Level D. It is not anticipated that either Level B or Level C protection will be necessary.

Although not anticipated, any tasks requiring Level B personal protective equipment (PPE) will utilize the following equipment:

- Positive pressure, full facepiece, self-contained breathing apparatus (SCBA) or positive pressure, supplied air respirator with escape SCBA (NIOSH approved)
- Disposable coveralls (Tyvek, Poly-coated Tyvek, or Saranex)
- Gloves, inner: latex or nitrile
- Gloves, outer: nitrile or neoprene
- Chemical resistant boots over the work boots
- Steel toe work boots
- Hard hat
- Hearing protection (as needed)
- Boot cover (as needed)

For tasks requiring Level C PPE, the following equipment may be used in any combination:

- Full-face, air purifying, canister-equipped respirators (NIOSH approved) utilizing Organic Vapor/Acid Gas and P-100 filters (half-face if approved by SSO)
- Disposable coveralls (Tyvek, Poly-coated Tyvek, or Saranex) as required
- Gloves, inner: latex or nitrile as required
- Gloves, outer: nitrile or neoprene as required
- Chemical resistant boots over the work boots as required

- Steel toe work boots
- Hard hat
- Hearing protection (as needed)
- Safety glasses (if half-mask is utilized)
- Boot covers (as needed)

The Minimum level of PPE for entry onto the Site is Level D PPE. The following equipment shall be used:

- Work uniform (long pants, sleeved shirt)
- Hard hat
- Steel toe work boots
- Safety glasses
- Boot covers (as needed)
- Hearing protection (as needed)
- Reflective safety vest

Modified Level D PPE consists of the following:

- Regular Tyvek coveralls (Poly-coated Tyvek as required)
- Outer gloves: leather, cotton, neoprene or nitrile (as required)
- Inner gloves: latex or nitrile (doubled) as required
- Chemical resistant boots over work boots (as required)
- Steel toe work boots
- Hard hat
- Safety glasses
- Hearing protection as needed
- Reflective safety vest

### 8.2.3 Initial Levels of Protection

Levels of protection for the proposed scope of work may be upgraded or downgraded depending on direct-reading instruments or personnel monitoring. The following are the initial levels of protection that shall be used for each planned field activity:

<u>Activity</u>	<u>Initial level of PPE</u>
Mobilization/Demobilization	D
Site Inspection/Geophysical Survey	D
Decontamination	D
Drilling	D
<i>In situ</i> Chemical Injections	D
Groundwater Sampling	D

### 8.3 Communications

If working in level C/B respiratory protection is required, personnel may find that communication becomes a more difficult task and process to accomplish. Distance and space further complicate this. In order to address this problem, electronic instruments, mechanical devices, or hand signals will be used as follows:

Telephones – Mobile telephones will be carried by designated personnel for communication with emergency support services/facilities.

Radios – Two-way radios will be utilized onsite for communications between field personnel in areas where visual contact cannot be maintained and where hand signals cannot be employed.

Air Horn – Available as posted in the Site trailer or support zone to alert field personnel to an emergency situation. The emergency signal will be the sharp blasts of the air horn.

Hand Signals – This communication method will be employed by members of the field team along with use of the buddy system. Signals become especially important when in the vicinity of heavy moving equipment and when using Level B respiratory equipment. The signals shall become familiar to the entire field team before Site operations commence, and will be reinforced and reviewed during site-specific training.

<u>Signal</u>	<u>Meaning</u>
Hand gripping throat	Out of air; can't breathe
Grip partner's wrist	Leave area immediately; no debate
Hands on top of head	Need assistance
Thumbs up	OK; I'm all right; I understand
Thumbs down	No; Unable to understand you, I'm not all right

## **9.0 MONITORING PROCEDURES**

### **9.1 General**

Monitoring will be performed to verify the adequacy of respiratory protection, to aid in Site layout, and to document worker exposure. If air monitoring in these areas indicates the presence of potentially hazardous materials, control measures will be implemented. All monitoring instruments shall be operated by qualified personnel only and will be calibrated daily prior to use or, more often, as necessary. General monitoring during intrusive site activities will be performed in accordance with the Community Air Monitoring Plan included as Appendix D.

### **9.2 Exclusion Zone Monitoring**

#### **9.2.1 Instrumentation**

The following monitoring instruments will be available for use during field operations as necessary. There will be a minimum of one of each piece of equipment on the Site at all times:

- Photoionization Detector (PID) with 10.6 EV probe or Flame Ionization Detector (FID) or equivalent.
- Dust/Particulate Monitor (DM), MIE Miniram, or equivalent.

A PID will be used to monitor VOCs in active work areas, during intrusive activities. VOCs shall also be measured upwind of the work areas to determine background concentrations.

A particulate monitor shall be used to measure concentrations of dust and particulate matter.

When deemed necessary, a CGI/O<sub>2</sub> meter shall be used to monitor for combustible gases and oxygen content during confined space entry or when the HSO deems necessary.

Calibration records shall be documented and recorded daily and included in the daily air monitoring report. This report will be specific to work area monitoring. All instruments shall be calibrated before and after each daily use in accordance with manufacturer's procedures (Appendix E).

### **9.2.2 Action Levels**

Action levels for the upgrading of PPE requirements in the HASP will apply to all Site work during investigation and remediation activities at the Site. Action levels are for known contaminants using direct reading instruments in the Breathing Zone (BZ) for VOCs and particulates, and at the source for combustible gases. The BZ will be determined by the SSO, but is typically 4 to 5 feet above the work area surface or elevation. The action levels to be utilized for the Site are found in Table 2.

### **9.2.3 Monitoring During Field Activities**

Intrusive Operations – Continuous Personnel Breathing Zone Air Monitoring will be performed by the SSO during drilling activities. Real-time monitoring for all onsite activities will be accomplished as follows:

- Monitoring of VOCs in and around the work zones.
- Monitoring for particulates in and around the work zones, when necessary.

The frequency of monitoring may be modified by the SSO, after consultation with the Project Manager. The rationale for any modification must be documented in the HASP.

## **10.0 SAFETY CONSIDERATIONS**

### **10.1 General**

In addition to the specific requirements of this HASP, common sense should be used at all times.

The following general safety rules and practices will be in effect at the site.

- All open holes, trenches, and obstacles will be properly barricaded in accordance with local Site needs and requirements. Proximity to traffic ways, both pedestrian and vehicular, and location of the open hole, trench, or obstacle will determine these needs.
- All excavation and other Site work will be planned and performed with consideration for underground lines.
- Smoking and ignition sources in the vicinity of potentially flammable or contaminated material are strictly prohibited.
- Drilling, boring, and use of cranes and drilling rigs, erection of towers, movement of vehicles and equipment, and other activities will be planned and performed with consideration for the location, height, and relative position of aboveground utilities and fixtures, including signs; lights; canopies; buildings and other structures and construction; and natural features such as trees, boulders, bodies of water, and terrain.
- When working in areas where flammable vapors may be present, particular care shall be exercised with tools and equipment that may be sources of ignition. All tools and equipment provided must be properly bonded and/or grounded.
- Approved and appropriate safety equipment (as specified in this HASP), such as eye protection, hard hats, hand protection (nitrile, leather and/or cut resistant gloves as necessary), foot protection, and respirators, must be worn in areas where required. In addition, eye protection must be worn when sampling soil or water that may be contaminated.
- All site personnel may be called upon to use respirator protection in some situations. Fit testing will be necessary for all persons using respirators. The criteria for facial hair will be determined by the SSO. In general, the guideline is that facial hair cannot impede the fit of the respirator.
- No smoking, eating, chewing tobacco, gum chewing or drinking will be allowed outside the SZ.
- Contaminated tools and hands must be kept away from the face.
- Personnel must use personal hygiene safe guards (washing up) at the end of the shift.
- Each sample must be treated and handled as though it were contaminated.
- Persons with long hair and/or loose-fitting clothing that could become entangled in power equipment must take adequate precautions.

- Horseplay is prohibited in the work area.
- Work while under the influence of intoxicants, narcotics, or controlled substances is strictly prohibited.

## **10.2 Traffic Control**

Traffic control methods and barricades will be used as needed when working in areas of vehicular traffic. Since the site is fenced off and the areas of investigation are not in current use, outside vehicular and pedestrian traffic is not considered to be an issue.

## **10.3 Sample Handling**

Personnel responsible for handling of samples will wear the prescribed level of protection. Samples are to be identified as to their hazard and packaged as to prevent spillage or breakage. Any unusual sample conditions shall be noted. Laboratory personnel and all field personnel shall be advised of sample hazard levels and the potential contaminants present. This can be accomplished by a phone call to the lab coordinator and/or including a written statement with the samples reviewing lab safety procedures in handling in order to assure that the practices are appropriate for the suspected contaminants in the sample.

## **11.0 DECONTAMINATION AND DISPOSAL PROCEDURES**

### **11.1 Contamination Prevention**

Contamination prevention should minimize worker exposure and help ensure valid sample results by precluding cross-contamination. Procedures for contamination avoidance include:

#### Personnel

- Do not walk through areas of obvious or known contamination.
- Do not directly handle or touch contaminated materials.
- Make sure that there are no cuts or tears on PPE.
- Fasten all closures in suits; cover with tape, if necessary.
- Particular care should be taken to protect any skin injuries.
- Stay upwind of airborne contaminants.
- Do not carry cigarettes, cosmetics, gum, etc., into contaminated areas.

#### Sampling/Monitoring

- When required by the SSO, cover instruments with clear plastic, leaving openings for sampling ports.
- Bag sample containers prior to emplacement of sample material.

#### Heavy Equipment

- Care should be taken to limit the amount of contamination that comes in contact with heavy equipment (tires, contaminated augers).
- If contaminated tools are to be placed on non-contaminated equipment for transport to a decontamination area, plastic should be used to keep the equipment clean.
- Dust control measures including water misting will be used on roads inside the Site boundaries.

### **11.2 Personnel Decontamination**

A field wash for equipment and PPE shall be set up and maintained for all persons exiting the EZ. The system will include a gross wash and rinse for all disposable clothing and boots worn in the EZ. As necessary, equipment and facilities will be available for personnel to wash their hands, arms, neck, and face.

### **11.3 Equipment Decontamination**

All potentially contaminated equipment used at the Site will be decontaminated to prevent contaminants from leaving the Site. The decontamination area will provide for the containment of all wastewater from the decontamination process. Respirators and any other PPE that comes in contact with contaminated materials shall pass through a field wash in the decontamination area, and a thorough decontamination at the end of the day. All decontamination rinse water will be collected and managed in accordance with all applicable regulations.

### **11.4 Decontamination during Medical Emergencies**

If emergency life-saving first aid and/or medical treatment are required, normal decontamination procedures may need to be abbreviated or omitted. The Site SSO or designee will accompany contaminated victims to the medical facility to advise on matters involving decontamination, when necessary. The outer garments can be removed if they do not cause delays, interfere with treatment, or aggravate the problem. Respiratory equipment must always be removed. Protective clothing can be cut away. If the outer contaminated garments cannot be safely removed, a plastic barrier between the individual and clean surfaces should be used to help prevent contaminating the inside of ambulances and/or medical personnel. Outer garments are then removed at the medical facility. No attempt will be made to wash or rinse the victim, unless it is known that the individual has been contaminated with an extremely toxic or corrosive material, which could also cause severe injury or loss of life to emergency response personnel. For minor medical problems (ambulatory) or injuries, the normal decontamination procedures will be followed. Note that heat stroke requires prompt treatment to prevent irreversible damage or death. Protective clothing must be promptly removed. Less serious forms of heat stress also require prompt attention and removal of protective clothing immediately. Unless the victim is obviously contaminated, decontamination should be omitted or minimized, and treatment begun immediately.

### **11.5 Disposal Procedures**

A system of segregating all waste will be developed by the SSO.

All discarded materials, waste materials, or other objects shall be handled in such a way as to preclude the potential for spreading contamination, creating a sanitary hazard, or causing litter to

be left onsite. All potentially contaminated materials (e.g., clothing, gloves, etc.,) will be bagged or drummed as necessary, labeled and segregated for disposal. All non-contaminated materials shall be collected and bagged for appropriate disposal as domestic waste.

## **12.0 EMERGENCY PLAN**

Should an emergency situation occur, the emergency plan, outlined in this section, shall be known by Roux Associates and all Subcontractors prior to the start of work. The emergency plan will be available for use at all times during Site work. The plan provides the phone numbers for the fire, police, ambulance, hospital, poison control centers, and directions to the hospital from the Site. This information is to be found in Section 1.2 of the HASP.

Various individual Site characteristics will determine preliminary actions taken to assure that this emergency plan is successfully implemented in the event of a Site emergency. Careful consideration must be given to the proximity of neighborhood housing or places of employment, and to the relative possibility of Site release of vapors, which could affect the surrounding community.

The emergency coordinator shall implement the contingency plan whenever conditions at the Site warrant such action. The coordinator will be responsible for coordination of the evacuation, emergency treatment, and transport of Site personnel as necessary, and notification of emergency response units and the appropriate management staff.

In cases where the project manager is not available, the SSO shall serve as the alternate emergency coordinator.

The SSO during an emergency will perform air monitoring as needed, as well as lend assistance and provide health and safety information to responding emergency personnel.

Site Personnel will endeavor to keep non-essential personnel away from the incident until the appropriate emergency resources arrive. At that time, the responders will take control of the Site. Site personnel may be asked to lend assistance to emergency personnel such as during evacuations, help with the injured, etc.

### **12.1 Evacuation**

Evacuation procedures will be discussed prior to the start of work and periodically during safety meetings. In the event of an emergency situation, such as fire, or explosion, an air horn,

automobile horn, or other appropriate device will be sounded for three (3) sharp blasts indicating the initiation of evacuation procedures. The emergency evacuation route shall be known by all site workers. Under no circumstances will incoming personnel or visitors be allowed to proceed into the area once the emergency signal has been given. The SSO or project manager must ensure that access for emergency equipment is provided and that all combustion apparatuses have been shut down once the alarm has been sounded. All Site personnel will assemble in the designated nearest safe location. Once the safety of all personnel is established, the fire department and other emergency response groups will be notified by telephone of the emergency.

### 12.2 Personnel Injury

Emergency first aid shall be applied onsite as appropriate. If necessary, the individual shall be decontaminated and transported to the nearest hospital. The SSO will supply medical data sheets to medical personnel and complete the accident/incident reports in accordance with Section 13.4 of the HASP.

The ambulance/rescue squad shall be contacted for transport as necessary in an emergency. However, since some situations may require transport of an injured party by other means, the injured person shall be escorted to the hospital. A map to this facility is shown in Figure 2.

### 12.3 Accident/Incident Reporting

As soon as first aid and/or emergency response needs have been met, the following parties are to be contacted by telephone: (Direct contact, no phone messages).

		<b><u>Office:</u></b>	<b><u>Cell:</u></b>
1. <u>Project Director:</u>	Craig Werle	631-232-2600	631-793-1535
2. <u>Office Health and Safety Manager:</u>	Joe Gentile	856-423-8800	610-844-6911
3. <u>Site Health and Safety Officer:</u>	Joseph Gavin	631-232-2600	516-754-6671
4. The employer of any injured worker, if not a Roux Associates employee.			

Written confirmation of verbal reports are to be submitted within 24 hours. The report form entitled "Accident Report and Investigation Form" (Appendix F) is to be used for this purpose.

All representatives contacted by telephone are to receive a copy of this report. If the employee involved is not a Roux Associates employee, his employer shall receive a copy of the report. In addition to filling out the Accident Report and Investigation Form, if a Roux employee is involved in a vehicle accident, the employee must also complete the Acord form (Appendix G).

For reporting purposes, the term accident refers to fatalities, lost time injuries, spill or exposure to hazardous materials (radioactive materials, toxic materials, explosive or flammable materials), fire, explosion, property damage, or potential occurrence (i.e., near miss) of the above.

Any information released from the health care provider, which is not deemed confidential patient information, is to be attached to the appropriate form. Any medical information, which is released by patient consent, is to be filed in the individual's medical record and treated as confidential.

#### **12.4 Personnel Exposure**

Skin Contact: Use copious amounts of soap and water. Wash/rinse affected area thoroughly, then provide appropriate medical attention. Eyes should be rinsed for 15 minutes upon chemical contamination.

Inhalation: Move to fresh air and/or, if necessary, decontaminate/transport to hospital.

Ingestion: Decontamination and transport to emergency medical facility.

Puncture Wound or Laceration: Decontamination and transport to emergency medical facility.

#### **12.5 Adverse Weather Conditions**

In the event of adverse weather conditions, the SSO or project manager will determine if work can continue without sacrificing the health and safety of all field workers. Some of the items to be considered prior to determining if work should continue are:

- Potential for heat stress and heat-related injuries.
- Potential for cold stress and cold-related injuries.
- Treacherous weather-related conditions.
- Limited visibility.
- Electrical storm potential.

Site activities will be limited to daylight hours and acceptable weather conditions. Inclement working conditions include heavy rain, fog, high winds, and lightning. Observe daily weather reports and evacuate if necessary in case of inclement weather conditions.

## **13.0 LOGS, REPORTS AND RECORD KEEPING**

The following is a summary of required health and safety logs, reports, and record keeping for this project.

### **13.1 Medical and Training Records**

The employer keeps medical and training records. The subcontractor employer must provide verification of training and medical qualifications to the SSO. The SSO will keep a log of personnel meeting appropriate training and medical qualifications for Site work. The log will be kept in the project file. Roux Associates will maintain medical records in accordance with 29 CFR 1910.20.

### **13.2 Onsite Log**

The SSO or project manager will keep a log of onsite personnel daily in the designated field book.

### **13.3 Exposure Records**

Any personal monitoring results, laboratory reports, calculations, and air sampling data sheets are part of an employee exposure record. These records will be kept by Roux Associates in accordance with 29 CFR 1910.20.

### **13.4 Accident/Incident Reports**

An accident/incident report must be completed following procedures given in Appendix F. The originals will be sent to Roux Associates for maintenance. Copies will be distributed as stated. A copy of the forms will be kept in the project file.

### **13.5 OSHA Form 300**

An OSHA Form 300 (Log of Occupational Injuries and Illnesses) (Appendix H) will be kept at the Site. All reportable injuries or illnesses will be recorded on this form. At the end of the project, the original will be sent to Roux Associates for maintenance. Subcontractor employers must also meet the requirements of maintaining an OSHA 300 form.

### **13.6 Daily Safety Logs**

The Daily Safety Log form in Appendix E will be completed daily by the SSO and submitted to the project manager.

### **13.7 Weekly Safety Reports**

The Weekly Safety Reports in Appendix I will be completed by the SSO and submitted to the designated Owner's representative, if requested.

### **13.8 Close-Out Safety Report**

At the completion of the work, Roux Associates will submit a closeout Safety Report that will include all logs and reports generated during the project. The report will be signed and dated by the SSO and submitted to the Safety Manager and/or Owner's representative, if requested.



**SSO CERTIFICATION OF HOSPITAL DIRECTIONS**

Name of Roux Associates SSO:

Date: \_\_\_\_\_

This is to certify that on \_\_\_\_\_, I personally drove the route to New York Presbyterian Hospital as listed in the HASP. The Map Routing and Directions were/were not as listed in the plan. Listed below were conditions that resulted in different directions.

\_\_\_\_\_  
Roux Associates Site Health and Safety Officer

**Table 1. Toxicological, Physical, and Chemical Properties of Compounds Potentially Present at 189 West 230th Street, Bronx, New York**

Compound	CAS #	ACGIH TLV	NIOSH REL	OSHA PEL	IDLH	Routes of Exposure	Toxic Properties	Target Organs	Physical/Chemical Properties
1,1,1-Trichloroethane	71-55-6	TWA 350 ppm STEL 440 ppm C 440 ppm	C 350 ppm (1900 mg/m <sup>3</sup> ) [15-minute]	TWA 350 ppm (1900 mg/m <sup>3</sup> )	700 ppm	inhalation, ingestion, skin and/or eye contact	Irritation eyes, skin; headache, lassitude (weakness, exhaustion), central nervous system depression; poor equilibrium; dermatitis; cardiac arrhythmias;	Eyes, skin, central nervous system, cardiovascular system, liver	Colorless liquid with a mild, chloroform-like odor. BP: 165°F UEL: 12.5% LEL: 7.5%
1,1,2-Trichloroethane	79-00-5	TWA 10 ppm	Ca TWA 10 ppm (45 mg/m <sup>3</sup> ) [skin]	TWA 10 ppm (45 mg/m <sup>3</sup> ) [skin]	Ca [100 ppm]	inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, nose; central nervous system depression; liver, kidney damage; dermatitis; [potential occupational carcinogen]	Eyes, respiratory system, central nervous system, liver, kidneys	Colorless liquid with a sweet, chloroform-like odor. BP: 237°F UEL: 15.5% LEL: 6%
1,1-Dichloroethane	75-34-3	TWA 100 ppm	TWA 100 ppm (400 mg/m <sup>3</sup> )	TWA 100 ppm (400 mg/m <sup>3</sup> )	3000 ppm	inhalation, ingestion, skin and/or eye contact	Irritation skin; central nervous system depression; liver, kidney, lung damage	Skin, liver, kidneys, lungs, central nervous system	Colorless, oily liquid with a chloroform-like odor. BP: 135°F F.L.P: 2°F UEL: 11.4% LEL: 5.4%
1,1-Dichloroethene	75-35-4	TWA 5 ppm	Ca (lowest feasible concentration)TWA 1ppm		Ca [N.D.]	inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, skin, throat; dizziness, headache, nausea, dyspnea (breathing difficulty); liver, kidney disturbance; pneumonitis; [potential occupational carcinogen]	Eyes, skin, respiratory system, central nervous system, liver, kidneys	Colorless liquid or gas (above 89°F) with a mild, sweet, chloroform-like odor. BP: 89°F F.L.P: -2°F UEL: 15.5% LEL: 6.5% Class IA Flammable Liquid
1,2,4-Trimethylbenzene	95-63-6	None established	TWA 25 ppm (125mg/m <sup>3</sup> )	None established	N.D.	Inhalation; ingestion; skin and/or eye contact	Eye, skin, nose, and throat, resp syst irritation; bronchitis; hypochromic anemia; headache, drowsiness, weakness, dizziness, nausea, incoordination, vomit, confusion; chemical pneumonitis	Eyes, skin, resp sys, CNS, blood	Clear, colorless liquid with a distinctive, aromatic odor BP: 337°F FL.P: 112°F UEL: 6.4% LEL: 0.9% Class II Flammable liquid
1,2,4-Trimethylbenzene	95-63-6	TWA 25 ppm (125 mg TWA 25 ppm (125 mg/m <sup>3</sup> )	TWA 25 ppm (125 mg/m <sup>3</sup> )	None established	N.D.	inhalation, ingestion, skin and/or eye contact	Irritation eyes, skin, nose, throat, respiratory system; bronchitis; hypochromic anemia; headache, drowsiness, fatigue, dizziness, nausea, incoordination; vomiting, confusion; chemical pneumonitis (aspiration liquid)	Eyes, skin, respiratory system, central nervous system, blood	Clear, colorless liquid with a distinctive, aromatic odor. BP: 337°F F.L.P: 112°F UEL: 6.4% LEL: 0.9% Class II Flammable Liquid
1,2-Dichlorobenzene	95-50-1	TWA 25 ppm STEL 50 ppm	C 50 ppm (300 mg/m <sup>3</sup> )	C 50 ppm (300 mg/m <sup>3</sup> )	200 ppm	inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, nose; liver, kidney damage; skin blisters	Eyes, skin, respiratory system, liver, kidneys	Colorless to pale-yellow liquid with a pleasant, aromatic odor. [herbicide] BP: 357°F F.L.P: 151°F UEL: 9.2% LEL: 2.2% Class IIIA Combustible Liquid

**Table 1. Toxicological, Physical, and Chemical Properties of Compounds Potentially Present at 189 West 230th Street, Bronx, New York**

Compound	CAS #	ACGIH TLV	NIOSH REL	OSHA PEL	IDLH	Routes of Exposure	Toxic Properties	Target Organs	Physical/Chemical Properties
1,2-Dichloroethane	107-06-2	TWA 10 ppm	Ca TWA 1 ppm (4 mg/m <sup>3</sup> ) STEL 2 ppm (8 mg/m <sup>3</sup> )	TWA 50 ppm C 100 ppm 200 ppm [5-minute maximum peak in any 3 hours]	Ca [50 ppm]	inhalation, ingestion, skin absorption, skin and/or eye contact	Irritation eyes, corneal opacity; central nervous system depression; nausea, vomiting; dermatitis; liver, kidney, cardiovascular system damage; [potential occupational carcinogen]	Eyes, skin, kidneys, liver, central nervous system, cardiovascular system	Colorless liquid with a pleasant, chloroform-like odor. [Note: Decomposes slowly, becomes acidic & darkens in color.] BP: 182°F FLP: 56°F UEL: 16% LEL: 6.2% Class IB Flammable Liquid
1,2-Dichloroethene (total)	540-59-0	TWA 200 ppm (790 mg/m <sup>3</sup> )	TWA 200 ppm (790 mg/m <sup>3</sup> )	TWA 200 ppm (790 mg/m <sup>3</sup> )	1000 ppm	inhalation, ingestion, skin and/or eye contact	Irritation eyes, respiratory system; central nervous system depression	Eyes, respiratory system, central nervous system	Colorless liquid (usually a mixture of the cis & trans isomers) with a slightly acid, chloroform-like odor BP: 118-140°F FLP: 36-39°F UEL: 12.8% LEL: 5.6% Class IB Flammable Liquid
1,3,5-Trimethylbenzene	108-67-8	None established	TWA 25 ppm (125mg/m <sup>3</sup> )	None established	N.D.	Inhalation; ingestion; skin and/or eye contact	Eye, skin, nose, and throat, resp syst irritation; bronchitis; hypochromic anemia; headache, drowsiness, weakness, dizziness, nausea, incoordination, vomit, confusion; chemical pneumonitis	Eyes, skin, resp sys, CNS, blood	Clear, colorless liquid with a distinctive, aromatic odor BP: 329°F FLP: 122°F Class II Flammable liquid
1,3,5-Trimethylbenzene	108-67-8	TWA 25 ppm (125 mg/m <sup>3</sup> )	TWA 25 ppm (125 mg/m <sup>3</sup> )	None established	N.D.	inhalation, ingestion, skin and/or eye contact	Irritation eyes, skin, nose, throat, respiratory system; bronchitis; hypochromic anemia; headache, drowsiness, lassitude (weakness, exhaustion), dizziness, nausea, incoordination; vomiting, confusion; chemical pneumonitis (aspiration liquid)	Eyes, skin, respiratory system, central nervous system, blood	Clear, colorless liquid with a distinctive, aromatic odor. BP: 329°F FLP: 122°F Class II Flammable Liquid
1,4-Dichlorobenzene	106-46-7	TWA 10 ppm	Ca	TWA 75 ppm (450 mg/m <sup>3</sup> )	Ca [150 ppm]	inhalation, skin absorption, ingestion, skin and/or eye contact	Eye irritation, swelling periorbital (situated around the eye); profuse rhinitis; headache, anorexia, nausea, vomiting; weight loss, jaundice, cirrhosis; in animals: liver, kidney injury; [potential occupational carcinogen]	Liver, respiratory system, eyes, kidneys, skin	Colorless or white crystalline solid with a mothball-like odor. [insecticide] BP: 345°F FLP: 150°F LEL: 2.5% Combustible Solid
2,4-Dimethylphenol	105-67-9	None established	None established	None established	None established	inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, skin, respiratory system, mouth, throat, stomach; dizziness, weakness, fatigue, nausea, headache; systemic damage; moderate to severe eye injury.	Skin, CVS, eyes, CNS	Clear, colorless liquid with a faint ether or chloroform-like odor BP: 178°F

**Table 1. Toxicological, Physical, and Chemical Properties of Compounds Potentially Present at 189 West 230th Street, Bronx, New York**

Compound	CAS #	ACGIH TLV	NIOSH REL	OSHA PEL	IDLH	Routes of Exposure	Toxic Properties	Target Organs	Physical/Chemical Properties
2-Butanone (MEK)	78-93-3	TWA 200 ppm (590 mg/m <sup>3</sup> ) STEL 300 ppm (885 mg/m <sup>3</sup> )	TWA 200 ppm (590 mg/m <sup>3</sup> ) STEL 300 ppm (885 mg/m <sup>3</sup> )	TWA 200 ppm (590 mg/m <sup>3</sup> )	3000 ppm	inhalation, ingestion, skin and/or eye contact	Irritation eyes, skin, nose; headache; dizziness; vomiting; dermatitis	Eyes, skin, respiratory system, central nervous system	Colorless liquid with a moderately sharp, fragrant, mint- or acetone-like odor. BP: 175°F FLP: 16°F UEL(200°F): 11.4% LEL(200°F): 1.4% Class IB Flammable Liquid
Acenaphthene	83-32-9	None established	None established	None established	None established	inhalation, ingestion, skin and/or eye contact	Irritation eyes, skin, respiratory system	Eyes, skin, respiratory system	Brown solid
Acetone	67-64-1	TWA 200 ppm STEL 500 ppm	TWA 250 ppm (590 mg/m <sup>3</sup> )	TWA 1000 ppm (2400 mg/m <sup>3</sup> )	2500 ppm [10%LEL]	inhalation, ingestion, skin and/or eye contact	Irritation eyes, nose, throat; headache, dizziness, central nervous system depression; dermatitis	Eyes, skin, respiratory system, central nervous system	Colorless liquid with a fragrant, mint-like odor BP: 133°F FLP: 0°F UEL: 12.8% LEL: 2.5% Class IB Flammable Liquid
Anthracene	65996-93-2	TWA 0.2 mg/m <sup>3</sup>	Ca TWA 0.1 mg/m <sup>3</sup> (cyclohexane-extractable fraction)	TWA 0.2 mg/m <sup>3</sup> (benzene-soluble fraction)	Ca [80 mg/m <sup>3</sup> ]	inhalation, skin and/or eye contact	Dermatitis, bronchitis, [potential occupational carcinogen]	respiratory system, skin, bladder, kidneys	Black or dark-brown amorphous residue. Combustible Solids
Antimony	7440-36-0	TWA 0.5 mg/m <sup>3</sup>	TWA 0.5 mg/m <sup>3</sup>	TWA 0.5 mg/m <sup>3</sup>	50 mg/m <sup>3</sup> (as Sb)	inhalation, ingestion, skin and/or eye contact	Irritation eyes, skin, nose, throat, mouth; cough; dizziness; headache; nausea, vomiting, diarrhea; stomach cramps; insomnia; anorexia; unable to smell properly	Eyes, skin, respiratory system, cardiovascular system	Silver-white, lustrous, hard, brittle solid; scale-like crystals; or a dark-gray, lustrous powder. BP: 2975°F
Arsenic (inorganic)	7440-38-2 (metal)	TWA 0.01 mg/m <sup>3</sup>	Ca C 0.002 mg/m <sup>3</sup> [15-min]	TWA 0.010 mg/m <sup>3</sup>	Ca [5 mg/m <sup>3</sup> (as As)]	Inhalation; ingestion; skin absorption; skin and/or eye contact	Ulceration of nasal septum, dermatitis, GI disturbances, peripheral neuropathy, resp irritation, hyperpigmentation of skin, [potential occupational carcinogen]	Liver, kidneys, skin, lungs, lymphatic sys	Metal: silver-gray or tin-white, brittle, odorless solid BP: sublimates
Asbestos	1332-21-4	TWA 0.1 f/cc	Ca 100,000 fibers/m <sup>3</sup>	TWA 0.1 fiber/cm <sup>3</sup>	Ca [IDLH value has not been determined]	Inhalation; ingestion; skin and/or eye contact	Asbestosis (chronic exposure), dyspnea, interstitial fibrosis, restricted pulmonary function, finger clubbing, irritation eyes, [potential occupational carcinogen]	Respiratory system, eyes,	White or greenish (chrysotile), blue (crocidolite), or gray-green (amosite), fibrous, odorless solids.  BP: decomposes
Asphalt fumes	8052-42-4	TWA 0.5 mg/m <sup>3</sup> (fumes)	Ca C 5 mg/m <sup>3</sup> [15 min]	None established	Ca [IDLH value has not been determined]	Skin absorption; inhalation; skin and/or eye contact	Irritation eyes, resp sys	Eyes, respiratory system	Black or dark brown cement-like substance Combustible solid
Barium	7440-39-3	TWA 0.5 mg/m <sup>3</sup>	None established	TWA 0.5 mg/m <sup>3</sup>	None established	Inhalation, ingestion, skin contact	Irritation skin, respiratory system,	Skin, eyes, respiratory system	Yellow white powder BP: 1640 C

**Table 1. Toxicological, Physical, and Chemical Properties of Compounds Potentially Present at 189 West 230th Street, Bronx, New York**

Compound	CAS #	ACGIH TLV	NIOSH REL	OSHA PEL	IDLH	Routes of Exposure	Toxic Properties	Target Organs	Physical/Chemical Properties
Benzene	71-43-2	TWA 0.5 ppm STEL 2.5 ppm	Ca TWA 0.1 ppm STEL 1 ppm	TWA 1 ppm STEL 5 ppm	Ca [500 ppm]	inhalation, skin absorption, skin and/or eye contact	Irritation eyes, skin, nose, respiratory system; dizziness; headache, nausea, staggered gait; anorexia, lassitude (weakness, exhaustion); dermatitis; bone marrow depression; [potential occupational carcinogen]	Eyes, skin, respiratory system, blood, central nervous system, bone marrow	Colorless to light yellow liquid with an aromatic odor [Note: Solid below 42 °F] BP: 176°F Fl.Pt = 12°F LEL: 1.2% UEL: 7.8% Class B Flammable liquid
Benzo[a]anthracene	56-55-3	None established	None established	None established	None established	Inhalation; ingestion; skin absorption; skin and/or eye contact	Irritation eyes, skin, respiratory system, CNS	Skin	Pale Yellow crystal, solid BP: 438 C
Benzo[a]pyrene	50-32-8	None established	TWA 0.1 mg/m <sup>3</sup>	TWA 0.2 mg/m <sup>3</sup>	None established	Inhalation; ingestion; skin absorption; skin and/or eye contact	POISON. This material is an experimental carcinogen, mutagen, tumorigen, neoplastigen and teratogen. It is a probable carcinogen in humans and a known human mutagen. IARC Group 2A carcinogen. It is believed to cause bladder, skin and lung cancer. Exposure to it may damage the developing foetus. May cause reproductive damage. Skin, respiratory and eye irritant or burns.	Skin, eye, bladder, lung, reproductive	Yellow crystals or powder [found in cigarette smoke, coal tar, fuel exhaust gas and in many other sources] BP: 495 C
Benzo[b]fluoranthene	205-99-2	None established	TWA 0.1 mg/m <sup>3</sup>	TWA 0.2 mg/m <sup>3</sup>	None established	Inhalation; ingestion; skin and/or eye contact	No data were identified on the toxicity of benzo[b]fluoranthene to humans. Based on results of studies in animals, IARC concluded that benzo[b]fluoranthene is possibly carcinogenic to humans	Respiratory system, skin, bladder, kidneys	Off-white to tan powder
Benzo[k]fluoranthene	207-08-9	None established	None established	None established	None established	inhalation, skin absorption, skin and/or eye contact	Irritation eyes, skin, respiratory tract, gastrointestinal; fatal if swallowed, inhaled, absorbed through the skin; vomiting, nausea, diarrhea	Lungs, respiratory system	Yellow crystals BP: 480 C
Beryllium	7440-41-7 (metal)	TWA 0.002 mg/m <sup>3</sup>	Ca C 0.0005 mg/m <sup>3</sup>	TWA 0.002 mg/m <sup>3</sup> C 0.005 mg/m <sup>3</sup> (30 minutes) with a maximum peak of 0.025 mg/m <sup>3</sup>	Ca [4 mg/m <sup>3</sup> (as Be)]	inhalation, skin and/or eye contact	Berylliosis (chronic exposure): anorexia, weight loss, lassitude (weakness, exhaustion), chest pain, cough, clubbing of fingers, cyanosis, pulmonary insufficiency; irritation eyes; dermatitis; [potential occupational carcinogen]	Eyes, skin, respiratory system	Metal: A hard, brittle, gray-white solid. BP: 4532°F

**Table 1. Toxicological, Physical, and Chemical Properties of Compounds Potentially Present at 189 West 230th Street, Bronx, New York**

Compound	CAS #	ACGIH TLV	NIOSH REL	OSHA PEL	IDLH	Routes of Exposure	Toxic Properties	Target Organs	Physical/Chemical Properties
Bis(2-ethylhexyl) phthalate	117-81-7	TWA 5 mg/m <sup>3</sup>	TWA 5 mg/m <sup>3</sup> STEL 10 mg/m <sup>3</sup> (do not exceed during any 15-minute work period)	TWA 5 mg/m <sup>3</sup>	None established	inhalation, skin and/or eye contact	Irritation eyes, skin, nose, throat; affect the nervous system and liver; damage to male reproductive glands	Eyes, skin, nose, respiratory system, nervous system, reproductive system, liver	Colorless to light colored, thick liquid with slight odor
Butane	106-97-8	TWA 1000 ppm	TWA 800 ppm (1900 mg/m <sup>3</sup> )	None established	None established	inhalation, skin and/or eye contact (liquid)	Drowsiness, narcosis, asphyxia; liquid: frostbite	central nervous system	Colorless gas with a gasoline-like or natural gas odor. BP: 31°F UEL: 8.4% LEL: 1.6% Flammable Gas
Cadmium	7440-43-9 (metal)	TWA 0.01 mg/m <sup>3</sup>	Ca	TWA 0.005 mg/m <sup>3</sup>	Ca [9 mg/m <sup>3</sup> (as Cd)]	inhalation, ingestion	Pulmonary edema, dyspnea (breathing difficulty), cough, chest tightness, substernal (occurring beneath the sternum) pain; headache; chills, muscle aches; nausea, vomiting, diarrhea; anosmia (loss of the sense of smell), emphysema, proteinuria, mild anemia; [potential occupational carcinogen]	respiratory system, kidneys, prostate, blood	Metal: Silver-white, blue-tinged lustrous, odorless solid. BP: 1409°F
Carbon Disulfide	75-15-0	TWA 1 ppm	TWA 1 ppm (3 mg/m <sup>3</sup> ) STEL 10 ppm (30 mg/m <sup>3</sup> ) [skin]	TWA 20 ppm C 30 ppm 100 ppm (30-minute maximum peak)	500 ppm	inhalation, skin absorption, ingestion, skin and/or eye contact	Dizziness, headache, poor sleep, lassitude (weakness, exhaustion), anxiety, anorexia, weight loss; psychosis; polyneuropathy; Parkinson-like syndrome; ocular changes; coronary heart disease; gastritis; kidney, liver injury; eye, skin burns; dermatitis; reproductive effects	central nervous system, peripheral nervous system, cardiovascular system, eyes, kidneys, liver, skin, reproductive system	Colorless to faint-yellow liquid with a sweet ether-like odor. BP: 116°F Fl.P: -22°F UEL: 50.0% LEL: 1.3% Class IB Flammable Liquid
Chlorobenzene	108-90-7	TWA 10 ppm	None established	TWA 75 ppm (350 mg/m <sup>3</sup> )	1000 ppm	inhalation, ingestion, skin and/or eye contact	Irritation eyes, skin, nose; drowsiness, incoordination; central nervous system depression; in animals: liver, lung, kidney injury	Eyes, skin, respiratory system, central nervous system, liver	Colorless liquid with an almond-like odor BP: 270°F Fl.P: 82°F UEL: 9.6% LEL: 1.3%
Chloroethane	75-00-3	TWA 100ppm	Handle with caution in the workplace	TWA 1000 ppm (2600 mg/m <sup>3</sup> )	3800 ppm [10%LEL]	inhalation, skin absorption (liquid), ingestion (liquid), skin and/or eye contact	Incoordination, inebriation; abdominal cramps; cardiac arrhythmias, cardiac arrest; liver, kidney damage	Liver, kidneys, respiratory system, cardiovascular system, central nervous system	Colorless gas or liquid (below 54°F) with a pungent, ether-like odor. BP: 54°F Fl.P: NA (Gas) -58°F (Liquid) UEL: 15.4% LEL: 3.8%
Chloroform	67-66-3	TWA 10 ppm	Ca STEL 2 ppm (9.78 mg/m <sup>3</sup> ) [60-minute]	C 50 ppm (240 mg/m <sup>3</sup> )	Ca [500 ppm]	inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, skin; dizziness, mental dullness, nausea, confusion; headache, lassitude (weakness, exhaustion); anesthesia; enlarged liver; [potential occupational carcinogen]	Liver, kidneys, heart, eyes, skin, central nervous system	Colorless liquid with a pleasant odor BP: 143°F

**Table 1. Toxicological, Physical, and Chemical Properties of Compounds Potentially Present at 189 West 230th Street, Bronx, New York**

Compound	CAS #	ACGIH TLV	NIOSH REL	OSHA PEL	IDLH	Routes of Exposure	Toxic Properties	Target Organs	Physical/Chemical Properties
Chromium	7440-47-3	TWA 0.5 mg/m <sup>3</sup> (metal and Cr III compounds) TWA 0.05 mg/m <sup>3</sup> (water-soluble Cr IV compounds) TWA 0.01 mg/m <sup>3</sup> (insoluble Cr IV compounds)	TWA 0.5 mg/m <sup>3</sup>	TWA 1 mg/m <sup>3</sup>	250 mg/m <sup>3</sup> (as Cr)	inhalation, ingestion, skin and/or eye contact	Irritation eyes, skin; lung fibrosis (histologic)	Eyes, skin, respiratory system	Blue-white to steel-gray, lustrous, brittle, hard, odorless solid. BP: 4788°F
Chrysene; Phenanthrene; Pyrene; Coal tar pitch volatiles	65996-93-2	TWA 0.2 mg/m <sup>3</sup>	Ca TWA 0.1 mg/m <sup>3</sup> (cyclohexane- extractable fraction)	TWA 0.2 mg/m <sup>3</sup> (benzene- soluble fraction)	Ca [80 mg/m <sup>3</sup> ]	Inhalation, skin and/or eye contact	Dermatitis, bronchitis, [potential occupational carcinogen]	Respiratory system, skin, bladder, kidneys	Black or dark-brown amorphous residue. Combustible Solids
cis-1,2-Dichloroethene	158-59-2	TWA 200 ppm	TWA 200 ppm	TWA 200 ppm	None established	inhalation, skin absorption, ingestion	Harmful if swallowed, inhaled, or absorbed through skin. Irritant. Narcotic. Suspected carcinogen	Skin	Colorless liquid BP: 60 C F.P: 4 C UEL: 12.8% LEL: 9.7 %
Copper	7440-50-8	TWA 0.2mg/m <sup>3</sup> (fume) 1 mg/m <sup>3</sup> (dusts and mists)	TWA 1 mg/m <sup>3</sup>	TWA 1 mg/m <sup>3</sup>	100 mg/m <sup>3</sup> (as Cu)	Inhalation, ingestion, skin and/or eye contact	Irritation eyes, respiratory system; cough, dyspnea (breathing difficulty), wheezing	Eyes, skin, respiratory system, liver, kidneys (increase(d) risk with Wilson's disease)	Noncombustible Solid in bulk form, but powdered form may ignite. BP: 4703°F
Dibenzo[a,h]anthracene	53-70-3	None established	None established	None established	None established	Inhalation, ingestion, skin and/or eye contact	Irritation eyes, skin	Eyes, skin; skin photosensitization.	Colorless crystalline powder BP: 524°C
Diesel Fuel #2	68476-34-6	None established	None established	Designated as an OSHA Select Carcinogen	None established	ingestion, skin and/or eye contact	Kidney damage; potential lung damage; suspected carcinogen; irritation of eyes, skin, respiratory tract; dizziness, headache, nausea; chemical pneumonitis (from aspiration of liquid); dry, red skin; irritant contact dermatitis; eye redness, pain.	Eyes, skin, kidneys	Clear yellow brown combustible liquid; floats on water; distinct diesel petroleum hydrocarbon odor. BP: 356-716°F F.P: 154.4-165.2°F LEL: 0.6% UEL: 7.0%
Ethylbenzene	100-41-4	TWA 100 ppm STEL 125 ppm	TWA 100 ppm (435 mg/m <sup>3</sup> ) STEL 125 ppm (545 mg/m <sup>3</sup> )	TWA 100 ppm (435 mg/m <sup>3</sup> )	800 ppm [10%LEL]	inhalation, ingestion, skin and/or eye contact	Irritation eyes, skin, mucous membrane; headache; dermatitis; narcosis, coma	Eyes, skin, respiratory system, central nervous system	Colorless liquid with an aromatic odor. BP: 277°F F.P: 55°F UEL: 6.7% LEL: 0.8% Class IB Flammable Liquid
Fluoranthene	206-44-0	None established	None established	None established	None established	inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, skin; possible burns; heart and liver injury, pulmonary edema, respiratory arrest, gastrointestinal disturbances.	Heart, liver, lungs.	Yellow needles.
Fluorene	86-73-7	None established	None established	None established	None established	inhalation, ingestion, skin and/or eye contact	Irritation skin, digestive tract	Skin	White crystals BP: 563°F

**Table 1. Toxicological, Physical, and Chemical Properties of Compounds Potentially Present at 189 West 230th Street, Bronx, New York**

Compound	CAS #	ACGIH TLV	NIOSH REL	OSHA PEL	IDLH	Routes of Exposure	Toxic Properties	Target Organs	Physical/Chemical Properties
Fuel Oil #2	68476-30-2	TWA 100mg/m <sup>3</sup> (aerosol and vapor, as total hydrocarbons)	None established	None established	None established	inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, skin; CNS effects; nausea, vomiting, headache, cramping, dizziness, weakness, loss of coordination,, drowsiness; kidney, liver damage	Eyes, skin, CNS	Clear or yellow to red oily liquid, kerosene-like odor BP: 347 - 689 °F UEL:5-6% LEL: 0.7-1.0%
Gasoline	8006-61-9	TWA 300 ppm STEL 500 ppm	Carcinogen	None established	Ca [IDLH value has not been determined]	Skin absorption; inhalation; ingestion; skin and/or eye contact	Eyes and skin irritation, mucous membrane; dermatitis; headache; listlessness, blurred vision, dizziness, slurred speech, confusion, convulsions; chemical pneumonitis; possible liver, kidney damage [Potential occupational carcinogen]	Eyes, skin, respiratory system, CNS, Liver, Kidneys	Clear liquid with a characteristic odor, aromatic Fl.Pt = -45°F LEL = 1.4% UEL = 7.6% Class 1B Flammable Liquid
Hexachlorobutadiene	87-68-3	TWA 0.02 ppm	Ca TWA 0.02 ppm (0.24 mg/m <sup>3</sup> ) [skin]	None established	Ca [N.D.]	inhalation, skin absorption, ingestion, skin and/or eye contact	In animals: irritation eyes, skin, respiratory system; kidney damage; [potential occupational carcinogen]	Eyes, skin, respiratory system, kidneys	Clear, colorless liquid with a mild, turpentine-like odor. BP: 419°F
Hydrogen Sulfide	7783-06-4	TWA (10 ppm) STEL (15 ppm) (adopted values for which changes are proposed in the NIC)	C 10 ppm (15 mg/m <sup>3</sup> ) [10- minute]	C 20 ppm 50 ppm [10- minute maximum peak]	100 ppm	inhalation, skin and/or eye contact	Irritation eyes, respiratory system; apnea, coma, convulsions; conjunctivitis, eye pain, lacrimation (discharge of tears), photophobia (abnormal visual intolerance to light), corneal vesiculation; dizziness, headache, lassitude (weakness, exhaustion), irritability, insomnia; gastrointestinal disturbance; liquid: frostbite	Eyes, respiratory system, central nervous system	Colorless gas with a strong odor of rotten eggs. BP: -77°F UEL: 44.0% LEL: 4.0% Flammable Gas
Indeno[1,2,3-cd]pyrene	193-39-5	None established	None established	None established	None established	inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, skin; possible human carcinogen (skin); weakness; affect liver, lung tissue, renal tissue; impariment of blood forming tissue	Skin	Fluorescent green-yellow crystalline solid BP: 536 C
Indeno[1,2,3-cd]pyrene	193-39-5	None established	None established	None established	None established	inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, skin; possible human carcinogen (skin); weakness; affect liver, lung tissue, renal tissue; impariment of blood forming tissue	Skin	Yellowish crystal solid BP: 536 C
Isopropylbenzene	98-82-8	TWA 50 ppm	TWA 50 ppm (245 mg/m <sup>3</sup> ) [skin]	TWA 50 ppm (245 mg/m <sup>3</sup> ) [skin]	900 ppm [10%LEL]	inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, skin, mucous membrane; dermatitis; headache, narcosis, coma	Eyes, skin, respiratory system, central nervous system	Colorless liquid with a sharp, penetrating, aromatic odor. BP: 306°F Fl.P: 96°F UEL: 6.5% LEL: 0.9%

**Table 1. Toxicological, Physical, and Chemical Properties of Compounds Potentially Present at 189 West 230th Street, Bronx, New York**

Compound	CAS #	ACGIH TLV	NIOSH REL	OSHA PEL	IDLH	Routes of Exposure	Toxic Properties	Target Organs	Physical/Chemical Properties
Kerosene	8008-20-6	TWA 200 mg/m <sup>3</sup>	TWA 100 mg/m <sup>3</sup>	None established	IDLH value has not been determined	inhalation, ingestion, skin and/or eye contact	Irritation eyes, skin, nose, throat; burning sensation in chest; headache, nausea, lassitude (weakness, exhaustion), restlessness, incoordination, confusion, drowsiness; vomiting, diarrhea; dermatitis; chemical pneumonitis (aspiration liquid)	Eyes, skin, respiratory system, central nervous system	Colorless to yellowish, oily liquid with a strong, characteristic odor. BP: 347-617°F Fl.P: 100-162°F UEL: 5% LEL: 0.7% Class II Combustible Liquid
Lead	7439-92-1	TWA 0.05 mg/m <sup>3</sup>	TWA (8-hour) 0.050 mg/m <sup>3</sup>	TWA 0.050 mg/m <sup>3</sup>	100 mg/m <sup>3</sup> (as Pb)	inhalation, ingestion, skin and/or eye contact	Lassitude (weakness, exhaustion), insomnia; facial pallor; anorexia, weight loss, malnutrition; constipation, abdominal pain, colic; anemia; gingival lead line; tremor; paralysis wrist, ankles; encephalopathy; kidney disease; irritation eyes; hypertension	Eyes, gastrointestinal tract, central nervous system, kidneys, blood, gingival tissue	A heavy, ductile, soft, gray solid. BP: 3164°F Noncombustible Solid in bulk form
Manganese	7439-96-5 (metal)	TWA 0.2 mg/m <sup>3</sup>	TWA 1 mg/m <sup>3</sup> STEL 3 mg/m <sup>3</sup>	C 5 mg/m <sup>3</sup>	500 mg/m <sup>3</sup> (as Mn)	inhalation, ingestion	Manganism; asthenia, insomnia, mental confusion; metal fume fever: dry throat, cough, chest tightness, dyspnea (breathing difficulty), rales, flu-like fever; low-back pain; vomiting; malaise (vague feeling of discomfort); lassitude (weakness, exhaustion); kidney damage	respiratory system, central nervous system, blood, kidneys	A lustrous, brittle, silvery solid. BP: 3564°F
Mercury (organo) alkyl compounds (as Hg)	7439-97-6	TWA 0.01 mg/m <sup>3</sup> STEL 0.03 mg/m <sup>3</sup> [skin]	TWA 0.01 mg/m <sup>3</sup> STEL 0.03 mg/m <sup>3</sup> [skin]	TWA 0.01 mg/m <sup>3</sup> C 0.04 mg/m <sup>3</sup>	2 mg/m <sup>3</sup> (as Hg)	inhalation, skin absorption, ingestion, skin and/or eye contact	Paresthesia; ataxia, dysarthria; vision, hearing disturbance; spasticity, jerking limbs; dizziness; salivation; lacrimation (discharge of tears); nausea, vomiting, diarrhea, constipation; skin burns; emotional disturbance; kidney injury; possible teratogenic effects	Eyes, skin, central nervous system, peripheral nervous system, kidneys	Appearance and odor vary depending upon the specific (organo) alkyl mercury compound
Mercury compounds [except (organo) alkyls] (as Hg) Mercury	7439-97-6	TWA 0.025 mg/m <sup>3</sup> (elemental and inorganic forms)	Hg Vapor: TWA 0.05 mg/m <sup>3</sup> [skin] Other: C 0.1 mg/m <sup>3</sup> [skin]	TWA 0.1 mg/m <sup>3</sup>	10 mg/m <sup>3</sup> (as Hg)	inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, skin; cough, chest pain, dyspnea (breathing difficulty), bronchitis, pneumonitis; tremor, insomnia, irritability, indecision, headache, lassitude (weakness, exhaustion); stomatitis, salivation; gastrointestinal disturbance, anorexia, weight loss; proteinuria	Eyes, skin, respiratory system, central nervous system, kidneys	Metal: Silver-white, heavy, odorless liquid. [Note: "Other" Hg compounds include all inorganic & aryl Hg compounds except (organo) alkyls.] BP: 674°F

**Table 1. Toxicological, Physical, and Chemical Properties of Compounds Potentially Present at 189 West 230th Street, Bronx, New York**

Compound	CAS #	ACGIH TLV	NIOSH REL	OSHA PEL	IDLH	Routes of Exposure	Toxic Properties	Target Organs	Physical/Chemical Properties
Methyl tert-butyl ether (MTBE)	1634-04-4	TWA 50 ppm	No established REL	None established	None established	inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, mucous membrane, respiratory; dizziness, nausea, headache, intoxication	Eyes, skin, mucous membrane, respiratory system, central nervous system	Colorless liquid BP: 55.2 C
Methylene Chloride	75-09-2	TWA 50 ppm, A3 - Ca suspected human carcinogen		TWA 25 ppm STEL 125 ppm	Ca [2300 ppm]	inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, skin; lassitude (weakness, exhaustion), drowsiness, dizziness; numbness, tingle limbs; nausea; [potential occupational carcinogen]	Eyes, skin, cardiovascular system, central nervous system	Colorless liquid with a chloroform-like odor BP: 104°F UEL: 23% LEL: 13%
Metals Remediation Compound (MRC): Glycerol Tripolylactate Sorbitol Cysteinate Lactic Acid Glycerol	201167-72-8 444618-64-8 50-21-5 56-81-5	None established	None established	None established	None established	inhalation, ingestion, skin absorption, skin and/or eye contact	Irritation eyes, skin, respiratory tract	Behavioral (headache), gastrointestinal tract, reproductive system	Viscous amber gel/liquid; strong amine/sulfur odor
Naphtha (coal tar)	8030-30-6	None established	TWA 100 ppm (400 mg/m <sup>3</sup> )	TWA 100 ppm (400 mg/m <sup>3</sup> )	1000 ppm [10%LEL]	inhalation, ingestion, skin and/or eye contact	Irritation eyes, skin, nose; dizziness, drowsiness; dermatitis; in animals: liver, kidney damage	Eyes, skin, respiratory system, central nervous system, liver, kidneys	Reddish-brown, mobile liquid with an aromatic odor BP: 320-428°F F.L.P: 100-109°F Class II Combustible Liquid
Naphthalene	91-20-3	TWA 2 ppm STEL 15 ppm	TWA 10 ppm (50 mg/m <sup>3</sup> ) STEL 15 ppm (75 mg/m <sup>3</sup> )	TWA 10 ppm (50 mg/m <sup>3</sup> )	250 ppm	inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes; headache, confusion, excitement, malaise (vague feeling of discomfort); nausea, vomiting, abdominal pain; irritation bladder; profuse sweating; jaundice; hematuria (blood in the urine), renal shutdown; dermatitis, optical neuritis, corneal damage	Eyes, skin, blood, liver, kidneys, central nervous system	Colorless to brown solid with an odor of mothballs. BP: 424°F F.L.P: 174°F UEL: 5.9% LEL: 0.9%
n-Butylbenzene	104-51-8	None established	None established	None established	None established	inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, skin; CNS depression, lung damage; nausea, vomiting, headache, dizziness, weakness, loss of coordination, blurred vision, drowsiness, confusion, disorientation	Eyes, skin, respiratory system, central nervous system	Colorless liquid with a sweet odor BP: 183 C F.L.P: 59 C UEL: 5.8% LEL: 0.8%
Nickel	7440-02-0 (Metal)	TWA 1.5 mg/m <sup>3</sup> (elemental) TWA 0.1 mg/m <sup>3</sup> (soluble inorganic compounds) TWA 0.2 mg/m <sup>3</sup> (insoluble inorganic compounds) TWA 0.1 mg/m <sup>3</sup> (Nickel subsulfide)	Ca TWA 0.015 mg/m <sup>3</sup>	TWA 1 mg/m <sup>3</sup>	Ca [10 mg/m <sup>3</sup> (as Ni)]	inhalation, ingestion, skin and/or eye contact	Sensitization dermatitis, allergic asthma, pneumonitis; [potential occupational carcinogen]	Nasal cavities, lungs, skin	Metal: Lustrous, silvery, odorless solid. BP: 5139°F

**Table 1. Toxicological, Physical, and Chemical Properties of Compounds Potentially Present at 189 West 230th Street, Bronx, New York**

Compound	CAS #	ACGIH TLV	NIOSH REL	OSHA PEL	IDLH	Routes of Exposure	Toxic Properties	Target Organs	Physical/Chemical Properties
Nitrobenzene	98-95-3	TWA 1 ppm	TWA 1 ppm (5 mg/m <sup>3</sup> ) [skin]	TWA 1 ppm (5 mg/m <sup>3</sup> ) [skin]	200 ppm	inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, skin; anoxia; dermatitis; anemia; methemoglobinemia; in animals: liver, kidney damage; testicular effects	Eyes, skin, blood, liver, kidneys, cardiovascular system, reproductive system	Yellow, oily liquid with a pungent odor like paste shoe polish. BP: 411°F F.P: 190°F LEL(200°F): 1.8%
n-Propylbenzene	103-65-1	None established	None established	None established	None established	inhalation, ingestion, skin and/or eye contact	Harmful if swallowed, Irritation eyes, skin, digestive tract, respiratory tract, central nervous system	Eyes, skin, central nervous system, respiratory system	colorless or light yellow liquid BP: 159 C F.P: 47 C UEL: 6% LEL: 0.8%
Petroleum hydrocarbons(Petroleum distillates)	8002-05-9	None established	TWA 350 mg/m <sup>3</sup> C 1800 mg/m <sup>3</sup> [15 min]	TWA 500 ppm (2000 mg/m <sup>3</sup> )	1,100 [10% LEL]	Inhalation; ingestion; skin and/or eye contact	Irritation eyes, skin, nose, throat; dizziness, drowsiness, headache, nausea; dried/cracked skin; chemical pneumonitis	CNS, eyes, respiratory system, skin	Colorless liquid with a gasoline or kerosene-like odor BP: 86-460°F Fl. Pt = -40 to -86°F UEL: 5.9% LEL: 1.1% Flammable liquid
Phenol	108-95-2	TWA 5 ppm	TWA 5 ppm (19 mg/m <sup>3</sup> ) C 15.6 ppm (60 mg/m <sup>3</sup> ) [15-minute] [skin]	TWA 5 ppm (19 mg/m <sup>3</sup> ) [skin]	250 ppm	inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, nose, throat; anorexia, weight loss; lassitude (weakness, exhaustion), muscle ache, pain; dark urine; cyanosis; liver, kidney damage; skin burns; dermatitis; ochronosis; tremor, convulsions, twitching	Eyes, skin, respiratory system, liver, kidneys	Colorless to light-pink, crystalline solid with a sweet, acrid odor. BP: 359°F UEL: 8.6% LEL: 1.8%
p-Isopropyltoluene	99-87-6	None established	None established	None established	None established	inhalation, skin absorption, eye contact	Irritation skin	CNS, skin	Colorless, clear liquid, sweetish aromatic odor BP: 350.8°F Class III Flammable liquid
Regenox Part A: Sodium Percarbonate Sodium Carbonate Monohydrate Silicic Acid Silica Gel	15630-89-4 5968-11-6 7699-11-6 63231-67-4	None established	None established	None established	None established	inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation respiratory tract, mucous membranes, nose, throat, eyes, skin; gastrointestinal disturbance	Respiratory system, eyes, skin	Odorless, white, powder [Note: Self-accelerating decomposition with oxygen release starts at 50° C]
Regenox Part B: Silicic Acid, Sodium Salt, Sodium Silicate; Silica Gel; Ferrous Sulfate; Water	1344-09-8 63231-67-4 7720-78-7 7732-18-5	None established	None established	None established	None established	inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation respiratory tract, mucous membranes, nose, throat, eyes, skin, mouth, esophagus and stomach	Respiratory system, eyes, skin, gastrointestinal tract	Odorless, Blue/Green, liquid [Note: Oxides of carbon and silicon may be formed when heated to decomposition]
sec-Butylbenzene	135-98-8	None established	None established	None established	None established	inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, skin, upper airway; central nervous system, headache, dizziness; gastrointestinal disturbance	Respiratory system, central nervous system, eyes, skin;	Colorless liquid BP: 344°F F.P: 126 °F UEL: 6.9% LEL: 0.8% Combustible liquid

**Table 1. Toxicological, Physical, and Chemical Properties of Compounds Potentially Present at 189 West 230th Street, Bronx, New York**

Compound	CAS #	ACGIH TLV	NIOSH REL	OSHA PEL	IDLH	Routes of Exposure	Toxic Properties	Target Organs	Physical/Chemical Properties
Selenium	7782-49-2	TWA 0.2 mg/m <sup>3</sup>	TWA 0.2 mg/m <sup>3</sup>	TWA 0.2 mg/m <sup>3</sup>	1 mg/m <sup>3</sup> (as Se)	inhalation, ingestion, skin and/or eye contact	Irritation eyes, skin, nose, throat; visual disturbance; headache; chills, fever; dyspnea (breathing difficulty), bronchitis; metallic taste, garlic breath, gastrointestinal disturbance; dermatitis; eye, skin burns; in animals: anemia; liver necrosis, cirrhosis; kidney, spleen damage	Eyes, skin, respiratory system, liver, kidneys, blood, spleen	Amorphous or crystalline, red to gray solid. [Note: Occurs as an impurity in most sulfide ores.] BP: 1265°F
Silver	7440-22-4 (metal)	TWA 0.1 mg/m <sup>3</sup> (metal, dust, fumes) TWA 0.01 mg/m <sup>3</sup> (Soluble compounds, as Ag)	TWA 0.01 mg/m <sup>3</sup>	TWA 0.01 mg/m <sup>3</sup>	10 mg/m <sup>3</sup> (as Ag)	inhalation, ingestion, skin and/or eye contact	Blue-gray eyes, nasal septum, throat, skin; irritation, ulceration skin; gastrointestinal disturbance	Nasal septum, skin, eyes	Metal: White, lustrous solid BP: 3632°F
Slop Oil	69029-75-0	None established	None established	None established	None established	Inhalation; ingestion	Irritation eyes, skin, gastrointestinal tract	Eyes, skin, gastrointestinal tract	Clear light to dark amber liquid, with mild hydrocarbon odor. BP: >500°F F.L.P : 250°F
Sulfuric Acid	7664-93-9	TWA 0.2 mg/m <sup>3</sup>	TWA 1 mg/m <sup>3</sup>	TWA 1 mg/m <sup>3</sup>	15 mg/m <sup>3</sup>	inhalation, ingestion, skin and/or eye contact	Irritation eyes, skin, nose, throat; pulmonary edema, bronchitis; emphysema; conjunctivitis; stomatis; dental erosion; eye, skin burns; dermatitis	Eyes, skin, respiratory system, teeth	Colorless to dark-brown, oily, odorless liquid. BP: 554°F Noncombustible Liquid
tert-Butylbenzene	98-06-6	None established	None established	None established	None established	inhalation, skin absorption, ingestion,	Eye and respiratory irritant; CNS depression; liver or kidney damage	Respiratory system, central nervous system, eyes, liver, kidney	Colorless liquid with an aromatic odor BP: 168 - 169 C F.L.P: 34 C UEL: 5.6 % LEL: 0.8 %
Tetrachloroethene	127-18-4	TWA 25 ppm STEL 100 ppm (STEL) listed as A3, animal carcinogen	Ca Minimize workplace exposure concentrations	TWA 100 ppm C 200 ppm (for 5 minutes in any 3-hour period), with a maximum peak of 300 ppm	Ca [150 ppm]	inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, skin, nose, throat, respiratory system; nausea; flush face, neck; dizziness, incoordination; headache, drowsiness; skin erythema (skin redness); liver damage; [potential occupational carcinogen]	Eyes, skin, respiratory system, liver, kidneys, central nervous system	Colorless liquid with a mild, chloroform-like odor. BP: 250°F Noncombustible Liquid
Toluene	108-88-3	TWA 20 ppm	TWA 100 ppm (375 mg/m <sup>3</sup> ) STEL 150 ppm (560 mg/m <sup>3</sup> )	TWA 200 ppm C 300 ppm 500 ppm (10-minute maximum peak)	500 ppm	inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, nose; lassitude (weakness, exhaustion), confusion, euphoria, dizziness, headache; dilated pupils, lacrimation (discharge of tears); anxiety, muscle fatigue, insomnia; paresthesia; dermatitis; liver, kidney damage	Eyes, skin, respiratory system, central nervous system, liver, kidneys	Colorless liquid with a sweet, pungent, benzene-like odor. BP: 232°F F.L.P: 40°F UEL: 7.1% LEL: 1.1% Class IB Flammable Liquid

**Table 1. Toxicological, Physical, and Chemical Properties of Compounds Potentially Present at 189 West 230th Street, Bronx, New York**

Compound	CAS #	ACGIH TLV	NIOSH REL	OSHA PEL	IDLH	Routes of Exposure	Toxic Properties	Target Organs	Physical/Chemical Properties
trans-1,2-Dichloroethene	156-60-5	TWA 200 ppm	None established	TWA 200 ppm STEL 250 ppm (skin)	None established	inhalation, skin absorption, ingestion, skin and/or eye contact	Narcotic. Irritation eyes, skin, respiratory tract, mucous membrane; CNS depression.	Respiratory tract, mucous membrane, eyes, skin, CNS	Colorless liquid with a fruity pleasant odor BP: 48°C Fl.P 6C UEL: 12.8% LEL: 9.7%
Trichloroethene	79-01-6	TWA 10 ppm STEL 25 ppm	Ca	TWA 100 ppm C 200 ppm 300 ppm (5-minute maximum peak in any 2 hours)	Ca [1000 ppm]	inhalation, skin absorption, ingestion, skin and/or eye contact	Irritation eyes, skin; headache, visual disturbance, lassitude (weakness, exhaustion), dizziness, tremor, drowsiness, nausea, vomiting; dermatitis; cardiac arrhythmias, paresthesia; liver injury; [potential occupational carcinogen]	Eyes, skin, respiratory system, heart, liver, kidneys, central nervous system	Colorless liquid (unless dyed blue) with a chloroform-like odor. BP: 189°F UEL(77°F): 10.5% LEL(77°F): 8%
Vinyl Chloride	75-01-4	TWA 1 ppm	Carcinogen	TWA 1 ppm C 5 ppm [15-minute]	Ca [IDLH value has not been determined]	inhalation, skin, and/or eye contact (liquid)	Lassitude (weakness, exhaustion); abdominal pain, gastrointestinal bleeding; enlarged liver; pallor or cyanosis of extremities; liquid: frostbite; [potential occupational carcinogen]	Liver, central nervous system, blood, respiratory system, lymphatic system	Colorless gas or liquid (below 7°F) with a pleasant odor at high concentrations. BP: 7°F UEL: 33.0% LEL: 3.6% Flammable Gas
Xylene (m, o & p isomers)	108-38-3, 95-47-6, 106-42-3	TWA 100 ppm (435 mg/m <sup>3</sup> ) STEL 150 ppm	TWA 100 ppm (435 mg/m <sup>3</sup> )	TWA 100 ppm (435 mg/m <sup>3</sup> )	900 ppm	Skin absorption, inhalation, ingestion, skin, and/or eye contact	Irritation eyes, skin, nose, throat; dizziness, excitement, drowsiness, incoordination, staggering gait; corneal vacuolization; anorexia, nausea, vomiting, abdominal pain; dermatitis	Eyes, skin, respiratory system, central nervous system, gastrointestinal tract, blood, liver, kidneys	Colorless liquid with an aromatic odor BP: 282°F, 292°F, 281°F Fl. Pt. 82°F, 90°F, 81°F LEL: 1.1%, 0.9%, 1.1% UEL: 7.0%, 6.7%, 7.0% Class C Flammable Liquid
Zinc	7440-66-6	TWA 10 mg/m3 (Inhalable fraction)	None established	TWA 10 mg/m3 (for zinc oxide fume)	None established	skin and/or eye contact, inhalation, ingestion	Irritation eyes, skin, respiratory tract; gastrointestinal disturbances	Eyes, skin, respiratory system	Bluish gray solid BP: 1664.6°F Flammable

**TABLE 2**  
**ACTION LEVELS FOR WORKER BREATHING ZONE**

<b>Instrument</b>	<b>Action Level *</b>	<b>Level of Respiratory Protection/Action</b>
PID	0 to <5 ppm (one minute sustained)	Level D *
PID	>5 to <50 ppm (one minute sustained)	Utilize APR (Level C)
PID	>50 to <100 ppm (one minute sustained)	Level B
PID	>100ppm	Stop work** (ventilate, apply foam)
CGI/H <sub>2</sub> S Meter	<5%	Level D
CGI/H <sub>2</sub> S Meter	>5% to <25%	Level B
CGI/H <sub>2</sub> S Meter	>25%	Stop work**
CGI/CO Meter	>25%	Level B
CGI/CO Meter	>50%	Stop work** (ventilate area)
CGI/O <sub>2</sub> Meter	<10% LEL, in excavation 19.5% oxygen – 23.5%	Level D Level D
CGI/O <sub>2</sub> Meter	>10% LEL, in excavation >23.5% oxygen	Allow to vent, apply foam** Stop work, Oxygen Enriched ATM**
Dust Monitor	0 – 1.0 mg/m <sup>3</sup> , 5-minutes average	Level D
Dust Monitor	>1.0 to 5.0 mg/m <sup>3</sup> , 5-minutes average	Level D – Institute dust suppression measures
Dust Monitor	5.0 to >50 mg/m <sup>3</sup> , 5-minute average	Level C – Institute dust suppression measures

Note: Action levels are based on above background levels.

\* Instrument readings will be taken in the breathing zone (BZ) of the workers, unless otherwise indicated.

\*\* Suspend work in immediate area. Conduct air monitoring periodically to determine when work can continue. Implement mitigative measures.

**FIGURE 1**  
**Site Location Map**



## FIGURE 2

### Directions to New York Presbyterian Hospital – 5141 Broadway, New York, NY 10034



- Start at 189 West 230<sup>th</sup> Street, Bronx, New York
- Head northwest on West 230<sup>th</sup> Street
- Turn Left on Broadway
- Arrive at 5141 Broadway, New York Presbyterian Hospital on your right

**Activity Hazard Analysis and  
Material Safety Data Sheets**

<b>JOB SAFETY ANALYSIS</b>		Ctrl. No. 563	DATE 4/27/12	<input checked="" type="checkbox"/> NEW <input type="checkbox"/> REVISED	PAGE 1 of 2
JSA TYPE CATEGORY: <b>EQUITY ONE - BROADWAY</b>		WORK TYPE: <b>Drilling</b>	WORK ACTIVITY (Description): <b>Hollow Stem Auger Soil Borings /Well Installation</b>		
<b>DEVELOPMENT TEAM</b>		<b>POSITION / TITLE</b>	<b>REVIEWED BY:</b>	<b>POSITION / TITLE</b>	
Wendy Monterosso		Senior Hydrogeologist	Joseph Gentile	CHSM	
			Subraham Singh	OHSM	
<b>REQUIRED AND / OR RECOMMENDED PERSONAL PROTECTIVE EQUIPMENT</b>					
<input type="checkbox"/> LIFE VEST <input checked="" type="checkbox"/> HARD HAT <input type="checkbox"/> LIFELINE / BODY HARNESS <input checked="" type="checkbox"/> SAFETY GLASSES	<input type="checkbox"/> GOGGLES <input type="checkbox"/> FACE SHIELD <input checked="" type="checkbox"/> HEARING PROTECTION: (as needed) <input checked="" type="checkbox"/> SAFETY SHOES: Composite-toe or steel toe boots/shoes	<input type="checkbox"/> AIR PURIFYING RESPIRATOR <input type="checkbox"/> SUPPLIED RESPIRATOR <input checked="" type="checkbox"/> PPE CLOTHING: Fluorescent reflective vest or high visibility clothing	<input checked="" type="checkbox"/> GLOVES: Leather, Nitrile and cut resistant <input checked="" type="checkbox"/> OTHER: Insect Repellent, sunscreen (as needed)		
<b>REQUIRED AND / OR RECOMMENDED EQUIPMENT</b>					
Truck-Mounted Drilling Rig, saw, Hand Tools, Photoionization Detector, MultiGas meter (or equivalent), Interface Probe, 20 lb. fire extinguisher, Safety Cones & Flags, "Work Area" Signs (if needed)					
<b>COMMITMENT TO SAFETY</b> - All personnel onsite will actively participate in SPSA performance by verbalizing SPSAs throughout the day.					
<b>"SHOW ME YOUR HANDS"</b>					
<b>Driller and helper should show that hands are clear from controls and moving parts</b>					
<b><sup>1</sup>JOB STEPS</b>	<b><sup>2</sup>POTENTIAL HAZARDS</b>		<b><sup>3</sup>CRITICAL ACTIONS</b>		
1. Mobilization of drilling rig (ensure the Subsurface Clearance Protocol and Drill Rig Checklist are completed)	1a. Contact: equipment/property damage	1a. The drill rig's tower/derrick will be lowered and secured prior to mobilization. 1a. If personnel moves into the path of the drilling rig, the drilling rig will be stopped until the path is again clear. 1a. Use a spotter. 1a. Use caution while advancing the drilling rig. 1a. Inspect the driving path for uneven terrain.			
	1b. Fall: slip/trip/fall hazards	1b. Inspect walking path for uneven terrain, weather-related hazards (i.e., ice, puddles, snow, etc.), and obstructions prior to mobilizing equipment. 1b. Do not climb over stored materials/equipment; walk around. Practice good housekeeping. 1b. Use established pathways and walk on stable, secure ground.			
2. Setting up drilling rig/work area	2a. Fall: slip/trip/fall hazards associated with drilling equipment and tools	2a. See 1b. 2a. Equipment and tools will be staged in a convenient, stable, and orderly manner. 2a. Equipment and tools will be stored at the lowest point of potential energy and out of the walkway and immediate work area (i.e. tools should not be propped against walls or nearby equipment or vehicles). 2a. Equipment and tools that are not anticipated to be used will be returned to an appropriate storage area that is out of the immediate work area. 2a. Ensure power cords and water lines are grouped when used within the work area.			
	2b. Exertion: lifting	2b. Use proper body positioning and lifting techniques; keep back straight, lift with legs, keep load close to body, and never reach with a load. 2b. Ensure that loads are balanced to reduce the potential for muscle strain. 2b. Two people or a mechanical lifting aid are required when lifting objects over 50 lbs or when the shape makes the object difficult to lift.			
3. Raising tower/derrick of drilling rig	3. Contact: overhead hazards	3. Prior to raising the tower/derrick, the area above the drilling rig will be inspected for wires, tree limbs, piping, or other structures, that could come in contact with the rig's tower and/or drilling rods or tools. 3. The tower/derrick must not be raised beneath overhead power lines unless approved by the Roux PM. 3. Maintain a safe distance from overhead structures. 3. Do not move the rig while the tower/derrick is raised.			

<sup>1</sup> Each Job or Operation consists of a set of tasks / steps. Be sure to list all the steps needed to perform job.

<sup>2</sup> A hazard is a potential danger. Break hazards into five types: Contact - victim is struck by or strikes an object; Caught - victim is caught on, caught in or caught between objects; Fall - victim falls to ground or lower level (includes slips and trips); Exertion - excessive strain or stress / ergonomics / lifting techniques; Exposure - inhalation/skin hazards.

<sup>3</sup> Using the first two columns as a guide, decide what actions or procedures are necessary to eliminate or minimize the risk. List the recommended safe operating procedures. Say exactly what needs to be done - such as "use two persons to lift". Avoid general statements such as, "be careful".

<sup>1</sup> JOB STEPS	<sup>2</sup> POTENTIAL HAZARDS	<sup>3</sup> CRITICAL ACTIONS
4. Drilling activity	4a. Contact: flying debris	4a. Use the proper PPE (especially hand, eye, ear and respiratory protection). 4a. Be aware of and avoid potential lines of fire.
	4b. Exposure: noise and dust	4b. Wet borehole area with sprayer to minimize dust. 4b. Stand upwind and keep body away from rig. 4b. No open flames/heat sources.
	4c. Caught: limb/extremity pinching; abrasion/crushing	4c. Use proper PPE. 4c. Always wear leather gloves when making connections and using hand tools; wear cut-resistant (i.e., Kevlar) gloves when handling cutting tools. 4c. Inspect the equipment prior to use for potential pinch points. 4c. Test all emergency shutdown devices prior to drilling to ensure proper working condition. 4c. Inspect drill head for worn surface or missing teeth; replace if damaged or blunt. 4c. Ensure all jewelry is removed, loose clothing is secured, and PPE is secured close to the body. 4c. All non-essential personnel should stay away from the immediate work area; position body out of the line-of-fire of equipment. 4c. Drillers and helpers will understand and use the "Show Me Your Hands" Policy.
	4d. Contact: equipment imbalance during advancement drill equipment	4d. Drillers will advance the borehole with caution to avoid causing the rig to become imbalanced and/or tip. 4d. The blocking and leveling devices used to secure the rig will be inspected by drillers and Roux personnel regularly to see if shifting has occurred. 4d. In addition, personnel and equipment that are non-essential to the advancement of the borehole will be positioned away from the rig at a distance that is at least as far as the boom is high. For example, if the boom is ten feet high, non-essential personnel and equipment will be positioned at least ten feet away from the rig in case the rig tips over.
	4e. Exposure: inhalation of contamination	4e. Air monitoring using a calibrated photoionization detector (PID) will be used to periodically monitor the breathing zone of the work area. 4e. The Action Level for breathing zone air is five parts per million (sustained) as detected by the PID. 4e. If a reading of >5ppm is recorded, the Roux field personnel must temporarily cease work, instruct all Site personnel to step away from the area of elevated readings and inform the Roux PM of the condition. The Roux PM will then recommend additional appropriate precautions in accordance with the site specific health and safety plan.
	4f. Fall: slip/trip/fall hazards	4f. See 2a.
5. Decontaminate equipment	5a. Exposure to contamination (e.g., Separate Phase Hydrocarbons (SPH), contaminated groundwater, vapors)	5a. Wear chemical-resistant disposable gloves and safety glasses. 5a. Use an absorbent pad to clean spills.
	5b. Exposure to chemicals in cleaning solution including ammonia	5b. See 5a.

<sup>1</sup> Each Job or Operation consists of a set of tasks / steps. Be sure to list all the steps needed to perform job.

<sup>2</sup> A hazard is a potential danger. Break hazards into five types: Contact - victim is struck by or strikes an object;

Caught - victim is caught on, caught in or caught between objects; Fall - victim falls to ground or lower level (includes slips and trips); Exertion - excessive strain or stress / ergonomics / lifting techniques; Exposure - inhalation/skin hazards.

<sup>3</sup> Using the first two columns as a guide, decide what actions or procedures are necessary to eliminate or minimize the risk. List the recommended safe operating procedures. Say exactly what needs to be done - such as "use two persons to lift". Avoid general statements such as, "be careful".

<b>JOB SAFETY ANALYSIS</b>		Ctrl. No. 564	DATE 4/27/12	<input type="checkbox"/> NEW <input checked="" type="checkbox"/> REVISED	PAGE 1 of 2
JSA TYPE CATEGORY: <b>EQUITY ONE - BROADWAY</b>		WORK TYPE: <b>Monitoring Well Gauging/Sampling</b>	WORK ACTIVITY (Description): <b>Groundwater Gauging and Sampling</b>		
<b>DEVELOPMENT TEAM</b>		<b>POSITION / TITLE</b>	<b>REVIEWED BY:</b>	<b>POSITION / TITLE</b>	
Wendy Monterosso		Senior Hydrogeologist	Joseph Gentile	CHSM	
			Subraham Singh	OHSM	
<b>REQUIRED AND / OR RECOMMENDED PERSONAL PROTECTIVE EQUIPMENT</b>					
<input type="checkbox"/> LIFE VEST <input checked="" type="checkbox"/> HARD HAT <input type="checkbox"/> LIFELINE / BODY HARNESS <input checked="" type="checkbox"/> SAFETY GLASSES	<input type="checkbox"/> GOGGLES <input type="checkbox"/> FACE SHIELD <input type="checkbox"/> HEARING PROTECTION <input checked="" type="checkbox"/> SAFETY SHOES: Composite-toe or steel toe boots/shoes	<input type="checkbox"/> AIR PURIFYING RESPIRATOR <input type="checkbox"/> SUPPLIED RESPIRATOR <input checked="" type="checkbox"/> PPE CLOTHING: Fluorescent reflective vest or high visibility clothing	<input checked="" type="checkbox"/> GLOVES: Leather, Nitrile and cut resistant <input checked="" type="checkbox"/> OTHER: Insect Repellent, sunscreen (as needed)		
<b>REQUIRED AND / OR RECOMMENDED EQUIPMENT</b>					
Required Equipment: Safety cones, caution tape, Interface probe and/or Water level meter, scissors, tubing cutter, 20 lb. fire extinguisher Equipment as needed: Peristaltic pump, appropriate power sources, tubing, master flex, bailers, poly rope, 55-gallon drums; buckets Tools as needed: socket wrench, screw driver, crow bar, mallet					
<b>COMMITMENT TO SAFETY</b> - All personnel onsite will actively participate in SPSA performance by verbalizing SPSAs throughout the day.					
<b><sup>1</sup>JOB STEPS</b>		<b><sup>2</sup>POTENTIAL HAZARDS</b>		<b><sup>3</sup>CRITICAL ACTIONS</b>	
1. Open/close well		1a. Exertion: muscle strain		1a. Use proper lifting techniques; keep back straight, lift with legs, keep load close to body, and never reach with a load. 1a. Ensure that loads are balanced to reduce the potential for muscle strain. 1a. Two people are required when lifting objects over 50 lbs or when the shape makes the object difficult to lift.	
		1b. Caught: pinch points associated with removing/replacing manholes and working with hand tools		1b. Wear leather gloves when working with well cover and hand tools. 1b. Use proper tools (ratchet and pry bar for well cover) and inspect before use. 1b. Do not put fingers under well cover.	
		1c. Exposure: potential hazardous vapors		1c. No open flames/heat sources. 1c. Allow well to vent after opening it and before sampling activities begin to minimize exposure to vapors. 1c. Work on the upwind side of well.	
		1d. Contact with traffic		1d. Identify potential traffic sources. 1d. Wear appropriate PPE including high visibility clothing or reflective vest. 1d. Delineate work area with 42 inch safety cones and/or other barriers. Position vehicle to protect against oncoming traffic. Use caution tape to provide a more visible delineation of the work area. 1d. Face traffic, maintain eye contact with oncoming vehicles, and establish a safe exit route.	
2. Gauge well		2a. Contact with contamination (e.g., Separate Phase Hydrocarbons (SPH), contaminated groundwater, vapors)		2a. See 1c. 2a. Wear chemical-resistant disposable gloves and safety glasses when gauging well. 2a. Use an absorbent pad to clean probe.	
		2b. Contact with traffic		2b. See 1d.	
3. Purge and sample well using most appropriate method		3a. Exposure: contamination (e.g., SPH, contaminated groundwater, vapors)		3a. Wear chemical-resistant disposable gloves and safety glasses when gauging well. 3a. Insert and remove tubing or bailers slowly to avoid splashing. 3a. Use an absorbent pad to clean spills (see 1c).	
		3b. Exertion: muscle strain while carrying equipment		3b. Use proper lifting techniques when handling/moving equipment. 3b. Use mechanical assistance or make multiple trips to carry equipment (see 1a).	
		3c. Exposure: exposure to preservatives and contaminated liquids		3c. Wear chemical-resistant disposable gloves, cut-resistant gloves and safety glasses when handling samples. 3c. Open and fill sample jars slowly to avoid splashing and contact with preservatives.	
		3d. Contact: cuts by glass or sharp objects		3d. Wear cut-resistant (i.e., Kevlar) gloves under chemical-resistant gloves when handling VOA vials or when using cutting tools.	
		3e. Contact with traffic		3e. See 1d.	
		3f. Electrical hazards		3f. Use caution when attaching equipment to power sources. 3f. Avoid touching battery terminals. 3f. Position batteries away from water source.	

<sup>1</sup> Each Job or Operation consists of a set of tasks / steps. Be sure to list all the steps needed to perform job.

<sup>2</sup> A hazard is a potential danger. Break hazards into five types: Contact - victim is struck by or strikes an object; Caught - victim is caught on, caught in or caught between objects; Fall - victim falls to ground or lower level (includes slips and trips); Exertion - excessive strain or stress / ergonomics / lifting techniques; Exposure - inhalation/skin hazards.

<sup>3</sup> Using the first two columns as a guide, decide what actions or procedures are necessary to eliminate or minimize the risk. List the recommended safe operating procedures. Say exactly what needs to be done - such as "use two persons to lift". Avoid general statements such as, "be careful".

<sup>1</sup> JOB STEPS	<sup>2</sup> POTENTIAL HAZARDS	<sup>3</sup> CRITICAL ACTIONS
4. Transfer purge water from 5-gallon buckets to 55-gallon drums (if necessary); move drums to storage area- See waste disposal/storage JSA	4a. Exposure to contamination (e.g., Separate Phase Hydrocarbons (SPH), contaminated groundwater)	4a. Do not overfill buckets or drums and pour liquids in such a manner that they do not splash. 4a. Properly dispose of used materials/PPE in provided drums in designated drum storage area (see 3a).
	4b. Exertion: muscle strain from lifting/carrying 5-gallon buckets	4b. Use proper lifting techniques when carrying buckets. Do not overfill buckets (see 3b).
	4c. Caught: pinch points associated with handling drum lid	4c. Ensure that fingers are not placed under the lid of the drum. Wear leather gloves and use proper tools (ratchet) while sealing drum lid.
	4d. Fall: spilled purge water	4d. Clean up any spills using absorbent pads.
5. Decontaminate interface probe	5a. Exposure to contamination (e.g., SPH, contaminated groundwater, vapors)	5a. See 3a.
	5b. Exposure to chemicals in cleaning solution including ammonia	5b. See 3a.

<sup>1</sup> Each Job or Operation consists of a set of tasks / steps. Be sure to list all the steps needed to perform job.

<sup>2</sup> A hazard is a potential danger. Break hazards into five types: Contact - victim is struck by or strikes an object; Caught - victim is caught on, caught in or caught between objects; Fall - victim falls to ground or lower level (includes slips and trips); Exertion - excessive strain or stress / ergonomics / lifting techniques; Exposure - inhalation/skin hazards.

<sup>3</sup> Using the first two columns as a guide, decide what actions or procedures are necessary to eliminate or minimize the risk. List the recommended safe operating procedures. Say exactly what needs to be done - such as "use two persons to lift". Avoid general statements such as, "be careful".

<b>JOB SAFETY ANALYSIS</b>		Ctrl. No. 565	DATE 4/27/12	<input type="checkbox"/> NEW <input checked="" type="checkbox"/> REVISED	PAGE 1 of 1
JSA TYPE CATEGORY: <b>EQUITY ONE 0- BROADWAY</b>		WORK TYPE: <b>Waste Disposal Oversight</b>	WORK ACTIVITY (Description): <b>Movement of 55-gallon Drums</b>		
<b>DEVELOPMENT TEAM</b>		<b>POSITION / TITLE</b>	<b>REVIEWED BY:</b>	<b>POSITION / TITLE</b>	
Wendy Monterosso		Senior Hydrogeologist	Joseph Gentile	CHSM	
			Subraham Singh	OHSM	
<b>REQUIRED AND / OR RECOMMENDED PERSONAL PROTECTIVE EQUIPMENT</b>					
<input type="checkbox"/> LIFE VEST <input checked="" type="checkbox"/> HARD HAT <input type="checkbox"/> LIFELINE / BODY HARNESS <input checked="" type="checkbox"/> SAFETY GLASSES	<input type="checkbox"/> GOGGLES <input type="checkbox"/> FACE SHIELD <input checked="" type="checkbox"/> HEARING PROTECTION (as needed) <input checked="" type="checkbox"/> SAFETY SHOES: Composite-toe or steel toe boots/shoes	<input type="checkbox"/> AIR PURIFYING RESPIRATOR <input type="checkbox"/> SUPPLIED RESPIRATOR <input checked="" type="checkbox"/> PPE CLOTHING: Fluorescent reflective vest or high visibility clothing	<input checked="" type="checkbox"/> GLOVES: Leather, Nitrile <input checked="" type="checkbox"/> OTHER: Insect Repellant, sunscreen (as needed)		
<b>REQUIRED AND / OR RECOMMENDED EQUIPMENT</b>					
Drum Cart					
<b>COMMITMENT TO SAFETY</b> - All personnel onsite will actively participate in SPSA performance by verbalizing SPSAs throughout the day.					
<b><sup>1</sup>JOB STEPS</b>		<b><sup>2</sup>POTENTIAL HAZARDS</b>		<b><sup>3</sup>CRITICAL ACTIONS</b>	
1. Inspect 55-gal drums for proper condition, labeling		1a. Exposure: if drum contains hazardous material, if the drum is damaged; or if the drum has hazardous materials stuck on the outside of the drum		1a. If drum is not properly labeled, do not open and cease all drum transport activities. Immediately contact Project Manager and inform him/her of drum situation. Do not continue drum transport activities until further actions are determined by the project manager.	
		1b. Caught: drum could potentially be damaged		1a. If drum is properly labeled, but leaking, improperly sealed or in a poor condition, place drum in an over-pack drum. 1b. Use proper PPE (leather gloves). 1b. If damaged, see 1a.	
2. If 55-gal drum is properly labeled and in adequate condition, transfer onto a drum cart		2a. Exertion: muscle strain (handling drums)		2a. Use proper body positioning and lifting techniques; keep back straight, lift with legs, keep load close to body, and never reach with a load. 2a. Ensure that loads are balanced to reduce the potential for muscle strain. 2a. Two people or a mechanical lifting aid are required when lifting objects over 50 lbs or when the shape makes the object difficult to lift. 2a. Never move drum by picking it up. If movement is necessary, slightly lean the drum over and roll it on its edge.	
		2b. Caught: pinch points associated with handling the drum		2b. Use proper PPE (leather gloves and steel-toed boots). 2b. Never put hand or foot in a position between the drum and the drum cart or ground.	
3. Push drum cart with 55-gal drum to appropriate pre-determined drum storage area		3a. Exertion: muscle strain (pushing drum cart)		3a. See 2a. 3a. Inspect the wheels of the cart and ensure that the load is evenly distributed.	
		3b. Caught: dropping of the drum		3b. Determine transport route before actually moving the drum. 3b. Remove all obstructions from transport route prior to transport. 3b. Maintain a straight route on solid, level ground. 3b. Ensure that the drum is properly secured before transport.	
4. Place 55-gal drum in drum storage area or on lift gate of disposal truck		4a. Exertion: muscle strain (handling drums)		4a. See 2a.	
		4b. Caught: pinch points associated with handling the drum		4b. See 2b.	

<sup>1</sup> Each Job or Operation consists of a set of tasks / steps. Be sure to list all the steps needed to perform job.

<sup>2</sup> A hazard is a potential danger. Break hazards into five types: Contact - victim is struck by or strikes an object;

Caught - victim is caught on, caught in or caught between objects; Fall - victim falls to ground or lower level (includes slips and trips); Exertion - excessive strain or stress / ergonomics / lifting techniques; Exposure - inhalation/skin hazards.

<sup>3</sup> Using the first two columns as a guide, decide what actions or procedures are necessary to eliminate or minimize the risk. List the recommended safe operating procedures. Say exactly what needs to be done - such as "use two persons to lift". Avoid general statements such as, "be careful".

<b>JOB SAFETY ANALYSIS</b> Ctrl. No. 566		DATE 3/23/12	<input checked="" type="checkbox"/> NEW <input type="checkbox"/> REVISED	PAGE 1 of 2
JSA TYPE CATEGORY: <b>EQUITY ONE- BROADWAY</b>	WORK TYPE: <b>Drilling</b>	WORK ACTIVITY (Description): <b>Geoprobe Soil Borings / Well Installation</b>		
<b>DEVELOPMENT TEAM</b>	<b>POSITION / TITLE</b>	<b>REVIEWED BY:</b>	<b>POSITION / TITLE</b>	
Wendy Monterosso	Project Hydrogeologist	Joseph Gentile	CHSM	
		Subraham Singh	OHSM	
<b>REQUIRED AND / OR RECOMMENDED PERSONAL PROTECTIVE EQUIPMENT</b>				
<input type="checkbox"/> LIFE VEST <input checked="" type="checkbox"/> HARD HAT <input type="checkbox"/> LIFELINE / BODY HARNESS <input checked="" type="checkbox"/> SAFETY GLASSES	<input type="checkbox"/> GOGGLES <input type="checkbox"/> FACE SHIELD <input checked="" type="checkbox"/> HEARING PROTECTION: (as needed) <input checked="" type="checkbox"/> SAFETY SHOES: Composite-toe or steel toe boots/shoes	<input type="checkbox"/> AIR PURIFYING RESPIRATOR <input type="checkbox"/> SUPPLIED RESPIRATOR <input checked="" type="checkbox"/> PPE CLOTHING: Fluorescent reflective vest or high visibility clothing	<input checked="" type="checkbox"/> GLOVES: Leather, Nitrile and cut resistant <input checked="" type="checkbox"/> OTHER: Insect Repellant, sunscreen (as needed)	
<b>REQUIRED AND / OR RECOMMENDED EQUIPMENT</b>				
Truck-Mounted Drilling Rig, saw, Hand Tools, Photoionization Detector, MultiGas meter (or equivalent), Interface Probe, 20 lb. fire extinguisher, Safety Cones & Flags, "Work Area" Signs				
<b>COMMITMENT TO SAFETY</b> - All personnel onsite will actively participate in SPSA performance by verbalizing SPSAs throughout the day.				
<b>"SHOW ME YOUR HANDS"</b>				
<b>Driller and helper should show that hands are clear from controls and moving parts</b>				
<b><sup>1</sup>JOB STEPS</b>	<b><sup>2</sup>POTENTIAL HAZARDS</b>	<b><sup>3</sup>CRITICAL ACTIONS</b>		
1. Mobilization of drilling rig	1a. Contact: equipment/property damage	1a. The drill rig's tower/derrick will be lowered and secured prior to mobilization. 1a. If personnel moves into the path of the drilling rig, the drilling rig will be stopped until the path is again clear. 1a. Use a spotter. 1a. Use caution while advancing the drilling rig. 1a. Inspect the driving path for uneven terrain.		
	1b. Fall: slip/trip/fall hazards	1b. Inspect walking path for uneven terrain, weather-related hazards (i.e., ice, puddles, snow, etc.), and obstructions prior to mobilizing equipment. 1b. Do not climb over stored materials/equipment; walk around. Practice good housekeeping. 1b. Use established pathways and walk on stable, secure ground.		
2. Setting up drilling rig/work area	2a. Fall: slip/trip/fall hazards associated with drilling equipment and tools	2a. See 1b. 2a. Equipment and tools will be staged in a convenient, stable, and orderly manner. 2a. Equipment and tools will be stored at the lowest point of potential energy and out of the walkway and immediate work area (i.e. tools should not be propped against walls or nearby equipment or vehicles). 2a. Equipment and tools that are not anticipated to be used will be returned to an appropriate storage area that is out of the immediate work area. 2a. Ensure power cords and water lines are grouped when used within the work area.		
	2b. Exertion: lifting	2b. Use proper body positioning and lifting techniques; keep back straight, lift with legs, keep load close to body, and never reach with a load. 2b. Ensure that loads are balanced to reduce the potential for muscle strain. 2b. Two people or a mechanical lifting aid are required when lifting objects over 50 lbs or when the shape makes the object difficult to lift.		
3. Raising tower/derrick of drilling rig	3. Contact: overhead hazards	3. Prior to raising the tower/derrick, the area above the drilling rig will be inspected for wires, tree limbs, piping, or other structures, that could come in contact with the rig's tower and/or drilling rods or tools. 3. The tower/derrick must not be raised beneath overhead power lines unless approved by the Roux PM. 3. Maintain a safe distance from overhead structures. 3. Do not move the rig while the tower/derrick is raised.		

<sup>1</sup> Each Job or Operation consists of a set of tasks / steps. Be sure to list all the steps needed to perform job.

<sup>2</sup> A hazard is a potential danger. Break hazards into five types: Contact - victim is struck by or strikes an object; Caught - victim is caught on, caught in or caught between objects; Fall - victim falls to ground or lower level (includes slips and trips); Exertion - excessive strain or stress / ergonomics / lifting techniques; Exposure - inhalation/skin hazards.

<sup>3</sup> Using the first two columns as a guide, decide what actions or procedures are necessary to eliminate or minimize the risk. List the recommended safe operating procedures. Say exactly what needs to be done - such as "use two persons to lift". Avoid general statements such as, "be careful".

<sup>1</sup> JOB STEPS	<sup>2</sup> POTENTIAL HAZARDS	<sup>3</sup> CRITICAL ACTIONS
4. Drilling activity	4a. Contact: flying debris	4a. Use the proper PPE (especially hand, eye, ear and respiratory protection). 4a. Be aware of and avoid potential lines of fire.
	4b. Exposure: noise and dust	4b. Wet borehole area with sprayer to minimize dust. 4b. Stand upwind and keep body away from rig. 4b. No open flames/heat sources.
	4c. Caught: limb/extremity pinching; abrasion/crushing	4c. Use proper PPE. 4c. Always wear leather gloves when making connections and using hand tools; wear cut-resistant (i.e., Kevlar) gloves when handling cutting tools. 4c. Inspect the equipment prior to use for potential pinch points. 4c. Test all emergency shutdown devices prior to drilling. 4c. Inspect drill head for worn surface or missing teeth; replace if damaged or blunt. 4c. Ensure all jewelry is removed, loose clothing is secured, and PPE is secured close to the body. 4c. All non-essential personnel should stay away from the immediate work area; position body out of the line-of-fire of equipment. 4c. The emergency stop switches on the rig should be tested to ensure proper working condition. 4c. Drillers and helpers will understand and use the "Show Me Your Hands" Policy.
	4d. Contact: equipment imbalance during advancement drill equipment	4d. Drillers will advance the borehole with caution to avoid causing the rig to become imbalanced and/or tip. 4d. The blocking and leveling devices used to secure the rig will be inspected by drillers and Roux personnel regularly to see if shifting has occurred. 4d. In addition, personnel and equipment that are non-essential to the advancement of the borehole will be positioned away from the rig at a distance that is at least as far as the boom is high. For example, if the boom is ten feet high, non-essential personnel and equipment will be positioned at least ten feet away from the rig in case the rig tips over.
	4e. Exposure: inhalation of contamination	4e. Air monitoring using a calibrated photoionization detector (PID) will be used to periodically monitor the breathing zone of the work area. 4e. The Action Level for breathing zone air is five parts per million (sustained) as detected by the PID. 4e. If a reading of >5ppm is recorded, the Roux field personnel must temporarily cease work, instruct all Site personnel to step away from the area of elevated readings and inform the Roux PM of the condition. The Roux PM will then recommend additional appropriate precautions in accordance with the site specific health and safety plan.
	4f. Fall: slip/trip/fall hazards	4f. See 2a.
5. Decontaminate equipment	5a. Exposure to contamination (e.g., Separate Phase Hydrocarbons (SPH), contaminated groundwater, vapors)	5a. Wear chemical-resistant disposable gloves and safety glasses. 5a. Use an absorbent pad to clean spills.
	5b. Exposure to chemicals in cleaning solution including ammonia	5b. See 5a.

<sup>1</sup> Each Job or Operation consists of a set of tasks / steps. Be sure to list all the steps needed to perform job.

<sup>2</sup> A hazard is a potential danger. Break hazards into five types: Contact - victim is struck by or strikes an object;

Caught - victim is caught on, caught in or caught between objects; Fall - victim falls to ground or lower level (includes slips and trips); Exertion - excessive strain or stress / ergonomics / lifting techniques; Exposure - inhalation/skin hazards.

<sup>3</sup> Using the first two columns as a guide, decide what actions or procedures are necessary to eliminate or minimize the risk. List the recommended safe operating procedures. Say exactly what needs to be done - such as "use two persons to lift". Avoid general statements such as, "be careful".

<b>JOB SAFETY ANALYSIS</b>		Ctrl. No. 567	DATE 04/27/12	<input type="checkbox"/> NEW <input checked="" type="checkbox"/> REVISED	PAGE 1 of 1
JSA TYPE CATEGORY: <b>EQUITY ONE - BROADWAY</b>		WORK TYPE: <b>General</b>	WORK ACTIVITY (Description): <b>Site Mobilization/Demobilization</b>		
<b>DEVELOPMENT TEAM</b>		<b>POSITION / TITLE</b>	<b>REVIEWED BY:</b>	<b>POSITION / TITLE</b>	
Wendy Monterosso		Senior Hydrogeologist	Joseph Gentile	CHSM	
			Subraham Singh	OHSM	
<b>REQUIRED AND / OR RECOMMENDED PERSONAL PROTECTIVE EQUIPMENT</b>					
<input type="checkbox"/> LIFE VEST <input checked="" type="checkbox"/> HARD HAT <input type="checkbox"/> LIFELINE / BODY HARNESS <input checked="" type="checkbox"/> SAFETY GLASSES	<input type="checkbox"/> GOGGLES <input type="checkbox"/> FACE SHIELD <input checked="" type="checkbox"/> HEARING PROTECTION: (as needed) <input checked="" type="checkbox"/> SAFETY SHOES: Composite-toe or steel toe boots/shoes	<input type="checkbox"/> AIR PURIFYING RESPIRATOR <input type="checkbox"/> SUPPLIED RESPIRATOR <input checked="" type="checkbox"/> PPE CLOTHING: Fluorescent reflective vest or high visibility clothing	<input checked="" type="checkbox"/> GLOVES: Leather, Nitrile and cut resistant <input checked="" type="checkbox"/> OTHER: Insect Repellant, sunscreen (as needed)		
<b>REQUIRED AND / OR RECOMMENDED EQUIPMENT</b>					
Safety cones and flags, 20 lb. fire extinguisher, "Work Area" signs (if needed based on task), vehicle tire chocks, caution tape, HASP					
<b>COMMITMENT TO SAFETY</b> - All personnel onsite will actively participate in SPSA performance by verbalizing SPSAs throughout the day.					
<b><sup>1</sup>JOB STEPS</b>	<b><sup>2</sup>POTENTIAL HAZARDS</b>		<b><sup>3</sup>CRITICAL ACTIONS</b>		
1. Mobilize/demobilize and establish work area	1a. Fall: tripping/falling due to uneven terrain, weather conditions, and materials/equipment stored at the Site		1a. Inspect walking path for uneven terrain, weather-related hazards (i.e., ice, puddles, snow, etc.), and obstructions prior to mobilizing equipment. 1a. Do not climb over stored materials/equipment; walk around. Practice good housekeeping. 1a. Use established pathways and walk on stable, secure ground.		
	1b. Contact: with traffic (including any unintended movement of the work truck), Contact / Interference with Other Site Activities		1b. When first arriving onsite park vehicles in designated parking space and/or out of the way locations. Use parking brake on all vehicles and tire chocks on work trucks and trailers. 1b. Check in with with Site Manager/Supervisor to ensure proper coordination with other site activities. 1b. Identify potential traffic sources. 1b. Wear appropriate PPE including high visibility clothing or reflective vest. 1b. Use a spotter while moving work vehicles; plan ahead to avoid backing when unnecessary. 1b. Delineate work area with cones, flags, caution tape, and/or other barriers. 1b. Position "Work Area" signs at site entrances. 1b. Position largest vehicle to protect against oncoming traffic. 1b. Face traffic, maintain eye contact with oncoming vehicles, use a spotter, and establish a safe exit route. 1b. Chock wheels of work truck and other support equipment on wheels and engage parking brake if possible.		
	1c. Exertion: during moving of equipment(cones and signage) into work area		1c. Use proper body positioning and lifting techniques; keep back straight, lift with legs, keep load close to body, and never reach with a load. 1c. Ensure that loads are balanced to reduce the potential for muscle strain.		
	1d. Exposure: to biological hazards: ticks, bees/wasps, poison ivy, insects, dogs, etc. (ticks are most active any time the temperature is above freezing from March to November)		1d. Inspect area to avoid contact with biological hazards. 1d. Be aware of pedestrians walking pet dogs and keep distance. 1d. Wear long sleeved clothing to protect skin and apply insect repellent containing DEET when working in overgrown areas of the Site. 1d. Personnel shall examine themselves for ticks. 1d. If skin comes in contact with poison ivy, wash skin thoroughly with soap and water as soon as possible.		
	1e. Exposure: to sun, possibly causing sunburn		1e. Wear sunscreen with an SPF of at least 15 whenever 30 minutes or more of exposure is expected.		
	1f. Noise hazards (active auto repair facility, impact hammers and compressor noise)		1f. Wear hearing protection if necessary.		

<sup>1</sup> Each Job or Operation consists of a set of tasks / steps. Be sure to list all the steps needed to perform job.

<sup>2</sup> A hazard is a potential danger. Break hazards into five types: Contact - victim is struck by or strikes an object; Caught - victim is caught on, caught in or caught between objects; Fall - victim falls to ground or lower level (includes slips and trips); Exertion - excessive strain or stress / ergonomics / lifting techniques; Exposure - inhalation/skin hazards.

<sup>3</sup> Using the first two columns as a guide, decide what actions or procedures are necessary to eliminate or minimize the risk. List the recommended safe operating procedures. Say exactly what needs to be done - such as "use two persons to lift". Avoid general statements such as, "be careful".

**Metals Remediation Compound (MRC<sup>®</sup>)  
MATERIALS SAFETY DATA SHEET**

**Last Revised: August 31, 2007**

---

**Section 1 – Material Identification**

---

**Supplier:**



**REGENESIS**

**1011 Calle Sombra**

**San Clemente, CA 92673**

**Phone: 949.366.8000**

**Fax: 949.366.8090**

**E-mail: info@regenesiS.com**

**Chemical Name:** Propionic acid, 2-[2-[2-(2-hydroxy-1-oxopropoxy)-1-oxopropoxy]-1,2,3-propoanetriyl ester

**Chemical Family:** Organic Chemical

**Trade Name:** MRC<sup>®</sup>, Glycerol Tripoly lactate with Metal Control Agent

**Product Use:** Used to remediate contaminated groundwater (environmental applications)

---

**Section 2 – Chemical Identification**

---

<u>CAS#</u>	<u>Chemical</u>
201167-72-8	Glycerol Tripoly lactate
444618-64-8	Sorbitol Cysteinate
50-21-5	Lactic Acid
56-81-5	Glycerol

---

**Section 3 – Physical Data**

---

<b>Melting Point:</b>	<b>Not Available (NA)</b>
<b>Boiling Point:</b>	<b>Not Determined (ND)</b>
<b>Flash Point:</b>	<b>ND</b>
<b>Density:</b>	<b>1.3 g/cc</b>
<b>Solubility:</b>	<b>Acetone and DMSO</b>
<b>Appearance:</b>	<b>Viscous amber gel/liquid</b>
<b>Odor:</b>	<b>Strong Amine/Sulfur Smell</b>
<b>Vapor Pressure:</b>	<b>None</b>

---

**Section 4 – Fire and Explosion Hazard Data**

---

**Extinguishing Media:** Use Water Spray, Carbon Dioxide, Dry Chemical Powder or Appropriate Foam.

Water May be used to keep exposed containers cool. For large quantities involved in a fire, one should wear full protective clothing and a NIOSH approved self contained breathing apparatus with full face piece operated in the pressure demand or positive pressure mode as for a situation where lack of oxygen and excess heat are present.

---

**Section 5 – Toxicological Information**

---

**Acute Effects:** May be harmful by inhalation, ingestion, or skin absorption. May cause irritation. To the best of our knowledge, the chemical, physical, and toxicological properties of the glycerol tripoly lactate have not been investigated. Listed below are the toxicological information for glycerol and lactic acid.

**RTECS#** MA8050000  
Glycerol

---

**Section 5 – Toxicological Information (cont)**


---

<b>Irritation Data:</b>	<b>SKN-RBT 500 MG/24H MLD</b>	<b>85JCAE-,207,1986</b>
	<b>EYE-RBT 126 MG MLD</b>	<b>BIOFX* 9-4/1970</b>
	<b>EYE-RBT 500 MG/24H MLD</b>	<b>85JCAE-,207,1986</b>
	<b>SKN-RBT 5MG/24H SEV</b>	<b>85JCAE -,656,86</b>
	<b>EYE-RBT 750 UG SEV</b>	<b>AJOPAA 29,1363,46</b>
<b>Toxicity Data:</b>	<b>ORL-MUS LD50:4090 MG/KG</b>	<b>FRZKAP (6),56,1977</b>
	<b>SCU-RBT LD50:100 MG/KG</b>	<b>NIIRDN 6,215,1982</b>
	<b>ORL-RAT LD50:12600 MG/KG</b>	<b>FEFRA7 4,142,1945</b>
	<b>LC50: &gt; 570 MG/1H</b>	<b>BIOFX* 9-4/1970</b>
	<b>IHL-RATLC50:&gt;570 MG/M3/1H</b>	<b>RCOCB8 56,125,1987</b>
	<b>IPR-RAT LD50: 4420 MG/KG</b>	<b>ARZNAD 26,1581,1976</b>
	<b>IVN-RAT LD50: 5566 MG/KG</b>	<b>ARZNAD 26,1579,1978</b>
	<b>IPR-MUS LD50: 8700 MG/KG</b>	<b>NIIRDN 6,215,1982</b>
	<b>SCU-MUS LD50: 91 MG/KG</b>	<b>JAPMA8 39,583,1950</b>
	<b>IVN-MUS LD50: 4250 MG/KG</b>	<b>DMDJAP 31,276,1959</b>
	<b>ORL-RBT LD50: 27 GM/KG</b>	<b>BIOFX* 9-4/1970</b>
	<b>SKN-RBT LD50:&gt;10GM/KG</b>	<b>NIIRDN 6,215,1982</b>
	<b>IVN-RBT LD50: 53 GM/KG</b>	<b>JIHTAB 23,259,1941</b>
	<b>ORL-GPG LD50: 7750 MG/KG</b>	<b>FMCHA2-,C252,91</b>
	<b>ORL-RAT LD50:3543 MG/KG</b>	<b>FMCHA2-,C252,91</b>
	<b>SKN-RBT LD50:&gt;2 GM/KG</b>	<b>FAONAU 40,144,67</b>
	<b>ORL-MUS LD50: 4875 MG/KG</b>	<b>JIHTAB 23,259,41</b>
<b>ORL-GPG LD50: 1810 MG/KG</b>	<b>FMCHA2-,C252,91</b>	
<b>ORL-QAL LD50: &gt;2250 MG/KG</b>		
<b>Target Organ Data:</b>	<b>Behavioral (headache), gastrointestinal (nausea or vomiting), Paternal effects (spermatogenesis, testes, epididymis, sperm duct), effects of fertility (male fertility index, post-implantation mortality).</b>	

**Only selected registry of toxic effects of chemical substances (RTECS) data is presented here. See actual entry in RTECS for complete information on lactic acid and glycerol.**

---

**Section 6 – Health Hazard Data**

---

**Handling:** Avoid continued contact with skin. Avoid contact with eyes.

In any case of any exposure which elicits a response, a physician should be consulted immediately.

**First Aid Procedures**

**Inhalation:** Remove to fresh air. If not breathing give artificial respiration. In case of labored breathing give oxygen. Call a physician.

**Ingestion:** No effects expected. Do not give anything to an unconscious person. Call a physician immediately.

**Skin Contact:** Flush with plenty of water. Contaminated clothing may be washed or dry cleaned normally.

**Eye Contact:** Wash eyes with plenty of water for at least 15 minutes lifting both upper and lower lids. Call a physician.

---

**Section 7 – Reactivity Data**

---

**Conditions to Avoid:** Strong oxidizing agents, bases and acids

**Hazardous Polymerization:** None known.

**Further Information:** Hydrolyses in water to form Lactic Acid and Glycerol.

---

**Section 8 – Spill, Leak or Accident Procedures**

---

**After Spillage or Leakage:** Neutralization is not required. This combustible material may be burned in a chemical incinerator equipped with an afterburner and scrubber.

**Disposal:** Laws and regulations for disposal vary widely by locality. Observe all applicable regulations and laws. This material may be disposed of in solid waste. Material is readily degradable and hydrolyses in several hours.

No requirement for a reportable quantity (CERCLA) of a spill is known.

---

**Section 9 – Special Protection or Handling**

---

**Should be stored in plastic lined steel, plastic, glass, aluminum, stainless steel, or reinforced fiberglass containers.**

**Protective Gloves: Vinyl or Rubber**

**Eyes: Splash Goggles or Full Face Shield  
Area should have approved means of washing eyes.**

**Ventilation: General exhaust.**

**Storage: Store in cool, dry, ventilated area. Protect from incompatible materials.**

---

**Section 10 – Other Information**

---

**This material will degrade in the environment by hydrolysis to lactic acid and glycerol. Materials containing reactive chemicals should be used only by personnel with appropriate chemical training.**

**The information contained in this document is the best available to the supplier as of the time of writing. Some possible hazards have been determined by analogy to similar classes of material. No separate tests have been performed on the toxicity of this material. The items in this document are subject to change and clarification as more information becomes available.**

## RegenOx® – Part B (Activator Complex)

### Material Safety Data Sheet (MSDS)

Last Revised: June 4, 2010

---

#### Section 1 – Supplier Information and Material Identification

---

**Supplier:**



### REGENESIS

1011 Calle Sombra  
San Clemente, CA 92673  
Telephone: 949.366.8000  
Fax: 949.366.8090  
E-mail: info@regenesis.com

**Chemical Description:** A mixture of sodium silicate solution, silica gel and ferrous sulfate

**Chemical Family:** Inorganic Chemicals

**Trade Name:** RegenOx® – Part B (Activator Complex)

**Product Use:** Used for environmental remediation of contaminated soils and groundwater

---

#### Section 2 – Chemical Information/Other Designations

---

<u>CAS No.</u>	<u>Chemical</u>
1344-09-8	Silicic Acid, Sodium Salt, Sodium Silicate
63231-67-4	Silica Gel
7720-78-7	Ferrous Sulfate
7732-18-5	Water

---

#### Section 3 – Physical Data

---

**Form:** Liquid

**Color:** Blue/Green

**Odor:** Odorless

**Melting Point:** NA

**Boiling Point:** NA

**Flammability/Flash Point:** NA

**Vapor Pressure:** NA

---

**Section 3 – Physical Data ( cont)**


---

<b>Specific Gravity</b>	1.39 g/cm <sup>3</sup>
<b>Solubility:</b>	Miscible
<b>Viscosity:</b>	NA
<b>pH (3% solution):</b>	11
<b>Hazardous Decomposition Products:</b>	Oxides of carbon and silicon may be formed when heated to decomposition.

---

**Section 4 – Reactivity Data**


---

<b>Stability:</b>	Stable under normal conditions.
<b>Conditions to Avoid:</b>	None.
<b>Incompatibility:</b>	Avoid hydrogen fluoride, fluorine, oxygen difluoride, chlorine trifluoride, strong acids, strong bases, oxidizers, aluminum, fiberglass, copper, brass, zinc, and galvanized containers.

---

**Section 5 – Regulations**


---

<b>TSCA Inventory Listed:</b>	Yes
<b>CERCLA Hazardous Substance (40 CFR Part 302)</b>	
<b>Listed Substance:</b>	<i>No</i>
<b>Unlisted Substance:</b>	<i>Yes</i>
<b>SARA, Title III, Sections 302/303 (40 CFR Part 355) – Emergency Planning and Notification</b>	
<b>Extremely Hazardous Substance:</b>	No
<b>SARA, Title III, Sections 311/312 (40 CFR Part 370) – Hazardous Chemical Reporting: Community Right-To-Know</b>	
<b>Hazard Category:</b>	Acute
<b>SARA, Title III, Sections 313 (40 CFR Part 372) – Toxic Chemical Release Reporting: Community Right-To-Know</b>	
<b>Extremely Hazardous Substance:</b>	No

---

**Section 6 – Protective Measures, Storage and Handling**

---

**Technical Protective Measures**

**Storage:** Keep in a tightly closed container (steel or plastic) and store in a cool, well ventilated area away from all incompatible materials (acids, reactive metals, and ammonium salts). Store in a dry location away from heat above 60 degrees C and colder than 10 degrees C. Do not store in aluminum, fiberglass, copper, brass, zinc or galvanized containers.

**Handling:** Avoid contact with eyes, skin and clothing. Avoid breathing spray mist. Use with adequate ventilation.  
Do not use product if it is brownish-yellow in color.

**Personal Protective Equipment (PPE)**

**Engineering Controls:** General room ventilation is required if used indoors. Local exhaust ventilation, process enclosures or other engineering controls may be needed to maintain airborne levels below recommended exposure limits. Safety shower and eyewash station should be within direct access.

**Respiratory Protection:** Use NIOSH-approved dust and mist respirator where spray mist exists. Respirators should be used in accordance with 29 CFR 1910.134.

**Hand Protection:** Wear chemical resistant gloves.

**Eye Protection:** Wear chemical safety goggles. A full face shield may be worn in lieu of safety goggles.

**Skin Protection:** Try to avoid skin contact with this product. Gloves and protective clothing should be worn during use.

**Other:**

**Protection Against Fire & Explosion:** Product is non-explosive and non-combustible.

---

### Section 7 – Hazards Identification

---

#### Potential Health Effects

<b>Inhalation:</b>	Causes irritation to the respiratory tract. Symptoms may include coughing, shortness of breath, and irritations to mucous membranes, nose and throat.
<b>Eye Contact:</b>	Causes irritation, redness and pain.
<b>Skin Contact:</b>	Causes irritation. Symptoms include redness, itching and pain.
<b>Ingestion:</b>	May cause irritation to mouth, esophagus, and stomach.

---

### Section 8 – Measures in Case of Accidents and Fire

---

<b>After Spillage/Leakage (small):</b>	Mop up and neutralize liquid, then discharge to sewer in accordance with local, state and federal regulations.
<b>After Spillage/Leakage (large):</b>	Keep unnecessary personnel away; isolate hazard area and do not allow entrance into the affected area. Do not touch or walk through spilled material. Stop leak if possible without risking injury. Prevent runoff from entering into storm sewers and ditches that lead to natural waterways. Isolate the material if at all possible. Sand or earth may be used to contain the spill. If containment is not possible, neutralize the contaminated area and flush with large quantities of water.
<b>Extinguishing Media:</b>	Material is compatible with all extinguishing media.
<b>Further Information:</b>	
<b>First Aid</b>	
<b>Eye Contact:</b>	Flush eyes with running water for at least 15 minutes with eyelids held open. Seek a specialist.
<b>Inhalation:</b>	Remove affected person to fresh air. Give artificial respiration if individual is not breathing. If breathing is difficult, give oxygen. Seek medical attention if the effects persist.
<b>Ingestion:</b>	If the individual is conscious and not convulsing, give two-four cups of water to dilute the chemical and seek medical attention immediately. <b><u>DO NOT</u></b> induce vomiting.
<b>Skin Contact:</b>	Wash affected areas with soap and a mild detergent and large amounts of water. Remove contaminated clothing and shoes.

---

**Section 9 – Accidental Release Measures**

---

**Precautions:**

**PPE:** Wear chemical goggles, body-covering protective clothing, chemical resistant gloves, and rubber boots (see Section 6).

**Environmental Hazards:** Sinks and mixes with water. High pH of this material may be harmful to aquatic life. Only water will evaporate from a spill of this material.

**Cleanup Methods:** Pick-up and place in an appropriate container for reclamation or disposal. US regulations (CERCLA) require reporting spills and releases to soil, water and air in excess of reportable quantities.

---

**Section 10 – Information on Toxicology**

---

**Toxicity Data**

**Sodium Silicate:** When tested for primary eye irritation potential according to OECD Guidelines, Section 405, a similar sodium silicate solution produced corneal, iridal and conjunctival irritation. Some eye irritation was still present 14 days after treatment, although the average primary irritation score has declined from 29.7 after 1 day to 4.0 after 14 days. When tested for primary skin irritation potential, a similar sodium silicate solution produced irritation with a primary irritation index of 3 to abraded skin and 0 to intact skin. Human experience confirms that irritation occurs when sodium silicates get on clothes at the collar, cuffs, or other areas where abrasion may exist.

The acute oral toxicity of this product has not been tested.

**Ferrous Sulfate:** LD50 Oral (rat): 319 mg/kg not a suspected carcinogen.

---

### Section 11 – Information on Ecology

---

#### Ecology Data

**Ecotoxicological Information:** Based on 100% solid sodium silicate, a 96 hour median tolerance for fish of 2,320 mg/l; a 96 hour median tolerance for water fleas of 247 mg/L; a 96 hour median tolerance for snail eggs of 632 mg/L; and a 96 hour median tolerance for Amphipoda of 160 mg/L.

---

### Section 12 – Disposal Considerations

---

#### Waste Disposal Method

**Waste Treatment:** Neutralize and landfill solids in an approved waste facility operated by an authorized contactor in compliance with local regulations.

**Package (Pail) Treatment:** The empty and clean containers are to be recycled or disposed of in conformity with local regulations.

---

### Section 13 – Shipping/Transport Information

---

**D.O.T.** This product is not regulated as a hazardous material so there are no restrictions.

---

### Section 14 – Other Information

---

<b>HMIS<sup>®</sup> Rating</b>	Health – 2 (moderate)	Reactivity – 0 (none)
	Flammability – 0 (none)	Lab PPE – goggles, gloves, and lab coat
	Contact – 1 (slight)	

HMIS<sup>®</sup> is a registered trademark of the National Painting and Coating Association.

---

### Section 15 – Further Information

---

The information contained in this document is the best available to the supplier at the time of writing, but is provided without warranty of any kind. Some possible hazards have been determined by analogy to similar classes of material. The items in this document are subject to change and clarification as more information become available. This document is intended only as a guide to the appropriate precautionary handling of the material by a properly trained person. Individuals receiving this information must exercise their independent judgment in determining its appropriateness for a particular purpose.



## RegenOx® – Part A (Oxidizer Complex)

### Material Safety Data Sheet (MSDS)

Last Revised: June 24, 2010

---

#### Section 1 – Supplier Information and Material Identification

---

**Supplier:**



**REGENESIS**

1011 Calle Sombra  
San Clemente, CA 92673  
Telephone: 949.366.8000  
Fax: 949.366.8090  
E-mail: info@regenesis.com

**Chemical Description:** A mixture of sodium percarbonate [2Na<sub>2</sub>CO<sub>3</sub>·3H<sub>2</sub>O<sub>2</sub>], sodium carbonate [Na<sub>2</sub>CO<sub>3</sub>], sodium silicate and silica gel.

**Chemical Family:** Inorganic Chemicals

**Trade Name:** RegenOx® – Part A (Oxidizer Complex)

**Product Use:** Used to remediate contaminated soil and groundwater (environmental applications)

---

#### Section 2 – Chemical Information/Other Designations

---

<u>CAS No.</u>	<u>Chemical</u>	<u>Percentage</u>
15630-89-4	Sodium Percarbonate	60 -100 %
5968-11-6	Sodium Carbonate Monohydrate	10 – 30 %
7699-11-6	Silicic Acid	< 1 %
63231-67-4	Silica Gel	< 1 %

---

#### Section 3 – Physical Data

---

**Form:** Powder

**Color:** White

**Odor:** Odorless

**Melting Point:** NA

**Boiling Point:** NA

---

**Section 3 – Physical Data (cont)**


---

<b>Flammability/Flash Point:</b>	NA
<b>Vapor Pressure:</b>	NA
<b>Bulk Density:</b>	0.9 – 1.2 g/cm <sup>3</sup>
<b>Solubility:</b>	Min 14.5g/100g water @ 20 °C
<b>Viscosity:</b>	NA
<b>pH (3% solution):</b>	≈ 10.5
<b>Decomposition Temperature:</b>	Self-accelerating decomposition with oxygen release starts at 50 °C.

---

**Section 4 – Reactivity Data**


---

<b>Stability:</b>	Stable under normal conditions
<b>Conditions to Avoid/Incompatibility:</b>	Acids, bases, salts of heavy metals, reducing agents, and flammable substances
<b>Hazardous Decomposition Products:</b>	Oxygen. Contamination with many substances will cause decomposition. The rate of decomposition increases with increasing temperature and may be very vigorous with rapid generation of oxygen and steam.

---

**Section 5 – Regulations**


---

<b>TSCA Inventory Listed:</b>	Yes
<b>CERCLA Hazardous Substance (40 CFR Part 302)</b>	
<b>Listed Substance:</b>	<i>No</i>
<b>Unlisted Substance:</b>	<i>Yes</i>
<b>SARA, Title III, Sections 313 (40 CFR Part 372) – Toxic Chemical Release Reporting: Community Right-To-Know</b>	
<b>Extremely Hazardous Substance:</b>	No
<b>WHMIS Classification:</b>	C, D2B
<b>Canadian Domestic Substance List:</b>	Appears

---

---

## Section 6 – Protective Measures, Storage and Handling

---

### Technical Protective Measures

**Storage:** Oxidizer. Store in a cool, well ventilated area away from all sources of ignition and out of the direct sunlight. Store in a dry location away from heat and in temperatures less than 40 °C.

Keep away from incompatible materials and keep lids tightly closed. Do not store in improperly labeled containers.

Protect from moisture. Do not store near combustible materials. Keep containers well sealed.

Store separately from reducing materials. Avoid contamination which may lead to decomposition.

**Handling:** Avoid contact with eyes, skin and clothing. Use with adequate ventilation.

Do not swallow. Avoid breathing vapors, mists or dust. Do not eat, drink or smoke in the work area.

Label containers and keep them tightly closed when not in use.

Wash hands thoroughly after handling.

### Personal Protective Equipment (PPE)

**Engineering Controls:** General room ventilation is required if used indoors. Local exhaust ventilation, process enclosures or other engineering controls may be needed to maintain airborne levels below recommended exposure limits. Avoid creating dust or mists. Maintain adequate ventilation at all times. Do not use in confined areas. Keep levels below recommended exposure limits. To determine actual exposure limits, monitoring should be performed on a routine basis.

**Respiratory Protection:** For many conditions, no respiratory protection is necessary; however, in dusty or unknown conditions or when exposures exceed limit values a NIOSH approved respirator should be used.

**Hand Protection:** Wear chemical resistant gloves (neoprene, rubber, or PVC).

---

### Section 6 – Protective Measures, Storage and Handling (cont)

---

<b>Eye Protection:</b>	Wear chemical safety goggles. A full face shield may be worn in lieu of safety goggles.
<b>Skin Protection:</b>	Try to avoid skin contact with this product. Chemical resistant gloves (neoprene, PVC or rubber) and protective clothing should be worn during use.
<b>Other:</b>	Eye wash station.
<b>Protection Against Fire &amp; Explosion:</b>	Product is non-explosive. In case of fire, evacuate all non-essential personnel, wear protective clothing and a self-contained breathing apparatus, stay upwind of fire, and use water to spray cool fire-exposed containers.

---

### Section 7 – Hazards Identification

---

#### Potential Health Effects

<b>Inhalation:</b>	Causes irritation to the respiratory tract. Symptoms may include coughing, shortness of breath, and irritations to mucous membranes, nose and throat.
<b>Eye Contact:</b>	Causes irritation, redness and pain.
<b>Skin Contact:</b>	Causes slight irritation.
<b>Ingestion:</b>	May be harmful if swallowed (vomiting and diarrhea).

---

### Section 8 – Measures in Case of Accidents and Fire

---

<b>After Spillage/Leakage:</b>	Eliminate all ignition sources. Evacuate unprotected personnel and never exceed any occupational exposure limit. Shovel or sweep spilt material into plastic bags or vented containers for disposal. Do not return spilled or contaminated material to the inventory.
<b>Extinguishing Media:</b>	Water
<b>First Aid</b>	
<b>Eye Contact:</b>	Flush eyes with running water for at least 15 minutes with eyelids held open. Seek a specialist.
<b>Inhalation:</b>	Remove affected person to fresh air. Seek medical attention if the effects persist.
<b>Ingestion:</b>	If the individual is conscious and not convulsing, give two-four cups of water to dilute the chemical and seek medical attention immediately. <b><u>Do Not</u></b> induce vomiting.

---

---

**Section 8 – Measures in Case of Accidents and Fire (cont)**

---

**Skin Contact:** Wash affected areas with soap and a mild detergent and large amounts of water.

---

**Section 9 – Accidental Release Measures**

---

**Precautions:**

**Cleanup Methods:** Shovel or sweep spilt material into plastic bags or vented containers for disposal. Do not return spilled or contaminated material to the inventory.

---

**Section 10 – Information on Toxicology**

---

**Toxicity Data**

**LD50 Oral (rat):** 2,400 mg/kg  
**LD50 Dermal (rabbit):** Min 2,000 mg/kg  
**LD50 Inhalation (rat):** Min 4,580 mg/kg

---

**Section 11 – Information on Ecology**

---

**Ecology Data**

**Ecotoxicological Information:** NA

---

**Section 12 – Disposal Considerations**

---

**Waste Disposal Method**

**Waste Treatment:** Dispose of in an approved waste facility operated by an authorized contactor in compliance with local regulations.

**Package (Pail) Treatment:** The empty and clean containers are to be recycled or disposed of in conformity with local regulations.

---

**Section 13 – Shipping/Transport Information**

---

<b>D.O.T. Shipping Name:</b>	Oxidizing Solid, N.O.S. [A mixture of sodium percarbonate [2Na <sub>2</sub> CO <sub>3</sub> ·3H <sub>2</sub> O <sub>2</sub> ], sodium carbonate [Na <sub>2</sub> CO <sub>3</sub> ], sodium silicate and silica gel.]
<b>UN Number:</b>	1479
<b>Hazard Class:</b>	5.1
<b>Labels:</b>	5.1 (Oxidizer)
<b>Packaging Group:</b>	III

---

**Section 14 – Other Information**

---

<b>HMIS<sup>®</sup> Rating</b>	Health – 1 (slight)	Reactivity – 1 (slight)
	Flammability – 0 (none)	Lab PPE – goggles, gloves, and lab coat

HMIS<sup>®</sup> is a registered trademark of the National Painting and Coating Association.

---

**Section 15 – Further Information**

---

**The information contained in this document is the best available to the supplier at the time of writing, but is provided without warranty of any kind. Some possible hazards have been determined by analogy to similar classes of material. The items in this document are subject to change and clarification as more information become available. This document is intended only as a guide to the appropriate precautionary handling of the material by a properly trained person. Individuals receiving this information must exercise their independent judgment in determining its appropriateness for a particular purpose.**

## **Heat and Cold Stress Guidelines**

**Heat Stress**

Heat stress is a significant potential hazard and can be associated with heavy physical activity and/or the use of personal protective equipment (PPE) in hot weather environments.

Heat cramps are brought on by prolonged exposure to heat. As an individual sweats, water and salts are lost by the body resulting in painful muscle cramps. The signs and symptoms of heat cramps are as follows:

- severe muscle cramps, usually in the legs and abdomen;
- exhaustion, often to the point of collapse; and
- dizziness or periods of faintness.

First aid treatment includes moving to a shaded area, rest, and fluid intake. Normally, the individual should recover within one-half hour. If the individual has not recovered within 30 minutes and the temperature has not decreased, the individual should be transported to a hospital for medical attention.

Heat exhaustion may occur in a healthy individual who has been exposed to excessive heat. The circulatory system of the individual fails as blood collects near the skin in an effort to rid the body of excess heat. The signs and symptoms of heat exhaustion are as follows:

- rapid and shallow breathing;
- weak pulse;
- cold and clammy skin with heavy perspiration;
- skin appears pale;
- fatigue and weakness;
- dizziness; and
- elevated body temperature.

First aid treatment includes cooling the victim, elevating the feet, and replacing fluids and electrolytes. If the individual has not recovered within 30 minutes and the temperature has not decreased, the individual should be transported to the hospital for medical attention.

Heat stroke occurs when an individual is exposed to excessive heat and stops sweating. This condition is classified as a **MEDICAL EMERGENCY**, requiring immediate cooling of the victim and transport to a medical facility. The signs and symptoms of heat stroke are as follows:

- dry, hot, red skin;
- body temperature approaching or above 105°F;
- large (dilated) pupils; and
- loss of consciousness – the individual may go into a coma.

First aid treatment requires immediate cooling and transportation to a medical facility.

Heat stress (heat cramps, heat exhaustion, and heat stroke) is a significant hazard if any type of protective equipment (semi-permeable or impermeable) which prevents evaporative cooling is worn in hot weather environments. Local weather conditions may require restricted work schedules in order to adequately protect personnel. The use of work/rest cycles (including working in the cooler periods of the day or evening) and training on the signs and symptoms of heat stress should help prevent heat-related illnesses from occurring. Work/rest cycles will depend on the work load required to perform each task, type of protective equipment, temperature, and humidity. In general, when the temperature exceeds 88°F, a 15 minute rest cycle will be initiated once every two hours. In addition, potable water and fluids containing electrolytes (e.g., Gatorade) will be available to replace lost body fluids.

### **Cold Stress**

Cold stress is a danger at low temperatures and when the wind-chill factor is low. Prevention of cold-related illnesses is a function of whole-body protection. Adequate insulating clothing must be used when the air temperature is below 40°F. In addition, reduced work periods followed by rest in a warm area may be necessary in extreme conditions. Training on the signs and symptoms of cold stress should prevent cold-related illnesses from occurring. The signs and symptoms of cold stress include the following:

- severe shivering;
- abnormal behavior;

- slowing of body movement;
- confusion;
- weakness;
- stumbling or repeated falling;
- inability to walk;
- collapse; and/or
- unconsciousness.

First aid requires removing the victim from the cold environment and seeking medical attention immediately. Also, prevent further body heat loss by covering the victim lightly with blankets. Do not cover the victim's face. If the victim is still conscious, administer hot drinks, and encourage activity, such as walking wrapped in a blanket.

**Medical Data Form**

# MEDICAL DATA SHEET

This form must be completed by all onsite personnel prior to the commencement of activities, and shall be kept by the Site Health and Safety Officer during site activities. This form must be delivered to any attending physician when medical assistance is needed.

*(This form should be typed or printed legibly.)*

Site: \_\_\_\_\_

Name: \_\_\_\_\_ Home Telephone: \_\_\_\_\_  
(Area Code/Telephone Number)

Address: \_\_\_\_\_

Date of Birth: \_\_\_\_\_ Height: \_\_\_\_\_ Weight: \_\_\_\_\_

Emergency Contact: \_\_\_\_\_ Telephone: \_\_\_\_\_  
(Area Code/Telephone Number)

Drug Allergies or Other Allergies: \_\_\_\_\_

\_\_\_\_\_

Previous Illnesses or Exposures to Hazardous Substances: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Current Medication (Prescription and Non-Prescription): \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Medical Restrictions: \_\_\_\_\_

\_\_\_\_\_

Name, Address and Telephone Number of Person Physician: \_\_\_\_\_

\_\_\_\_\_

**Community Air Monitoring Plan**

**April 30, 2012**

## **COMMUNITY AIR MONITORING PLAN**

**189 West 230th Street  
Bronx, New York**

*Prepared for*

**EQUITY ONE (NORTHEAST PORTFOLIO) INC.  
410 Park Avenue, 12th Floor  
New York, New York 10022**

**ROUX ASSOCIATES, INC.**

***Environmental Consulting & Management***

---



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

## TABLE OF CONTENTS

---

1.0 INTRODUCTION .....	1
1.1 Establishing Background Conditions.....	2
1.2 VOC Monitoring Approach.....	2
1.3 Particulate Monitoring Approach .....	3
1.4 Meteorological Monitoring .....	4
1.5 Available Suppression Techniques.....	4
1.6 Reporting .....	5

### TABLE

1. Action Limit Summary for Particulates and VOCs,  
189 West 230<sup>th</sup> Street, Bronx, New York

### FIGURE

1. CAMP Monitoring Location Plan

### APPENDIX

- A. Action Limit Report

## **1.0 INTRODUCTION**

Roux Associates, Inc. (Roux Associates) has developed a project-specific Community Air Monitoring Plan (CAMP) to implement real time monitoring at 189 West 230<sup>th</sup> Street, Bronx, New York (Site) during the Remedial Investigation (RI) work, Remedial Action (RA) planned for the remediation activities (excavation and offsite disposal) and the demolition activities at the Site. Remedial activities will be performed in late 2012. Previous investigation results indicate that volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), inorganic compounds (metals), and pesticides are present in soil across the Site. Since the RA includes excavation, soil stockpiling, and backfill activities, particulates will be monitored. Multiple previous investigations at the site have documented the absence of volatile organic compounds (VOCs) in Site soils, therefore, limited VOC monitoring is included as part of this CAMP.

The monitoring program will monitor for particulates at the downwind perimeter of the work area during ground intrusive activities. The design of the CAMP is intended to provide a measure of protection for the downwind community and onsite workers not directly involved with the subject work activities from potential airborne contaminant releases as a direct result of remedial work and demolition activities. This plan is consistent with the New York State Department of Environmental Conservation's (NYSDEC) Fugitive Dust Suppression and Particulate Monitoring Program and the New York State Department of Health's (NYSDOH's) Generic Community Air Monitoring Plan guidance documents included in DER-10.

Roux Associates will be responsible for the implementation of the CAMP during the RI, RA and demolition activities and will have direct and constant communication with all components of the remediation team in order to effectively and instantaneously initiate the necessary Site controls to prevent and/or minimize any work stoppages related to CAMP issues.

The specifics of the CAMP are presented in the following six (6) sections:

1.1 Establishing Background Conditions

1.2 VOC Monitoring Approach

- 1.3 Particulate Monitoring Approach
- 1.4 Meteorological Monitoring Approach
- 1.5 Available Suppression Techniques
- 1.6 Reporting

### **1.1 Establishing Background Conditions**

Background air quality monitoring will be conducted during a maximum of two work days prior to the start of the remedial activities. Background air quality monitoring will be conducted for up to 8 hours per day, with the timing generally coinciding with the hours work will typically be occurring at the Site. Background air quality monitoring will be conducted at two sampling stations. Particulate matter (PM-10) will be monitored continuously at each location with a MIE DataRam 4000. The DataRams will be set to take 15-minute running average measurements, and record one average measurement every 15 minutes, including the time and date of the end of the measurement period. The particulate data stored on the DataRams will be periodically transferred to a laptop computer and analyzed as necessary. All particulate will be measured in units of micrograms per cubic meter ( $\mu\text{g}/\text{m}^3$ ).

### **1.2 VOC Monitoring Approach**

Since minimal VOCs were detected in on-site soils during investigations, VOC monitoring will take place throughout all Site remedial activities.

Due to the relatively small size of the Site, it is not practical to monitor individual work areas within the Site. Thus, total VOC concentrations in air will be monitored continuously at the upwind and downwind perimeters of the Site during all ground intrusive activities. The VOC monitoring equipment will be located at temporary monitoring stations that will be established daily based on Site logistics and weather conditions. The monitoring work will be conducted using MiniRAE 2000 portable VOC monitors, or similar type monitors, for all VOC monitoring. The equipment will be calibrated at least once daily using isobutylene as the calibration gas. One (1) upwind and one (1) downwind monitor will be deployed each day. Each monitoring unit is equipped with an audible alarm to indicate exceedance of the action levels (as defined below and summarized in Table 1).

The equipment is capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below:

- If the ambient air concentration of total VOCs at the downwind perimeter of the Site exceeds 5 parts per million (ppm) above background for the 15-minute average, work activities must be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities can resume with continued monitoring.
- If the ambient air concentration of total VOCs at the downwind perimeter of the Site persists at levels in excess of 5 ppm over background but less than 25 ppm, work activities must be halted, the source of VOCs identified, suppression techniques employed to abate emissions, and monitoring continued. After these steps, work activities can resume if the total organic vapor level at the Site perimeter is below 5 ppm over the background concentration for the 15-minute average. If levels are in excess of 25 ppm above background, identified contributing ground-intrusive activities will be halted and vapor suppression techniques will be evaluated and modified until monitoring indicates VOC levels at the Site perimeter are below 5 ppm over background. Once VOC levels are below 5 ppm at the Site perimeter, work will resume with continued monitoring.

All 15-minute readings will be recorded and be available for State Regulator (NYSDEC and NYSDOH) personnel to review. Instantaneous readings, if any, used for decision purposes will be recorded. If an exceedance of the action level occurs, an Action Limit Report will be completed, identifying the monitoring device location, the measured VOC level, the activity causing the exceedance, meteorological conditions, and the corrective actions taken, as provided in Appendix A. Additionally, the NYSDEC and NYSDOH will be notified within 24 hours of the VOC Action Limit Report generation. Daily monitoring equipment locations and meteorological conditions will also be documented on the daily CAMP Monitoring Location Plan, as shown in Figure 1. All documentation will be kept on file at the Site.

### **1.3 Particulate Monitoring Approach**

Particulate concentrations will be monitored continuously at the upwind and downwind perimeters of the work area at temporary particulate monitoring stations. The particulate monitoring will be performed using real-time monitoring equipment capable of measuring particulate matter less than 10 micrometers in size (PM-10) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action levels (as summarized in Table 1). Monitoring equipment will be MIE Data Ram 4000 monitors or equivalent. One (1) upwind and one (1) downwind monitor will be deployed each day

equipped with an omni-directional sampling inlet and a PM-10 sample head. The data logging averaging period will be set to 15-minutes with time and date stamp recording. Alarm averaging will be set at 90  $\mu\text{g}/\text{m}^3$  above background per 15-minute period. This setting will allow proactive evaluation of work conditions prior to reaching Action Levels of 100  $\mu\text{g}/\text{m}^3$  above background. The equipment is equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration will be visually assessed during all work activities.

All readings will be recorded and made available for NYSDEC and NYSDOH personnel to review. If an exceedance of the action level occurs, an Action Limit Report will be completed identifying the monitoring device location, the measured particulate level, the activity causing the exceedance, meteorological conditions, and the corrective actions taken, as provided in Attachment 1. Daily monitoring equipment locations and meteorological conditions will also be documented on the daily CAMP Monitoring Location Plan. All documentation will be kept on file at the Site.

#### **1.4 Meteorological Monitoring**

Meteorological data consisting of wind speed, wind direction, temperatures, barometric pressure, and relative humidity will be collected. The measurements will be continuous and 15-minute average values will be digitally recorded by the instrument. Wind direction readings will be utilized to position the particulate monitoring equipment in appropriate upwind and downwind locations. A Davis Corporation wireless instrument station or equivalent will be used to collect and download all meteorological monitoring data.

#### **1.5 Available Suppression Techniques**

If necessary, water misting via controlled fire hose and/or dedicated water truck will be utilized as a Site control measure to mitigate the potential for particulate/dust release in work areas and roadways. Excavation methods, material staging and loading methods, and vapor/dust suppression methods will be performed in accordance with the Remedial Action Work Plan , and continually evaluated and modified (as necessary) to alleviate the potential for particulate releases.

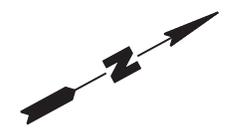
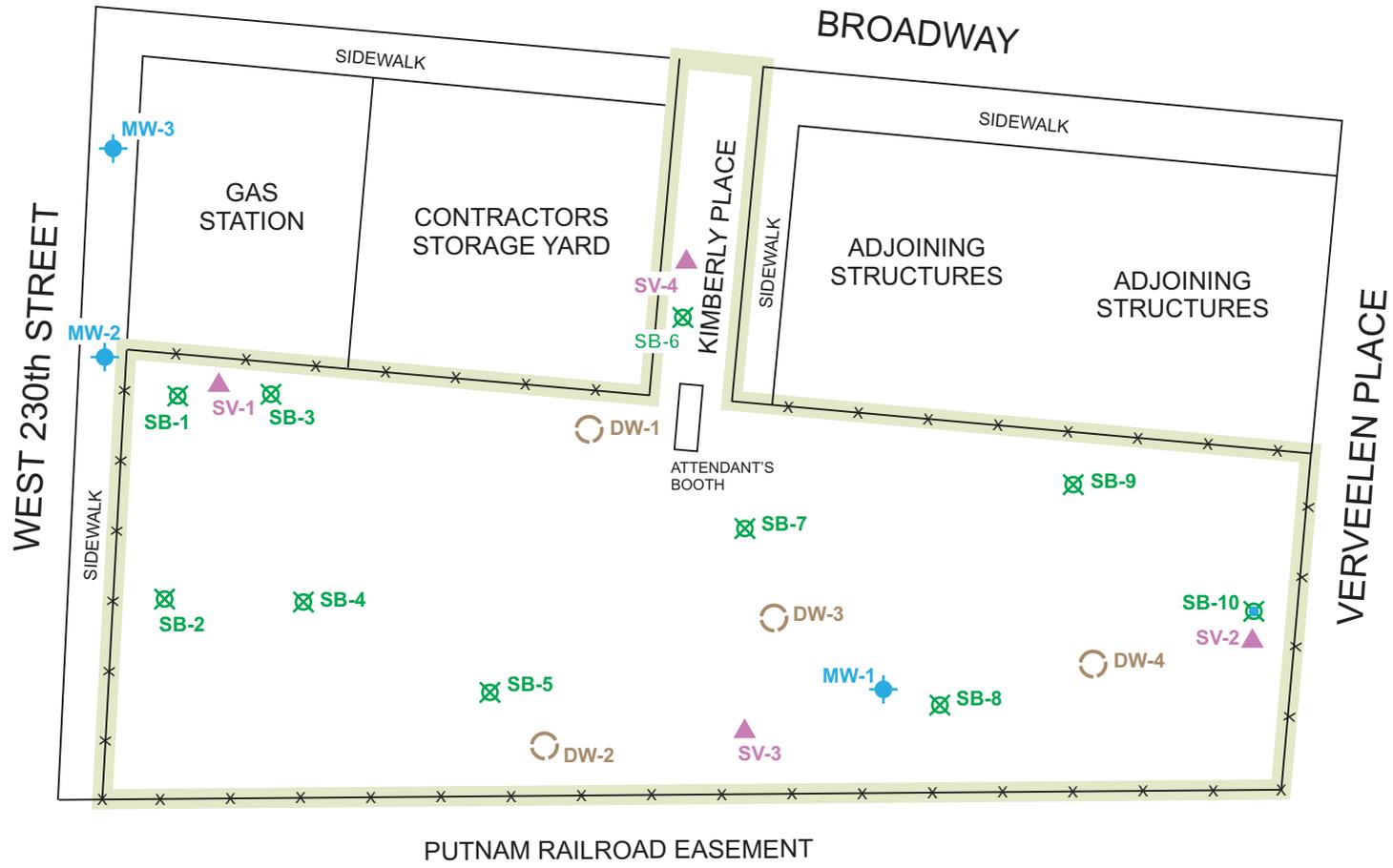
## **1.6 Reporting**

All recorded data will be downloaded and field logged daily, including Action Limit Reports (if any) and daily CAMP monitoring location figures. All records will be maintained onsite for NYSDEC/NYSDOH review. A description of all CAMP-related activities will be included in the Remedial Action Report submitted to the NYSDEC and NYSDOH. Additionally, all CAMP monitoring records will be included in the overall Final Engineering Report that will be submitted to the NYSDEC and NYSDOH.

**Table 1. Action Limit Summary for VOCs and Particulates  
189 West 230th Street, Bronx, New York**

Contaminant	Downwind Action Levels*	Action/Response
Particulates (Monitoring Via Particulate Meter and Observation)	< 100 µg/m <sup>3</sup>	1. If dust is observed leaving the work area, then dust control techniques must be implemented or additional controls used.
	100 µg/m <sup>3</sup> < level < 150 µg/m <sup>3</sup>	1. Employ dust suppression techniques. 2. Work may continue with dust suppression techniques provided that the downwind PM-10 particulate concentration does not exceed 100 µg/m <sup>3</sup> above the upwind level, and provided that no visible dust is migrating from the work area.
	> 150 µg/m <sup>3</sup>	1. STOP work. 2. Re-evaluate activities, modify dust suppression techniques. Work can resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 µg/m <sup>3</sup> of the upwind level and in preventing visible dust migration.
Volatile Organic Compounds (VOCs) (Monitoring Via Photoionization Detector and Odor Observation at the active borehole or excavation site)	< 5 ppm	1. Resume work with continued monitoring.
	5 ppm < level < 25 ppm	1. Work activities must be temporarily halted, source vapors must be identified, suppression techniques employed to abate emissions, and monitoring continued. 2. After these steps, if VOC levels (200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or structure, whichever is less) are below 5 ppm over background, resume work.
	> 25 ppm	1. Identified contributing ground intrusive activities must be halted and vapor suppression techniques must be evaluated and modified until monitoring indicates VOC levels below the action level. 2. After these steps, if VOC levels (200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or structure, whichever is less) are below 5 ppm over background, resume work.

\* 15-minute running time-weighted average (twa) above background. Particulate readings are based on the respirable (PM-10) fraction. Background readings are taken at upwind locations relative to Work Areas or Exclusion Zones.



MAJOR DEEGAN EXPRESSWAY

LEGEND

- Boundary of Equity One Site
- Chain Link Fence
- Existing monitoring well / groundwater grab sample
- Soil boring
- Soil boring within groundwater grab sample
- Dry well
- Soil vapor sample

Title:

## CAMP MONITORING LOCATION PLAN

BROADWAY PLAZA SITE  
BRONX, NEW YORK

Prepared for: EQUITY ONE, INC.

	Compiled by: J.G.	Date: 30APR12	FIGURE <b>1</b>
	Prepared by: G.M.	Scale: AS SHOWN	
	Project Mgr.: J.G.	Project No.: 1924.0003Y	
	File: 1924.0003Y103.01.CDR		

**Action Limit Report**

# ACTION LIMIT REPORT

Project Location: 189 West 230<sup>th</sup> Street, Bronx, NY

Date: \_\_\_\_\_ Time: \_\_\_\_\_

Name: \_\_\_\_\_

Contaminant: PM-10: \_\_\_\_\_ VOC: \_\_\_\_\_

Wind Speed: \_\_\_\_\_ Wind Direction: \_\_\_\_\_

Temperature: \_\_\_\_\_ Barometric Pressure: \_\_\_\_\_

---

## DOWNWIND DATA

Monitor ID #: \_\_\_\_\_ Location: \_\_\_\_\_ Level Reported: \_\_\_\_\_

Monitor ID #: \_\_\_\_\_ Location: \_\_\_\_\_ Level Reported: \_\_\_\_\_

---

## UPWIND DATA

Monitor ID #: \_\_\_\_\_ Location: \_\_\_\_\_ Level Reported: \_\_\_\_\_

Monitor ID #: \_\_\_\_\_ Location: \_\_\_\_\_ Level Reported: \_\_\_\_\_

---

## BACKGROUND CORRECTION LEVELS

Monitor ID #: \_\_\_\_\_ Location: \_\_\_\_\_ Level Reported: \_\_\_\_\_

Monitor ID #: \_\_\_\_\_ Location: \_\_\_\_\_ Level Reported: \_\_\_\_\_

---

## ACTIVITY DESCRIPTION

---

---

---

---

---

## CORRECTIVE ACTION TAKEN

---

---

---

---

---

---

**Health and Safety Briefing/Tailgate Meeting Form**

# HEALTH & SAFETY BRIEFING / TAILGATE MEETING FORM

Site Name / Location \_\_\_\_\_

Date: \_\_\_\_\_ Weather Forecast: \_\_\_\_\_

Names of Personnel Attending Briefing

_____	_____	_____
_____	_____	_____
_____	_____	_____

Planned Work

_____
_____
_____

Instrument Calibration: Instrument/Time/Cal. Gas/Cal. Concentration/Actual Concentration

_____
_____
_____

Items Discussed

_____
_____
_____
_____
_____

Work Permit Type and Applicable Restrictions

_____
_____
_____

Signatures of Attending Personnel

_____	_____	_____
_____	_____	_____
_____	_____	_____

**Accident Report and Investigation Form**

Roux Associates, Inc.    Remedial Engineering, P.C.  
 (Check applicable company name)

**ACCIDENT REPORT**

**Joe Gentile, Corporate Health and Safety Manager**

Cell: (610) 844-6911; Office: (856) 423-8800; Office FAX: (856) 423-3220; Home: (484) 373-0953

**PART 1: ADMINISTRATIVE INFORMATION**

<b>Project #:</b> _____ <b>Project Name:</b> _____ <b>Project Location</b> (street address/city/state): _____ _____ <b>Client Corporate Name / Contact / Address / Phone #:</b> _____ _____ _____ _____ _____	<b>Immediate Verbal Notifications Given To:</b>  Corporate Health & Safety <input type="checkbox"/> Yes <input type="checkbox"/> No Office Health & Safety <input type="checkbox"/> Yes <input type="checkbox"/> No Office Manager <input type="checkbox"/> Yes <input type="checkbox"/> No Project Principal <input type="checkbox"/> Yes <input type="checkbox"/> No Project Manager <input type="checkbox"/> Yes <input type="checkbox"/> No Client Contact <input type="checkbox"/> Yes <input type="checkbox"/> No	<b>REPORT STATUS (time due):</b> <input type="checkbox"/> Initial (24 hr) <input type="checkbox"/> Final (5-10 days) Date: _____ Date: _____ <b>Accident Report Delivered To:</b> Corporate Health & Safety <input type="checkbox"/> Yes <input type="checkbox"/> No Office Health & Safety <input type="checkbox"/> Yes <input type="checkbox"/> No Office Manager <input type="checkbox"/> Yes <input type="checkbox"/> No Project Principal <input type="checkbox"/> Yes <input type="checkbox"/> No Project Manager <input type="checkbox"/> Yes <input type="checkbox"/> No
<b>REPORT TYPE:</b> <input type="checkbox"/> Loss <input type="checkbox"/> Near Loss   Estimated Costs: \$ _____		

<b>OSHA CASE # Assigned by Corporate Health &amp; Safety if Applicable:</b> _____	<b>Corporate Health &amp; Safety Confirmed Final Accident Report</b> <input type="checkbox"/> Yes <input type="checkbox"/> No
---	--

<b>DATE OF INCIDENT:</b> _____	<b>TIME INCIDENT OCCURRED:</b> _____ <input type="checkbox"/> AM <input type="checkbox"/> PM	<b>INCIDENT LOCATION</b> – City, State, and Country (If outside U.S.A.) _____
--------------------------------	---	--

**INCIDENT TYPES: (Select most appropriate if Loss occurred.)**  
 From lists below, please select the option that best categories the incident. When selecting an injury or illness, also indicate the severity level.

<b><input type="checkbox"/> INJURY</b> -----Severity Level----- <input type="checkbox"/> Fatality <input type="checkbox"/> Restricted Work <input type="checkbox"/> First Aid <input type="checkbox"/> Lost Time <input type="checkbox"/> Medical Treatment	<b><input type="checkbox"/> ILLNESS</b> <input type="checkbox"/> Spill / Release Material involved: _____ Quantity (U.S. Gallons): _____	<b>OTHER INCIDENT TYPES</b> <input type="checkbox"/> Misdirected Waste <input type="checkbox"/> Consent Order <input type="checkbox"/> NOV <input type="checkbox"/> Property Damage <input type="checkbox"/> Exceedance <input type="checkbox"/> Motor Vehicle <input type="checkbox"/> Fine / Penalty
---	---	---

<b>ACTIVITY TYPE (Check most appropriate one.)</b> <input type="checkbox"/> Decommissioning <input type="checkbox"/> Geoprobe <input type="checkbox"/> Sampling <input type="checkbox"/> Demolition <input type="checkbox"/> Motor Vehicle <input type="checkbox"/> System Start-up <input type="checkbox"/> Dewatering <input type="checkbox"/> Operations/ Maintenance <input type="checkbox"/> Trenching <input type="checkbox"/> Drilling <input type="checkbox"/> Pump/Pilot Test <input type="checkbox"/> AST/UST Removal <input type="checkbox"/> Excavation <input type="checkbox"/> Rigging/Lifting <input type="checkbox"/> Other _____ <input type="checkbox"/> Gauging	<b>INJURY TYPE (Check all applicable.)</b> <input type="checkbox"/> Abrasion <input type="checkbox"/> Occupational Illness <input type="checkbox"/> Amputation <input type="checkbox"/> Puncture <input type="checkbox"/> Burn <input type="checkbox"/> Rash <input type="checkbox"/> Cold/Heat Stress <input type="checkbox"/> Repetitive Motion <input type="checkbox"/> Inflammation <input type="checkbox"/> Sprain/Strain <input type="checkbox"/> Laceration <input type="checkbox"/> Other _____	<b>BODY PART AFFECTED (Check all applicable.)</b> <input type="checkbox"/> Respiratory <input type="checkbox"/> Shoulder <input type="checkbox"/> Face <input type="checkbox"/> Neck <input type="checkbox"/> Arm <input type="checkbox"/> Leg <input type="checkbox"/> Chest <input type="checkbox"/> Wrist <input type="checkbox"/> Knee <input type="checkbox"/> Abdomen <input type="checkbox"/> Hand/Fingers <input type="checkbox"/> Ankle <input type="checkbox"/> Groin <input type="checkbox"/> Eye <input type="checkbox"/> Foot/Toes <input type="checkbox"/> Back <input type="checkbox"/> Head <input type="checkbox"/> Other _____
--	---	--

I. PERSON(S) DIRECTLY / INDIRECTLY INVOLVED IN INCIDENT (Attach additional information as necessary/applicable.)				
Name/Phone # of Each Person Directly/Indirectly Involved in Incident:	Designate: Roux/Remedial Employee Roux/Remedial Subcontractor Client Employee Client Contractor Third Party	As applicable, Current Occupation; Yrs in Current Occupation; Current Position; and Yrs in Current Position:	As applicable, Employer Name; Address; and Phone #:	As applicable, Supervisor Name; and Phone #:
1)				
2)				

II. PERSONS INJURED IN INCIDENT (Attach additional information as necessary/applicable.)					
Name/Phone # of Each Person Injured in Incident:	Designate: Roux/Remedial Employee Roux/Remedial Subcontractor Client Employee Client Contractor Third Party	As applicable, Current Occupation; Yrs in Current Occupation; Current Position; and Yrs in Current Position:	As applicable, Employer Name; Address; and Phone #:	As applicable, Supervisor Name; and Phone #:	Description of Injury:
1)					
2)					

III. PROPERTY DAMAGED IN INCIDENT (Attach additional information as necessary/applicable.)				
Property Damaged:	Property Location:	Owner Name, Address & Phone #:	Description of Damage:	Estimated Cost:
1)				\$

**Accident Report – Page 2**

2)				\$
----	--	--	--	----

**IV. WITNESSES TO INCIDENT** (Attach additional information as necessary/applicable.)

Witness Name:	Address:	Phone #:
1)		
2)		

**PART 2: WHAT HAPPENED AND INCIDENT DETAILS**

**PROVIDE FACTUAL DESCRIPTION OF INCIDENT** (e.g., describe loss/near loss, injury, response / treatment).

**I. AUTHORITIES/GOVERNMENTAL AGENCIES NOTIFIED** (Attach additional information as necessary/applicable.)

Authority/Agency Notified:	Name/Phone #/Fax # of Person Notified:	Address of Person Notified:	Date & Time of Notification:	Exact Information Reported/Provided:

**II. PUBLIC RESPONSES TO INCIDENT (if applicable)**

Response/Inquiry By: (check one)	Entity Name:	Name/Phone # of Respondent/ Inquirer:	Address of Entity/Person:	Date & Time of Response/Inquiry:
<input type="checkbox"/> Newspaper <input type="checkbox"/> Television <input type="checkbox"/> Community Group <input type="checkbox"/> Neighbors <input type="checkbox"/> Other				

Describe Response/Inquiry:

Roux/Remedial Response:

(Check all that apply.) (Attach photos, drawings, etc. to help illustrate the incident.)

**ATTACHED INFORMATION:**     Photo     Sketches     Vehicle Acord Form     Police Report     Other

Name(s) of person(s) who prepared Initial and Final Report:	Title(s):	Phone number(s):

**PART 3: INVESTIGATION TEAM ANALYSIS**

**CONCLUSION: WHY IT HAPPENED (LIST CAUSAL FACTORS AND CORRESPONDING ROOT CAUSES)**

(Root Causes: Lack of knowledge or skill, Doing the task according to procedures or acceptable practices takes more time or effort, Short-cuts or not following acceptable practices is reinforced or tolerated, Not following procedures or acceptable practices did not result in an accident, Lack of or inadequate procedures, Inadequate communications of expectations regarding procedures or acceptable practices, Inadequate tools or equipment, External Factors)

**ROOT CAUSE(S) AND SOLUTION(S): HOW TO PREVENT INCIDENT FROM RECURRING**

CAUSAL FACTOR	ROOT CAUSE	SOLUTION(S) [Must Match Root Cause(s)]		PERSON RESPONSIBLE	AGREED DUE DATE	ACTUAL COMPLETION DATE
		#	Solution(s)			
		1				
		2				
		3				

**INVESTIGATION TEAM:**

PRINT NAME	JOB POSITION	DATE	SIGNATURE

**No One Gets Hurt!**

**Acord Form**

# ACORD™ AUTOMOBILE LOSS NOTICE

DATE

<b>PRODUCER</b> James C. Herrmann & Associates LTD 265 Sunrise Highway, Suite #20 Rockville Centre, NY 11570		<b>PHONE (A/C, No, Ext):</b> 516-678-2626		<b>COMPANY</b> Commerce & Industry		<b>NAIC CODE:</b> 19410		<b>MISCELLANEOUS INFO (Site &amp; location code)</b>				
<b>CODE:</b> AGENCY CUSTOMER ID:		<b>SUB CODE:</b>		<b>EFFECTIVE DATE</b> 06/01/11		<b>EXPIRATION DATE</b> 06/01/12		<b>DATE OF ACCIDENT AND TIME</b>		AM PM	<b>PREVIOUSLY REPORTED</b> YES NO	

<b>INSURED</b>				<b>CONTACT</b>				CONTACT INSURED							
<b>NAME AND ADDRESS</b> Roux Associates, Inc. 209 Shafter Street Islandia, NY 11749				<b>SOC SEC # OR FEIN:</b> 11-2579482				<b>NAME AND ADDRESS</b> Susan Sullivan, General Counsel Roux Associates, Inc. 209 Shafter Street Islandia, NY 11749				<b>WHERE TO CONTACT</b> Fax Notice: 631-232-1525			
<b>RESIDENCE PHONE (A/C, No)</b> NA				<b>BUSINESS PHONE (A/C, No, Ext)</b> 631-232-2600				<b>RESIDENCE PHONE (A/C, No)</b>				<b>BUSINESS PHONE (A/C, No, Ext)</b> 631-232-2600			

<b>LOSS</b>							
<b>LOCATION OF ACCIDENT</b> (Include city & state)				<b>AUTHORITY CONTACTED:</b>		<b>VIOLATIONS/CITATIONS</b>	
<b>DESCRIPTION OF ACCIDENT</b> (Use separate sheet, if necessary)				<b>REPORT #:</b>			

<b>POLICY INFORMATION</b>						
<b>BODILY INJURY (Per Person)</b>	<b>BODILY INJURY (Per Accident)</b>	<b>PROPERTY DAMAGE</b>	<b>SINGLE LIMIT</b>	<b>MEDICAL PAYMENT</b>	<b>OTC DEDUCTIBLE</b>	<b>OTHER COVERAGE &amp; DEDUCTIBLES (UM, no-fault, towing, etc)</b>
<b>LOSS PAYEE</b>					<b>COLLISION DED</b>	
<b>UMBRELLA/ EXCESS</b>	<b>UMBRELLA</b>	<b>EXCESS</b>	<b>CARRIER:</b>	<b>LIMITS:</b>	<b>AGGR</b>	<b>PER CLAIM/OCC</b>
<b>SIR/ DED</b>						

<b>INSURED VEHICLE</b>						
<b>VEH #</b>	<b>YEAR</b>	<b>MAKE:</b>		<b>BODY TYPE:</b>	<b>PLATE NUMBER</b>	<b>STATE</b>
<b>MODEL:</b>		<b>V.I.N.:</b>				
<b>OWNER'S NAME &amp; ADDRESS</b>				<b>RESIDENCE PHONE (A/C, No):</b>		
<b>DRIVER'S NAME &amp; ADDRESS</b> (Check if same as owner)				<b>BUSINESS PHONE (A/C, No, Ext):</b>		
<b>RELATION TO INSURED (Employee, family, etc.)</b> Employee	<b>DATE OF BIRTH</b>	<b>DRIVER'S LICENSE NUMBER</b>		<b>STATE</b>	<b>PURPOSE OF USE</b>	<b>USED WITH PERMISSION?</b> YES NO
<b>DESCRIBE DAMAGE</b>		<b>ESTIMATE AMOUNT</b>	<b>WHERE CAN VEHICLE BE SEEN?</b>		<b>WHEN CAN VEH BE SEEN?</b>	<b>OTHER INSURANCE ON VEHICLE</b>

<b>PROPERTY DAMAGED</b>						
<b>DESCRIBE PROPERTY</b> (If auto, year, make, model, plate #)				<b>OTHER VEH/PROP INS?</b> YES NO	<b>COMPANY OR AGENCY NAME:</b>	
<b>OWNER'S NAME &amp; ADDRESS</b>				<b>RESIDENCE PHONE (A/C, No):</b>		
<b>OTHER DRIVER'S NAME &amp; ADDRESS</b> (Check if same as owner)				<b>BUSINESS PHONE (A/C, No, Ext):</b>		
<b>DESCRIBE DAMAGE</b>	<b>ESTIMATE AMOUNT</b>	<b>WHERE CAN DAMAGE BE SEEN?</b>				

<b>INJURED</b>						
<b>NAME &amp; ADDRESS</b>		<b>PHONE (A/C, No)</b>	<b>PED</b>	<b>INS VEH</b>	<b>OTH VEH</b>	<b>AGE</b>
						<b>EXTENT OF INJURY</b>

<b>WITNESSES OR PASSENGERS</b>						
<b>NAME &amp; ADDRESS</b>		<b>PHONE (A/C, No)</b>	<b>INS VEH</b>	<b>OTH VEH</b>	<b>OTHER (Specify)</b>	

<b>REMARKS (Include adjuster assigned)</b>			
<b>REPORTED BY</b>	<b>REPORTED TO</b>	<b>SIGNATURE OF INSURED</b>	<b>SIGNATURE OF PRODUCER</b>

### **Applicable in Arizona**

For your protection, Arizona law requires the following statement to appear on this form. Any person who knowingly presents a false or fraudulent claim for payment of a loss is subject to criminal and civil penalties.

### **Applicable in Arkansas, District of Columbia, Kentucky, Louisiana, Maine, Michigan, New Jersey, New Mexico, Pennsylvania and Virginia**

Any person who knowingly and with intent to defraud any insurance company or another person, files a statement of claim containing any materially false information, or conceals for the purpose of misleading, information concerning any fact, material thereto, commits a fraudulent insurance act, which is a crime, subject to criminal prosecution and civil penalties. In D.C., LA, ME and VA insurance benefits may also be denied.

### **Applicable in California**

Any person who knowingly files a statement of claim containing any false or misleading information is subject to criminal and civil penalties.

### **Applicable in Colorado**

It is unlawful to knowingly provide false, incomplete, or misleading facts or information to an insurance company for the purpose of defrauding or attempting to defraud the company. Penalties may include imprisonment, fines, denial of insurance, and civil damages. Any insurance company or agent of an insurance company who knowingly provides false, incomplete, or misleading facts or information to a policy holder or claimant for the purpose of defrauding or attempting to defraud the policy holder or claimant with regard to a settlement or award payable from insurance proceeds shall be reported to the Colorado Division of Insurance within the Department of Regulatory Agencies.

### **Applicable in Florida and Idaho**

Any person who knowingly and with the intent to injure, Defraud, or Deceive any Insurance Company Files a Statement of Claim Containing any False, Incomplete or Misleading information is Guilty of a Felony.\*

\* In Florida - Third Degree Felony

### **Applicable in Hawaii**

For your protection, Hawaii law requires you to be informed that presenting a fraudulent claim for payment of a loss or benefit is a crime punishable by fines or imprisonment , or both.

### **Applicable in Indiana**

A person who knowingly and with intent to defraud an insurer files a statement of claim containing any false, incomplete, or misleading information commits a felony.

### **Applicable in Minnesota**

A person who files a claim with intent to defraud or helps commit a fraud against an insurer is guilty of a crime.

### **Applicable in Nevada**

Pursuant to NRS 686A.291, any person who knowingly and willfully files a statement of claim that contains any false, incomplete or misleading information concerning a material fact is guilty of a felony.

### **Applicable in New Hampshire**

Any person who, with purpose to injure, defraud or deceive any insurance company, files a statement of claim containing any false, incomplete or misleading information is subject to prosecution and punishment for insurance fraud, as provided in RSA 638:20.

### **Applicable in New York**

Any person who knowingly makes or knowingly assists, abets, solicits or conspires with another to make a false report of the theft, destruction, damage or conversion of any motor vehicle to a law enforcement agency, the Department of Motor Vehicles or an insurance company, commits a fraudulent insurance act, which is a crime, and shall also be subject to a civil penalty not to exceed five thousand dollars and the value of the subject motor vehicle or stated claim for each violation.

### **Applicable in Ohio**

Any person who, with intent to defraud or knowing that he/she is facilitating a fraud against an insurer, submits an application or files a claim containing a false or deceptive statement is guilty of insurance fraud.

### **Applicable in Oklahoma**

WARNING: Any person who knowingly and with intent to injure, defraud or deceive any insurer, makes any claim for the proceeds of an insurance policy containing any false, incomplete or misleading information is guilty of a felony.

**OSHA 300**



# OSHA's Form 300A (Rev. 01/2004)

## Summary of Work-Related Injuries and Illnesses

Year \_\_\_\_\_



U.S. Department of Labor  
Occupational Safety and Health Administration

Form approved OMB no. 1218-0176

All establishments covered by Part 1904 must complete this Summary page, even if no injuries or illnesses occurred during the year. Remember to review the Log to verify that the entries are complete

Using the Log, count the individual entries you made for each category. Then write the totals below, making sure you've added the entries from every page of the log. If you had no cases write "0."

Employees former employees, and their representatives have the right to review the OSHA Form 300 in its entirety. They also have limited access to the OSHA Form 301 or its equivalent. See 29 CFR 1904.35, in OSHA's Recordkeeping rule, for further details on the access provisions for these forms.

### Number of Cases

Total number of deaths	Total number of cases with days away from work	Total number of cases with job transfer or restriction	Total number of other recordable cases
0	0	0	0
(G)	(H)	(I)	(J)

### Number of Days

Total number of days away from work	Total number of days of job transfer or restriction
0	0
(K)	(L)

### Injury and Illness Types

Total number of... (M)			
(1) Injury	0	(4) Poisoning	0
(2) Skin Disorder	0	(5) Hearing Loss	0
(3) Respiratory Condition	0	(6) All Other Illnesses	0

Post this Summary page from February 1 to April 30 of the year following the year covered by the form

Public reporting burden for this collection of information is estimated to average 50 minutes per response, including time to review the instruction, search and gather the data needed, and complete and review the collection of information. Persons are not required to respond to the collection of information unless it displays a currently valid OMB control number. If you have any comments about these estimates or any aspects of this data collection, contact: US Department of Labor, OSHA Office of Statistics, Room N-3644, 200 Constitution Ave. NW, Washington, DC 20210. Do not send the completed forms to this office.

### Establishment information

Your establishment name \_\_\_\_\_  
 Street \_\_\_\_\_  
 City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_  
 Industry description (e.g., Manufacture of motor truck trailers)  
 \_\_\_\_\_  
 Standard Industrial Classification (SIC), if known (e.g., SIC 3715)  
 \_\_\_\_\_  
 OR North American Industrial Classification (NAICS), if known (e.g., 336212)  
 \_\_\_\_\_

### Employment information

Annual average number of employees \_\_\_\_\_  
 Total hours worked by all employees last year \_\_\_\_\_

### Sign here

Knowingly falsifying this document may result in a fine.

I certify that I have examined this document and that to the best of my knowledge the entries are true, accurate, and complete.

\_\_\_\_\_  
 Company executive Title  
 \_\_\_\_\_  
 Phone Date

**Weekly Safety Report**

**APPENDIX I**  
**WEEKLY SAFETY REPORT**

**Job Name** \_\_\_\_\_ **Job#** \_\_\_\_\_

**Week of:** \_\_\_\_\_ **Days Without Lost Time Injury:** \_\_\_\_\_

**Describe any recordable incidents or accidents:**

**What actions were taken to prevent such incidents or accidents from occurring again?**

**Was training conducted addressing the incident? Y N What date? \_\_\_**

**What level of PPE is currently in place?**

**Has PPE been upgraded or downgraded?**

**Have Perimeter Air Monitoring action limits been exceeded:**

**What action was taken to mitigate the exceedance?**

**Have personal air monitoring limits been exceeded:**

**What actions were taken?**

**List any problems with air monitoring equipment:**

**Write a summary of work completed during the week:**

**Write a summary of proposed work for the coming week:**

**Summarize any safety issues that are outstanding:**

**HSO Name:** \_\_\_\_\_ **HSO Signature:** \_\_\_\_\_

**Job Safety and  
Health Protection Poster**

# You Have a Right to a Safe and Healthful Workplace. IT'S THE LAW!

- You have the right to notify your employer or OSHA about workplace hazards. You may ask OSHA to keep your name confidential.
- You have the right to request an OSHA inspection if you believe that there are unsafe and unhealthful conditions in your workplace. You or your representative may participate in the inspection.
- You can file a complaint with OSHA within 30 days of discrimination by your employer for making safety and health complaints or for exercising your rights under the *OSH Act*.
- You have a right to see OSHA citations issued to your employer. Your employer must post the citations at or near the place of the alleged violation.
- Your employer must correct workplace hazards by the date indicated on the citation and must certify that these hazards have been reduced or eliminated.
- You have the right to copies of your medical records or records of your exposure to toxic and harmful substances or conditions.
- Your employer must post this notice in your workplace.



The *Occupational Safety and Health Act of 1970 (OSH Act)*, P.L. 91-596, assures safe and healthful working conditions for working men and women throughout the Nation. The Occupational Safety and Health Administration, in the U.S. Department of Labor, has the primary responsibility for administering the *OSH Act*. The rights listed here may vary depending on the particular circumstances. To file a complaint, report an emergency, or seek OSHA advice, assistance, or products, call 1-800-321-OSHA or your nearest OSHA office: • Atlanta (404) 562-2300 • Boston (617) 565-9860 • Chicago (312) 353-2220 • Dallas (214) 767-4731 • Denver (303) 844-1600 • Kansas City (816) 426-5861 • New York (212) 337-2378 • Philadelphia (215) 861-4900 • San Francisco (415) 975-4310 • Seattle (206) 553-5930. Teletypewriter (TTY) number is 1-877-889-5627. To file a complaint online or obtain more information on OSHA federal and state programs, visit OSHA's website at [www.osha.gov](http://www.osha.gov). If your workplace is in a state operating under an OSHA-approved plan, your employer must post the required state equivalent of this poster.

## 1-800-321-OSHA [www.osha.gov](http://www.osha.gov)

**Table 1. Site Soil Cleanup Objectives, West 230th Street, Bronx, New York**

Parameter	NYSDEC	NYSDEC
	Part 375 Unrestricted Use	Part 375 Commercial
<b>Volatile Organic Compounds (Concentrations in µg/kg)</b>		
1,1,1-Trichloroethane	680	500000
1,1-Dichloroethane	270	240000
1,1-Dichloroethene	330	500000
1,2-Dichlorobenzene	1100	500000
1,2-Dichloroethane	20	30000
1,3-Dichlorobenzene	2400	280000
1,4-Dichlorobenzene	1800	130000
1,4-Dioxane	100	130000
2-Butanone (MEK)	120	500000
Acetone	50	500000
Benzene	60	44000
Carbon tetrachloride	760	22000
Chlorobenzene	1100	500000
Chloroform	370	350000
cis-1,2-Dichloroethene	250	500000
Ethylbenzene	1000	390000
Methylene chloride	50	500000
MTBE	930	500000
Tetrachloroethene	1300	150000
Toluene	700	500000
trans-1,2-Dichloroethene	190	500000
Trichloroethene	470	200000
Vinyl chloride	20	13000
Xylenes (total)	260	500000
<b>Semivolatile Organic Compounds (Concentrations in µg/kg)</b>		
2-Methylphenol	330	500000
Acenaphthene	20000	500000
Acenaphthylene	100000	500000
Anthracene	100000	500000
Benzo[a]anthracene	1000	5600
Benzo[a]pyrene	1000	1000
Benzo[b]fluoranthene	1000	5600
Benzo[g,h,i]perylene	100000	500000
Benzo[k]fluoranthene	800	56000
Chrysene	1000	56000
Dibenzo[a,h]anthracene	330	560
Dibenzofuran	7000	350000
Fluoranthene	100000	500000
Fluorene	30000	500000
Hexachlorobenzene	330	6000
Indeno[1,2,3-cd]pyrene	500	5600
Naphthalene	12000	500000
Pentachlorophenol	800	6700
Phenanthrene	100000	500000
Phenol	330	500000
Pyrene	100000	500000

**Table 1. Site Soil Cleanup Objectives, West 230th Street, Bronx, New York**

Parameter	NYSDEC	NYSDEC
	Part 375 Unrestricted Use	Part 375 Commercial
<b>Metals (Concentrations in mg/kg)</b>		
Arsenic	13	16
Barium	350	400
Beryllium	7.2	590
Cadmium	2.5	9.3
Chromium	30	1500
Copper	50	270
Lead	63	1000
Manganese	1600	10000
Mercury	0.18	2.8
Nickel	30	310
Selenium	3.9	1500
Silver	2	1500
Zinc	109	10000
<b>Total Polychlorinated Biphenyls (Concentrations in µg/kg)</b>	100	1000
<b>Pesticides (Concentrations in µg/kg)</b>		
2,4,5-TP	3800	500000
4,4'-DDD	3.3	92000
4,4'-DDE	3.3	62000
4,4'-DDT	3.3	47000
Aldrin	5	680
alpha-BHC	20	3400
alpha-Chlordane	94	24000
beta-BHC	36	3000
delta-BHC	40	500000
Dieldrin	5	1400
Endosulfan I	2400	200000
Endosulfan II	2400	200000
Endosulfan sulfate	2400	200000
Endrin	14	89000
gamma-BHC (Lindane)	100	9200
Heptachlor	42	15000
Pentachlorophenol	800	6700
<b>General Chemistry (Concentrations in mg/kg)</b>		
Chromium, Hexavalent	1	400
Cyanide, Free	27	27

µg/kg - Micrograms per kilogram

mg/kg - Milligrams per kilogram

**Table 2. Summary of Volatile Organic Compounds in Groundwater, West 230th Street, Bronx, New York**

Parameter (Concentrations in µg/L)	NYSDEC	Sample Designation:	FB-022212	MW-1	MW-1DUP	MW-2	MW-3	SB-10
	AWQSGVs (µg/L)	Sample Date:	2/22/2012	2/21/2012	2/21/2012	2/21/2012	2/21/2012	2/22/2012
1,1,1-Trichloroethane	5		1 U	1 U	1 U	1 U	1 U	1 U
1,1,2,2-Tetrachloroethane	5		1 U	1 U	1 U	1 U	1 U	1 U
1,1,2-Trichloroethane	1		1 U	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethane	5		1 U	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethene	5		1 U	1 U	1 U	1 U	1 U	1 U
1,2,3-Trichlorobenzene	5		5 U	5 U	5 U	5 U	5 U	5 U
1,2,4-Trichlorobenzene	5		5 U	5 U	5 U	5 U	5 U	5 U
1,2-Dibromoethane	5		2 U	2 U	2 U	2 U	2 U	2 U
1,2-Dichlorobenzene	3		1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichloroethane	0.6		1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichloropropane	1		1 U	1 U	1 U	1 U	1 U	1 U
1,3-Dichlorobenzene	3		1 U	1 U	1 U	1 U	1 U	1 U
1,4-Dichlorobenzene	3		1 U	1 U	1 U	1 U	1 U	1 U
1,4-Dioxane	--		130 U					
2-Butanone (MEK)	50		10 U					
2-Hexanone	50		5 U	5 U	5 U	5 U	5 U	5 U
4-Methyl-2-pentanone (MIBK)	--		5 U	5 U	5 U	5 U	5 U	5 U
Acetone	50		10 U					
Benzene	1		1 U	1 U	1 U	1 U	2.6	1 U
Bromochloromethane	5		5 U	5 U	5 U	5 U	5 U	5 U
Bromodichloromethane	50		1 U	1 U	1 U	1 U	1 U	1 U
Bromoform	50		4 U	4 U	4 U	4 U	4 U	4 U
Bromomethane	5		2 U	2 U	2 U	2 U	2 U	2 U
Carbon disulfide	60		2 U	2 U	2 U	2 U	2 U	2 U
Carbon tetrachloride	5		1 U	1 U	1 U	1 U	1 U	1 U
Chlorobenzene	5		1 U	1 U	1 U	1 U	1 U	1 U
Chloroethane	5		1 U	1 U	1 U	1 U	1 U	1 U
Chloroform	7		1 U	1 U	1 U	1 U	1 U	1 U
Chloromethane	--		1 U	1 U	1 U	1 U	1 U	1 U
cis-1,2-Dichloroethene	5		1 U	3.5	3.2	1 U	1 U	0.28 J
cis-1,3-Dichloropropene	5		1 U	1 U	1 U	1 U	1 U	1 U
Cyclohexane	--		5 U	5 U	5 U	5 U	5 U	5 U
Dibromochloromethane	50		1 U	1 U	1 U	1 U	1 U	1 U
Dibromochloropropane	--		10 U					
Dichlorodifluoromethane	5		5 U	5 U	5 U	5 U	5 U	5 U

**Table 2. Summary of Volatile Organic Compounds in Groundwater, West 230th Street, Bronx, New York**

Parameter (Concentrations in µg/L)	NYSDEC	Sample Designation:		MW-1	MW-1DUP	MW-2	MW-3	SB-10
	AWQSGVs (µg/L)	FB-022212	Sample Date:	2/21/2012	2/21/2012	2/21/2012	2/21/2012	2/22/2012
Ethylbenzene	5	1 U		1 U	1 U	1 U	2.1	1 U
Freon 113	--	5 U		5 U	5 U	5 U	5 U	5 U
Isopropylbenzene	5	2 U		2 U	2 U	2 U	1.4 J	2 U
m+p-Xylene	5	1 U		1 U	1 U	1 U	1.6	1 U
Methyl acetate	--	5 U		5 U	5 U	5 U	5 U	5 U
Methylcyclohexane	--	5 U		5 U	5 U	5 U	0.56 J	5 U
Methylene chloride	5	2 U		2 U	2 U	2 U	2 U	2 U
MTBE	10	1 U		0.58 J	0.54 J	0.4 J	2.3	1 U
o-Xylene	5	1 U		1 U	1 U	1 U	0.58 J	1 U
Styrene	5	5 U		5 U	5 U	5 U	5 U	5 U
Tetrachloroethene	5	1 U		1 U	0.36 J	1 U	1 U	0.82 J
Toluene	5	1 U		1 U	1 U	1 U	0.3 J	1 U
trans-1,2-Dichloroethene	5	1 U		0.33 J	1 U	1 U	1 U	1 U
trans-1,3-Dichloropropene	--	1 U		1 U	1 U	1 U	1 U	1 U
Trichloroethene	5	1 U		0.41 J	0.37 J	1 U	1 U	0.33 J
Trichlorofluoromethane	5	5 U		5 U	5 U	5 U	5 U	5 U
Vinyl chloride	2	1 U		1 U	1 U	1 U	1 U	1 U
Xylenes (total)	5	1 U		1 U	1 U	1 U	2.2	1 U
Total VOCs		0		4.82	4.47	0.4	13.64	1.43

NYSDEC - New York State Department of Environmental Conservation

AWQSGVs - Ambient Water-Quality Standards and Guidance Values

µg/L -Micrograms per liter

J - Estimated Value

U - Compound was analyzed for but not detected

DUP - Duplicate

-- No NYSDEC AWQSGV available

Bold data indicates that parameter was detected above the NYSDEC AWQSGVs

VOCs - Volatile Organic Compounds

**Table 3. Summary of Semivolatile Organic Compounds in Groundwater, West 230th Street, Bronx, New York**

Parameter (Concentrations in µg/L)	NYSDEC AWQSGVs (µg/L)	Sample Designation:	FB-022212	MW-1	MW-1DUP	MW-2	MW-3	SB-10
		Sample Date:	2/22/2012	2/21/2012	2/21/2012	2/21/2012	2/21/2012	2/22/2012
1,1'-Biphenyl	--		1 U	1 U	1 U	1.3 U	1 U	1.1 U
1,2,4,5-Tetrachlorobenzene	--		2 U	2 U	2 U	2.5 U	2.1 U	2.2 U
2,2'-oxybis (1-chloropropane)	5		2 U	2 U	2 U	2.5 U	2.1 U	2.2 U
2,3,4,6-Tetrachlorophenol	--		5 U	5.1 U	5 U	6.3 U	5.2 U	5.4 U
2,4,5-Trichlorophenol	--		5 U	5.1 U	5 U	6.3 U	5.2 U	5.4 U
2,4,6-Trichlorophenol	--		5 U	5.1 U	5 U	6.3 U	5.2 U	5.4 U
2,4-Dichlorophenol	5		5 U	5.1 U	5 U	6.3 U	5.2 U	5.4 U
2,4-Dimethylphenol	50		5 U	5.1 U	5 U	6.3 U	5.2 U	5.4 U
2,4-Dinitrophenol	10		20 U	20 U	20 U	25 U	21 U	22 U
2,4-Dinitrotoluene	5		2 U	2 U	2 U	2.5 U	2.1 U	2.2 U
2,6-Dinitrotoluene	5		2 U	2 U	2 U	2.5 U	2.1 U	2.2 U
2-Chloronaphthalene	10		2 U	2 U	2 U	2.5 U	2.1 U	2.2 U
2-Chlorophenol	--		5 U	5.1 U	5 U	6.3 U	5.2 U	5.4 U
2-Methylnaphthalene	--		1 U	1 U	1 U	1.3 U	1 U	1.1 U
2-Methylphenol	--		2 U	2 U	2 U	2.5 U	2.1 U	2.2 U
2-Nitroaniline	5		5 U	5.1 U	5 U	6.3 U	5.2 U	5.4 U
2-Nitrophenol	--		5 U	5.1 U	5 U	6.3 U	5.2 U	5.4 U
3&4-Methylphenol	--		2 U	2 U	2 U	2.5 U	2.1 U	2.2 U
3,3'-Dichlorobenzidine	5		5 U	5.1 U	5 U	6.3 U	5.2 U	5.4 U
3-Nitroaniline	5		5 U	5.1 U	5 U	6.3 U	5.2 U	5.4 U
4,6-Dinitro-2-methylphenol	--		20 U	20 U	20 U	25 U	21 U	22 U
4-Bromophenyl phenyl ether	--		2 U	2 U	2 U	2.5 U	2.1 U	2.2 U
4-Chloro-3-methylphenol	--		5 U	5.1 U	5 U	6.3 U	5.2 U	5.4 U
4-Chloroaniline	5		5 U	5.1 U	5 U	6.3 U	5.2 U	5.4 U
4-Chlorophenyl phenyl ether	--		2 U	2 U	2 U	2.5 U	2.1 U	2.2 U
4-Nitroaniline	5		5 U	5.1 U	5 U	6.3 U	5.2 U	5.4 U
4-Nitrophenol	--		10 U	10 U	10 U	13 U	10 U	11 U
Acenaphthene	20		1 U	1 U	1 U	1.3 U	1 U	1.1 U
Acenaphthylene	20		1 U	1 U	1 U	1.3 U	1 U	1.1 U
Acetophenone	--		2 U	2 U	2 U	2.5 U	2.1 U	2.2 U
Anthracene	50		1 U	1 U	1 U	1.3 U	1 U	1.1 U
Atrazine	--		5 U	5.1 U	5 U	6.3 U	5.2 U	5.4 U
Benzaldehyde	--		5 U	5.1 U	5 U	6.3 U	5.2 U	5.4 U

**Table 3. Summary of Semivolatile Organic Compounds in Groundwater, West 230th Street, Bronx, New York**

Parameter (Concentrations in µg/L)	NYSDEC AWQSGVs (µg/L)	Sample Designation:	FB-022212	MW-1	MW-1DUP	MW-2	MW-3	SB-10
		Sample Date:	2/22/2012	2/21/2012	2/21/2012	2/21/2012	2/21/2012	2/22/2012
Benzo[a]anthracene	0.002		1 U	1 U	1 U	1.3 U	1 U	1.1 U
Benzo[a]pyrene	0		1 U	1 U	1 U	1.3 U	1 U	1.1 U
Benzo[b]fluoranthene	0.002		1 U	1 U	1 U	1.3 U	1 U	1.1 U
Benzo[g,h,i]perylene	--		1 U	1 U	1 U	1.3 U	1 U	1.1 U
Benzo[k]fluoranthene	0.002		1 U	1 U	1 U	1.3 U	1 U	1.1 U
Bis(2-chloroethoxy)methane	5		2 U	2 U	2 U	2.5 U	2.1 U	2.2 U
Bis(2-chloroethyl) ether	--		2 U	2 U	2 U	2.5 U	2.1 U	2.2 U
Bis(2-ethylhexyl) phthalate	5		2 U	2 U	2 U	2.5 U	2.1 U	2.2 U
Butylbenzyl phthalate	50		2 U	2 U	2 U	2.5 U	2.1 U	2.2 U
Caprolactam	--		2 U	2 U	2 U	2.5 U	2.1 U	2.2 U
Carbazole	--		1 U	1 U	1 U	1.3 U	1 U	1.1 U
Chrysene	0.002		1 U	1 U	1 U	1.3 U	1 U	1.1 U
Dibenzo[a,h]anthracene	--		1 U	1 U	1 U	1.3 U	1 U	1.1 U
Dibenzofuran	--		5 U	5.1 U	5 U	6.3 U	5.2 U	5.4 U
Diethyl phthalate	50		2 U	2 U	2 U	2.5 U	2.1 U	2.2 U
Dimethyl phthalate	50		2 U	2 U	2 U	2.5 U	2.1 U	2.2 U
Di-n-butyl phthalate	50		2 U	2 U	2 U	2.5 U	2.1 U	2.2 U
Di-n-octyl phthalate	--		2 U	2 U	2 U	2.5 U	2.1 U	2.2 U
Fluoranthene	50		1 U	1 U	1 U	1.3 U	1 U	1.1 U
Fluorene	50		1 U	1 U	1 U	1.3 U	1 U	1.1 U
Hexachlorobenzene	0.04		1 U	1 U	1 U	1.3 U	1 U	1.1 U
Hexachlorobutadiene	0.5		1 U	1 U	1 U	1.3 U	1 U	1.1 U
Hexachlorocyclopentadiene	5		20 U	20 U	20 U	25 U	21 U	22 U
Hexachloroethane	5		2 U	2 U	2 U	2.5 U	2.1 U	2.2 U
Indeno[1,2,3-cd]pyrene	0.002		1 U	1 U	1 U	1.3 U	1 U	1.1 U
Isophorone	50		2 U	2 U	2 U	2.5 U	2.1 U	2.2 U
Naphthalene	10		1 U	1 U	1 U	1.3 U	1 U	1.1 U
Nitrobenzene	0.4		2 U	2 U	2 U	2.5 U	2.1 U	2.2 U
n-Nitrosodi-n-propylamine	--		2 U	2 U	2 U	2.5 U	2.1 U	2.2 U
n-Nitrosodiphenylamine	50		5 U	5.1 U	5 U	6.3 U	5.2 U	5.4 U
Pentachlorophenol	1		10 U	10 U	10 U	13 U	10 U	11 U
Phenanthrene	50		1 U	1 U	1 U	1.3 U	1 U	1.1 U
Phenol	1		2 U	2 U	2 U	2.5 U	2.1 U	2.2 U

**Table 3. Summary of Semivolatile Organic Compounds in Groundwater, West 230th Street, Bronx, New York**

Parameter (Concentrations in µg/L)	NYSDEC AWQSGVs (µg/L)	Sample Designation:	FB-022212	MW-1	MW-1DUP	MW-2	MW-3	SB-10
		Sample Date:	2/22/2012	2/21/2012	2/21/2012	2/21/2012	2/21/2012	2/22/2012
Pyrene	50		1 U	1 U	1 U	1.3 U	1 U	1.1 U
Total SVOCs			0	0	0	0	0	0

NYSDEC - New York State Department of Environmental Conservation  
 AWQSGVs - Ambient Water-Quality Standards and Guidance Values  
 µg/L -Micrograms per liter  
 J - Estimated Value  
 U - Compound was analyzed for but not detected  
 DUP - Duplicate  
 - - No NYSDEC AWQSGV available  
 Bold data indicates that parameter was detected above the NYSDEC AWQSGVs  
 SVOCs - Semivolatile Organic Compounds

**Table 4. Summary of Metals in Groundwater, West 230th Street, Bronx, New York**

Parameter (Concentrations in µg/L)	NYSDEC	Sample Designation: FB-022212		MW-1	MW-1DUP	MW-2	MW-3	SB-10
	AWQSGVs (µg/L)	Sample Date:	2/22/2012	2/21/2012	2/21/2012	2/21/2012	2/21/2012	2/22/2012
Aluminum	--		200 U	493	242	200 U	200 U	599
Antimony	3		6 U	6 U	6 U	6 U	6 U	6 U
Arsenic	25		3 U	3 U	3 U	6.4	3.9	3 U
Barium	1000		200 U	200 U	200 U	200 U	200 U	257
Beryllium	3		1 U	1 U	1 U	1 U	1 U	1 U
Cadmium	5		3 U	3 U	3 U	3 U	3 U	3 U
Calcium	--		5000 U	249000	251000	260000	193000	153000
Chromium	50		10 U	10 U	10 U	10 U	10 U	10 U
Cobalt	--		50 U	50 U	50 U	50 U	50 U	50 U
Copper	200		10 U	10 U	10 U	10 U	10 U	10 U
Iron	--		100 U	7070	6510	15900	3610	2210
Lead	25		3 U	4.5	3	3 U	3 U	4.5
Magnesium	--		5000 U	52700	52600	42800	51500	23200
Manganese	300		15 U	<b>586</b>	<b>606</b>	<b>2120</b>	<b>440</b>	<b>1130</b>
Mercury	0.7		0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Nickel	100		10 U	10 U	10 U	10 U	10 U	10 U
Potassium	--		10000 U	23400	24000	13500	15500	12000
Selenium	10		10 U	10 U	10 U	10 U	10 U	10 U
Silver	50		10 U	10 U	10 U	10 U	10 U	10 U
Sodium	20000		10000 U	<b>240000</b>	<b>244000</b>	<b>237000</b>	<b>413000</b>	<b>197000</b>
Thallium	0.5		2 U	2 U	2 U	2 U	2 U	2 U
Vanadium	--		50 U	50 U	50 U	50 U	50 U	50 U
Zinc	2000		20 U	20 U	20 U	20 U	20 U	20 U

NYSDEC - New York State Department of Environmental Conservation

AWQSGVs - Ambient Water-Quality Standards and Guidance Values

µg/L -Micrograms per liter

J - Estimated Value

U - Compound was analyzed for but not detected

DUP - Duplicate

-- No NYSDEC AWQSGV available

Bold data indicates that parameter was detected above the NYSDEC AWQSGVs

**Table 5. Summary of Polychlorinated Biphenyls in Groundwater, West 230th Street, Bronx, New York**

Parameter (Concentrations in µg/L)	NYSDEC AWQSGVs (µg/L)	Sample Designation: FB-022212    MW-1    MW-1DUP    MW-2    MW-3    SB-10					
		Sample Date: 2/22/2012    2/21/2012    2/21/2012    2/21/2012    2/21/2012    2/22/2012					
Aroclor-1016	--	0.52 U	0.71 U	0.5 U	0.5 U	0.55 U	0.53 U
Aroclor-1221	--	0.52 U	0.71 U	0.5 U	0.5 U	0.55 U	0.53 U
Aroclor-1232	--	0.52 U	0.71 U	0.5 U	0.5 U	0.55 U	0.53 U
Aroclor-1242	--	0.52 U	0.71 U	0.5 U	0.5 U	0.55 U	0.53 U
Aroclor-1248	--	0.52 U	0.71 U	0.5 U	0.5 U	0.55 U	0.53 U
Aroclor-1254	--	0.52 U	0.71 U	0.5 U	0.5 U	0.55 U	0.53 U
Aroclor-1260	--	0.52 U	0.71 U	0.5 U	0.5 U	0.55 U	0.53 U
Aroclor-1262	--	0.52 U	0.71 U	0.5 U	0.5 U	0.55 U	0.53 U
Aroclor-1268	--	0.52 U	0.71 U	0.5 U	0.5 U	0.55 U	0.53 U
<b>Total PCBs</b>	<b>0.09</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

NYSDEC - New York State Department of Environmental Conservation  
 AWQSGVs - Ambient Water-Quality Standards and Guidance Values  
 µg/L -Micrograms per liter  
 J - Estimated Value  
 U - Compound was analyzed for but not detected  
 DUP - Duplicate  
 - - No NYSDEC AWQSGV available  
 Bold data indicates that parameter was detected above the NYSDEC AWQSGVs  
 PCBs - Polychlorinated Biphenyls

**Table 6. Summary of Pesticides and Herbicides in Groundwater, West 230th Street, Bronx, New York**

Parameter (Concentrations in µg/L)	NYSDEC	Sample Designation: FB-022212		MW-1	MW-1DUP	MW-2	MW-3	SB-10
	AWQSGVs (µg/L)	Sample Date:	2/22/2012	2/21/2012	2/21/2012	2/21/2012	2/21/2012	2/22/2012
2,4,5-T	--		0.1 U	0.11 U				
2,4,5-TP	0.26		0.1 U	0.11 U				
2,4-D	50		0.5 U	0.52 U	0.52 U	0.51 U	0.52 U	0.54 U
2,4-DB	--		0.5 U	0.52 U	0.52 U	0.51 U	0.52 U	0.54 U
4,4'-DDD	0.3		0.01 U	0.014 U	0.01 U	0.01 U	0.011 U	0.011 U
4,4'-DDE	0.2		0.01 U	0.014 U	0.01 U	0.01 U	0.011 U	0.011 U
4,4'-DDT	0.2		0.01 U	0.014 U	0.01 U	0.01 U	0.011 U	0.011 U
Aldrin	0		0.01 U	0.014 U	0.01 U	0.01 U	0.011 U	0.011 U
alpha-BHC	--		0.01 U	0.014 U	0.01 U	0.01 U	0.011 U	0.011 U
alpha-Chlordane	--		0.01 U	0.014 U	0.01 U	0.01 U	0.011 U	0.011 U
beta-BHC	--		0.01 U	0.014 U	0.01 U	0.01 U	0.011 U	0.011 U
Dalapon	--		0.1 U	0.11 U				
delta-BHC	--		0.01 U	0.014 U	0.01 U	0.01 U	0.011 U	0.011 U
Dicamba	--		0.1 U	0.11 U				
Dichloroprop	--		0.5 U	0.52 U	0.52 U	0.51 U	0.52 U	0.54 U
Dieldrin	0.004		0.01 U	0.014 U	0.01 U	0.01 U	0.011 U	0.011 U
Dinoseb	--		0.5 U	0.52 U	0.52 U	0.51 U	0.52 U	0.54 U
Endosulfan I	--		0.01 U	0.014 U	0.01 U	0.01 U	0.011 U	0.011 U
Endosulfan II	--		0.01 U	0.014 U	0.01 U	0.01 U	0.011 U	0.011 U
Endosulfan sulfate	--		0.01 U	0.014 U	0.01 U	0.01 U	0.011 U	0.011 U
Endrin aldehyde	5		0.01 U	0.014 U	0.01 U	0.01 U	0.011 U	0.011 U
Endrin ketone	--		0.01 U	0.014 U	0.01 U	0.01 U	0.011 U	0.011 U
Endrin	0		0.01 U	0.014 U	0.01 U	0.01 U	0.011 U	0.011 U
gamma-BHC (Lindane)	--		0.01 U	0.014 U	0.01 U	0.01 U	0.011 U	0.011 U
gamma-Chlordane	0		0.01 U	0.014 U	0.01 U	0.01 U	0.011 U	0.011 U
Heptachlor epoxide	0.03		0.01 U	0.014 U	0.01 U	0.01 U	0.011 U	0.011 U
Heptachlor	0.04		0.01 U	0.014 U	0.01 U	0.01 U	0.011 U	0.011 U
MCPA	--		50 U	52 U	52 U	51 U	52 U	54 U
MCPP	--		50 U	52 U	52 U	51 U	52 U	54 U
Methoxychlor	35		0.021 U	0.029 U	0.02 U	0.02 U	0.022 U	0.021 U
Pentachlorophenol	1		0.05 U	0.052 U	0.052 U	0.051 U	0.052 U	0.054 U
Toxaphene	0.06		0.26 U	0.36 U	0.25 U	0.25 U	0.28 U	0.27 U

NYSDEC - New York State Department of Environmental Conservation

AWQSGVs - Ambient Water-Quality Standards and Guidance Values

µg/L -Micrograms per liter

J - Estimated Value

U - Compound was analyzed for but not detected

DUP - Duplicate

-- No NYSDEC AWQSGV available

Bold data indicates that parameter was detected above the NYSDEC AWQSGVs

**Table 7. Summary of General Chemistry in Groundwater, West 230th Street, Bronx, New York**

Parameter	NYSDEC		Sample Designation:	FB-022212	MW-1	MW-1DUP	MW-2	MW-3	SB-10
	AWQSGVs	Units							
	(µg/L)								
Chromium, Hexavalent	--	mg/l		0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Cyanide, Free	200	mg/l		0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
pH	--	su		5.64	6.89	6.96	6.77	6.92	7.01

NYSDEC - New York State Department of Environmental Conservation  
 AWQSGVs - Ambient Water-Quality Standards and Guidance Values  
 µg/L -Micrograms per liter  
 su - Standard units  
 J - Estimated Value  
 U - Compound was analyzed for but not detected  
 DUP - Duplicate  
 - - No NYSDEC AWQSGV available  
 Bold data indicates that parameter was detected above the NYSDEC AWQSGVs

**Table 8. Summary of Volatile Organic Compounds in Soil, West 230th Street, Bronx, New York**

Parameter (Concentrations in µg/kg)	NYSDEC	NYSDEC	Sample Designation:	SB-1	SB-2	SB-3	SB-4	SB-4DUP	SB-5
	Part 375	Part 375	Sample Date:	2/22/2012	2/22/2012	2/22/2012	2/22/2012	2/22/2012	2/22/2012
	Unrestricted Use	Commercial (µg/kg)	Sample Depth (ft bls):	0-5	0-5	0-5	0-5	0-5	0-5
1,1,1-Trichloroethane	680	500000		5.7 U	5.9 U	6.3 U	5.7 U	6 U	6.6 U
1,1,2,2-Tetrachloroethane	--	--		5.7 U	5.9 U	6.3 U	5.7 U	6 U	6.6 U
1,1,2-Trichloroethane	--	--		5.7 U	5.9 U	6.3 U	5.7 U	6 U	6.6 U
1,1-Dichloroethane	270	240000		5.7 U	5.9 U	6.3 U	5.7 U	6 U	6.6 U
1,1-Dichloroethene	330	500000		5.7 U	5.9 U	6.3 U	5.7 U	6 U	6.6 U
1,2,3-Trichlorobenzene	--	--		5.7 U	5.9 U	6.3 U	5.7 U	6 U	6.6 U
1,2,4-Trichlorobenzene	--	--		5.7 U	5.9 U	6.3 U	5.7 U	6 U	6.6 U
1,2-Dibromoethane	--	--		1.1 U	1.2 U	1.3 U	1.1 U	1.2 U	1.3 U
1,2-Dichlorobenzene	1100	500000		5.7 U	5.9 U	6.3 U	5.7 U	6 U	6.6 U
1,2-Dichloroethane	20	30000		1.1 U	1.2 U	1.3 U	1.1 U	1.2 U	1.3 U
1,2-Dichloropropane	--	--		5.7 U	5.9 U	6.3 U	5.7 U	6 U	6.6 U
1,3-Dichlorobenzene	2400	280000		5.7 U	5.9 U	6.3 U	5.7 U	6 U	6.6 U
1,4-Dichlorobenzene	1800	130000		5.7 U	5.9 U	6.3 U	5.7 U	6 U	6.6 U
1,4-Dioxane	100	130000		140 U	150 U	160 U	140 U	150 U	170 U
2-Butanone (MEK)	120	500000		11 U	12 U	13 U	11 U	12 U	13 U
2-Hexanone	--	--		5.7 U	5.9 U	6.3 U	5.7 U	6 U	6.6 U
4-Methyl-2-pentanone (MIBK)	--	--		5.7 U	5.9 U	6.3 U	5.7 U	6 U	6.6 U
Acetone	50	500000		11 U	12 U	13 U	11 U	12 U	13 U
Benzene	60	44000		0.55 J	1.2 U	1 J	0.85 J	1 J	1.4
Bromochloromethane	--	--		5.7 U	5.9 U	6.3 U	5.7 U	6 U	6.6 U
Bromodichloromethane	--	--		5.7 U	5.9 U	6.3 U	5.7 U	6 U	6.6 U
Bromoform	--	--		5.7 U	5.9 U	6.3 U	5.7 U	6 U	6.6 U
Bromomethane	--	--		5.7 U	5.9 U	6.3 U	5.7 U	6 U	6.6 U
Carbon disulfide	--	--		5.7 U	5.9 U	6.3 U	5.7 U	6 U	6.6 U
Carbon tetrachloride	760	22000		5.7 U	5.9 U	6.3 U	5.7 U	6 U	6.6 U
Chlorobenzene	1100	500000		5.7 U	5.9 U	6.3 U	5.7 U	6 U	6.6 U
Chloroethane	--	--		5.7 U	5.9 U	6.3 U	5.7 U	6 U	6.6 U
Chloroform	370	350000		5.7 U	5.9 U	6.3 U	5.7 U	6 U	6.6 U
Chloromethane	--	--		5.7 U	5.9 U	6.3 U	5.7 U	6 U	6.6 U
cis-1,2-Dichloroethene	250	500000		5.7 U	5.9 U	6.3 U	5.7 U	6 U	6.6 U
cis-1,3-Dichloropropene	--	--		5.7 U	5.9 U	6.3 U	5.7 U	6 U	6.6 U
Cyclohexane	--	--		5.7 U	5.9 U	6.3 U	5.7 U	6 U	6.6 U
Dibromochloromethane	--	--		5.7 U	5.9 U	6.3 U	5.7 U	6 U	6.6 U
Dibromochloropropane	--	--		11 U	12 U	13 U	11 U	12 U	13 U

**Table 8. Summary of Volatile Organic Compounds in Soil, West 230th Street, Bronx, New York**

Parameter (Concentrations in µg/kg)	NYSDEC Part 375 Unrestricted Use	NYSDEC Part 375 Commercial (µg/kg)	Sample Designation:	SB-1	SB-2	SB-3	SB-4	SB-4DUP	SB-5
			Sample Date:	2/22/2012	2/22/2012	2/22/2012	2/22/2012	2/22/2012	2/22/2012
			Sample Depth (ft bls):	0-5	0-5	0-5	0-5	0-5	0-5
Dichlorodifluoromethane	--	--		5.7 U	5.9 U	6.3 U	5.7 U	6 U	6.6 U
Ethylbenzene	1000	390000		1.1 U	1.2 U	1.3 U	1.1 U	1.2	1.3 U
Freon 113	--	--		5.7 U	5.9 U	6.3 U	5.7 U	6 U	6.6 U
Isopropylbenzene	--	--		5.7 U	5.9 U	6.3 U	5.7 U	6 U	6.6 U
m+p-Xylene	--	--		1.1 U	1.2 U	1.3 U	1.1 U	1.5	1.3 U
Methyl acetate	--	--		5.7 U	5.9 U	6.3 U	5.7 U	6 U	6.6 U
Methylcyclohexane	--	--		5.7 U	5.9 U	6.3 U	5.7 U	6 U	6.6 U
Methylene chloride	50	500000		5.7 U	5.9 U	6.3 U	5.7 U	6 U	6.6 U
MTBE	930	500000		1.1 U	1.2 U	1.3 U	1.1 U	1.2 U	1.3 U
o-Xylene	--	--		1.1 U	1.2 U	1.3 U	1.1 U	0.85 J	1.3 U
Styrene	--	--		5.7 U	5.9 U	6.3 U	5.7 U	6 U	6.6 U
Tetrachloroethene	1300	150000		1.6 J	5.9 U	0.85 J	5.7 U	0.28 J	1.4 J
Toluene	700	500000		1.1 U	1.2 U	0.73 J	0.63 J	1.2	0.89 J
trans-1,2-Dichloroethene	190	500000		5.7 U	5.9 U	6.3 U	5.7 U	6 U	6.6 U
trans-1,3-Dichloropropene	--	--		5.7 U	5.9 U	6.3 U	5.7 U	6 U	6.6 U
Trichloroethene	470	200000		5.7 U	5.9 U	6.3 U	5.7 U	6 U	6.6 U
Trichlorofluoromethane	--	--		5.7 U	5.9 U	6.3 U	5.7 U	6 U	6.6 U
Vinyl chloride	20	13000		5.7 U	5.9 U	6.3 U	5.7 U	6 U	6.6 U
Xylenes (total)	260	500000		1.1 U	1.2 U	1.3 U	1.1 U	2.4	1.3 U
Total VOCs				2.15	0	2.58	1.48	8.43	3.69

J - Estimated value

U - Indicates that the compound was analyzed for but not detected

DUP - Duplicate sample

µg/kg - Micrograms per kilogram

ft bls - Feet below land surface

NYSDEC - New York State Department of Environmental Conservation

-- No Standards available

Bold data indicates that parameter was detected above the NYSDEC

Part 375 Unrestricted Use Standards

Shaded data indicates that parameter was detected above the NYSDEC

Part 375 Commercial Standards

VOCs - Volatile Organic Compounds

**Table 8. Summary of Volatile Organic Compounds in Soil, West 230th Street, Bronx, New York**

Parameter (Concentrations in µg/kg)	NYSDEC	NYSDEC	Sample Designation: Sample Date: Sample Depth (ft bls):	SB-6	SB-6	SB-7	SB-7	SB-8	SB-8
	Part 375	Part 375		2/22/2012	2/22/2012	2/22/2012	2/22/2012	2/22/2012	2/22/2012
	Unrestricted Use	Commercial (µg/kg)		0-5	10-15	0-5	10-15	0-5	10-15
1,1,1-Trichloroethane	680	500000		12 U	6.4 U	5.9 U	6.4 U	6.2 U	6.6 U
1,1,2,2-Tetrachloroethane	--	--		12 U	6.4 U	5.9 U	6.4 U	6.2 U	6.6 U
1,1,2-Trichloroethane	--	--		12 U	6.4 U	5.9 U	6.4 U	6.2 U	6.6 U
1,1-Dichloroethane	270	240000		12 U	6.4 U	5.9 U	6.4 U	6.2 U	6.6 U
1,1-Dichloroethene	330	500000		12 U	6.4 U	5.9 U	6.4 U	6.2 U	6.6 U
1,2,3-Trichlorobenzene	--	--		12 U	6.4 U	5.9 U	6.4 U	6.2 U	6.6 U
1,2,4-Trichlorobenzene	--	--		12 U	6.4 U	5.9 U	6.4 U	6.2 U	6.6 U
1,2-Dibromoethane	--	--		2.3 U	1.3 U	1.2 U	1.3 U	1.2 U	1.3 U
1,2-Dichlorobenzene	1100	500000		12 U	6.4 U	5.9 U	6.4 U	6.2 U	6.6 U
1,2-Dichloroethane	20	30000		2.3 U	1.3 U	1.2 U	1.3 U	1.2 U	1.3 U
1,2-Dichloropropane	--	--		12 U	6.4 U	5.9 U	6.4 U	6.2 U	6.6 U
1,3-Dichlorobenzene	2400	280000		12 U	6.4 U	5.9 U	6.4 U	6.2 U	6.6 U
1,4-Dichlorobenzene	1800	130000		12 U	6.4 U	5.9 U	6.4 U	6.2 U	6.6 U
1,4-Dioxane	100	130000		290 U	160 U	150 U	160 U	150 U	160 U
2-Butanone (MEK)	120	500000		23 U	13 U	12 U	13 U	12 U	13.3
2-Hexanone	--	--		12 U	6.4 U	5.9 U	6.4 U	6.2 U	6.6 U
4-Methyl-2-pentanone (MIBK)	--	--		12 U	6.4 U	5.9 U	6.4 U	6.2 U	6.6 U
Acetone	50	500000		23 U	16.2	12 U	13 U	12 U	<b>65.4</b>
Benzene	60	44000		1.3 J	0.67 J	0.33 J	0.34 J	1.3	0.81 J
Bromochloromethane	--	--		12 U	6.4 U	5.9 U	6.4 U	6.2 U	6.6 U
Bromodichloromethane	--	--		12 U	6.4 U	5.9 U	6.4 U	6.2 U	6.6 U
Bromoform	--	--		12 U	6.4 U	5.9 U	6.4 U	6.2 U	6.6 U
Bromomethane	--	--		12 U	6.4 U	5.9 U	6.4 U	6.2 U	6.6 U
Carbon disulfide	--	--		12 U	2.3 J	5.9 U	6.4 U	6.2 U	0.63 J
Carbon tetrachloride	760	22000		12 U	6.4 U	5.9 U	6.4 U	6.2 U	6.6 U
Chlorobenzene	1100	500000		12 U	6.4 U	5.9 U	6.4 U	6.2 U	6.6 U
Chloroethane	--	--		12 U	6.4 U	5.9 U	6.4 U	6.2 U	6.6 U
Chloroform	370	350000		12 U	6.4 U	5.9 U	6.4 U	6.2 U	6.6 U
Chloromethane	--	--		12 U	6.4 U	5.9 U	6.4 U	6.2 U	6.6 U
cis-1,2-Dichloroethene	250	500000		12 U	6.4 U	5.9 U	6.4 U	6.2 U	6.6 U
cis-1,3-Dichloropropene	--	--		12 U	6.4 U	5.9 U	6.4 U	6.2 U	6.6 U
Cyclohexane	--	--		12 U	6.4 U	5.9 U	6.4 U	6.2 U	6.6 U
Dibromochloromethane	--	--		12 U	6.4 U	5.9 U	6.4 U	6.2 U	6.6 U
Dibromochloropropane	--	--		23 U	13 U	12 U	13 U	12 U	13 U

**Table 8. Summary of Volatile Organic Compounds in Soil, West 230th Street, Bronx, New York**

Parameter (Concentrations in µg/kg)	NYSDEC	NYSDEC	Sample Designation:	SB-6	SB-6	SB-7	SB-7	SB-8	SB-8
	Part 375 Unrestricted Use	Part 375 Commercial (µg/kg)		Sample Date:	2/22/2012	2/22/2012	2/22/2012	2/22/2012	2/22/2012
			Sample Depth (ft bls):	0-5	10-15	0-5	10-15	0-5	10-15
Dichlorodifluoromethane	--	--		12 U	6.4 U	5.9 U	6.4 U	6.2 U	6.6 U
Ethylbenzene	1000	390000		2.2 J	1 J	0.35 J	0.49 J	1.6	0.87 J
Freon 113	--	--		12 U	6.4 U	5.9 U	6.4 U	6.2 U	6.6 U
Isopropylbenzene	--	--		12 U	6.4 U	5.9 U	6.4 U	0.8 J	6.6 U
m+p-Xylene	--	--		2.3 U	1.3	0.45 J	0.72 J	4.4	1 J
Methyl acetate	--	--		12 U	6.4 U	5.9 U	6.4 U	6.2 U	6.6 U
Methylcyclohexane	--	--		12 U	6.4 U	5.9 U	6.4 U	2.2 J	6.6 U
Methylene chloride	50	500000		12 U	6.4 U	5.9 U	6.4 U	6.2 U	6.6 U
MTBE	930	500000		2.3 U	1.3 U	1.2 U	1.3 U	1.2 U	1.3 U
o-Xylene	--	--		1.4 J	0.74 J	0.28 J	0.28 J	2.9	0.59 J
Styrene	--	--		12 U	6.4 U	5.9 U	6.4 U	6.2 U	6.6 U
Tetrachloroethene	1300	150000		306	32.5	7.3	4.3 J	8	6.6 U
Toluene	700	500000		1.2 J	0.77 J	1.2 U	0.99 J	1.6	0.86 J
trans-1,2-Dichloroethene	190	500000		12 U	6.4 U	5.9 U	6.4 U	6.2 U	6.6 U
trans-1,3-Dichloropropene	--	--		12 U	6.4 U	5.9 U	6.4 U	6.2 U	6.6 U
Trichloroethene	470	200000		3 J	0.63 J	5.9 U	6.4 U	6.2 U	6.6 U
Trichlorofluoromethane	--	--		12 U	6.4 U	5.9 U	6.4 U	6.2 U	6.6 U
Vinyl chloride	20	13000		12 U	6.4 U	5.9 U	6.4 U	6.2 U	6.6 U
Xylenes (total)	260	500000		1.4 J	2.1	0.73 J	1 J	7.2	1.6
Total VOCs				316.5	58.21	9.44	8.12	30	85.06

J - Estimated value

U - Indicates that the compound was analyzed for but not detected

DUP - Duplicate sample

µg/kg - Micrograms per kilogram

ft bls - Feet below land surface

NYSDEC - New York State Department of Environmental Conservation

-- No Standards available

Bold data indicates that parameter was detected above the NYSDEC

Part 375 Unrestricted Use Standards

Shaded data indicates that parameter was detected above the NYSDEC

Part 375 Commercial Standards

VOCs - Volatile Organic Compounds

**Table 8. Summary of Volatile Organic Compounds in Soil, West 230th Street, Bronx, New York**

Parameter (Concentrations in µg/kg)	NYSDEC	NYSDEC	Sample Designation:	SB-9	SB-9	SB-10
	Part 375 Unrestricted Use	Part 375 Commercial (µg/kg)		Sample Date:	2/22/2012	2/22/2012
			Sample Depth (ft bls):	0-5	10-15	0-5
1,1,1-Trichloroethane	680	500000		6.2 U	6.6 U	6.2 U
1,1,2,2-Tetrachloroethane	--	--		6.2 U	6.6 U	6.2 U
1,1,2-Trichloroethane	--	--		6.2 U	6.6 U	6.2 U
1,1-Dichloroethane	270	240000		6.2 U	6.6 U	6.2 U
1,1-Dichloroethene	330	500000		6.2 U	6.6 U	6.2 U
1,2,3-Trichlorobenzene	--	--		6.2 U	6.6 U	6.2 U
1,2,4-Trichlorobenzene	--	--		6.2 U	6.6 U	6.2 U
1,2-Dibromoethane	--	--		1.2 U	1.3 U	1.2 U
1,2-Dichlorobenzene	1100	500000		6.2 U	6.6 U	6.2 U
1,2-Dichloroethane	20	30000		1.2 U	1.3 U	1.2 U
1,2-Dichloropropane	--	--		6.2 U	6.6 U	6.2 U
1,3-Dichlorobenzene	2400	280000		6.2 U	6.6 U	6.2 U
1,4-Dichlorobenzene	1800	130000		6.2 U	6.6 U	6.2 U
1,4-Dioxane	100	130000		160 U	170 U	160 U
2-Butanone (MEK)	120	500000		12 U	13 U	12 U
2-Hexanone	--	--		6.2 U	6.6 U	6.2 U
4-Methyl-2-pentanone (MIBK)	--	--		6.2 U	6.6 U	6.2 U
Acetone	50	500000		12 U	17.9	12 U
Benzene	60	44000		1.4	1.3 U	0.69 J
Bromochloromethane	--	--		6.2 U	6.6 U	6.2 U
Bromodichloromethane	--	--		6.2 U	6.6 U	6.2 U
Bromoform	--	--		6.2 U	6.6 U	6.2 U
Bromomethane	--	--		6.2 U	6.6 U	6.2 U
Carbon disulfide	--	--		6.2 U	6.6 U	6.2 U
Carbon tetrachloride	760	22000		6.2 U	6.6 U	6.2 U
Chlorobenzene	1100	500000		6.2 U	6.6 U	6.2 U
Chloroethane	--	--		6.2 U	6.6 U	6.2 U
Chloroform	370	350000		6.2 U	6.6 U	6.2 U
Chloromethane	--	--		6.2 U	6.6 U	6.2 U
cis-1,2-Dichloroethene	250	500000		6.2 U	6.6 U	6.2 U
cis-1,3-Dichloropropene	--	--		6.2 U	6.6 U	6.2 U
Cyclohexane	--	--		6.2 U	6.6 U	6.2 U
Dibromochloromethane	--	--		6.2 U	6.6 U	6.2 U
Dibromochloropropane	--	--		12 U	13 U	12 U

**Table 8. Summary of Volatile Organic Compounds in Soil, West 230th Street, Bronx, New York**

Parameter (Concentrations in µg/kg)	NYSDEC	NYSDEC	Sample Designation:	SB-9	SB-9	SB-10
	Part 375 Unrestricted Use	Part 375 Commercial (µg/kg)		Sample Date:	2/22/2012	2/22/2012
			Sample Depth (ft bls):	0-5	10-15	0-5
Dichlorodifluoromethane	--	--		6.2 U	6.6 U	6.2 U
Ethylbenzene	1000	390000		1.7	1.3 U	1.6
Freon 113	--	--		6.2 U	6.6 U	6.2 U
Isopropylbenzene	--	--		6.2 U	6.6 U	6.2 U
m+p-Xylene	--	--		1.9	1.3 U	2
Methyl acetate	--	--		6.2 U	6.6 U	6.2 U
Methylcyclohexane	--	--		6.2 U	6.6 U	6.2 U
Methylene chloride	50	500000		6.2 U	6.6 U	6.2 U
MTBE	930	500000		1.2 U	1.3 U	1.2 U
o-Xylene	--	--		1.1 J	1.3 U	0.93 J
Styrene	--	--		6.2 U	6.6 U	6.2 U
Tetrachloroethene	1300	150000		1.5 J	6.6 U	0.77 J
Toluene	700	500000		1.4	1.3 U	1.1 J
trans-1,2-Dichloroethene	190	500000		6.2 U	6.6 U	6.2 U
trans-1,3-Dichloropropene	--	--		6.2 U	6.6 U	6.2 U
Trichloroethene	470	200000		6.2 U	6.6 U	6.2 U
Trichlorofluoromethane	--	--		6.2 U	6.6 U	6.2 U
Vinyl chloride	20	13000		6.2 U	6.6 U	6.2 U
Xylenes (total)	260	500000		3	1.3 U	3
Total VOCs				12	17.9	10.09

J - Estimated value

U - Indicates that the compound was analyzed for but not detected

DUP - Duplicate sample

µg/kg - Micrograms per kilogram

ft bls - Feet below land surface

NYSDEC - New York State Department of Environmental Conservation

-- No Standards available

Bold data indicates that parameter was detected above the NYSDEC

Part 375 Unrestricted Use Standards

Shaded data indicates that parameter was detected above the NYSDEC

Part 375 Commercial Standards

VOCs - Volatile Organic Compounds

**Table 9. Summary of Semivolatile Organic Compounds in Soil, West 230th Street, Bronx, New York**

Parameter (Concentrations in µg/kg)	NYSDEC	NYSDEC	Sample Designation: Sample Date: Sample Depth (ft bls):	SB-1	SB-2	SB-3	SB-4	SB-4DUP	SB-5	SB-6	SB-6	
	Part 375	Part 375		2/22/2012	2/22/2012	2/22/2012	2/22/2012	2/22/2012	2/22/2012	2/22/2012	2/22/2012	2/22/2012
	Unrestricted Use	Commercial (µg/kg)		0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	10-15
1,1'-Biphenyl	--	--		67 U	61 U	66 U	67 U	65 U	68 U	64 U	65 U	
1,2,4,5-Tetrachlorobenzene	--	--		170 U	150 U	160 U	170 U	160 U	170 U	160 U	160 U	
2,2'-oxybis (1-chloropropane)	--	--		67 U	61 U	66 U	67 U	65 U	68 U	64 U	65 U	
2,3,4,6-Tetrachlorophenol	--	--		170 U	150 U	160 U	170 U	160 U	170 U	160 U	160 U	
2,4,5-Trichlorophenol	--	--		170 U	150 U	160 U	170 U	160 U	170 U	160 U	160 U	
2,4,6-Trichlorophenol	--	--		170 U	150 U	160 U	170 U	160 U	170 U	160 U	160 U	
2,4-Dichlorophenol	--	--		170 U	150 U	160 U	170 U	160 U	170 U	160 U	160 U	
2,4-Dimethylphenol	--	--		170 U	150 U	160 U	170 U	160 U	170 U	160 U	160 U	
2,4-Dinitrophenol	--	--		670 U	610 U	660 U	670 U	650 U	680 U	640 U	650 U	
2,4-Dinitrotoluene	--	--		67 U	61 U	66 U	67 U	65 U	68 U	64 U	65 U	
2,6-Dinitrotoluene	--	--		67 U	61 U	66 U	67 U	65 U	68 U	64 U	65 U	
2-Chloronaphthalene	--	--		67 U	61 U	66 U	67 U	65 U	68 U	64 U	65 U	
2-Chlorophenol	--	--		170 U	150 U	160 U	170 U	160 U	170 U	160 U	160 U	
2-Methylnaphthalene	--	--		67 U	61 U	66 U	67 U	65 U	68 U	64 U	65 U	
2-Methylphenol	330	500000		67 U	61 U	66 U	67 U	65 U	68 U	64 U	65 U	
2-Nitroaniline	--	--		170 U	150 U	160 U	170 U	160 U	170 U	160 U	160 U	
2-Nitrophenol	--	--		170 U	150 U	160 U	170 U	160 U	170 U	160 U	160 U	
3&4-Methylphenol	--	--		67 U	61 U	66 U	67 U	65 U	68 U	64 U	65 U	
3,3'-Dichlorobenzidine	--	--		170 U	150 U	160 U	170 U	160 U	170 U	160 U	160 U	
3-Nitroaniline	--	--		170 U	150 U	160 U	170 U	160 U	170 U	160 U	160 U	
4,6-Dinitro-2-methylphenol	--	--		670 U	610 U	660 U	670 U	650 U	680 U	640 U	650 U	
4-Bromophenyl phenyl ether	--	--		67 U	61 U	66 U	67 U	65 U	68 U	64 U	65 U	
4-Chloro-3-methylphenol	--	--		170 U	150 U	160 U	170 U	160 U	170 U	160 U	160 U	
4-Chloroaniline	--	--		170 U	150 U	160 U	170 U	160 U	170 U	160 U	160 U	
4-Chlorophenyl phenyl ether	--	--		67 U	61 U	66 U	67 U	65 U	68 U	64 U	65 U	
4-Nitroaniline	--	--		170 U	150 U	160 U	170 U	160 U	170 U	160 U	160 U	
4-Nitrophenol	--	--		330 U	300 U	330 U	330 U	330 U	340 U	320 U	330 U	
Acenaphthene	20000	500000		33 U	30 U	33 U	35.5	44.8	22.7 J	32 U	33 U	
Acenaphthylene	100000	500000		21.8 J	30 U	15.6 J	155	150	38	16.2 J	33 U	
Acetophenone	--	--		170 U	150 U	160 U	170 U	160 U	170 U	160 U	160 U	
Anthracene	100000	500000		32.7 J	41.2	16.5 J	192	190	89.2	53	25.8 J	
Atrazine	--	--		170 U	150 U	160 U	170 U	160 U	170 U	160 U	160 U	
Benzaldehyde	--	--		170 U	150 U	160 U	170 U	160 U	170 U	160 U	160 U	
Benzo[a]anthracene	1000	5600		127	187	96.2	897	881	535	263	75.9	
Benzo[a]pyrene	1000	1000		115	149	90.2	879	937	561	235	69.6	
Benzo[b]fluoranthene	1000	5600		155	162	118	1030	1050	496	224	64.8	
Benzo[g,h,i]perylene	100000	500000		88.9	96.6	63.5	647	614	347	250	64.3	
Benzo[k]fluoranthene	800	56000		69.4	75.3	49.3	589	626	484	156	47.7	
Bis(2-chloroethoxy)methane	--	--		67 U	61 U	66 U	67 U	65 U	68 U	64 U	65 U	
Bis(2-chloroethyl) ether	--	--		67 U	61 U	66 U	67 U	65 U	68 U	64 U	65 U	
Bis(2-ethylhexyl) phthalate	--	--		191000	61 U	111	293	75.5	68 U	64 U	65 U	

**Table 9. Summary of Semivolatile Organic Compounds in Soil, West 230th Street, Bronx, New York**

Parameter (Concentrations in µg/kg)	NYSDEC	NYSDEC	Sample Designation:	SB-1	SB-2	SB-3	SB-4	SB-4DUP	SB-5	SB-6	SB-6
	Part 375	Part 375									
	Unrestricted	Commercial									
			Sample Date:	2/22/2012	2/22/2012	2/22/2012	2/22/2012	2/22/2012	2/22/2012	2/22/2012	2/22/2012
	Use	(µg/kg)	Sample Depth (ft bls):	0-5	0-5	0-5	0-5	0-5	0-5	0-5	10-15
Butylbenzyl phthalate	--	--		67 U	61 U	66 U	67 U	65 U	68 U	64 U	65 U
Caprolactam	--	--		67 U	61 U	66 U	67 U	65 U	68 U	64 U	65 U
Carbazole	--	--		67 U	61 U	66 U	85.9	82.3	25.2 J	64 U	65 U
Chrysene	1000	56000		128	180	95.1	920	918	553	303	78.8
Dibenzo[a,h]anthracene	330	560		53	24.9 J	19.7 J	202	223	103	93.8	26.1 J
Dibenzofuran	7000	350000		67 U	61 U	66 U	15.5 J	16.6 J	68 U	64 U	65 U
Diethyl phthalate	--	--		67 U	61 U	66 U	67 U	65 U	68 U	64 U	65 U
Dimethyl phthalate	--	--		67 U	61 U	66 U	67 U	65 U	68 U	64 U	65 U
Di-n-butyl phthalate	--	--		67 U	61 U	66 U	67 U	65 U	68 U	64 U	65 U
Di-n-octyl phthalate	--	--		460	61 U	66 U	67 U	65 U	68 U	64 U	65 U
Fluoranthene	100000	500000		210	322	162	1660	1570	951	333	165
Fluorene	30000	500000		33 U	13 J	33 U	41.9	45.5	19.2 J	32 U	33 U
Hexachlorobenzene	330	6000		67 U	61 U	66 U	67 U	65 U	68 U	64 U	65 U
Hexachlorobutadiene	--	--		33 U	30 U	33 U	33 U	33 U	34 U	32 U	33 U
Hexachlorocyclopentadiene	--	--		330 U	300 U	330 U	330 U	330 U	340 U	320 U	330 U
Hexachloroethane	--	--		170 U	150 U	160 U	170 U	160 U	170 U	160 U	160 U
Indeno[1,2,3-cd]pyrene	500	5600		87.4	86.2	55.4	<b>577</b>	<b>554</b>	325	227	46.5
Isophorone	--	--		67 U	61 U	66 U	67 U	65 U	68 U	64 U	65 U
Naphthalene	12000	500000		33 U	30 U	33 U	33 U	33 U	34 U	32 U	33 U
Nitrobenzene	--	--		67 U	61 U	66 U	67 U	65 U	68 U	64 U	65 U
n-Nitrosodi-n-propylamine	--	--		67 U	61 U	66 U	67 U	65 U	68 U	64 U	65 U
n-Nitrosodiphenylamine	--	--		170 U	150 U	160 U	170 U	160 U	170 U	160 U	160 U
Pentachlorophenol	800	6700		330 U	300 U	330 U	330 U	330 U	340 U	320 U	330 U
Phenanthrene	100000	500000		102	162	52.7	660	675	312	95.8	109
Phenol	330	500000		67 U	61 U	66 U	67 U	65 U	68 U	64 U	65 U
Pyrene	100000	500000		320	301	196	1610	1410	902	399	225
Total SVOCs				192970.2	1800.2	1141.2	10489.8	10062.7	5763.3	2648.8	998.5

J - Estimated value

U - Indicates that the compound was analyzed for but not detected

DUP - Duplicate sample

µg/kg - Micrograms per kilogram

ft bls - Feet below land surface

NYSDEC - New York State Department of Environmental Conservation

-- No Standards available

Bold data indicates that parameter was detected above the NYSDEC

Part 375 Unrestricted Use Standards

Shaded data indicates that parameter was detected above the NYSDEC

Part 375 Commercial Standards

SVOCs - Semivolatile Organic Compounds

**Table 9. Summary of Semivolatile Organic Compounds in Soil, West 230th Street, Bronx, New York**

Parameter (Concentrations in µg/kg)	NYSDEC	NYSDEC	Sample Designation: Sample Date: Sample Depth (ft bls):	SB-7	SB-7	SB-8	SB-8	SB-9	SB-9	SB-10
	Part 375	Part 375		2/22/2012	2/22/2012	2/22/2012	2/22/2012	2/22/2012	2/22/2012	2/22/2012
	Unrestricted Use	Commercial (µg/kg)		0-5	10-15	0-5	10-15	0-5	10-15	0-5
1,1'-Biphenyl	--	--		62 U	65 U	63 U	69 U	64 U	72 U	19.2 J
1,2,4,5-Tetrachlorobenzene	--	--		160 U	160 U	160 U	170 U	160 U	180 U	160 U
2,2'-oxybis (1-chloropropane)	--	--		62 U	65 U	63 U	69 U	64 U	72 U	64 U
2,3,4,6-Tetrachlorophenol	--	--		160 U	160 U	160 U	170 U	160 U	180 U	160 U
2,4,5-Trichlorophenol	--	--		160 U	160 U	160 U	170 U	160 U	180 U	160 U
2,4,6-Trichlorophenol	--	--		160 U	160 U	160 U	170 U	160 U	180 U	160 U
2,4-Dichlorophenol	--	--		160 U	160 U	160 U	170 U	160 U	180 U	160 U
2,4-Dimethylphenol	--	--		160 U	160 U	160 U	170 U	160 U	180 U	160 U
2,4-Dinitrophenol	--	--		620 U	650 U	630 U	690 U	640 U	720 U	640 U
2,4-Dinitrotoluene	--	--		62 U	65 U	63 U	69 U	64 U	72 U	64 U
2,6-Dinitrotoluene	--	--		62 U	65 U	63 U	69 U	64 U	72 U	64 U
2-Chloronaphthalene	--	--		62 U	65 U	63 U	69 U	64 U	72 U	64 U
2-Chlorophenol	--	--		160 U	160 U	160 U	170 U	160 U	180 U	160 U
2-Methylnaphthalene	--	--		62 U	65 U	63 U	69 U	64 U	34.8 J	54.7 J
2-Methylphenol	330	500000		62 U	65 U	63 U	69 U	64 U	72 U	64 U
2-Nitroaniline	--	--		160 U	160 U	160 U	170 U	160 U	180 U	160 U
2-Nitrophenol	--	--		160 U	160 U	160 U	170 U	160 U	180 U	160 U
3&4-Methylphenol	--	--		62 U	65 U	63 U	69 U	64 U	72 U	64 U
3,3'-Dichlorobenzidine	--	--		160 U	160 U	160 U	170 U	160 U	180 U	160 U
3-Nitroaniline	--	--		160 U	160 U	160 U	170 U	160 U	180 U	160 U
4,6-Dinitro-2-methylphenol	--	--		620 U	650 U	630 U	690 U	640 U	720 U	640 U
4-Bromophenyl phenyl ether	--	--		62 U	65 U	63 U	69 U	64 U	72 U	64 U
4-Chloro-3-methylphenol	--	--		160 U	160 U	160 U	170 U	160 U	180 U	160 U
4-Chloroaniline	--	--		160 U	160 U	160 U	170 U	160 U	180 U	160 U
4-Chlorophenyl phenyl ether	--	--		62 U	65 U	63 U	69 U	64 U	72 U	64 U
4-Nitroaniline	--	--		160 U	160 U	160 U	170 U	160 U	180 U	160 U
4-Nitrophenol	--	--		310 U	330 U	310 U	350 U	320 U	360 U	320 U
Acenaphthene	20000	500000		19 J	33 U	31 U	35 U	14.4 J	27.2 J	316
Acenaphthylene	100000	500000		48.2	33 U	24.7 J	35 U	18.6 J	181	191
Acetophenone	--	--		160 U	160 U	160 U	170 U	160 U	180 U	160 U
Anthracene	100000	500000		150	33 U	32.5	35 U	34.1	284	990
Atrazine	--	--		160 U	160 U	160 U	170 U	160 U	180 U	160 U
Benzaldehyde	--	--		160 U	160 U	160 U	170 U	160 U	180 U	160 U
Benzo[a]anthracene	1000	5600		932	33 U	130	47.3	149	656	<b>2070</b>
Benzo[a]pyrene	1000	1000		863	33 U	131	45.5	166	464	<b>1430</b>
Benzo[b]fluoranthene	1000	5600		920	33 U	124	86.9	195	438	<b>1690</b>
Benzo[g,h,i]perylene	100000	500000		642	33 U	157	47.9	202	221	987
Benzo[k]fluoranthene	800	56000		523	33 U	52.9	47	97.5	418	<b>848</b>
Bis(2-chloroethoxy)methane	--	--		62 U	65 U	63 U	69 U	64 U	72 U	64 U
Bis(2-chloroethyl) ether	--	--		62 U	65 U	63 U	69 U	64 U	72 U	64 U
Bis(2-ethylhexyl) phthalate	--	--		62 U	65 U	63 U	55.6 J	45.1 J	72 U	44.2 J

**Table 9. Summary of Semivolatile Organic Compounds in Soil, West 230th Street, Bronx, New York**

Parameter (Concentrations in µg/kg)	NYSDEC	NYSDEC	Sample Designation:	SB-7	SB-7	SB-8	SB-8	SB-9	SB-9	SB-10
	Part 375	Part 375								
	Unrestricted Use	Commercial (µg/kg)								
			Sample Date:	2/22/2012	2/22/2012	2/22/2012	2/22/2012	2/22/2012	2/22/2012	2/22/2012
			Sample Depth (ft bls):	0-5	10-15	0-5	10-15	0-5	10-15	0-5
Butylbenzyl phthalate	--	--		62 U	65 U	63 U	69 U	64 U	72 U	64 U
Caprolactam	--	--		62 U	65 U	63 U	69 U	64 U	72 U	64 U
Carbazole	--	--		16.9 J	65 U	16 J	69 U	24.8 J	95.6	177
Chrysene	1000	56000		866	33 U	151	70.4	195	594	<b>2040</b>
Dibenzo[a,h]anthracene	330	560		226	33 U	58.4	35 U	88.7	98.3	<b>350</b>
Dibenzofuran	7000	350000		62 U	65 U	63 U	69 U	64 U	80.1	171
Diethyl phthalate	--	--		62 U	65 U	63 U	69 U	64 U	72 U	64 U
Dimethyl phthalate	--	--		62 U	65 U	63 U	69 U	64 U	72 U	64 U
Di-n-butyl phthalate	--	--		62 U	65 U	63 U	69 U	64 U	72 U	64 U
Di-n-octyl phthalate	--	--		62 U	65 U	63 U	69 U	64 U	72 U	64 U
Fluoranthene	100000	500000		1440	14.3 J	154	133	316	1650	5810
Fluorene	30000	500000		19.4 J	33 U	31 U	35 U	32 U	132	277
Hexachlorobenzene	330	6000		62 U	65 U	63 U	69 U	64 U	72 U	64 U
Hexachlorobutadiene	--	--		31 U	33 U	31 U	35 U	32 U	36 U	32 U
Hexachlorocyclopentadiene	--	--		310 U	330 U	310 U	350 U	320 U	360 U	320 U
Hexachloroethane	--	--		160 U	160 U	160 U	170 U	160 U	180 U	160 U
Indeno[1,2,3-cd]pyrene	500	5600		<b>596</b>	33 U	94.1	40.6	139	237	<b>898</b>
Isophorone	--	--		62 U	65 U	63 U	69 U	64 U	72 U	64 U
Naphthalene	12000	500000		31 U	33 U	31 U	35 U	32 U	51.7	58
Nitrobenzene	--	--		62 U	65 U	63 U	69 U	64 U	72 U	64 U
n-Nitrosodi-n-propylamine	--	--		62 U	65 U	63 U	69 U	64 U	72 U	64 U
n-Nitrosodiphenylamine	--	--		160 U	160 U	160 U	170 U	160 U	180 U	160 U
Pentachlorophenol	800	6700		310 U	330 U	310 U	350 U	320 U	360 U	320 U
Phenanthrene	100000	500000		351	33 U	83.6	38.7	142	1310	2980
Phenol	330	500000		62 U	65 U	63 U	69 U	64 U	72 U	64 U
Pyrene	100000	500000		1580	33 U	237	101	384	1140	6010
Total SVOCs				9192.5	14.3	1446.2	713.9	2211.2	8112.7	27411.1

J - Estimated value

U - Indicates that the compound was analyzed for but not detected

DUP - Duplicate sample

µg/kg - Micrograms per kilogram

ft bls - Feet below land surface

NYSDEC - New York State Department of Environmental Conservation

-- No Standards available

Bold data indicates that parameter was detected above the NYSDEC

Part 375 Unrestricted Use Standards

Shaded data indicates that parameter was detected above the NYSDEC

Part 375 Commercial Standards

SVOCs - Semivolatile Organic Compounds

**Table 10. Summary of Metals in Soil, West 230th Street, Bronx, New York**

Parameter (Concentrations in mg/kg)	NYSDEC	NYSDEC	Sample Designation: Sample Date: Sample Depth (ft bls):	SB-1	SB-2	SB-3	SB-4	SB-4DUP	SB-5	SB-6	
	Part 375	Part 375		2/22/2012	2/22/2012	2/22/2012	2/22/2012	2/22/2012	2/22/2012	2/22/2012	2/22/2012
	Unrestricted Use	Commercial (mg/kg)		0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5
Aluminum	--	--		10300	6940	13700	10800	10100	11000	16300	
Antimony	--	--		2.2 U	2 U	2.2 U	2.5 U	2.1 U	2.3 U	2.3 U	
Arsenic	13	16		3.5	2.7	4.1	3.8	4.6	4.1	2.4	
Barium	350	400		105	78.4	92.3	303	<b>368</b>	171	184	
Beryllium	7.2	590		0.29	0.26	0.44	0.55	0.66	0.34	0.23	
Cadmium	2.5	9.3		0.55 U	0.5 U	0.68	0.62 U	0.73	0.58 U	0.57 U	
Calcium	--	--		5320	137000	39100	44000	48200	9850	43800	
Chromium	30	1500		27.3	17.1	22.5	25.2	25	24.6	20.4	
Cobalt	--	--		6.6	5 U	8.7	7.5	8.9	7.7	7.7	
Copper	50	270		32.1	12.7	28.1	32.4	42.2	36	<b>88.6</b>	
Iron	--	--		15400	7720	18700	19100	25500	18600	18400	
Lead	63	1000		<b>110</b>	<b>178</b>	<b>88.2</b>	<b>11900</b>	<b>190</b>	<b>226</b>	47.7	
Magnesium	--	--		4440	69300	25100	15900	16700	6580	18400	
Manganese	1600	10000		314	159	428	384	476	342	278	
Mercury	0.18	2.8		0.16	0.084	0.11	<b>0.23</b>	<b>0.51</b>	<b>2.2</b>	<b>2</b>	
Nickel	30	310		19.6	12.8	23.9	17.9	26.3	19.9	18.7	
Potassium	--	--		2240	3390	2660	3040	2300	3310	3380	
Selenium	3.9	1500		2.2 U	2 U	2.2 U	2.5 U	2.1 U	2.3 U	2.3 U	
Silver	2	1500		0.55 U	0.5 U	0.56 U	0.63	0.53 U	0.58 U	0.57 U	
Sodium	--	--		1100 U	1000 U	1100 U	1200 U	1100 U	1200 U	2760	
Thallium	--	--		1.1 U	2 U	1.1 U	3.7 U	1.1 U	1.2 U	1.1 U	
Vanadium	--	--		31.1	22.7	36.3	34.9	34.7	34.5	49.6	
Zinc	109	10000		<b>146</b>	77	<b>113</b>	<b>264</b>	<b>290</b>	<b>159</b>	<b>191</b>	

J - Estimated value

U - Indicates that the compound was analyzed for but not detected

DUP - Duplicate sample

mg/kg - Milligrams per kilogram

ft bls - Feet below land surface

NYSDEC - New York State Department of Environmental Conservation

-- No Standards available

Bold data indicates that parameter was detected above the NYSDEC

Part 375 Unrestricted Use Standards

Shaded data indicates that parameter was detected above the NYSDEC

Part 375 Commercial Standards

**Table 10. Summary of Metals in Soil, West 230th Street, Bronx, New York**

Parameter (Concentrations in mg/kg)	NYSDEC Part 375 Unrestricted Use	NYSDEC Part 375 Commercial (mg/kg)	Sample Designation: Sample Date: Sample Depth (ft bls):	SB-6 2/22/2012 10-15	SB-7 2/22/2012 0-5	SB-7 2/22/2012 10-15	SB-8 2/22/2012 0-5	SB-8 2/22/2012 10-15	SB-9 2/22/2012 0-5	SB-9 2/22/2012 10-15	SB-10 2/22/2012 0-5
	Aluminum	--	--		10100	26600	7550	10300	24300	8260	5230
Antimony	--	--		2.3 U	2.1	2.2 U	2.2 U	2.2 U	2.1 U	1.9 U	2.3 U
Arsenic	13	16		3	2.6	2.5	3.5	2.2 U	4.1	2.8	3.8
Barium	350	400		48.4	<b>433</b>	55.6	71.2	<b>403</b>	123	150	143
Beryllium	7.2	590		0.33	0.21 U	0.22 U	0.28	0.28	0.33	0.29	0.3
Cadmium	2.5	9.3		0.57 U	0.53 U	0.55 U	0.55 U	0.56 U	0.53 U	0.48 U	0.56 U
Calcium	--	--		26200	8630	87600	25400	10800	36700	4430	14500
Chromium	30	1500		16.7	<b>85.8</b>	14.7	15	<b>41.1</b>	16.2	9	27.3
Cobalt	--	--		5.7 U	15.5	5.5 U	7.6	12.6	5.3 U	5.5	11
Copper	50	270		14	<b>61.1</b>	17.7	<b>56.7</b>	33	19.4	15.5	39.3
Iron	--	--		13300	34800	11500	19500	34800	12600	8130	20600
Lead	63	1000		40.9	32.3	13	52.8	16.3	50.1	<b>3780</b>	<b>69.2</b>
Magnesium	--	--		11500	19700	55700	11300	12200	7130	1920	10900
Manganese	1600	10000		201	715	243	273	305	251	164	393
Mercury	0.18	2.8		0.13	<b>9.3</b>	0.034 U	<b>6</b>	0.056	0.12	0.039	0.16
Nickel	30	310		12.6	<b>36.1</b>	11.4	17.4	<b>39.9</b>	15.2	9.3	27.6
Potassium	--	--		1460	18400	2410	2130	11800	1850	970 U	5190
Selenium	3.9	1500		2.3 U	2.1 U	2.2 U	2.2 U	2.2 U	2.1 U	1.9 U	2.3 U
Silver	2	1500		0.57 U	<b>4.7</b>	0.55 U	0.55 U	<b>3.4</b>	0.53 U	0.48 U	0.56 U
Sodium	--	--		1100 U	1100 U	1100 U	1100 U	1100 U	1100 U	970 U	1100 U
Thallium	--	--		1.1 U	2.1 U	1.1 U	1.1 U	1.1 U	1.1 U	0.97 U	1.1 U
Vanadium	--	--		19.1	67.5	17.1	37.9	87.5	28.6	11.3	41.8
Zinc	109	10000		52.2	<b>285</b>	41.6	78.5	95.3	76.5	<b>202</b>	<b>138</b>

J - Estimated value

U - Indicates that the compound was analyzed for but not detected

DUP - Duplicate sample

mg/kg - Milligrams per kilogram

ft bls - Feet below land surface

NYSDEC - New York State Department of Environmental Conservation

-- No Standards available

Bold data indicates that parameter was detected above the NYSDEC

Part 375 Unrestricted Use Standards

Shaded data indicates that parameter was detected above the NYSDEC

Part 375 Commercial Standards

**Table 11. Summary of Polychlorinated Biphenyls in Soil, West 230th Street, Bronx, New York**

Parameter (Concentrations in µg/kg)	NYSDEC Part 375 Unrestricted Use	NYSDEC Part 375 Commercial (µg/kg)	Sample Designation:	SB-1	SB-2	SB-3	SB-4	SB-4DUP	SB-5	SB-6
			Sample Date:	2/22/2012	2/22/2012	2/22/2012	2/22/2012	2/22/2012	2/22/2012	2/22/2012
			Sample Depth (ft bls):	0-5	0-5	0-5	0-5	0-5	0-5	0-5
Aroclor-1016	--	--		34 U	36 U	33 U	34 U	33 U	34 U	32 U
Aroclor-1221	--	--		34 U	36 U	33 U	34 U	33 U	34 U	32 U
Aroclor-1232	--	--		34 U	36 U	33 U	34 U	33 U	34 U	32 U
Aroclor-1242	--	--		34 U	36 U	33 U	34 U	33 U	34 U	32 U
Aroclor-1248	--	--		34 U	36 U	33 U	34 U	33 U	34 U	32 U
Aroclor-1254	--	--		34 U	170	33 U	34 U	33 U	34 U	32 U
Aroclor-1260	--	--		34 U	36 U	33 U	34 U	33 U	34 U	32 U
Aroclor-1262	--	--		34 U	36 U	33 U	34 U	33 U	34 U	32 U
Aroclor-1268	--	--		34 U	36 U	33 U	34 U	33 U	34 U	32 U
<b>Total PCBs</b>	100	1000		0	<b>170</b>	0	0	0	0	0

J - Estimated value

U - Indicates that the compound was analyzed for but not detected

DUP - Duplicate sample

µg/kg - Micrograms per kilogram

ft bls - Feet below land surface

NYSDEC - New York State Department of Environmental Conservation

-- No Standards available

Bold data indicates that parameter was detected above the NYSDEC

Part 375 Unrestricted Use Standards

Shaded data indicates that parameter was detected above the NYSDEC

Part 375 Commercial Standards

PCBs - Polychlorinated Biphenyls

**Table 11. Summary of Polychlorinated Biphenyls in Soil, West 230th Street, Bronx, New York**

Parameter (Concentrations in µg/kg)	NYSDEC	NYSDEC	Sample Designation:	SB-6	SB-7	SB-7	SB-8	SB-8	SB-9	SB-9	SB-10
	Part 375 Unrestricted Use	Part 375 Commercial (µg/kg)		Sample Date:	2/22/2012	2/22/2012	2/22/2012	2/22/2012	2/22/2012	2/22/2012	2/22/2012
			Sample Depth (ft bls):	10-15	0-5	10-15	0-5	10-15	0-5	10-15	0-5
Aroclor-1016	--	--		33 U	31 U	34 U	32 U	35 U	33 U	37 U	32 U
Aroclor-1221	--	--		33 U	31 U	34 U	32 U	35 U	33 U	37 U	32 U
Aroclor-1232	--	--		33 U	31 U	34 U	32 U	35 U	33 U	37 U	32 U
Aroclor-1242	--	--		33 U	31 U	34 U	32 U	35 U	33 U	37 U	32 U
Aroclor-1248	--	--		33 U	31 U	34 U	32 U	35 U	33 U	37 U	32 U
Aroclor-1254	--	--		33 U	31 U	34 U	32 U	35 U	33 U	37 U	32 U
Aroclor-1260	--	--		33 U	31 U	34 U	32 U	35 U	33 U	37 U	32 U
Aroclor-1262	--	--		33 U	31 U	34 U	32 U	35 U	33 U	37 U	32 U
Aroclor-1268	--	--		33 U	31 U	34 U	32 U	35 U	33 U	37 U	32 U
<b>Total PCBs</b>	100	1000		0	0	0	0	0	0	0	0

J - Estimated value

U - Indicates that the compound was analyzed for but not detected

DUP - Duplicate sample

µg/kg - Micrograms per kilogram

ft bls - Feet below land surface

NYSDEC - New York State Department of Environmental Conservation

-- No Standards available

Bold data indicates that parameter was detected above the NYSDEC

Part 375 Unrestricted Use Standards

Shaded data indicates that parameter was detected above the NYSDEC

Part 375 Commercial Standards

PCBs - Polychlorinated Biphenyls

**Table 12. Summary of Pesticides and Herbicides in Soil, West 230th Street, Bronx, New York**

Parameter (Concentrations in µg/kg)	NYSDEC	NYSDEC	Sample Designation:	SB-1	SB-2	SB-3	SB-4	SB-4DUP	SB-5	SB-6
	Part 375 Unrestricted Use	Part 375 Commercial (µg/kg)	Sample Date:	2/22/2012	2/22/2012	2/22/2012	2/22/2012	2/22/2012	2/22/2012	2/22/2012
			Sample Depth (ft bls):	0-5	0-5	0-5	0-5	0-5	0-5	0-5
2,4,5-T	--	--		3.3 U	3 U	3.3 U	3.3 U	3.3 U	3.4 U	3.2 U
2,4,5-TP	3800	500000		3.3 U	3 U	3.3 U	3.3 U	3.3 U	3.4 U	3.2 U
2,4-D	--	--		17 U	15 U	16 U	17 U	16 U	17 U	16 U
2,4-DB	--	--		17 U	15 U	16 U	17 U	16 U	17 U	16 U
4,4'-DDD	3.3	92000		<b>18.6</b>	0.61 U	0.8	3	2.7	0.68 U	<b>256</b>
4,4'-DDE	3.3	62000		<b>221</b>	0.61 U	<b>6.8</b>	<b>11.2</b>	<b>22</b>	0.68 U	<b>473</b>
4,4'-DDT	3.3	47000		<b>431</b>	0.61 U	<b>13.2</b>	<b>37.4</b>	<b>54.8</b>	<b>10.2</b>	<b>1200</b>
Aldrin	5	680		0.69 U	0.61 U	0.67 U	0.69 U	0.66 U	0.68 U	0.65 U
alpha-BHC	20	3400		0.69 U	0.61 U	0.67 U	0.69 U	0.66 U	0.68 U	0.65 U
alpha-Chlordane	94	24000		1.6	0.61 U	0.67 U	9	9.4	0.68 U	0.65 U
beta-BHC	36	3000		0.69 U	0.61 U	0.67 U	0.69 U	0.66 U	0.68 U	0.65 U
Dalapon	--	--		3.3 U	3 U	3.3 U	3.3 U	3.3 U	3.4 U	3.2 U
delta-BHC	40	500000		0.69 U	0.61 U	0.67 U	0.69 U	0.66 U	0.68 U	0.65 U
Dicamba	--	--		3.3 U	3 U	3.3 U	3.3 U	3.3 U	3.4 U	3.2 U
Dichloroprop	--	--		17 U	15 U	16 U	17 U	16 U	17 U	16 U
Dieldrin	5	1400		0.69 U	0.61 U	0.67 U	2.7	2.3	0.68 U	0.65 U
Dinoseb	--	--		17 U	15 U	16 U	17 U	16 U	17 U	16 U
Endosulfan I	2400	200000		0.69 U	0.61 U	0.67 U	0.69 U	0.66 U	0.68 U	0.65 U
Endosulfan II	2400	200000		0.69 U	0.61 U	0.67 U	0.69 U	0.66 U	0.68 U	0.65 U
Endosulfan sulfate	2400	200000		0.69 U	0.61 U	0.67 U	0.69 U	0.66 U	0.68 U	0.65 U
Endrin	14	89000		0.69 U	0.61 U	0.67 U	0.69 U	0.66 U	0.68 U	0.65 U
Endrin aldehyde	--	--		0.69 U	0.61 U	0.67 U	5.2	3.2	0.68 U	0.65 U
Endrin ketone	--	--		0.69 U	0.61 U	0.67 U	8.1	5.3	0.68 U	0.65 U
gamma-BHC (Lindane)	100	9200		0.69 U	0.61 U	0.67 U	0.69 U	0.66 U	0.68 U	0.65 U
gamma-Chlordane	--	--		2.5	0.61 U	0.67 U	6.3	7.6	0.68 U	0.65 U
Heptachlor	42	15000		0.69 U	0.61 U	0.67 U	0.69 U	0.66 U	0.68 U	0.65 U
Heptachlor epoxide	--	--		0.69 U	0.61 U	0.67 U	0.9	0.93	0.68 U	0.65 U
MCPA	--	--		1700 U	1500 U	1600 U	1700 U	1600 U	1700 U	1600 U
MCPP	--	--		1700 U	1500 U	1600 U	1700 U	1600 U	1700 U	1600 U
Methoxychlor	--	--		1.4 U	1.2 U	1.3 U	1.4 U	1.3 U	1.4 U	1.3 U
Pentachlorophenol	800	6700		1.7 U	1.5 U	1.6 U	1.7 U	1.6 U	1.7 U	1.6 U

**Table 12. Summary of Pesticides and Herbicides in Soil, West 230th Street, Bronx, New York**

Parameter (Concentrations in µg/kg)	NYSDEC Part 375 Unrestricted Use	NYSDEC Part 375 Commercial (µg/kg)	<b>Sample Designation:</b>	SB-1	SB-2	SB-3	SB-4	SB-4DUP	SB-5	SB-6
			<b>Sample Date:</b>	2/22/2012	2/22/2012	2/22/2012	2/22/2012	2/22/2012	2/22/2012	2/22/2012
			<b>Sample Depth (ft bls):</b>	0-5	0-5	0-5	0-5	0-5	0-5	0-5
Toxaphene	--	--		17 U	15 U	17 U	17 U	16 U	17 U	16 U

J - Estimated value

U - Indicates that the compound was analyzed for but not detected

DUP - Duplicate sample

µg/kg - Micrograms per kilogram

ft bls - Feet below land surface

NYSDEC - New York State Department of Environmental Conservation

-- No Standards available

**Bold data indicates that parameter was detected above the NYSDEC**

**Part 375 Unrestricted Use Standards**

**Shaded data indicates that parameter was detected above the NYSDEC**

**Part 375 Commercial Standards**

**Table 12. Summary of Pesticides and Herbicides in Soil, West 230th Street, Bronx, New York**

Parameter (Concentrations in µg/kg)	NYSDEC	NYSDEC	Sample Designation: Sample Date: Sample Depth (ft bls):	SB-6	SB-7	SB-7	SB-8	SB-8	SB-9	SB-9	SB-10
	Part 375	Part 375		2/22/2012	2/22/2012	2/22/2012	2/22/2012	2/22/2012	2/22/2012	2/22/2012	2/22/2012
	Unrestricted Use	Commercial (µg/kg)		10-15	0-5	10-15	0-5	10-15	0-5	10-15	0-5
2,4,5-T	--	--		3.3 U	3.1 U	3.3 U	3.2 U	3.4 U	3.2 U	3.6 U	3.2 U
2,4,5-TP	3800	500000		3.3 U	3.1 U	3.3 U	3.2 U	3.4 U	3.2 U	3.6 U	3.2 U
2,4-D	--	--		16 U	15 U	16 U	16 U	17 U	16 U	18 U	16 U
2,4-DB	--	--		16 U	15 U	16 U	16 U	17 U	16 U	18 U	16 U
4,4'-DDD	3.3	92000		0.78	1.2	0.67 U	0.64 U	0.7 U	0.66 U	0.74 U	0.65 U
4,4'-DDE	3.3	62000		0.66 U	0.73	0.67 U	0.64 U	0.7 U	2.7	0.74 U	0.65 U
4,4'-DDT	3.3	47000		0.66 U	2.2	0.67 U	1.8	0.7 U	<b>4.9</b>	0.74 U	<b>5.7</b>
Aldrin	5	680		0.66 U	0.62 U	0.67 U	0.64 U	0.7 U	0.66 U	0.74 U	0.65 U
alpha-BHC	20	3400		0.66 U	0.62 U	0.67 U	0.64 U	0.7 U	0.66 U	0.74 U	0.65 U
alpha-Chlordane	94	24000		0.66 U	0.62 U	0.67 U	0.64 U	0.7 U	0.66 U	0.74 U	0.65 U
beta-BHC	36	3000		0.66 U	0.62 U	0.67 U	0.64 U	0.7 U	0.66 U	0.74 U	0.65 U
Dalapon	--	--		3.3 U	3.1 U	3.3 U	3.2 U	3.4 U	3.2 U	3.6 U	3.2 U
delta-BHC	40	500000		0.66 U	0.62 U	0.67 U	0.64 U	0.7 U	0.66 U	0.74 U	0.65 U
Dicamba	--	--		3.3 U	3.1 U	3.3 U	3.2 U	3.4 U	3.2 U	3.6 U	3.2 U
Dichloroprop	--	--		16 U	15 U	16 U	16 U	17 U	16 U	18 U	16 U
Dieldrin	5	1400		0.66 U	0.62 U	0.67 U	0.64 U	0.7 U	0.66 U	0.74 U	0.65 U
Dinoseb	--	--		16 U	15 U	16 U	16 U	17 U	16 U	18 U	16 U
Endosulfan I	2400	200000		0.66 U	0.62 U	0.67 U	0.64 U	0.7 U	0.66 U	0.74 U	0.65 U
Endosulfan II	2400	200000		0.66 U	0.62 U	0.67 U	0.64 U	0.7 U	0.66 U	0.74 U	0.65 U
Endosulfan sulfate	2400	200000		0.66 U	0.62 U	0.67 U	0.64 U	0.7 U	0.66 U	0.74 U	0.65 U
Endrin	14	89000		0.66 U	0.62 U	0.67 U	0.64 U	0.7 U	0.66 U	0.74 U	0.65 U
Endrin aldehyde	--	--		0.66 U	0.62 U	0.67 U	0.64 U	0.7 U	0.66 U	0.74 U	0.65 U
Endrin ketone	--	--		0.66 U	0.62 U	0.67 U	0.64 U	0.7 U	0.66 U	0.74 U	0.65 U
gamma-BHC (Lindane)	100	9200		0.66 U	0.62 U	0.67 U	0.64 U	0.7 U	0.66 U	0.74 U	0.65 U
gamma-Chlordane	--	--		0.66 U	0.62 U	0.67 U	0.64 U	0.7 U	0.66 U	0.74 U	0.65 U
Heptachlor	42	15000		0.66 U	0.62 U	0.67 U	0.64 U	0.7 U	0.66 U	0.74 U	0.65 U
Heptachlor epoxide	--	--		0.66 U	0.62 U	0.67 U	0.64 U	0.7 U	0.66 U	0.74 U	0.65 U
MCPA	--	--		1600 U	1500 U	1600 U	1600 U	1700 U	1600 U	1800 U	1600 U
MCPP	--	--		1600 U	1500 U	1600 U	1600 U	1700 U	1600 U	1800 U	1600 U
Methoxychlor	--	--		1.3 U	1.2 U	1.3 U	1.3 U	1.4 U	1.3 U	1.5 U	1.3 U
Pentachlorophenol	800	6700		1.6 U	1.5 U	1.6 U	1.6 U	1.7 U	1.6 U	1.8 U	1.6 U

**Table 12. Summary of Pesticides and Herbicides in Soil, West 230th Street, Bronx, New York**

Parameter (Concentrations in µg/kg)	NYSDEC Part 375 Unrestricted Use	NYSDEC Part 375 Commercial (µg/kg)	<b>Sample Designation:</b>	SB-6	SB-7	SB-7	SB-8	SB-8	SB-9	SB-9	SB-10
			<b>Sample Date:</b>	2/22/2012	2/22/2012	2/22/2012	2/22/2012	2/22/2012	2/22/2012	2/22/2012	2/22/2012
			<b>Sample Depth (ft bls):</b>	10-15	0-5	10-15	0-5	10-15	0-5	10-15	0-5
Toxaphene	--	--		17 U	16 U	17 U	16 U	18 U	16 U	18 U	16 U

J - Estimated value

U - Indicates that the compound was analyzed for but not detected

DUP - Duplicate sample

µg/kg - Micrograms per kilogram

ft bls - Feet below land surface

NYSDEC - New York State Department of Environmental Conservation

-- No Standards available

**Bold data indicates that parameter was detected above the NYSDEC**

**Part 375 Unrestricted Use Standards**

**Shaded data indicates that parameter was detected above the NYSDEC**

**Part 375 Commercial Standards**

**Table 13. Summary of General Chemistry in Soil, West 230th Street, Bronx, New York**

Parameter (Concentrations in mg/kg)	NYSDEC Part 375 Unrestricted Use	NYSDEC Part 375 Commercial (mg/kg)	Units	<b>Sample Designation:</b>	SB-1	SB-2	SB-3	SB-4	SB-4DUP	SB-5
				<b>Sample Date:</b>	2/22/2012	2/22/2012	2/22/2012	2/22/2012	2/22/2012	2/22/2012
				<b>Sample Depth (ft bls):</b>	0-5	0-5	0-5	0-5	0-5	0-5
Chromium, Hexavalent	1	400	mg/kg		0.72	0.43 U	0.46 U	0.47 U	0.46 U	0.48 U
Corrosivity as pH	--	--	su		NA	NA	NA	NA	NA	NA
Cyanide Reactivity	--	--	mg/kg		12 U	11 U	12 U	12 U	NA	12 U
Cyanide, Free	27	27	mg/kg		0.26 U	0.26 U	0.28 U	0.26 U	0.46	0.27 U
Ignitability	--	--	Deg. F		>	>	>	>	NA	>
Percent Solids	--	--	percent		85.8	93.7	86.4	85.3	87.2	83.9
pH	--	--	su		7.68	8.52	8.2	8.21	8.33	7.79
Redox Potential Vs H2	--	--	mv		324	282	292	295	296	324
Sulfide Reactivity	--	--	mg/kg		120 U	110 U	120 U	120 U	NA	120 U

J - Estimated value

U - Indicates that the compound was analyzed for but not detected

DUP - Duplicate sample

mg/kg - Milligrams per kilogram

su - Standard units

Deg. F - Degrees Fahrenheit

mv - Millivolts

ft bls - Feet below land surface

NYSDEC - New York State Department of Environmental Conservation

-- No Standards available

Bold data indicates that parameter was detected above the NYSDEC Part 375 Unrestricted Use Standards

Shaded data indicates that parameter was detected above the NYSDEC Part 375 Commercial Standards

**Table 13. Summary of General Chemistry in Soil, West 230th Street, Bronx, New York**

Parameter (Concentrations in mg/kg)	NYSDEC Part 375 Unrestricted Use	NYSDEC Part 375 Commercial (mg/kg)	Units	Sample Designation:	SB-6	SB-6	SB-7	SB-7	SB-8	SB-8
				Sample Date:	2/22/2012	2/22/2012	2/22/2012	2/22/2012	2/22/2012	2/22/2012
				Sample Depth (ft bls):	0-5	10-15	0-5	10-15	0-5	10-15
Chromium, Hexavalent	1	400	mg/kg		0.45 U	0.46 U	0.43 U	0.46 U	0.44 U	0.48 U
Corrosivity as pH	--	--	su		NA	NA	NA	NA	NA	NA
Cyanide Reactivity	--	--	mg/kg		11 U	NA	11 U	NA	11 U	NA
Cyanide, Free	27	27	mg/kg		0.26 U	0.26 U	0.26 U	0.26 U	0.27 U	0.27 U
Ignitability	--	--	Deg. F		>	NA	>	NA	>	NA
Percent Solids	--	--	percent		89.3	86.5	92	86.9	90.2	82.5
pH	--	--	su		9.29	9.52	8.01	8.26	8.38	8.07
Redox Potential Vs H2	--	--	mv		272	189	296	280	303	276
Sulfide Reactivity	--	--	mg/kg		110 U	NA	110 U	NA	110 U	NA

J - Estimated value

U - Indicates that the compound was analyzed for but not detected

DUP - Duplicate sample

mg/kg - Milligrams per kilogram

su - Standard units

Deg. F - Degrees Fahrenheit

mv - Millivolts

ft bls - Feet below land surface

NYSDEC - New York State Department of Environmental Conservation

-- No Standards available

Bold data indicates that parameter was detected above the NYSDEC Part 375 Unrestricted Use Standards

Shaded data indicates that parameter was detected above the NYSDEC Part 375 Commercial Standards

**Table 13. Summary of General Chemistry in Soil, West 230th Street, Bronx, New York**

Parameter (Concentrations in mg/kg)	NYSDEC Part 375 Unrestricted Use	NYSDEC Part 375 Commercial (mg/kg)	Units	Sample Designation:	SB-9	SB-9	SB-10
				Sample Date:	2/22/2012	2/22/2012	2/22/2012
				Sample Depth (ft bls):	0-5	10-15	0-5
Chromium, Hexavalent	1	400	mg/kg		0.45 U	0.51 U	0.45 U
Corrosivity as pH	--	--	su		NA	NA	NA
Cyanide Reactivity	--	--	mg/kg		11 U	NA	11 U
Cyanide, Free	27	27	mg/kg		0.26 U	0.28 U	0.27 U
Ignitability	--	--	Deg. F		>	NA	>
Percent Solids	--	--	percent		89.2	78.6	88.9
pH	--	--	su		10.87	8.33	8.02
Redox Potential Vs H2	--	--	mv		192	273	321
Sulfide Reactivity	--	--	mg/kg		110 U	NA	110 U

J - Estimated value

U - Indicates that the compound was analyzed for but not detected

DUP - Duplicate sample

mg/kg - Milligrams per kilogram

su - Standard units

Deg. F - Degrees Fahrenheit

mv - Millivolts

ft bls - Feet below land surface

NYSDEC - New York State Department of Environmental Conservation

-- No Standards available

Bold data indicates that parameter was detected above the NYSDEC Part 375 Unrestricted Use Standards

Shaded data indicates that parameter was detected above the NYSDEC Part 375 Commercial Standards

**Table 14. Summary of Volatile Organic Compounds in Soil Vapor, West 230th Street, Bronx, New York**

Parameter (Concentrations in ug/m3)	Sample Designation:	SV-1	SV-2	SV-3	SV-4
	Sample Date:	2/22/2012	2/22/2012	2/22/2012	2/22/2012
1,1,1-Trichloroethane		4.4 U	4.4 U	4.4 U	4.4 U
1,1,2,2-Tetrachloroethane		5.5 U	5.5 U	5.5 U	5.5 U
1,1,2-Trichloroethane		4.4 U	4.4 U	4.4 U	4.4 U
1,1-Dichloroethane		3.2 U	3.2 U	3.2 U	3.2 U
1,1-Dichloroethene		3.2 U	3.2 U	3.2 U	3.2 U
1,2,4-Trichlorobenzene		5.9 U	5.9 U	5.9 U	5.9 U
1,2,4-Trimethylbenzene		<b>4.9</b>	<b>57</b>	3.9 U	<b>5.4</b>
1,2-Dibromoethane		6.1 U	6.1 U	6.1 U	6.1 U
1,2-Dichlorobenzene		4.8 U	4.8 U	4.8 U	4.8 U
1,2-Dichloroethane		3.2 U	3.2 U	3.2 U	3.2 U
1,2-Dichloropropane		3.7 U	3.7 U	3.7 U	3.7 U
1,3,5-Trimethylbenzene		3.9 U	<b>16</b>	3.9 U	<b>2.4 J</b>
1,3-Butadiene		1.8 U	1.8 U	1.8 U	1.8 U
1,3-Dichlorobenzene		4.8 U	<b>2.3 J</b>	4.8 U	4.8 U
1,4-Dichlorobenzene		4.8 U	4.8 U	4.8 U	4.8 U
1,4-Dioxane		2.9 U	2.9 U	2.9 U	2.9 U
2-Butanone (MEK)		<b>22</b>	<b>11</b>	<b>12</b>	<b>43.9</b>
2-Chlorotoluene		4.1 U	4.1 U	4.1 U	4.1 U
2-Hexanone		3.3 U	3.3 U	3.3 U	3.3 U
3-Chloropropene		2.5 U	2.5 U	2.5 U	2.5 U
4-Ethyltoluene		3.9 U	<b>9.8</b>	3.9 U	<b>1.8 J</b>
4-Methyl-2-pentanone (MIBK)		3.3 U	3.3 U	3.3 U	3.3 U
Acetone		<b>38.5</b>	<b>43.9</b>	<b>52.3</b>	<b>268</b>
Benzene		<b>5.8</b>	<b>2.9</b>	<b>2.3 J</b>	<b>8.9</b>
Benzyl chloride		4.1 U	4.1 U	4.1 U	4.1 U
Bromodichloromethane		5.4 U	5.4 U	5.4 U	5.4 U

**Table 14. Summary of Volatile Organic Compounds in Soil Vapor, West 230th Street, Bronx, New York**

Parameter (Concentrations in ug/m3)	Sample Designation:	SV-1	SV-2	SV-3	SV-4
	Sample Date:	2/22/2012	2/22/2012	2/22/2012	2/22/2012
Bromoethene		3.5 U	3.5 U	3.5 U	3.5 U
Bromoform		8.3 U	8.3 U	8.3 U	8.3 U
Bromomethane		3.1 U	3.1 U	3.1 U	3.1 U
Carbon disulfide		<b>5.6</b>	<b>7.8</b>	<b>3.7</b>	<b>22</b>
Carbon tetrachloride		5 U	5 U	5 U	5 U
Chlorobenzene		3.7 U	3.7 U	3.7 U	3.7 U
Chloroethane		2.1 U	2.1 U	2.1 U	2.1 U
Chloroform		3.9 U	3.9 U	3.9 U	3.9 U
Chloromethane		<b>0.97 J</b>	<b>0.85 J</b>	<b>1.2 J</b>	1.7 U
cis-1,2-Dichloroethene		3.2 U	<b>2.1 J</b>	3.2 U	<b>25</b>
cis-1,3-Dichloropropene		3.6 U	3.6 U	3.6 U	3.6 U
Cyclohexane		<b>13</b>	<b>2.7 J</b>	<b>2.6 J</b>	<b>18</b>
Dibromochloromethane		6.8 U	6.8 U	6.8 U	6.8 U
Dichlorodifluoromethane		<b>2.4 J</b>	<b>2.5 J</b>	<b>2.5 J</b>	<b>2.4 J</b>
Ethanol		<b>25.1</b>	<b>30.5</b>	<b>27.7</b>	<b>46</b>
Ethyl Acetate		2.9 U	2.9 U	2.9 U	2.9 U
Ethylbenzene		<b>11</b>	<b>17</b>	<b>2.3 J</b>	<b>13</b>
Freon 113		6.1 U	6.1 U	6.1 U	6.1 U
Freon 114		5.6 U	5.6 U	5.6 U	5.6 U
Heptane		<b>64.8</b>	<b>6.1</b>	<b>5.3</b>	<b>90.2</b>
Hexachlorobutadiene		8.5 U	8.5 U	8.5 U	8.5 U
Hexane		<b>1500</b>	<b>24</b>	<b>158</b>	<b>1410</b>
Isooctane		<b>56</b>	<b>4.1</b>	3.7 U	<b>35</b>
Isopropyl Alcohol		<b>3.7</b>	<b>7.9</b>	<b>5.2</b>	<b>16</b>
m+p-Xylene		<b>25</b>	<b>72.1</b>	<b>5.6</b>	<b>35</b>
Methyl Methacrylate		3.3 U	3.3 U	3.3 U	3.3 U

**Table 14. Summary of Volatile Organic Compounds in Soil Vapor, West 230th Street, Bronx, New York**

Parameter (Concentrations in ug/m3)	Sample Designation:	SV-1	SV-2	SV-3	SV-4
	Sample Date:	2/22/2012	2/22/2012	2/22/2012	2/22/2012
Methylene chloride		2.8 U	2.8 U	2.8 U	2.8 U
MTBE		2.9 U	2.9 U	2.9 U	2.9 U
o-Xylene		<b>9.1</b>	<b>36</b>	<b>1.8 J</b>	<b>12</b>
Propylene		3.4 U	3.4 U	3.4 U	3.4 U
Styrene		3.4 U	3.4 U	3.4 U	3.4 U
t-Butyl Alcohol		<b>3.6</b>	<b>9.7</b>	<b>2.3 J</b>	<b>10</b>
Tetrachloroethene		<b>12</b>	<b>71.9</b>	<b>21</b>	<b>201</b>
Tetrahydrofuran		<b>40.1</b>	<b>2.9</b>	<b>13</b>	<b>40.1</b>
Toluene		<b>48.2</b>	<b>22</b>	<b>17</b>	<b>37.7</b>
trans-1,2-Dichloroethene		3.2 U	3.2 U	3.2 U	<b>11</b>
trans-1,3-Dichloropropene		3.6 U	3.6 U	3.6 U	3.6 U
Trichloroethene		<b>0.91</b>	<b>1.2</b>	0.86 U	<b>25</b>
Trichlorofluoromethane		4.5 U	4.5 U	4.5 U	4.5 U
Vinyl Acetate		2.8 U	2.8 U	2.8 U	2.8 U
Vinyl chloride		2 U	2 U	2 U	<b>340</b>
Xylenes (total)		<b>33</b>	<b>108</b>	<b>7.4</b>	<b>46.9</b>

J - Estimated value

E - Indicates value exceeded calibration range

U - Indicates that the compound was analyzed for but not detected

DUP - Duplicate sample

ug/m3 - Micrograms per cubic meter

Bold data indicates that parameter was detected

Shaded data indicates that parameter was detected above levels to be monitored in accordance with the Final NYSDOH CEH BEEI Soil Vapor Intrusion Guidance of October 2006



**LOCATION OF SITE**

Broadway

West 260th Street

Major Deegan Expressway



Title:

**SITE LOCATION MAP**

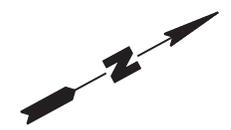
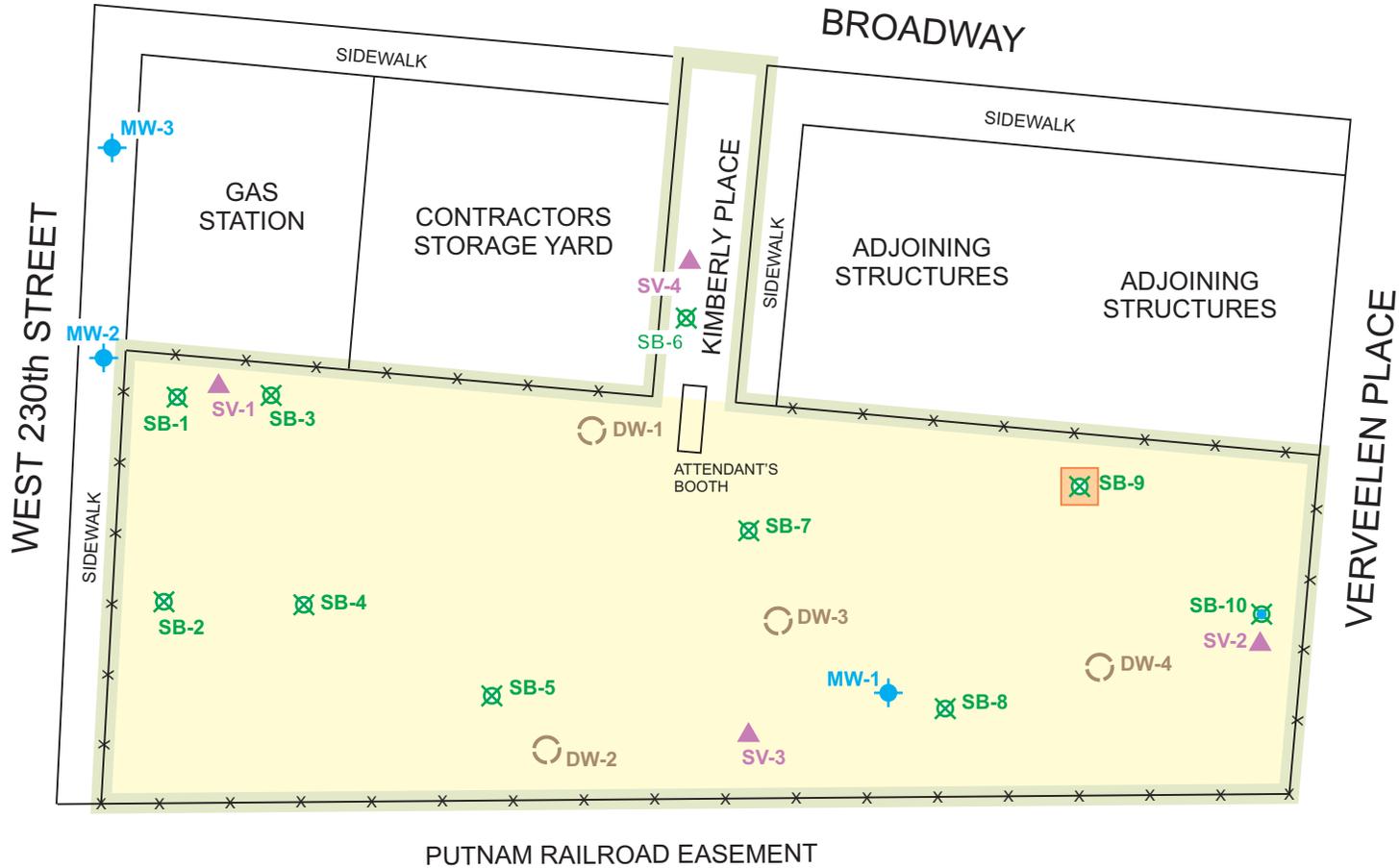
BROADWAY PLAZA SITE  
BRONX, NEW YORK

Prepared for:

EQUITY ONE, INC.

 <b>ROUX ASSOCIATES, INC.</b> <i>Environmental Consulting &amp; Management</i>	Compiled by: J.G.	Date: 01MAY12	FIGURE  <b>1</b>
	Prepared by: G.M.	Scale: AS SHOWN	
	Project Mgr.: J.G.	Project No.: 1924.0003Y	
	File: 1924.0003Y104.01.CDR		

1924Y0003Y1041924.0003Y104.01.CDR

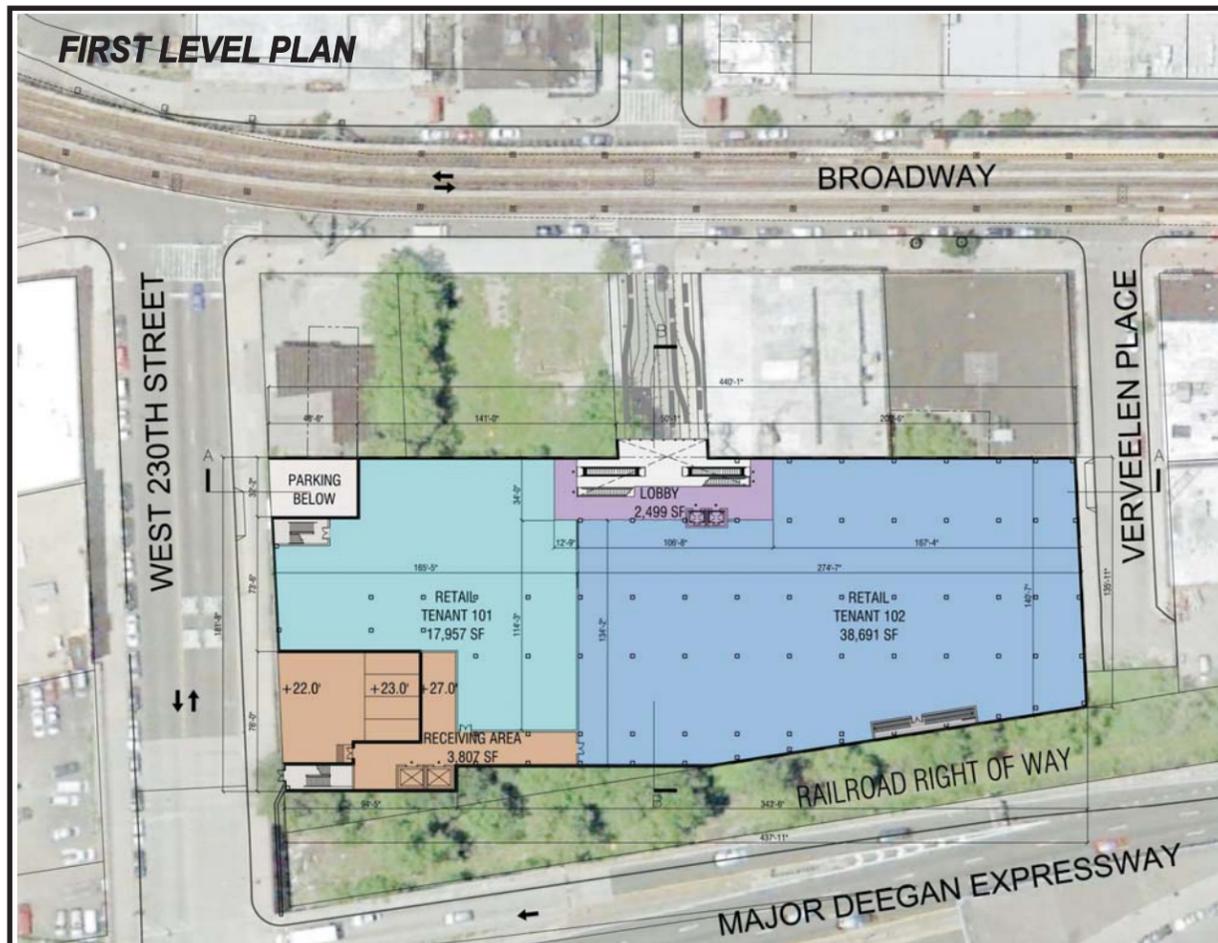


### MAJOR DEEGAN EXPRESSWAY

#### LEGEND

- Boundary of Equity One site
- Chain Link fence
- Existing monitoring well /groundwater grab sample
- Soil boring
- Soil boring with groundwater grab sample
- Dry well
- Soil vapor sample
- Site wide excavation area
- Excavation area containing elevated lead concentration (not drawn to scale. Actual area is 10ft X 10ft X 15ft)

Title:			
<b>SITE PLAN</b>			
BROADWAY PLAZA SITE BRONX, NEW YORK			
Prepared for: <b>EQUITY ONE, INC.</b>			
<b>ROUX</b> ROUX ASSOCIATES, INC. <small>Environmental Consulting &amp; Management</small>	Compiled by: J.G.	Date: 01MAY12	<b>FIGURE</b>  <b>2</b>
	Prepared by: G.M.	Scale: AS SHOWN	
	Project Mgr.: J.G.	Project No.: 1924.0003Y	
	File: 1924.0003Y104.02.CDR		



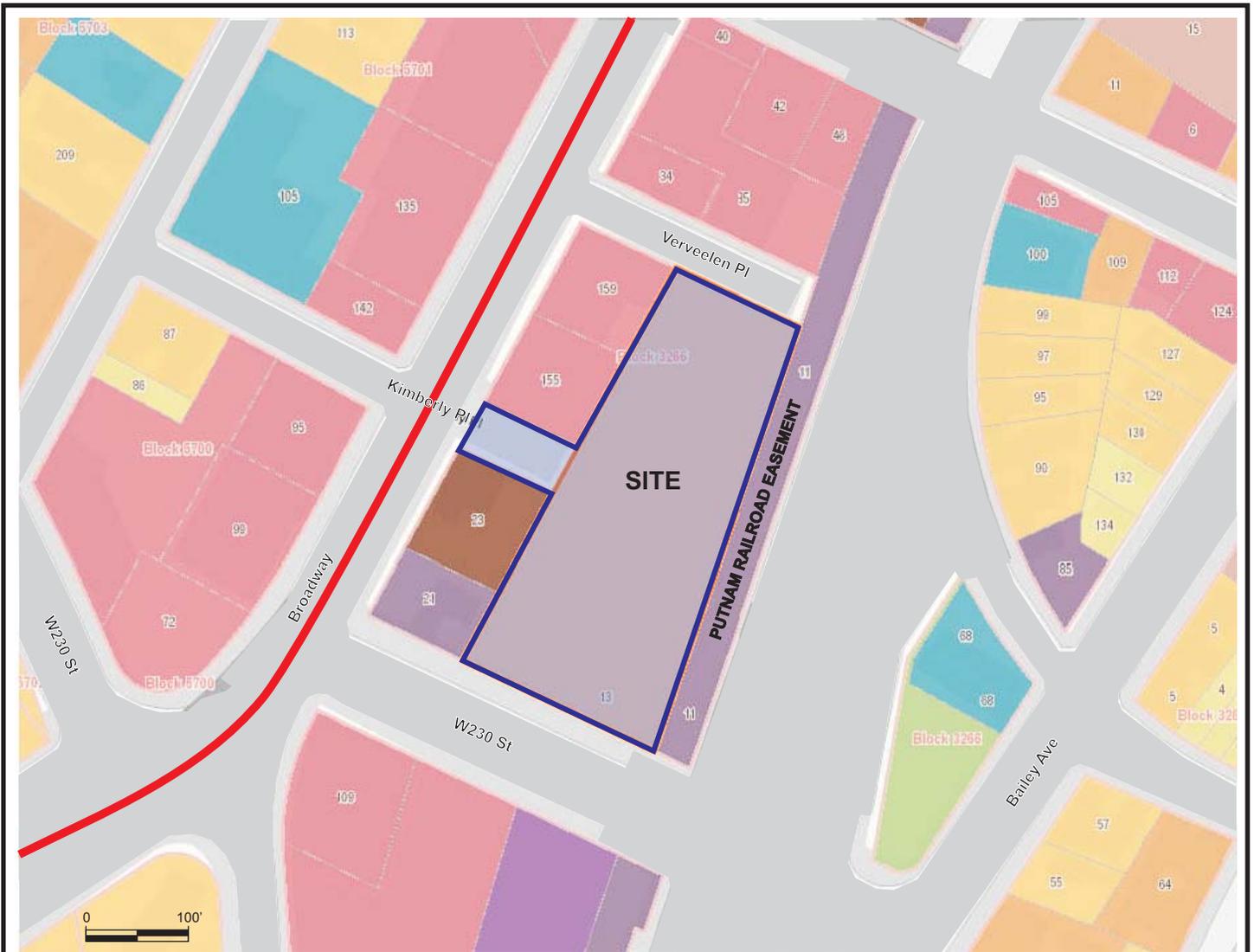
- LEGEND**
- SPECIALTY GROCERY STORE
  - FASHION RETAIL
  - LIFESTYLE RETAIL
  - SHARED LOBBY
  - SHARED SERVICE/RECEIVING
  - EGRESS
  - PARKING & LOADING

**SUMMARY**

RETAIL 1ST LEVEL	56,648 SF
RETAIL 2ND LEVEL	58,415 SF
SERVICE	3,359 SF
LOBBY TOTAL	6,981 SF
RECEIVING	3,807 SF
EGRESS	3,805 SF
<b>GROSS FLOOR AREA TOTAL:</b>	<b>133,015 SF</b>
<b>FLOOR AREA TOTAL WITH 3% REDUCTION FOR MECHANICAL SPACE:</b>	<b>129,024 SF</b>

<b>REDEVELOPMENT PLAN</b>		
BROADWAY PLAZA SITE BRONX, NEW YORK		
Prepared for: EQUITY ONE, INC.		
<b>ROUX</b> ROUX ASSOCIATES, INC. <i>Environmental Consulting &amp; Management</i>	Compiled by: J.G.    Date: 01MAY12 Prepared by: G.M.    Scale: AS SHOWN Project Mgr.: J.G.    Project No.: 1924.0003Y File: 1924.0003Y104.03.CDR	FIGURE <b>3</b>

1924\0003Y\104\1924\_0003Y104\_03.CDR



**LEGEND**

-  Commercial / Industrial
-  Residential and Mixed use
-  Institutions
-  Parks / Recreation
-  Roads and Highways
-  Vacant Lot
-  Site
-  Transportation

**Note:**

Base Map adapted from NYC Open Accessible Space Information System (OASIS), [www.oasisnyc.net](http://www.oasisnyc.net), April 2012.

Title:			<b>SURROUNDING LAND USE</b>
BROADWAY PLAZA SITE BRONX, NEW YORK			
Prepared for:			EQUITY ONE, INC.
<b>ROUX</b> ROUX ASSOCIATES, INC. <i>Environmental Consulting &amp; Management</i>	Compiled by: J.G.	Date: 01MAY12	FIGURE <b>4</b>
	Prepared by: G.M.	Scale: AS SHOWN	
	Project Mgr.: J.G.	Project No.: 1924.0003Y	
	File: 1924.0003Y104.01.CDR		