

# Revised-Interim Remedial Measure (IRM) Work Plan

The Peninsula NYSDEC BCP Site No. C203097 1221 Spofford Avenue Tax Lot 35 of Tax Block 2738 Bronx, New York

August 6, 2018

Prepared for:

The Peninsula JV, LLC 111 8<sup>th</sup> Avenue New York, New York 10011

Prepared by:

Roux Environmental Engineering and Geology, D.P.C. 209 Shafter Street Islandia, New York 11749

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# Certification

I, Brian P. Morrissey, certify that I am currently a NYS registered professional engineer and that this Interim Remedial Measure Work Plan was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation Remediation (DER-10) and the BCP Agreement for the Site.

Brian P. Morrissey, P.E.

NYS Professional Engineer #062617

August 3, 2018

Date

# 1. INTRODUCTION

Roux Environmental Engineering and Geology, D.P.C. (Roux) have prepared this Interim Remedial Measure (IRM) Work Plan on behalf of The Peninsula JV, LLC (Volunteer) to detail the scope of work for building demolition, temporary closure of existing underground storage tanks (USTs), and excavation of two geotechnical test pits at the former Spofford Juvenile Detention Center, later renamed as Bridges Juvenile Center, located at 1221 Spofford Avenue, Bronx, New York (Site). The Site is comprised of Block 2738 Lot 35 of the New York City Tax map, as shown on Figure 1. The IRM will be an initial phase of the overall remediation and redevelopment of the Site.

The Volunteer entered into a Brownfield Cleanup Agreement (BCA) with the New York State Department of Environmental Conservation (NYSDEC) in November 2017, to investigate, remediate and redevelop the 3.78-acre Site. The Peninsula JV, LLC is a Volunteer in the Brownfield Cleanup Program (BCA Index No C203097-10-17; BCP Site No. C203097). The property is currently owned by the City of New York and the Volunteer has obtained access to the Site to implement this IRM. In the course of redevelopment, the existing structures at the Site will be demolished and the impacts to soils and groundwater will be delineated in order to select appropriate remedies to support redevelopment. At this time, the Volunteer anticipates that the redevelopment for the Site will include a vibrant live-work campus featuring affordable housing, community space, open/recreational space, industrial space and retail space.

This IRM Work Plan has been prepared in accordance with NYSDEC procedures set forth in the document titled DER-10 Technical Guidance for Site Investigation and Remediation, dated May 2010, and complies with all applicable Federal, State and local laws, regulations and requirements.

# 1.1 Objectives and Scope of the IRM Work Plan

The Spofford Juvenile Detention Center ceased operations in 2011. There are currently three (3) six-story buildings on-Site that are vacant. Two (2) 12,000-gallon, #2 Fuel Oil USTs remain in-service at the Site. The proposed IRM includes the demolition of the buildings and subgrade features, starting first with the west side on Tiffany Street followed by the east side on Spofford Avenue. The proposed IRM also includes removing all fluids from the USTs, rendering them inert and temporary closure of the USTs prior to building demolition, as well as the excavation of two geotechnical test pits. After demolition of the existing buildings is complete, the USTs will be permanently closed as part of the remedial work, with further details provided in the Remedial Action Work Plan (RAWP) to be provided as a separate submittal.

If, and to the extent that, grossly contaminated soil is encountered during the IRM activities, excavations will continue to remove the grossly contaminated soil to the extent it is technically and practically feasible. If further soil removal is determined to be infeasible (e.g., sidewall instability, equipment limitations due to depth of excavation, if the contamination anticipated in vadose zone extends to the water table and dewatering is not practical), excavation efforts will be concluded and conditions remaining following completion of the IRM will be documented in the Construction Completion Report (CCR). Remaining contamination will be documented and addressed as part of the RAWP, which will describe the overall remedy for the Site.

Plans depicting the proposed IRM scope of work for the Site are presented on Figure 2. The IRM is a component of, but does not constitute, the overall remedy for the Site. The objectives of the IRM are to provide oversight of and the UST temporary closure, conduct community air monitoring during soil

disturbance generated as part of the building demolition, and to identify and remove any contaminated soil observed during geotechnical test pitting. This will advance the BCP goals but will not complete the investigation or remediation of the Site.

The remainder of this IRM Work Plan is organized as follows:

Section 2: Site Background

Section 3: Scope of Work

Section 4: Soils/Materials Management Plan

Section 5: Reporting

Section 6: IRM Implementation Schedule

# 2. BACKGROUND

Relevant Site background information is presented in this section. A Site location map is included as Figure 1.

# 2.1 Site Description and Setting

Site Location							
Site Name: Former Spofford Juvenile Detention Center							
Site Address:	1221 Spofford Avenue						
Site Town, County, State:	Neighborhood of Hunts Point, Bronx, Bronx County, New York						
Site Tax Identification:	Block 2738, Lot 35						
Site Topographic Quadrangle:	Central Park, New York						
Nearest Intersection:	Spofford Avenue and Tiffany Street						
Area Description:	The Site is in a mixed-use area of the Bronx, New York. To the north is Corpus Christi Monastery; to the south are multi-family residential and commercial properties; to the east are residential properties; and to the west are commercial and industrial properties.						

Site Information							
Site Acreage:	3.78 (total)						
Site Shape: Rectangular							
Site Use:	Tax Lot 35 of Tax Block 2738 is currently vacant						
Number and Size of Buildings (Year Built):	Lot 35 – three six-story buildings totaling 921,100 sf (1956)						
Basement/ Slab-on-Grade:	Basement/slab-on-grade						

#### 2.1.1 Site Operations

The Site was the location of the former Spofford Juvenile Detention Facility, later renamed as Bridges Juvenile Center, which was in operation from 1956 to 2011. The Site was temporarily closed from 1998 to 1999. Based on a 1951 Sanborn® Fire Insurance Map, a stone cutting yard, a dwelling, and "coops" are depicted in northwestern portion of the Site. Information contained in the 1927 and 1940 City Directory indicated that a ground floor laundry facility with second floor residential apartments (according to Sanborn maps) was located on the southeast side of the property along Spofford Avenue, the actual period of operation is unknown. Since 2011, the Site is vacant and currently owned by the City of New York. There are currently three six-story buildings located at the Site, which will be demolished to facilitate Site redevelopment.

#### 2.1.2 Topography/Hydrogeology

A review of the United States Geological Survey (USGS) Central Park, New York 7.5-minute series topographic quadrangle map indicated that the topography in the area surrounding the Site slopes steeply to the south and west towards the East River. The elevation surrounding the Site ranges from approximately 80 feet above mean sea level (on Manida Street to the east of the Site) to 30 feet above mean sea level (on Tiffany Street to the west of the Site). The land surface grade of the former Spofford Juvenile Detention Center is located approximately 50 feet above mean sea level and is generally flat, as it appears that the existing hill in this portion of the Site was regraded for leveling of the former juvenile detention center.

Based on information indicated by previous investigations, historic fill materials were noted onsite in the majority of soil borings completed at the Site. No information concerning the origin of this historic fill (likely imported to level terrain prior to the construction of the former Spofford Juvenile Detention Center). Soil borings conducted by Roux during the Phase II Environmental Site Assessment (ESA) completed in April 2017 confirmed the presence of the historic fill material, which consisted of fine to medium sand with varying amounts of coarse sand, silt, gravel, asphalt, brick and concrete fragments ranging in thickness of approximately one foot to five feet. This fill layer was underlain by a native glacial silty fine to medium sand stratum with varying amounts of gravel. This glacial stratum was underlain by weathered bedrock, ranging in thickness of one foot to six feet, which overlaid bedrock. Bedrock was encountered at depths ranging from 8.5 feet to 19 feet below land surface (ft bls).

Groundwater was not encountered during the April 2017 Phase II ESA, however, during previous environmental Site investigations, perched groundwater was encountered on top of bedrock at depths ranging from approximately 13 ft to 19 ft bls. Regional groundwater flow likely mimics land surface and bedrock surface topography and is inferred to flow to the southwest towards the East River (approximately 0.53 miles southwest of Site). According to prior Site environmental investigations, localized groundwater flow in the vicinity of one of the existing buildings appears to be to the north. The localized different flow direction of groundwater in this area of the Site may likely be affected by the construction of the existing buildings on Site (e.g., boiler room cellar of the former juvenile detention center), which may have excavated and regraded the bedrock surface.

#### 2.1.3 Bulk Storage Tanks

Multiple bulk storage tanks have been identified at the Site, both currently in-service and closed/removed. Detailed information on these tanks is provided in the following sections.

#### 2.1.3.1 Aboveground Storage Tanks

NYSDEC Petroleum Bulk Storage (PBS) records identified two aboveground storage tanks (ASTs) present at the Site. The following table summarizes the findings from the NYSDEC Petroleum Bulk Storage (PBS) Records for the Site, which is currently registered under PBS#2-604085.

Tank ID	Tank Location	Tank Contents	Capacity (Gal)	Status
Diesel	Aboveground (in vault)	Diesel (generator)	5,000	Closed in Place
Heat	Aboveground (in vault)	Closed – Removed	20,000	Closed in Place

#### 2.1.3.2 Underground Storage Tanks

NYSDEC Petroleum Bulk Storage (PBS) records identified two USTs present at the Site. The following table summarizes the findings from the NYSDEC Petroleum Bulk Storage (PBS) Records for the Site, which is currently registered under PBS#2-604085.

Tank ID	Tank Location	Tank Contents	Capacity (Gal)	Status
001	Underground	#6 Fuel Oil	20,000	Closed-Removed
002	Underground	#2 Fuel Oil	12,000	In Service
003	Underground	#2 Fuel Oil	12,000	In Service

The actual location of former UST "001" is not known for certain, however, the two 12,000-gallon USTs (i.e., 002 and 003) are located in the visitor parking lot on the south side of the former Spofford Juvenile Detention Center, with the former tank "diesel" located immediately to the east of these USTs. The approximate locations of the two 12,000-gallon USTs are shown on Figure 2.

# 2.2 Summary of Environmental Conditions

The following is a summary of environmental conditions at the Site.

#### 2.2.1 NYSDEC Spills

There is one open Spill Number (0812579) assigned to the Site in 2009. In 2009, there was a documented release of approximately 2,000 gallons of fuel oil from UST supply lines located near the basement boiler room of the former Spofford Juvenile Detention Center. Following notification to the NYSDEC that a release to subsurface soils had occurred, NYSDEC assigned spill case #0812579. Subsequent investigation conducted on behalf of New York City Department of Juvenile Justice by Louis Berger and Associates (LBA), as described in the May 15, 2009 Remedial Investigation Report (RIR), identified the presence of petroleum contamination in soils immediately surrounding the two existing USTs (002 and 003) located in the visitor parking lot outside of the former Spofford Juvenile Detention Center. In addition, free phase petroleum product (free-product) was observed in the following borings atop perched groundwater beneath the Site:

- SB01B, SB02, and SB03, all completed within the boiler room adjacent to the exterior USTs (002 and 003); and
- SB-15 and SB-16, both completed in the exterior lot adjacent to the USTs (002 and 003).

#### 2.2.2 Previous Environmental Sampling

The following is a brief summary of environmental sampling conducted at the Site. A complete description of previous environmental sampling conducted at the Site is included in the approved Remedial Investigation Work Plan (RIWP) prepared by Roux, dated February 6, 2018.

As documented in the following reports, soil, groundwater, and soil vapor sampling has been carried out at the Site between 2009 and 2017:

- RIR prepared by LBA, dated May 15, 2009;
- Remedial Action Plan (RAP) prepared by LBA, dated May 21, 2010;
- Phase I ESA prepared by Arcadis, Inc., dated June 3, 2016;

- Groundwater Monitoring and Remediation Report for the Fourth Quarter 2016 prepared by URS, dated January 25, 2017;
- Roux Associates Phase I ESA, dated July 11, 2017 (prepared on behalf of the Applicant); and
- Roux Associates Phase II ESA, dated August 10, 2017 (prepared on behalf of the Applicant).

In addition, Roux completed Phase I and Phase II of the Remedial Investigation (RI) in April and May 2018, including soil and soil vapor sampling in accordance with the February 2018 RIWP.

Recent data collected as part of the Roux Phase I RI work (April and May 2018) is provided in Tables 1 through 6 and Figure 5, and the locations are shown on Figure 3. A summary of all activities completed, and data collected as part of the Roux Phases I and II RI will be included in the Remedial Investigation Report (RIR). Note that the data collected as part of the Roux Phase I RI work provided in Tables 1 through 6 has not been validated but will be validated as part of the RIR. Data collected during the Roux Phase II ESA relevant to the proposed IRM activities are provided on Tables 7 through 12. Data collected during investigations before the Roux Phase II ESA relevant to the proposed IRM activities are provided on Figures 4 and 5, and Plate 1. Further details related to the previous investigations are presented in the February 2018 RIWP.

In summary, analytical results from previous investigations indicated that subsurface soil and/or groundwater at the Site have been impacted by contaminants above applicable regulatory guidance values, including petroleum-related VOCs and SVOCs associated with releases from former tank systems (as described in section 2.2.1) and/or other Site uses. In addition, free-product was present in three soil borings located within the basement of the existing building; in two exterior borings, located approximately three feet east of the UST vault; and in existing groundwater monitoring wells, MW-2 through MW-5. The Roux Phase II ESA confirmed the presence of several petroleum related and historic fill-related SVOC contamination in soil. Additionally, arsenic was detected in soil at a concentration above applicable regulatory guidance values from one soil sample. Analytical results from the recent Roux Phase I RI work completed in April and May 2018 confirmed the presence of historic fill-related SVOC contamination in soil, as well as several detections of metals above the regulatory guidance values (barium, copper and lead). Barium was detected above the Restricted Residential Soil Cleanup Objective (RRSCO) of 400 milligrams per kilogram (mg/kg) at sample locations RXMW-10 (419 mg/kg and 489 mg/kg) and RXSB-13 (630 mg/kg). Copper was detected above the RRSCO of 270 mg/kg at sample locations RXMW-4 (468 mg/kg), RXMW-9 (481 mg/kg) and RXSB-12 (2100 mg/kg). Lead was detected above the RRSCO of 400 mg/kg at sample locations RXMW-4 (486 mg/kg) and RXSB-13 (424 mg/kg).

# 3. SCOPE OF WORK

The scope of work for the IRM consists of the following tasks:

- Site mobilization and Site preparation, including perimeter construction fence;
- Completion of two geotechnical test pits in the northeast courtyard to explore the adjacent retaining wall footings,
- Temporarily render the two 12,000-gallon USTs out of service (including extraction of fluids, rendering interior of USTs inert by degassing, and capping of fill pipes) to allow for safe demolition of buildings;
- Phase I of Building Demolition: Demolition of the buildings and subgrade features on the west side (Tiffany Street);
- Phase II of Building Demolition: Demolition of the buildings and subgrade features on the east side (Spofford Avenue);
- · Waste disposal; and
- Documentation.

Implementation of the IRM will be in accordance with the Soils/Materials Management Plan (SoMP) included in Section 4 of this Work Plan.

# 3.1 Geophysical Survey

A geophysical survey will be conducted during RI activities, prior to the IRM activities, and relevant findings will be provided as an Appendix to the RIR. However, the results of the survey will be used to verify the location of current tanks and piping prior to tank closure.

#### 3.2 Mobilization and Site Preparation

The NYSDEC will be provided with at least five days advanced notice prior to intrusive activities. The selected Contractor will supply labor (Hazardous Waste Operations and Emergency Response [HAZWOPER] Certified in accordance with OSHA 1910.120) and materials required for the implementation of the IRM scope of work. In addition, necessary permits, insurance, bonds, and licenses required to complete the work will be obtained and fees necessary to obtain these permits will be paid. Mobilization and Site preparation activities include:

- 1. Mobilization of equipment to the work area;
- Installation of construction fencing (in accordance with New York City Department of Buildings [NYCDOB] requirements) and traffic barricades surrounding the Site to delineate the work zone, act as a work Site security measure, and mark the truck loading and decontamination areas;
- 3. Implementation of erosion and sediment control measures in accordance with the New York Guidelines for Urban Erosion and Sediment Control, if required. Hay bales will be placed surrounding the excavation areas to control stormwater runoff and surface water from entering or exiting the excavation. Catch basin inlets will be protected to prevent disturbed soil from entering;
- 4. Set-up of staging areas for the excavation area; and
- 5. Set-up of temporary facilities and decontamination facilities including decontamination pad in order to decontaminate trucks and other vehicles/equipment.

#### 3.3 Tank Closure and Geotechnical Test Pits

The UST closure and removal will occur in two phases to allow for safe demolition of the building and tank removal at the Site. Temporary closure of the USTs is included in the scope of work for this IRM. Permanent closure of the USTs will be completed during the remedial work and is therefore not included in the scope of work for this IRM. The geotechnical test pits will be completed during temporary closure of the USTs. The Scope of Work for the temporary UST closure is provided below. The Scope of Work for the building demolition activities is provided in Section 3.6.

#### 3.3.1 Temporary Tank Closure

Prior to demolition of the buildings, temporary closure of the USTs at the Site will be completed in general accordance with NYSDEC's DER-10 Section 5.5, NYSDEC's *Permanent Closure of Petroleum Storage Tanks* dated January 20, 1987, as revised December 3, 2003, and the Rules of the FDNY – RCNY Title 3. The scope of work will include:

- Removal of pumps, if present, from within USTs;
- Extraction of any fluids currently in the USTs;
- Rendering the interior of the USTs inert by degassing;
- Sealing all fill ports; and
- Filing the tanks as temporarily out of service with FDNY.

The location of the USTs is shown on Figure 2.

#### 3.3.2 Geotechnical Test Pits

Two geotechnical test pits (TP-1 and TP-2) will be completed at the Site (in the northeast courtyard) to explore the adjacent retaining wall footings. TP-1 and TP-2 locations are shown on Figure 2. At TP-1 location, an approximate five-foot by five-foot area will be opened and excavated to approximately 10 ft bls to expose the retaining wall footing. At TP-2 location, an approximate five-foot by five-foot area will be opened and excavated to approximately four ft bls to expose the retaining wall footing.

Excavated soil will be segregated (unsaturated versus saturated) and stockpiled on and covered with polyethylene sheeting until the excavation is completed. Upon completion, the test pits will be backfilled with the unsaturated soil removed during the excavation, as appropriate (refer to Section 4.7 for additional details regarding reuse of soil).

# 3.4 Waste Disposal

All wastes generated during the temporary UST closure and geotechnical test pitting including any product removed from the tanks and any impacted soil will be handled, transported and disposed of in a manner consistent with federal, state and local laws and regulations.

#### 3.5 Documentation

A Pre-Work Notification for Bulk Storage Tank Installation, Closing, Repair, or Reconditioning was submitted to the NYSDEC Petroleum Bulk Storage (PBS) Division on April 24, 2018. Prior to closure of the tanks, an FDNY Affidavit will be filed by the FDNY licensed tank removal contractor for temporary in-place closure of the USTs.

Detailed information regarding the IRM (e.g., waste disposal documentation, photos, etc.) will be included in the CCR described in Section 5.

# 3.6 Building Demolition

Demolition of the three (3) existing six-story buildings will take place in two (2) phases, as shown on Figure 2. Phase I will be the mechanical demolition of buildings on the west side along Tiffany Street, and the Phase II will be the mechanical demolition of buildings on the east side along Spofford Avenue. Building demolition will include dismantling and offsite removal of above grade structures, foundation elements and slabs, and subgrade structures, where present, including basements, cellars, pump rooms and crawl spaces as deep as approximately 25 feet below existing grade. Once soil is disturbed as part of the subgrade feature removal for the building demolition, Roux will provide oversight of any limited soil disturbance activities and conduct air monitoring in accordance with the site-specific Community Air Monitoring Plan (CAMP). Oversight and CAMP will continue until the former building areas are stabilized and the exposed soil surfaces are covered with a temporarily cover consisting of 6" of stone. Details of the air monitoring requirements are provided in Section 4.12.

# 4. SOILS/MATERIALS MANAGEMENT PLAN

The following sections provide the SoMP to be implemented during the IRM.

# 4.1 Soil Screening Methods

Visual, olfactory and photoionization detector (PID) soil screening and assessment will be performed during geotechnical test pitting activities under the supervision of Roux personnel.

# 4.2 Stockpile Methods

Soil excavated during geotechnical test pitting will be segregated (unsaturated versus saturated) and stockpiled on and covered with polyethylene sheeting or placed in roll-off containers until the excavation is completed. Stockpiles will be used only when necessary and will be removed as soon as practicable. While stockpiles are in place, they will be inspected at a minimum each week, 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 NYSDEC. Excavated soils will be stockpiled on, at minimum, double layers of 6-mil minimum poly-sheeting, will be kept covered at all times (except when material is being added or removed) with appropriately anchored polyethylene sheeting, and will be routinely inspected. Broken or ripped sheeting will be promptly replaced. If used, rolloff containers for saturated materials will be lined.

Stockpile activities will be compliant with applicable laws and regulations. Stockpiles of excavated soils and other materials will be located a minimum of 20 feet from the property boundaries, where possible. Hay bales or equivalent will surround soil stockpiles as needed, except for areas where access by equipment is required. Hay bales will be used as needed near catch basins, surface waters and other discharge points.

Stockpiles of petroleum-contaminated soils are not anticipated to remain onsite for longer than 60 days. In the event that stockpiles will need to remain onsite longer than 60 days, Roux will coordinate with NYSDEC.

#### 4.3 Characterization of Excavated Materials

Soil/fill or other excavated media that will be transported off-Site for disposal will be sampled in accordance with the site-specific Quality Assurance Project Plan (QAPP), that is provided as Appendix A, and 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.

#### 4.4 Materials Excavation and Load Out

Roux will oversee all invasive work and the excavation and load-out of all excavated material.

The Volunteer and its contractors are solely responsible for safe execution of all invasive and other work performed under this Plan. The selected contractor will be required to place a one-call dig safe notification prior to mobilization. In addition, existing private markout information, where available, will be consulted prior to excavation. Support of excavation will be provided, if necessary, based upon Site conditions and local regulations.

The presence of easements on the Site has been investigated. It has been determined that no risk or impediment to the planned work under this IRM Work Plan is posed by easements on the Site. The presence

of utilities within/adjacent to the proposed work area will be investigated prior to the work in order to determine if there are any impediments to the proposed scope of work. NYSDEC will be notified of any changes required to the scope of work based on the geophysical survey.

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

Loaded outbound trucks will be inspected by Roux and cleaned if necessary before leaving the Site.

Locations where vehicles enter or exit the Site shall be inspected daily for evidence of off-Site sediment tracking. Vehicles/trucks will either be staged on asphalt/concrete, where still existing, or in the event that the asphalt/concrete is removed, we will install and maintain a stabilized construction entrance at any vehicle egress points. Regardless, all egress points for truck and equipment transport from the Site will be clean of dirt and other materials derived from the Site during the implementation of the IRM. Cleaning of the adjacent streets will be performed as needed to maintain a clean condition with respect to Site-derived materials.

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

# 4.5 Materials Transport Off-Site

All transport of materials will be performed by licensed haulers in accordance with appropriate local, State, and Federal regulations, including 6 NYCRR Part 364. Haulers will be appropriately licensed and trucks properly placarded.

The proposed inbound truck route to the Site is:

 Take the Bruckner Expressway (I-278) to the Hunts Point Avenue exit. Merge into Bruckner Boulevard and turn left onto Tiffany Street. Turn left onto Spofford Avenue, entrance to the Site will be on the left.

The proposed outbound truck route from the Site is:

 Turn right out of the Site and go west on Spofford Avenue. Turn right onto Tiffany Street. Turn right onto Garrison Avenue and follow signs for the Bruckner Expressway northbound or southbound.

These are the most appropriate routes and take into account: (a) limiting transport through residential areas and past sensitive sites; (b) use of city mapped truck routes; (c) prohibiting off-Site queuing of trucks entering the facility; (d) limiting total distance to major highways; (e) promoting safety in access to highways; and (f) overall safety in transport. To the extent possible, trucks loaded with Site materials will travel to/from the Site using these approved truck routes. Tiffany Street, Bruckner Boulevard and Garrison Avenue are New York City Department of Transportation approved Local Truck Routes.

Trucks will avoid stopping and idling in the neighborhood outside the project Site, to the extent practicable. Queuing of trucks will be performed on-Site, when possible, in order to minimize off Site disturbance. Off-Site queuing will be minimized.

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

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

# 4.6 Materials Disposal Off-Site

All soil/fill/solid waste excavated and removed from the Site will be disposed of in accordance with regulatory requirements based on the levels of contamination found to be present in waste characterization samples collected.

The following documentation will be obtained and reported for each disposal location used in this project to demonstrate and document that the disposal of material derived from the Site conforms with all applicable laws: (1) a letter or facility-specific waste profile/application from Roux or the Volunteer to the receiving facility describing the material to be disposed and requesting formal written acceptance of the material. This letter/profile/application will state that material to be disposed is contaminated material generated at an environmental remediation Site in New York State. The letter will provide the project identity and the name and phone number of the Roux or the Volunteer. The letter will include as an attachment a summary of all chemical data for the material being transported (including Site Characterization data); and (2) a letter from all receiving facilities stating it is in receipt of the correspondence (above) and is approved to accept the material. These documents will be included in the CCR.

The CCR will include an accounting of the destination of all material removed from the Site during this IRM. This information will also be presented in a tabular form in the CCR.

A Bill of Lading system or equivalent will be used for off-Site movement of non-hazardous wastes and contaminated soils. This information will be reported in the CCR.

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

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

Waste characterization will be performed for off-Site disposal in a manner suitable to the receiving facility and in conformance with applicable permits. All data available for soil/material to be disposed at a given facility must be submitted to the disposal facility with suitable explanation prior to shipment and receipt.

#### 4.7 Materials Reuse On-Site

Unsaturated soil excavated during the geotechnical test pitting will be reused on-Site, as appropriate, provided no petroleum impacts are observed (staining, odors, PID response). "Reuse on-Site" means material that is excavated during the geotechnical test pitting does not leave the property and is put back in the excavation from which it came at a level at least one foot above the water table. Roux will confirm that materials proposed for reuse are segregated from other materials to be exported from the Site and that procedures defined for material reuse in this SoMP are followed. If petroleum impacts are observed, the soil will be sampled and disposed of offsite and offsite backfill will be used (Section 4.9).

Soil or fill excavated from the Site during the IRM will not be reused within a final cover soil layer or within landscaping berms.

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

# 4.8 Fluids Management

All liquids to be removed from the Site will be handled, transported and disposed in accordance with applicable laws and regulations. Any and all liquids observed in the USTs will be removed prior to temporary closure of the USTs. All liquids removed from the USTs will be sampled in a manner required by the receiving facility, and in compliance with applicable laws and regulations. Liquid waste manifests will be reported to NYSDEC in the CCR.

Dewatering is not expected to be necessary during the IRM activities.

#### 4.9 Backfill from Off-Site Sources

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

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

All imported soils will meet NYSDEC approved backfill or cover soil quality objectives for this Site. These NYSDEC approved backfill or cover soil quality objectives are the lower of the protection of groundwater or the protection of public health soil cleanup objectives for Restricted-Residential or higher use as set forth in Table 375-6.8(b) of 6 NYCRR Part 375. Non-compliant soils will not be imported onto the Site without prior approval by NYSDEC. Nothing in the approved IRM or its approval by NYSDEC should be construed as an approval for this purpose.

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

In accordance with DER-10, the following material may be imported, without chemical testing, to be used as backfill beneath pavement, buildings or as part of the final site cover, provided that it contains less than 10% by weight material which would pass through a size 80 sieve and consists of:

- gravel, rock or stone, consisting of virgin material from a NYSDEC permitted mine or quarry; or
- recycled concrete or brick from a NYSDEC registered construction and demolition debris processing facility if the material conforms to the requirements of Section 304 of the New York State Department of Transportation Standard Specifications Construction and Materials Volume 1 (2002).

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

#### 4.10 Stormwater Pollution Prevention

Applicable laws and regulations pertaining to stormwater pollution prevention will be addressed during the IRM activities. Erosion and sediment control measures (silt fences and/or barriers, and/or hay bale checks)

will be installed, as appropriate, 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 NYSDEC. All necessary repairs to erosion and sediment controls 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 anchor will be repaired immediately with appropriate backfill materials. Manufacturer's recommendations will be followed for replacing silt fencing damaged due to weathering.

# 4.11 Contingency Plan

This contingency plan is developed for the remedial construction to address the discovery of unknown structures or contaminated media during implementation of the IRM.

If underground tanks or other previously unidentified contaminant sources are found during on-Site remedial excavation, sampling will be performed on potentially contaminated source material and surrounding soils and reported to NYSDEC. Chemical analytical work will be for NYSDEC CP-51 Soil Cleanup Guidance Tables 2 and 3, Soil Cleanup Levels for Gas and Fuel Oil Contaminated Soil (CP-51) parameters. In areas where samples will be collected in close proximity to the location of a soil sample proposed in the RIWP, the full suite of parameters (TCL VOCs, TCL SVOCs, TAL metals, PCBs, pesticides and herbicides) will be analyzed. Analyses will not be otherwise limited without NYSDEC approval.

Identification of unknown or unexpected contaminated media identified by screening during invasive Site work will be promptly communicated by phone to NYSDEC's Project Manager. These findings will be also included in daily and periodic electronic media reports.

# 4.12 Community Air Monitoring Plan

In accordance with the Site Health and Safety Plan (HASP, Appendix B), CAMP monitoring will be implemented during all ground intrusive activities, which includes subgrade feature removal of the building demolition and geotechnical test pitting. The CAMP monitoring will be performed in accordance with the site-specific CAMP (Appendix C) and will include the real-time monitoring of VOCs and particulates at the upwind and downwind perimeter of the designated work area. Should monitoring results exceed action levels as noted in the CAMP, efforts will be made to mitigate/eliminate the exceedance.

#### 4.13 Odor, Dust, and Nuisance Control Plan

#### 4.13.1 Odor Control Plan

In addition to the CAMP monitoring, Roux will closely monitor the presence of odors emanating from either the excavation or the stockpile.

Odor controls 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 odor suppressants to cover exposed odorous soils. If nuisance odors develop and cannot otherwise be controlled, additional means to eliminate them 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, the source of odors will be identified and corrected. If necessary, to identify or correct a nuisance odor source, work will be temporarily halted and will not resume until such nuisance odors have been identified and abated. NYSDEC will be notified of all odor complaint events.

#### 4.13.2 Dust Control Plan

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

- Use of properly anchored tarps to cover stockpiles;
- Exercising extra care during dry and high-wind periods; and
- Dust suppression will be achieved through the use of water for wetting excavation areas. Water will be available on-Site at suitable supply and pressure for use in dust control.

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. NYSDEC will be notified of all dust complaint events.

#### 4.13.3 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 building demolition and during the remedial program, as necessary, to prevent nuisances.

# 5. REPORTING

# 5.1 Reporting during Site Activities

Daily reports to NYSDEC and NYSDOH containing photo-documentation will be submitted during the days when IRM activities take place. Daily reports will include a summary of all work completed that day; locations of work and quantities of material imported and exported from the Site; a summary of any and all complaints with relevant details (names, phone numbers); a summary of CAMP readings and an explanation of notable Site conditions etc. Monthly reports will be submitted to the NYSDEC and NYSDOH on the 10<sup>th</sup> day of the following month. Monthly reports will provide an update of progress made during the reporting period, a summary of the daily reports, any analytical data received during the reporting period and a summary of activities scheduled for the next reporting period.

# **5.2 Construction Completion Report (CCR)**

Detailed information regarding the IRM (e.g., general description of the construction activities, waste disposal documentation, backfill documentation, photos, etc.) will be included in the CCR to be prepared following receipt of all data, the DUSR and all final disposal documentation. The CCR will be submitted within 30 days after Phase II building demolition completion.

# 6. IRM IMPLEMENTATION SCHEDULE

This IRM Work Plan is anticipated to begin in July 2018. It is anticipated that the actual onsite duration of major remedial construction tasks will be completed as follows:

#### **UST Temporary Closure Activities - July 2018**

- Site Mobilization and Preparation ----- two days
- Render USTs Temporarily Out of Service/Closure ------ two days
- Geotechnical Test Pits ----- two days

Phase I of Building Demolition - September 2018

Phase II of Building Demolition – January 2019

Submittal of CCR - 30 days following completion of Building Demolition

# **TABLES**

- Summary of Volatile Organic Compounds Detected in Soil (April/May 2018)
- 2. Summary of Semivolatile Organic Compounds Detected in Soil (April/May 2018)
- 3. Summary of Metals Detected in Soil (April/May 2018)
- 4. Summary of Polychlorinated Biphenyls Detected in Soil (April/May 2018)
- 5. Summary of Pesticides and Herbicides Detected in Soil (April/May 2018)
- 6. Summary of Volatile Organic Compounds in Sub-Slab and Soil Vapor (May 2018)
- 7. Summary of Volatile Organic Compounds Detected in Soil (April 2017)
- 8. Summary of Semivolatile Organic Compounds Detected in Soil (April 2017)
- 9. Summary of Metals Detected in Soil (April 2017)
- 10. Summary of Polychlorinated Biphenyls Detected in Soil (April 2017)
- 11. Summary of Pesticides Detected in Soil (April 2017)
- 12. Summary of Volatile Organic Compounds in Sub-Slab and Soil Vapor (April 2017)

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	Notes Utilized Throughout Tables							
Soil Tables								
J -	Estimated value							
U -	Indicates that the compound was analyzed for but not detected							
P -	The RPD between the results for the two columns exceeds the method-specified criteria							
ļ <b>-</b>	The lower value for the two columns has been reported due to obvious interference							
RPD -	Relative Percent Difference							
T -	Indicates that a quality control parameter has exceeded laboratory limits							
ft bls -	Feet below land surface							
FD -	Duplicate sample							
NA -	Compound was not analyzed for by laboratory							
mg/kg -	Milligrams per kilogram							
NYSDEC -	New York State Department of Environmental Conservation							
SCO -	Soil Cleanup Objectives							
	No SCO available							
	that parameter was detected above the NYSDEC Part 375 Unrestricted Use SCO							
	ites that parameter was detected above the NYSDEC Part 375 Restricted Residential SCO							
Red data indicates	that parameter was detected above the NYSDEC Part 375 Protection of Groundwater SCO							
Soil Vapor								
J -	Estimated value							
U -	Indicates that the compound was analyzed for but not detected							
ug/m3 -	Micrograms per cubic meter							
Bold data indicates	that parameter was detected							



Table 1. Summary of Volatile Organic Compounds in Soil, 1221 Spofford Avenue, Bronx, New York (April/May 2018)

NYSDEC Part 375	Sample Designation:						RXMW-10	RXMW-11	RXMW-11
NYSDEC Part 375	,								04/27/2018
Normal or Field Duplicate:   N					11 - 13				
Parameter	· · · · · · · · · · · · · · · · · · ·						N	N	N
Parameter		NYSDEC Part 375	NYSDEC Part 375	NYSDEC Part 375					
1,1,1-Trichloroethane (TCA)         0.68         100         0.68         MG/KG         0.00094 U         0.0011 U         0.00088 U         0.00097           1,1,2-Tetrachioroethane            MG/KG         0.00094 U         0.0011 U         0.00088 U         0.00097           1,1,2-Trichloroethane            MG/KG         0.00094 U         0.0011 U         0.00088 U         0.00097           1,1-Dichloroethane            MG/KG         0.00094 U         0.0011 U         0.00088 U         0.00097           1,1-Dichloroethane         0.27         26         0.27         MG/KG         0.00094 U         0.0011 U         0.00088 U         0.00097           1,2-3-Trichlorobenzene            MG/KG         0.00094 U         0.0011 U         0.00088 U         0.00097           1,2-3-Trichlorobenzene             MG/KG         0.00094 U         0.0011 U         0.00088 U         0.00097           1,2-Dichrobenzene             MG/KG         0.00094 U         0.0011 U         0.00088 U         0.00097           1,2-Di		Unrestricted Use	Restricted						
1,1,2,2-Tetrachloroethane			Residential SCO	Groundwater SCO					
1,12-Trichloro-1,2,2-Trifluoroethane	, ,	0.68	100	0.68	MG/KG	0.00094 U	0.0011 U	0.00088 U	0.00097 U
1,12-Trichloroethane									0.00097 U
1,1-Dichloroethane	1,1,2-Trichloro-1,2,2-Trifluoroethane						0.0011 U	0.00088 U	0.00097 U
1,1-Dichloroethene	1,1,2-Trichloroethane						0.0011 U	0.00088 U	0.00097 U
1,2,3-Trichlorobenzene	1,1-Dichloroethane	0.27	26	0.27	MG/KG	0.00094 U	0.0011 U	0.00088 U	0.00097 U
1,2,4-Trichlorobenzene            MG/KG         0.00094 U         0.0011 U         0.00098 U         0.00097           1,2-Dibromo-3-Chloropropane            MG/KG         0.00094 U         0.0011 U         0.00088 U         0.00097           1,2-Dibromoethane (Ethylene Dibromide)            MG/KG         0.00094 U         0.0011 U         0.00088 U         0.00097           1,2-Dichlorobenzene         1.1         100         1.1         MG/KG         0.00094 U         0.0011 U         0.00088 U         0.00097           1,2-Dichlorobenzene         0.02         3.1         0.02         MG/KG         0.0094 U         0.0011 U         0.00088 U         0.00097           1,2-Dichlorobenzene         2.4         49         2.4         MG/KG         0.0094 U         0.011 U         0.00088 U         0.00097           1,4-Dichlorobenzene         1.8         13         1.8         MG/KG         0.0094 U         0.011 U         0.00088 U         0.00097           1,4-Dioxane (P-Dioxane)         0.1         13         0.1         MG/KG         0.0094 U         0.0011 U         0.00088 U         0.0097           2-Hexanone	1,1-Dichloroethene	0.33	100	0.33	MG/KG	0.00094 U	0.0011 U	0.00088 U	0.00097 U
1,2-Dibromo-3-Chloropropane            MG/KG         0.00094 U         0.0011 U         0.00098 U         0.00097           1,2-Dibromoethane (Ethylene Dibromide)            MG/KG         0.00094 U         0.0011 U         0.00088 U         0.00097           1,2-Dichlorobenzene         1.1         100         1.1         MG/KG         0.00094 U         0.0011 U         0.00088 U         0.00097           1,2-Dichlorobenzene         0.02         3.1         0.02         MG/KG         0.00094 U         0.0011 U         0.00088 U         0.00097           1,2-Dichlorobenzene            MG/KG         0.00094 U         0.0011 U         0.00088 U         0.00097           1,3-Dichlorobenzene         2.4         49         2.4         MG/KG         0.0094 U         0.0011 U         0.00088 U         0.00097           1,4-Dicklorobenzene         1.8         13         1.8         MG/KG         0.0094 U         0.0011 U         0.00088 U         0.00097           1,4-Dicklorobenzene         1.8         13         0.1         MG/KG         0.0094 U         0.0011 U         0.00088 U         0.00097           2-Hexanne <td>1,2,3-Trichlorobenzene</td> <td></td> <td></td> <td></td> <td>MG/KG</td> <td>0.00094 U</td> <td>0.0011 U</td> <td>0.00088 U</td> <td>0.00097 U</td>	1,2,3-Trichlorobenzene				MG/KG	0.00094 U	0.0011 U	0.00088 U	0.00097 U
1,2-Dibromoethane (Ethylene Dibromide)           MG/KG         0.00094 U         0.0011 U         0.00098 U         0.00097           1,2-Dichlorobenzene         1.1         100         1.1         MG/KG         0.00094 U         0.0011 U         0.00088 U         0.00097           1,2-Dichlorobenzene         0.02         3.1         0.02         MG/KG         0.00094 U         0.0011 U         0.00088 U         0.00097           1,2-Dichlorobenzene            MG/KG         0.00094 U         0.0011 U         0.00088 U         0.00097           1,3-Dichlorobenzene         2.4         49         2.4         MG/KG         0.00094 U         0.0011 U         0.00088 U         0.00097           1,4-Dichlorobenzene         1.8         13         1.8         MG/KG         0.0094 U         0.0011 U         0.00088 U         0.00097           1,4-Dichlorobenzene         1.8         13         1.8         MG/KG         0.0094 U         0.0011 U         0.00088 U         0.00097           1,4-Dichlorobenzene         1.8         13         1.8         MG/KG         0.0094 U         0.0011 U         0.00088 U         0.00097           1,4-Dichlorobenzene         1.1         1	1,2,4-Trichlorobenzene				MG/KG	0.00094 U	0.0011 U	0.00088 U	0.00097 U
1,2-Dichlorobenzene         1.1         100         1.1         MG/KG         0.0094 U         0.0011 U         0.00088 U         0.00097           1,2-Dichloroethane         0.02         3.1         0.02         MG/KG         0.00094 U         0.0011 U         0.00088 U         0.00097           1,2-Dichloropropane            MG/KG         0.00094 U         0.0011 U         0.00088 U         0.00097           1,3-Dichlorobenzene         1.8         13         1.8         MG/KG         0.0094 U         0.0011 U         0.00088 U         0.00097           1,4-Dichlorobenzene         1.8         13         1.8         MG/KG         0.0094 U         0.0011 U         0.00088 U         0.00097           1,4-Dicklorobenzene         1.8         13         1.8         MG/KG         0.0094 U         0.0011 U         0.00088 U         0.00097           1,4-Dicklorobenzene         1.8         13         1.8         MG/KG         0.0094 U         0.0011 U         0.00088 U         0.00097           1,4-Dicklorobenzene         0.1         13         0.1         MG/KG         0.0047 U         0.0057 U         0.014 U         0.0044 U         0.0044 U         0.0044 U         0.0044 U         0.	1,2-Dibromo-3-Chloropropane				MG/KG	0.00094 U	0.0011 U	0.00088 U	0.00097 U
1,2-Dichloroethane         0.02         3.1         0.02         MG/KG         0.0094 U         0.0011 U         0.00088 U         0.00097           1,2-Dichloropropane             MG/KG         0.00094 U         0.0011 U         0.00088 U         0.00097           1,3-Dichlorobenzene         2.4         49         2.4         MG/KG         0.00094 U         0.0011 U         0.00088 U         0.00097           1,4-Dichlorobenzene         1.8         13         1.8         MG/KG         0.00094 U         0.0011 U         0.00088 U         0.00097           1,4-Dichlorobenzene         0.1         13         0.1         MG/KG         0.00094 U         0.0011 U         0.00088 U         0.00097           2-Hexanone            MG/KG         0.0047 U         0.0057 U         0.0044 U	1,2-Dibromoethane (Ethylene Dibromide)				MG/KG	0.00094 U	0.0011 U	0.00088 U	0.00097 U
1,2-Dichloropropane	1,2-Dichlorobenzene	1.1	100	1.1	MG/KG	0.00094 U	0.0011 U	0.00088 U	0.00097 U
1,3-Dichlorobenzene         2.4         49         2.4         MG/KG         0.00094 U         0.0011 U         0.00088 U         0.00097           1,4-Dichlorobenzene         1.8         13         1.8         MG/KG         0.00094 U         0.0011 U         0.00088 U         0.00097           1,4-Dioxane (P-Dioxane)         0.1         13         0.1         MG/KG         0.019 U         0.023 U         0.018 U         0.019 U           2-Hexanone             MG/KG         0.0047 U         0.0057 U         0.0044 U         0.0049 U           Acetone         0.05         100         0.05         MG/KG         0.0047 U         0.0057 U         0.0044 U         0.0049 U           Acetone         0.05         100         0.05         MG/KG         0.00094 U         0.0011 U         0.00088 U         0.00097           Bromchloromethane             MG/KG         0.00094 U         0.0011 U         0.00088 U         0.00097           Bromoform             MG/KG         0.00094 U         0.0011 U         0.00088 U         0.00097           Bromomethane	1,2-Dichloroethane	0.02	3.1	0.02	MG/KG	0.00094 U	0.0011 U	0.00088 U	0.00097 U
1,4-Dichlorobenzene         1.8         13         1.8         MG/KG         0.00094 U         0.0011 U         0.00088 U         0.00097           1,4-Dioxane (P-Dioxane)         0.1         13         0.1         MG/KG         0.019 U         0.023 U         0.018 U         0.019 U           2-Hexanone             MG/KG         0.0047 U         0.0057 U         0.0044 U         0.0049 U           Acetone         0.05         100         0.05         MG/KG         0.0047 U         0.0057 U         0.0044 U         0.0064 U         0.0064 U         0.0057 U         0.0044 U         0.0064 U         0.0064 U         0.0067 U         0.0057 U         0.0044 U         0.0064 U         0.0011 U         0.0088 U         0.00097 U         0.0011 U         0.00088 U         0.00097 U         0.0011 U	1,2-Dichloropropane				MG/KG	0.00094 U	0.0011 U	0.00088 U	0.00097 U
1,4-Dioxane (P-Dioxane)         0.1         13         0.1         MG/KG         0.019 U         0.023 U         0.018 U         0.019 U           2-Hexanone             MG/KG         0.0047 U         0.0057 U         0.0044 U         0.0049 U           Acetone         0.05         100         0.05         MG/KG         0.0047 U         0.0057 U         0.0044 U         0.0064           Benzene         0.06         4.8         0.06         MG/KG         0.0094 U         0.0011 U         0.00088 U         0.00097           Bromochloromethane            MG/KG         0.00094 U         0.0011 U         0.00088 U         0.00097           Bromoform            MG/KG         0.00094 U         0.0011 U         0.00088 U         0.00097           Bromomethane            MG/KG         0.00094 U         0.0011 U         0.00088 U         0.00097           Carbon Disulfide            MG/KG         0.00094 U         0.0011 U         0.00088 U         0.00097           Chlorobenzene         1.1         100         1.1         MG/KG	1,3-Dichlorobenzene	2.4	49	2.4	MG/KG	0.00094 U	0.0011 U	0.00088 U	0.00097 U
2-Hexanone            MG/KG         0.0047 U         0.0044 U         0.0049 U           Acetone         0.05         100         0.05         MG/KG         0.0047 U         0.0057 U         0.0044 U         0.0064           Benzene         0.06         4.8         0.06         MG/KG         0.0094 U         0.0011 U         0.00088 U         0.0097           Bromochloromethane            MG/KG         0.0094 U         0.0011 U         0.00088 U         0.0097           Bromoform            MG/KG         0.0094 U         0.0011 U         0.00088 U         0.0097           Bromomethane            MG/KG         0.0094 U         0.0011 U         0.00088 U         0.0097           Bromomethane            MG/KG         0.0094 U         0.0011 U         0.00088 U         0.0097           Carbon Disulfide            MG/KG         0.0094 U         0.0011 U         0.00088 U         0.0012           Carbon Tetrachloride         0.76         2.4         0.76         MG/KG         0.00094 U         0.0011 U <td>1,4-Dichlorobenzene</td> <td>1.8</td> <td>13</td> <td>1.8</td> <td>MG/KG</td> <td>0.00094 U</td> <td>0.0011 U</td> <td>0.00088 U</td> <td>0.00097 U</td>	1,4-Dichlorobenzene	1.8	13	1.8	MG/KG	0.00094 U	0.0011 U	0.00088 U	0.00097 U
Acetone         0.05         100         0.05         MG/KG         0.0047 U         0.0057 U         0.0044 U         0.0064           Benzene         0.06         4.8         0.06         MG/KG         0.00094 U         0.0011 U         0.00088 U         0.00097           Bromochloromethane            MG/KG         0.00094 U         0.0011 U         0.00088 U         0.00097           Bromoform           MG/KG         0.00094 U         0.0011 U         0.00088 U         0.00097           Bromomethane           MG/KG         0.00094 U         0.0011 U         0.00088 U         0.00097           Bromomethane           MG/KG         0.00094 U         0.0011 U         0.00088 U         0.00097           Carbon Disulfide            MG/KG         0.00094 U         0.0011 U         0.00088 U         0.0012           Carbon Tetrachloride         0.76         2.4         0.76         MG/KG         0.00094 U         0.0011 U         0.00088 U         0.00097           Chlorobenzene         1.1         100         1.1         MG/KG         0.00094 U         0.0011 U         0	1,4-Dioxane (P-Dioxane)	0.1	13	0.1	MG/KG	0.019 U	0.023 U	0.018 U	0.019 U
Benzene         0.06         4.8         0.06         MG/KG         0.00094 U         0.0011 U         0.00088 U         0.00097           Bromochloromethane             MG/KG         0.00094 U         0.0011 U         0.00088 U         0.00097           Bromoform            MG/KG         0.00094 U         0.0011 U         0.00088 U         0.00097           Bromomethane            MG/KG         0.00094 U         0.0011 U         0.00088 U         0.00097           Carbon Disulfide            MG/KG         0.00094 U         0.0011 U         0.00088 U         0.0012           Carbon Tetrachloride         0.76         2.4         0.76         MG/KG         0.00094 U         0.0011 U         0.00088 U         0.00097           Chlorobenzene         1.1         100         1.1         MG/KG         0.00094 U         0.0011 U         0.00088 U         0.00097           Chloroform         0.37         49         0.37         MG/KG         0.00094 U         0.0011 U         0.00088 U         0.00097           Chloromethane	2-Hexanone				MG/KG	0.0047 U	0.0057 U	0.0044 U	0.0049 U
Bromochloromethane            MG/KG         0.00094 U         0.0011 U         0.00088 U         0.00097           Bromodichloromethane            MG/KG         0.00094 U         0.0011 U         0.00088 U         0.00097           Bromoform            MG/KG         0.00094 U         0.0011 U         0.00088 U         0.00097           Bromomethane            MG/KG         0.00094 U         0.0011 U         0.00088 U         0.00097           Carbon Disulfide            MG/KG         0.00094 U         0.0011 U         0.00088 U         0.0012           Carbon Tetrachloride         0.76         2.4         0.76         MG/KG         0.00094 U         0.0011 U         0.00088 U         0.00097           Chlorobenzene         1.1         100         1.1         MG/KG         0.00094 U         0.0011 U         0.00088 U         0.00097           Chloroform         0.37         49         0.37         MG/KG         0.00094 U         0.0011 U         0.00088 U         0.00097           Chloromethane            MG/	Acetone	0.05	100	0.05	MG/KG	0.0047 U	0.0057 U	0.0044 U	0.0064
Bromodichloromethane            MG/KG         0.00094 U         0.0011 U         0.00088 U         0.00097           Bromoform             MG/KG         0.00094 U         0.0011 U         0.00088 U         0.00097           Bromomethane            MG/KG         0.00094 U         0.0011 U         0.00088 U         0.00097           Carbon Disulfide            MG/KG         0.00094 U         0.0011 U         0.00088 U         0.0012           Carbon Tetrachloride         0.76         2.4         0.76         MG/KG         0.00094 U         0.0011 U         0.00088 U         0.00097           Chlorobenzene         1.1         100         1.1         MG/KG         0.00094 U         0.0011 U         0.00088 U         0.00097           Chloroform         0.37         49         0.37         MG/KG         0.00094 U         0.0011 U         0.00088 U         0.00097           Chloromethane            MG/KG         0.00094 U         0.0011 U         0.00088 U         0.00097	Benzene	0.06	4.8	0.06	MG/KG	0.00094 U	0.0011 U	0.00088 U	0.00097 U
Bromoform            MG/KG         0.00094 U         0.0011 U         0.00088 U         0.00097           Bromomethane            MG/KG         0.00094 U         0.0011 U         0.00088 U         0.00097           Carbon Disulfide            MG/KG         0.00094 U         0.0011 U         0.00088 U         0.0012           Carbon Tetrachloride         0.76         2.4         0.76         MG/KG         0.00094 U         0.0011 U         0.00088 U         0.00097           Chlorobenzene         1.1         100         1.1         MG/KG         0.00094 U         0.0011 U         0.00088 U         0.00097           Chloroform         0.37         49         0.37         MG/KG         0.00094 U         0.0011 U         0.00088 U         0.00097           Chloromethane            MG/KG         0.00094 U         0.0011 U         0.00088 U         0.00097	Bromochloromethane				MG/KG	0.00094 U	0.0011 U	0.00088 U	0.00097 U
Bromomethane            MG/KG         0.00094 U         0.0011 U         0.00088 U         0.00097           Carbon Disulfide            MG/KG         0.00094 U         0.0011 U         0.00088 U         0.0012           Carbon Tetrachloride         0.76         2.4         0.76         MG/KG         0.00094 U         0.0011 U         0.00088 U         0.00097           Chlorobenzene         1.1         100         1.1         MG/KG         0.00094 U         0.0011 U         0.00088 U         0.00097           Chloroethane           MG/KG         0.00094 U         0.0011 U         0.00088 U         0.00097           Chloromethane           MG/KG         0.00094 U         0.0011 U         0.00088 U         0.00097	Bromodichloromethane				MG/KG	0.00094 U	0.0011 U	0.00088 U	0.00097 U
Carbon Disulfide            MG/KG         0.00094 U         0.0011 U         0.00088 U         0.0012           Carbon Tetrachloride         0.76         2.4         0.76         MG/KG         0.00094 U         0.0011 U         0.00088 U         0.00097           Chlorobenzene         1.1         100         1.1         MG/KG         0.00094 U         0.0011 U         0.00088 U         0.00097           Chloroethane            MG/KG         0.00094 U         0.0011 U         0.00088 U         0.00097           Chloromethane           MG/KG         0.00094 U         0.0011 U         0.00088 U         0.00097	Bromoform				MG/KG	0.00094 U	0.0011 U	0.00088 U	0.00097 U
Carbon Tetrachloride         0.76         2.4         0.76         MG/KG         0.00094 U         0.0011 U         0.00088 U         0.00097           Chlorobenzene         1.1         100         1.1         MG/KG         0.00094 U         0.0011 U         0.00088 U         0.00097           Chloroethane            MG/KG         0.00094 U         0.0011 U         0.00088 U         0.00097           Chloroform         0.37         49         0.37         MG/KG         0.00094 U         0.0011 U         0.00088 U         0.00097           Chloromethane           MG/KG         0.00094 U         0.0011 U         0.00088 U         0.00097	Bromomethane				MG/KG	0.00094 U	0.0011 U	0.00088 U	0.00097 U
Chlorobenzene         1.1         100         1.1         MG/KG         0.00094 U         0.0011 U         0.00088 U         0.00097           Chloroethane            MG/KG         0.00094 U         0.0011 U         0.00088 U         0.00097           Chloroform         0.37         49         0.37         MG/KG         0.00094 U         0.0011 U         0.00088 U         0.00097           Chloromethane           MG/KG         0.00094 U         0.0011 U         0.00088 U         0.00097	Carbon Disulfide				MG/KG	0.00094 U	0.0011 U	0.00088 U	0.0012
Chloroethane             MG/KG         0.00094 U         0.0011 U         0.00088 U         0.00097           Chloroform         0.37         49         0.37         MG/KG         0.00094 U         0.0011 U         0.00088 U         0.00097           Chloromethane           MG/KG         0.00094 U         0.0011 U         0.00088 U         0.00097	Carbon Tetrachloride	0.76	2.4	0.76	MG/KG	0.00094 U	0.0011 U	0.00088 U	0.00097 U
Chloroform         0.37         49         0.37         MG/KG         0.00094 U         0.0011 U         0.00088 U         0.00097           Chloromethane            MG/KG         0.00094 U         0.0011 U         0.00088 U         0.00097	Chlorobenzene	1.1	100	1.1	MG/KG	0.00094 U	0.0011 U	0.00088 U	0.00097 U
Chloromethane MG/KG 0.00094 U 0.0011 U 0.00088 U 0.00097	Chloroethane				MG/KG	0.00094 U	0.0011 U	0.00088 U	0.00097 U
	Chloroform	0.37	49	0.37	MG/KG	0.00094 U	0.0011 U	0.00088 U	0.00097 U
Cis-1,2-Dichloroethylene 0.25 100 0.25 MG/KG 0.00094 U 0.0011 U 0.00088 U 0.00097	Chloromethane				MG/KG	0.00094 U	0.0011 U	0.00088 U	0.00097 U
	Cis-1,2-Dichloroethylene	0.25	100	0.25	MG/KG	0.00094 U	0.0011 U	0.00088 U	0.00097 U



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Table 1. Summary of Volatile Organic Compounds in Soil, 1221 Spofford Avenue, Bronx, New York (April/May 2018)

Sample Designation:					RXMW-10	RXMW-10	RXMW-11	RXMW-11
	04/23/2018	04/23/2018	04/23/2018	04/27/2018				
	0 - 2	2 - 4	0 - 2	11 - 13				
Sample Depth (ft bls):  Normal or Field Duplicate:						N	N	N
	NYSDEC Part 375	NYSDEC Part 375	NYSDEC Part 375					
	Unrestricted Use	Restricted	Protection of					
Parameter	SCO	Residential SCO	Groundwater SCO	Unit				
Cis-1,3-Dichloropropene				MG/KG	0.00094 U	0.0011 U	0.00088 U	0.00097 U
Cyclohexane				MG/KG	0.00094 U	0.0011 U	0.00088 U	0.00097 U
Dibromochloromethane				MG/KG	0.00094 U	0.0011 U	0.00088 U	0.00097 U
Dichlorodifluoromethane				MG/KG	0.00094 UT	0.0011 UT	0.00088 UT	0.00097 UT
Ethylbenzene	1	41	1	MG/KG	0.00094 U	0.0011 U	0.00088 U	0.00097 U
Isopropylbenzene (Cumene)				MG/KG	0.00094 U	0.0011 U	0.00088 U	0.00097 U
m,p-Xylene				MG/KG	0.00094 U	0.0011 U	0.00088 U	0.00097 U
Methyl Acetate				MG/KG	0.0047 U	0.0057 U	0.0044 U	0.0049 U
Methyl Ethyl Ketone (2-Butanone)	0.12	100	0.12	MG/KG	0.0047 U	0.0057 U	0.0044 U	0.0012 J
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone				MG/KG	0.0047 U	0.0057 U	0.0044 U	0.0049 U
Methylcyclohexane				MG/KG	0.00094 U	0.0011 U	0.00088 U	0.00097 U
Methylene Chloride	0.05	100	0.05	MG/KG	0.0002 BJ	0.0011 U	0.00088 U	0.00097 U
O-Xylene (1,2-Dimethylbenzene)				MG/KG	0.00094 U	0.0011 U	0.00088 U	0.00097 U
Styrene				MG/KG	0.00094 U	0.0011 U	0.00088 U	0.00097 U
Tert-Butyl Methyl Ether	0.93	100	0.93	MG/KG	0.00094 U	0.0011 U	0.00088 U	0.00097 U
Tetrachloroethylene (PCE)	1.3	19	1.3	MG/KG	0.00094 U	0.0011 U	0.00088 U	0.00097 U
Toluene	0.7	100	0.7	MG/KG	0.00094 U	0.0011 U	0.00088 U	0.00097 U
Trans-1,2-Dichloroethene	0.19	100	0.19	MG/KG	0.00094 U	0.0011 U	0.00088 U	0.00097 U
Trans-1,3-Dichloropropene				MG/KG	0.00094 U	0.0011 U	0.00088 U	0.00097 U
Trichloroethylene (TCE)	0.47	21	0.47	MG/KG	0.00094 U	0.0011 U	0.00088 U	0.00097 U
Trichlorofluoromethane				MG/KG	0.00094 U	0.0011 U	0.00088 U	0.00097 U
Vinyl Chloride	0.02	0.9	0.02	MG/KG	0.00094 U	0.0011 U	0.00088 U	0.00097 U



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Table 1. Summary of Volatile Organic Compounds in Soil, 1221 Spofford Avenue, Bronx, New York (April/May 2018)

Sample Designation:						RXMW-4	RXMW-5	RXMW-5
Sample Date:						05/01/2018	04/26/2018	05/02/2018
	0 - 2	13 - 15	0 - 2	12 - 14				
	Sample Depth (ft bls):  Normal or Field Duplicate:				N	N	N	N
	NYSDEC Part 375	NYSDEC Part 375	NYSDEC Part 375					
	Unrestricted Use	Restricted	Protection of					
Parameter	SCO	Residential SCO	Groundwater SCO	Unit				
1,1,1-Trichloroethane (TCA)	0.68	100	0.68	MG/KG	0.00099 U	0.0012 U	0.0011 U	0.0012 U
1,1,2,2-Tetrachloroethane				MG/KG	0.00099 U	0.0012 U	0.0011 U	0.0012 U
1,1,2-Trichloro-1,2,2-Trifluoroethane				MG/KG	0.00099 U	0.0012 U	0.0011 U	0.0012 U
1,1,2-Trichloroethane				MG/KG	0.00099 U	0.0012 U	0.0011 U	0.0012 U
1,1-Dichloroethane	0.27	26	0.27	MG/KG	0.00099 U	0.0012 U	0.0011 U	0.0012 U
1,1-Dichloroethene	0.33	100	0.33	MG/KG	0.00099 U	0.0012 U	0.0011 U	0.0012 U
1,2,3-Trichlorobenzene				MG/KG	0.00099 U	0.0012 U	0.0011 U	0.0012 U
1,2,4-Trichlorobenzene				MG/KG	0.00099 U	0.0012 U	0.0011 U	0.0012 U
1,2-Dibromo-3-Chloropropane				MG/KG	0.00099 U	0.0012 U	0.0011 U	0.0012 U
1,2-Dibromoethane (Ethylene Dibromide)				MG/KG	0.00099 U	0.0012 U	0.0011 U	0.0012 U
1,2-Dichlorobenzene	1.1	100	1.1	MG/KG	0.00099 U	0.0012 U	0.0011 U	0.0012 U
1,2-Dichloroethane	0.02	3.1	0.02	MG/KG	0.00099 U	0.0012 U	0.0011 U	0.0012 U
1,2-Dichloropropane				MG/KG	0.00099 U	0.0012 U	0.0011 U	0.0012 U
1,3-Dichlorobenzene	2.4	49	2.4	MG/KG	0.00099 U	0.0012 U	0.0011 U	0.0012 U
1,4-Dichlorobenzene	1.8	13	1.8	MG/KG	0.00099 U	0.0012 U	0.0011 U	0.0012 U
1,4-Dioxane (P-Dioxane)	0.1	13	0.1	MG/KG	0.02 U	0.023 U	0.021 U	0.024 U
2-Hexanone				MG/KG	0.0049 U	0.0058 U	0.0053 U	0.006 U
Acetone	0.05	100	0.05	MG/KG	0.0049 U	0.0044 J	0.0053 U	0.006 U
Benzene	0.06	4.8	0.06	MG/KG	0.00099 U	0.0012 U	0.0011 U	0.0012 U
Bromochloromethane				MG/KG	0.00099 U	0.0012 U	0.0011 U	0.0012 U
Bromodichloromethane				MG/KG	0.00099 U	0.0012 U	0.0011 U	0.0012 U
Bromoform				MG/KG	0.00099 U	0.0012 U	0.0011 U	0.0012 U
Bromomethane				MG/KG	0.00099 U	0.0012 U	0.0011 U	0.0012 U
Carbon Disulfide				MG/KG	0.00099 U	0.0012 U	0.0011 U	0.0012 U
Carbon Tetrachloride	0.76	2.4	0.76	MG/KG	0.00099 U	0.0012 U	0.0011 U	0.0012 U
Chlorobenzene	1.1	100	1.1	MG/KG	0.00099 U	0.0012 U	0.0011 U	0.0012 U
Chloroethane				MG/KG	0.00099 U	0.0012 U	0.0011 U	0.0012 U
Chloroform	0.37	49	0.37	MG/KG	0.00099 U	0.0012 U	0.0011 U	0.0012 U
Chloromethane				MG/KG	0.00099 U	0.0012 U	0.0011 U	0.0012 U
Cis-1,2-Dichloroethylene	0.25	100	0.25	MG/KG	0.00099 U	0.0012 U	0.0011 U	0.0012 U



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Table 1. Summary of Volatile Organic Compounds in Soil, 1221 Spofford Avenue, Bronx, New York (April/May 2018)

Sample Designation:					RXMW-4	RXMW-4	RXMW-5	RXMW-5
Sample Date: 0						05/01/2018	04/26/2018	05/02/2018
	0 - 2	13 - 15	0 - 2	12 - 14				
	Normal or Field Duplicate:							N
	NYSDEC Part 375	NYSDEC Part 375	NYSDEC Part 375					
	Unrestricted Use	Restricted	Protection of					
Parameter	SCO	Residential SCO	Groundwater SCO	Unit				
Cis-1,3-Dichloropropene				MG/KG	0.00099 U	0.0012 U	0.0011 U	0.0012 U
Cyclohexane				MG/KG	0.00099 U	0.0012 U	0.0011 U	0.0012 U
Dibromochloromethane				MG/KG	0.00099 U	0.0012 U	0.0011 U	0.0012 U
Dichlorodifluoromethane				MG/KG	0.00099 UT	0.0012 U	0.0011 UT	0.0012 UT
Ethylbenzene	1	41	1	MG/KG	0.00099 U	0.0012 U	0.0011 U	0.0012 U
Isopropylbenzene (Cumene)				MG/KG	0.00099 U	0.0012 U	0.0011 U	0.0012 U
m,p-Xylene				MG/KG	0.00099 U	0.0012 U	0.0011 U	0.0012 U
Methyl Acetate				MG/KG	0.0049 U	0.0058 U	0.0053 U	0.006 U
Methyl Ethyl Ketone (2-Butanone)	0.12	100	0.12	MG/KG	0.0049 U	0.0058 U	0.0053 U	0.006 U
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)				MG/KG	0.0049 U	0.0058 U	0.0053 U	0.006 U
Methylcyclohexane				MG/KG	0.00099 U	0.0012 U	0.0011 U	0.0012 U
Methylene Chloride	0.05	100	0.05	MG/KG	0.00099 U	0.0012 U	0.00019 BJ	0.00031 BJ
O-Xylene (1,2-Dimethylbenzene)				MG/KG	0.00099 U	0.0012 U	0.0011 U	0.0012 U
Styrene				MG/KG	0.00099 U	0.0012 U	0.0011 U	0.0012 U
Tert-Butyl Methyl Ether	0.93	100	0.93	MG/KG	0.00099 U	0.0012 U	0.0011 U	0.0012 U
Tetrachloroethylene (PCE)	1.3	19	1.3	MG/KG	0.00099 U	0.0012 U	0.00094 J	0.0012 U
Toluene	0.7	100	0.7	MG/KG	0.00099 U	0.0012 U	0.0011 U	0.0012 U
Trans-1,2-Dichloroethene	0.19	100	0.19	MG/KG	0.00099 U	0.0012 U	0.0011 U	0.0012 U
Trans-1,3-Dichloropropene				MG/KG	0.00099 U	0.0012 U	0.0011 U	0.0012 U
Trichloroethylene (TCE)	0.47	21	0.47	MG/KG	0.00099 U	0.0012 U	0.0011 U	0.0012 U
Trichlorofluoromethane				MG/KG	0.00099 U	0.0012 U	0.0011 U	0.0012 U
Vinyl Chloride	0.02	0.9	0.02	MG/KG	0.00099 U	0.0012 U	0.0011 U	0.0012 U



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Table 1. Summary of Volatile Organic Compounds in Soil, 1221 Spofford Avenue, Bronx, New York (April/May 2018)

Sample Designation						RXMW-6	RXMW-9	RXMW-9
Sample Date:						04/27/2018	04/23/2018	04/25/2018
	0 - 2	9 - 11	0 - 2	5 - 7				
	Sample Depth (ft bls):  Normal or Field Duplicate:				N	N	N	N
	NYSDEC Part 375	NYSDEC Part 375	NYSDEC Part 375					
	Unrestricted Use	Restricted	Protection of					
Parameter	SCO	Residential SCO	Groundwater SCO	Unit				
1,1,1-Trichloroethane (TCA)	0.68	100	0.68	MG/KG	0.001 U	0.0011 U	0.00092 U	0.00094 U
1,1,2,2-Tetrachloroethane				MG/KG	0.001 U	0.0011 U	0.00092 U	0.00094 U
1,1,2-Trichloro-1,2,2-Trifluoroethane				MG/KG	0.001 U	0.0011 U	0.00092 U	0.00094 U
1,1,2-Trichloroethane				MG/KG	0.001 U	0.0011 U	0.00092 U	0.00094 U
1,1-Dichloroethane	0.27	26	0.27	MG/KG	0.001 U	0.0011 U	0.00092 U	0.00094 U
1,1-Dichloroethene	0.33	100	0.33	MG/KG	0.001 U	0.0011 U	0.00092 U	0.00094 U
1,2,3-Trichlorobenzene				MG/KG	0.001 U	0.0011 U	0.00092 U	0.00094 U
1,2,4-Trichlorobenzene				MG/KG	0.001 U	0.0011 U	0.00092 U	0.00094 U
1,2-Dibromo-3-Chloropropane				MG/KG	0.001 U	0.0011 U	0.00092 U	0.00094 U
1,2-Dibromoethane (Ethylene Dibromide)				MG/KG	0.001 U	0.0011 U	0.00092 U	0.00094 U
1,2-Dichlorobenzene	1.1	100	1.1	MG/KG	0.001 U	0.0011 U	0.00092 U	0.00094 U
1,2-Dichloroethane	0.02	3.1	0.02	MG/KG	0.001 U	0.0011 U	0.00092 U	0.00094 U
1,2-Dichloropropane				MG/KG	0.001 U	0.0011 U	0.00092 U	0.00094 U
1,3-Dichlorobenzene	2.4	49	2.4	MG/KG	0.001 U	0.0011 U	0.00092 U	0.00094 U
1,4-Dichlorobenzene	1.8	13	1.8	MG/KG	0.001 U	0.0011 U	0.00092 U	0.00094 U
1,4-Dioxane (P-Dioxane)	0.1	13	0.1	MG/KG	0.021 U	0.022 U	0.018 U	0.019 U
2-Hexanone				MG/KG	0.0051 U	0.0055 U	0.0046 U	0.0047 U
Acetone	0.05	100	0.05	MG/KG	0.0051 U	0.0055 U	0.0046 U	0.0044 J
Benzene	0.06	4.8	0.06	MG/KG	0.001 U	0.0011 U	0.00092 U	0.00094 U
Bromochloromethane				MG/KG	0.001 U	0.0011 U	0.00092 U	0.00094 U
Bromodichloromethane				MG/KG	0.001 U	0.0011 U	0.00092 U	0.00094 U
Bromoform				MG/KG	0.001 U	0.0011 U	0.00092 U	0.00094 U
Bromomethane				MG/KG	0.001 U	0.0011 U	0.00092 U	0.00094 U
Carbon Disulfide				MG/KG	0.001 U	0.0011 U	0.00092 U	0.00046 J
Carbon Tetrachloride	0.76	2.4	0.76	MG/KG	0.001 U	0.0011 U	0.00092 U	0.00094 U
Chlorobenzene	1.1	100	1.1	MG/KG	0.001 U	0.0011 U	0.00092 U	0.00094 U
Chloroethane				MG/KG	0.001 U	0.0011 U	0.00092 U	0.00094 U
Chloroform	0.37	49	0.37	MG/KG	0.001 U	0.0011 U	0.00092 U	0.00094 U
Chloromethane				MG/KG	0.001 U	0.0011 U	0.00092 U	0.00094 U
Cis-1,2-Dichloroethylene	0.25	100	0.25	MG/KG	0.001 U	0.0011 U	0.00092 U	0.00094 U



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Table 1. Summary of Volatile Organic Compounds in Soil, 1221 Spofford Avenue, Bronx, New York (April/May 2018)

Sample Designation:						RXMW-6	RXMW-9	RXMW-9
		04/25/2018	04/27/2018	04/23/2018	04/25/2018			
		Sample Depth (ft bls):					0 - 2	5 - 7
			Normal or Field D	uplicate:	N	N	N	N
	NYSDEC Part 375	NYSDEC Part 375	NYSDEC Part 375					
	Unrestricted Use	Restricted	Protection of					
Parameter	SCO	Residential SCO	Groundwater SCO	Unit				
Cis-1,3-Dichloropropene	-			MG/KG	0.001 U	0.0011 U	0.00092 U	0.00094 U
Cyclohexane				MG/KG	0.001 U	0.0011 U	0.00092 U	0.00094 U
Dibromochloromethane				MG/KG	0.001 U	0.0011 U	0.00092 U	0.00094 U
Dichlorodifluoromethane				MG/KG	0.001 UT	0.0011 UT	0.00092 UT	0.00094 UT
Ethylbenzene	1	41	1	MG/KG	0.001 U	0.0011 U	0.00092 U	0.00094 U
Isopropylbenzene (Cumene)				MG/KG	0.001 U	0.0011 U	0.00092 U	0.00094 U
m,p-Xylene				MG/KG	0.001 U	0.0011 U	0.00092 U	0.00021 J
Methyl Acetate				MG/KG	0.0051 U	0.0055 U	0.0046 U	0.0047 U
Methyl Ethyl Ketone (2-Butanone)	0.12	100	0.12	MG/KG	0.0051 U	0.0055 U	0.0046 U	0.0047 U
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)				MG/KG	0.0051 U	0.0055 U	0.0046 U	0.0047 U
Methylcyclohexane				MG/KG	0.001 U	0.0011 U	0.00092 U	0.00094 U
Methylene Chloride	0.05	100	0.05	MG/KG	0.001 U	0.00021 BJ	0.00016 BJ	0.00094 U
O-Xylene (1,2-Dimethylbenzene)				MG/KG	0.001 U	0.0011 U	0.00092 U	9.5E-05 J
Styrene				MG/KG	0.001 U	0.0011 U	0.00092 U	0.00094 U
Tert-Butyl Methyl Ether	0.93	100	0.93	MG/KG	0.001 U	0.0011 U	0.00092 U	0.00094 U
Tetrachloroethylene (PCE)	1.3	19	1.3	MG/KG	0.001 U	0.0011 U	0.00092 U	0.00094 U
Toluene	0.7	100	0.7	MG/KG	0.001 U	0.0011 U	0.00092 U	0.00094 U
Trans-1,2-Dichloroethene	0.19	100	0.19	MG/KG	0.001 U	0.0011 U	0.00092 U	0.00094 U
Trans-1,3-Dichloropropene				MG/KG	0.001 U	0.0011 U	0.00092 U	0.00094 U
Trichloroethylene (TCE)	0.47	21	0.47	MG/KG	0.001 U	0.0011 U	0.00092 U	0.00094 U
Trichlorofluoromethane				MG/KG	0.001 U	0.0011 U	0.00092 U	0.00094 U
Vinyl Chloride	0.02	0.9	0.02	MG/KG	0.001 U	0.0011 U	0.00092 U	0.00094 U



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Table 1. Summary of Volatile Organic Compounds in Soil, 1221 Spofford Avenue, Bronx, New York (April/May 2018)

	gnation:	RXSB-11	RXSB-11	RXSB-12	RXSB-12			
Sample Date:						04/26/2018	04/23/2018	04/26/2018
	0 - 2	3 - 5	0 - 2	6 - 8				
	Sample Depth (ft bls): Normal or Field Duplicate:						N	N
	NYSDEC Part 375	NYSDEC Part 375	NYSDEC Part 375					
	Unrestricted Use	Restricted	Protection of					
Parameter	SCO	Residential SCO	Groundwater SCO	Unit				
1,1,1-Trichloroethane (TCA)	0.68	100	0.68	MG/KG	0.001 U	0.0011 U	0.00096 U	0.0013 U
1,1,2,2-Tetrachloroethane				MG/KG	0.001 U	0.0011 U	0.00096 U	0.0013 U
1,1,2-Trichloro-1,2,2-Trifluoroethane				MG/KG	0.001 U	0.0011 U	0.00096 U	0.0013 U
1,1,2-Trichloroethane				MG/KG	0.001 U	0.0011 U	0.00096 U	0.0013 U
1,1-Dichloroethane	0.27	26	0.27	MG/KG	0.001 U	0.0011 U	0.00096 U	0.0013 U
1,1-Dichloroethene	0.33	100	0.33	MG/KG	0.001 U	0.0011 U	0.00096 U	0.0013 U
1,2,3-Trichlorobenzene				MG/KG	0.001 U	0.0011 U	0.00096 U	0.0013 U
1,2,4-Trichlorobenzene		-	-	MG/KG	0.001 U	0.0011 U	0.00096 U	0.0013 U
1,2-Dibromo-3-Chloropropane				MG/KG	0.001 U	0.0011 U	0.00096 U	0.0013 U
1,2-Dibromoethane (Ethylene Dibromide)				MG/KG	0.001 U	0.0011 U	0.00096 U	0.0013 U
1,2-Dichlorobenzene	1.1	100	1.1	MG/KG	0.001 U	0.0011 U	0.00096 U	0.0013 U
1,2-Dichloroethane	0.02	3.1	0.02	MG/KG	0.001 U	0.0011 U	0.00096 U	0.0013 U
1,2-Dichloropropane				MG/KG	0.001 U	0.0011 U	0.00096 U	0.0013 U
1,3-Dichlorobenzene	2.4	49	2.4	MG/KG	0.001 U	0.0011 U	0.00096 U	0.0013 U
1,4-Dichlorobenzene	1.8	13	1.8	MG/KG	0.001 U	0.0011 U	0.00096 U	0.0013 U
1,4-Dioxane (P-Dioxane)	0.1	13	0.1	MG/KG	0.02 U	0.021 U	0.019 U	0.025 U
2-Hexanone				MG/KG	0.005 U	0.0053 U	0.0048 U	0.0063 U
Acetone	0.05	100	0.05	MG/KG	0.005 U	0.0053 U	0.0048 U	0.0063 U
Benzene	0.06	4.8	0.06	MG/KG	0.001 U	0.0011 U	0.00096 U	0.0013 U
Bromochloromethane				MG/KG	0.001 U	0.0011 U	0.00096 U	0.0013 U
Bromodichloromethane				MG/KG	0.001 U	0.0011 U	0.00096 U	0.0013 U
Bromoform				MG/KG	0.001 U	0.0011 U	0.00096 U	0.0013 U
Bromomethane				MG/KG	0.001 U	0.0011 U	0.00096 U	0.0013 U
Carbon Disulfide				MG/KG	0.001 U	0.0011 U	0.00096 U	0.0013 U
Carbon Tetrachloride	0.76	2.4	0.76	MG/KG	0.001 U	0.0011 U	0.00096 U	0.0013 U
Chlorobenzene	1.1	100	1.1	MG/KG	0.001 U	0.0011 U	0.00096 U	0.0013 U
Chloroethane				MG/KG	0.001 U	0.0011 U	0.00096 U	0.0013 U
Chloroform	0.37	49	0.37	MG/KG	0.001 U	0.0011 U	0.00096 U	0.0013 U
Chloromethane				MG/KG	0.001 U	0.0011 U	0.00096 U	0.0013 U
Cis-1,2-Dichloroethylene	0.25	100	0.25	MG/KG	0.001 U	0.0011 U	0.00096 U	0.0013 U



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Table 1. Summary of Volatile Organic Compounds in Soil, 1221 Spofford Avenue, Bronx, New York (April/May 2018)

Sample Designation:						RXSB-11	RXSB-12	RXSB-12
			Samp	ole Date:	04/23/2018	04/26/2018	04/23/2018	04/26/2018
			h (ft bls):	0 - 2	3 - 5	0 - 2	6 - 8	
			Normal or Field D	uplicate:	N	N	N	N
	NYSDEC Part 375	NYSDEC Part 375	NYSDEC Part 375					
	Unrestricted Use	Restricted	Protection of					
Parameter	SCO	Residential SCO	Groundwater SCO	Unit				
Cis-1,3-Dichloropropene				MG/KG	0.001 U	0.0011 U	0.00096 U	0.0013 U
Cyclohexane				MG/KG	0.001 U	0.0011 U	0.00096 U	0.0013 U
Dibromochloromethane				MG/KG	0.001 U	0.0011 U	0.00096 U	0.0013 U
Dichlorodifluoromethane				MG/KG	0.001 UT	0.0011 UT	0.00096 UT	0.0013 UT
Ethylbenzene	1	41	1	MG/KG	0.001 U	0.0011 U	0.00096 U	0.0013 U
Isopropylbenzene (Cumene)				MG/KG	0.001 U	0.0011 U	0.00096 U	0.0013 U
m,p-Xylene				MG/KG	0.001 U	0.0011 U	0.00096 U	0.0013 U
Methyl Acetate				MG/KG	0.005 U	0.0053 U	0.0048 U	0.0063 U
Methyl Ethyl Ketone (2-Butanone)	0.12	100	0.12	MG/KG	0.005 U	0.0053 U	0.0048 U	0.0063 U
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)				MG/KG	0.005 U	0.0053 U	0.0048 U	0.0063 U
Methylcyclohexane				MG/KG	0.001 U	0.0011 U	0.00096 U	0.0013 U
Methylene Chloride	0.05	100	0.05	MG/KG	0.00018 BJ	0.00021 BJ	0.00096 U	0.00027 BJ
O-Xylene (1,2-Dimethylbenzene)				MG/KG	0.001 U	0.0011 U	0.00096 U	0.0013 U
Styrene				MG/KG	0.001 U	0.0011 U	0.00096 U	0.0013 U
Tert-Butyl Methyl Ether	0.93	100	0.93	MG/KG	0.001 U	0.0011 U	0.00096 U	0.0013 U
Tetrachloroethylene (PCE)	1.3	19	1.3	MG/KG	0.001 U	0.0011 U	0.00096 U	0.0013 U
Toluene	0.7	100	0.7	MG/KG	0.001 U	0.0011 U	0.00096 U	0.0013 U
Trans-1,2-Dichloroethene	0.19	100	0.19	MG/KG	0.001 U	0.0011 U	0.00096 U	0.0013 U
Trans-1,3-Dichloropropene				MG/KG	0.001 U	0.0011 U	0.00096 U	0.0013 U
Trichloroethylene (TCE)	0.47	21	0.47	MG/KG	0.001 U	0.0011 U	0.00096 U	0.0013 U
Trichlorofluoromethane				MG/KG	0.001 U	0.0011 U	0.00096 U	0.0013 U
Vinyl Chloride	0.02	0.9	0.02	MG/KG	0.001 U	0.0011 U	0.00096 U	0.0013 U



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Table 1. Summary of Volatile Organic Compounds in Soil, 1221 Spofford Avenue, Bronx, New York (April/May 2018)

Sample Designation:						RXSB-13	RXSB-14	RXSB-14
	Sample Date:					04/26/2018	04/24/2018	04/24/2018
	Sample Depth (ft bls):						0 - 2	0 - 2
			Normal or Field D	uplicate:	Ν	N	N	FD
	NYSDEC Part 375	NYSDEC Part 375	NYSDEC Part 375					
	Unrestricted Use	Restricted	Protection of					
Parameter	SCO	Residential SCO	Groundwater SCO	Unit				
1,1,1-Trichloroethane (TCA)	0.68	100	0.68	MG/KG	0.0012 U	0.001 U	0.0011 U	0.0011 U
1,1,2,2-Tetrachloroethane				MG/KG	0.0012 U	0.001 U	0.0011 U	0.0011 U
1,1,2-Trichloro-1,2,2-Trifluoroethane				MG/KG	0.0012 U	0.001 U	0.0011 U	0.0011 U
1,1,2-Trichloroethane				MG/KG	0.0012 U	0.001 U	0.0011 U	0.0011 U
1,1-Dichloroethane	0.27	26	0.27	MG/KG	0.0012 U	0.001 U	0.0011 U	0.0011 U
1,1-Dichloroethene	0.33	100	0.33	MG/KG	0.0012 U	0.001 U	0.0011 U	0.0011 U
1,2,3-Trichlorobenzene				MG/KG	0.0012 U	0.001 U	0.0011 U	0.0011 U
1,2,4-Trichlorobenzene				MG/KG	0.0012 U	0.001 U	0.0011 U	0.0011 U
1,2-Dibromo-3-Chloropropane				MG/KG	0.0012 U	0.001 U	0.0011 U	0.0011 U
1,2-Dibromoethane (Ethylene Dibromide)				MG/KG	0.0012 U	0.001 U	0.0011 U	0.0011 U
1,2-Dichlorobenzene	1.1	100	1.1	MG/KG	0.0012 U	0.001 U	0.0011 U	0.0011 U
1,2-Dichloroethane	0.02	3.1	0.02	MG/KG	0.0012 U	0.001 U	0.0011 U	0.0011 U
1,2-Dichloropropane				MG/KG	0.0012 U	0.001 U	0.0011 U	0.0011 U
1,3-Dichlorobenzene	2.4	49	2.4	MG/KG	0.0012 U	0.001 U	0.0011 U	0.0011 U
1,4-Dichlorobenzene	1.8	13	1.8	MG/KG	0.0012 U	0.001 U	0.0011 U	0.0011 U
1,4-Dioxane (P-Dioxane)	0.1	13	0.1	MG/KG	0.023 U	0.021 U	0.022 U	0.021 U
2-Hexanone				MG/KG	0.0058 U	0.0052 U	0.0054 U	0.0053 U
Acetone	0.05	100	0.05	MG/KG	0.0058 U	0.0052 U	0.0054 U	0.0053 U
Benzene	0.06	4.8	0.06	MG/KG	0.0012 U	0.001 U	0.0011 U	0.0011 U
Bromochloromethane				MG/KG	0.0012 U	0.001 U	0.0011 U	0.0011 U
Bromodichloromethane				MG/KG	0.0012 U	0.001 U	0.0011 U	0.0011 U
Bromoform				MG/KG	0.0012 U	0.001 U	0.0011 U	0.0011 U
Bromomethane				MG/KG	0.0012 U	0.001 U	0.0011 U	0.0011 U
Carbon Disulfide				MG/KG	0.0012 U	0.001 U	0.0011 U	0.0011 U
Carbon Tetrachloride	0.76	2.4	0.76	MG/KG	0.0012 U	0.001 U	0.0011 U	0.0011 U
Chlorobenzene	1.1	100	1.1	MG/KG	0.0012 U	0.001 U	0.0011 U	0.0011 U
Chloroethane				MG/KG	0.0012 U	0.001 U	0.0011 U	0.0011 U
Chloroform	0.37	49	0.37	MG/KG	0.0012 U	0.001 U	0.0011 U	0.0011 U
Chloromethane				MG/KG	0.0012 U	0.001 U	0.0011 U	0.0011 U
Cis-1,2-Dichloroethylene	0.25	100	0.25	MG/KG	0.0012 U	0.001 U	0.0011 U	0.0011 U



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Table 1. Summary of Volatile Organic Compounds in Soil, 1221 Spofford Avenue, Bronx, New York (April/May 2018)

Sample Designation:						RXSB-13	RXSB-14	RXSB-14
	Sample Date:					04/26/2018	04/24/2018	04/24/2018
	Sample Depth (ft bls):						0 - 2	0 - 2
			Normal or Field D	uplicate:	N	N	N	FD
	NYSDEC Part 375	NYSDEC Part 375	NYSDEC Part 375					
	Unrestricted Use	Restricted	Protection of					
Parameter	SCO	Residential SCO	Groundwater SCO	Unit				
Cis-1,3-Dichloropropene	-	-		MG/KG	0.0012 U	0.001 U	0.0011 U	0.0011 U
Cyclohexane				MG/KG	0.0012 U	0.001 U	0.0011 U	0.0011 U
Dibromochloromethane				MG/KG	0.0012 U	0.001 U	0.0011 U	0.0011 U
Dichlorodifluoromethane				MG/KG	0.0012 UT	0.001 UT	0.0011 UT	0.0011 UT
Ethylbenzene	1	41	1	MG/KG	0.0012 U	0.001 U	0.0011 U	0.0011 U
Isopropylbenzene (Cumene)				MG/KG	0.0012 U	0.001 U	0.0011 U	0.0011 U
m,p-Xylene				MG/KG	0.0012 U	0.001 U	0.0011 U	0.0011 U
Methyl Acetate				MG/KG	0.0058 U	0.0052 U	0.0054 U	0.0053 U
Methyl Ethyl Ketone (2-Butanone)	0.12	100	0.12	MG/KG	0.0058 U	0.0052 U	0.0054 U	0.0053 U
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)				MG/KG	0.0058 U	0.0052 U	0.0054 U	0.0053 U
Methylcyclohexane				MG/KG	0.0012 U	0.001 U	0.0011 U	0.0011 U
Methylene Chloride	0.05	100	0.05	MG/KG	0.0012 U	0.00018 BJ	0.0011 U	0.0011 U
O-Xylene (1,2-Dimethylbenzene)				MG/KG	0.0012 U	0.001 U	0.0011 U	0.0011 U
Styrene				MG/KG	0.0012 U	0.001 U	0.0011 U	0.0011 U
Tert-Butyl Methyl Ether	0.93	100	0.93	MG/KG	0.0012 U	0.001 U	0.0011 U	0.0011 U
Tetrachloroethylene (PCE)	1.3	19	1.3	MG/KG	0.00071 J	0.001 U	0.0011 U	0.0011 U
Toluene	0.7	100	0.7	MG/KG	0.00081 J	0.001 U	0.0011 U	0.0011 U
Trans-1,2-Dichloroethene	0.19	100	0.19	MG/KG	0.0012 U	0.001 U	0.0011 U	0.0011 U
Trans-1,3-Dichloropropene				MG/KG	0.0012 U	0.001 U	0.0011 U	0.0011 U
Trichloroethylene (TCE)	0.47	21	0.47	MG/KG	0.0012 U	0.001 U	0.0011 U	0.0011 U
Trichlorofluoromethane				MG/KG	0.0012 U	0.001 U	0.0011 U	0.0011 U
Vinyl Chloride	0.02	0.9	0.02	MG/KG	0.0012 U	0.001 U	0.0011 U	0.0011 U



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Table 1. Summary of Volatile Organic Compounds in Soil, 1221 Spofford Avenue, Bronx, New York (April/May 2018)

			Sample Desi	gnation:	RXSB-15	RXSB-15
	04/26/2018	05/01/2018				
	h (ft bls):	0 - 2	6 - 8			
	N	N				
	NYSDEC Part 375	NYSDEC Part 375	NYSDEC Part 375			
	Unrestricted Use	Restricted	Protection of			
Parameter	SCO	Residential SCO	Groundwater SCO	Unit		
1,1,1-Trichloroethane (TCA)	0.68	100	0.68	MG/KG	0.001 U	0.0011 U
1,1,2,2-Tetrachloroethane				MG/KG	0.001 U	0.0011 U
1,1,2-Trichloro-1,2,2-Trifluoroethane				MG/KG	0.001 U	0.0011 U
1,1,2-Trichloroethane				MG/KG	0.001 U	0.0011 U
1,1-Dichloroethane	0.27	26	0.27	MG/KG	0.001 U	0.0011 U
1,1-Dichloroethene	0.33	100	0.33	MG/KG	0.001 U	0.0011 U
1,2,3-Trichlorobenzene				MG/KG	0.001 U	0.0011 U
1,2,4-Trichlorobenzene				MG/KG	0.001 U	0.0011 U
1,2-Dibromo-3-Chloropropane				MG/KG	0.001 U	0.0011 U
1,2-Dibromoethane (Ethylene Dibromide)				MG/KG	0.001 U	0.0011 U
1,2-Dichlorobenzene	1.1	100	1.1	MG/KG	0.001 U	0.0011 U
1,2-Dichloroethane	0.02	3.1	0.02	MG/KG	0.001 U	0.0011 U
1,2-Dichloropropane				MG/KG	0.001 U	0.0011 U
1,3-Dichlorobenzene	2.4	49	2.4	MG/KG	0.001 U	0.0011 U
1,4-Dichlorobenzene	1.8	13	1.8	MG/KG	0.001 U	0.0011 U
1,4-Dioxane (P-Dioxane)	0.1	13	0.1	MG/KG	0.02 U	0.021 U
2-Hexanone				MG/KG	0.005 U	0.0053 U
Acetone	0.05	100	0.05	MG/KG	0.005 U	0.0048 J
Benzene	0.06	4.8	0.06	MG/KG	0.001 U	0.0011 U
Bromochloromethane				MG/KG	0.001 U	0.0011 U
Bromodichloromethane				MG/KG	0.001 U	0.0011 U
Bromoform				MG/KG	0.001 U	0.0011 U
Bromomethane				MG/KG	0.001 U	0.0011 U
Carbon Disulfide				MG/KG	0.001 U	0.0011 U
Carbon Tetrachloride	0.76	2.4	0.76	MG/KG	0.001 U	0.0011 U
Chlorobenzene	1.1	100	1.1	MG/KG	0.001 U	0.0011 U
Chloroethane				MG/KG	0.001 U	0.0011 U
Chloroform	0.37	49	0.37	MG/KG	0.001 U	0.0011 U
Chloromethane				MG/KG	0.001 U	0.0011 U
Cis-1,2-Dichloroethylene	0.25	100	0.25	MG/KG	0.001 U	0.0011 U



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Table 1. Summary of Volatile Organic Compounds in Soil, 1221 Spofford Avenue, Bronx, New York (April/May 2018)

			Sample Desi	gnation:	RXSB-15	RXSB-15
	04/26/2018	05/01/2018				
	0 - 2	6 - 8				
	N	N				
	NYSDEC Part 375	NYSDEC Part 375	NYSDEC Part 375			
	Unrestricted Use	Restricted	Protection of			
Parameter	SCO	Residential SCO	Groundwater SCO	Unit		
Cis-1,3-Dichloropropene	-			MG/KG	0.001 U	0.0011 U
Cyclohexane				MG/KG	0.001 U	0.0011 U
Dibromochloromethane				MG/KG	0.001 U	0.0011 U
Dichlorodifluoromethane				MG/KG	0.001 UT	0.0011 U
Ethylbenzene	1	41	1	MG/KG	0.001 U	0.0011 U
Isopropylbenzene (Cumene)				MG/KG	0.001 U	0.0011 U
m,p-Xylene				MG/KG	0.001 U	0.0011 U
Methyl Acetate				MG/KG	0.005 U	0.0053 U
Methyl Ethyl Ketone (2-Butanone)	0.12	100	0.12	MG/KG	0.005 U	0.0053 U
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)				MG/KG	0.005 U	0.0053 U
Methylcyclohexane				MG/KG	0.001 U	0.0011 U
Methylene Chloride	0.05	100	0.05	MG/KG	0.0002 BJ	0.0011 U
O-Xylene (1,2-Dimethylbenzene)				MG/KG	0.001 U	0.0011 U
Styrene				MG/KG	0.001 U	0.0011 U
Tert-Butyl Methyl Ether	0.93	100	0.93	MG/KG	0.001 U	0.0011 U
Tetrachloroethylene (PCE)	1.3	19	1.3	MG/KG	0.001 U	0.0011 U
Toluene	0.7	100	0.7	MG/KG	0.001 U	0.0011 U
Trans-1,2-Dichloroethene	0.19	100	0.19	MG/KG	0.001 U	0.0011 U
Trans-1,3-Dichloropropene				MG/KG	0.001 U	0.0011 U
Trichloroethylene (TCE)	0.47	21	0.47	MG/KG	0.001 U	0.0011 U
Trichlorofluoromethane				MG/KG	0.001 U	0.0011 U
Vinyl Chloride	0.02	0.9	0.02	MG/KG	0.001 U	0.0011 U



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Table 2. Summary of Semivolatile Organic Compounds in Soil, 1221 Spofford Avenue, Bronx, New York (April/May 2018)

			Sample Desi	gnation:	RXMW-10	RXMW-10	RXMW-11
	Sample Date:						04/23/2018
	0 - 2	2 - 4	0 - 2				
	N	N	N				
	NYSDEC Part 375	NYSDEC Part 375	NYSDEC Part 375				
	Unrestricted Use	Restricted	Protection of				
Parameter	SCO	Residential SCO	Groundwater SCO	Unit			
1,2,4,5-Tetrachlorobenzene				MG/KG	0.38 U	0.37 U	0.35 U
2,3,4,6-Tetrachlorophenol				MG/KG	0.38 U	0.37 U	0.35 U
2,4,5-Trichlorophenol				MG/KG	0.38 U	0.37 U	0.35 U
2,4,6-Trichlorophenol				MG/KG	0.15 U	0.15 U	0.14 U
2,4-Dichlorophenol				MG/KG	0.15 U	0.15 U	0.14 U
2,4-Dimethylphenol				MG/KG	0.38 U	0.37 U	0.35 U
2,4-Dinitrophenol				MG/KG	0.3 U	0.3 U	0.28 U
2,4-Dinitrotoluene				MG/KG	0.076 U	0.075 U	0.071 U
2,6-Dinitrotoluene				MG/KG	0.076 U	0.075 U	0.071 U
2-Chloronaphthalene				MG/KG	0.38 U	0.37 U	0.35 U
2-Chlorophenol				MG/KG	0.38 U	0.37 U	0.35 U
2-Methylnaphthalene				MG/KG	0.38 U	0.036 J	0.35 U
2-Methylphenol (O-Cresol)	0.33	100	0.33	MG/KG	0.38 U	0.37 U	0.35 U
2-Nitroaniline				MG/KG	0.38 U	0.37 U	0.35 U
2-Nitrophenol				MG/KG	0.38 U	0.37 U	0.35 U
3,3'-Dichlorobenzidine				MG/KG	0.15 U	0.15 U	0.14 U
3-Nitroaniline				MG/KG	0.38 U	0.37 U	0.35 U
4,6-Dinitro-2-Methylphenol				MG/KG	0.3 U	0.3 U	0.28 U
4-Bromophenyl Phenyl Ether				MG/KG	0.38 U	0.37 U	0.35 U
4-Chloro-3-Methylphenol				MG/KG	0.38 U	0.37 U	0.35 U
4-Chloroaniline				MG/KG	0.38 U	0.37 U	0.35 U
4-Chlorophenyl Phenyl Ether				MG/KG	0.38 U	0.37 U	0.35 U
4-Methylphenol (P-Cresol)	0.33	100	0.33	MG/KG	0.38 U	0.37 U	0.35 U
4-Nitroaniline				MG/KG	0.38 U	0.37 U	0.35 U
4-Nitrophenol				MG/KG	0.76 U	0.75 U	0.71 U
Acenaphthene	20	100	98	MG/KG	0.38 U	0.37 U	0.35 U
Acenaphthylene	100	100	107	MG/KG	0.38 U	0.37 U	0.35 U
Acetophenone				MG/KG	0.38 U	0.37 U	0.35 U
Anthracene	100	100	1000	MG/KG	0.38 U	0.023 J	0.35 U
Atrazine				MG/KG	0.15 U	0.15 U	0.14 U



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Table 2. Summary of Semivolatile Organic Compounds in Soil, 1221 Spofford Avenue, Bronx, New York (April/May 2018)

			Sample Desi	gnation:	RXMW-10	RXMW-10	RXMW-11
			Samp	ole Date:	04/23/2018	04/23/2018	04/23/2018
			Sample Dept	h (ft bls):	0 - 2	2 - 4	0 - 2
			Normal or Field D	uplicate:	N	N	N
	NYSDEC Part 375	NYSDEC Part 375	NYSDEC Part 375				
	Unrestricted Use	Restricted	Protection of				
Parameter	SCO	Residential SCO	Groundwater SCO	Unit			
Benzaldehyde				MG/KG	0.38 U	0.37 U	0.35 U
Benzo(A)Anthracene	1	1	1	MG/KG	0.052	0.095	0.035 U
Benzo(A)Pyrene	1	1	22	MG/KG	0.051	0.12	0.017 JT
Benzo(B)Fluoranthene	1	1	1.7	MG/KG	0.067	0.23	0.028 JT
Benzo(G,H,I)Perylene	100	100	1000	MG/KG	0.022 J	0.12 J	0.35 UT
Benzo(K)Fluoranthene	0.8	3.9	1.7	MG/KG	0.024 J	0.08	0.014 JT
Benzyl Butyl Phthalate				MG/KG	0.38 U	0.37 U	0.35 U
Biphenyl (Diphenyl)				MG/KG	0.38 U	0.37 U	0.35 U
Bis(2-Chloroethoxy) Methane				MG/KG	0.38 U	0.37 U	0.35 U
Bis(2-Chloroethyl) Ether (2-Chloroethyl Ether)				MG/KG	0.038 U	0.037 U	0.035 U
Bis(2-Chloroisopropyl) Ether				MG/KG	0.38 U	0.37 U	0.35 U
Bis(2-Ethylhexyl) Phthalate				MG/KG	0.38 U	0.37 U	0.35 U
Caprolactam				MG/KG	0.38 U	0.37 U	0.35 U
Carbazole				MG/KG	0.38 U	0.37 U	0.35 U
Chrysene	1	3.9	1	MG/KG	0.053 J	0.12 J	0.35 U
Dibenz(A,H)Anthracene	0.33	0.33	1000	MG/KG	0.038 U	0.047	0.035 UT
Dibenzofuran	7	59	210	MG/KG	0.38 U	0.37 U	0.35 U
Diethyl Phthalate				MG/KG	0.38 U	0.37 U	0.35 U
Dimethyl Phthalate				MG/KG	0.38 U	0.37 U	0.35 U
Di-N-Butyl Phthalate				MG/KG	0.38 U	0.37 U	0.35 U
Di-N-Octylphthalate				MG/KG	0.38 U	0.37 U	0.12 JT
Fluoranthene	100	100	1000	MG/KG	0.078 J	0.17 J	0.011 J
Fluorene	30	100	386	MG/KG	0.38 U	0.37 U	0.35 U
Hexachlorobenzene	0.33	1.2	3.2	MG/KG	0.038 U	0.037 U	0.035 U
Hexachlorobutadiene				MG/KG	0.076 U	0.075 U	0.071 U
Hexachlorocyclopentadiene				MG/KG	0.38 U	0.37 U	0.35 U
Hexachloroethane				MG/KG	0.038 U	0.037 U	0.035 U
Indeno(1,2,3-C,D)Pyrene	0.5	0.5	8.2	MG/KG	0.029 J	0.12	0.035 UT
Isophorone				MG/KG	0.15 U	0.15 U	0.14 U
Naphthalene	12	100	12	MG/KG	0.38 U	0.08 J	0.35 U



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Table 2. Summary of Semivolatile Organic Compounds in Soil, 1221 Spofford Avenue, Bronx, New York (April/May 2018)

			Sample Design	gnation:	RXMW-10	RXMW-10	RXMW-11
			Samp	ole Date:	04/23/2018	04/23/2018	04/23/2018
			Sample Deptl	n (ft bls):	0 - 2	2 - 4	0 - 2
			N	N	N		
	NYSDEC Part 375	NYSDEC Part 375 NYSDEC Part 375 NYSDEC Part 375					
	Unrestricted Use	Restricted	Protection of				
Parameter	SCO	Residential SCO	Groundwater SCO	Unit			
Nitrobenzene				MG/KG	0.038 U	0.037 U	0.035 U
N-Nitrosodi-N-Propylamine				MG/KG	0.038 U	0.037 U	0.035 U
N-Nitrosodiphenylamine				MG/KG	0.38 U	0.37 U	0.35 U
Pentachlorophenol	0.8	6.7	0.8	MG/KG	0.3 U	0.3 U	0.28 U
Phenanthrene	100	100	1000	MG/KG	0.035 J	0.085 J	0.35 U
Phenol	0.33	100	0.33	MG/KG	0.38 U	0.37 U	0.35 U
Pyrene	100	100	1000	MG/KG	0.079 J	0.16 J	0.35 U



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Table 2. Summary of Semivolatile Organic Compounds in Soil, 1221 Spofford Avenue, Bronx, New York (April/May 2018)

			Sample Desi	gnation:	RXMW-11	RXMW-4	RXMW-4
			Samp	ole Date:	04/27/2018	04/24/2018	05/01/2018
			Sample Dept		11 - 13	0 - 2	13 - 15
			Normal or Field D	uplicate:	N	N	N
	NYSDEC Part 375	NYSDEC Part 375	NYSDEC Part 375				
	Unrestricted Use	Restricted	Protection of				
Parameter	SCO	Residential SCO	Groundwater SCO	Unit			
1,2,4,5-Tetrachlorobenzene				MG/KG	0.35 U	0.36 U	0.36 U
2,3,4,6-Tetrachlorophenol				MG/KG	0.35 U	0.36 U	0.36 U
2,4,5-Trichlorophenol				MG/KG	0.35 U	0.36 U	0.36 U
2,4,6-Trichlorophenol				MG/KG	0.14 U	0.14 U	0.15 U
2,4-Dichlorophenol				MG/KG	0.14 U	0.14 U	0.15 U
2,4-Dimethylphenol				MG/KG	0.35 U	0.36 U	0.36 U
2,4-Dinitrophenol				MG/KG	0.29 U	0.29 U	0.29 U
2,4-Dinitrotoluene				MG/KG	0.072 U	0.073 U	0.073 U
2,6-Dinitrotoluene				MG/KG	0.072 U	0.073 U	0.073 U
2-Chloronaphthalene				MG/KG	0.35 U	0.36 U	0.36 U
2-Chlorophenol				MG/KG	0.35 U	0.36 U	0.36 U
2-Methylnaphthalene				MG/KG	0.35 U	0.36 U	0.36 U
2-Methylphenol (O-Cresol)	0.33	100	0.33	MG/KG	0.35 U	0.36 U	0.36 U
2-Nitroaniline				MG/KG	0.35 U	0.36 U	0.36 U
2-Nitrophenol				MG/KG	0.35 U	0.36 U	0.36 U
3,3'-Dichlorobenzidine				MG/KG	0.14 U	0.14 U	0.15 U
3-Nitroaniline				MG/KG	0.35 U	0.36 U	0.36 U
4,6-Dinitro-2-Methylphenol				MG/KG	0.29 U	0.29 U	0.29 U
4-Bromophenyl Phenyl Ether				MG/KG	0.35 U	0.36 U	0.36 U
4-Chloro-3-Methylphenol				MG/KG	0.35 U	0.36 U	0.36 U
4-Chloroaniline				MG/KG	0.35 U	0.36 U	0.36 U
4-Chlorophenyl Phenyl Ether				MG/KG	0.35 U	0.36 U	0.36 U
4-Methylphenol (P-Cresol)	0.33	100	0.33	MG/KG	0.35 U	0.36 U	0.36 U
4-Nitroaniline				MG/KG	0.35 U	0.36 U	0.36 U
4-Nitrophenol				MG/KG	0.72 U	0.73 U	0.73 U
Acenaphthene	20	100	98	MG/KG	0.35 U	0.36 U	0.36 U
Acenaphthylene	100	100	107	MG/KG	0.35 U	0.36 U	0.36 U
Acetophenone				MG/KG	0.35 U	0.36 U	0.36 U
Anthracene	100	100	1000	MG/KG	0.35 U	0.36 U	0.36 U
Atrazine				MG/KG	0.14 U	0.14 UT	0.15 UT



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Table 2. Summary of Semivolatile Organic Compounds in Soil, 1221 Spofford Avenue, Bronx, New York (April/May 2018)

			Sample Desi	gnation:	RXMW-11	RXMW-4	RXMW-4
			Samp	ole Date:	04/27/2018	04/24/2018	05/01/2018
			Sample Depti	h (ft bls):	11 - 13	0 - 2	13 - 15
			Normal or Field Duplicate:		N	N	N
	NYSDEC Part 375	NYSDEC Part 375	NYSDEC Part 375				
	Unrestricted Use	Restricted	Protection of				
Parameter	SCO	Residential SCO	Groundwater SCO	Unit			
Benzaldehyde				MG/KG	0.35 U	0.36 U	0.36 U
Benzo(A)Anthracene	1	1	1	MG/KG	0.035 U	0.078	0.036 U
Benzo(A)Pyrene	1	1	22	MG/KG	0.035 U	0.09	0.036 U
Benzo(B)Fluoranthene	1	1	1.7	MG/KG	0.035 U	0.11	0.036 U
Benzo(G,H,I)Perylene	100	100	1000	MG/KG	0.35 U	0.049 J	0.36 U
Benzo(K)Fluoranthene	0.8	3.9	1.7	MG/KG	0.035 U	0.042	0.036 U
Benzyl Butyl Phthalate				MG/KG	0.35 U	0.36 U	0.36 U
Biphenyl (Diphenyl)				MG/KG	0.35 U	0.36 U	0.36 U
Bis(2-Chloroethoxy) Methane				MG/KG	0.35 U	0.36 U	0.36 U
Bis(2-Chloroethyl) Ether (2-Chloroethyl Ether)				MG/KG	0.035 U	0.036 U	0.036 U
Bis(2-Chloroisopropyl) Ether				MG/KG	0.35 U	0.36 U	0.36 U
Bis(2-Ethylhexyl) Phthalate				MG/KG	0.35 U	0.36 U	0.36 U
Caprolactam				MG/KG	0.35 U	0.36 U	0.36 U
Carbazole				MG/KG	0.35 U	0.36 U	0.36 U
Chrysene	1	3.9	1	MG/KG	0.35 U	0.095 J	0.36 U
Dibenz(A,H)Anthracene	0.33	0.33	1000	MG/KG	0.035 U	0.019 J	0.036 U
Dibenzofuran	7	59	210	MG/KG	0.35 U	0.36 U	0.36 U
Diethyl Phthalate				MG/KG	0.35 U	0.36 U	0.36 U
Dimethyl Phthalate				MG/KG	0.35 U	0.36 U	0.36 U
Di-N-Butyl Phthalate				MG/KG	0.35 U	0.36 U	0.36 U
Di-N-Octylphthalate				MG/KG	0.35 U	0.36 U	0.36 U
Fluoranthene	100	100	1000	MG/KG	0.35 U	0.12 J	0.36 U
Fluorene	30	100	386	MG/KG	0.35 U	0.36 U	0.36 U
Hexachlorobenzene	0.33	1.2	3.2	MG/KG	0.035 U	0.036 U	0.036 U
Hexachlorobutadiene				MG/KG	0.072 U	0.073 U	0.073 U
Hexachlorocyclopentadiene				MG/KG	0.35 U	0.36 U	0.36 U
Hexachloroethane				MG/KG	0.035 U	0.036 U	0.036 UT
Indeno(1,2,3-C,D)Pyrene	0.5	0.5	8.2	MG/KG	0.035 U	0.056	0.036 U
Isophorone				MG/KG	0.14 U	0.14 U	0.15 U
Naphthalene	12	100	12	MG/KG	0.35 U	0.014 J	0.36 U



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Table 2. Summary of Semivolatile Organic Compounds in Soil, 1221 Spofford Avenue, Bronx, New York (April/May 2018)

			Sample Design	gnation:	RXMW-11	RXMW-4	RXMW-4
			Samp	ole Date:	04/27/2018	04/24/2018	05/01/2018
			Sample Deptl	n (ft bls):	11 - 13	0 - 2	13 - 15
		Normal or Field Duplicate:					
	NYSDEC Part 375	NYSDEC Part 375	NYSDEC Part 375				
	Unrestricted Use	Restricted	Protection of				
Parameter	SCO	Residential SCO	Groundwater SCO	Unit			
Nitrobenzene				MG/KG	0.035 U	0.036 U	0.036 U
N-Nitrosodi-N-Propylamine				MG/KG	0.035 U	0.036 U	0.036 U
N-Nitrosodiphenylamine				MG/KG	0.35 U	0.36 U	0.36 U
Pentachlorophenol	0.8	6.7	0.8	MG/KG	0.29 U	0.29 U	0.29 U
Phenanthrene	100	100	1000	MG/KG	0.35 U	0.033 J	0.36 U
Phenol	0.33	100	0.33	MG/KG	0.35 U	0.36 U	0.36 U
Pyrene	100	100	1000	MG/KG	0.35 U	0.13 J	0.36 U



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Table 2. Summary of Semivolatile Organic Compounds in Soil, 1221 Spofford Avenue, Bronx, New York (April/May 2018)

			Sample Desi	gnation:	RXMW-5	RXMW-5	RXMW-6
			Samp	ole Date:	04/26/2018	05/02/2018	04/25/2018
			Sample Dept	h (ft bls):	0 - 2	12 - 14	0 - 2
			Normal or Field D	uplicate:	N	N	N
	NYSDEC Part 375	NYSDEC Part 375	NYSDEC Part 375				
	Unrestricted Use	Restricted	Protection of				
Parameter	SCO	Residential SCO	Groundwater SCO	Unit			
1,2,4,5-Tetrachlorobenzene				MG/KG	0.37 U	0.36 U	0.36 U
2,3,4,6-Tetrachlorophenol				MG/KG	0.37 U	0.36 U	0.36 U
2,4,5-Trichlorophenol				MG/KG	0.37 U	0.36 U	0.36 U
2,4,6-Trichlorophenol				MG/KG	0.15 U	0.15 U	0.14 U
2,4-Dichlorophenol				MG/KG	0.15 U	0.15 U	0.14 U
2,4-Dimethylphenol				MG/KG	0.37 U	0.36 U	0.36 U
2,4-Dinitrophenol				MG/KG	0.3 U	0.29 U	0.29 U
2,4-Dinitrotoluene				MG/KG	0.075 U	0.073 U	0.072 U
2,6-Dinitrotoluene				MG/KG	0.075 U	0.073 U	0.072 U
2-Chloronaphthalene				MG/KG	0.37 U	0.36 U	0.36 U
2-Chlorophenol				MG/KG	0.37 U	0.36 U	0.36 U
2-Methylnaphthalene				MG/KG	0.37 U	0.36 U	0.36 U
2-Methylphenol (O-Cresol)	0.33	100	0.33	MG/KG	0.37 U	0.36 U	0.36 U
2-Nitroaniline				MG/KG	0.37 U	0.36 U	0.36 U
2-Nitrophenol				MG/KG	0.37 U	0.36 U	0.36 U
3,3'-Dichlorobenzidine				MG/KG	0.15 U	0.15 U	0.14 U
3-Nitroaniline				MG/KG	0.37 U	0.36 U	0.36 U
4,6-Dinitro-2-Methylphenol				MG/KG	0.3 U	0.29 U	0.29 U
4-Bromophenyl Phenyl Ether				MG/KG	0.37 U	0.36 U	0.36 U
4-Chloro-3-Methylphenol				MG/KG	0.37 U	0.36 U	0.36 U
4-Chloroaniline				MG/KG	0.37 U	0.36 U	0.36 U
4-Chlorophenyl Phenyl Ether				MG/KG	0.37 U	0.36 U	0.36 U
4-Methylphenol (P-Cresol)	0.33	100	0.33	MG/KG	0.37 U	0.36 U	0.36 U
4-Nitroaniline				MG/KG	0.37 U	0.36 U	0.36 U
4-Nitrophenol				MG/KG	0.75 U	0.73 U	0.72 U
Acenaphthene	20	100	98	MG/KG	0.056 J	0.36 U	0.035 J
Acenaphthylene	100	100	107	MG/KG	0.056 J	0.36 U	0.36 U
Acetophenone				MG/KG	0.37 U	0.36 U	0.36 U
Anthracene	100	100	1000	MG/KG	0.16 J	0.36 U	0.058 J
Atrazine				MG/KG	0.15 U	0.15 U	0.14 U



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Table 2. Summary of Semivolatile Organic Compounds in Soil, 1221 Spofford Avenue, Bronx, New York (April/May 2018)

			Sample Desi	gnation:	RXMW-5	RXMW-5	RXMW-6
			Samp	ole Date:	04/26/2018	05/02/2018	04/25/2018
			Sample Dept	h (ft bls):	0 - 2	12 - 14	0 - 2
			Normal or Field D	uplicate:	N	N	N
	NYSDEC Part 375	NYSDEC Part 375	NYSDEC Part 375				
	Unrestricted Use	Restricted	Protection of				
Parameter	SCO	Residential SCO	Groundwater SCO	Unit			
Benzaldehyde				MG/KG	0.37 U	0.36 U	0.36 U
Benzo(A)Anthracene	1	1	1	MG/KG	0.67	0.036 U	0.14
Benzo(A)Pyrene	1	1	22	MG/KG	0.7	0.036 U	0.12
Benzo(B)Fluoranthene	1	1	1.7	MG/KG	0.89	0.036 U	0.15
Benzo(G,H,I)Perylene	100	100	1000	MG/KG	0.37	0.36 U	0.059 J
Benzo(K)Fluoranthene	0.8	3.9	1.7	MG/KG	0.39	0.036 U	0.058
Benzyl Butyl Phthalate				MG/KG	0.37 U	0.36 U	0.36 U
Biphenyl (Diphenyl)				MG/KG	0.37 U	0.36 U	0.36 U
Bis(2-Chloroethoxy) Methane				MG/KG	0.37 U	0.36 U	0.36 U
Bis(2-Chloroethyl) Ether (2-Chloroethyl Ether)				MG/KG	0.037 U	0.036 U	0.036 U
Bis(2-Chloroisopropyl) Ether				MG/KG	0.37 U	0.36 U	0.36 U
Bis(2-Ethylhexyl) Phthalate				MG/KG	0.37 U	0.36 U	0.36 U
Caprolactam				MG/KG	0.37 U	0.36 U	0.36 U
Carbazole				MG/KG	0.046 J	0.36 U	0.024 J
Chrysene	1	3.9	1	MG/KG	0.75	0.36 U	0.13 J
Dibenz(A,H)Anthracene	0.33	0.33	1000	MG/KG	0.11	0.036 U	0.027 J
Dibenzofuran	7	59	210	MG/KG	0.022 J	0.36 U	0.012 J
Diethyl Phthalate				MG/KG	0.37 U	0.36 U	0.36 U
Dimethyl Phthalate				MG/KG	0.37 U	0.36 U	0.36 U
Di-N-Butyl Phthalate				MG/KG	0.37 U	0.36 U	0.36 U
Di-N-Octylphthalate				MG/KG	0.37 U	0.36 U	0.36 U
Fluoranthene	100	100	1000	MG/KG	1	0.36 U	0.26 J
Fluorene	30	100	386	MG/KG	0.056 J	0.36 U	0.025 J
Hexachlorobenzene	0.33	1.2	3.2	MG/KG	0.037 U	0.036 U	0.036 U
Hexachlorobutadiene				MG/KG	0.075 U	0.073 U	0.072 U
Hexachlorocyclopentadiene				MG/KG	0.37 U	0.36 U	0.36 U
Hexachloroethane				MG/KG	0.037 U	0.036 U	0.036 U
Indeno(1,2,3-C,D)Pyrene	0.5	0.5	8.2	MG/KG	0.52	0.036 U	0.061
Isophorone				MG/KG	0.15 U	0.15 U	0.14 U
Naphthalene	12	100	12	MG/KG	0.37 U	0.36 U	0.36 U



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Table 2. Summary of Semivolatile Organic Compounds in Soil, 1221 Spofford Avenue, Bronx, New York (April/May 2018)

			Sample Design	gnation:	RXMW-5	RXMW-5	RXMW-6
			Samp	ole Date:	04/26/2018	05/02/2018	04/25/2018
			Sample Deptl	n (ft bls):	0 - 2	12 - 14	0 - 2
			N	N	N		
	NYSDEC Part 375	NYSDEC Part 375 NYSDEC Part 375 NYSDEC Part 375					
	Unrestricted Use	Restricted	Protection of				
Parameter	SCO	Residential SCO	Groundwater SCO	Unit			
Nitrobenzene				MG/KG	0.037 U	0.036 U	0.036 U
N-Nitrosodi-N-Propylamine				MG/KG	0.037 U	0.036 U	0.036 U
N-Nitrosodiphenylamine				MG/KG	0.37 U	0.36 U	0.36 U
Pentachlorophenol	0.8	6.7	0.8	MG/KG	0.3 U	0.29 U	0.29 U
Phenanthrene	100	100	1000	MG/KG	0.61	0.36 U	0.23 J
Phenol	0.33	100	0.33	MG/KG	0.37 U	0.36 U	0.36 U
Pyrene	100	100	1000	MG/KG	1.1	0.36 U	0.25 J



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Table 2. Summary of Semivolatile Organic Compounds in Soil, 1221 Spofford Avenue, Bronx, New York (April/May 2018)

			Sample Desi	gnation:	RXMW-6	RXMW-9	RXMW-9
			Samp	ole Date:	04/27/2018	04/23/2018	04/25/2018
			Sample Dept	h (ft bls):	9 - 11	0 - 2	5 - 7
			Normal or Field D	uplicate:	N	N	N
	NYSDEC Part 375	NYSDEC Part 375	NYSDEC Part 375				
	Unrestricted Use	Restricted	Protection of				
Parameter	SCO	Residential SCO	Groundwater SCO	Unit			
1,2,4,5-Tetrachlorobenzene				MG/KG	0.36 U	0.37 U	0.36 U
2,3,4,6-Tetrachlorophenol				MG/KG	0.36 U	0.37 U	0.36 U
2,4,5-Trichlorophenol				MG/KG	0.36 U	0.37 U	0.36 U
2,4,6-Trichlorophenol				MG/KG	0.15 U	0.15 U	0.15 U
2,4-Dichlorophenol				MG/KG	0.15 U	0.15 U	0.15 U
2,4-Dimethylphenol				MG/KG	0.36 U	0.37 U	0.36 U
2,4-Dinitrophenol				MG/KG	0.29 U	0.3 U	0.29 U
2,4-Dinitrotoluene				MG/KG	0.074 U	0.075 U	0.073 U
2,6-Dinitrotoluene				MG/KG	0.074 U	0.075 U	0.073 U
2-Chloronaphthalene				MG/KG	0.36 U	0.37 U	0.36 U
2-Chlorophenol				MG/KG	0.36 U	0.37 U	0.36 U
2-Methylnaphthalene				MG/KG	0.36 U	0.37 U	0.36 U
2-Methylphenol (O-Cresol)	0.33	100	0.33	MG/KG	0.36 U	0.37 U	0.36 U
2-Nitroaniline				MG/KG	0.36 U	0.37 U	0.36 U
2-Nitrophenol				MG/KG	0.36 U	0.37 U	0.36 U
3,3'-Dichlorobenzidine				MG/KG	0.15 U	0.15 U	0.15 U
3-Nitroaniline				MG/KG	0.36 U	0.37 U	0.36 U
4,6-Dinitro-2-Methylphenol				MG/KG	0.29 U	0.3 U	0.29 U
4-Bromophenyl Phenyl Ether				MG/KG	0.36 U	0.37 U	0.36 U
4-Chloro-3-Methylphenol				MG/KG	0.36 U	0.37 U	0.36 U
4-Chloroaniline				MG/KG	0.36 U	0.37 U	0.36 U
4-Chlorophenyl Phenyl Ether				MG/KG	0.36 U	0.37 U	0.36 U
4-Methylphenol (P-Cresol)	0.33	100	0.33	MG/KG	0.36 U	0.37 U	0.36 U
4-Nitroaniline				MG/KG	0.36 U	0.37 U	0.36 U
4-Nitrophenol				MG/KG	0.74 U	0.75 U	0.73 U
Acenaphthene	20	100	98	MG/KG	0.36 U	0.37 U	0.36 U
Acenaphthylene	100	100	107	MG/KG	0.36 U	0.37 U	0.36 U
Acetophenone				MG/KG	0.36 U	0.37 U	0.36 U
Anthracene	100	100	1000	MG/KG	0.36 U	0.37 U	0.36 U
Atrazine				MG/KG	0.15 U	0.15 U	0.15 U



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Table 2. Summary of Semivolatile Organic Compounds in Soil, 1221 Spofford Avenue, Bronx, New York (April/May 2018)

			Sample Design	gnation:	RXMW-6	RXMW-9	RXMW-9
			Samp	ole Date:	04/27/2018	04/23/2018	04/25/2018
			Sample Depti	n (ft bls):	9 - 11	0 - 2	5 - 7
			Normal or Field D	uplicate:	N	N	N
	NYSDEC Part 375	NYSDEC Part 375	NYSDEC Part 375				
_	Unrestricted Use	Restricted	Protection of				
Parameter	SCO	Residential SCO	Groundwater SCO	Unit		2 2 - 1 1	
Benzaldehyde				MG/KG	0.36 U	0.37 U	0.36 U
Benzo(A)Anthracene	1	1	1	MG/KG	0.036 U	0.028 J	0.036 U
Benzo(A)Pyrene	1	1	22	MG/KG	0.036 U	0.022 J	0.036 U
Benzo(B)Fluoranthene	1	1	1.7	MG/KG	0.036 U	0.027 J	0.012 J
Benzo(G,H,I)Perylene	100	100	1000	MG/KG	0.36 U	0.37 U	0.36 U
Benzo(K)Fluoranthene	0.8	3.9	1.7	MG/KG	0.036 U	0.037 U	0.036 U
Benzyl Butyl Phthalate				MG/KG	0.36 U	0.37 U	0.36 U
Biphenyl (Diphenyl)				MG/KG	0.36 U	0.37 U	0.36 U
Bis(2-Chloroethoxy) Methane			-	MG/KG	0.36 U	0.37 U	0.36 U
Bis(2-Chloroethyl) Ether (2-Chloroethyl Ether)				MG/KG	0.036 U	0.037 U	0.036 U
Bis(2-Chloroisopropyl) Ether				MG/KG	0.36 U	0.37 U	0.36 U
Bis(2-Ethylhexyl) Phthalate				MG/KG	0.36 U	0.37 U	0.36 U
Caprolactam				MG/KG	0.36 U	0.37 U	0.36 U
Carbazole				MG/KG	0.36 U	0.37 U	0.36 U
Chrysene	1	3.9	1	MG/KG	0.36 U	0.021 J	0.011 J
Dibenz(A,H)Anthracene	0.33	0.33	1000	MG/KG	0.036 U	0.037 U	0.036 U
Dibenzofuran	7	59	210	MG/KG	0.36 U	0.37 U	0.36 U
Diethyl Phthalate				MG/KG	0.36 U	0.37 U	0.36 U
Dimethyl Phthalate				MG/KG	0.36 U	0.37 U	0.36 U
Di-N-Butyl Phthalate				MG/KG	0.36 U	0.37 U	0.36 U
Di-N-Octylphthalate				MG/KG	0.36 U	0.37 U	0.36 U
Fluoranthene	100	100	1000	MG/KG	0.36 U	0.027 J	0.015 J
Fluorene	30	100	386	MG/KG	0.36 U	0.37 U	0.36 U
Hexachlorobenzene	0.33	1.2	3.2	MG/KG	0.036 U	0.037 U	0.036 U
Hexachlorobutadiene				MG/KG	0.074 U	0.075 U	0.073 U
Hexachlorocyclopentadiene				MG/KG	0.36 U	0.37 U	0.36 U
Hexachloroethane				MG/KG	0.036 U	0.037 U	0.036 U
Indeno(1,2,3-C,D)Pyrene	0.5	0.5	8.2	MG/KG	0.036 U	0.016 J	0.036 U
Isophorone				MG/KG	0.15 U	0.15 U	0.15 U
Naphthalene	12	100	12	MG/KG	0.36 U	0.37 U	0.36 U



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Table 2. Summary of Semivolatile Organic Compounds in Soil, 1221 Spofford Avenue, Bronx, New York (April/May 2018)

			Sample Design	gnation:	RXMW-6	RXMW-9	RXMW-9
			Samp	ole Date:	04/27/2018	04/23/2018	04/25/2018
			Sample Deptl	n (ft bls):	9 - 11	0 - 2	5 - 7
			N	N	N		
	NYSDEC Part 375	NYSDEC Part 375 NYSDEC Part 375 NYSDEC Part 375					
	Unrestricted Use	Restricted	Protection of				
Parameter	SCO	Residential SCO	Groundwater SCO	Unit			
Nitrobenzene				MG/KG	0.036 U	0.037 U	0.036 U
N-Nitrosodi-N-Propylamine				MG/KG	0.036 U	0.037 U	0.036 U
N-Nitrosodiphenylamine				MG/KG	0.36 U	0.37 U	0.36 U
Pentachlorophenol	0.8	6.7	0.8	MG/KG	0.29 U	0.3 U	0.29 U
Phenanthrene	100	100	1000	MG/KG	0.36 U	0.37 U	0.36 U
Phenol	0.33	100	0.33	MG/KG	0.36 U	0.37 U	0.36 U
Pyrene	100	100	1000	MG/KG	0.0092 J	0.032 J	0.019 J



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Table 2. Summary of Semivolatile Organic Compounds in Soil, 1221 Spofford Avenue, Bronx, New York (April/May 2018)

			Sample Desi	gnation:	RXSB-11	RXSB-11	RXSB-12
			Samp	ole Date:	04/23/2018	04/26/2018	04/23/2018
			Sample Deptl	n (ft bls):	0 - 2	3 - 5	0 - 2
			Normal or Field D	uplicate:	N	N	N
	NYSDEC Part 375	NYSDEC Part 375	NYSDEC Part 375				
	Unrestricted Use	Restricted	Protection of				
Parameter	SCO	Residential SCO	Groundwater SCO	Unit			
1,2,4,5-Tetrachlorobenzene				MG/KG	0.35 U	0.36 U	0.36 U
2,3,4,6-Tetrachlorophenol				MG/KG	0.35 U	0.36 U	0.36 U
2,4,5-Trichlorophenol				MG/KG	0.35 U	0.36 U	0.36 U
2,4,6-Trichlorophenol			-	MG/KG	0.14 U	0.14 U	0.14 U
2,4-Dichlorophenol				MG/KG	0.14 U	0.14 U	0.14 U
2,4-Dimethylphenol				MG/KG	0.35 U	0.36 U	0.36 U
2,4-Dinitrophenol				MG/KG	0.28 U	0.29 U	0.29 U
2,4-Dinitrotoluene				MG/KG	0.071 U	0.072 U	0.073 U
2,6-Dinitrotoluene				MG/KG	0.071 U	0.072 U	0.073 U
2-Chloronaphthalene				MG/KG	0.35 U	0.36 U	0.36 U
2-Chlorophenol				MG/KG	0.35 U	0.36 U	0.36 U
2-Methylnaphthalene				MG/KG	0.035 J	0.36 U	0.36 U
2-Methylphenol (O-Cresol)	0.33	100	0.33	MG/KG	0.35 U	0.36 U	0.36 U
2-Nitroaniline				MG/KG	0.35 U	0.36 U	0.36 U
2-Nitrophenol				MG/KG	0.35 U	0.36 U	0.36 U
3,3'-Dichlorobenzidine				MG/KG	0.14 U	0.14 U	0.14 U
3-Nitroaniline				MG/KG	0.35 U	0.36 U	0.36 U
4,6-Dinitro-2-Methylphenol				MG/KG	0.28 U	0.29 U	0.29 U
4-Bromophenyl Phenyl Ether				MG/KG	0.35 U	0.36 U	0.36 U
4-Chloro-3-Methylphenol				MG/KG	0.35 U	0.36 U	0.36 U
4-Chloroaniline				MG/KG	0.35 U	0.36 U	0.36 U
4-Chlorophenyl Phenyl Ether				MG/KG	0.35 U	0.36 U	0.36 U
4-Methylphenol (P-Cresol)	0.33	100	0.33	MG/KG	0.35 U	0.36 U	0.36 U
4-Nitroaniline				MG/KG	0.35 U	0.36 U	0.36 U
4-Nitrophenol				MG/KG	0.71 U	0.72 U	0.73 U
Acenaphthene	20	100	98	MG/KG	0.35 U	0.36 U	0.36 U
Acenaphthylene	100	100	107	MG/KG	0.068 J	0.36 U	0.36 U
Acetophenone				MG/KG	0.35 U	0.36 U	0.36 U
Anthracene	100	100	1000	MG/KG	0.06 J	0.36 U	0.36 U
Atrazine				MG/KG	0.14 U	0.14 U	0.14 U



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Table 2. Summary of Semivolatile Organic Compounds in Soil, 1221 Spofford Avenue, Bronx, New York (April/May 2018)

			Sample Desi	gnation:	RXSB-11	RXSB-11	RXSB-12
			Samp	ole Date:	04/23/2018	04/26/2018	04/23/2018
			Sample Dept	h (ft bls):	0 - 2	3 - 5	0 - 2
			Normal or Field D	uplicate:	N	N	N
	NYSDEC Part 375	NYSDEC Part 375	NYSDEC Part 375				
	Unrestricted Use	Restricted	Protection of				
Parameter	SCO	Residential SCO	Groundwater SCO	Unit			
Benzaldehyde				MG/KG	0.35 U	0.36 U	0.36 U
Benzo(A)Anthracene	1	1	1	MG/KG	0.061	0.036 U	0.036 U
Benzo(A)Pyrene	1	1	22	MG/KG	0.1	0.036 U	0.036 U
Benzo(B)Fluoranthene	1	1	1.7	MG/KG	0.15	0.036 U	0.036 U
Benzo(G,H,I)Perylene	100	100	1000	MG/KG	0.062 J	0.36 U	0.36 U
Benzo(K)Fluoranthene	0.8	3.9	1.7	MG/KG	0.051	0.036 U	0.036 U
Benzyl Butyl Phthalate				MG/KG	0.35 U	0.36 U	0.36 U
Biphenyl (Diphenyl)				MG/KG	0.35 U	0.36 U	0.36 U
Bis(2-Chloroethoxy) Methane				MG/KG	0.35 U	0.36 U	0.36 U
Bis(2-Chloroethyl) Ether (2-Chloroethyl Ether)				MG/KG	0.035 U	0.036 U	0.036 U
Bis(2-Chloroisopropyl) Ether				MG/KG	0.35 U	0.36 U	0.36 U
Bis(2-Ethylhexyl) Phthalate				MG/KG	0.35 U	0.36 U	0.36 U
Caprolactam				MG/KG	0.35 U	0.36 U	0.36 U
Carbazole				MG/KG	0.35 U	0.36 U	0.36 U
Chrysene	1	3.9	1	MG/KG	0.06 J	0.36 U	0.36 U
Dibenz(A,H)Anthracene	0.33	0.33	1000	MG/KG	0.019 J	0.036 U	0.036 U
Dibenzofuran	7	59	210	MG/KG	0.35 U	0.36 U	0.36 U
Diethyl Phthalate				MG/KG	0.35 U	0.36 U	0.36 U
Dimethyl Phthalate				MG/KG	0.35 U	0.36 U	0.36 U
Di-N-Butyl Phthalate				MG/KG	0.35 U	0.36 U	0.36 U
Di-N-Octylphthalate				MG/KG	0.35 U	0.36 U	0.36 U
Fluoranthene	100	100	1000	MG/KG	0.081 J	0.36 U	0.36 U
Fluorene	30	100	386	MG/KG	0.02 J	0.36 U	0.36 U
Hexachlorobenzene	0.33	1.2	3.2	MG/KG	0.035 U	0.036 U	0.036 U
Hexachlorobutadiene				MG/KG	0.071 U	0.072 U	0.073 U
Hexachlorocyclopentadiene				MG/KG	0.35 U	0.36 U	0.36 U
Hexachloroethane				MG/KG	0.035 U	0.036 U	0.036 U
Indeno(1,2,3-C,D)Pyrene	0.5	0.5	8.2	MG/KG	0.077	0.036 U	0.036 U
Isophorone				MG/KG	0.14 U	0.14 U	0.14 U
Naphthalene	12	100	12	MG/KG	0.061 J	0.36 U	0.36 U



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Table 2. Summary of Semivolatile Organic Compounds in Soil, 1221 Spofford Avenue, Bronx, New York (April/May 2018)

			Sample Desi	gnation:	RXSB-11	RXSB-11	RXSB-12
			Samp	ole Date:	04/23/2018	04/26/2018	04/23/2018
			Sample Deptl	n (ft bls):	0 - 2	3 - 5	0 - 2
		Normal or Field Duplicate:			N	N	N
	NYSDEC Part 375 NYSDEC Part 375 NYSDEC Part 375						
	Unrestricted Use Restricted Protection of						
Parameter	SCO	Residential SCO	Groundwater SCO	Unit			
Nitrobenzene				MG/KG	0.035 U	0.036 U	0.036 U
N-Nitrosodi-N-Propylamine				MG/KG	0.035 U	0.036 U	0.036 U
N-Nitrosodiphenylamine				MG/KG	0.35 U	0.36 U	0.36 U
Pentachlorophenol	0.8	6.7	0.8	MG/KG	0.28 U	0.29 U	0.29 U
Phenanthrene	100	100	1000	MG/KG	0.052 J	0.36 U	0.36 U
Phenol	0.33	100	0.33	MG/KG	0.35 U	0.36 U	0.36 U
Pyrene	100	100	1000	MG/KG	0.079 J	0.36 U	0.36 U



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Table 2. Summary of Semivolatile Organic Compounds in Soil, 1221 Spofford Avenue, Bronx, New York (April/May 2018)

			Sample Desi	gnation:	RXSB-12	RXSB-13	RXSB-13
			Samp	ole Date:	04/26/2018	04/24/2018	04/26/2018
			Sample Depti	n (ft bls):	6 - 8	0 - 2	13 - 15
			Normal or Field D	uplicate:	N	N	N
	NYSDEC Part 375	NYSDEC Part 375	NYSDEC Part 375				
	Unrestricted Use	Restricted	Protection of				
Parameter	SCO	Residential SCO	Groundwater SCO	Unit			
1,2,4,5-Tetrachlorobenzene				MG/KG	0.38 U	0.39 U	0.36 U
2,3,4,6-Tetrachlorophenol				MG/KG	0.38 U	0.39 U	0.36 U
2,4,5-Trichlorophenol			-	MG/KG	0.38 U	0.39 U	0.36 U
2,4,6-Trichlorophenol			-	MG/KG	0.15 U	0.16 U	0.15 U
2,4-Dichlorophenol				MG/KG	0.15 U	0.16 U	0.15 U
2,4-Dimethylphenol				MG/KG	0.38 U	0.39 U	0.36 U
2,4-Dinitrophenol				MG/KG	0.31 U	0.32 U	0.29 U
2,4-Dinitrotoluene				MG/KG	0.077 U	0.079 U	0.074 U
2,6-Dinitrotoluene				MG/KG	0.077 U	0.079 U	0.074 U
2-Chloronaphthalene				MG/KG	0.38 U	0.39 U	0.36 U
2-Chlorophenol				MG/KG	0.38 U	0.39 U	0.36 U
2-Methylnaphthalene				MG/KG	0.38 U	0.045 J	0.36 U
2-Methylphenol (O-Cresol)	0.33	100	0.33	MG/KG	0.38 U	0.39 U	0.36 U
2-Nitroaniline				MG/KG	0.38 U	0.39 U	0.36 U
2-Nitrophenol				MG/KG	0.38 U	0.39 U	0.36 U
3,3'-Dichlorobenzidine				MG/KG	0.15 U	0.16 U	0.15 U
3-Nitroaniline				MG/KG	0.38 U	0.39 U	0.36 U
4,6-Dinitro-2-Methylphenol				MG/KG	0.31 U	0.32 U	0.29 U
4-Bromophenyl Phenyl Ether				MG/KG	0.38 U	0.39 U	0.36 U
4-Chloro-3-Methylphenol				MG/KG	0.38 U	0.39 U	0.36 U
4-Chloroaniline				MG/KG	0.38 U	0.39 U	0.36 U
4-Chlorophenyl Phenyl Ether				MG/KG	0.38 U	0.39 U	0.36 U
4-Methylphenol (P-Cresol)	0.33	100	0.33	MG/KG	0.38 U	0.39 U	0.36 U
4-Nitroaniline				MG/KG	0.38 U	0.39 U	0.36 U
4-Nitrophenol				MG/KG	0.77 U	0.79 U	0.74 U
Acenaphthene	20	100	98	MG/KG	0.38 U	0.11 J	0.36 U
Acenaphthylene	100	100	107	MG/KG	0.38 U	0.11 J	0.36 U
Acetophenone				MG/KG	0.38 U	0.39 U	0.36 U
Anthracene	100	100	1000	MG/KG	0.38 U	0.29 J	0.36 U
Atrazine				MG/KG	0.15 U	0.16 UT	0.15 U



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Table 2. Summary of Semivolatile Organic Compounds in Soil, 1221 Spofford Avenue, Bronx, New York (April/May 2018)

			Sample Design	gnation:	RXSB-12	RXSB-13	RXSB-13
			Samp	ole Date:	04/26/2018	04/24/2018	04/26/2018
			Sample Deptl	n (ft bls):	6 - 8	0 - 2	13 - 15
			Normal or Field D	uplicate:	N	N	N
	NYSDEC Part 375	NYSDEC Part 375	NYSDEC Part 375				
	Unrestricted Use	Restricted	Protection of				
Parameter	SCO	Residential SCO	Groundwater SCO	Unit			
Benzaldehyde				MG/KG	0.38 U	0.019 J	0.36 U
Benzo(A)Anthracene	1	1	1	MG/KG	0.038 U	1.2	0.036 U
Benzo(A)Pyrene	1	1	22	MG/KG	0.038 U	1.3	0.036 U
Benzo(B)Fluoranthene	1	1	1.7	MG/KG	0.038 U	1.7	0.036 U
Benzo(G,H,I)Perylene	100	100	1000	MG/KG	0.38 U	0.79	0.36 U
Benzo(K)Fluoranthene	0.8	3.9	1.7	MG/KG	0.038 U	0.65	0.036 U
Benzyl Butyl Phthalate			-	MG/KG	0.38 U	0.39 U	0.36 U
Biphenyl (Diphenyl)				MG/KG	0.38 U	0.39 U	0.36 U
Bis(2-Chloroethoxy) Methane				MG/KG	0.38 U	0.39 U	0.36 U
Bis(2-Chloroethyl) Ether (2-Chloroethyl Ether)				MG/KG	0.038 U	0.039 U	0.036 U
Bis(2-Chloroisopropyl) Ether				MG/KG	0.38 U	0.39 U	0.36 U
Bis(2-Ethylhexyl) Phthalate				MG/KG	0.38 U	0.39 U	0.36 U
Caprolactam				MG/KG	0.38 U	0.39 U	0.36 U
Carbazole				MG/KG	0.38 U	0.12 J	0.36 U
Chrysene	1	3.9	1	MG/KG	0.38 U	1.3	0.36 U
Dibenz(A,H)Anthracene	0.33	0.33	1000	MG/KG	0.038 U	0.23	0.036 U
Dibenzofuran	7	59	210	MG/KG	0.38 U	0.069 J	0.36 U
Diethyl Phthalate				MG/KG	0.38 U	0.39 U	0.36 U
Dimethyl Phthalate				MG/KG	0.38 U	0.39 U	0.36 U
Di-N-Butyl Phthalate				MG/KG	0.38 U	0.39 U	0.36 U
Di-N-Octylphthalate				MG/KG	0.38 U	0.39 U	0.36 U
Fluoranthene	100	100	1000	MG/KG	0.38 U	2.3	0.36 U
Fluorene	30	100	386	MG/KG	0.38 U	0.086 J	0.36 U
Hexachlorobenzene	0.33	1.2	3.2	MG/KG	0.038 U	0.039 U	0.036 U
Hexachlorobutadiene				MG/KG	0.077 U	0.079 U	0.074 U
Hexachlorocyclopentadiene				MG/KG	0.38 U	0.39 U	0.36 U
Hexachloroethane				MG/KG	0.038 U	0.039 U	0.036 U
Indeno(1,2,3-C,D)Pyrene	0.5	0.5	8.2	MG/KG	0.038 U	0.78	0.036 U
Isophorone				MG/KG	0.15 U	0.16 U	0.15 U
Naphthalene	12	100	12	MG/KG	0.38 U	0.12 J	0.36 U



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Table 2. Summary of Semivolatile Organic Compounds in Soil, 1221 Spofford Avenue, Bronx, New York (April/May 2018)

			Sample Design	gnation:	RXSB-12	RXSB-13	RXSB-13
			Samp	ole Date:	04/26/2018	04/24/2018	04/26/2018
			Sample Deptl	n (ft bls):	6 - 8	0 - 2	13 - 15
		Normal or Field Duplicate:			N	N	N
	NYSDEC Part 375	NYSDEC Part 375	NYSDEC Part 375				
	Unrestricted Use	Restricted	Protection of				
Parameter	SCO	Residential SCO	Groundwater SCO	Unit			
Nitrobenzene				MG/KG	0.038 U	0.039 U	0.036 U
N-Nitrosodi-N-Propylamine				MG/KG	0.038 U	0.039 U	0.036 U
N-Nitrosodiphenylamine				MG/KG	0.38 U	0.39 U	0.36 U
Pentachlorophenol	0.8	6.7	0.8	MG/KG	0.31 U	0.32 U	0.29 U
Phenanthrene	100	100	1000	MG/KG	0.38 U	1.1	0.36 U
Phenol	0.33	100	0.33	MG/KG	0.38 U	0.39 U	0.36 U
Pyrene	100	100	1000	MG/KG	0.38 U	2.2	0.36 U



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Table 2. Summary of Semivolatile Organic Compounds in Soil, 1221 Spofford Avenue, Bronx, New York (April/May 2018)

			Sample Desi	gnation:	RXSB-14	RXSB-14	RXSB-15
			Samp	ole Date:	04/24/2018	04/24/2018	04/26/2018
			Sample Deptl	h (ft bls):	0 - 2	0 - 2	0 - 2
			Normal or Field D	uplicate:	N	FD	N
	NYSDEC Part 375	NYSDEC Part 375	NYSDEC Part 375				
	Unrestricted Use	Restricted	Protection of				
Parameter	SCO	Residential SCO	Groundwater SCO	Unit			
1,2,4,5-Tetrachlorobenzene				MG/KG	0.35 U	0.35 U	0.36 U
2,3,4,6-Tetrachlorophenol				MG/KG	0.35 U	0.35 U	0.36 U
2,4,5-Trichlorophenol				MG/KG	0.35 U	0.35 U	0.36 U
2,4,6-Trichlorophenol				MG/KG	0.14 U	0.14 U	0.15 U
2,4-Dichlorophenol				MG/KG	0.14 U	0.14 U	0.15 U
2,4-Dimethylphenol				MG/KG	0.35 U	0.35 U	0.36 U
2,4-Dinitrophenol				MG/KG	0.28 U	0.28 U	0.29 U
2,4-Dinitrotoluene				MG/KG	0.071 U	0.072 U	0.073 U
2,6-Dinitrotoluene				MG/KG	0.071 U	0.072 U	0.073 U
2-Chloronaphthalene				MG/KG	0.35 U	0.35 U	0.36 U
2-Chlorophenol				MG/KG	0.35 U	0.35 U	0.36 U
2-Methylnaphthalene				MG/KG	0.35 U	0.014 J	0.36 U
2-Methylphenol (O-Cresol)	0.33	100	0.33	MG/KG	0.35 U	0.35 U	0.36 U
2-Nitroaniline				MG/KG	0.35 U	0.35 U	0.36 U
2-Nitrophenol				MG/KG	0.35 U	0.35 U	0.36 U
3,3'-Dichlorobenzidine				MG/KG	0.14 U	0.14 U	0.15 U
3-Nitroaniline				MG/KG	0.35 U	0.35 U	0.36 U
4,6-Dinitro-2-Methylphenol				MG/KG	0.28 U	0.28 U	0.29 U
4-Bromophenyl Phenyl Ether				MG/KG	0.35 U	0.35 U	0.36 U
4-Chloro-3-Methylphenol				MG/KG	0.35 U	0.35 U	0.36 U
4-Chloroaniline				MG/KG	0.35 U	0.35 U	0.36 U
4-Chlorophenyl Phenyl Ether				MG/KG	0.35 U	0.35 U	0.36 U
4-Methylphenol (P-Cresol)	0.33	100	0.33	MG/KG	0.35 U	0.35 U	0.36 U
4-Nitroaniline				MG/KG	0.35 U	0.35 U	0.36 U
4-Nitrophenol				MG/KG	0.71 U	0.72 U	0.73 U
Acenaphthene	20	100	98	MG/KG	0.35 U	0.12 J	0.36 U
Acenaphthylene	100	100	107	MG/KG	0.35 U	0.35 U	0.36 U
Acetophenone				MG/KG	0.35 U	0.35 U	0.36 U
Anthracene	100	100	1000	MG/KG	0.35 U	0.14 J	0.039 J
Atrazine				MG/KG	0.14 UT	0.14 UT	0.15 U



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Table 2. Summary of Semivolatile Organic Compounds in Soil, 1221 Spofford Avenue, Bronx, New York (April/May 2018)

			Sample Desi	gnation:	RXSB-14	RXSB-14	RXSB-15
			Samp	ole Date:	04/24/2018	04/24/2018	04/26/2018
			Sample Dept	h (ft bls):	0 - 2	0 - 2	0 - 2
			Normal or Field D	uplicate:	N	FD	N
	NYSDEC Part 375	NYSDEC Part 375	NYSDEC Part 375				
	Unrestricted Use	Restricted	Protection of				
Parameter	SCO	Residential SCO	Groundwater SCO	Unit			
Benzaldehyde				MG/KG	0.35 U	0.35 U	0.36 U
Benzo(A)Anthracene	1	1	1	MG/KG	0.11	0.4	0.16
Benzo(A)Pyrene	1	1	22	MG/KG	0.11	0.32	0.15
Benzo(B)Fluoranthene	1	1	1.7	MG/KG	0.15	0.44	0.19
Benzo(G,H,I)Perylene	100	100	1000	MG/KG	0.063 J	0.15 J	0.092 J
Benzo(K)Fluoranthene	0.8	3.9	1.7	MG/KG	0.05	0.16	0.074
Benzyl Butyl Phthalate				MG/KG	0.35 U	0.35 U	0.36 U
Biphenyl (Diphenyl)				MG/KG	0.35 U	0.35 U	0.36 U
Bis(2-Chloroethoxy) Methane				MG/KG	0.35 U	0.35 U	0.36 U
Bis(2-Chloroethyl) Ether (2-Chloroethyl Ether)				MG/KG	0.035 U	0.035 U	0.036 U
Bis(2-Chloroisopropyl) Ether				MG/KG	0.35 U	0.35 U	0.36 U
Bis(2-Ethylhexyl) Phthalate				MG/KG	0.35 U	0.35 U	0.36 U
Caprolactam				MG/KG	0.35 U	0.35 U	0.36 U
Carbazole				MG/KG	0.35 U	0.065 J	0.02 J
Chrysene	1	3.9	1	MG/KG	0.12 J	0.37	0.17 J
Dibenz(A,H)Anthracene	0.33	0.33	1000	MG/KG	0.023 J	0.054	0.031 J
Dibenzofuran	7	59	210	MG/KG	0.35 U	0.03 J	0.36 U
Diethyl Phthalate				MG/KG	0.35 U	0.35 U	0.36 U
Dimethyl Phthalate				MG/KG	0.35 U	0.35 U	0.36 U
Di-N-Butyl Phthalate				MG/KG	0.35 U	0.35 U	0.36 U
Di-N-Octylphthalate				MG/KG	0.044 J	0.35 U	0.36 U
Fluoranthene	100	100	1000	MG/KG	0.2 J	0.79	0.31 J
Fluorene	30	100	386	MG/KG	0.35 U	0.057 J	0.013 J
Hexachlorobenzene	0.33	1.2	3.2	MG/KG	0.035 U	0.035 U	0.036 U
Hexachlorobutadiene				MG/KG	0.071 U	0.072 U	0.073 U
Hexachlorocyclopentadiene				MG/KG	0.35 U	0.35 U	0.36 U
Hexachloroethane				MG/KG	0.035 U	0.035 U	0.036 U
Indeno(1,2,3-C,D)Pyrene	0.5	0.5	8.2	MG/KG	0.077	0.19	0.11
Isophorone				MG/KG	0.14 U	0.14 U	0.15 U
Naphthalene	12	100	12	MG/KG	0.35 U	0.024 J	0.36 U



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Table 2. Summary of Semivolatile Organic Compounds in Soil, 1221 Spofford Avenue, Bronx, New York (April/May 2018)

			Sample Design	gnation:	RXSB-14	RXSB-14	RXSB-15
			Samp	ole Date:	04/24/2018	04/24/2018	04/26/2018
			Sample Deptl	n (ft bls):	0 - 2	0 - 2	0 - 2
		Normal or Field Duplicate:				FD	N
	NYSDEC Part 375	NYSDEC Part 375	NYSDEC Part 375				
	Unrestricted Use	Restricted	Protection of				
Parameter	SCO	Residential SCO	Groundwater SCO	Unit			
Nitrobenzene				MG/KG	0.035 U	0.035 U	0.036 U
N-Nitrosodi-N-Propylamine				MG/KG	0.035 U	0.035 U	0.036 U
N-Nitrosodiphenylamine				MG/KG	0.35 U	0.35 U	0.36 U
Pentachlorophenol	0.8	6.7	0.8	MG/KG	0.28 U	0.28 U	0.29 U
Phenanthrene	100	100	1000	MG/KG	0.086 J	0.62	0.17 J
Phenol	0.33	100	0.33	MG/KG	0.35 U	0.016 J	0.36 U
Pyrene	100	100	1000	MG/KG	0.17 J	0.69	0.28 J



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Table 2. Summary of Semivolatile Organic Compounds in Soil, 1221 Spofford Avenue, Bronx, New York (April/May 2018)

			Sample Desi	gnation:	RXSB-15
			•	ole Date:	05/01/2018
			Sample Dept	h (ft bls):	6 - 8
			Normal or Field D	uplicate:	N
	NYSDEC Part 375	NYSDEC Part 375	NYSDEC Part 375		
	Unrestricted Use	Restricted	Protection of		
Parameter	SCO	Residential SCO	Groundwater SCO	Unit	
1,2,4,5-Tetrachlorobenzene				MG/KG	0.33 U
2,3,4,6-Tetrachlorophenol			-	MG/KG	0.33 U
2,4,5-Trichlorophenol				MG/KG	0.33 U
2,4,6-Trichlorophenol				MG/KG	0.13 U
2,4-Dichlorophenol				MG/KG	0.13 U
2,4-Dimethylphenol				MG/KG	0.33 U
2,4-Dinitrophenol				MG/KG	0.27 U
2,4-Dinitrotoluene				MG/KG	0.067 U
2,6-Dinitrotoluene				MG/KG	0.067 U
2-Chloronaphthalene				MG/KG	0.33 U
2-Chlorophenol				MG/KG	0.33 U
2-Methylnaphthalene				MG/KG	0.33 U
2-Methylphenol (O-Cresol)	0.33	100	0.33	MG/KG	0.33 U
2-Nitroaniline				MG/KG	0.33 U
2-Nitrophenol				MG/KG	0.33 U
3,3'-Dichlorobenzidine				MG/KG	0.13 U
3-Nitroaniline				MG/KG	0.33 U
4,6-Dinitro-2-Methylphenol				MG/KG	0.27 U
4-Bromophenyl Phenyl Ether				MG/KG	0.33 U
4-Chloro-3-Methylphenol				MG/KG	0.33 U
4-Chloroaniline				MG/KG	0.33 U
4-Chlorophenyl Phenyl Ether				MG/KG	0.33 U
4-Methylphenol (P-Cresol)	0.33	100	0.33	MG/KG	0.33 U
4-Nitroaniline				MG/KG	0.33 U
4-Nitrophenol				MG/KG	0.67 U
Acenaphthene	20	100	98	MG/KG	0.33 U
Acenaphthylene	100	100	107	MG/KG	0.33 U
Acetophenone				MG/KG	0.33 U
Anthracene	100	100	1000	MG/KG	0.33 U
Atrazine				MG/KG	0.13 UT



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Table 2. Summary of Semivolatile Organic Compounds in Soil, 1221 Spofford Avenue, Bronx, New York (April/May 2018)

Sample Depth (It bigs):   Normal or Field Duplicate:   Normal or Field D				Sample Desi	gnation:	RXSB-15
NySDEC Part 375				•	~	05/01/2018
NYSDEC Part 375				Sample Dept	h (ft bls):	6 - 8
Parameter				Normal or Field D	uplicate:	N
Parameter   SCO   Residential SCO   Groundwater SCO   Unit		NYSDEC Part 375	NYSDEC Part 375	NYSDEC Part 375		
Benzaldehyde			Restricted	Protection of		
Benzo(A)Anthracene		SCO	Residential SCO	Groundwater SCO		
Benzo(A)Pyrene						
Benzo(B)Fluoranthene	. ,	1	1	1		
Benzo(G,H,I)Perylene	. , ,	1	1			
Benzo(K)Fluoranthene	` '	=	1	1.7		
Benzyl Butyl Phthalate		100	100	1000		
Biphenyl (Diphenyl)	Benzo(K)Fluoranthene	0.8	3.9	1.7	MG/KG	0.033 U
Bis(2-Chloroethoxy) Methane	Benzyl Butyl Phthalate				MG/KG	0.33 U
Bis(2-Chloroethyl) Ether (2-Chloroethyl Ether)       MG/KG   0.033 L	Biphenyl (Diphenyl)				MG/KG	0.33 U
Bis(2-Chloroisopropyl) Ether	Bis(2-Chloroethoxy) Methane				MG/KG	0.33 U
Bis(2-Ethylhexyl) Phthalate	Bis(2-Chloroethyl) Ether (2-Chloroethyl Ether)				MG/KG	0.033 U
Caprolactam            MG/KG         0.33 U           Carbazole            MG/KG         0.33 U           Chrysene         1         3.9         1         MG/KG         0.018 J           Dibenz(A,H)Anthracene         0.33         0.33         1000         MG/KG         0.033 U           Dibenzofuran         7         59         210         MG/KG         0.33 U           Diethyl Phthalate            MG/KG         0.33 U           Di-N-Butyl Phthalate            MG/KG         0.33 U           Di-N-Octylphthalate            MG/KG         0.33 U           Fluoranthene         100         100         1000         MG/KG         0.033 U           Fluorene         30         100         386         MG/KG         0.033 U           Hexachlorobenzene         0.33         1.2         3.2         MG/KG         0.033 U           Hexachlorocyclopentadiene            MG/KG         0.033 U           Hexachloroethane            M	Bis(2-Chloroisopropyl) Ether				MG/KG	0.33 U
Carbazole            MG/KG         0.33 U           Chrysene         1         3.9         1         MG/KG         0.018 J           Dibenz(A,H)Anthracene         0.33         0.33         1000         MG/KG         0.033 U           Dibenzofuran         7         59         210         MG/KG         0.33 U           Diethyl Phthalate            MG/KG         0.33 U           Di-N-Butyl Phthalate            MG/KG         0.33 U           Di-N-Octylphthalate            MG/KG         0.33 U           Fluoranthene         100         100         1000         MG/KG         0.023 J           Fluorene         30         100         386         MG/KG         0.33 U           Hexachlorobenzene         0.33         1.2         3.2         MG/KG         0.033 U           Hexachlorocyclopentadiene            MG/KG         0.033 U           Hexachloroethane            MG/KG         0.018 J           Indeno(1,2,3-C,D)Pyrene         0.5         0.5         8.2 <td>Bis(2-Ethylhexyl) Phthalate</td> <td></td> <td></td> <td></td> <td>MG/KG</td> <td>0.33 U</td>	Bis(2-Ethylhexyl) Phthalate				MG/KG	0.33 U
Chrysene         1         3.9         1         MG/KG         0.018 J           Dibenz(A,H)Anthracene         0.33         0.33         1000         MG/KG         0.033 U           Dibenzofuran         7         59         210         MG/KG         0.33 U           Diethyl Phthalate            MG/KG         0.33 U           Dimethyl Phthalate            MG/KG         0.33 U           Di-N-Butyl Phthalate            MG/KG         0.33 U           Di-N-Octylphthalate            MG/KG         0.33 U           Fluoranthene         100         100         1000         MG/KG         0.023 J           Fluorene         30         100         386         MG/KG         0.33 U           Hexachlorobenzene         0.33         1.2         3.2         MG/KG         0.033 U           Hexachlorocyclopentadiene            MG/KG         0.033 U           Hexachloroethane            MG/KG         0.018 J           Indeno(1,2,3-C,D)Pyrene         0.5         0.5 <t< td=""><td>Caprolactam</td><td></td><td></td><td></td><td>MG/KG</td><td>0.33 U</td></t<>	Caprolactam				MG/KG	0.33 U
Dibenz(A,H)Anthracene         0.33         0.33         1000         MG/KG         0.033 U           Dibenzofuran         7         59         210         MG/KG         0.33 U           Diethyl Phthalate            MG/KG         0.33 U           Di-N-Butyl Phthalate            MG/KG         0.33 U           Di-N-Octylphthalate            MG/KG         0.33 U           Fluoranthene         100         100         1000         MG/KG         0.023 J           Fluorene         30         100         386         MG/KG         0.33 U           Hexachlorobenzene         0.33         1.2         3.2         MG/KG         0.033 U           Hexachlorocyclopentadiene             MG/KG         0.033 U           Hexachloroethane            MG/KG         0.018 J           Isophorone            MG/KG         0.13 U	Carbazole				MG/KG	0.33 U
Dibenzofuran         7         59         210         MG/KG         0.33 U           Diethyl Phthalate            MG/KG         0.33 U           Dimethyl Phthalate            MG/KG         0.33 U           Di-N-Butyl Phthalate            MG/KG         0.33 U           Di-N-Octylphthalate            MG/KG         0.33 U           Fluoranthene         100         100         1000         MG/KG         0.023 J           Fluorene         30         100         386         MG/KG         0.33 U           Hexachlorobenzene         0.33         1.2         3.2         MG/KG         0.033 U           Hexachlorobutadiene            MG/KG         0.033 U           Hexachlorocyclopentadiene            MG/KG         0.033 U           Indeno(1,2,3-C,D)Pyrene         0.5         0.5         8.2         MG/KG         0.018 J           Isophorone                  <	Chrysene	1	3.9	1	MG/KG	0.018 J
Diethyl Phthalate            MG/KG         0.33 U           Di-N-Butyl Phthalate            MG/KG         0.33 U           Di-N-Octylphthalate            MG/KG         0.33 U           Fluoranthene         100         100         1000         MG/KG         0.023 J           Fluorene         30         100         386         MG/KG         0.33 U           Hexachlorobenzene         0.33         1.2         3.2         MG/KG         0.033 U           Hexachlorocyclopentadiene            MG/KG         0.33 U           Hexachloroethane            MG/KG         0.033 U           Indeno(1,2,3-C,D)Pyrene         0.5         0.5         8.2         MG/KG         0.018 J           Isophorone              MG/KG         0.13 U	Dibenz(A,H)Anthracene	0.33	0.33	1000	MG/KG	0.033 U
Dimethyl Phthalate            MG/KG         0.33 U           Di-N-Butyl Phthalate             MG/KG         0.33 U           Di-N-Octylphthalate            MG/KG         0.33 U           Fluoranthene         100         100         1000         MG/KG         0.023 J           Fluorene         30         100         386         MG/KG         0.33 U           Hexachlorobenzene         0.33         1.2         3.2         MG/KG         0.033 U           Hexachlorobutadiene            MG/KG         0.33 U           Hexachlorocyclopentadiene            MG/KG         0.033 U           Hexachloroethane            MG/KG         0.018 J           Isophorone            MG/KG         0.13 U	Dibenzofuran	7	59	210	MG/KG	0.33 U
Di-N-Butyl Phthalate            MG/KG         0.33 U           Di-N-Octylphthalate            MG/KG         0.33 U           Fluoranthene         100         100         1000         MG/KG         0.023 J           Fluorene         30         100         386         MG/KG         0.33 U           Hexachlorobenzene         0.33         1.2         3.2         MG/KG         0.033 U           Hexachlorobutadiene            MG/KG         0.33 U           Hexachlorocyclopentadiene            MG/KG         0.033 U           Hexachloroethane            MG/KG         0.018 J           Isophorone            MG/KG         0.018 J	Diethyl Phthalate				MG/KG	0.33 U
Di-N-Octylphthalate            MG/KG         0.33 U           Fluorene         30         100         386         MG/KG         0.33 U           Hexachlorobenzene         0.33         1.2         3.2         MG/KG         0.033 U           Hexachlorobutadiene            MG/KG         0.067 U           Hexachlorocyclopentadiene            MG/KG         0.033 U           Hexachloroethane            MG/KG         0.033 U           Indeno(1,2,3-C,D)Pyrene         0.5         0.5         8.2         MG/KG         0.018 J           Isophorone             MG/KG         0.13 U	Dimethyl Phthalate				MG/KG	0.33 U
Fluoranthene         100         100         1000         MG/KG         0.023 J           Fluorene         30         100         386         MG/KG         0.33 U           Hexachlorobenzene         0.33         1.2         3.2         MG/KG         0.033 U           Hexachlorobutadiene            MG/KG         0.067 U           Hexachlorocyclopentadiene            MG/KG         0.33 U           Hexachloroethane            MG/KG         0.033 U           Indeno(1,2,3-C,D)Pyrene         0.5         0.5         8.2         MG/KG         0.018 J           Isophorone             MG/KG         0.13 U	Di-N-Butyl Phthalate				MG/KG	0.33 U
Fluorene         30         100         386         MG/KG         0.33 U           Hexachlorobenzene         0.33         1.2         3.2         MG/KG         0.033 U           Hexachlorobutadiene            MG/KG         0.067 U           Hexachlorocyclopentadiene            MG/KG         0.33 U           Hexachloroethane            MG/KG         0.033 U           Indeno(1,2,3-C,D)Pyrene         0.5         0.5         8.2         MG/KG         0.018 J           Isophorone            MG/KG         0.13 U	Di-N-Octylphthalate				MG/KG	0.33 U
Hexachlorobenzene         0.33         1.2         3.2         MG/KG         0.033 L           Hexachlorobutadiene            MG/KG         0.067 L           Hexachlorocyclopentadiene            MG/KG         0.33 U           Hexachloroethane            MG/KG         0.033 U           Indeno(1,2,3-C,D)Pyrene         0.5         0.5         8.2         MG/KG         0.018 J           Isophorone            MG/KG         0.13 U	Fluoranthene	100	100	1000	MG/KG	0.023 J
Hexachlorobutadiene            MG/KG         0.067 L           Hexachlorocyclopentadiene            MG/KG         0.33 U           Hexachloroethane            MG/KG         0.033 U           Indeno(1,2,3-C,D)Pyrene         0.5         0.5         8.2         MG/KG         0.018 J           Isophorone            MG/KG         0.13 U	Fluorene	30	100	386	MG/KG	0.33 U
Hexachlorocyclopentadiene            MG/KG         0.33 U           Hexachloroethane             MG/KG         0.033 U           Indeno(1,2,3-C,D)Pyrene         0.5         0.5         8.2         MG/KG         0.018 J           Isophorone            MG/KG         0.13 U	Hexachlorobenzene	0.33	1.2	3.2	MG/KG	0.033 U
Hexachloroethane	Hexachlorobutadiene				MG/KG	0.067 U
Hexachloroethane	Hexachlorocyclopentadiene				MG/KG	0.33 U
Isophorone MG/KG 0.13 U					MG/KG	0.033 UT
Isophorone MG/KG 0.13 U	Indeno(1,2,3-C,D)Pyrene	0.5	0.5	8.2	MG/KG	0.018 J
Naphthalene 12 100 12 MG/KG 0.33 II					MG/KG	0.13 U
12   100   12   100   12   100   12   100   12   100	Naphthalene	12	100	12	MG/KG	0.33 U



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Table 2. Summary of Semivolatile Organic Compounds in Soil, 1221 Spofford Avenue, Bronx, New York (April/May 2018)

			Sample Desi	gnation:	RXSB-15
			Samp	ole Date:	05/01/2018
			Sample Dept	h (ft bls):	6 - 8
			Normal or Field D	uplicate:	N
	NYSDEC Part 375	NYSDEC Part 375	NYSDEC Part 375		
	Unrestricted Use	Restricted	Protection of		
Parameter	SCO	Residential SCO	Groundwater SCO	Unit	
Nitrobenzene				MG/KG	0.033 U
N-Nitrosodi-N-Propylamine				MG/KG	0.033 U
N-Nitrosodiphenylamine				MG/KG	0.33 U
Pentachlorophenol	0.8	6.7	0.8	MG/KG	0.27 U
Phenanthrene	100	100	1000	MG/KG	0.33 U
Phenol	0.33	100	0.33	MG/KG	0.33 U
Pyrene	100	100	1000	MG/KG	0.026 J



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Table 3. Summary of Metals in Soil, 1221 Spofford Avenue, Bronx, New York (April/May 2018)

			Sample Desi	gnation:	RXMW-10	RXMW-10	RXMW-11	RXMW-11	RXMW-4
			Sam	ole Date:	04/23/2018	04/23/2018	04/23/2018	04/27/2018	04/24/2018
			Sample Dept	h (ft bls):	0 - 2	2 - 4	0 - 2	11 - 13	0 - 2
			Normal or Field D	uplicate:	N	N	N	N	N
	NYSDEC Part 375	NYSDEC Part 375	NYSDEC Part 375						
	Unrestricted Use	Restricted	Protection of						
Parameter	SCO	Residential SCO	Groundwater SCO	Unit					
Aluminum				MG/KG	18900	24400	12700	11100	9900
Antimony		-		MG/KG	1.1 U	1.1 U	0.99 U	1.1 U	0.82 J
Arsenic	13	16	16	MG/KG	1.9	1.5	0.58 J	1.1 U	2.2
Barium	350	400	820	MG/KG	419	489	111	71.1	161
Beryllium	7.2	72	47	MG/KG	0.53	0.68	0.6	0.45	3
Cadmium	2.5	4.3	7.5	MG/KG	1.1 U	1.1 U	0.99 U	1.1 U	0.42 J
Calcium				MG/KG	6370	5180	2030	436	21600
Chromium, Hexavalent	1	110	19	MG/KG	2.3 U	2.2 U	2.1 U	2.2 U	2.1 U
Chromium, Total	30	180		MG/KG	38.1	46.4	30.1	25.3	66.4
Cobalt				MG/KG	15.4	17.9	22.2	13.2	32.5
Copper	50	270	1720	MG/KG	58.9	57.6	48.3	34.4	468
Cyanide	27	27	40	MG/KG	0.26 U	0.26 U	0.23 U	9.1E-06 U	0.26 U
Iron				MG/KG	30300	34900	24900	18400	44600
Lead	63	400	450	MG/KG	12.7	9.2	7.3	4.7	486
Magnesium				MG/KG	9770	11200	6040	5810	13500
Manganese	1600	2000	2000	MG/KG	343	339	197	151	580
Mercury	0.18	0.81	0.73	MG/KG	0.076	0.018 U	0.017 U	0.017 U	0.039
Nickel	30	310	130	MG/KG	36.7	41.9	34.7	31	67.2
Potassium				MG/KG	7790	9120	7670	8040	3730
Selenium	3.9	180	4	MG/KG	5.5 U	5.6 U	5 U	0.33 J	5.3 U
Silver	2	180	8.3	MG/KG	1.1 U	1.1 U	0.99 U	1.1 U	1.1 U
Sodium				MG/KG	303	357	130	88.2 J	455
Thallium				MG/KG	0.45	0.51	0.47	0.47	0.19 J
Vanadium				MG/KG	75.3	88.2	35.7	37.8	30.4
Zinc	109	10000	2480	MG/KG	78.9	80.4	101	72.3	3460



Table 3. Summary of Metals in Soil, 1221 Spofford Avenue, Bronx, New York (April/May 2018)

			Sample Desi	gnation:	RXMW-4	RXMW-5	RXMW-5	RXMW-6	RXMW-6
			Sam	ole Date:	05/01/2018	04/26/2018	05/02/2018	04/25/2018	04/27/2018
			Sample Dept	h (ft bls):	13 - 15	0 - 2	12 - 14	0 - 2	9 - 11
			Normal or Field D	uplicate:	N	N	N	N	N
	NYSDEC Part 375	NYSDEC Part 375	NYSDEC Part 375						
	Unrestricted Use	Restricted	Protection of						
Parameter	SCO	Residential SCO	Groundwater SCO	Unit					
Aluminum				MG/KG	19500	7910	17400	2800	12600
Antimony				MG/KG	1.1 U	1 U	1 U	0.74 J	1.1 U
Arsenic	13	16	16	MG/KG	0.6 J	3	0.77 J	7.8	1.1 U
Barium	350	400	820	MG/KG	224	198	254	81.6	125
Beryllium	7.2	72	47	MG/KG	1	0.83	1.2	1.3	0.98
Cadmium	2.5	4.3	7.5	MG/KG	0.4 J	1 U	1 U	1.1 U	1.1 U
Calcium				MG/KG	5050	52600	2150	153000	2990
Chromium, Hexavalent	1	110	19	MG/KG	2.2 U	2.3 U	2.2 U	2.1 U	2.2 U
Chromium, Total	30	180		MG/KG	35.6	22	32.9	22	27
Cobalt				MG/KG	15.3	10.9	14.2	13.6	11.7
Copper	50	270	1720	MG/KG	70.4	93	46.4	219	7.8
Cyanide	27	27	40	MG/KG	0.087 BJ	0.24 U	0.24 U	0.26 U	0.26 U
Iron				MG/KG	37200	19400	38100	17600	25900
Lead	63	400	450	MG/KG	27.9	170	12.1	173	14.6
Magnesium				MG/KG	7890	19800	5660	54700	5520
Manganese	1600	2000	2000	MG/KG	333	459	526	252	309
Mercury	0.18	0.81	0.73	MG/KG	0.017 U	0.031	0.017 U	0.012 J	0.017 U
Nickel	30	310	130	MG/KG	31.4	22.6	30.1	29.7	23.5
Potassium				MG/KG	11400	2710	10300	588	8240
Selenium	3.9	180	4	MG/KG	5.5 U	5.2 U	5.2 U	5.3 U	5.3 U
Silver	2	180	8.3	MG/KG	1.1 U	1 U	1 U	1.1 U	1.1 U
Sodium				MG/KG	167	190	110	261	99.7 J
Thallium				MG/KG	0.65	0.18 J	0.44	0.43 U	0.34 J
Vanadium				MG/KG	47.4	27.1	43.8	10.2	32.2
Zinc	109	10000	2480	MG/KG	188	666	75.7	1510	98.5



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Table 3. Summary of Metals in Soil, 1221 Spofford Avenue, Bronx, New York (April/May 2018)

			Sample Desi	gnation:	RXMW-9	RXMW-9	RXSB-11	RXSB-11	RXSB-12
			Sam	ole Date:	04/23/2018	04/25/2018	04/23/2018	04/26/2018	04/23/2018
			Sample Dept	h (ft bls):	0 - 2	5 - 7	0 - 2	3 - 5	0 - 2
			Normal or Field D	uplicate:	N	N	N	N	N
	NYSDEC Part 375	NYSDEC Part 375	NYSDEC Part 375						
	Unrestricted Use	Restricted	Protection of						
Parameter	SCO	Residential SCO	Groundwater SCO	Unit					
Aluminum				MG/KG	9210	15200	5220	17800	11300
Antimony				MG/KG	0.52 J	0.72 J	0.97 U	1.1 U	1.1 U
Arsenic	13	16	16	MG/KG	3.4	1.1	3.9	1.1 U	2
Barium	350	400	820	MG/KG	124	186	67.7	191	142
Beryllium	7.2	72	47	MG/KG	6.3	1.2	0.33 J	1.1	0.55
Cadmium	2.5	4.3	7.5	MG/KG	1.1 U	1.1 U	0.97 U	1.1 U	1.1 U
Calcium				MG/KG	31100	10700	100000	3310	48000
Chromium, Hexavalent	1	110	19	MG/KG	2.2 U	2.2 U	2.1 U	2.1 U	2.1 U
Chromium, Total	30	180		MG/KG	39.6	51.1	15.2	33.3	27.1
Cobalt				MG/KG	23	20.1	5.7	17.1	11
Copper	50	270	1720	MG/KG	242	481	31.1	59.1	38.5
Cyanide	27	27	40	MG/KG	0.27 U	0.26 U	0.25 U	0.063 J	0.24 U
Iron				MG/KG	25700	36800	11600	27200	20400
Lead	63	400	450	MG/KG	306	163	38.6	9.5	11.9
Magnesium				MG/KG	20200	8020	59700	7590	30900
Manganese	1600	2000	2000	MG/KG	461	627	186	235	164
Mercury	0.18	0.81	0.73	MG/KG	0.046	0.018 U	0.026	0.018 U	0.018 U
Nickel	30	310	130	MG/KG	39.8	48.5	14.7	37.8	23.3
Potassium				MG/KG	2840	4950	2680	8640	6900
Selenium	3.9	180	4	MG/KG	5.5 U	0.32 J	4.9 U	5.4 U	5.4 U
Silver	2	180	8.3	MG/KG	1.1 U	1.1 U	0.97 U	1.1 U	1.1 U
Sodium				MG/KG	274	365	151	176	136
Thallium				MG/KG	0.21 J	0.25 J	0.19 J	0.42 J	0.33 J
Vanadium				MG/KG	30.6	40.5	19	58.9	34.4
Zinc	109	10000	2480	MG/KG	2330	1050	91.7	63.1	71.3



Table 3. Summary of Metals in Soil, 1221 Spofford Avenue, Bronx, New York (April/May 2018)

			Sample Desi	gnation:	RXSB-12	RXSB-13	RXSB-13	RXSB-14	RXSB-14
			Sam	ole Date:	04/26/2018	04/24/2018	04/26/2018	04/24/2018	04/24/2018
			Sample Dept	h (ft bls):	6 - 8	0 - 2	13 - 15	0 - 2	0 - 2
			Normal or Field D	uplicate:	N	N	N	N	FD
	NYSDEC Part 375	NYSDEC Part 375	NYSDEC Part 375						
	Unrestricted Use	Restricted	Protection of						
Parameter	SCO	Residential SCO	Groundwater SCO	Unit					
Aluminum				MG/KG	33400	15500	12400	13600	14400
Antimony				MG/KG	2.7 U	0.52 J	1 U	1 U	1 U
Arsenic	13	16	16	MG/KG	1.2 J	7.7	0.77 J	0.74 J	0.9 J
Barium	350	400	820	MG/KG	220	630	147	188	233
Beryllium	7.2	72	47	MG/KG	1.5	1.1	0.7	0.59	0.75
Cadmium	2.5	4.3	7.5	MG/KG	2.7 U	0.82 J	1 U	1 U	1 U
Calcium				MG/KG	3390	50100	1590	10300	9700
Chromium, Hexavalent	1	110	19	MG/KG	2.3 U	2.4 U	2.2 U	2.1 U	2.1 U
Chromium, Total	30	180		MG/KG	102	55.7	34.5	25.2	26.8
Cobalt				MG/KG	99.6	12.4	18.3	11.3	12
Copper	50	270	1720	MG/KG	2100	121	46	47.1	53.8
Cyanide	27	27	40	MG/KG	0.26 U	0.29 U	0.24 U	0.27 U	0.12 J
Iron				MG/KG	73400	28900	26800	26100	26900
Lead	63	400	450	MG/KG	9.7	424	7.1	27.4	37.2
Magnesium				MG/KG	20800	11400	6580	9300	8410
Manganese	1600	2000	2000	MG/KG	373	390	292	155	179
Mercury	0.18	0.81	0.73	MG/KG	0.019 U	0.65	0.017 U	0.017 U	0.018 U
Nickel	30	310	130	MG/KG	85.7	27.2	44.7	23.5	24.4
Potassium				MG/KG	11700	3020	7370	7950	8250
Selenium	3.9	180	4	MG/KG	2.7 J	0.33 J	5.2 U	5.1 U	5.1 U
Silver	2	180	8.3	MG/KG	2.7 U	1.1 U	1 U	1 U	1 U
Sodium				MG/KG	201 J	913	190	102 J	121
Thallium				MG/KG	0.53 J	0.23 J	0.71	0.31 J	0.32 J
Vanadium				MG/KG	117	44.3	42.5	32.5	34.7
Zinc	109	10000	2480	MG/KG	269	899	84.1	104	128



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Table 3. Summary of Metals in Soil, 1221 Spofford Avenue, Bronx, New York (April/May 2018)

			Sample Desi	gnation:	RXSB-15	RXSB-15
			Sam	ole Date:	04/26/2018	05/01/2018
			Sample Dept	h (ft bls):	0 - 2	6 - 8
			Normal or Field D	uplicate:	N	N
	NYSDEC Part 375	NYSDEC Part 375	NYSDEC Part 375			
	Unrestricted Use	Restricted	Protection of			
Parameter	SCO	Residential SCO	Groundwater SCO	Unit		
Aluminum				MG/KG	7210	13800
Antimony				MG/KG	1 U	0.94 U
Arsenic	13	16	16	MG/KG	3	0.85 J
Barium	350	400	820	MG/KG	108	142
Beryllium	7.2	72	47	MG/KG	0.51	0.43
Cadmium	2.5	4.3	7.5	MG/KG	1 U	0.94 U
Calcium				MG/KG	59700	11600
Chromium, Hexavalent	1	110	19	MG/KG	2.2 U	2 U
Chromium, Total	30	180		MG/KG	17.7	27.5
Cobalt				MG/KG	7.9	10.7
Copper	50	270	1720	MG/KG	21.5	4.3
Cyanide	27	27	40	MG/KG	0.26 U	0.24 U
Iron				MG/KG	16400	25400
Lead	63	400	450	MG/KG	26.3	6.7
Magnesium				MG/KG	12000	10000
Manganese	1600	2000	2000	MG/KG	356	209
Mercury	0.18	0.81	0.73	MG/KG	0.015 J	0.016 U
Nickel	30	310	130	MG/KG	15.8	22.1
Potassium				MG/KG	3060	8560
Selenium	3.9	180	4	MG/KG	5.1 U	4.7 U
Silver	2	180	8.3	MG/KG	1 U	0.94 U
Sodium				MG/KG	139	137
Thallium				MG/KG	0.17 J	0.36 J
Vanadium				MG/KG	21.6	32.7
Zinc	109	10000	2480	MG/KG	114	65.2



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Table 4. Summary of Polychlorinated Biphenyls in Soil, 1221 Spofford Avenue, Bronx, New York (April/May 2018)

			Sample Desi	gnation:	RXMW-10	RXMW-10	RXMW-11	RXMW-11
			Sam	ole Date:	04/23/2018	04/23/2018	04/23/2018	04/27/2018
			Sample Dept	h (ft bls):	0 - 2	2 - 4	0 - 2	11 - 13
			Normal or Field D	uplicate:	N	N	N	N
	NYSDEC Part 375	NYSDEC Part 375	NYSDEC Part 375					
	Unrestricted Use	Restricted	Protection of					
Parameter	SCO	Residential SCO	Groundwater SCO	Unit				
PCB-1016 (Aroclor 1016)				MG/KG	0.076 U	0.075 U	0.071 U	0.072 U
PCB-1221 (Aroclor 1221)				MG/KG	0.076 U	0.075 U	0.071 U	0.072 U
PCB-1232 (Aroclor 1232)				MG/KG	0.076 U	0.075 U	0.071 U	0.072 U
PCB-1242 (Aroclor 1242)				MG/KG	0.076 U	0.075 U	0.071 U	0.072 U
PCB-1248 (Aroclor 1248)				MG/KG	0.076 U	0.075 U	0.071 U	0.072 U
PCB-1254 (Aroclor 1254)				MG/KG	0.076 U	0.075 U	0.071 U	0.072 U
PCB-1260 (Aroclor 1260)				MG/KG	0.076 U	0.075 U	0.071 U	0.072 U
PCB-1262 (Aroclor 1262)				MG/KG	0.076 U	0.075 U	0.071 U	0.072 U
PCB-1268 (Aroclor 1268)				MG/KG	0.076 U	0.075 U	0.071 U	0.072 U
Polychlorinated Biphenyl (PCBs)	0.1	1	3.2	MG/KG	0.076 U	0.075 U	0.071 U	0.072 U



Table 4. Summary of Polychlorinated Biphenyls in Soil, 1221 Spofford Avenue, Bronx, New York (April/May 2018)

			Sample Desi	gnation:	RXMW-4	RXMW-4	RXMW-5	RXMW-5
			Sam	ole Date:	04/24/2018	05/01/2018	04/26/2018	05/02/2018
			Sample Dept	h (ft bls):	0 - 2	13 - 15	0 - 2	12 - 14
		Normal or Field Duplicate					N	N
	NYSDEC Part 375	NYSDEC Part 375	NYSDEC Part 375					
	Unrestricted Use	Restricted	Protection of					
Parameter	SCO	Residential SCO	Groundwater SCO	Unit				
PCB-1016 (Aroclor 1016)				MG/KG	0.073 U	0.073 U	0.075 U	0.073 U
PCB-1221 (Aroclor 1221)				MG/KG	0.073 U	0.073 U	0.075 U	0.073 U
PCB-1232 (Aroclor 1232)				MG/KG	0.073 U	0.073 U	0.075 U	0.073 U
PCB-1242 (Aroclor 1242)				MG/KG	0.073 U	0.073 U	0.075 U	0.073 U
PCB-1248 (Aroclor 1248)				MG/KG	0.073 U	0.073 U	0.075 U	0.073 U
PCB-1254 (Aroclor 1254)				MG/KG	0.073 U	0.073 U	0.075 U	0.073 U
PCB-1260 (Aroclor 1260)				MG/KG	0.073 U	0.073 U	0.075 U	0.073 U
PCB-1262 (Aroclor 1262)				MG/KG	0.073 U	0.073 U	0.075 U	0.073 U
PCB-1268 (Aroclor 1268)				MG/KG	0.073 U	0.073 U	0.075 U	0.073 U
Polychlorinated Biphenyl (PCBs)	0.1	1	3.2	MG/KG	0.073 U	0.073 U	0.075 U	0.073 U



Table 4. Summary of Polychlorinated Biphenyls in Soil, 1221 Spofford Avenue, Bronx, New York (April/May 2018)

			Sample Desi	gnation:	RXMW-6	RXMW-6	RXMW-9	RXMW-9
			Samp	ole Date:	04/25/2018	04/27/2018	04/23/2018	04/25/2018
			Sample Dept	h (ft bls):	0 - 2	9 - 11	0 - 2	5 - 7
			Normal or Field D	uplicate:	N	N	N	N
	NYSDEC Part 375	NYSDEC Part 375	NYSDEC Part 375					
	Unrestricted Use	Restricted	Protection of					
Parameter	SCO	Residential SCO	Groundwater SCO	Unit				
PCB-1016 (Aroclor 1016)				MG/KG	0.072 U	0.074 U	0.075 U	0.073 U
PCB-1221 (Aroclor 1221)				MG/KG	0.072 U	0.074 U	0.075 U	0.073 U
PCB-1232 (Aroclor 1232)				MG/KG	0.072 U	0.074 U	0.075 U	0.073 U
PCB-1242 (Aroclor 1242)				MG/KG	0.072 U	0.074 U	0.075 U	0.073 U
PCB-1248 (Aroclor 1248)				MG/KG	0.072 U	0.074 U	0.075 U	0.073 U
PCB-1254 (Aroclor 1254)				MG/KG	0.072 U	0.074 U	0.075 U	0.073 U
PCB-1260 (Aroclor 1260)				MG/KG	0.072 U	0.074 U	0.075 U	0.073 U
PCB-1262 (Aroclor 1262)				MG/KG	0.072 U	0.074 U	0.075 U	0.073 U
PCB-1268 (Aroclor 1268)				MG/KG	0.072 U	0.074 U	0.075 U	0.073 U
Polychlorinated Biphenyl (PCBs)	0.1	1	3.2	MG/KG	0.072 U	0.074 U	0.075 U	0.073 U



Table 4. Summary of Polychlorinated Biphenyls in Soil, 1221 Spofford Avenue, Bronx, New York (April/May 2018)

			Sample Desi	gnation:	RXSB-11	RXSB-11	RXSB-12	RXSB-12
			Samp	ole Date:	04/23/2018	04/26/2018	04/23/2018	04/26/2018
			Sample Dept	h (ft bls):	0 - 2	3 - 5	0 - 2	6 - 8
			Normal or Field D	uplicate:	N	N	N	N
	NYSDEC Part 375	NYSDEC Part 375	NYSDEC Part 375					
	Unrestricted Use	Restricted	Protection of					
Parameter	SCO	Residential SCO	Groundwater SCO	Unit				
PCB-1016 (Aroclor 1016)				MG/KG	0.071 U	0.072 U	0.073 U	0.077 U
PCB-1221 (Aroclor 1221)				MG/KG	0.071 U	0.072 U	0.073 U	0.077 U
PCB-1232 (Aroclor 1232)				MG/KG	0.071 U	0.072 U	0.073 U	0.077 U
PCB-1242 (Aroclor 1242)				MG/KG	0.071 U	0.072 U	0.073 U	0.077 U
PCB-1248 (Aroclor 1248)				MG/KG	0.071 U	0.072 U	0.073 U	0.077 U
PCB-1254 (Aroclor 1254)				MG/KG	0.071 U	0.072 U	0.073 U	0.077 U
PCB-1260 (Aroclor 1260)				MG/KG	0.071 U	0.072 U	0.073 U	0.077 U
PCB-1262 (Aroclor 1262)				MG/KG	0.071 U	0.072 U	0.073 U	0.077 U
PCB-1268 (Aroclor 1268)				MG/KG	0.071 U	0.072 U	0.073 U	0.077 U
Polychlorinated Biphenyl (PCBs)	0.1	1	3.2	MG/KG	0.071 U	0.072 U	0.073 U	0.077 U



Table 4. Summary of Polychlorinated Biphenyls in Soil, 1221 Spofford Avenue, Bronx, New York (April/May 2018)

			Sample Desi	gnation:	RXSB-13	RXSB-13	RXSB-14	RXSB-14
			Samp	ole Date:	04/24/2018	04/26/2018	04/24/2018	04/24/2018
			Sample Dept	h (ft bls):	0 - 2	13 - 15	0 - 2	0 - 2
			Normal or Field D	uplicate:	N	N	N	FD
	NYSDEC Part 375	NYSDEC Part 375	NYSDEC Part 375					
	Unrestricted Use	Restricted	Protection of					
Parameter	SCO	Residential SCO	Groundwater SCO	Unit				
PCB-1016 (Aroclor 1016)				MG/KG	0.08 U	0.074 U	0.072 U	0.072 U
PCB-1221 (Aroclor 1221)				MG/KG	0.08 U	0.074 U	0.072 U	0.072 U
PCB-1232 (Aroclor 1232)				MG/KG	0.08 U	0.074 U	0.072 U	0.072 U
PCB-1242 (Aroclor 1242)				MG/KG	0.08 U	0.074 U	0.072 U	0.072 U
PCB-1248 (Aroclor 1248)				MG/KG	0.08 U	0.074 U	0.072 U	0.072 U
PCB-1254 (Aroclor 1254)				MG/KG	0.08 U	0.074 U	0.072 U	0.072 U
PCB-1260 (Aroclor 1260)				MG/KG	0.08 U	0.074 U	0.072 U	0.072 U
PCB-1262 (Aroclor 1262)				MG/KG	0.08 U	0.074 U	0.072 U	0.072 U
PCB-1268 (Aroclor 1268)				MG/KG	0.08 U	0.074 U	0.072 U	0.072 U
Polychlorinated Biphenyl (PCBs)	0.1	1	3.2	MG/KG	0.08 U	0.074 U	0.072 U	0.072 U



Table 4. Summary of Polychlorinated Biphenyls in Soil, 1221 Spofford Avenue, Bronx, New York (April/May 2018)

			Sample Desi	gnation:	RXSB-15	RXSB-15
			•	ole Date:	04/26/2018	05/01/2018
			Sample Dept	h (ft bls):	0 - 2	6 - 8
			Normal or Field D	uplicate:	N	N
	NYSDEC Part 375 NYSDEC Part 375 NYSDEC Part 375					
	Unrestricted Use	Restricted	Protection of			
Parameter	SCO	Residential SCO	Groundwater SCO	Unit		
PCB-1016 (Aroclor 1016)				MG/KG	0.073 U	0.067 U
PCB-1221 (Aroclor 1221)				MG/KG	0.073 U	0.067 U
PCB-1232 (Aroclor 1232)				MG/KG	0.073 U	0.067 U
PCB-1242 (Aroclor 1242)				MG/KG	0.073 U	0.067 U
PCB-1248 (Aroclor 1248)				MG/KG	0.073 U	0.067 U
PCB-1254 (Aroclor 1254)				MG/KG	0.073 U	0.067 U
PCB-1260 (Aroclor 1260)				MG/KG	0.073 U	0.067 U
PCB-1262 (Aroclor 1262)				MG/KG	0.073 U	0.067 U
PCB-1268 (Aroclor 1268)				MG/KG	0.073 U	0.067 U
Polychlorinated Biphenyl (PCBs)	0.1	1	3.2	MG/KG	0.073 U	0.067 U



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Table 5. Summary of Pesticides and Herbicides in Soil, 1221 Spofford Avenue, Bronx, New York (April/May 2018)

			Sample Desi	gnation:	RXMW-10	RXMW-10	RXMW-11	RXMW-11
			Samp	ole Date:	04/23/2018	04/23/2018	04/23/2018	04/27/2018
			Sample Depti	h (ft bls):	0 - 2	2 - 4	0 - 2	11 - 13
			Normal or Field D	uplicate:	N	N	N	N
	NYSDEC Part 375	NYSDEC Part 375	NYSDEC Part 375					
	Unrestricted Use	Restricted	Protection of					
Parameter	SCO	Residential SCO	Groundwater SCO	Unit				
2,4-D (Dichlorophenoxyacetic Acid)	-	-		MG/KG	0.038 U	0.038 U	0.035 U	0.036 U
Acetic acid, (2,4,5-trichlorophenoxy)-	1	1	-	MG/KG	0.038 U	0.038 U	0.035 U	0.036 U
Aldrin	0.005	0.097	0.19	MG/KG	0.0076 U	0.0076 U	0.0071 U	0.0072 U
Alpha Bhc (Alpha Hexachlorocyclohexane)	0.02	0.48	0.02	MG/KG	0.0023 U	0.0023 U	0.0021 U	0.0021 U
Alpha Endosulfan	2.4	24	102	MG/KG	0.0076 U	0.0076 U	0.0071 U	0.0072 U
Beta Bhc (Beta Hexachlorocyclohexane)	0.036	0.36	0.09	MG/KG	0.0023 U	0.0023 U	0.0021 U	0.0021 U
Beta Endosulfan	2.4	24	102	MG/KG	0.0076 U	0.0076 U	0.0071 U	0.0072 U
Chlordane				MG/KG	0.076 U	0.076 U	0.071 U	0.072 U
Delta BHC (Delta Hexachlorocyclohexane)	0.04	100	0.25	MG/KG	0.0023 U	0.0023 U	0.0021 U	0.0021 U
Dieldrin	0.005	0.2	0.1	MG/KG	0.0023 U	0.0023 U	0.0021 U	0.0021 U
Endosulfan Sulfate	2.4	24	1000	MG/KG	0.0076 U	0.0076 U	0.0071 U	0.0072 U
Endrin	0.014	11	0.06	MG/KG	0.0076 U	0.0076 U	0.0071 U	0.0072 U
Endrin Aldehyde				MG/KG	0.0076 U	0.0076 U	0.0071 U	0.0072 U
Endrin Ketone				MG/KG	0.0076 U	0.0076 U	0.0071 U	0.0072 U
Gamma Bhc (Lindane)	0.1	1.3	0.1	MG/KG	0.0023 U	0.0023 U	0.0021 U	0.0021 U
Heptachlor	0.042	2.1	0.38	MG/KG	0.0076 U	0.0076 U	0.0071 U	0.0072 U
Heptachlor Epoxide				MG/KG	0.0076 U	0.0076 U	0.0071 U	0.0072 U
Methoxychlor				MG/KG	0.0076 U	0.0076 U	0.0071 U	0.0072 U
P,P'-DDD	0.0033	13	14	MG/KG	0.0076 U	0.0076 U	0.0071 U	0.0072 U
P,P'-DDE	0.0033	8.9	17	MG/KG	0.0076 U	0.0076 U	0.0071 U	0.0072 U
P,P'-DDT	0.0033	7.9	136	MG/KG	0.0076 U	0.0076 U	0.0071 U	0.0072 U
Silvex (2,4,5-TP)	3.8	100	3.8	MG/KG	0.038 U	0.038 U	0.035 U	0.036 U
Toxaphene				MG/KG	0.076 U	0.076 U	0.071 U	0.072 U



Table 5. Summary of Pesticides and Herbicides in Soil, 1221 Spofford Avenue, Bronx, New York (April/May 2018)

			Sample Desi	gnation:	RXMW-4	RXMW-4	RXMW-5	RXMW-5
			Samp	ole Date:	04/24/2018	05/01/2018	04/26/2018	05/02/2018
			Sample Depti	h (ft bls):	0 - 2	13 - 15	0 - 2	12 - 14
			Normal or Field D	uplicate:	N	N	N	N
	NYSDEC Part 375	NYSDEC Part 375	NYSDEC Part 375					
	Unrestricted Use	Restricted	Protection of					
Parameter	SCO	Residential SCO	Groundwater SCO	Unit				
2,4-D (Dichlorophenoxyacetic Acid)	-	-		MG/KG	0.036 U	0.036 U	0.037 U	0.036 U
Acetic acid, (2,4,5-trichlorophenoxy)-	1	1	-	MG/KG	0.036 U	0.036 U	0.037 U	0.036 U
Aldrin	0.005	0.097	0.19	MG/KG	0.0073 U	0.0073 U	0.0075 U	0.0073 U
Alpha Bhc (Alpha Hexachlorocyclohexane)	0.02	0.48	0.02	MG/KG	0.0022 U	0.0022 U	0.0022 U	0.0022 U
Alpha Endosulfan	2.4	24	102	MG/KG	0.0073 U	0.0073 U	0.0075 U	0.0073 U
Beta Bhc (Beta Hexachlorocyclohexane)	0.036	0.36	0.09	MG/KG	0.0022 U	0.0022 U	0.0022 U	0.0022 U
Beta Endosulfan	2.4	24	102	MG/KG	0.0073 U	0.0073 U	0.0075 U	0.0073 U
Chlordane				MG/KG	0.073 U	0.073 U	0.075 U	0.073 U
Delta BHC (Delta Hexachlorocyclohexane)	0.04	100	0.25	MG/KG	0.0022 U	0.0022 U	0.0022 U	0.0022 U
Dieldrin	0.005	0.2	0.1	MG/KG	0.0022 U	0.0022 U	0.0022 U	0.0022 U
Endosulfan Sulfate	2.4	24	1000	MG/KG	0.0073 U	0.0073 U	0.0075 U	0.0073 U
Endrin	0.014	11	0.06	MG/KG	0.0073 U	0.0073 U	0.0075 U	0.0073 U
Endrin Aldehyde				MG/KG	0.0073 U	0.0073 U	0.0075 U	0.0073 U
Endrin Ketone				MG/KG	0.0073 U	0.0073 U	0.0075 U	0.0073 U
Gamma Bhc (Lindane)	0.1	1.3	0.1	MG/KG	0.0022 U	0.0022 U	0.0022 U	0.0022 U
Heptachlor	0.042	2.1	0.38	MG/KG	0.0073 U	0.0073 U	0.0075 U	0.0073 U
Heptachlor Epoxide				MG/KG	0.0073 U	0.0073 U	0.0075 U	0.0073 U
Methoxychlor				MG/KG	0.0073 U	0.0073 U	0.0075 U	0.0073 U
P,P'-DDD	0.0033	13	14	MG/KG	0.0073 U	0.0073 U	0.0075 U	0.0073 U
P,P'-DDE	0.0033	8.9	17	MG/KG	0.0073 U	0.0073 U	0.0075 U	0.0073 U
P,P'-DDT	0.0033	7.9	136	MG/KG	0.0073 U	0.0073 U	0.0075 U	0.0073 U
Silvex (2,4,5-TP)	3.8	100	3.8	MG/KG	0.036 U	0.036 U	0.037 U	0.036 U
Toxaphene		-		MG/KG	0.073 U	0.073 U	0.075 U	0.073 U



Table 5. Summary of Pesticides and Herbicides in Soil, 1221 Spofford Avenue, Bronx, New York (April/May 2018)

			Sample Desi	gnation:	RXMW-6	RXMW-6	RXMW-9	RXMW-9
			Samp	ole Date:	04/25/2018	04/27/2018	04/23/2018	04/25/2018
			Sample Depti	h (ft bls):	0 - 2	9 - 11	0 - 2	5 - 7
			Normal or Field D	uplicate:	N	N	N	N
	NYSDEC Part 375	NYSDEC Part 375	NYSDEC Part 375					
	Unrestricted Use	Restricted	Protection of					
Parameter	SCO	Residential SCO	Groundwater SCO	Unit				
2,4-D (Dichlorophenoxyacetic Acid)	-	-		MG/KG	0.036 U	0.037 U	0.037 U	0.036 U
Acetic acid, (2,4,5-trichlorophenoxy)-	1	1	-	MG/KG	0.036 U	0.037 U	0.037 U	0.036 U
Aldrin	0.005	0.097	0.19	MG/KG	0.0072 U	0.0074 U	0.0075 U	0.0073 U
Alpha Bhc (Alpha Hexachlorocyclohexane)	0.02	0.48	0.02	MG/KG	0.0022 U	0.0022 U	0.0022 U	0.0022 U
Alpha Endosulfan	2.4	24	102	MG/KG	0.0072 U	0.0074 U	0.0075 U	0.0073 U
Beta Bhc (Beta Hexachlorocyclohexane)	0.036	0.36	0.09	MG/KG	0.0022 U	0.0022 U	0.0022 U	0.0022 U
Beta Endosulfan	2.4	24	102	MG/KG	0.0072 U	0.0074 U	0.0075 U	0.0073 U
Chlordane				MG/KG	0.072 U	0.074 U	0.075 U	0.073 U
Delta BHC (Delta Hexachlorocyclohexane)	0.04	100	0.25	MG/KG	0.0022 U	0.0022 U	0.0022 U	0.0022 U
Dieldrin	0.005	0.2	0.1	MG/KG	0.0022 U	0.0022 U	0.0022 U	0.0022 U
Endosulfan Sulfate	2.4	24	1000	MG/KG	0.0072 U	0.0074 U	0.0075 U	0.0073 U
Endrin	0.014	11	0.06	MG/KG	0.0072 U	0.0074 U	0.0075 U	0.0073 U
Endrin Aldehyde				MG/KG	0.0072 U	0.0074 U	0.0075 U	0.0073 U
Endrin Ketone				MG/KG	0.0072 U	0.0074 U	0.0075 U	0.0073 U
Gamma Bhc (Lindane)	0.1	1.3	0.1	MG/KG	0.0022 U	0.0022 U	0.0022 U	0.0022 U
Heptachlor	0.042	2.1	0.38	MG/KG	0.0072 U	0.0074 U	0.0075 U	0.0073 U
Heptachlor Epoxide				MG/KG	0.0072 U	0.0074 U	0.0075 U	0.0073 U
Methoxychlor				MG/KG	0.0072 U	0.0074 U	0.0075 U	0.0073 U
P,P'-DDD	0.0033	13	14	MG/KG	0.0072 U	0.0074 U	0.0075 U	0.0073 U
P,P'-DDE	0.0033	8.9	17	MG/KG	0.0072 U	0.0074 U	0.0075 U	0.0073 U
P,P'-DDT	0.0033	7.9	136	MG/KG	0.0072 U	0.0074 U	0.0075 U	0.0073 U
Silvex (2,4,5-TP)	3.8	100	3.8	MG/KG	0.036 U	0.037 U	0.037 U	0.036 U
Toxaphene				MG/KG	0.072 U	0.074 U	0.075 U	0.073 U



Table 5. Summary of Pesticides and Herbicides in Soil, 1221 Spofford Avenue, Bronx, New York (April/May 2018)

			Sample Desi	gnation:	RXSB-11	RXSB-11	RXSB-12	RXSB-12
			Samp	ole Date:	04/23/2018	04/26/2018	04/23/2018	04/26/2018
			Sample Depti	h (ft bls):	0 - 2	3 - 5	0 - 2	6 - 8
			Normal or Field D	uplicate:	N	N	N	N
	NYSDEC Part 375	NYSDEC Part 375	NYSDEC Part 375					
	Unrestricted Use	Restricted	Protection of					
Parameter	SCO	Residential SCO	Groundwater SCO	Unit				
2,4-D (Dichlorophenoxyacetic Acid)	-	-		MG/KG	0.035 U	0.036 U	0.036 U	0.038 U
Acetic acid, (2,4,5-trichlorophenoxy)-	1	1	-	MG/KG	0.035 U	0.036 U	0.036 U	0.038 U
Aldrin	0.005	0.097	0.19	MG/KG	0.0071 U	0.0072 U	0.0073 U	0.0077 U
Alpha Bhc (Alpha Hexachlorocyclohexane)	0.02	0.48	0.02	MG/KG	0.0021 U	0.0022 U	0.0022 U	0.0023 U
Alpha Endosulfan	2.4	24	102	MG/KG	0.0071 U	0.0072 U	0.0073 U	0.0077 U
Beta Bhc (Beta Hexachlorocyclohexane)	0.036	0.36	0.09	MG/KG	0.0021 U	0.0022 U	0.0022 U	0.0023 U
Beta Endosulfan	2.4	24	102	MG/KG	0.0071 U	0.0072 U	0.0073 U	0.0077 U
Chlordane				MG/KG	0.071 U	0.072 U	0.073 U	0.077 U
Delta BHC (Delta Hexachlorocyclohexane)	0.04	100	0.25	MG/KG	0.0021 U	0.0022 U	0.0022 U	0.0023 U
Dieldrin	0.005	0.2	0.1	MG/KG	0.0021 U	0.0022 U	0.0022 U	0.0023 U
Endosulfan Sulfate	2.4	24	1000	MG/KG	0.0071 U	0.0072 U	0.0073 U	0.0077 U
Endrin	0.014	11	0.06	MG/KG	0.0071 U	0.0072 U	0.0073 U	0.0077 U
Endrin Aldehyde				MG/KG	0.0071 U	0.0072 U	0.0073 U	0.0077 U
Endrin Ketone				MG/KG	0.0071 U	0.0072 U	0.0073 U	0.0077 U
Gamma Bhc (Lindane)	0.1	1.3	0.1	MG/KG	0.0021 U	0.0022 U	0.0022 U	0.0023 U
Heptachlor	0.042	2.1	0.38	MG/KG	0.0071 U	0.0072 U	0.0073 U	0.0077 U
Heptachlor Epoxide				MG/KG	0.0071 U	0.0072 U	0.0073 U	0.0077 U
Methoxychlor				MG/KG	0.0071 U	0.0072 U	0.0073 U	0.0077 U
P,P'-DDD	0.0033	13	14	MG/KG	0.0071 U	0.0072 U	0.0073 U	0.0077 U
P,P'-DDE	0.0033	8.9	17	MG/KG	0.0071 U	0.0072 U	0.0073 U	0.0077 U
P,P'-DDT	0.0033	7.9	136	MG/KG	0.0071 U	0.0072 U	0.0073 U	0.0077 U
Silvex (2,4,5-TP)	3.8	100	3.8	MG/KG	0.035 U	0.036 U	0.036 U	0.038 U
Toxaphene				MG/KG	0.071 U	0.072 U	0.073 U	0.077 U



Table 5. Summary of Pesticides and Herbicides in Soil, 1221 Spofford Avenue, Bronx, New York (April/May 2018)

			Sample Desi	gnation:	RXSB-13	RXSB-13	RXSB-14	RXSB-14
			Samp	ole Date:	04/24/2018	04/26/2018	04/24/2018	04/24/2018
			Sample Depti	h (ft bls):	0 - 2	13 - 15	0 - 2	0 - 2
			Normal or Field D	uplicate:	N	N	N	FD
	NYSDEC Part 375	NYSDEC Part 375	NYSDEC Part 375					
	Unrestricted Use	Restricted	Protection of					
Parameter	SCO	Residential SCO	Groundwater SCO	Unit				
2,4-D (Dichlorophenoxyacetic Acid)	-	-		MG/KG	0.04 U	0.037 U	0.036 U	0.036 U
Acetic acid, (2,4,5-trichlorophenoxy)-	1	1	-	MG/KG	0.04 U	0.037 U	0.036 U	0.036 U
Aldrin	0.005	0.097	0.19	MG/KG	U 800.0	0.0074 U	0.0072 U	0.0072 U
Alpha Bhc (Alpha Hexachlorocyclohexane)	0.02	0.48	0.02	MG/KG	0.0024 U	0.0022 U	0.0021 U	0.0021 U
Alpha Endosulfan	2.4	24	102	MG/KG	0.008 U	0.0074 U	0.0072 U	0.0072 U
Beta Bhc (Beta Hexachlorocyclohexane)	0.036	0.36	0.09	MG/KG	0.0024 U	0.0022 U	0.0021 U	0.0021 U
Beta Endosulfan	2.4	24	102	MG/KG	0.008 U	0.0074 U	0.0072 U	0.0072 U
Chlordane				MG/KG	0.08 U	0.074 U	0.072 U	0.072 U
Delta BHC (Delta Hexachlorocyclohexane)	0.04	100	0.25	MG/KG	0.0024 U	0.0022 U	0.0021 U	0.0021 U
Dieldrin	0.005	0.2	0.1	MG/KG	0.0024 U	0.0022 U	0.0021 U	0.0021 U
Endosulfan Sulfate	2.4	24	1000	MG/KG	0.008 U	0.0074 U	0.0072 U	0.0072 U
Endrin	0.014	11	0.06	MG/KG	0.008 U	0.0074 U	0.0072 U	0.0072 U
Endrin Aldehyde				MG/KG	0.008 U	0.0074 U	0.0072 U	0.0072 U
Endrin Ketone				MG/KG	0.008 U	0.0074 U	0.0072 U	0.0072 U
Gamma Bhc (Lindane)	0.1	1.3	0.1	MG/KG	0.0024 U	0.0022 U	0.0021 U	0.0021 U
Heptachlor	0.042	2.1	0.38	MG/KG	0.008 U	0.0074 U	0.0072 U	0.0072 U
Heptachlor Epoxide				MG/KG	0.008 U	0.0074 U	0.0072 U	0.0072 U
Methoxychlor				MG/KG	0.008 U	0.0074 U	0.0072 U	0.0072 U
P,P'-DDD	0.0033	13	14	MG/KG	0.008 U	0.0074 U	0.0072 U	0.0072 U
P,P'-DDE	0.0033	8.9	17	MG/KG	0.008 U	0.0074 U	0.0072 U	0.0072 U
P,P'-DDT	0.0033	7.9	136	MG/KG	0.0037 J	0.0074 U	0.0072 U	0.0072 U
Silvex (2,4,5-TP)	3.8	100	3.8	MG/KG	0.04 U	0.037 U	0.036 U	0.036 U
Toxaphene				MG/KG	0.08 U	0.074 U	0.072 U	0.072 U



Table 5. Summary of Pesticides and Herbicides in Soil, 1221 Spofford Avenue, Bronx, New York (April/May 2018)

			Sample Desi	gnation:	RXSB-15	RXSB-15
			Sam	ole Date:	04/26/2018	05/01/2018
			Sample Dept	h (ft bls):	0 - 2	6 - 8
			Normal or Field D	uplicate:	N	N
	NYSDEC Part 375	NYSDEC Part 375	NYSDEC Part 375			
	Unrestricted Use	Restricted	Protection of			
Parameter	SCO	Residential SCO	Groundwater SCO	Unit		
2,4-D (Dichlorophenoxyacetic Acid)	-	-		MG/KG	0.036 U	0.033 U
Acetic acid, (2,4,5-trichlorophenoxy)-				MG/KG	0.036 U	0.033 U
Aldrin	0.005	0.097	0.19	MG/KG	0.0073 U	0.0067 U
Alpha Bhc (Alpha Hexachlorocyclohexane)	0.02	0.48	0.02	MG/KG	0.0022 U	0.002 U
Alpha Endosulfan	2.4	24	102	MG/KG	0.0073 U	0.0067 U
Beta Bhc (Beta Hexachlorocyclohexane)	0.036	0.36	0.09	MG/KG	0.0022 U	0.002 U
Beta Endosulfan	2.4	24	102	MG/KG	0.0073 U	0.0067 U
Chlordane				MG/KG	0.073 U	0.067 U
Delta BHC (Delta Hexachlorocyclohexane)	0.04	100	0.25	MG/KG	0.0022 U	0.002 U
Dieldrin	0.005	0.2	0.1	MG/KG	0.0022 U	0.002 U
Endosulfan Sulfate	2.4	24	1000	MG/KG	0.0073 U	0.0067 U
Endrin	0.014	11	0.06	MG/KG	0.0073 U	0.0067 U
Endrin Aldehyde				MG/KG	0.0073 U	0.0067 U
Endrin Ketone				MG/KG	0.0073 U	0.0067 U
Gamma Bhc (Lindane)	0.1	1.3	0.1	MG/KG	0.0022 U	0.002 U
Heptachlor	0.042	2.1	0.38	MG/KG	0.0073 U	0.0067 U
Heptachlor Epoxide				MG/KG	0.0073 U	0.0067 U
Methoxychlor				MG/KG	0.0073 U	0.0067 U
P,P'-DDD	0.0033	13	14	MG/KG	0.0073 U	0.0067 U
P,P'-DDE	0.0033	8.9	17	MG/KG	0.0073 U	0.0067 U
P,P'-DDT	0.0033	7.9	136	MG/KG	0.0073 U	0.0067 U
Silvex (2,4,5-TP)	3.8	100	3.8	MG/KG	0.036 U	0.033 U
Toxaphene				MG/KG	0.073 U	0.067 U



Table 6. Summary of Volatile Organic Compounds in Soil Vapor, 1221 Spofford Avenue, Bronx, New York (May 2018)

Sample Desi	gnation:	RXSV-9	RXSV-11
Samp	le Date:	05/23/2018	05/23/2018
Parameter	Unit		
1,1,1-Trichloroethane (TCA)	UG/M3	11 U	11 U
1,1,2,2-Tetrachloroethane	UG/M3	14 U	14 U
1,1,2-Trichloro-1,2,2-Trifluoroethane	UG/M3	15 U	15 U
1,1,2-Trichloroethane	UG/M3	11 U	11 U
1,1-Dichloroethane	UG/M3	8.1 U	8.1 U
1,1-Dichloroethene	UG/M3	1.6	1.4 U
1,2,4-Trichlorobenzene	UG/M3	37 U	37 U
1,2,4-Trimethylbenzene	UG/M3	9.8 U	9.8 U
1,2-Dibromoethane (Ethylene Dibromide)	UG/M3	15 U	15 U
1,2-Dichlorobenzene	UG/M3	12 U	12 U
1,2-Dichloroethane	UG/M3	8.1 U	8.1 U
1,2-Dichloropropane	UG/M3	9.2 U	9.2 U
1,2-Dichlorotetrafluoroethane	UG/M3	14 U	14 U
1,3,5-Trimethylbenzene (Mesitylene)	UG/M3	9.8 U	9.8 U
1,3-Butadiene	UG/M3	4.4 U	4.4 U
1,3-Dichlorobenzene	UG/M3	12 U	12 U
1,4-Dichlorobenzene	UG/M3	12 U	12 U
1,4-Dioxane (P-Dioxane)	UG/M3	180 U	180 U
2,2,4-Trimethylpentane	UG/M3	9.3 U	9.3 U
2-Chlorotoluene	UG/M3	10 U	10 U
2-Hexanone	UG/M3	20 U	20 U
4-Ethyltoluene	UG/M3	9.8 U	9.8 U
Acetone	UG/M3	630	410
Allyl Chloride (3-Chloropropene)	UG/M3	16 U	16 U
Benzene	UG/M3	6 J	5.5 J
Benzyl Chloride	UG/M3	10 U	10 U
Bromodichloromethane	UG/M3	13 U	13 U
Bromoform	UG/M3	21 U	21 U
Bromomethane	UG/M3	7.8 U	7.8 U
Carbon Disulfide	UG/M3	13 J	19
Carbon Tetrachloride	UG/M3	2.2 U	2.2 U
Chlorobenzene	UG/M3	9.2 U	9.2 U
Chloroethane	UG/M3	13 U	13 U
Chloroform	UG/M3	9.8 U	9.8 U
Chloromethane	UG/M3	10 U	10 U



Table 6. Summary of Volatile Organic Compounds in Soil Vapor, 1221 Spofford Avenue, Bronx, New York (May 2018)

Sample Des	ignation:	RXSV-9	RXSV-11
Sam	ole Date:	05/23/2018	05/23/2018
Parameter	Unit		
Cis-1,2-Dichloroethylene	UG/M3	1.4 U	1.4 U
Cis-1,3-Dichloropropene	UG/M3	9.1 U	9.1 U
Cyclohexane	UG/M3	2.3 J	6.9 U
Dibromochloromethane	UG/M3	17 U	17 U
Dichlorodifluoromethane	UG/M3	25 U	25 U
Dichloroethylenes	UG/M3	16 U	16 U
Ethanol	UG/M3	NA	NA
Ethyl Acetate	UG/M3	NA	NA
Ethylbenzene	UG/M3	8.7 U	8.7 U
Hexachlorobutadiene	UG/M3	21 U	21 U
Isopropanol	UG/M3	120 U	120 U
m,p-Xylene	UG/M3	22 U	22 U
Methyl Ethyl Ketone (2-Butanone)	UG/M3	110	54
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	UG/M3	20 U	20 U
Methyl Methacrylate	UG/M3	20 U	20 U
Methylene Chloride	UG/M3	17 U	17 U
Naphthalene	UG/M3	26 U	26 U
N-Heptane	UG/M3	8.2 U	8.2 U
N-Hexane	UG/M3	7 U	7 U
O-Xylene (1,2-Dimethylbenzene)	UG/M3	8.7 U	8.7 U
Propylene	UG/M3	NA	NA
Styrene	UG/M3	8.5 U	8.5 U
Tert-Butyl Alcohol	UG/M3	64 J	150 U
Tert-Butyl Methyl Ether	UG/M3	7.2 U	7.2 U
Tetrachloroethylene (PCE)	UG/M3	6 J	8.9 J
Tetrahydrofuran	UG/M3	150 U	150 U
Toluene	UG/M3	30	22
Trans-1,2-Dichloroethene	UG/M3	7.9 U	7.9 U
Trans-1,3-Dichloropropene	UG/M3	9.1 U	9.1 U
Trichloroethylene (TCE)	UG/M3	1.9 U	1.9 U
Trichlorofluoromethane	UG/M3	11 U	11 U
Vinyl Acetate	UG/M3	NA	NA
Vinyl Bromide	UG/M3	8.7 U	8.7 U
Vinyl Chloride	UG/M3	0.89 U	0.89 U
Xylenes, Total	UG/M3	30 U	30 U



Table 7. Summary of Volatile Organic Compounds in Soil, 1221 Spofford Avenue, Bronx, New York (April 2017)

Sample Designation: RXSB-1 RXSB-2 RXSB-2 RXSB-3 RXSB-3												
			•	ple Date:	04/24/2017	04/25/2017	04/24/2017	04/25/2017	04/25/2017	04/26/2017		
			Sample Dep	•	0-2	8 - 10	0-2	7 - 9	0-2	6 - 8		
			Normal or Field [	. ,	N N	0 - 10 N	N N		N N	N N		
	1		Normal of Field L	Jupilcate.	N	N	N	N	N	N		
	NVSDEC Part 375	NYSDEC Part 375	NYSDEC Part 375									
	Unrestricted Use	Restricted	Protection of									
Parameter	SCO	Residential SCO	Groundwater SCO	Unit								
1,1,1,2-Tetrachloroethane				UG/KG	1 U	1 U	1.1 U	1 U	1.3 U	1 U		
1,1,1-Trichloroethane	680	100000	680	UG/KG	1 U	1 U	1.1 U	1 U	1.3 U	1 U		
1,1,2,2-Tetrachloroethane				UG/KG	1 U	1 U	1.1 U	1 U	1.3 U	1 U		
1,1,2-Trichloroethane				UG/KG	1.5 U	1.5 U	1.6 U	1.6 U	1.9 U	1.5 U		
1,1-Dichloroethane	270	26000	270	UG/KG	1.5 U	1.5 U	1.6 U	1.6 U	1.9 U	1.5 U		
1,1-Dichloroethene	330	100000	330	UG/KG	1 U	1 U	1.1 U	1 U	1.3 U	1 U		
1,1-Dichloropropene				UG/KG	5.1 U	5.1 U	5.4 U	5.2 U	6.3 U	5 U		
1,2,3-Trichlorobenzene		-		UG/KG	5.1 U	5.1 U	5.4 U	5.2 U	6.3 U	5 U		
1,2,3-Trichloropropane				UG/KG	10 U	10 U	11 U	10 U	13 U	10 U		
1,2,4,5-Tetramethylbenzene		-		UG/KG	4.1 U	4.1 U	4.4 U	4.2 U	5.1 U	4 U		
1,2,4-Trichlorobenzene				UG/KG	5.1 U	5.1 U	5.4 U	5.2 U	6.3 U	5 U		
1,2,4-Trimethylbenzene	3600	52000	3600	UG/KG	5.1 U	5.1 U	5.4 U	5.2 U	6.3 U	5 U		
1,2-Dibromo-3-Chloropropane				UG/KG	5.1 U	5.1 U	5.4 U	5.2 U	6.3 U	5 U		
1,2-Dibromoethane (Ethylene Dibromide)				UG/KG	4.1 U	4.1 U	4.4 U	4.2 U	5.1 U	4 U		
1,2-Dichlorobenzene	1100	100000	1100	UG/KG	5.1 U	5.1 U	5.4 U	5.2 U	6.3 U	5 U		
1,2-Dichloroethane	20	3100	20	UG/KG	1 U	1 U	1.1 U	1 U	1.3 U	1 U		
1,2-Dichloropropane				UG/KG	3.6 U	3.6 U	3.8 U	3.7 U	4.4 U	3.5 U		
1,3,5-Trimethylbenzene (Mesitylene)	8400	52000	8400	UG/KG	5.1 U	5.1 U	5.4 U	5.2 U	6.3 U	5 U		
1,3-Dichlorobenzene	2400	49000	2400	UG/KG	5.1 U	5.1 U	5.4 U	5.2 U	6.3 U	5 U		
1,3-Dichloropropane				UG/KG	5.1 U	5.1 U	5.4 U	5.2 U	6.3 U	5 U		
1,4-Dichlorobenzene	1800	13000	1800	UG/KG	5.1 U	5.1 U	5.4 U	5.2 U	6.3 U	5 U		
1,4-Diethyl Benzene			-	UG/KG	4.1 U	4.1 U	4.4 U	4.2 U	5.1 U	4 U		
1,4-Dioxane (P-Dioxane)	100	13000	100	UG/KG	41 U	41 U	44 U	42 U	51 U	40 U		
2,2-Dichloropropane		-	-	UG/KG	5.1 U	5.1 U	5.4 U	5.2 U	6.3 U	5 U		
2-Chlorotoluene		-	-	UG/KG	5.1 U	5.1 U	5.4 U	5.2 U	6.3 U	5 U		
2-Hexanone			-	UG/KG	10 U	10 U	11 U	10 U	13 U	10 U		
4-Chlorotoluene		-	-	UG/KG	5.1 U	5.1 U	5.4 U	5.2 U	6.3 U	5 U		
4-Ethyltoluene			-	UG/KG	4.1 U	4.1 U	4.4 U	4.2 U	5.1 U	4 U		
Acetone	50	100000	50	UG/KG	3.5 J	2.9 J	7.4 J	10 U	44	10 U		
Acrylonitrile		-	-	UG/KG	10 U	10 U	11 U	10 U	13 U	10 U		
Benzene	60	4800	60	UG/KG	1 U	1 U	1.1 U	1 U	1.3 U	1 U		
Bromobenzene				UG/KG	5.1 U	5.1 U	5.4 U	5.2 U	6.3 U	5 U		
Bromochloromethane				UG/KG	5.1 U	5.1 U	5.4 U	5.2 U	6.3 U	5 U		
Bromodichloromethane				UG/KG	1 U	1 U	1.1 U	1 U	1.3 U	1 U		
Bromoform				UG/KG	4.1 U	4.1 U	4.4 U	4.2 U	5.1 U	4 U		
Bromomethane				UG/KG	2 U	2 U	2.2 U	2.1 U	2.5 U	2 U		
Carbon Disulfide			-	UG/KG	10 U	10 U	11 U	10 U	13 U	10 U		



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Table 7. Summary of Volatile Organic Compounds in Soil, 1221 Spofford Avenue, Bronx, New York (April 2017)

			Sample De	esignation:	RXSB-1	RXSB-1	RXSB-2	RXSB-2	RXSB-3	RXSB-3
			•	mple Date:	04/24/2017	04/25/2017	04/24/2017	04/25/2017	04/25/2017	04/26/2017
			Sample De	pth (ft bls):	0 - 2	8 - 10	0 - 2	7 - 9	0 - 2	6 - 8
			Normal or Field	Duplicate:	N	N	N	N	N	N
Carbon Tetrachloride	760	2400	760	UG/KG	1 U	1 U	1.1 U	1 U	1.3 U	1 U
Chlorobenzene	1100	100000	1100	UG/KG	1 U	1 U	1.1 U	1 U	1.3 U	1 U
Chloroethane		-		UG/KG	2 U	2 U	2.2 U	2.1 U	2.5 U	2 U
Chloroform	370	49000	370	UG/KG	1.5 U	1.5 U	1.6 U	1.6 U	1.9 U	1.5 U
Chloromethane		-		UG/KG	5.1 U	5.1 U	5.4 U	5.2 U	6.3 U	5 U
Cis-1,2-Dichloroethylene	250	100000	250	UG/KG	1 U	1 U	1.1 U	1 U	1.3 U	1 U
Cis-1,3-Dichloropropene				UG/KG	1 U	1 U	1.1 U	1 U	1.3 U	1 U
Cymene				UG/KG	1 U	1 U	1.1 U	1 U	1.3 U	1 U
Dibromochloromethane				UG/KG	1 U	1 U	1.1 U	1 U	1.3 U	1 U
Dibromomethane				UG/KG	10 U	10 U	11 U	10 U	13 U	10 U
Dichlorodifluoromethane				UG/KG	10 U	10 U	11 U	10 U	13 U	10 U
Dichloroethylenes				UG/KG	1 U	1 U	1.1 U	1 U	1.3 U	1 U
Diethyl Ether (Ethyl Ether)				UG/KG	5.1 U	5.1 U	5.4 U	5.2 U	6.3 U	5 U
Ethylbenzene	1000	41000	1000	UG/KG	1 U	1 U	1.1 U	1 U	1.3 U	1 U
Hexachlorobutadiene				UG/KG	5.1 U	5.1 U	5.4 U	5.2 U	6.3 U	5 U
Isopropylbenzene (Cumene)				UG/KG	1 U	1 U	1.1 U	1 U	1.3 U	1 U
m,p-Xylene				UG/KG	2 U	2 U	2.2 U	2.1 U	2.5 U	2 U
Methyl Ethyl Ketone (2-Butanone)	120	100000	120	UG/KG	10 U	10 U	11 U	10 U	3.8 J	10 U
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)				UG/KG	10 U	10 U	11 U	10 U	13 U	10 U
Methylene Chloride	50	100000	50	UG/KG	10 U	10 U	11 U	10 U	13 U	10 U
Naphthalene	12000	100000	12000	UG/KG	5.1 U	5.1 U	5.4 U	5.2 U	6.3 U	5 U
N-Butylbenzene	12000	100000	12000	UG/KG	1 U	1 U	1.1 U	1 U	1.3 U	1 U
N-Propylbenzene	3900	100000	3900	UG/KG	1 U	1 U	1.1 U	1 U	1.3 U	1 U
O-Xylene (1,2-Dimethylbenzene)				UG/KG	2 U	2 U	2.2 U	2.1 U	2.5 U	2 U
Sec-Butylbenzene	11000	100000	11000	UG/KG	1 U	1 U	1.1 U	1 U	1.3 U	1 U
Styrene				UG/KG	2 U	2 U	2.2 U	2.1 U	2.5 U	2 U
T-Butylbenzene	5900	100000	5900	UG/KG	5.1 U	5.1 U	5.4 U	5.2 U	6.3 U	5 U
Tert-Butyl Methyl Ether	930	100000	930	UG/KG	2 U	2 U	2.2 U	2.1 U	2.5 U	2 U
Tetrachloroethylene (PCE)	1300	19000	1300	UG/KG	0.7 J	1 U	1.1 U	1 U	1.3 U	1 U
Toluene	700	100000	700	UG/KG	1.5 U	1.5 U	1.6 U	1.6 U	1.9 U	1.5 U
Total, 1,3-Dichloropropene (Cis And Trans)				UG/KG	1 U	1 U	1.1 U	1 U	1.3 U	1 U
Trans-1,2-Dichloroethene	190	100000	190	UG/KG	1.5 U	1.5 U	1.6 U	1.6 U	1.9 U	1.5 U
Trans-1,3-Dichloropropene				UG/KG	1 U	1 U	1.1 U	1 U	1.3 U	1 U
Trans-1,4-Dichloro-2-Butene				UG/KG	5.1 U	5.1 U	5.4 U	5.2 U	6.3 U	5 U
Trichloroethylene (TCE)	470	21000	470	UG/KG	1 U	1 U	1.1 U	1 U	1.3 U	1 U
Trichlorofluoromethane				UG/KG	5.1 U	5.1 U	5.4 U	5.2 U	6.3 U	5 U
Vinyl Acetate				UG/KG	10 U	10 U	11 U	10 U	13 U	10 U
Vinyl Chloride	20	900	20	UG/KG	2 U	2 U	2.2 U	2.1 U	2.5 U	2 U
Xylenes	260	100000	1600	UG/KG	2 U	2 U	2.2 U	2.1 U	2.5 U	2 U



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Table 7. Summary of Volatile Organic Compounds in Soil, 1221 Spofford Avenue, Bronx, New York (April 2017)

Sample Designation: RXSB-4 RXSB-4 RXSB-5 RXSB-5 RXSB-6												
			•	ple Date:	04/24/2017	04/24/2017	04/25/2017	04/25/2017	04/26/2017	04/24/2017		
			Sample Dep	•	0-2	0 - 2	11 - 13	0-2	5 - 6	0-2		
			Normal or Field [	. ,	N N	FD	N N	N N	N N	N N		
	1		Normal of Field L	Tuplicate.	IN	FD	IN	IN	IN	IN		
	NYSDEC Part 375	NYSDEC Part 375	NYSDEC Part 375									
	Unrestricted Use	Restricted	Protection of									
Parameter	SCO	Residential SCO	Groundwater SCO	Unit								
1,1,1,2-Tetrachloroethane				UG/KG	1 U	0.9 U	1.1 U	0.98 U	0.85 U	1 U		
1,1,1-Trichloroethane	680	100000	680	UG/KG	1 U	0.9 U	1.1 U	0.98 U	0.85 U	1 U		
1,1,2,2-Tetrachloroethane				UG/KG	1 U	0.9 U	1.1 U	0.98 U	0.85 U	1 U		
1,1,2-Trichloroethane				UG/KG	1.6 U	1.3 U	1.6 U	1.5 U	1.3 U	1.5 U		
1,1-Dichloroethane	270	26000	270	UG/KG	1.6 U	1.3 U	1.6 U	1.5 U	1.3 U	1.5 U		
1,1-Dichloroethene	330	100000	330	UG/KG	1 U	0.9 U	1.1 U	0.98 U	0.85 U	1 U		
1,1-Dichloropropene				UG/KG	5.3 U	4.5 U	5.4 U	4.9 U	4.2 U	5.1 U		
1,2,3-Trichlorobenzene				UG/KG	5.3 U	4.5 U	5.4 U	4.9 U	4.2 U	5.1 U		
1,2,3-Trichloropropane				UG/KG	10 U	9 U	11 U	9.8 U	8.5 U	10 U		
1,2,4,5-Tetramethylbenzene				UG/KG	1.2 J	1 J	4.4 U	3.9 U	3.4 U	4.1 U		
1,2,4-Trichlorobenzene				UG/KG	5.3 U	4.5 U	5.4 U	4.9 U	4.2 U	5.1 U		
1,2,4-Trimethylbenzene	3600	52000	3600	UG/KG	5.4	3.9 J	5.4 U	4.9 U	4.2 U	5.1 U		
1,2-Dibromo-3-Chloropropane				UG/KG	5.3 U	4.5 U	5.4 U	4.9 U	4.2 U	5.1 U		
1,2-Dibromoethane (Ethylene Dibromide)				UG/KG	4.2 U	3.6 U	4.4 U	3.9 U	3.4 U	4.1 U		
1,2-Dichlorobenzene	1100	100000	1100	UG/KG	5.3 U	4.5 U	5.4 U	4.9 U	4.2 U	5.1 U		
1,2-Dichloroethane	20	3100	20	UG/KG	1 U	0.9 U	1.1 U	0.98 U	0.85 U	1 U		
1,2-Dichloropropane				UG/KG	3.7 U	3.1 U	3.8 U	3.4 U	3 U	3.6 U		
1,3,5-Trimethylbenzene (Mesitylene)	8400	52000	8400	UG/KG	2.4 J	1.9 J	5.4 U	4.9 U	4.2 U	5.1 U		
1,3-Dichlorobenzene	2400	49000	2400	UG/KG	5.3 U	4.5 U	5.4 U	4.9 U	4.2 U	5.1 U		
1,3-Dichloropropane				UG/KG	5.3 U	4.5 U	5.4 U	4.9 U	4.2 U	5.1 U		
1,4-Dichlorobenzene	1800	13000	1800	UG/KG	5.3 U	4.5 U	5.4 U	4.9 U	4.2 U	5.1 U		
1,4-Diethyl Benzene			-	UG/KG	7.8	6.4	4.4 U	3.9 U	3.4 U	4.1 U		
1,4-Dioxane (P-Dioxane)	100	13000	100	UG/KG	42 U	36 U	44 U	39 U	34 U	41 U		
2,2-Dichloropropane		-	-	UG/KG	5.3 U	4.5 U	5.4 U	4.9 U	4.2 U	5.1 U		
2-Chlorotoluene		-	-	UG/KG	5.3 U	4.5 U	5.4 U	4.9 U	4.2 U	5.1 U		
2-Hexanone				UG/KG	10 U	9 U	11 U	9.8 U	8.5 U	10 U		
4-Chlorotoluene		-	-	UG/KG	5.3 U	4.5 U	5.4 U	4.9 U	4.2 U	5.1 U		
4-Ethyltoluene		-	-	UG/KG	2 J	1.4 J	4.4 U	3.9 U	3.4 U	4.1 U		
Acetone	50	100000	50	UG/KG	12	4.4 J	3.7 J	34	2.7 J	9.6 J		
Acrylonitrile		-	-	UG/KG	10 U	9 U	11 U	9.8 U	8.5 U	10 U		
Benzene	60	4800	60	UG/KG	1 U	0.9 U	1.1 U	0.98 U	0.85 U	1 U		
Bromobenzene				UG/KG	5.3 U	4.5 U	5.4 U	4.9 U	4.2 U	5.1 U		
Bromochloromethane				UG/KG	5.3 U	4.5 U	5.4 U	4.9 U	4.2 U	5.1 U		
Bromodichloromethane				UG/KG	1 U	0.9 U	1.1 U	0.98 U	0.85 U	1 U		
Bromoform				UG/KG	4.2 U	3.6 U	4.4 U	3.9 U	3.4 U	4.1 U		
Bromomethane				UG/KG	2.1 U	1.8 U	2.2 U	2 U	1.7 U	2 U		
Carbon Disulfide				UG/KG	10 U	9 U	11 U	9.8 U	8.5 U	10 U		



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Table 7. Summary of Volatile Organic Compounds in Soil, 1221 Spofford Avenue, Bronx, New York (April 2017)

			Sample De	esignation:	RXSB-4	RXSB-4	RXSB-4	RXSB-5	RXSB-5	RXSB-6
			•	mple Date:	04/24/2017	04/24/2017	04/25/2017	04/25/2017	04/26/2017	04/24/2017
			Sample De	pth (ft bls):	0 - 2	0 - 2	11 - 13	0 - 2	5 - 6	0 - 2
			Normal or Field	Duplicate:	N	FD	N	N	N	N
Carbon Tetrachloride	760	2400	760	UG/KG	1 U	0.9 U	1.1 U	0.98 U	0.85 U	1 U
Chlorobenzene	1100	100000	1100	UG/KG	1 U	0.9 U	1.1 U	0.98 U	0.85 U	1 U
Chloroethane				UG/KG	2.1 U	1.8 U	2.2 U	2 U	1.7 U	2 U
Chloroform	370	49000	370	UG/KG	1.6 U	1.3 U	1.6 U	1.5 U	1.3 U	1.5 U
Chloromethane				UG/KG	5.3 U	4.5 U	5.4 U	4.9 U	4.2 U	5.1 U
Cis-1,2-Dichloroethylene	250	100000	250	UG/KG	1 U	0.9 U	1.1 U	0.98 U	0.85 U	1 U
Cis-1,3-Dichloropropene		-		UG/KG	1 U	0.9 U	1.1 U	0.98 U	0.85 U	1 U
Cymene				UG/KG	0.52 J	0.44 J	1.1 U	0.98 U	0.85 U	1 U
Dibromochloromethane				UG/KG	1 U	0.9 U	1.1 U	0.98 U	0.85 U	1 U
Dibromomethane				UG/KG	10 U	9 U	11 U	9.8 U	8.5 U	10 U
Dichlorodifluoromethane				UG/KG	10 U	9 U	11 U	9.8 U	8.5 U	10 U
Dichloroethylenes				UG/KG	1 U	0.9 U	1.1 U	0.98 U	0.85 U	1 U
Diethyl Ether (Ethyl Ether)				UG/KG	5.3 U	4.5 U	5.4 U	4.9 U	4.2 U	5.1 U
Ethylbenzene	1000	41000	1000	UG/KG	1 U	0.9 U	1.1 U	0.98 U	0.85 U	1 U
Hexachlorobutadiene				UG/KG	5.3 U	4.5 U	5.4 U	4.9 U	4.2 U	5.1 U
Isopropylbenzene (Cumene)				UG/KG	1 U	0.9 U	1.1 U	0.98 U	0.85 U	1 U
m,p-Xylene				UG/KG	2.1 U	1.8 U	2.2 U	2 U	1.7 U	2 U
Methyl Ethyl Ketone (2-Butanone)	120	100000	120	UG/KG	10 U	9 U	11 U	1.6 J	8.5 U	10 U
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)				UG/KG	10 U	9 U	11 U	9.8 U	8.5 U	10 U
Methylene Chloride	50	100000	50	UG/KG	10 U	9 U	11 U	9.8 U	8.5 U	10 U
Naphthalene	12000	100000	12000	UG/KG	12	1.9 J	5.4 U	4.9 U	4.2 U	0.2 J
N-Butylbenzene	12000	100000	12000	UG/KG	0.33 J	0.3 J	1.1 U	0.98 U	0.85 U	1 U
N-Propylbenzene	3900	100000	3900	UG/KG	1 U	0.19 J	1.1 U	0.98 U	0.85 U	1 U
O-Xylene (1,2-Dimethylbenzene)				UG/KG	0.49 J	1.8 U	2.2 U	2 U	1.7 U	2 U
Sec-Butylbenzene	11000	100000	11000	UG/KG	0.61 J	0.56 J	1.1 U	0.98 U	0.85 U	1 U
Styrene				UG/KG	2.1 U	1.8 U	2.2 U	2 U	1.7 U	2 U
T-Butylbenzene	5900	100000	5900	UG/KG	5.3 U	4.5 U	5.4 U	4.9 U	4.2 U	5.1 U
Tert-Butyl Methyl Ether	930	100000	930	UG/KG	2.1 U	1.8 U	2.2 U	2 U	1.7 U	2 U
Tetrachloroethylene (PCE)	1300	19000	1300	UG/KG	1 U	0.9 U	1.1 U	0.98 U	0.85 U	1 U
Toluene	700	100000	700	UG/KG	1.6 U	1.3 U	1.6 U	1.5 U	1.3 U	1.5 U
Total, 1,3-Dichloropropene (Cis And Trans)				UG/KG	1 U	0.9 U	1.1 U	0.98 U	0.85 U	1 U
Trans-1,2-Dichloroethene	190	100000	190	UG/KG	1.6 U	1.3 U	1.6 U	1.5 U	1.3 U	1.5 U
Trans-1,3-Dichloropropene				UG/KG	1 U	0.9 U	1.1 U	0.98 U	0.85 U	1 U
Trans-1,4-Dichloro-2-Butene				UG/KG	5.3 U	4.5 U	5.4 U	4.9 U	4.2 U	5.1 U
Trichloroethylene (TCE)	470	21000	470	UG/KG	1 U	0.9 U	1.1 U	0.98 U	0.85 U	1 U
Trichlorofluoromethane				UG/KG	5.3 U	4.5 U	5.4 U	4.9 U	4.2 U	5.1 U
Vinyl Acetate				UG/KG	10 U	9 U	11 U	9.8 U	8.5 U	10 U
Vinyl Chloride	20	900	20	UG/KG	2.1 U	1.8 U	2.2 U	2 U	1.7 U	2 U
Xylenes	260	100000	1600	UG/KG	0.49 J	1.8 U	2.2 U	2 U	1.7 U	2 U



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Table 7. Summary of Volatile Organic Compounds in Soil, 1221 Spofford Avenue, Bronx, New York (April 2017)

			Sample Des	signation:	RXSB-6	RXSB-7	RXSB-7	RXSB-8	RXSB-8	RXSB-9
				ple Date:	04/25/2017	04/25/2017	04/25/2017	04/25/2017	04/25/2017	04/25/2017
			Sample Dep	•	8 - 10	0-12	5 - 7	0-123/2017	10 - 12	0-12
			Normal or Field [	. ,	0 - 10 N	N N	5 - 7 N	N N	N N	N N
			Normal of Field L	Jupiicate.	IN	IN	IN	IN	IN	IN
	NVSDEC Part 375	NYSDEC Part 375	NYSDEC Part 375							
	Unrestricted Use	Restricted	Protection of							
Parameter	SCO	Residential SCO	Groundwater SCO	Unit						
1,1,1,2-Tetrachloroethane				UG/KG	1 U	1 U	0.96 U	0.98 U	1 U	0.94 U
1,1,1-Trichloroethane	680	100000	680	UG/KG	1 U	1 U	0.96 U	0.98 U	1 U	0.94 U
1,1,2,2-Tetrachloroethane				UG/KG	1 U	1 U	0.96 U	0.98 U	1 U	0.94 U
1,1,2-Trichloroethane				UG/KG	1.5 U	1.5 U	1.4 U	1.5 U	1.5 U	1.4 U
1,1-Dichloroethane	270	26000	270	UG/KG	1.5 U	1.5 U	1.4 U	1.5 U	1.5 U	1.4 U
1,1-Dichloroethene	330	100000	330	UG/KG	1 U	1 U	0.96 U	0.98 U	1 U	0.94 U
1,1-Dichloropropene				UG/KG	5.1 U	5 U	4.8 U	4.9 U	5.1 U	4.7 U
1,2,3-Trichlorobenzene				UG/KG	5.1 U	5 U	4.8 U	4.9 U	5.1 U	4.7 U
1,2,3-Trichloropropane				UG/KG	10 U	10 U	9.6 U	9.8 U	10 U	9.4 U
1,2,4,5-Tetramethylbenzene				UG/KG	4.1 U	4 U	3.8 U	3.9 U	4.1 U	3.8 U
1,2,4-Trichlorobenzene				UG/KG	5.1 U	5 U	4.8 U	4.9 U	5.1 U	4.7 U
1,2,4-Trimethylbenzene	3600	52000	3600	UG/KG	5.1 U	5 U	4.8 U	4.9 U	5.1 U	4.7 U
1,2-Dibromo-3-Chloropropane				UG/KG	5.1 U	5 U	4.8 U	4.9 U	5.1 U	4.7 U
1,2-Dibromoethane (Ethylene Dibromide)				UG/KG	4.1 U	4 U	3.8 U	3.9 U	4.1 U	3.8 U
1,2-Dichlorobenzene	1100	100000	1100	UG/KG	5.1 U	5 U	4.8 U	4.9 U	5.1 U	4.7 U
1,2-Dichloroethane	20	3100	20	UG/KG	1 U	1 U	0.96 U	0.98 U	1 U	0.94 U
1,2-Dichloropropane				UG/KG	3.6 U	3.5 U	3.4 U	3.4 U	3.6 U	3.3 U
1,3,5-Trimethylbenzene (Mesitylene)	8400	52000	8400	UG/KG	5.1 U	5 U	4.8 U	4.9 U	5.1 U	4.7 U
1,3-Dichlorobenzene	2400	49000	2400	UG/KG	5.1 U	5 U	4.8 U	4.9 U	5.1 U	4.7 U
1,3-Dichloropropane				UG/KG	5.1 U	5 U	4.8 U	4.9 U	5.1 U	4.7 U
1,4-Dichlorobenzene	1800	13000	1800	UG/KG	5.1 U	5 U	4.8 U	4.9 U	5.1 U	4.7 U
1,4-Diethyl Benzene				UG/KG	4.1 U	4 U	3.8 U	3.9 U	4.1 U	3.8 U
1,4-Dioxane (P-Dioxane)	100	13000	100	UG/KG	41 U	40 U	38 U	39 U	41 U	38 U
2,2-Dichloropropane				UG/KG	5.1 U	5 U	4.8 U	4.9 U	5.1 U	4.7 U
2-Chlorotoluene				UG/KG	5.1 U	5 U	4.8 U	4.9 U	5.1 U	4.7 U
2-Hexanone				UG/KG	10 U	10 U	9.6 U	9.8 U	10 U	9.4 U
4-Chlorotoluene				UG/KG	5.1 U	5 U	4.8 U	4.9 U	5.1 U	4.7 U
4-Ethyltoluene				UG/KG	4.1 U	4 U	3.8 U	3.9 U	4.1 U	3.8 U
Acetone	50	100000	50	UG/KG	6.3 J	24	11	9.8 U	12	9.4 U
Acrylonitrile				UG/KG	10 U	10 U	9.6 U	9.8 U	10 U	9.4 U
Benzene	60	4800	60	UG/KG	1 U	1 U	0.96 U	0.98 U	1 U	0.94 U
Bromobenzene				UG/KG	5.1 U	5 U	4.8 U	4.9 U	5.1 U	4.7 U
Bromochloromethane				UG/KG	5.1 U	5 U	4.8 U	4.9 U	5.1 U	4.7 U
Bromodichloromethane				UG/KG	1 U	1 U	0.96 U	0.98 U	1 U	0.94 U
Bromoform				UG/KG	4.1 U	4 U	3.8 U	3.9 U	4.1 U	3.8 U
Bromomethane				UG/KG	2 U	2 U	1.9 U	2 U	2 U	1.9 U
Carbon Disulfide				UG/KG	10 U	10 U	9.6 U	9.8 U	10 U	9.4 U



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Table 7. Summary of Volatile Organic Compounds in Soil, 1221 Spofford Avenue, Bronx, New York (April 2017)

			Sample De	esignation:	RXSB-6	RXSB-7	RXSB-7	RXSB-8	RXSB-8	RXSB-9
			Sai	nple Date:	04/25/2017	04/25/2017	04/25/2017	04/25/2017	04/25/2017	04/25/2017
			Sample De	oth (ft bls):	8 - 10	0 - 2	5 - 7	0 - 2	10 - 12	0 - 2
			Normal or Field	Duplicate:	N	N	N	N	N	N
Carbon Tetrachloride	760	2400	760	UG/KG	1 U	1 U	0.96 U	0.98 U	1 U	0.94 U
Chlorobenzene	1100	100000	1100	UG/KG	1 U	1 U	0.96 U	0.98 U	1 U	0.94 U
Chloroethane		-		UG/KG	2 U	2 U	1.9 U	2 U	2 U	1.9 U
Chloroform	370	49000	370	UG/KG	1.5 U	1.5 U	1.4 U	1.5 U	1.5 U	1.4 U
Chloromethane		-		UG/KG	5.1 U	5 U	4.8 U	4.9 U	5.1 U	4.7 U
Cis-1,2-Dichloroethylene	250	100000	250	UG/KG	1 U	1 U	0.96 U	0.98 U	1 U	0.94 U
Cis-1,3-Dichloropropene				UG/KG	1 U	1 U	0.96 U	0.98 U	1 U	0.94 U
Cymene				UG/KG	1 U	1 U	0.96 U	0.98 U	1 U	0.94 U
Dibromochloromethane				UG/KG	1 U	1 U	0.96 U	0.98 U	1 U	0.94 U
Dibromomethane				UG/KG	10 U	10 U	9.6 U	9.8 U	10 U	9.4 U
Dichlorodifluoromethane				UG/KG	10 U	10 U	9.6 U	9.8 U	10 U	9.4 U
Dichloroethylenes				UG/KG	1 U	1 U	0.96 U	0.98 U	1 U	0.94 U
Diethyl Ether (Ethyl Ether)		-		UG/KG	5.1 U	5 U	4.8 U	4.9 U	5.1 U	4.7 U
Ethylbenzene	1000	41000	1000	UG/KG	1 U	1 U	0.96 U	0.98 U	1 U	0.94 U
Hexachlorobutadiene				UG/KG	5.1 U	5 U	4.8 U	4.9 U	5.1 U	4.7 U
Isopropylbenzene (Cumene)				UG/KG	1 U	1 U	0.96 U	0.98 U	1 U	0.94 U
m,p-Xylene				UG/KG	2 U	2 U	1.9 U	2 U	2 U	1.9 U
Methyl Ethyl Ketone (2-Butanone)	120	100000	120	UG/KG	10 U	10 U	0.95 J	9.8 U	2.3 J	9.4 U
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)				UG/KG	10 U	10 U	9.6 U	9.8 U	10 U	9.4 U
Methylene Chloride	50	100000	50	UG/KG	10 U	10 U	9.6 U	9.8 U	10 U	9.4 U
Naphthalene	12000	100000	12000	UG/KG	5.1 U	5 U	4.8 U	0.69 J	5.1 U	0.15 J
N-Butylbenzene	12000	100000	12000	UG/KG	1 U	1 U	0.96 U	0.98 U	1 U	0.94 U
N-Propylbenzene	3900	100000	3900	UG/KG	1 U	1 U	0.96 U	0.98 U	1 U	0.94 U
O-Xylene (1,2-Dimethylbenzene)				UG/KG	2 U	2 U	1.9 U	2 U	2 U	1.9 U
Sec-Butylbenzene	11000	100000	11000	UG/KG	1 U	1 U	0.96 U	0.98 U	1 U	0.94 U
Styrene				UG/KG	2 U	2 U	1.9 U	2 U	2 U	1.9 U
T-Butylbenzene	5900	100000	5900	UG/KG	5.1 U	5 U	4.8 U	4.9 U	5.1 U	4.7 U
Tert-Butyl Methyl Ether	930	100000	930	UG/KG	0.26 J	2 U	1.9 U	2 U	2 U	1.9 U
Tetrachloroethylene (PCE)	1300	19000	1300	UG/KG	1 U	1 U	0.96 U	0.55 J	1 U	0.94 U
Toluene	700	100000	700	UG/KG	1.5 U	1.5 U	1.4 U	1.5 U	1.5 U	1.4 U
Total, 1,3-Dichloropropene (Cis And Trans)				UG/KG	1 U	1 U	0.96 U	0.98 U	1 U	0.94 U
Trans-1,2-Dichloroethene	190	100000	190	UG/KG	1.5 U	1.5 U	1.4 U	1.5 U	1.5 U	1.4 U
Trans-1,3-Dichloropropene				UG/KG	1 U	1 U	0.96 U	0.98 U	1 U	0.94 U
Trans-1,4-Dichloro-2-Butene				UG/KG	5.1 U	5 U	4.8 U	4.9 U	5.1 U	4.7 U
Trichloroethylene (TCE)	470	21000	470	UG/KG	1 U	1 U	0.96 U	0.98 U	1 U	0.94 U
Trichlorofluoromethane				UG/KG	5.1 U	5 U	4.8 U	4.9 U	5.1 U	4.7 U
Vinyl Acetate				UG/KG	10 U	10 U	9.6 U	9.8 U	10 U	9.4 U
Vinyl Chloride	20	900	20	UG/KG	2 U	2 U	1.9 U	2 U	2 U	1.9 U
Xylenes	260	100000	1600	UG/KG	2 U	2 U	1.9 U	2 U	2 U	1.9 U



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Table 7. Summary of Volatile Organic Compounds in Soil, 1221 Spofford Avenue, Bronx, New York (April 2017)

			Sample Des	signation:	RXSB-10
			Sam	ple Date:	04/25/2017
			Sample Dep	th (ft bls):	0 - 2
			Normal or Field [	Ouplicate:	N
	NYSDEC Part 375	NYSDEC Part 375	NYSDEC Part 375		
	Unrestricted Use	Restricted	Protection of		
Parameter	SCO	Residential SCO	Groundwater SCO	Unit	
1,1,1,2-Tetrachloroethane			-	UG/KG	0.92 U
1,1,1-Trichloroethane	680	100000	680	UG/KG	0.92 U
1,1,2,2-Tetrachloroethane			-	UG/KG	0.92 U
1,1,2-Trichloroethane				UG/KG	1.4 U
1,1-Dichloroethane	270	26000	270	UG/KG	1.4 U
1,1-Dichloroethene	330	100000	330	UG/KG	0.92 U
1,1-Dichloropropene				UG/KG	4.6 U
1,2,3-Trichlorobenzene				UG/KG	4.6 U
1,2,3-Trichloropropane				UG/KG	9.2 U
1,2,4,5-Tetramethylbenzene				UG/KG	3.7 U
1,2,4-Trichlorobenzene				UG/KG	4.6 U
1,2,4-Trimethylbenzene	3600	52000	3600	UG/KG	4.6 U
1,2-Dibromo-3-Chloropropane				UG/KG	4.6 U
1,2-Dibromoethane (Ethylene Dibromide)				UG/KG	3.7 U
1,2-Dichlorobenzene	1100	100000	1100	UG/KG	4.6 U
1,2-Dichloroethane	20	3100	20	UG/KG	0.92 U
1,2-Dichloropropane				UG/KG	3.2 U
1,3,5-Trimethylbenzene (Mesitylene)	8400	52000	8400	UG/KG	4.6 U
1,3-Dichlorobenzene	2400	49000	2400	UG/KG	4.6 U
1,3-Dichloropropane				UG/KG	4.6 U
1,4-Dichlorobenzene	1800	13000	1800	UG/KG	4.6 U
1,4-Diethyl Benzene				UG/KG	3.7 U
1,4-Dioxane (P-Dioxane)	100	13000	100	UG/KG	37 U
2,2-Dichloropropane				UG/KG	4.6 U
2-Chlorotoluene				UG/KG	4.6 U
2-Hexanone				UG/KG	9.2 U
4-Chlorotoluene				UG/KG	4.6 U
4-Ethyltoluene				UG/KG	3.7 U
Acetone	50	100000	50	UG/KG	2.8 J
Acrylonitrile				UG/KG	9.2 U
Benzene	60	4800	60	UG/KG	0.92 U
Bromobenzene				UG/KG	4.6 U
Bromochloromethane				UG/KG	4.6 U
Bromodichloromethane				UG/KG	0.92 U
Bromoform				UG/KG	3.7 U
Bromomethane				UG/KG	1.8 U
Carbon Disulfide				UG/KG	9.2 U



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Table 7. Summary of Volatile Organic Compounds in Soil, 1221 Spofford Avenue, Bronx, New York (April 2017)

			Sample D	esignation:	RXSB-10
			•	mple Date:	04/25/2017
			Sample De	epth (ft bls):	0 - 2
			Normal or Field	Duplicate:	N
Carbon Tetrachloride	760	2400	760	UG/KG	0.92 U
Chlorobenzene	1100	100000	1100	UG/KG	0.92 U
Chloroethane				UG/KG	1.8 U
Chloroform	370	49000	370	UG/KG	1.4 U
Chloromethane				UG/KG	4.6 U
Cis-1,2-Dichloroethylene	250	100000	250	UG/KG	0.92 U
Cis-1,3-Dichloropropene				UG/KG	0.92 U
Cymene				UG/KG	0.92 U
Dibromochloromethane				UG/KG	0.92 U
Dibromomethane				UG/KG	9.2 U
Dichlorodifluoromethane				UG/KG	9.2 U
Dichloroethylenes				UG/KG	0.92 U
Diethyl Ether (Ethyl Ether)				UG/KG	4.6 U
Ethylbenzene	1000	41000	1000	UG/KG	0.92 U
Hexachlorobutadiene				UG/KG	4.6 U
Isopropylbenzene (Cumene)				UG/KG	0.92 U
m,p-Xylene				UG/KG	1.8 U
Methyl Ethyl Ketone (2-Butanone)	120	100000	120	UG/KG	9.2 U
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)				UG/KG	9.2 U
Methylene Chloride	50	100000	50	UG/KG	9.2 U
Naphthalene	12000	100000	12000	UG/KG	4.6 U
N-Butylbenzene	12000	100000	12000	UG/KG	0.92 U
N-Propylbenzene	3900	100000	3900	UG/KG	0.92 U
O-Xylene (1,2-Dimethylbenzene)				UG/KG	1.8 U
Sec-Butylbenzene	11000	100000	11000	UG/KG	0.92 U
Styrene				UG/KG	1.8 U
T-Butylbenzene	5900	100000	5900	UG/KG	4.6 U
Tert-Butyl Methyl Ether	930	100000	930	UG/KG	1.8 U
Tetrachloroethylene (PCE)	1300	19000	1300	UG/KG	0.92 U
Toluene	700	100000	700	UG/KG	1.4 U
Total, 1,3-Dichloropropene (Cis And Trans)				UG/KG	0.92 U
Trans-1,2-Dichloroethene	190	100000	190	UG/KG	1.4 U
Trans-1,3-Dichloropropene				UG/KG	0.92 U
Trans-1,4-Dichloro-2-Butene				UG/KG	4.6 U
Trichloroethylene (TCE)	470	21000	470	UG/KG	0.92 U
Trichlorofluoromethane				UG/KG	4.6 U
Vinyl Acetate				UG/KG	9.2 U
Vinyl Chloride	20	900	20	UG/KG	1.8 U
Xylenes	260	100000	1600	UG/KG	1.8 U



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Table 8. Summary of Semivolatile Organic Compounds in Soil, 1221 Spofford Avenue, Bronx, New York (April 2017)

			Sample Des	signation:	RXSB-1	RXSB-1	RXSB-2
			Sam	ple Date:	04/24/2017	04/25/2017	04/24/2017
			Sample Dept	th (ft bls):	0 - 2	8 - 10	0 - 2
			Normal or Field [	Ouplicate:	N	N	N
	NYSDEC Part 375	NYSDEC Part 375	NYSDEC Part 375				
	Unrestricted Use	Restricted	Protection of				
Parameter	SCO	Residential SCO	Groundwater SCO	Unit			
1,2,4,5-Tetrachlorobenzene				UG/KG	180 U	170 U	180 U
1,2,4-Trichlorobenzene				UG/KG	180 U	170 U	180 U
1,2-Dichlorobenzene	1100	100000	1100	UG/KG	180 U	170 U	180 U
1,3-Dichlorobenzene	2400	49000	2400	UG/KG	180 U	170 U	180 U
1,4-Dichlorobenzene	1800	13000	1800	UG/KG	180 U	170 U	180 U
2,4,5-Trichlorophenol				UG/KG	180 U	170 U	180 U
2,4,6-Trichlorophenol				UG/KG	110 U	100 U	110 U
2,4-Dichlorophenol				UG/KG	160 U	150 U	170 U
2,4-Dimethylphenol				UG/KG	180 U	170 U	180 U
2,4-Dinitrophenol				UG/KG	880 U	820 U	890 U
2,4-Dinitrotoluene				UG/KG	180 U	170 U	180 U
2,6-Dinitrotoluene				UG/KG	180 U	170 U	180 U
2-Chloronaphthalene				UG/KG	180 U	170 U	180 U
2-Chlorophenol				UG/KG	180 U	170 U	180 U
2-Methylnaphthalene				UG/KG	220 U	210 U	220 U
2-Methylphenol (O-Cresol)	330	100000	330	UG/KG	180 U	170 U	180 U
2-Nitroaniline				UG/KG	180 U	170 U	180 U
2-Nitrophenol				UG/KG	400 U	370 U	400 U
3- And 4- Methylphenol (Total)	330	100000	330	UG/KG	260 U	250 U	270 U
3,3'-Dichlorobenzidine				UG/KG	180 U	170 U	180 U
3-Nitroaniline				UG/KG	180 U	170 U	180 U
4,6-Dinitro-2-Methylphenol				UG/KG	480 U	450 U	480 U
4-Bromophenyl Phenyl Ether				UG/KG	180 U	170 U	180 U
4-Chloro-3-Methylphenol				UG/KG	180 U	170 U	180 U
4-Chloroaniline				UG/KG	180 U	170 U	180 U
4-Chlorophenyl Phenyl Ether				UG/KG	180 U	170 U	180 U
4-Nitroaniline				UG/KG	180 U	170 U	180 U
4-Nitrophenol				UG/KG	260 U	240 U	260 U
Acenaphthene	20000	100000	98000	UG/KG	150 U	140 U	31 J
Acenaphthylene	100000	100000	107000	UG/KG	150 U	140 U	150 U
Acetophenone				UG/KG	180 U	170 U	180 U



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Table 8. Summary of Semivolatile Organic Compounds in Soil, 1221 Spofford Avenue, Bronx, New York (April 2017)

			Sample Des	signation:	RXSB-1	RXSB-1	RXSB-2
			Sam	ple Date:	04/24/2017	04/25/2017	04/24/2017
			Sample Dep	th (ft bls):	0 - 2	8 - 10	0 - 2
			Normal or Field [	Duplicate:	N	N	N
Anthracene	100000	100000	1000000	UG/KG	110 U	100 U	82 J
Benzo(A)Anthracene	1000	1000	1000	UG/KG	160	100 U	250
Benzo(A)Pyrene	1000	1000	22000	UG/KG	110 J	140 U	190
Benzo(B)Fluoranthene	1000	1000	1700	UG/KG	160	100 U	260
Benzo(G,H,I)Perylene	100000	100000	1000000	UG/KG	60 J	140 U	120 J
Benzo(K)Fluoranthene	800	3900	1700	UG/KG	66 J	100 U	95 J
Benzoic Acid				UG/KG	600 U	560 U	600 U
Benzyl Alcohol				UG/KG	180 U	170 U	180 U
Benzyl Butyl Phthalate				UG/KG	180 U	170 U	180 U
Biphenyl (Diphenyl)				UG/KG	420 U	390 U	420 U
Bis(2-Chloroethoxy) Methane				UG/KG	200 U	180 U	200 U
Bis(2-Chloroethyl) Ether (2-Chloroethyl Ether)				UG/KG	160 U	150 U	170 U
Bis(2-Chloroisopropyl) Ether				UG/KG	220 U	210 U	220 U
Bis(2-Ethylhexyl) Phthalate				UG/KG	180 U	170 U	180 U
Carbazole				UG/KG	22 J	170 U	31 J
Chrysene	1000	3900	1000	UG/KG	180	100 U	250
Dibenz(A,H)Anthracene	330	330	1000000	UG/KG	23 J	100 U	35 J
Dibenzofuran	7000	59000	210000	UG/KG	180 U	170 U	180 U
Diethyl Phthalate				UG/KG	180 U	170 U	180 U
Dimethyl Phthalate				UG/KG	180 U	170 U	180 U
Di-N-Butyl Phthalate				UG/KG	180 U	170 U	180 U
Di-N-Octylphthalate				UG/KG	180 U	170 U	180 U
Fluoranthene	100000	100000	1000000	UG/KG	340	100 U	420
Fluorene	30000	100000	386000	UG/KG	180 U	170 U	33 J
Hexachlorobenzene	330	1200	3200	UG/KG	110 U	100 U	110 U
Hexachlorobutadiene				UG/KG	180 U	170 U	180 U
Hexachlorocyclopentadiene				UG/KG	530 U	490 U	530 U
Hexachloroethane				UG/KG	150 U	140 U	150 U
Indeno(1,2,3-C,D)Pyrene	500	500	8200	UG/KG	72 J	140 U	140 J
Isophorone				UG/KG	160 U	150 U	170 U
Naphthalene	12000	100000	12000	UG/KG	180 U	170 U	180 U
Nitrobenzene				UG/KG	160 U	150 U	170 U
N-Nitrosodi-N-Propylamine				UG/KG	180 U	170 U	180 U
N-Nitrosodiphenylamine				UG/KG	150 U	140 U	150 U
Pentachlorophenol	800	6700	800	UG/KG	150 U	140 U	150 U



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Table 8. Summary of Semivolatile Organic Compounds in Soil, 1221 Spofford Avenue, Bronx, New York (April 2017)

			Sample De	signation:	RXSB-1	RXSB-1	RXSB-2
			Sam	ple Date:	04/24/2017	04/25/2017	04/24/2017
		Sample Depth (ft bls):					
		Normal or Field Duplicate:					N
Phenanthrene	100000	100000	1000000	UG/KG	210	100 U	330
Phenol	330	100000	330	UG/KG	180 U	170 U	180 U
Pyrene	100000	100000	1000000	UG/KG	300	100 U	380



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Table 8. Summary of Semivolatile Organic Compounds in Soil, 1221 Spofford Avenue, Bronx, New York (April 2017)

			Sample Des	signation:	RXSB-2	RXSB-3	RXSB-3
			Sam	ple Date:	04/25/2017	04/25/2017	04/26/2017
			Sample Dept	th (ft bls):	7 - 9	0 - 2	6 - 8
			Normal or Field D	Ouplicate:	N	N	N
	NYSDEC Part 375	NYSDEC Part 375	NYSDEC Part 375				
	Unrestricted Use	Restricted	Protection of				
Parameter	SCO	Residential SCO	Groundwater SCO	Unit			
1,2,4,5-Tetrachlorobenzene				UG/KG	180 U	190 U	190 U
1,2,4-Trichlorobenzene				UG/KG	180 U	190 U	190 U
1,2-Dichlorobenzene	1100	100000	1100	UG/KG	180 U	190 U	190 U
1,3-Dichlorobenzene	2400	49000	2400	UG/KG	180 U	190 U	190 U
1,4-Dichlorobenzene	1800	13000	1800	UG/KG	180 U	190 U	190 U
2,4,5-Trichlorophenol				UG/KG	180 U	190 U	190 U
2,4,6-Trichlorophenol				UG/KG	110 U	110 U	110 U
2,4-Dichlorophenol				UG/KG	160 U	170 U	170 U
2,4-Dimethylphenol				UG/KG	180 U	190 U	190 U
2,4-Dinitrophenol				UG/KG	880 U	900 U	900 U
2,4-Dinitrotoluene				UG/KG	180 U	190 U	190 U
2,6-Dinitrotoluene				UG/KG	180 U	190 U	190 U
2-Chloronaphthalene				UG/KG	180 U	190 U	190 U
2-Chlorophenol				UG/KG	180 U	190 U	190 U
2-Methylnaphthalene				UG/KG	220 U	50 J	220 U
2-Methylphenol (O-Cresol)	330	100000	330	UG/KG	180 U	190 U	190 U
2-Nitroaniline				UG/KG	180 U	190 U	190 U
2-Nitrophenol				UG/KG	390 U	410 U	400 U
3- And 4- Methylphenol (Total)	330	100000	330	UG/KG	260 U	270 U	270 U
3,3'-Dichlorobenzidine				UG/KG	180 U	190 U	190 U
3-Nitroaniline				UG/KG	180 U	190 U	190 U
4,6-Dinitro-2-Methylphenol				UG/KG	470 U	490 U	480 U
4-Bromophenyl Phenyl Ether				UG/KG	180 U	190 U	190 U
4-Chloro-3-Methylphenol				UG/KG	180 U	190 U	190 U
4-Chloroaniline				UG/KG	180 U	190 U	190 U
4-Chlorophenyl Phenyl Ether				UG/KG	180 U	190 U	190 U
4-Nitroaniline				UG/KG	180 U	190 U	190 U
4-Nitrophenol				UG/KG	260 U	260 U	260 U
Acenaphthene	20000	100000	98000	UG/KG	150 U	20 J	150 U
Acenaphthylene	100000	100000	107000	UG/KG	150 U	150 U	150 U
Acetophenone				UG/KG	180 U	190 U	190 U



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Table 8. Summary of Semivolatile Organic Compounds in Soil, 1221 Spofford Avenue, Bronx, New York (April 2017)

			Sample De	signation:	RXSB-2	RXSB-3	RXSB-3
			Sam	ple Date:	04/25/2017	04/25/2017	04/26/2017
			Sample Dep	th (ft bls):	7 - 9	0 - 2	6 - 8
			Normal or Field [	Duplicate:	N	N	N
Anthracene	100000	100000	1000000	UG/KG	110 U	44 J	110 U
Benzo(A)Anthracene	1000	1000	1000	UG/KG	110 U	150	22 J
Benzo(A)Pyrene	1000	1000	22000	UG/KG	150 U	150	150 U
Benzo(B)Fluoranthene	1000	1000	1700	UG/KG	110 U	220	110 U
Benzo(G,H,I)Perylene	100000	100000	1000000	UG/KG	150 U	100 J	150 U
Benzo(K)Fluoranthene	800	3900	1700	UG/KG	110 U	76 J	110 U
Benzoic Acid				UG/KG	590 U	610 U	600 U
Benzyl Alcohol				UG/KG	180 U	190 U	190 U
Benzyl Butyl Phthalate				UG/KG	180 U	190 U	190 U
Biphenyl (Diphenyl)				UG/KG	420 U	430 U	420 U
Bis(2-Chloroethoxy) Methane				UG/KG	200 U	200 U	200 U
Bis(2-Chloroethyl) Ether (2-Chloroethyl Ether)				UG/KG	160 U	170 U	170 U
Bis(2-Chloroisopropyl) Ether				UG/KG	220 U	220 U	220 U
Bis(2-Ethylhexyl) Phthalate				UG/KG	180 U	190 U	190 U
Carbazole				UG/KG	180 U	33 J	190 U
Chrysene	1000	3900	1000	UG/KG	110 U	160	110 U
Dibenz(A,H)Anthracene	330	330	1000000	UG/KG	110 U	26 J	110 U
Dibenzofuran	7000	59000	210000	UG/KG	180 U	190 U	190 U
Diethyl Phthalate				UG/KG	180 U	190 U	190 U
Dimethyl Phthalate				UG/KG	180 U	190 U	190 U
Di-N-Butyl Phthalate				UG/KG	180 U	190 U	190 U
Di-N-Octylphthalate				UG/KG	180 U	190 U	190 U
Fluoranthene	100000	100000	1000000	UG/KG	110 U	330	23 J
Fluorene	30000	100000	386000	UG/KG	180 U	190 U	190 U
Hexachlorobenzene	330	1200	3200	UG/KG	110 U	110 U	110 U
Hexachlorobutadiene				UG/KG	180 U	190 U	190 U
Hexachlorocyclopentadiene				UG/KG	520 U	540 U	530 U
Hexachloroethane				UG/KG	150 U	150 U	150 U
Indeno(1,2,3-C,D)Pyrene	500	500	8200	UG/KG	150 U	110 J	150 U
Isophorone				UG/KG	160 U	170 U	170 U
Naphthalene	12000	100000	12000	UG/KG	180 U	41 J	190 U
Nitrobenzene				UG/KG	160 U	170 U	170 U
N-Nitrosodi-N-Propylamine				UG/KG	180 U	190 U	190 U
N-Nitrosodiphenylamine				UG/KG	150 U	150 U	150 U
Pentachlorophenol	800	6700	800	UG/KG	150 U	150 U	150 U



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Table 8. Summary of Semivolatile Organic Compounds in Soil, 1221 Spofford Avenue, Bronx, New York (April 2017)

			Sample Des	signation:	RXSB-2	RXSB-3	RXSB-3
			Sam	ple Date:	04/25/2017	04/25/2017	04/26/2017
			Sample Dept	th (ft bls):	7 - 9	0 - 2	6 - 8
			Normal or Field D	Ouplicate:	N	N	N
Phenanthrene	100000	100000	1000000	UG/KG	110 U	200	110 U
Phenol	330	100000	330	UG/KG	180 U	190 U	190 U
Pyrene	100000	100000	1000000	UG/KG	110 U	270	20 J



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Table 8. Summary of Semivolatile Organic Compounds in Soil, 1221 Spofford Avenue, Bronx, New York (April 2017)

			Sample Des	ignation:	RXSB-4	RXSB-4	RXSB-4
			Sam	ple Date:	04/24/2017	04/24/2017	04/25/2017
			Sample Dept	h (ft bls):	0 - 2	0 - 2	11 - 13
			Normal or Field D	Ouplicate:	N	FD	N
	NYSDEC Part 375	NYSDEC Part 375	NYSDEC Part 375				
	Unrestricted Use	Restricted	Protection of				
Parameter	SCO	Residential SCO	Groundwater SCO	Unit			
1,2,4,5-Tetrachlorobenzene				UG/KG	890 U	890 U	170 U
1,2,4-Trichlorobenzene				UG/KG	890 U	890 U	170 U
1,2-Dichlorobenzene	1100	100000	1100	UG/KG	890 U	890 U	170 U
1,3-Dichlorobenzene	2400	49000	2400	UG/KG	890 U	890 U	170 U
1,4-Dichlorobenzene	1800	13000	1800	UG/KG	890 U	890 U	170 U
2,4,5-Trichlorophenol				UG/KG	890 U	890 U	170 U
2,4,6-Trichlorophenol				UG/KG	540 U	540 U	100 U
2,4-Dichlorophenol				UG/KG	800 U	800 U	160 U
2,4-Dimethylphenol				UG/KG	890 U	890 U	170 U
2,4-Dinitrophenol				UG/KG	4300 U	4300 U	830 U
2,4-Dinitrotoluene				UG/KG	890 U	890 U	170 U
2,6-Dinitrotoluene				UG/KG	890 U	890 U	170 U
2-Chloronaphthalene				UG/KG	890 U	890 U	170 U
2-Chlorophenol				UG/KG	890 U	890 U	170 U
2-Methylnaphthalene				UG/KG	220 J	240 J	210 U
2-Methylphenol (O-Cresol)	330	100000	330	UG/KG	890 U	890 U	170 U
2-Nitroaniline				UG/KG	890 U	890 U	170 U
2-Nitrophenol				UG/KG	1900 U	1900 U	370 U
3- And 4- Methylphenol (Total)	330	100000	330	UG/KG	1300 U	1300 U	250 U
3,3'-Dichlorobenzidine				UG/KG	890 U	890 U	170 U
3-Nitroaniline				UG/KG	890 U	890 U	170 U
4,6-Dinitro-2-Methylphenol				UG/KG	2300 U	2300 U	450 U
4-Bromophenyl Phenyl Ether				UG/KG	890 U	890 U	170 U
4-Chloro-3-Methylphenol				UG/KG	890 U	890 U	170 U
4-Chloroaniline				UG/KG	890 U	890 U	170 U
4-Chlorophenyl Phenyl Ether				UG/KG	890 U	890 U	170 U
4-Nitroaniline				UG/KG	890 U	890 U	170 U
4-Nitrophenol				UG/KG	1200 U	1200 U	240 U
Acenaphthene	20000	100000	98000	UG/KG	1300	1400	140 U
Acenaphthylene	100000	100000	107000	UG/KG	710 U	710 U	140 U
Acetophenone				UG/KG	890 U	890 U	170 U



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Table 8. Summary of Semivolatile Organic Compounds in Soil, 1221 Spofford Avenue, Bronx, New York (April 2017)

			Sample Des	signation:	RXSB-4	RXSB-4	RXSB-4
			Sam	ple Date:	04/24/2017	04/24/2017	04/25/2017
			Sample Dept	th (ft bls):	0 - 2	0 - 2	11 - 13
			Normal or Field D	Ouplicate:	N	FD	N
Anthracene	100000	100000	1000000	UG/KG	1700	1800	100 U
Benzo(A)Anthracene	1000	1000	1000	UG/KG	4000	3600	100 U
Benzo(A)Pyrene	1000	1000	22000	UG/KG	3500	3300	140 U
Benzo(B)Fluoranthene	1000	1000	1700	UG/KG	4800	4200	100 U
Benzo(G,H,I)Perylene	100000	100000	1000000	UG/KG	2100	1900	140 U
Benzo(K)Fluoranthene	800	3900	1700	UG/KG	1500	1400	100 U
Benzoic Acid				UG/KG	2900 U	2900 U	560 U
Benzyl Alcohol				UG/KG	890 U	890 U	170 U
Benzyl Butyl Phthalate				UG/KG	890 U	890 U	170 U
Biphenyl (Diphenyl)				UG/KG	2000 U	2000 U	390 U
Bis(2-Chloroethoxy) Methane				UG/KG	960 U	960 U	190 U
Bis(2-Chloroethyl) Ether (2-Chloroethyl Ether)				UG/KG	800 U	800 U	160 U
Bis(2-Chloroisopropyl) Ether				UG/KG	1100 U	1100 U	210 U
Bis(2-Ethylhexyl) Phthalate				UG/KG	890 U	890 U	170 U
Carbazole				UG/KG	840 J	870 J	170 U
Chrysene	1000	3900	1000	UG/KG	3500	3200	100 U
Dibenz(A,H)Anthracene	330	330	1000000	UG/KG	580	540	100 U
Dibenzofuran	7000	59000	210000	UG/KG	470 J	520 J	170 U
Diethyl Phthalate				UG/KG	890 U	890 U	170 U
Dimethyl Phthalate				UG/KG	890 U	890 U	170 U
Di-N-Butyl Phthalate				UG/KG	890 U	890 U	170 U
Di-N-Octylphthalate				UG/KG	890 U	890 U	170 U
Fluoranthene	100000	100000	1000000	UG/KG	7900	7400	100 U
Fluorene	30000	100000	386000	UG/KG	900	980	170 U
Hexachlorobenzene	330	1200	3200	UG/KG	540 U	540 U	100 U
Hexachlorobutadiene				UG/KG	890 U	890 U	170 U
Hexachlorocyclopentadiene				UG/KG	2600 U	2600 U	500 U
Hexachloroethane				UG/KG	710 U	710 U	140 U
Indeno(1,2,3-C,D)Pyrene	500	500	8200	UG/KG	2500	2300	140 U
Isophorone				UG/KG	800 U	800 U	160 U
Naphthalene	12000	100000	12000	UG/KG	730 J	900	170 U
Nitrobenzene				UG/KG	800 U	800 U	160 U
N-Nitrosodi-N-Propylamine				UG/KG	890 U	890 U	170 U
N-Nitrosodiphenylamine				UG/KG	710 U	710 U	140 U
Pentachlorophenol	800	6700	800	UG/KG	710 U	710 U	140 U



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Table 8. Summary of Semivolatile Organic Compounds in Soil, 1221 Spofford Avenue, Bronx, New York (April 2017)

			Sample Des	ignation:	RXSB-4	RXSB-4	RXSB-4
			Sam	ple Date:	04/24/2017	04/24/2017	04/25/2017
	Sample Depth (ft bls):						
		Normal or Field Duplicate:					N
Phenanthrene	100000	100000	1000000	UG/KG	5600	5600	100 U
Phenol	330	100000	330	UG/KG	890 U	890 U	170 U
Pyrene	100000	100000	1000000	UG/KG	6300	5700	100 U



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Table 8. Summary of Semivolatile Organic Compounds in Soil, 1221 Spofford Avenue, Bronx, New York (April 2017)

			Sample Des	signation:	RXSB-5	RXSB-5	RXSB-6
			Sam	ple Date:	04/25/2017	04/26/2017	04/24/2017
			Sample Dept	th (ft bls):	0 - 2	5 - 6	0 - 2
			Normal or Field D	Ouplicate:	N	N	N
	NYSDEC Part 375	NYSDEC Part 375	NYSDEC Part 375				
	Unrestricted Use	Restricted	Protection of				
Parameter	SCO	Residential SCO	Groundwater SCO	Unit			
1,2,4,5-Tetrachlorobenzene				UG/KG	190 U	180 U	180 U
1,2,4-Trichlorobenzene				UG/KG	190 U	180 U	180 U
1,2-Dichlorobenzene	1100	100000	1100	UG/KG	190 U	180 U	180 U
1,3-Dichlorobenzene	2400	49000	2400	UG/KG	190 U	180 U	180 U
1,4-Dichlorobenzene	1800	13000	1800	UG/KG	190 U	180 U	180 U
2,4,5-Trichlorophenol			-	UG/KG	190 U	180 U	180 U
2,4,6-Trichlorophenol				UG/KG	120 U	110 U	110 U
2,4-Dichlorophenol				UG/KG	180 U	160 U	160 U
2,4-Dimethylphenol				UG/KG	190 U	180 U	180 U
2,4-Dinitrophenol				UG/KG	940 U	880 U	860 U
2,4-Dinitrotoluene				UG/KG	190 U	180 U	180 U
2,6-Dinitrotoluene				UG/KG	190 U	180 U	180 U
2-Chloronaphthalene				UG/KG	190 U	180 U	180 U
2-Chlorophenol				UG/KG	190 U	180 U	180 U
2-Methylnaphthalene				UG/KG	230 U	220 U	34 J
2-Methylphenol (O-Cresol)	330	100000	330	UG/KG	190 U	180 U	180 U
2-Nitroaniline				UG/KG	190 U	180 U	180 U
2-Nitrophenol				UG/KG	420 U	390 U	390 U
3- And 4- Methylphenol (Total)	330	100000	330	UG/KG	280 U	260 U	260 U
3,3'-Dichlorobenzidine				UG/KG	190 U	180 U	180 U
3-Nitroaniline				UG/KG	190 U	180 U	180 U
4,6-Dinitro-2-Methylphenol				UG/KG	510 U	470 U	460 U
4-Bromophenyl Phenyl Ether				UG/KG	190 U	180 U	180 U
4-Chloro-3-Methylphenol				UG/KG	190 U	180 U	180 U
4-Chloroaniline			-	UG/KG	190 U	180 U	180 U
4-Chlorophenyl Phenyl Ether				UG/KG	190 U	180 U	180 U
4-Nitroaniline			-	UG/KG	190 U	180 U	180 U
4-Nitrophenol				UG/KG	270 U	260 U	250 U
Acenaphthene	20000	100000	98000	UG/KG	22 J	140 U	340
Acenaphthylene	100000	100000	107000	UG/KG	160 U	140 U	140 U
Acetophenone				UG/KG	190 U	180 U	180 U



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Table 8. Summary of Semivolatile Organic Compounds in Soil, 1221 Spofford Avenue, Bronx, New York (April 2017)

			Sample De	signation:	RXSB-5	RXSB-5	RXSB-6
			Sam	ple Date:	04/25/2017	04/26/2017	04/24/2017
			Sample Dep	th (ft bls):	0 - 2	5 - 6	0 - 2
			Normal or Field [	Duplicate:	N	N	N
Anthracene	100000	100000	1000000	UG/KG	120 U	110 U	730
Benzo(A)Anthracene	1000	1000	1000	UG/KG	88 J	110 U	1500
Benzo(A)Pyrene	1000	1000	22000	UG/KG	78 J	140 U	1000
Benzo(B)Fluoranthene	1000	1000	1700	UG/KG	100 J	110 U	1400
Benzo(G,H,I)Perylene	100000	100000	1000000	UG/KG	47 J	140 U	510
Benzo(K)Fluoranthene	800	3900	1700	UG/KG	42 J	110 U	480
Benzoic Acid				UG/KG	630 U	590 U	580 U
Benzyl Alcohol				UG/KG	190 U	180 U	180 U
Benzyl Butyl Phthalate				UG/KG	190 U	180 U	180 U
Biphenyl (Diphenyl)				UG/KG	440 U	420 U	410 U
Bis(2-Chloroethoxy) Methane				UG/KG	210 U	200 U	190 U
Bis(2-Chloroethyl) Ether (2-Chloroethyl Ether)				UG/KG	180 U	160 U	160 U
Bis(2-Chloroisopropyl) Ether				UG/KG	230 U	220 U	210 U
Bis(2-Ethylhexyl) Phthalate				UG/KG	190 U	180 U	180 U
Carbazole				UG/KG	190 U	180 U	160 J
Chrysene	1000	3900	1000	UG/KG	84 J	110 U	1300
Dibenz(A,H)Anthracene	330	330	1000000	UG/KG	120 U	110 U	140
Dibenzofuran	7000	59000	210000	UG/KG	190 U	180 U	170 J
Diethyl Phthalate				UG/KG	190 U	180 U	180 U
Dimethyl Phthalate				UG/KG	190 U	180 U	180 U
Di-N-Butyl Phthalate				UG/KG	190 U	180 U	180 U
Di-N-Octylphthalate				UG/KG	190 U	180 U	180 U
Fluoranthene	100000	100000	1000000	UG/KG	180	110 U	3200
Fluorene	30000	100000	386000	UG/KG	190 U	180 U	310
Hexachlorobenzene	330	1200	3200	UG/KG	120 U	110 U	110 U
Hexachlorobutadiene				UG/KG	190 U	180 U	180 U
Hexachlorocyclopentadiene				UG/KG	560 U	520 U	510 U
Hexachloroethane				UG/KG	160 U	140 U	140 U
Indeno(1,2,3-C,D)Pyrene	500	500	8200	UG/KG	59 J	140 U	580
Isophorone				UG/KG	180 U	160 U	160 U
Naphthalene	12000	100000	12000	UG/KG	190 U	180 U	27 J
Nitrobenzene				UG/KG	180 U	160 U	160 U
N-Nitrosodi-N-Propylamine				UG/KG	190 U	180 U	180 U
N-Nitrosodiphenylamine				UG/KG	160 U	140 U	140 U
Pentachlorophenol	800	6700	800	UG/KG	160 U	140 U	140 U



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Table 8. Summary of Semivolatile Organic Compounds in Soil, 1221 Spofford Avenue, Bronx, New York (April 2017)

			Sample De	signation:	RXSB-5	RXSB-5	RXSB-6
		Sample Date: 04/25				04/26/2017	04/24/2017
	Sample Depth (ft bls): 0					5 - 6	0 - 2
		Normal or Field Duplicate:			N	N	N
Phenanthrene	100000	100000	1000000	UG/KG	130	110 U	3600
Phenol	330	100000	330	UG/KG	190 U	180 U	180 U
Pyrene	100000	100000	1000000	UG/KG	140	110 U	2700



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Table 8. Summary of Semivolatile Organic Compounds in Soil, 1221 Spofford Avenue, Bronx, New York (April 2017)

			Sample Des	signation:	RXSB-6	RXSB-7	RXSB-7
			Sam	ple Date:	04/25/2017	04/25/2017	04/25/2017
			Sample Dept	th (ft bls):	8 - 10	0 - 2	5 - 7
			Normal or Field D	Ouplicate:	N	N	N
	NYSDEC Part 375	NYSDEC Part 375	NYSDEC Part 375				
	Unrestricted Use	Restricted	Protection of				
Parameter	SCO	Residential SCO	Groundwater SCO	Unit			
1,2,4,5-Tetrachlorobenzene				UG/KG	190 U	370 U	180 U
1,2,4-Trichlorobenzene				UG/KG	190 U	370 U	180 U
1,2-Dichlorobenzene	1100	100000	1100	UG/KG	190 U	370 U	180 U
1,3-Dichlorobenzene	2400	49000	2400	UG/KG	190 U	370 U	180 U
1,4-Dichlorobenzene	1800	13000	1800	UG/KG	190 U	370 U	180 U
2,4,5-Trichlorophenol				UG/KG	190 U	370 U	180 U
2,4,6-Trichlorophenol				UG/KG	120 U	220 U	110 U
2,4-Dichlorophenol				UG/KG	170 U	330 U	170 U
2,4-Dimethylphenol				UG/KG	190 U	370 U	180 U
2,4-Dinitrophenol				UG/KG	930 U	1800 U	890 U
2,4-Dinitrotoluene				UG/KG	190 U	370 U	180 U
2,6-Dinitrotoluene				UG/KG	190 U	370 U	180 U
2-Chloronaphthalene				UG/KG	190 U	370 U	180 U
2-Chlorophenol				UG/KG	190 U	370 U	180 U
2-Methylnaphthalene				UG/KG	230 U	440 U	220 U
2-Methylphenol (O-Cresol)	330	100000	330	UG/KG	190 U	370 U	180 U
2-Nitroaniline				UG/KG	190 U	370 U	180 U
2-Nitrophenol				UG/KG	420 U	800 U	400 U
3- And 4- Methylphenol (Total)	330	100000	330	UG/KG	280 U	530 U	270 U
3,3'-Dichlorobenzidine				UG/KG	190 U	370 U	180 U
3-Nitroaniline				UG/KG	190 U	370 U	180 U
4,6-Dinitro-2-Methylphenol				UG/KG	500 U	960 U	480 U
4-Bromophenyl Phenyl Ether				UG/KG	190 U	370 U	180 U
4-Chloro-3-Methylphenol				UG/KG	190 U	370 U	180 U
4-Chloroaniline			-	UG/KG	190 U	370 U	180 U
4-Chlorophenyl Phenyl Ether				UG/KG	190 U	370 U	180 U
4-Nitroaniline				UG/KG	190 U	370 U	180 U
4-Nitrophenol			-	UG/KG	270 U	520 U	260 U
Acenaphthene	20000	100000	98000	UG/KG	160 U	300 U	150 U
Acenaphthylene	100000	100000	107000	UG/KG	160 U	300 U	150 U
Acetophenone				UG/KG	190 U	370 U	180 U



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Table 8. Summary of Semivolatile Organic Compounds in Soil, 1221 Spofford Avenue, Bronx, New York (April 2017)

			Sample De	signation:	RXSB-6	RXSB-7	RXSB-7
			Sam	ple Date:	04/25/2017	04/25/2017	04/25/2017
			Sample Dep	th (ft bls):	8 - 10	0 - 2	5 - 7
			Normal or Field [	Duplicate:	N	N	N
Anthracene	100000	100000	1000000	UG/KG	120 U	220 U	110 U
Benzo(A)Anthracene	1000	1000	1000	UG/KG	120 U	220 U	110 U
Benzo(A)Pyrene	1000	1000	22000	UG/KG	160 U	300 U	150 U
Benzo(B)Fluoranthene	1000	1000	1700	UG/KG	120 U	220 U	110 U
Benzo(G,H,I)Perylene	100000	100000	1000000	UG/KG	160 U	300 U	150 U
Benzo(K)Fluoranthene	800	3900	1700	UG/KG	120 U	220 U	110 U
Benzoic Acid				UG/KG	630 U	1200 U	600 U
Benzyl Alcohol				UG/KG	190 U	370 U	180 U
Benzyl Butyl Phthalate				UG/KG	190 U	370 U	180 U
Biphenyl (Diphenyl)				UG/KG	440 U	840 U	420 U
Bis(2-Chloroethoxy) Methane				UG/KG	210 U	400 U	200 U
Bis(2-Chloroethyl) Ether (2-Chloroethyl Ether)				UG/KG	170 U	330 U	170 U
Bis(2-Chloroisopropyl) Ether				UG/KG	230 U	440 U	220 U
Bis(2-Ethylhexyl) Phthalate				UG/KG	190 U	370 U	180 U
Carbazole				UG/KG	190 U	370 U	180 U
Chrysene	1000	3900	1000	UG/KG	120 U	220 U	110 U
Dibenz(A,H)Anthracene	330	330	1000000	UG/KG	120 U	220 U	110 U
Dibenzofuran	7000	59000	210000	UG/KG	190 U	370 U	180 U
Diethyl Phthalate				UG/KG	190 U	370 U	180 U
Dimethyl Phthalate				UG/KG	190 U	370 U	180 U
Di-N-Butyl Phthalate				UG/KG	190 U	370 U	180 U
Di-N-Octylphthalate				UG/KG	190 U	370 U	180 U
Fluoranthene	100000	100000	1000000	UG/KG	22 J	220 U	110 U
Fluorene	30000	100000	386000	UG/KG	190 U	370 U	180 U
Hexachlorobenzene	330	1200	3200	UG/KG	120 U	220 U	110 U
Hexachlorobutadiene				UG/KG	190 U	370 U	180 U
Hexachlorocyclopentadiene				UG/KG	560 U	1000 U	530 U
Hexachloroethane				UG/KG	160 U	300 U	150 U
Indeno(1,2,3-C,D)Pyrene	500	500	8200	UG/KG	160 U	300 U	150 U
Isophorone				UG/KG	170 U	330 U	170 U
Naphthalene	12000	100000	12000	UG/KG	190 U	370 U	180 U
Nitrobenzene				UG/KG	170 U	330 U	170 U
N-Nitrosodi-N-Propylamine				UG/KG	190 U	370 U	180 U
N-Nitrosodiphenylamine				UG/KG	160 U	300 U	150 U
Pentachlorophenol	800	6700	800	UG/KG	160 U	300 U	150 U



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Table 8. Summary of Semivolatile Organic Compounds in Soil, 1221 Spofford Avenue, Bronx, New York (April 2017)

			Sample De	signation:	RXSB-6	RXSB-7	RXSB-7
			Sam	ple Date:	04/25/2017	04/25/2017	04/25/2017
	Sample Depth (ft bls): 8					0 - 2	5 - 7
		Normal or Field Duplicate:			N	N	N
Phenanthrene	100000	100000	1000000	UG/KG	120 U	220 U	110 U
Phenol	330	100000	330	UG/KG	190 U	370 U	180 U
Pyrene	100000	100000	1000000	UG/KG	22 J	220 U	110 U



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Table 8. Summary of Semivolatile Organic Compounds in Soil, 1221 Spofford Avenue, Bronx, New York (April 2017)

Sample Designation: RXSB-8 RXSB-8 RX									
			Sam	ple Date:	04/25/2017	04/25/2017	04/25/2017		
			Sample Dept	th (ft bls):	0 - 2	10 - 12	0 - 2		
			Normal or Field D	Ouplicate:	N	N	N		
	NYSDEC Part 375	NYSDEC Part 375	NYSDEC Part 375						
	Unrestricted Use	Restricted	Protection of						
Parameter	SCO	Residential SCO	Groundwater SCO	Unit					
1,2,4,5-Tetrachlorobenzene				UG/KG	180 U	190 U	380 U		
1,2,4-Trichlorobenzene				UG/KG	180 U	190 U	380 U		
1,2-Dichlorobenzene	1100	100000	1100	UG/KG	180 U	190 U	380 U		
1,3-Dichlorobenzene	2400	49000	2400	UG/KG	180 U	190 U	380 U		
1,4-Dichlorobenzene	1800	13000	1800	UG/KG	180 U	190 U	380 U		
2,4,5-Trichlorophenol				UG/KG	180 U	190 U	380 U		
2,4,6-Trichlorophenol				UG/KG	110 U	110 U	230 U		
2,4-Dichlorophenol				UG/KG	160 U	170 U	350 U		
2,4-Dimethylphenol				UG/KG	180 U	190 U	380 U		
2,4-Dinitrophenol				UG/KG	880 U	900 U	1800 U		
2,4-Dinitrotoluene				UG/KG	180 U	190 U	380 U		
2,6-Dinitrotoluene				UG/KG	180 U	190 U	380 U		
2-Chloronaphthalene				UG/KG	180 U	190 U	380 U		
2-Chlorophenol				UG/KG	180 U	190 U	380 U		
2-Methylnaphthalene				UG/KG	220 U	220 U	71 J		
2-Methylphenol (O-Cresol)	330	100000	330	UG/KG	180 U	190 U	380 U		
2-Nitroaniline				UG/KG	180 U	190 U	380 U		
2-Nitrophenol				UG/KG	400 U	400 U	830 U		
3- And 4- Methylphenol (Total)	330	100000	330	UG/KG	260 U	270 U	560 U		
3,3'-Dichlorobenzidine				UG/KG	180 U	190 U	380 U		
3-Nitroaniline				UG/KG	180 U	190 U	380 U		
4,6-Dinitro-2-Methylphenol				UG/KG	480 U	490 U	1000 U		
4-Bromophenyl Phenyl Ether				UG/KG	180 U	190 U	380 U		
4-Chloro-3-Methylphenol				UG/KG	180 U	190 U	380 U		
4-Chloroaniline			-	UG/KG	180 U	190 U	380 U		
4-Chlorophenyl Phenyl Ether				UG/KG	180 U	190 U	380 U		
4-Nitroaniline				UG/KG	180 U	190 U	380 U		
4-Nitrophenol			-	UG/KG	260 U	260 U	540 U		
Acenaphthene	20000	100000	98000	UG/KG	150 U	150 U	64 J		
Acenaphthylene	100000	100000	107000	UG/KG	150 U	150 U	220 J		
Acetophenone				UG/KG	180 U	190 U	380 U		



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Table 8. Summary of Semivolatile Organic Compounds in Soil, 1221 Spofford Avenue, Bronx, New York (April 2017)

			Sample Des	signation:	RXSB-8	RXSB-8	RXSB-9
			Sam	ple Date:	04/25/2017	04/25/2017	04/25/2017
			Sample Dep	th (ft bls):	0 - 2	10 - 12	0 - 2
			Normal or Field [	Duplicate:	N	N	N
Anthracene	100000	100000	1000000	UG/KG	110 U	110 U	350
Benzo(A)Anthracene	1000	1000	1000	UG/KG	110 U	110 U	750
Benzo(A)Pyrene	1000	1000	22000	UG/KG	150 U	150 U	620
Benzo(B)Fluoranthene	1000	1000	1700	UG/KG	110 U	110 U	710
Benzo(G,H,I)Perylene	100000	100000	1000000	UG/KG	150 U	150 U	330
Benzo(K)Fluoranthene	800	3900	1700	UG/KG	110 U	110 U	200 J
Benzoic Acid				UG/KG	590 U	610 U	1200 U
Benzyl Alcohol				UG/KG	180 U	190 U	380 U
Benzyl Butyl Phthalate				UG/KG	180 U	190 U	380 U
Biphenyl (Diphenyl)				UG/KG	420 U	430 U	880 U
Bis(2-Chloroethoxy) Methane				UG/KG	200 U	200 U	420 U
Bis(2-Chloroethyl) Ether (2-Chloroethyl Ether)				UG/KG	160 U	170 U	350 U
Bis(2-Chloroisopropyl) Ether				UG/KG	220 U	220 U	460 U
Bis(2-Ethylhexyl) Phthalate				UG/KG	180 U	190 U	380 U
Carbazole				UG/KG	180 U	190 U	380 U
Chrysene	1000	3900	1000	UG/KG	110 U	110 U	790
Dibenz(A,H)Anthracene	330	330	1000000	UG/KG	110 U	110 U	93 J
Dibenzofuran	7000	59000	210000	UG/KG	180 U	190 U	380 U
Diethyl Phthalate				UG/KG	180 U	190 U	380 U
Dimethyl Phthalate				UG/KG	180 U	190 U	380 U
Di-N-Butyl Phthalate				UG/KG	180 U	190 U	380 U
Di-N-Octylphthalate				UG/KG	180 U	190 U	380 U
Fluoranthene	100000	100000	1000000	UG/KG	110 U	110 U	1100
Fluorene	30000	100000	386000	UG/KG	180 U	190 U	160 J
Hexachlorobenzene	330	1200	3200	UG/KG	110 U	110 U	230 U
Hexachlorobutadiene				UG/KG	180 U	190 U	380 U
Hexachlorocyclopentadiene				UG/KG	520 U	540 U	1100 U
Hexachloroethane				UG/KG	150 U	150 U	310 U
Indeno(1,2,3-C,D)Pyrene	500	500	8200	UG/KG	150 U	150 U	310
Isophorone				UG/KG	160 U	170 U	350 U
Naphthalene	12000	100000	12000	UG/KG	180 U	190 U	48 J
Nitrobenzene				UG/KG	160 U	170 U	350 U
N-Nitrosodi-N-Propylamine				UG/KG	180 U	190 U	380 U
N-Nitrosodiphenylamine				UG/KG	150 U	150 U	310 U
Pentachlorophenol	800	6700	800	UG/KG	150 U	150 U	310 U



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Table 8. Summary of Semivolatile Organic Compounds in Soil, 1221 Spofford Avenue, Bronx, New York (April 2017)

		_	Sample Des	ignation:	RXSB-8	RXSB-8	RXSB-9
			Sam	ple Date:	04/25/2017	04/25/2017	04/25/2017
			Sample Dept	h (ft bls):	0 - 2	10 - 12	0 - 2
		Normal or Field Duplicate:				N	N
Phenanthrene	100000	100000	1000000	UG/KG	110 U	110 U	790
Phenol	330	100000	330	UG/KG	180 U	190 U	380 U
Pyrene	100000	100000	1000000	UG/KG	110 U	110 U	1500



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Table 8. Summary of Semivolatile Organic Compounds in Soil, 1221 Spofford Avenue, Bronx, New York (April 2017)

Sample Designation:								
				ple Date:	04/25/2017			
			Sample Dep		0 - 2			
	_		Normal or Field [	Ouplicate:	N			
	NYSDEC Part 375	NYSDEC Part 375	NYSDEC Part 375					
_	Unrestricted Use	Restricted	Protection of					
Parameter	SCO	Residential SCO	Groundwater SCO	Unit				
1,2,4,5-Tetrachlorobenzene				UG/KG	370 U			
1,2,4-Trichlorobenzene				UG/KG	370 U			
1,2-Dichlorobenzene	1100	100000	1100	UG/KG	370 U			
1,3-Dichlorobenzene	2400	49000	2400	UG/KG	370 U			
1,4-Dichlorobenzene	1800	13000	1800	UG/KG	370 U			
2,4,5-Trichlorophenol				UG/KG	370 U			
2,4,6-Trichlorophenol				UG/KG	220 U			
2,4-Dichlorophenol				UG/KG	330 U			
2,4-Dimethylphenol				UG/KG	370 U			
2,4-Dinitrophenol				UG/KG	1800 U			
2,4-Dinitrotoluene				UG/KG	370 U			
2,6-Dinitrotoluene				UG/KG	370 U			
2-Chloronaphthalene				UG/KG	370 U			
2-Chlorophenol				UG/KG	370 U			
2-Methylnaphthalene				UG/KG	440 U			
2-Methylphenol (O-Cresol)	330	100000	330	UG/KG	370 U			
2-Nitroaniline				UG/KG	370 U			
2-Nitrophenol				UG/KG	800 U			
3- And 4- Methylphenol (Total)	330	100000	330	UG/KG	530 U			
3,3'-Dichlorobenzidine				UG/KG	370 U			
3-Nitroaniline				UG/KG	370 U			
4,6-Dinitro-2-Methylphenol				UG/KG	960 U			
4-Bromophenyl Phenyl Ether				UG/KG	370 U			
4-Chloro-3-Methylphenol				UG/KG	370 U			
4-Chloroaniline				UG/KG	370 U			
4-Chlorophenyl Phenyl Ether				UG/KG	370 U			
4-Nitroaniline				UG/KG	370 U			
4-Nitrophenol				UG/KG	520 U			
Acenaphthene	20000	100000	98000	UG/KG	300 U			
Acenaphthylene	100000	100000	107000	UG/KG	86 J			
Acetophenone				UG/KG	370 U			



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Table 8. Summary of Semivolatile Organic Compounds in Soil, 1221 Spofford Avenue, Bronx, New York (April 2017)

Sample Depth (ft bils)				Sample De	signation:	RXSB-10
Normal or Field Duplicate: Nanthracene   100000   1000000   UG/KG   220 U					-	04/25/2017
Anthracene 100000 100000 100000 UG/KG 220 U Benzo(A)Anthracene 1000 1000 1000 UG/KG 120 J Benzo(A)Pyrene 1000 1000 22000 UG/KG 130 J Benzo(B)Fluoranthene 1000 1000 1700 UG/KG 150 J Benzo(B)Fluoranthene 10000 10000 100000 UG/KG 150 J Benzo(B)Fluoranthene 10000 100000 100000 UG/KG 150 J Benzo(G)H,I)Perylene 100000 100000 1000000 UG/KG 100 J Benzo(K)Fluoranthene 800 3900 17000 UG/KG 220 U Benzolc Acid UG/KG 370 U Benzyl Alcohol UG/KG 370 U Benzyl Butyl Phthalate UG/KG 370 U Bisplenyl (Diphenyl) UG/KG 370 U Bisplenyl (Diphenyl) UG/KG 370 U Bisplenyl (Diphenyl) UG/KG 330 U Bis(2-Chloroethys)) Ether UG/KG 330 U Bis(2-Chloroethy)) Ether UG/KG 330 U Bis(2-Chloroethy)) Ether UG/KG 370 U Bis(2-Chloroethy)) Ether UG/KG 370 U Displenzoluran 7000 3900 1000 UG/KG 130 J Dibenz(A,H)Anthracene 330 330 1000000 UG/KG 130 J Dibenz(A,H)Anthracene 330 330 1000000 UG/KG 220 U Diehnzoluran 77000 59000 210000 UG/KG 370 U Diehn-Butyl Phthalate UG/KG 370 U Dimethyl Phthalate UG/KG 370 U Dieh-Roughl Phtha				Sample Dep	th (ft bls):	0 - 2
Benzo(A)Anthracene				Normal or Field	Duplicate:	N
Benzo(A)Pyrene	Anthracene	100000	100000	1000000	UG/KG	220 U
Benzo(B)Fluoranthene	Benzo(A)Anthracene	1000	1000	1000	UG/KG	120 J
Benzo(G,H,I)Perylene	Benzo(A)Pyrene	1000	1000	22000	UG/KG	130 J
Benzo(K)Fluoranthene	Benzo(B)Fluoranthene	1000	1000	1700	UG/KG	150 J
Benzolic Acid	Benzo(G,H,I)Perylene	100000	100000	1000000	UG/KG	100 J
Benzyl Alcohol	Benzo(K)Fluoranthene	800	3900	1700	UG/KG	220 U
Benzyl Butyl Phthalate	Benzoic Acid				UG/KG	1200 U
Biphenyl (Diphenyl)	Benzyl Alcohol				UG/KG	370 U
Bis(2-Chloroethoxy) Methane            UG/KG         400 U           Bis(2-Chloroethyl) Ether (2-Chloroethyl Ether)            UG/KG         330 U           Bis(2-Chloroisopropyl) Ether             UG/KG         440 U           Bis(2-Ethylhexyl) Phthalate             UG/KG         370 U           Carbazole             UG/KG         370 U           Chrysene         1000         3900         1000         UG/KG         130 J           Dibenzofuran         7000         59000         210000         UG/KG         220 U           Diethyl Phthalate            UG/KG         370 U           Direthyl Phthalate            UG/KG         370 U           Dir-N-Butyl Phthalate            UG/KG         370 U           Di-N-Octylphthalate            UG/KG         370 U           Fluorene         30000         100000         100000         UG/KG         370 U	Benzyl Butyl Phthalate				UG/KG	370 U
Bis(2-Chloroethyl)   Ether (2-Chloroethyl Ether)         UG/KG   330 U     Bis(2-Chloroisopropyl)   Ether       UG/KG   440 U     Bis(2-Ethylhexyl)   Phthalate       UG/KG   370 U     Carbazole       UG/KG   370 U     Chrysene   1000   3900   1000   UG/KG   130 J     Dibenz(A,H)Anthracene   330   330   1000000   UG/KG   220 U     Dibenzofuran   7000   59000   210000   UG/KG   370 U     Diethyl Phthalate       UG/KG   370 U     Dimethyl Phthalate       UG/KG   370 U     Di-N-Dutyl Phthalate       UG/KG   370 U     Di-N-Dutyl Phthalate       UG/KG   370 U     Di-N-Octylphthalate       UG/KG   370 U     Fluoranthene   100000   100000   100000   UG/KG   370 U     Fluoranthene   30000   100000   386000   UG/KG   370 U     Hexachlorobenzene   330   1200   3200   UG/KG   370 U     Hexachlorocyclopentadiene       UG/KG   370 U     Hexachlorocyclopentadiene       UG/KG   370 U     Hexachlorocyclopentadiene       UG/KG   300 U     Indeno(1,2,3-C,D)Pyrene   500   500   8200   UG/KG   330 U     Naphthalene   12000   100000   12000   UG/KG   370 U     Naphthalene   12000   100000   12000   UG/KG   370 U     N-Nitrosodi-N-Propylamine       UG/KG   370 U         UG/KG   370 U         UG/KG   370 U       N-Nitrosodi-N-Propylamine       UG/KG   370 U       N-Nitrosodi-N-Propylamine       UG/KG   370 U	Biphenyl (Diphenyl)				UG/KG	840 U
Bis(2-Chloroisopropyl) Ether	Bis(2-Chloroethoxy) Methane				UG/KG	400 U
Bis(2-Ethylhexyl) Phthalate            UG/KG         370 U           Carbazole             UG/KG         370 U           Chrysene         1000         3900         1000         UG/KG         130 J           Dibenzofuran         7000         59000         210000         UG/KG         370 U           Dibenzofuran         7000         59000         210000         UG/KG         370 U           Diethyl Phthalate             UG/KG         370 U           Dinethyl Phthalate            UG/KG         370 U         U           Di-N-Butyl Phthalate            UG/KG         370 U         U           Di-N-Octylphthalate            UG/KG         370 U         U           Fluorene         100000         100000         1000000         UG/KG         370 U           Hexachlorobenzene         330         1200         3200         UG/KG         220 U           Hexachlorocyclopentadiene            UG/KG         370 U <td>Bis(2-Chloroethyl) Ether (2-Chloroethyl Ether)</td> <td></td> <td></td> <td></td> <td>UG/KG</td> <td>330 U</td>	Bis(2-Chloroethyl) Ether (2-Chloroethyl Ether)				UG/KG	330 U
Carbazole            UG/KG         370 U           Chrysene         1000         3900         1000         UG/KG         130 J           Dibenz(A,H)Anthracene         330         330         1000000         UG/KG         220 U           Dibenzofuran         7000         59000         210000         UG/KG         370 U           Diethyl Phthalate            UG/KG         370 U           Dimethyl Phthalate            UG/KG         370 U           Di-N-Butyl Phthalate            UG/KG         370 U           Di-N-Octylphthalate            UG/KG         370 U           Fluoranthene         100000         100000         1000000         UG/KG         370 U           Fluorene         30000         100000         386000         UG/KG         370 U           Hexachlorobenzene         330         1200         3200         UG/KG         220 U           Hexachlorocyclopentadiene            UG/KG         370 U           Hexachlorochtane	Bis(2-Chloroisopropyl) Ether				UG/KG	440 U
Chrysene         1000         3900         1000         UG/KG         130 J           Dibenz(A,H)Anthracene         330         330         1000000         UG/KG         220 U           Dibenzofuran         7000         59000         210000         UG/KG         370 U           Diethyl Phthalate             UG/KG         370 U           Di-N-Butyl Phthalate            UG/KG         370 U           Di-N-Butyl Phthalate            UG/KG         370 U           Di-N-Butyl Phthalate            UG/KG         370 U           Di-N-Octylphthalate            UG/KG         370 U           Fluoranthene         100000         100000         100000         UG/KG         370 U           Fluoranthene         30000         100000         386000         UG/KG         370 U           Hexachlorobenzene         330         1200         3200         UG/KG         220 U           Hexachlorobutadiene             UG/KG         370 U           Hexachlorobutadiene	Bis(2-Ethylhexyl) Phthalate				UG/KG	370 U
Dibenz(A,H)Anthracene         330         330         1000000         UG/KG         220 U           Dibenzofuran         7000         59000         210000         UG/KG         370 U           Diethyl Phthalate            UG/KG         370 U           Dirnethyl Phthalate            UG/KG         370 U           Fluorathalate            UG/KG         370 U           Hexachlorotenzene           -	Carbazole				UG/KG	370 U
Dibenzofuran         7000         59000         210000         UG/KG         370 U           Diethyl Phthalate             UG/KG         370 U           Dimethyl Phthalate             UG/KG         370 U           Di-N-Butyl Phthalate             UG/KG         370 U           Di-N-Octylphthalate            UG/KG         370 U           Fluoranthene         100000         100000         100000         UG/KG         370 U           Fluorene         30000         100000         386000         UG/KG         370 U           Hexachlorobenzene         330         1200         3200         UG/KG         220 U           Hexachlorobutadiene             UG/KG         370 U           Hexachlorocyclopentadiene            UG/KG         300 U           Hexachlorocthane            UG/KG         300 U           Indeno(1,2,3-C,D)Pyrene         500         500         8200         UG/KG         80 J	Chrysene	1000	3900	1000	UG/KG	130 J
Diethyl Phthalate            UG/KG         370 U           Dimethyl Phthalate             UG/KG         370 U           Di-N-Butyl Phthalate             UG/KG         370 U           Di-N-Octylphthalate             UG/KG         370 U           Fluoranthene         100000         100000         100000         UG/KG         170 J           Fluorene         30000         100000         386000         UG/KG         370 U           Hexachlorobenzene         330         1200         3200         UG/KG         220 U           Hexachlorocyclopentadiene            UG/KG         370 U           Hexachlorocyclopentadiene            UG/KG         300 U           Hexachlorocyclopentadiene            UG/KG         300 U           Hexachlorocyclopentadiene            UG/KG         300 U           Indeno(1,2,3-C,D)Pyrene         500         500         8200         UG/KG         80 J	Dibenz(A,H)Anthracene	330	330	1000000	UG/KG	220 U
Dimethyl Phthalate            UG/KG         370 U           Di-N-Butyl Phthalate             UG/KG         370 U           Di-N-Octylphthalate             UG/KG         370 U           Fluoranthene         100000         100000         100000         UG/KG         170 J           Fluorene         30000         100000         386000         UG/KG         370 U           Hexachlorobenzene         330         1200         3200         UG/KG         220 U           Hexachlorobutadiene            UG/KG         370 U           Hexachlorocyclopentadiene            UG/KG         370 U           Hexachlorocyclopentadiene            UG/KG         300 U           Hexachlorocyclopentadiene            UG/KG         300 U           Indeno(1,2,3-C,D)Pyrene         500         500         8200         UG/KG         80 J           Isophorone             UG/KG         370 U	Dibenzofuran	7000	59000	210000	UG/KG	370 U
Di-N-Butyl Phthalate             UG/KG         370 U           Di-N-Octylphthalate             UG/KG         370 U           Fluoranthene         100000         100000         100000         UG/KG         170 J           Fluorene         30000         100000         386000         UG/KG         370 U           Hexachlorobenzene         330         1200         3200         UG/KG         220 U           Hexachlorobutadiene            UG/KG         370 U           Hexachlorocyclopentadiene            UG/KG         370 U           Hexachlorocyclopentadiene            UG/KG         300 U           Hexachlorocyclopentadiene            UG/KG         300 U           Hexachlorocyclopentadiene            UG/KG         300 U           Indeno(1,2,3-C,D)Pyrene         500         500         8200         UG/KG         80 J           Isophorone             UG/KG         370 U	Diethyl Phthalate				UG/KG	370 U
Di-N-Octylphthalate            UG/KG         370 U           Fluoranthene         100000         100000         100000         UG/KG         170 J           Fluorene         30000         100000         386000         UG/KG         370 U           Hexachlorobenzene         330         1200         3200         UG/KG         220 U           Hexachlorobutadiene            UG/KG         370 U           Hexachlorocyclopentadiene            UG/KG         1000 U           Hexachloroethane            UG/KG         300 U           Indeno(1,2,3-C,D)Pyrene         500         500         8200         UG/KG         80 J           Isophorone             UG/KG         370 U           Naphthalene         12000         100000         12000         UG/KG         370 U           N-Nitrosodi-N-Propylamine             UG/KG         370 U           N-Nitrosodiphenylamine             UG/KG         300 U	Dimethyl Phthalate				UG/KG	370 U
Fluoranthene         100000         100000         1000000         UG/KG         170 J           Fluorene         30000         100000         386000         UG/KG         370 U           Hexachlorobenzene         330         1200         3200         UG/KG         220 U           Hexachlorobutadiene            UG/KG         370 U           Hexachlorocyclopentadiene            UG/KG         1000 U           Hexachloroethane            UG/KG         300 U           Indeno(1,2,3-C,D)Pyrene         500         500         8200         UG/KG         80 J           Isophorone             UG/KG         330 U           Naphthalene         12000         100000         12000         UG/KG         370 U           N-Nitrosodi-N-Propylamine             UG/KG         370 U           N-Nitrosodiphenylamine              UG/KG         300 U	Di-N-Butyl Phthalate				UG/KG	370 U
Fluorene         30000         100000         386000         UG/KG         370 U           Hexachlorobenzene         330         1200         3200         UG/KG         220 U           Hexachlorobutadiene            UG/KG         370 U           Hexachlorocyclopentadiene            UG/KG         1000 U           Hexachlorocethane            UG/KG         300 U           Indeno(1,2,3-C,D)Pyrene         500         500         8200         UG/KG         80 J           Isophorone             UG/KG         330 U           Naphthalene         12000         100000         12000         UG/KG         370 U           Nitrobenzene             UG/KG         370 U           N-Nitrosodi-N-Propylamine            UG/KG         370 U           N-Nitrosodiphenylamine             UG/KG         300 U	Di-N-Octylphthalate				UG/KG	370 U
Hexachlorobenzene         330         1200         3200         UG/KG         220 U           Hexachlorobutadiene            UG/KG         370 U           Hexachlorocyclopentadiene            UG/KG         1000 U           Hexachloroethane            UG/KG         300 U           Indeno(1,2,3-C,D)Pyrene         500         500         8200         UG/KG         80 J           Isophorone            UG/KG         330 U           Naphthalene         12000         100000         12000         UG/KG         370 U           Nitrobenzene             UG/KG         370 U           N-Nitrosodi-N-Propylamine            UG/KG         370 U           N-Nitrosodiphenylamine            UG/KG         300 U	Fluoranthene	100000	100000	1000000	UG/KG	170 J
Hexachlorobutadiene	Fluorene	30000	100000	386000	UG/KG	370 U
Hexachlorocyclopentadiene            UG/KG         1000 U           Hexachloroethane            UG/KG         300 U           Indeno(1,2,3-C,D)Pyrene         500         500         8200         UG/KG         80 J           Isophorone             UG/KG         330 U           Naphthalene         12000         100000         12000         UG/KG         370 U           Nitrobenzene            UG/KG         330 U           N-Nitrosodi-N-Propylamine            UG/KG         370 U           N-Nitrosodiphenylamine            UG/KG         300 U	Hexachlorobenzene	330	1200	3200	UG/KG	220 U
Hexachloroethane            UG/KG         300 U           Indeno(1,2,3-C,D)Pyrene         500         500         8200         UG/KG         80 J           Isophorone            UG/KG         330 U           Naphthalene         12000         100000         12000         UG/KG         370 U           Nitrobenzene            UG/KG         330 U           N-Nitrosodi-N-Propylamine            UG/KG         370 U           N-Nitrosodiphenylamine            UG/KG         300 U	Hexachlorobutadiene			-	UG/KG	370 U
Indeno(1,2,3-C,D)Pyrene         500         500         8200         UG/KG         80 J           Isophorone             UG/KG         330 U           Naphthalene         12000         100000         12000         UG/KG         370 U           Nitrobenzene            UG/KG         330 U           N-Nitrosodi-N-Propylamine            UG/KG         370 U           N-Nitrosodiphenylamine            UG/KG         300 U	Hexachlorocyclopentadiene			-	UG/KG	1000 U
Sophorone	Hexachloroethane				UG/KG	300 U
Naphthalene         12000         100000         12000         UG/KG         370 U           Nitrobenzene            UG/KG         330 U           N-Nitrosodi-N-Propylamine            UG/KG         370 U           N-Nitrosodiphenylamine            UG/KG         300 U	Indeno(1,2,3-C,D)Pyrene	500	500	8200	UG/KG	80 J
Nitrobenzene            UG/KG         330 U           N-Nitrosodi-N-Propylamine            UG/KG         370 U           N-Nitrosodiphenylamine            UG/KG         300 U	Isophorone					
N-Nitrosodi-N-Propylamine            UG/KG         370 U           N-Nitrosodiphenylamine            UG/KG         300 U	Naphthalene	12000	100000	12000	UG/KG	370 U
N-Nitrosodiphenylamine UG/KG 300 U	Nitrobenzene	<u></u>			UG/KG	330 U
	N-Nitrosodi-N-Propylamine				UG/KG	370 U
Pentachlorophenol         800         6700         800         UG/KG         300 U	N-Nitrosodiphenylamine				UG/KG	300 U
	Pentachlorophenol	800	6700	800	UG/KG	300 U



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Table 8. Summary of Semivolatile Organic Compounds in Soil, 1221 Spofford Avenue, Bronx, New York (April 2017)

			Sample Des	signation:	RXSB-10	
			Sam	ple Date:	04/25/2017	
		Sample Depth (ft bls):				
			N			
Phenanthrene	100000	100000	1000000	UG/KG	120 J	
Phenol	330	100000	330	UG/KG	370 U	
Pvrene	100000	100000	1000000	UG/KG	210 J	



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Table 9. Summary of Metals in Soil, 1221 Spofford Avenue, Bronx, New York (April 2017)

			Sample De	signation:	RXSB-1	RXSB-1	RXSB-2	RXSB-2	RXSB-3	RXSB-3
			•	•	04/24/2017	04/25/2017	04/24/2017	04/25/2017	04/25/2017	04/26/2017
			Sample Dep	•	0 - 2	8 - 10	0 - 2	7 - 9	0 - 2	6 - 8
			Normal or Field	, ,	N	N	N	N	N	N
	NYSDEC Part 375	NYSDEC Part 375	NYSDEC Part 375							
	Unrestricted Use	Restricted	Protection of							
Parameter	SCO	Residential SCO	Groundwater SCO	Unit						
Aluminum				MG/KG	8200	11000	5500	9500	6900	6100
Antimony				MG/KG	4.2 U	4 U	4.4 U	4.4 U	4.3 U	4.3 U
Arsenic	13	16	16	MG/KG	2.9	0.8 U	5.5	1.5	18	0.87
Barium	350	400	820	MG/KG	72	110	95	73	100	60
Beryllium	7.2	72	47	MG/KG	0.28 J	0.4 U	0.26 J	0.07 J	0.48	0.31 J
Cadmium	2.5	4.3	7.5	MG/KG	0.52 J	0.8 U	0.38 J	0.12 J	0.35 J	0.38 J
Calcium				MG/KG	45000	5200	87000	1700	22000	11000
Chromium, Total	30	180		MG/KG	18	21	12	22	17	14
Cobalt				MG/KG	9	8.6	5.8	9.5	7.3	7.5
Copper	50	270	1720	MG/KG	33	23	24	24	64	22
Iron				MG/KG	17000	16000	11000	19000	24000	12000
Lead	63	400	450	MG/KG	27	5.7	45	5.3	62	12
Magnesium				MG/KG	25000	4300	48000	3600	8700	7700
Manganese	1600	2000	2000	MG/KG	160	100	160	280	310	240
Mercury	0.18	0.81	0.73	MG/KG	0.03 J	0.07 U	0.06 J	0.07 U	0.1	0.02 J
Nickel	30	310	130	MG/KG	14	19	10	17	16	13
Potassium				MG/KG	3500	7600	1700	3600	1800	2000
Selenium	3.9	180	4	MG/KG	0.52 J	1.6 U	0.6 J	1.8 U	1.4 J	0.73 J
Silver	2	180	8.3	MG/KG	0.85 U	0.8 U	0.89 U	0.88 U	0.87 U	0.86 U
Sodium				MG/KG	120 J	87 J	260	100 J	140 J	100 J
Thallium				MG/KG	1.7 U	1.6 U	1.8 U	1.8 U	1.7 U	1.7 U
Vanadium				MG/KG	33	27	24	30	33	21
Zinc	109	10000	2480	MG/KG	92	56	63	55	270	37



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Table 9. Summary of Metals in Soil, 1221 Spofford Avenue, Bronx, New York (April 2017)

			Sample De	signation:	RXSB-4	RXSB-4	RXSB-4	RXSB-5	RXSB-5	RXSB-6
			•	•	04/24/2017	04/24/2017	04/25/2017	04/25/2017	04/26/2017	04/24/2017
			Sample Dep	•	0 - 2	0 - 2	11 - 13	0 - 2	5 - 6	0 - 2
			Normal or Field	, ,	N	FD	N	N	N	N
	NYSDEC Part 375	NYSDEC Part 375	NYSDEC Part 375							
	Unrestricted Use	Restricted	Protection of							
Parameter	SCO	Residential SCO	Groundwater SCO	Unit						
Aluminum				MG/KG	4900	4900	11000	6700	4300	3500
Antimony				MG/KG	4.2 U	4.2 U	4.1 U	4.6 U	4.3 U	4.2 U
Arsenic	13	16	16	MG/KG	1.7	1.6	0.81 U	7.6	0.9	4.3
Barium	350	400	820	MG/KG	64	76	150	100	33	70
Beryllium	7.2	72	47	MG/KG	0.41 J	0.4 J	0.21 J	0.57	0.47	1.1
Cadmium	2.5	4.3	7.5	MG/KG	0.42 J	0.45 J	0.14 J	0.45 J	0.49 J	0.64 J
Calcium				MG/KG	30000	30000	1200	36000	60000	69000
Chromium, Total	30	180		MG/KG	14	14	22	14	12	19
Cobalt				MG/KG	7.3	7.6	10	7	5.1	12
Copper	50	270	1720	MG/KG	43	48	28	29	8.2	190
Iron				MG/KG	11000	11000	20000	19000	11000	15000
Lead	63	400	450	MG/KG	64	50	5.8	22	2.6 J	150
Magnesium				MG/KG	14000	14000	4000	15000	30000	23000
Manganese	1600	2000	2000	MG/KG	190	240	140	370	340	170
Mercury	0.18	0.81	0.73	MG/KG	0.06 J	0.07	0.07 U	0.08	0.07 U	0.03 J
Nickel	30	310	130	MG/KG	14	15	19	13	7.7	27
Potassium				MG/KG	2100	2200	6900	2000	1200	700
Selenium	3.9	180	4	MG/KG	0.5 J	0.6 J	1.6 U	1.8 U	0.7 J	0.83 J
Silver	2	180	8.3	MG/KG	0.84 U	0.84 U	0.81 U	0.92 U	0.86 U	0.84 U
Sodium				MG/KG	92 J	100 J	76 J	140 J	120 J	160 J
Thallium				MG/KG	1.7 U	1.7 U	1.6 U	1.8 U	1.7 U	1.7 U
Vanadium				MG/KG	21	22	29	27	17	16
Zinc	109	10000	2480	MG/KG	210	230	49	120	36	1200



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Table 9. Summary of Metals in Soil, 1221 Spofford Avenue, Bronx, New York (April 2017)

			Sample De	signation:	RXSB-6	RXSB-7	RXSB-7	RXSB-8	RXSB-8	RXSB-9
			•	•	04/25/2017	04/25/2017	04/25/2017	04/25/2017	04/25/2017	04/25/2017
			Sample Dep	th (ft bls):	8 - 10	0 - 2	5 - 7	0 - 2	10 - 12	0 - 2
			Normal or Field	Duplicate:	N	N	N	N	N	N
	NYSDEC Part 375	NYSDEC Part 375	NYSDEC Part 375							
	Unrestricted Use	Restricted	Protection of							
Parameter	SCO	Residential SCO	Groundwater SCO	Unit						
Aluminum				MG/KG	6400	8000	6400	8700	6700	9700
Antimony				MG/KG	4.7 U	4.3 U	4.4 U	4.2 U	4.4 U	4.5 U
Arsenic	13	16	16	MG/KG	0.4 J	0.39 J	0.46 J	0.85 U	0.21 J	0.63 J
Barium	350	400	820	MG/KG	73	72	57	88	64	79
Beryllium	7.2	72	47	MG/KG	0.48	0.17 J	0.23 J	0.17 J	0.24 J	0.17 J
Cadmium	2.5	4.3	7.5	MG/KG	0.15 J	0.1 J	0.17 J	0.14 J	0.19 J	0.14 J
Calcium				MG/KG	7600	2100	22000	15000	33000	4400
Chromium, Total	30	180		MG/KG	21	19	15	20	24	23
Cobalt				MG/KG	9.1	7.7	6.2	8	7.1	8
Copper	50	270	1720	MG/KG	72	21	19	24	19	21
Iron				MG/KG	16000	14000	16000	15000	15000	16000
Lead	63	400	450	MG/KG	49	5.2	3.8 J	4.8	4.2 J	9.6
Magnesium				MG/KG	4600	3400	13000	10000	17000	4300
Manganese	1600	2000	2000	MG/KG	220	290	270	270	380	290
Mercury	0.18	0.81	0.73	MG/KG	0.07 U	0.07 U	0.07 U	0.02 J	0.07 U	0.07 U
Nickel	30	310	130	MG/KG	17	16	12	15	14	17
Potassium				MG/KG	2300	3000	2400	4000	2800	3100
Selenium	3.9	180	4	MG/KG	1.9 U	1.7 U	1.8 U	1.7 U	1.8 U	1.8 U
Silver	2	180	8.3	MG/KG	0.93 U	0.86 U	0.89 U	0.85 U	0.89 U	0.9 U
Sodium				MG/KG	120 J	120 J	190	110 J	150 J	260
Thallium				MG/KG	1.9 U	1.7 U	1.8 U	1.7 U	1.8 U	1.8 U
Vanadium				MG/KG	26	26	24	27	23	29
Zinc	109	10000	2480	MG/KG	440	37	33	43	35	44



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Table 9. Summary of Metals in Soil, 1221 Spofford Avenue, Bronx, New York (April 2017)

			Sample De	signation:	RXSB-10
					04/25/2017
			Sample Der	•	0 - 2
			Normal or Field	,	N
	NYSDEC Part 375	NYSDEC Part 375	NYSDEC Part 375		
	Unrestricted Use	Restricted	Protection of		
Parameter	SCO	Residential SCO	Groundwater SCO	Unit	
Aluminum				MG/KG	5700
Antimony				MG/KG	4.4 U
Arsenic	13	16	16	MG/KG	0.46 J
Barium	350	400	820	MG/KG	62
Beryllium	7.2	72	47	MG/KG	0.1 J
Cadmium	2.5	4.3	7.5	MG/KG	0.21 J
Calcium				MG/KG	16000
Chromium, Total	30	180		MG/KG	12
Cobalt				MG/KG	5.9
Copper	50	270	1720	MG/KG	23
Iron				MG/KG	11000
Lead	63	400	450	MG/KG	14
Magnesium				MG/KG	9000
Manganese	1600	2000	2000	MG/KG	230
Mercury	0.18	0.81	0.73	MG/KG	0.07 U
Nickel	30	310	130	MG/KG	12
Potassium				MG/KG	1900
Selenium	3.9	180	4	MG/KG	1.7 U
Silver	2	180	8.3	MG/KG	0.87 U
Sodium				MG/KG	130 J
Thallium				MG/KG	1.7 U
Vanadium				MG/KG	23
Zinc	109	10000	2480	MG/KG	39



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Table 10. Summary of Polychlorinated Biphenyls in Soil, 1221 Spofford Avenue, Bronx, New York (April 2017)

	Sample Designa							RXSB-2	RXSB-3	RXSB-3	RXSB-4
			Sam	ple Date:	04/24/2017	04/25/2017	04/24/2017	04/25/2017	04/25/2017	04/26/2017	04/24/2017
	Sample Depth (ft bls)							7 - 9	0 - 2	6 - 8	0 - 2
Normal or Field Duplicate:						N	N	N	N	N	N
Parameter	NYSDEC Part 375 Unrestricted Use SCO	NYSDEC Part 375 Restricted Residential SCO	NYSDEC Part 375 Protection of Groundwater SCO	Unit							
PCB-1016 (Aroclor 1016)				UG/KG	35 U	32.5 U	35.9 U	35.7 U	37.1 U	35.7 U	35.4 U
PCB-1221 (Aroclor 1221)				UG/KG	35 U	32.5 U	35.9 U	35.7 U	37.1 U	35.7 U	35.4 U
PCB-1232 (Aroclor 1232)				UG/KG	35 U	32.5 U	35.9 U	35.7 U	37.1 U	35.7 U	35.4 U
PCB-1242 (Aroclor 1242)				UG/KG	35 U	32.5 U	35.9 U	35.7 U	37.1 U	35.7 U	35.4 U
PCB-1248 (Aroclor 1248)				UG/KG	35 U	32.5 U	35.9 U	35.7 U	37.1 U	35.7 U	35.4 U
PCB-1254 (Aroclor 1254)				UG/KG	35 U	32.5 U	17.2 J	35.7 U	37.1 U	35.7 U	13.3 J
PCB-1260 (Aroclor 1260)				UG/KG	35 U	32.5 U	4.82 J	35.7 U	37.1 U	35.7 U	5.7 J
PCB-1262 (Aroclor 1262)				UG/KG	35 U	32.5 U	35.9 U	35.7 U	37.1 U	35.7 U	35.4 U
PCB-1268 (Aroclor 1268)				UG/KG	35 U	32.5 U	35.9 U	35.7 U	37.1 U	35.7 U	35.4 U
Polychlorinated Biphenyl (PCBs)	100	1000	3200	UG/KG	35 U	32.5 U	22 J	35.7 U	37.1 U	35.7 U	19 J



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Table 10. Summary of Polychlorinated Biphenyls in Soil, 1221 Spofford Avenue, Bronx, New York (April 2017)

			Sample Des	ignation:	RXSB-4	RXSB-4	RXSB-5	RXSB-5	RXSB-6	RXSB-6	RXSB-7	RXSB-7	RXSB-8
			Sam	ple Date:	04/24/2017	04/25/2017	04/25/2017	04/26/2017	04/24/2017	04/25/2017	04/25/2017	04/25/2017	04/25/2017
	Sample Depth (ft bl							5 - 6	0 - 2	8 - 10	0 - 2	5 - 7	0 - 2
			Normal or Field D	Ouplicate:	FD	N	N	N	N	N	N	N	N
	NYSDEC Part 375 Unrestricted Use	NYSDEC Part 375 Restricted	NYSDEC Part 375 Protection of										
Parameter	SCO	Residential SCO	Groundwater SCO	Unit									1
PCB-1016 (Aroclor 1016)				UG/KG	35.1 U	33.8 U	37.7 U	36.2 U	34.7 U	37.4 U	36.7 U	35.7 U	36.2 U
PCB-1221 (Aroclor 1221)				UG/KG	35.1 U	33.8 U	37.7 U	36.2 U	34.7 U	37.4 U	36.7 U	35.7 U	36.2 U
PCB-1232 (Aroclor 1232)				UG/KG	35.1 U	33.8 U	37.7 U	36.2 U	34.7 U	37.4 U	36.7 U	35.7 U	36.2 U
PCB-1242 (Aroclor 1242)				UG/KG	35.1 U	33.8 U	37.7 U	36.2 U	34.7 U	37.4 U	36.7 U	35.7 U	36.2 U
PCB-1248 (Aroclor 1248)				UG/KG	35.1 U	33.8 U	37.7 U	36.2 U	34.7 U	37.4 U	36.7 U	35.7 U	36.2 U
PCB-1254 (Aroclor 1254)				UG/KG	27.6 J	33.8 U	37.7 U	36.2 U	16.2 J	37.4 U	36.7 U	35.7 U	36.2 U
PCB-1260 (Aroclor 1260)				UG/KG	8.75 J	33.8 U	37.7 U	36.2 U	8.66 J	37.4 U	36.7 U	35.7 U	7.31 J
PCB-1262 (Aroclor 1262)				UG/KG	35.1 U	33.8 U	37.7 U	36.2 U	34.7 U	37.4 U	36.7 U	35.7 U	36.2 U
PCB-1268 (Aroclor 1268)				UG/KG	35.1 U	33.8 U	37.7 U	36.2 U	34.7 U	37.4 U	36.7 U	35.7 U	36.2 U
Polychlorinated Biphenyl (PCBs)	100	1000	3200	UG/KG	36.4 J	33.8 U	37.7 U	36.2 U	24.9 J	37.4 U	36.7 U	35.7 U	7.31 J



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Table 10. Summary of Polychlorinated Biphenyls in Soil, 1221 Spofford Avenue, Bronx, New York (April 2017)

			Sample Des	signation:	RXSB-8	RXSB-9	RXSB-10				
			•	ple Date:		04/25/2017	04/25/2017				
	Sample Depth (ft bls										
			Normal or Field [	Duplicate:	N	N	N				
	NYSDEC Part 375	NYSDEC Part 375	NYSDEC Part 375								
	Unrestricted Use	Restricted	Protection of								
Parameter	SCO	Residential SCO	Groundwater SCO	Unit							
PCB-1016 (Aroclor 1016)				UG/KG	37.5 U	36.9 U	36 U				
PCB-1221 (Aroclor 1221)				UG/KG	37.5 U	36.9 U	36 U				
PCB-1232 (Aroclor 1232)				UG/KG	37.5 U	36.9 U	36 U				
PCB-1242 (Aroclor 1242)				UG/KG	37.5 U	36.9 U	36 U				
PCB-1248 (Aroclor 1248)				UG/KG	37.5 U	36.9 U	36 U				
PCB-1254 (Aroclor 1254)				UG/KG	37.5 U	36.9 U	36 U				
PCB-1260 (Aroclor 1260)				UG/KG	37.5 U	10 J	14.7 J				
PCB-1262 (Aroclor 1262)				UG/KG	37.5 U	36.9 U	36 U				
PCB-1268 (Aroclor 1268)				UG/KG	37.5 U	36.9 U	36 U				
Polychlorinated Biphenyl (PCBs)	100	1000	3200	UG/KG	37.5 U	10 J	14.7 J				



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Table 11. Summary of Pesticides in Soil, 1221 Spofford Avenue, Bronx, New York (April 2017)

	signation:	RXSB-1	RXSB-1	RXSB-2	RXSB-2			
			Sam	ple Date:	04/24/2017	04/25/2017	04/24/2017	04/25/2017
			Sample Dep	th (ft bls):	0 - 2	8 - 10	0 - 2	7 - 9
			Normal or Field [	Ouplicate:	N	N	N	N
	NYSDEC Part 375	NYSDEC Part 375	NYSDEC Part 375					
	Unrestricted Use	Restricted	Protection of					
Parameter	SCO	Residential SCO	Groundwater SCO	Unit				
Aldrin	5	97	190	UG/KG	1.71 U	1.58 U	1.77 U	1.74 U
Alpha Bhc (Alpha Hexachlorocyclohexane)	20	480	20	UG/KG	0.712 U	0.657 U	0.739 U	0.727 U
Alpha Endosulfan	2400	24000	102000	UG/KG	1.71 U	1.58 U	1.77 U	1.74 U
Beta Bhc (Beta Hexachlorocyclohexane)	36	360	90	UG/KG	1.71 U	1.58 U	1.77 U	1.74 U
Beta Endosulfan	2400	24000	102000	UG/KG	1.71 U	1.58 U	1.77 U	1.74 U
Chlordane				UG/KG	13.9 U	12.8 U	20.9 PI	14.2 U
cis-Chlordane	94	4200	2900	UG/KG	2.14 U	1.97 U	6.29 P	2.18 U
Delta BHC (Delta Hexachlorocyclohexane)	40	100000	250	UG/KG	1.71 U	1.58 U	1.77 U	1.74 U
Dieldrin	5	200	100	UG/KG	1.07 U	0.986 U	1.11 U	1.09 U
Endosulfan Sulfate	2400	24000	1000000	UG/KG	0.712 U	0.657 U	0.739 U	0.727 U
Endrin	14	11000	60	UG/KG	0.418 J	0.657 U	0.739 U	0.727 U
Endrin Aldehyde				UG/KG	2.14 U	1.97 U	2.22 U	2.18 U
Endrin Ketone				UG/KG	1.71 U	1.58 U	1.77 U	1.74 U
Gamma Bhc (Lindane)	100	1300	100	UG/KG	0.712 U	0.657 U	0.739 U	0.727 U
Heptachlor	42	2100	380	UG/KG	0.855 U	0.789 U	0.887 U	0.872 U
Heptachlor Epoxide				UG/KG	3.21 U	2.96 U	3.33 U	3.27 U
Methoxychlor				UG/KG	3.21 U	2.96 U	3.33 U	3.27 U
P,P'-DDD	3.3	13000	14000	UG/KG	1.71 U	1.58 U	1.77 U	1.74 U
P,P'-DDE	3.3	8900	17000	UG/KG	0.868 J	1.58 U	1.77 U	1.74 U
P,P'-DDT	3.3	7900	136000	UG/KG	3.21 U	2.96 U	3.33 U	3.27 U
Toxaphene				UG/KG	32.1 U	29.6 U	33.3 U	32.7 U
trans-Chlordane				UG/KG	2.14 U	1.97 U	4.99 PI	0.607 JPI



Table 11. Summary of Pesticides in Soil, 1221 Spofford Avenue, Bronx, New York (April 2017)

	Sample Designat								
			Sam	ple Date:	04/25/2017	04/26/2017	04/24/2017	04/24/2017	
			Sample Dep	th (ft bls):	0 - 2	6 - 8	0 - 2	0 - 2	
			Normal or Field [	Ouplicate:	N	N	N	FD	
	NYSDEC Part 375	NYSDEC Part 375	NYSDEC Part 375						
	Unrestricted Use	Restricted	Protection of						
Parameter	SCO	Residential SCO	Groundwater SCO	Unit					
Aldrin	5	97	190	UG/KG	1.73 U	1.74 U	1.67 U	1.62 U	
Alpha Bhc (Alpha Hexachlorocyclohexane)	20	480	20	UG/KG	0.722 U	0.726 U	0.695 U	0.676 U	
Alpha Endosulfan	2400	24000	102000	UG/KG	1.73 U	1.74 U	1.67 U	1.62 U	
Beta Bhc (Beta Hexachlorocyclohexane)	36	360	90	UG/KG	1.73 U	1.74 U	1.67 U	1.62 U	
Beta Endosulfan	2400	24000	102000	UG/KG	1.73 U	1.74 U	0.815 J	1.52 J	
Chlordane				UG/KG	14.1 U	14.2 U	13.5 U	13.2 U	
cis-Chlordane	94	4200	2900	UG/KG	2.16 U	2.18 U	2.08 U	2.03 U	
Delta BHC (Delta Hexachlorocyclohexane)	40	100000	250	UG/KG	1.73 U	1.74 U	1.67 U	1.62 U	
Dieldrin	5	200	100	UG/KG	1.08 U	1.09 U	1.04 U	1.01 U	
Endosulfan Sulfate	2400	24000	1000000	UG/KG	0.722 U	0.726 U	0.444 JPI	0.676 U	
Endrin	14	11000	60	UG/KG	0.722 U	0.726 U	0.695 U	0.676 U	
Endrin Aldehyde				UG/KG	2.16 U	2.18 U	2.08 U	2.03 U	
Endrin Ketone				UG/KG	1.73 U	1.74 U	1.67 U	1.62 U	
Gamma Bhc (Lindane)	100	1300	100	UG/KG	0.722 U	0.726 U	0.695 U	0.676 U	
Heptachlor	42	2100	380	UG/KG	0.866 U	0.871 U	0.834 U	0.811 U	
Heptachlor Epoxide				UG/KG	3.25 U	3.26 U	3.13 U	3.04 U	
Methoxychlor				UG/KG	3.25 U	3.26 U	3.13 U	3.04 U	
P,P'-DDD	3.3	13000	14000	UG/KG	1.73 U	1.74 U	1.15 JPI	4.57	
P,P'-DDE	3.3	8900	17000	UG/KG	0.931 J	1.74 U	1.67 U	1.62 U	
P,P'-DDT	3.3	7900	136000	UG/KG	3.25 U	3.26 U	1.58 J	2.47 J	
Toxaphene				UG/KG	32.5 U	32.6 U	31.3 U	30.4 U	
trans-Chlordane				UG/KG	1.19 JPI	1.65 J	1.78 JPI	1.12 JPI	



Table 11. Summary of Pesticides in Soil, 1221 Spofford Avenue, Bronx, New York (April 2017)

	Sample Designation: RXSB-4 RXSB-5 RXS									
			Sam	ple Date:	04/25/2017	04/25/2017	04/26/2017	04/24/2017		
			Sample Dep	th (ft bls):	11 - 13	0 - 2	5 - 6	0 - 2		
			Normal or Field [	Ouplicate:	N	N	N	N		
Parameter	NYSDEC Part 375 Unrestricted Use SCO	NYSDEC Part 375 Restricted Residential SCO	NYSDEC Part 375 Protection of Groundwater SCO	Unit						
Aldrin	5	97	190	UG/KG	1.6 U	1.76 U	1.74 U	1.63 U		
Alpha Bhc (Alpha Hexachlorocyclohexane)	20	480	20	UG/KG	0.668 U	0.735 U	0.727 U	0.681 U		
Alpha Endosulfan	2400	24000	102000	UG/KG	1.6 U	1.76 U	1.74 U	1.63 U		
Beta Bhc (Beta Hexachlorocyclohexane)	36	360	90	UG/KG	1.6 U	1.76 U	1.74 U	1.63 U		
Beta Endosulfan	2400	24000	102000	UG/KG	1.6 U	1.76 U	1.74 U	1.63 U		
Chlordane				UG/KG	13 U	14.3 U	14.2 U	13.3 U		
cis-Chlordane	94	4200	2900	UG/KG	2 U	2.21 U	0.641 J	2.04 U		
Delta BHC (Delta Hexachlorocyclohexane)	40	100000	250	UG/KG	1.6 U	1.76 U	1.74 U	1.63 U		
Dieldrin	5	200	100	UG/KG	1 U	1.1 U	1.09 U	1.02 U		
Endosulfan Sulfate	2400	24000	1000000	UG/KG	0.668 U	0.735 U	0.727 U	0.681 U		
Endrin	14	11000	60	UG/KG	0.668 U	0.735 U	0.727 U	0.681 U		
Endrin Aldehyde				UG/KG	2 U	2.21 U	2.18 U	2.04 U		
Endrin Ketone				UG/KG	1.6 U	1.76 U	1.74 U	1.63 U		
Gamma Bhc (Lindane)	100	1300	100	UG/KG	0.668 U	0.735 U	0.727 U	0.681 U		
Heptachlor	42	2100	380	UG/KG	0.802 U	0.882 U	0.872 U	0.817 U		
Heptachlor Epoxide				UG/KG	3.01 U	3.31 U	3.27 U	3.06 U		
Methoxychlor				UG/KG	3.01 U	3.31 U	3.27 U	3.06 U		
P,P'-DDD	3.3	13000	14000	UG/KG	1.6 U	1.76 U	61.8	1.09 J		
P,P'-DDE	3.3	8900	17000	UG/KG	1.6 U	1.98	76.6	1.63 U		
P,P'-DDT	3.3	7900	136000	UG/KG	3.01 U	2.5 J	513	1.33 J		
Toxaphene				UG/KG	30.1 U	33.1 U	32.7 U	30.6 U		
trans-Chlordane				UG/KG	0.536 JPI	0.693 JPI	0.859 JPI	1.27 JPI		



Table 11. Summary of Pesticides in Soil, 1221 Spofford Avenue, Bronx, New York (April 2017)

	RXSB-6	RXSB-7	RXSB-7				
				ple Date:		04/25/2017	04/25/2017
			Sample Dep	. ,	8 - 10	0 - 2	5 - 7
			Normal or Field [	Ouplicate:	N	N	N
Parameter	NYSDEC Part 375 Unrestricted Use SCO	NYSDEC Part 375 Restricted Residential SCO	NYSDEC Part 375 Protection of Groundwater SCO	Unit			
Aldrin	5	97	190	UG/KG	1.83 U	1.75 U	1.72 U
Alpha Bhc (Alpha Hexachlorocyclohexane)	20	480	20	UG/KG	0.763 U	0.729 U	0.719 U
Alpha Endosulfan	2400	24000	102000	UG/KG	1.83 U	1.75 U	1.72 U
Beta Bhc (Beta Hexachlorocyclohexane)	36	360	90	UG/KG	1.83 U	1.75 U	1.72 U
Beta Endosulfan	2400	24000	102000	UG/KG	1.83 U	1.75 U	1.72 U
Chlordane				UG/KG	14.9 U	14.2 U	14 U
cis-Chlordane	94	4200	2900	UG/KG	2.29 U	2.19 U	2.16 U
Delta BHC (Delta Hexachlorocyclohexane)	40	100000	250	UG/KG	1.83 U	1.75 U	1.72 U
Dieldrin	5	200	100	UG/KG	1.14 U	1.09 U	1.08 U
Endosulfan Sulfate	2400	24000	1000000	UG/KG	0.763 U	0.729 U	0.719 U
Endrin	14	11000	60	UG/KG	0.763 U	0.729 U	0.719 U
Endrin Aldehyde				UG/KG	2.29 U	2.19 U	2.16 U
Endrin Ketone				UG/KG	1.83 U	1.75 U	1.72 U
Gamma Bhc (Lindane)	100	1300	100	UG/KG	0.763 U	0.729 U	0.719 U
Heptachlor	42	2100	380	UG/KG	0.916 U	0.874 U	0.863 U
Heptachlor Epoxide				UG/KG	3.43 U	3.28 U	3.23 U
Methoxychlor				UG/KG	3.43 U	3.28 U	3.23 U
P,P'-DDD	3.3	13000	14000	UG/KG	1.83 U	1.75 U	1.72 U
P,P'-DDE	3.3	8900	17000	UG/KG	1.83 U	1.75 U	1.72 U
P,P'-DDT	3.3	7900	136000	UG/KG	3.43 U	3.28 U	3.23 U
Toxaphene				UG/KG	34.3 U	32.8 U	32.3 U
trans-Chlordane				UG/KG	2.29 U	0.646 JPI	2.16 U



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Table 11. Summary of Pesticides in Soil, 1221 Spofford Avenue, Bronx, New York (April 2017)

	Sample Designat								
			Sam	ple Date:	04/25/2017	04/25/2017	04/25/2017	04/25/2017	
			Sample Dep	th (ft bls):	0 - 2	10 - 12	0 - 2	0 - 2	
			Normal or Field [	Ouplicate:	N	N	N	N	
	NYSDEC Part 375	NYSDEC Part 375	NYSDEC Part 375						
	Unrestricted Use	Restricted	Protection of						
Parameter	SCO	Residential SCO	Groundwater SCO	Unit					
Aldrin	5	97	190	UG/KG	1.79 U	1.75 U	1.79 U	1.73 U	
Alpha Bhc (Alpha Hexachlorocyclohexane)	20	480	20	UG/KG	0.745 U	0.73 U	0.744 U	0.72 U	
Alpha Endosulfan	2400	24000	102000	UG/KG	1.79 U	1.75 U	1.79 U	1.73 U	
Beta Bhc (Beta Hexachlorocyclohexane)	36	360	90	UG/KG	1.79 U	1.75 U	1.79 U	1.73 U	
Beta Endosulfan	2400	24000	102000	UG/KG	1.79 U	1.75 U	2.52 P	1.73 U	
Chlordane				UG/KG	14.5 U	14.2 U	14.5 U	14 U	
cis-Chlordane	94	4200	2900	UG/KG	2.23 U	2.19 U	2.23 U	2.16 U	
Delta BHC (Delta Hexachlorocyclohexane)	40	100000	250	UG/KG	1.79 U	1.75 U	1.79 U	1.73 U	
Dieldrin	5	200	100	UG/KG	1.12 U	1.09 U	1.12 U	1.44	
Endosulfan Sulfate	2400	24000	1000000	UG/KG	0.745 U	0.73 U	0.744 U	0.72 U	
Endrin	14	11000	60	UG/KG	0.745 U	0.73 U	0.744 U	0.72 U	
Endrin Aldehyde				UG/KG	2.23 U	2.19 U	2.91	1.61 J	
Endrin Ketone				UG/KG	1.79 U	1.75 U	1.79 U	1.73 U	
Gamma Bhc (Lindane)	100	1300	100	UG/KG	0.745 U	0.73 U	0.744 U	0.72 U	
Heptachlor	42	2100	380	UG/KG	0.894 U	0.876 U	0.893 U	0.864 U	
Heptachlor Epoxide				UG/KG	3.35 U	3.28 U	3.35 U	3.24 U	
Methoxychlor				UG/KG	3.35 U	3.28 U	3.35 U	3.24 U	
P,P'-DDD	3.3	13000	14000	UG/KG	1.79 U	1.75 U	1.79 U	1.73 U	
P,P'-DDE	3.3	8900	17000	UG/KG	1.79 U	1.75 U	1.79 U	1.73 U	
P,P'-DDT	3.3	7900	136000	UG/KG	3.35 U	3.28 U	3.72 P	3.24 U	
Toxaphene				UG/KG	33.5 U	32.8 U	33.5 U	32.4 U	
trans-Chlordane				UG/KG	2.23 U	2.19 U	1.44 JPI	0.712 JPI	



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Table 12. Summary of Volatile Organic Compounds in Sub-Slab and Soil Vapor, 1221 Spofford Avenue, Bronx, New York (April 2017)

	Sample Designation:	RXSS-1	RXSV-1	RXSV-2	RXSV-3
	Sample Date:	04/27/2017	04/26/2017	04/26/2017	04/26/2017
Parameter	Unit				
1,1,1-Trichloroethane	UG/M3	90.6 U	1.09 U	1.09 U	1.09 U
1,1,2,2-Tetrachloroethane	UG/M3	114 U	1.37 U	1.37 U	1.37 U
1,1,2-Trichloro-1,2,2-Trifluoroethane	UG/M3	127 U	1.53 U	1.53 U	1.53 U
1,1,2-Trichloroethane	UG/M3	90.6 U	1.09 U	1.09 U	1.09 U
1,1-Dichloroethane	UG/M3	67.2 U	0.809 U	0.809 U	0.809 U
1,1-Dichloroethene	UG/M3	65.8 U	0.793 U	0.793 U	0.793 U
1,2,4-Trichlorobenzene	UG/M3	123 U	1.48 U	1.48 U	1.48 U
1,2,4-Trimethylbenzene	UG/M3	81.6 U	2.26	1.51	2.87
1,2-Dibromoethane (Ethylene Dibromide)	UG/M3	128 U	1.54 U	1.54 U	1.54 U
1,2-Dichlorobenzene	UG/M3	99.8 U	1.2 U	1.2 U	1.2 U
1,2-Dichloroethane	UG/M3	67.2 U	0.809 U	0.809 U	0.809 U
1,2-Dichloropropane	UG/M3	76.7 U	0.924 U	0.924 U	0.924 U
1,2-Dichlorotetrafluoroethane	UG/M3	116 U	1.4 U	1.4 U	1.4 U
1,3,5-Trimethylbenzene (Mesitylene)	UG/M3	81.6 U	1.09	0.983 U	1.41
1,3-Butadiene	UG/M3	36.7 U	0.442 U	0.442 U	0.442 U
1,3-Dichlorobenzene	UG/M3	99.8 U	1.2 U	1.2 U	1.2 U
1,4-Dichlorobenzene	UG/M3	99.8 U	1.2 U	1.2 U	1.2 U
1,4-Dioxane (P-Dioxane)	UG/M3	59.8 U	0.721 U	0.721 U	0.721 U
2,2,4-Trimethylpentane	UG/M3	77.5 U	2.67	0.934 U	11
2-Hexanone	UG/M3	68 U	1.2	31.1	0.82 U
4-Ethyltoluene	UG/M3	81.6 U	0.983 U	0.983 U	1.19
Acetone	UG/M3	197 U	57	46.8	106
Allyl Chloride (3-Chloropropene)	UG/M3	52 U	0.626 U	0.626 U	0.626 U
Benzene	UG/M3	377	2.62	0.703	7.99
Benzyl Chloride	UG/M3	86 U	1.04 U	1.04 U	1.04 U
Bromodichloromethane	UG/M3	111 U	1.34 U	1.34 U	1.34 U
Bromoform	UG/M3	172 U	2.07 U	2.07 U	2.07 U
Bromomethane	UG/M3	64.5 U	0.777 U	0.777 U	0.777 U
Carbon Disulfide	UG/M3	51.7 U	16.6	1.86	67
Carbon Tetrachloride	UG/M3	104 U	1.26 U	1.26 U	1.26 U
Chlorobenzene	UG/M3	76.4 U	0.921 U	0.921 U	0.921 U
Chloroethane	UG/M3	43.8 U	0.528 U	0.528 U	0.528 U
Chloroform	UG/M3	81.1 U	2.25	0.977 U	4.25
Chloromethane	UG/M3	34.3 U	0.413 U	0.413 U	1.15
Cis-1,2-Dichloroethylene	UG/M3	65.8 U	0.793 U	0.956	0.793 U
Cis-1,3-Dichloropropene	UG/M3	75.4 U	0.908 U	0.908 U	0.908 U



Table 12. Summary of Volatile Organic Compounds in Sub-Slab and Soil Vapor, 1221 Spofford Avenue, Bronx, New York (April 2017)

Sample	Designation:	RXSS-1	RXSV-1	RXSV-2	RXSV-3
	Sample Date:	04/27/2017	04/26/2017	04/26/2017	04/26/2017
Parameter	Unit				
Cyclohexane	UG/M3	20200	1.66	0.688 U	5.61
Dibromochloromethane	UG/M3	141 U	1.7 U	1.7 U	1.7 U
Dichlorodifluoromethane	UG/M3	82.1 U	1.82	1.66	2.71
Ethanol	UG/M3	780 U	9.42 U	15.7	9.42 U
Ethyl Acetate	UG/M3	149 U	1.8 U	1.8 U	1.8 U
Ethylbenzene	UG/M3	72.1 U	1.38	1.54	1.66
Hexachlorobutadiene	UG/M3	177 U	2.13 U	2.13 U	2.13 U
Isopropanol	UG/M3	102 U	1.31	1.23 U	1.23 U
m,p-Xylene	UG/M3	144 U	3.74	5.08	4.52
Methyl Ethyl Ketone (2-Butanone)	UG/M3	122 U	2.94	255	4.72
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	UG/M3	170 U	2.05 U	2.05 U	2.05 U
Methylene Chloride	UG/M3	144 U	1.74 U	1.74 U	2.32
N-Heptane	UG/M3	68 U	3.2	1.53	12.6
N-Hexane	UG/M3	58.5 U	4.26	0.969	21.3
O-Xylene (1,2-Dimethylbenzene)	UG/M3	72.1 U	1.08	1.49	1.12
Propylene	UG/M3	181	NA	NA	NA
Styrene	UG/M3	70.7 U	5.28	3.44	7.24
Tert-Butyl Alcohol	UG/M3	NA	4.91	1.52 U	1.52 U
Tert-Butyl Methyl Ether	UG/M3	59.8 U	0.721 U	0.721 U	0.721 U
Tetrachloroethylene (PCE)	UG/M3	113 U	5.15	1.36 U	7.26
Tetrahydrofuran	UG/M3	122 U	1.47 U	1.47 U	1.47 U
Toluene	UG/M3	62.6 U	11.4	8.44	19.3
Trans-1,2-Dichloroethene	UG/M3	65.8 U	0.793 U	0.793 U	0.793 U
Trans-1,3-Dichloropropene	UG/M3	75.4 U	0.908 U	0.908 U	0.908 U
Trichloroethylene (TCE)	UG/M3	89.2 U	1.07 U	1.75	1.07 U
Trichlorofluoromethane	UG/M3	93.3 U	1.73	1.12 U	2.91
Vinyl Acetate	UG/M3	292 U	NA	NA	NA
Vinyl Bromide	UG/M3	72.6 U	0.874 U	0.874 U	0.874 U
Vinyl Chloride	UG/M3	42.4 U	0.511 U	0.511 U	0.511 U



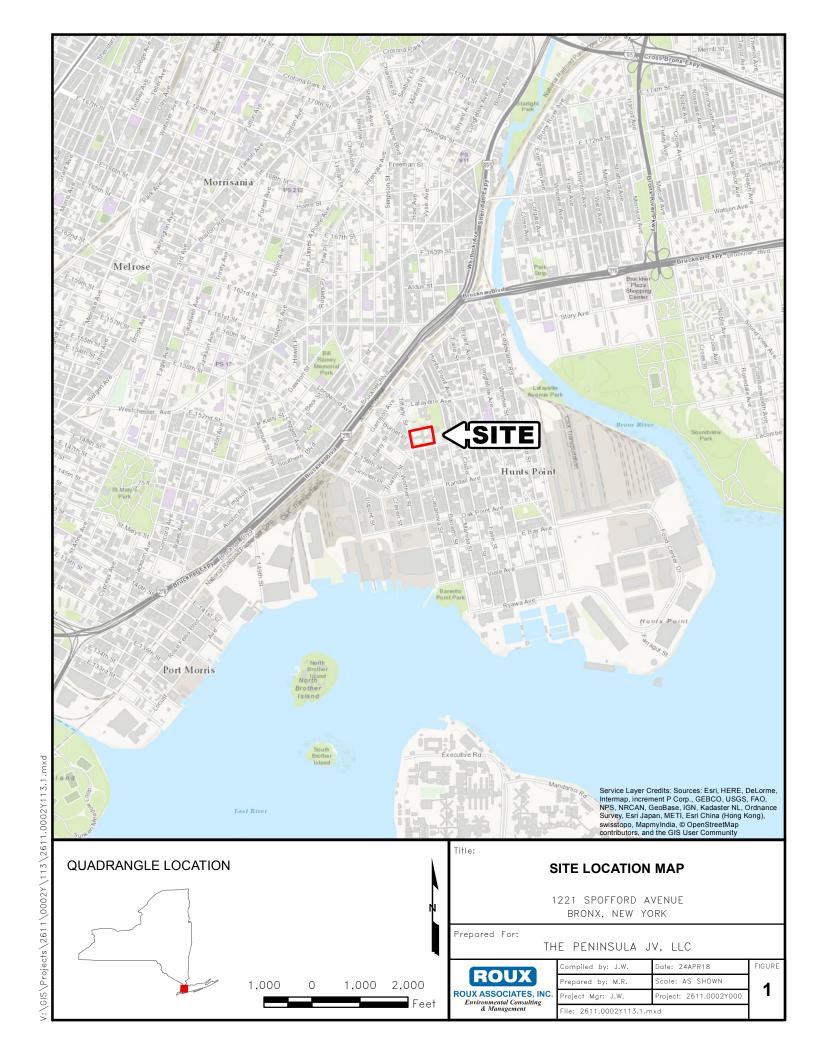
Page 2 of 2 2611.0002Y108R/WKB

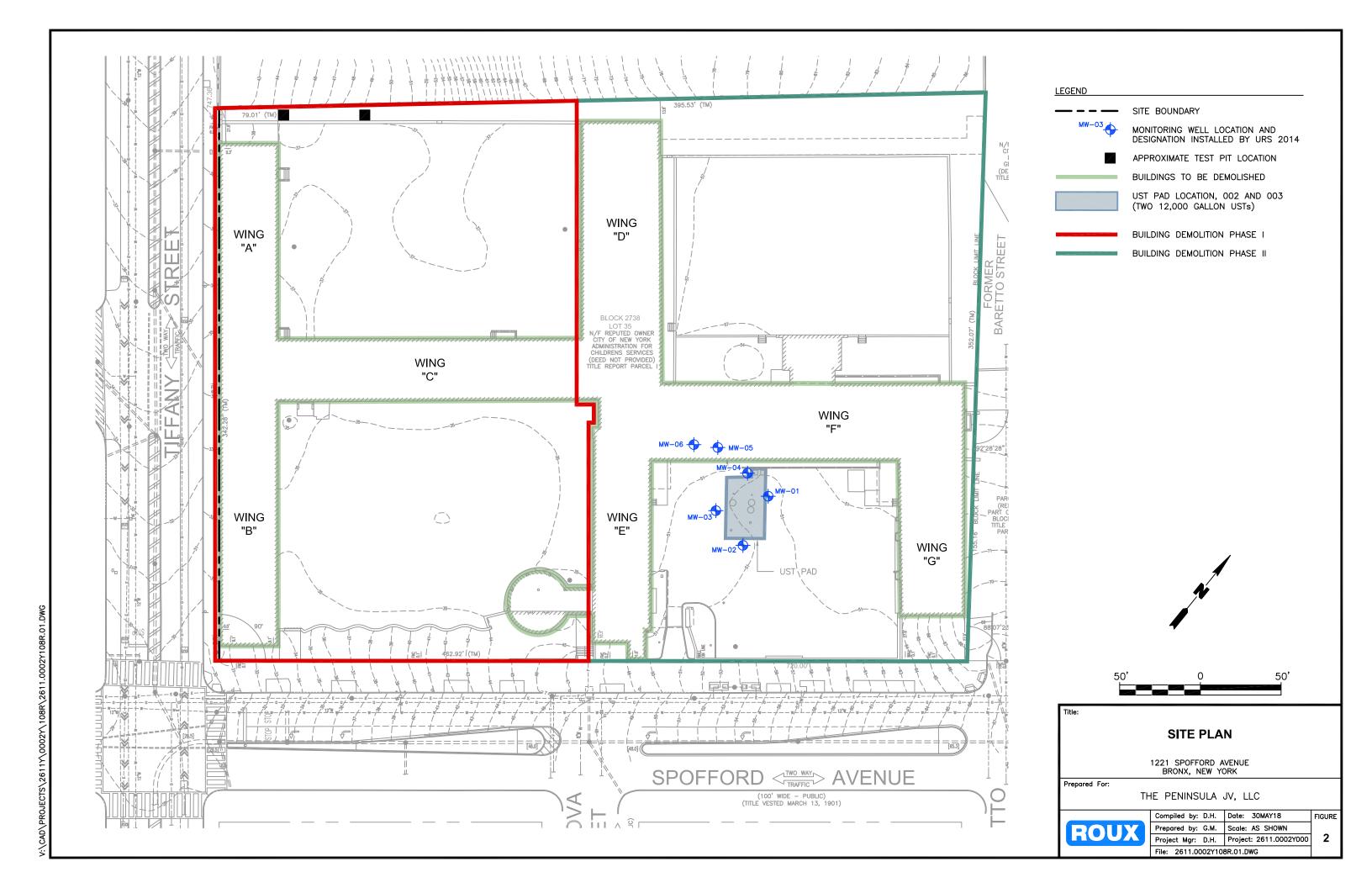
## Interim Remedial Measure Work Plan 1221 Spofford Avenue, Bronx, New York

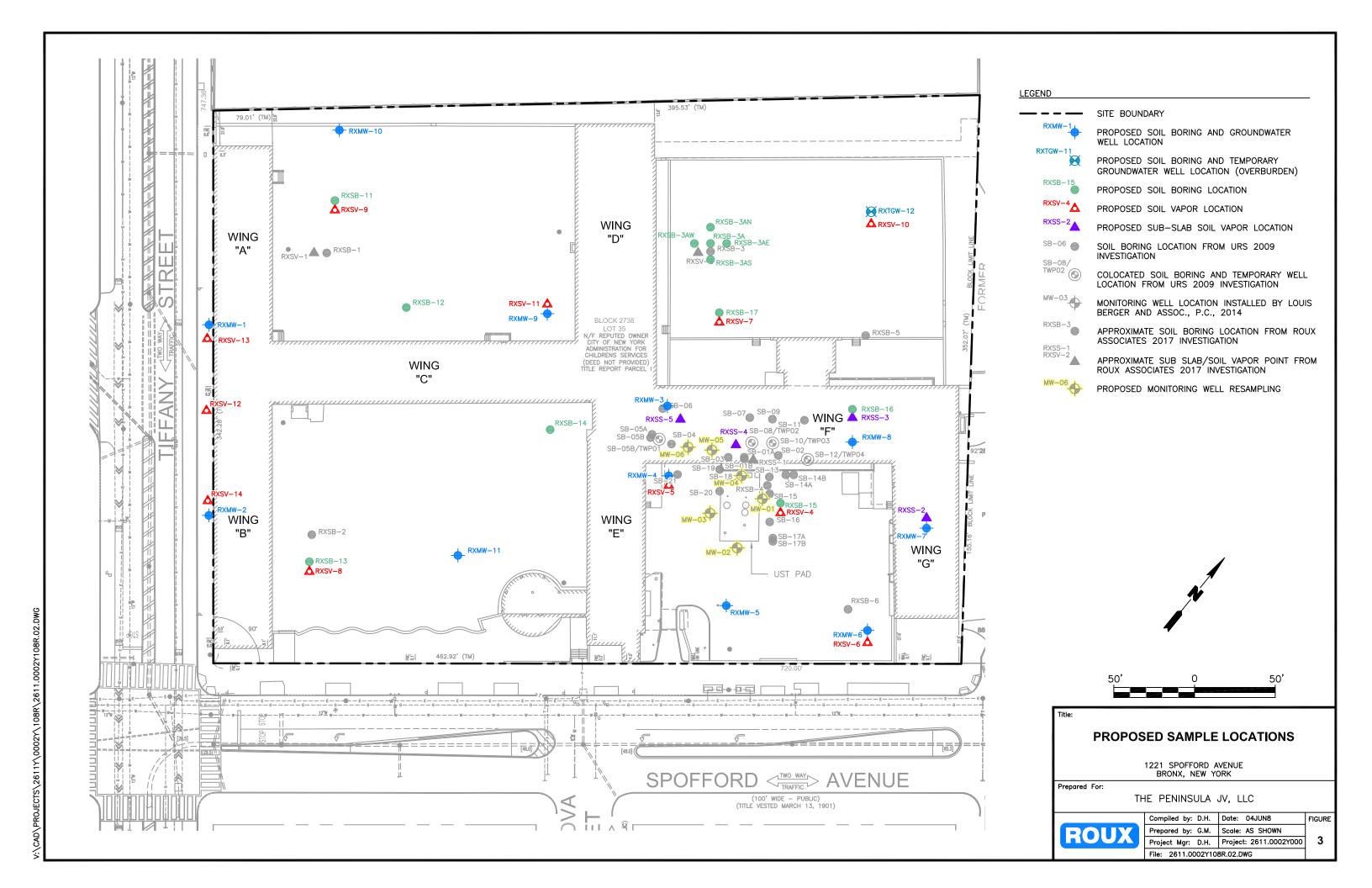
## **FIGURES**

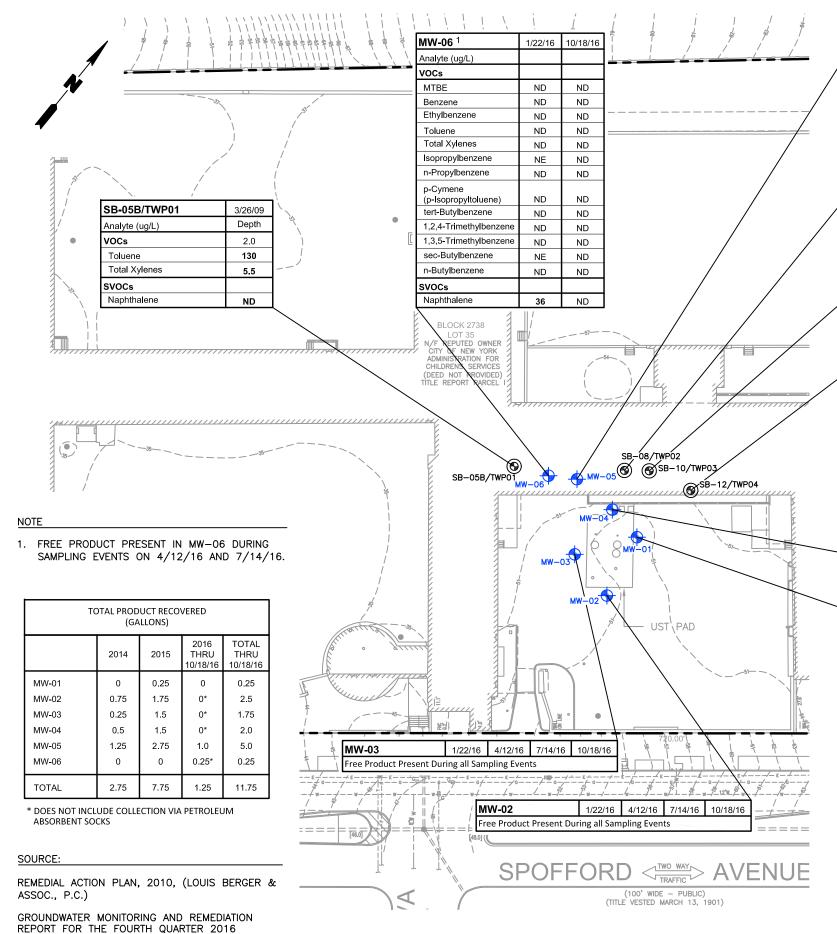
- 1. Location of Site
- 2. Site Plan
- 3. Proposed Sample Locations
- 4. Groundwater Exceedances
- 5. Soil Vapor Detections

2611.0002Y108/CVRS ROUX









(URS, 2017).

**MW-05** 1/22/16 4/12/16 7/14/16 10/18/16 Free Product Present During all Sampling Events

SB-08/TWP02	3/26/09
Analyte (ug/L)	Depth
VOCs	2.0
Toluene	310
1,2,4-Trimethylbenzene	22
1,3,5-Trimethylbenzene	9.1
SVOCs	
Naphthalene	ND

SB-10/TWP03	3/26/09
Analyte (ug/L)	Depth
VOCs	2.0
Toluene	190
1,2,4-Trimethylbenzene	9.4
SVOCs	
Naphthalene	12
ТРН	2,700

SB-12/TW04	3/26/09
Analyte (ug/L)	Depth
VOCs	2.0
Benzene	14
Ethylbenzene	6.1
Toluene	43
Total Xylenes	8
sec-Butylbenzene	6.5
SVOCs	NE
ТРН	6,500

MW-04	1/22/16	4/12/16	7/14/16	10/18/16
Free Product Present Dur	ing all Sam	pling Even	ts	

MW-01	1/22/16	4/12/16	7/14/16	10/18/16
Analyte (ug/L)				
VOCs				
MTBE	ND	ND	ND	ND
Benzene	3	2	NE	3.3
Ethylbenzene	63	47	32	67.9
Toluene	ND	ND	ND	ND
Total Xylenes	66	33	22	79.7
Isopropylbenzene	13	10	9	17.2
n-Propylbenzene	22	18	15	30.1
p-Cymene (p-Isopropyltoluene)	7	6	NE	9.1
tert-Butylbenzene	ND	ND	ND	ND
1,2,4-Trimethylbenzene	250 D	170	150	313
1,3,5-Trimethylbenzene	64	46	36	70
sec-Butylbenzene	6	NE	NE	ND
n-Butylbenzene	15	13	7	12.2
SVOCs				
Naphthalene	82	28	23	112

LEGEND

SITE BOUNDARY

IW-03

MONITORING WELL LOCATION INSTALLED BY URS, 2014

SB-08/ TWP02

COLOCATED SOIL BORING AND TEMPORARY WELL LOCATION FROM LOUIS BERGER AND ASSOC., P.C., 2009 INVESTIGATION

Parameter	Standards* (µg/L)
VOCs	
MTBE	10
Benzene	1
Ethylbenzene	5
Toluene	5
Total Xylenes	5
Isopropylbenzene	5
n-Propylbenzene	5
p-Cymene (p-lsopropyltoluene)	5
tert-Butylbenzene	5
1,2,4-Trimethylbenzene	5
1,3,5-Trimethylbenzene	5
sec-Butylbenzene	5
n-Butylbenzene	5
SVOCs	
Naphthalene	10

#### CONCENTRATIONS IN µg/L

µg/L - MICROGRAMS PER LITER

\* - NYSDEC AWQSGVS

NYSDEC - NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

AWQSGVS - AMBIENT WATER-QUALITY STANDARDS AND GUIDANCE VALUES

- NOT DETECTED ABOVE NYSDEC AWQSGV

B - FOUND IN LABORATORY BLANK

E - EXCEEDS CALIBRATION LIMIT

D - DILUTION

J - ESTIMATED VALUE

DUP - DUPLICATE SAMPLE

VOCS - VOLATILE ORGANIC COMPOUNDS

SVOCS - SEMIVOLATILE ORGANIC COMPOUNDS

NE - NO EXCEEDANCES

ND - NO DETECTION

**BOLD** - EXCEEDS AWQSGVS



Title:

#### **GROUNDWATER EXCEEDANCES**

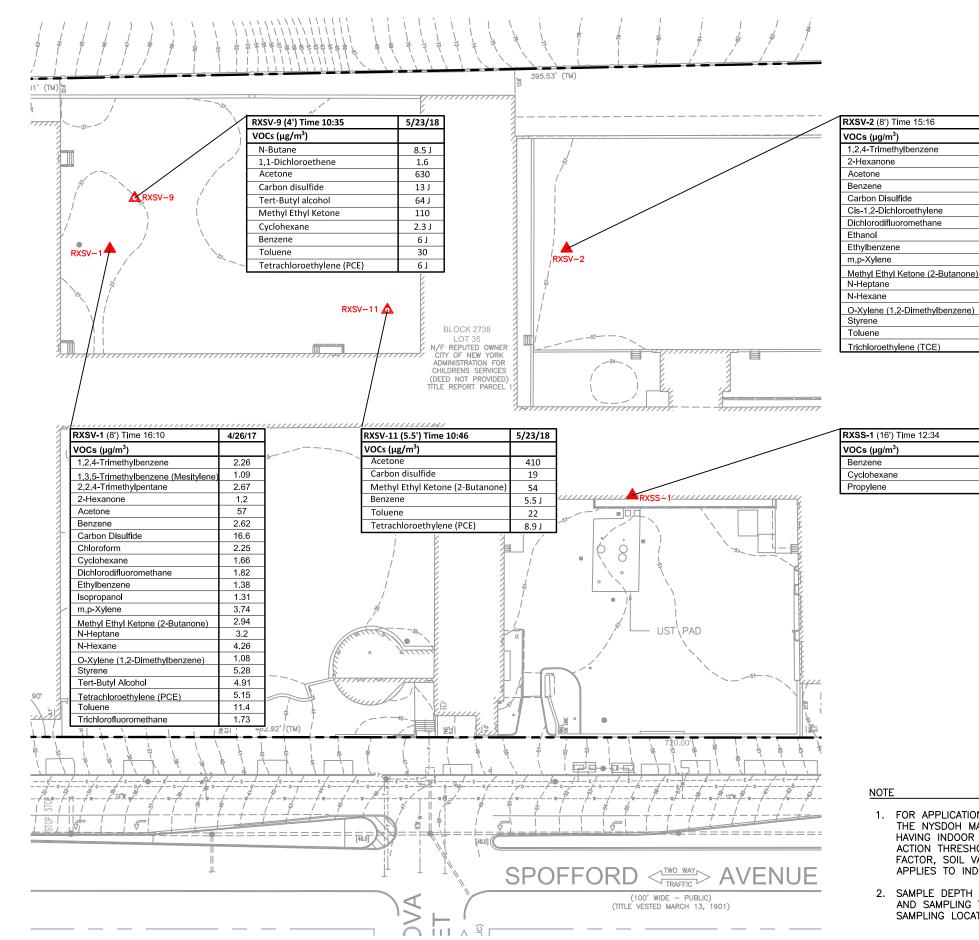
1221 SPOFFORD AVENUE BRONX, NEW YORK

Prepared For:

THE PENINSULA JV, LLC



Compiled by: D.H.	Date: 30MAY18	FIGUR
Prepared by: G.M.	Scale: AS SHOWN	
Project Mgr: D.H.	Project: 2611.0002Y000	4
File: 2611.0002Y108	BR.03.DWG	



LEGEND

4/26/17

1.51

31.1

46.8

0.703

1.86

0.956

1.66

15.7

1.54

5.08

255

1.53

0.969 1.49

3.44

8.44

1.75

4/27/17

377

20200

181

SITE BOUNDARY

RXSV-2 ▲

APPROXIMATE SUB SLAB/SOIL VAPOR POINT FROM ROUX ASSOCIATES 2017 INVESTIGATION

APPROXIMATE SOIL VAPOR POINT FROM ROUX ASSOCIATES 2018 INVESTIGATION

NYSDOH	CEH BEEI Soil Vapor	Intrusion Guidance of May	2017
trix A: Carbon tetrachlori	de, trichloroethene, c	is-1,2-Dichloroethene, 1,1-	Dichloroethene
Sub-Slab Vapor		Indoor Air Concentration	n
Concentration	< 0.2	0.2 to <1	1+
<6	No Action	No Action	Resample or Mitigate
6 to < 60	No Action	Monitor	Mitigate
60	Mitigate	Mitigate	Mitigate
trix B: Tetrachloroethene	1,1,1-Trichloroethan	e, Methylene Chloride	
Sub-Slab Vapor		Indoor Air Concentration	n
Concentration	<3	3 to <10	10+
<100	No Action	No Action	Resample or Mitigate
100 to <1000	No Action	Monitor	Mitigate
1000	Mitigate	Mitigate	Mitigate
trix C: Vinyl chloride			
Sub-Slab Vapor	Indoor Air	r Concentration	]
Concentration	< 0.2	0.2+	
<6	No Action	Resample or Mitigate	]
6 to < 60	Monitor	Mitigate	1
60	Mitigate	Mitigate	1

CONCENTRATIONS IN µg/m³

μg/m³ - MICROGRAMS PER CUBIC METER

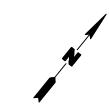
VOCs - VOLATILE ORGANIC COMPOUNDS

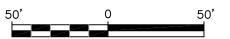
NYSDOH - NEW YORK STATE DEPARTMENT OF HEALTH

CEH - CENTER FOR ENVIRONMENTAL HEALTH

BEEI - BUREAU OF ENVIRONMENTAL EXPOSURE **INVESTIGATION** 

J - ESTIMATED VALUE





NOTE

- 1. FOR APPLICATION OF SOIL VAPOR RESULTS TO THE NYSDOH MATRIX GUIDANCE WITHOUT HAVING INDOOR AIR SAMPLES RESULTS, ACTION THRESHOLD ASSUMES NO ATTENUATION FACTOR, SOIL VAPOR CONCENTRATION ALSO APPLIES TO INDOOR AIR.
- 2. SAMPLE DEPTH IN FEET BELOW LAND SURFACE AND SAMPLING TIME PROVIDED FOR EACH SAMPLING LOCATION.

Title: **SOIL VAPOR DETECTIONS** 

> 1221 SPOFFORD AVENUE BRONX, NEW YORK

Prepared For:

THE PENINSULA JV, LLC



ompiled by: D.H.	Date: 04JUN18	FIGURE
repared by: B.H.C	Scale: AS SHOWN	
roject Mgr: D.H.	Project: 2611.0002Y000	5
ile: 2611.0002Y10	8R.03.DWG	

## Interim Remedial Measure Work Plan 1221 Spofford Avenue, Bronx, New York

## **APPENDICES**

- A. Quality Assurance Project Plan
- B. Health and Safety Plan
- C. Community Air Monitoring Plan

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## Interim Remedial Measure Work Plan 1221 Spofford Avenue, Bronx, New York

## **APPENDIX A**

Quality Assurance Project Plan

2611.0002Y108/CVRS ROUX



# **Quality Assurance Project Plan**

1221 Spofford Avenue Tax Lot 35 of Tax Block 2738 Bronx, New York

August 6, 2018

Prepared for:

THE PENINSULA JV, LLC 111 8th Avenue New York, New York 10011

Prepared by:

Roux Environmental Engineering and Geology, D.P.C. 209 Shafter Street Islandia, New York 11749

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- 2. Field and Quality Control Sampling Summary
- 3. Preservation, Holding Times and Sample Containers
- 4. Laboratory Reporting Limits for Soil Samples

## **Appendices**

- A. Professional Profiles
- B. Roux Standard Operating Procedures
- C. QA Glossary

## 1. INTRODUCTION

This Quality Assurance Project Plan (QAPP) has been prepared to describe the measures that will be taken to ensure that the data generated during performance of the Interim Remedial Measure (IRM) for Underground Storage Tank (UST) temporary closure, completion of geotechnical test pits and building demolition at the Peninsula Redevelopment Project site, located at 1221 Spofford Avenue, Bronx, New York (Site) are of quality sufficient to meet project-specific data quality objectives (DQOs).

The Peninsula Redevelopment Project (Project) consists of the demolition of the former Spofford Juvenile Detention Center and ACS Child Care Center. These facilities will be replaced with a vibrant live-work campus known as The Peninsula. The Peninsula includes the construction of a vibrant live-work campus featuring affordable housing, community space, open/recreational space, industrial space, and retail space. The entire Site encompasses an area of approximately 3.8 acres which is planned to be investigated, remediated and redeveloped under the New York State Department of Environmental Conservation (NYSDEC) Brownfield Cleanup Program (BCP).

Peninsula JV, LLC is a Volunteer in the Brownfield Cleanup Program (BCP). IRM activities will be conducted under the New York State Department of Environmental Conservation (NYSDEC) BCP. The QAPP was prepared in accordance with the guidance provided in NYSDEC Technical Guidance DER-10 (Technical Guidance for Site Investigation and Remediation), the BCP Guide and the United States Environmental Protection Agency's (USEPA's) Guidance for the Data Quality Objectives Process (EPA QA/G-4). This QAPP provides guidelines and procedures to be followed by field personnel during performance of the IRM sampling. Information contained in this QAPP relates to:

- Sampling objectives (Section 2);
- Project organization (Section 3);
- Sample media, sampling locations, analytical suites, sampling frequencies, and analytical laboratory (Section 4);
- Field sampling procedures (Section 5);
- Sample handling, sample analysis, and quality assurance/quality control (Section 6); and
- Site control procedures and decontamination (Section 7).

## 2. SAMPLING OBJECTIVES

The proposed IRM includes temporary closure of the two, 12,000-gallon, #2 Fuel Oil USTs that remain inservice at the Site and associated piping, as well as the excavation of two geotechnical test pits. The IRM also includes the demolition of the buildings and subgrades features, starting first with the west side on Tiffany Street followed by the east side on Spofford Avenue. The location of the USTs and existing buildings are provided on Figure 2 of the IRM Work Plan. Prior to building demolition, the USTs will be temporarily closed by removing all fluids from the USTs and rendering them inert. After demolition of the existing buildings is complete, the USTs will be removed as part of the remedial work, with further details provided in the Remedial Action Work Plan (RAWP). If, and to the extent that, grossly contaminated soil is encountered during the IRM activities, excavations will continue to remove the grossly contaminated soil to the extent it is technically and practically feasible.

Roux Environmental Engineering and Geology, D.P.C (Roux) has developed a scope of work for this IRM that includes waste characterization sampling and sampling of imported material during the geotechnical test pits (if necessary). No sampling is proposed during the building demolition and subgrade feature removal activities. The IRM sampling program is designed to meet the data quality objectives (DQOs) set forth in the DER-10. Specifically, sampling frequency and analytical parameters selected for each sample, as described in Section 4, are comprehensive and are intended to demonstrate that the contamination has been removed.

Sampling procedures are discussed in Section 5 of this QAPP. A discussion of the DQOs and quality assurance/quality control (QA/QC) for the project is provided in Section 6.

## 3. PROJECT ORGANIZATION

A general and generic summary of the overall management structure and responsibilities of project team members are presented below. Professional profiles are presented in Appendix A.

#### **Project Principal**

Frank Cherena of Roux will serve as Project Principal. The Project Principal is responsible for defining project objectives and bears ultimate responsibility for the successful completion of the IRM.

#### **Project Manager**

Jeffrey Wills of Roux will serve as Project Manager. The Project Manager is responsible for defining project objectives, and bears ultimate responsibility for the successful completion of the work. This individual will provide overall management for the implementation of the scope of work and will coordinate all field activities. The Project Manager is also responsible for data review/interpretation and report preparation.

#### **Quality Assurance Officer (QAO)**

Dana Hignell of Roux will serve as QAO. The QAO will review sampling procedures and certify that the data was collected and analyzed using the appropriate procedures. This individual will provide coordination with the analytical laboratory and the data validator to resolve any problems.

#### Field Analyst

Ronald Lombino of Roux will serve as the Field Analyst. The Field Analyst bears the responsibility for the successful execution of the field program. The Field Analyst will direct the activities of the technical staff in the field, as well as all subcontractors. The Field Analyst also assists in the interpretation of data and in report preparation. The Field Analyst reports to the Project Manager.

#### **Laboratory Project Manager**

The Laboratory Project Manager will be determined prior to the start of the Work. The Laboratory Project Manager is responsible for sample container preparation, sample custody in the laboratory, and completion of the required analysis through oversight of the laboratory staff. The Laboratory Project Manager will ensure that quality assurance procedures are followed and that an acceptable laboratory report is prepared and submitted. The Laboratory Project Manager reports to the Field Analyst. The laboratory selected for the IRM activities is TestAmerica Laboratories, Inc. of Edison, New Jersey (TestAmerica).

#### **Data Validator**

Judy Harry of Data Validation Services will serve as the Data Validator. The Data Validator is responsible for validation of any sampling data as required by the NYSDEC and preparation of the Data Usability Summary Report (DUSR) in accordance with Appendix 2B of DER-10.

## 4. SAMPLE MEDIA, LOCATIONS, ANALYTICAL SUITES, AND FREQUENCY

The media to be sampled during the implementation of the IRM is soil. Analytical suites and frequency for waste characterization sampling are provided below and summarized in Table 1. Specifics regarding the collection of samples are provided in Sections 5 and 6 of this QAPP.

Two samples per 300 cubic yards of excavated material (or more frequently if required by the disposal facility) will be collected from the soil for waste characterization. The samples will be composite samples comprised of three representative grab samples. The sample will be analyzed for the following:

- Target compound list (TCL) SVOCs according to USEPA Method SW-846 8270;
- Total petroleum hydrocarbons (TPH) for gasoline and diesel range organics by Methods SW-846 8015B;
- Reduced target analyte list (TAL) metals by Method SW-846 6010 (includes cadmium, chromium, lead, nickel, selenium, thallium, and vanadium) and Method SW-846 7471 for mercury;
- The full list of toxicity characteristics leaching procedure (TCLP) analyses (VOCs, SVOCs, metals, pesticides, and herbicides);
- Polychlorinated Biphenyls (PCBs) via by Method SW-846 8082A;
- Corrosivity;
- · Reactivity; and
- Ignitability.

One sample per 50 cubic yards of excavated material for the first 100 cubic yards, and then one sample per 100 cubic yards of material after will be collected from the soil for VOCs analysis using USEPA Method SW-846 8260. The samples will be discreet samples and will be collected at a frequency in accordance with DER-10 Table 5.4(e)10.

QA/QC samples are not required for waste characterization samples.

Laboratory analyses will be performed by a NYSDOH ELAP certified laboratory in accordance with the NYSDEC Analytical Services Protocol (ASP) using USEPA SW-846 Methods. The ELAP certified laboratory for the IRM activities is TestAmerica.

## 5. FIELD SAMPLING PROCEDURES

This section provides a discussion of the field procedures to be used for sampling of soil during implementation of the IRM.

The waste characterization samples will be composites samples comprised of three grab samples, collected by hand. Samples collected for VOC analysis will be discreet samples, collected by hand.

Additional details regarding soil-sampling protocols are described in Roux's Standard Operating Procedures (SOP), which are provided in Appendix B.

## 6. SAMPLE HANDLING AND ANALYSIS

To ensure quality data acquisition and collection of representative samples, there are selective procedures to minimize sample degradation or contamination. These include procedures for preservation of the samples, as well as sample packaging, shipping procedures, and quality assurance/quality control.

#### 6.1 Field Sample Handling

A detailed discussion of the proposed number and types of samples to be collected during each task, as well as the analyses to be performed can be found in Section 4.0 and in Table 1 of this QAPP. The types of containers, volumes, holding times, and preservation techniques for the aforementioned testing parameters are presented in Table 2.

#### **6.2 Sample Custody Documentation**

The purpose of documenting sample custody is to ensure that the integrity and handling of the samples is not subject to question. Sample custody will be maintained from the point of sampling through the analysis (and return of unused sample portion, if applicable). Specific procedures regarding sample tracking from the field to the laboratory are described in Roux's SOP for Sample Handling (Appendix B).

Each individual collecting a sample is personally responsible for the care and custody of the samples. All sample labels should be pre-printed or filled out using waterproof ink. The technical staff will review all field activities with the Field Team Leader to determine whether proper custody procedures were followed during the field work and to decide if additional samples are required.

All samples being shipped offsite for analysis must be accompanied by a properly completed laboratory chain of custody form. The sample numbers will be listed on the chain of custody form. When transferring the possession of samples, individuals relinquishing and receiving will sign, date, and note the time on the record. This record documents transfer of custody of samples from the sampler to another person and/or to/from a secure storage area and/or to the shipper, and/or to the laboratory.

Samples will be packaged for shipment and dispatched to the appropriate laboratory for analysis with a separate signed custody record enclosed in each sample box or cooler. Shipping containers will be locked and/or secured with strapping tape in at least two locations for shipment to the laboratory.

#### 6.3 Sample Shipment

Sample packaging and shipping procedures are based upon USEPA specifications, as well as U.S. Department of Transportation (DOT) regulations. The procedures vary according to potential sample analytes, concentration, and matrix and are designed to provide optimum protection for the samples and the public. Sample packaging and shipment must be performed using the general outline described below. Additional information regarding sample handling is provided in Roux's SOP for Sample Handling (Appendix B).

All samples will be shipped within 24 hours of collection and will be preserved appropriately from the time of sample collection

A description of the sample packing and shipping procedures is presented below:

- 1. Prepare cooler(s) for shipment.
  - o Tape drain(s) of cooler shut;
  - o Affix "This Side Up" arrow labels and "Fragile" labels on each cooler; and
  - o Place mailing label with laboratory address on top of cooler(s).
- 2. Arrange sample containers in groups by sample number.
- 3. Ensure that all bottle labels are completed correctly. Place clear tape over bottle labels to prevent moisture accumulation from causing the label to peel off.
- 4. Arrange containers in front of assigned coolers.
- 5. Place packaging material approximately at the bottom of the cooler to act as a cushion for the sample containers.
- 6. Arrange containers in the cooler so that they are not in contact with the cooler or other samples.
- 7. Fill remaining spaces with packaging material.
- 8. Ensure all containers are firmly packed in packaging material.
- 9. If ice is required to preserve the samples, ice cubes should be repackaged in Zip-lock™ bags and placed on top of the packaging material.
- 10. Sign chain of custody form (or obtain signature) and indicate the time and date it was relinquished to courier as appropriate.
- Separate chain of custody forms. Seal proper copies within a large Zip-lock<sup>™</sup> bag and tape to inside cover of cooler. Retain copies of all forms.
- 12. Close lid and latch.
- 13. Secure each cooler using custody seals.
- 14. Tape cooler shut on both ends.
- 15. Relinquish to overnight delivery service as appropriate. Retain air bill receipt for project records. (Note: All samples will be shipped for "NEXT A.M." delivery.)

#### 6.4 Quality Assurance/Quality Control

The primary intended use for the IRM data is to demonstrate that the waste generated is disposed of properly. The primary DQO of the soil sampling, therefore, is that data be accurate and precise, and hence representative of the actual Site conditions. Accuracy refers to the ability of the laboratory to obtain a true value (i.e., compared to a standard) and is assessed through the use of laboratory quality control (QC) samples, including laboratory control samples and matrix spike samples, as well as through the use of surrogates, which are compounds not typically found in the environment that are injected into the samples prior to analysis. Precision refers to the ability to replicate a value, and is assessed through both field and laboratory duplicate samples. Field MS/MSD and field duplicate samples are not required for waste characterization samples.

Sensitivity is also a critical issue in generating representative data. Laboratory equipment must be of sufficient sensitivity to detect target compounds and analytes at levels below NYSDEC standards and guidelines whenever possible. Equipment sensitivity can be decreased by field or laboratory contamination of samples, and by sample matrix effects. Assessment of instrument sensitivity is performed through the

analysis of reagent blanks, near-detection-limit standards, and response factors. Potential field and/or laboratory contamination is assessed through use of trip blanks, method blanks, and equipment rinse blanks (also called "field blanks"). Field blanks are not required for the waste characterization samples.

Table 1 lists the field and laboratory QC samples that will be analyzed to assess data accuracy and precision, as well as to determine if equipment sensitivity has been compromised. Table 2 lists the IRM field and quality control sampling summary. Table 3 lists the preservation, holding times and sample container information. Table 4 shows the reporting limits and minimum detection limits achievable by the laboratory.

All soil sample analysis will be performed in accordance with the NYSDEC Analytical Services Protocol (ASP), using USEPA SW-846 methods.

Waste characterization laboratory data are to be reported in NYSDEC ASP Category A deliverables. A Data Usability Summary Report (DUSR) is not required for the waste characterization.

A QA glossary is presented in Appendix C.

## 7. SITE CONTROL PROCEDURES

Site control procedures have been developed to minimize both the risk of exposure to contamination and the spread of contamination during field activities at the Site. In order to accomplish this objective, the QAPP addresses three main considerations:

- The establishment of discrete work zones in the IRM area;
- The decontamination of field equipment; and
- The disposal of all IRM-derived waste.

All personnel who come into designated work areas, including contractors and observers, will be required to adhere strictly to the conditions imposed herein and to the provisions of the consultant's and/or contractor's Site-Specific Health and Safety Plan (HASP), which will be submitted under separate cover, if requested.

#### 7.1 Field Work Zones

Field work zones will be limited to areas where excavation, stockpiling, and soil sampling is being conducted. Access to these areas will be limited in accordance with the HASP. Control of work zone access will be the responsibility of the individual(s) designated as a Site Health and Safety Manager. At the completion of each working day, all loose equipment (e.g., sampling equipment, coolers, etc.) will be secured. Heavy equipment, such as the excavator, will remain onsite within an established, secured zone.

#### 7.2 Decontamination

In an attempt to avoid the spread of contamination, all excavation and sampling equipment must be decontaminated at a reasonable frequency. Equipment used for the geotechnical test pits will be decontaminated prior to being brought onsite, and after completion of the test pits prior to removal of the equipment offsite. Sampling equipment will be decontaminated prior to use, following collection at each sample location and upon completion of the sampling activities. Temporary decontamination pads will be set up by the contractor as deemed necessary. Detailed procedures for the decontamination of field and sampling equipment are included in the attached Roux's SOPs (Appendix B). The location of the decontamination area(s) will be determined as necessary during the field operations. The decontamination area will be constructed to ensure that any wash water generated during decontamination can be collected. Decontamination water (if any) will be disposed of along with additional construction wastewaters, to be determined during the design process.

#### 7.3 Waste Handling and Disposal

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

- Impacted soil from the Site (non-hazardous);
- · Personal Protective Equipment (PPE); and
- Construction wastewater from decontamination, if any is generated.

Haul vehicles for bulk soil will be secured with appropriate covers prior to exiting the construction area to prevent release of waste.

PPE generated during the implementation of the IRM will be consolidated and stored in appropriate bulk containers (drums, etc.), and temporarily staged at a designated waste storage area. Any full or partially filled containers will be appropriately labeled after the completion of the work.

Construction and decontamination water, if any, will be collected and disposed of along with all other wastewater generated.

### **TABLES**

- 1. Field and Laboratory QA Summary
- 2. Field and Quality Control Sampling Summary
- 3. Preservation, Holding Times and Sample Containers
- 4. Laboratory Reporting Limits for Soil Samples

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Table 1. Field and Laboratory QC Summary

QC Check Type	Minimum Frequency	Use
Field QC		
 Duplicate	1 per matrix per 20 samples or SDG*	Precision
Trip Blank	1 per VOC cooler	Sensitivity
Field Blank	1 per matrix per 20 samples	Sensitivity
Matrix Spike/Matrix Spike Duplicate/Matrix Duplicate*	1 per matrix per 20 samples or SDG*	Accuracy/Precision
<u>Laboratory QC</u>		
Laboratory Control Sample	1 per matrix per SDG	Accuracy
Surrogate Spike	All organics samples	Accuracy
Laboratory Duplicate	1 per matrix per SDG	Precision
Method Blank	1 per matrix per SDG	Sensitivity

#### Notes:



<sup>\*</sup> SDG - Sample Delivery Group - Assumes a single extraction or preparation

<sup>\*\*</sup> Provided to lab by field sampling personnel

Table 2. Interim Remedial Measures Field and Quality Control Sampling Summary

		Field				Matrix	Spike	Total No.
Sample Medium	Target Analytes	Samples	Replicates <sup>1</sup>	Trip Blanks <sup>2</sup>	Field Blanks <sup>1</sup>	Spikes <sup>1</sup>	Duplicates <sup>1</sup>	of Samples
Soil , Waste Characterization		1 per 50						
		cubic yards,						
		then 1 per						
		100 cubic						
	TCL VOCs	yards	0	0	0	0	0	1
		2 per 500						
	TCL SVOCs	cubic yards	0	0	0	0	0	2
		2 per 500						
	TPH GRO	cubic yards	0	0	0	0	0	2
		2 per 500						
	TPH DRO	cubic yards	0	0	0	0	0	2
	TCLP (VOCs, SVOCs, Metals, Pesticides,	2 per 500						
	Herbicides)	cubic yards	0	0	0	0	0	2
		2 per 500						
	TAL Metals	cubic yards	0	0	0	0	0	2
		2 per 500						
	RCRA Characteristics	cubic yards	0	0	0	0	0	2
		2 per 500						
	PCBs	cubic yards	0	0	0	0	0	2

1 of 1

Totals are estimated based on scope of work as written, actual sample quantities may vary based on field conditions. QA/QC sample quantities will be adjusted accordingly.

NA - Not Applicable

PCBs - Polychlorinated Biphenyls

RCRA Characteristics - Ignitability, Corrosivity, and Reactivity

SVOCs - Semivolatile Organic Compounds

TAL - USEPA Contract Laboratory Program Target Analyte List

TCL - USEPA Contract Laboratory Program Target Compound List

TCLP - Toxicity Characteristics Leaching Procedure

TPH GRO - Total Petroleum Hydrocarbons - Gasoline Range Organics

TPH DRO - Total Petroleum Hydrocarbons - Diesel Range Organics

VOCs - Volatile Organic Compounds



<sup>&</sup>lt;sup>1</sup> Based on 1 per 20 samples or 1 per Sample Delivery Group (3 days max)

<sup>&</sup>lt;sup>2</sup> Based on 1 cooler per day

**Table 3. Preservation, Holding Times and Sample Containers** 

Analysis	Method	Matrix	Bottle Type	Preservation(s)	Holding Time(b)
TCL Volatile Organic Compounds (VOCs)	SW-846 8260C	Soil	1 - 1 Vial MeOH/2 Vial Water (via Encore)	Cool to 4°C	14 days from sample collection
TCL Semivolatile Organic Compounds (SVOCs)	SW-846 8270D	Soil	8 oz wide mouth glass, teflon lined cap	Cool to 4°C	14 days to extract, 40 days to analysis
Total Petroleum Hydrocarbons - Diesel Range Organics (DRO)	SW-846 8015B	Soil	8 oz wide mouth glass, teflon lined cap	Cool to 4°C	14 days from sample collection
Total Petroleum Hydrocarbons - Gasoline Range Organics (GRO)	SW-846 8015B	Soil	8 oz wide mouth glass, teflon lined cap	Cool to 4°C	14 days from sample collection
TAL Metals	SW-846 6010/7471	Soil	8 oz wide mouth glass	Cool to 4°C	6 months, except mercury (28 days)
Hexavalent Chromium	SW-846 7196A	Soil	4 oz wide mouth glass, teflon lined cap	Cool to 4°C	30 days to extract, 7 days for analysis
Total Cyanide	SW-846 9012B	Soil	4 oz wide mouth glass, teflon lined cap	Cool to 4°C	14 days
Pesticide and PCB Organic Compounds	SW-846 8081A/8082	Soil	4 oz wide mouth glass, teflon lined cap	Cool to 4°C	14 days to extract, 40 days for analysis
Herbicides	SW-846 8151A	Soil	4 oz wide mouth glass	Cool to 4°C	14 days to extract, 40 days for analysis
TCLP Acid Extractables Base Neutrals Herbicides Metals Pesticides Volatiles	SW-846 1311	Soil Soil Soil Soil Soil Soil	Wide-mouth plastic or glass; 2 oz. wide-mouth glass w/teflon lined cap	Cool to 4°C	14 days, except metals (6 months) and mercury (28 days)
RCRA Characteristics Ignitibility Reactive Cyanide Reactive Sulfide Corrosivity	SW-846 1020 SW-846 7332 SW-846 7342 SW-846 9045C	Soil Soil Soil Soil	Wide-mouth glass w/teflon lined cap	Cool to 4°C	N/A

<sup>&</sup>lt;sup>(a)</sup> All soil and groundwater samples to be preserved in ice during collection and transport



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<sup>(</sup>b) Days from date of sample collection.

TAL - Target Analyte List

TCL - USEPA Contract Laboratory Program Target Compound List



Roux Associates, Inc. TCL-SOIL METALS by 6010C (SOIL) Date Created: 06/15/17 Created By: Karyn Raymond File: PM3678-1 Page: 1

Analyte	CAS#	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Surrogate Criteria	Holding Time	Container
Aluminum, Total	7429-90-5	4	1.08	ma/ka	48-151	LOCKID	75-125	20	20	Ciliena	180 days	1 - Metals Only-Glass 60mL/2oz unpreserved
Antimony, Total	7440-36-0	2	0.152	mg/kg	1-208		75-125	20	20		180 days	1 - Metals Only-Glass 60mL/2oz unpreserved
Arsenic, Total	7440-38-2	0.4	0.0832	mg/kg	79-121		75-125	20	20		180 days	1 - Metals Only-Glass 60mL/2oz unpreserved
Barium, Total	7440-39-3	0.4	0.0696	mg/kg	83-117		75-125	20	20		180 days	1 - Metals Only-Glass 60mL/2oz unpreserved
Bervllium, Total	7440-41-7	0.2	0.0132	mg/kg	83-117		75-125	20	20		180 days	1 - Metals Only-Glass 60mL/2oz unpreserved
Cadmium, Total	7440-43-9	0.4	0.0392	mg/kg	83-117		75-125	20	20		180 days	1 - Metals Only-Glass 60mL/2oz unpreserved
Calcium, Total	7440-70-2	4	1.4	mg/kg	81-119		75-125	20	20		180 days	1 - Metals Only-Glass 60mL/2oz unpreserved
Chromium, Total	7440-47-3	0.4	0.0384	mg/kg	80-120		75-125	20	20		180 days	1 - Metals Only-Glass 60mL/2oz unpreserved
Cobalt, Total	7440-48-4	0.8	0.0664	mg/kg	84-115		75-125	20	20		180 days	1 - Metals Only-Glass 60mL/2oz unpreserved
Copper, Total	7440-50-8	0.4	0.1032	ma/ka	81-118		75-125	20	20		180 days	1 - Metals Only-Glass 60mL/2oz unpreserved
Iron, Total	7439-89-6	2	0.3612	ma/ka	45-155		75-125	20	20		180 days	1 - Metals Only-Glass 60mL/2oz unpreserved
Lead, Total	7439-92-1	2	0.1072	ma/ka	81-117		75-125	20	20		180 days	1 - Metals Only-Glass 60mL/2oz unpreserved
Magnesium, Total	7439-95-4	4	0.616	mg/kg	76-124		75-125	20	20		180 days	1 - Metals Only-Glass 60mL/2oz unpreserved
Manganese, Total	7439-96-5	0.4	0.0636	ma/ka	81-117		75-125	20	20		180 days	1 - Metals Only-Glass 60mL/2oz unpreserved
Nickel, Total	7440-02-0	1	0.0968	mg/kg	83-117		75-125	20	20		180 days	1 - Metals Only-Glass 60mL/2oz unpreserved
Potassium, Total	7440-09-7	100	5.76	ma/ka	71-129		75-125	20	20		180 days	1 - Metals Only-Glass 60mL/2oz unpreserved
Selenium, Total	7782-49-2	0.8	0.1032	ma/ka	78-122		75-125	20	20		180 days	1 - Metals Only-Glass 60mL/2oz unpreserved
Silver, Total	7440-22-4	0.4	0.1132	ma/ka	75-124		75-125	20	20		180 days	1 - Metals Only-Glass 60mL/2oz unpreserved
Sodium, Total	7440-23-5	80	1.26	ma/ka	72-127		75-125	20	20		180 days	1 - Metals Only-Glass 60mL/2oz unpreserved
Thallium, Total	7440-28-0	0.8	0.126	ma/ka	80-120		75-125	20	20		180 days	1 - Metals Only-Glass 60mL/2oz unpreserved
Vanadium, Total	7440-62-2	0.4	0.0812	mg/kg	78-122		75-125	20	20		180 days	1 - Metals Only-Glass 60mL/2oz unpreserved
Zinc, Total	7440-66-6	2	0.1172	mg/kg	82-118		75-125	20	20		180 days	1 - Metals Only-Glass 60mL/2oz unpreserved
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Please Note that the RL information provided in this table is calculated using a 100% Solids factor. (Soil/Solids only)

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Roux Associates, Inc. TCL-SOIL METALS by 7471B (SOIL) Date Created: 06/15/17 Created By: Karyn Raymond File: PM3678-1 Page: 1

Analyte ercury, Total	CAS# 7439-97-6	RL 0.08	MDL 0.016896	Units mg/kg	72-128	LCS RPD	80-120	MS RPD 20	Duplicate RPD 20	Surrogate Criteria	Holding Time 28 days	Container - Metals Only-Glass 60mL/2oz unpreserve
			information provid									

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2611.0002Y.109WKB-APA



Roux Associates, Inc. TCL-SOIL
TCL Pesticides - EPA 8081B (SOIL) Date Created: 06/15/17 Created By: Karyn Raymond File: PM3678-1 Page: 1

Holding Time: 14 days Container/Sample Preservation: 1 - Glass 250ml/8oz unpreserved

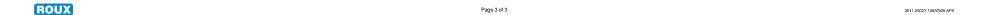
Analyte	CAS#	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Surrogate Criteria	
Delta-BHC	319-86-8	7.9992	1.56651	ua/ka	30-150	30	30-150	50	50	Criteria	
Lindane	58-89-9	3.333	1.489851	ug/kg	30-150	30	30-150	50	50		
Alpha-BHC	319-84-6	3.333	0.946572	ug/kg	30-150	30	30-150	50	50		
Beta-BHC	319-85-7	7,9992	3.03303	ug/kg	30-150	30	30-150	50	50		
Heptachlor	76-44-8	3.9996	1.793154	ug/kg	30-150	30	30-150	50	50		
Aldrin	309-00-2	7.9992	2.816385	ug/kg	30-150	30	30-150	50	50		
Heptachlor epoxide	1024-57-3	14.9985	4.49955	ug/kg	30-150	30	30-150	50	50		
Endrin	72-20-8	3.333	1.36653	ug/kg	30-150	30	30-150	50	50		
Endrin aldehyde	7421-93-4	9.999	3.49965	ug/kg	30-150	30	30-150	50	50		
Endrin ketone	53494-70-5	7,9992	2.059794	ua/ka	30-150	30	30-150	50	50		
Dieldrin	60-57-1	4.9995	2.49975	ug/kg	30-150	30	30-150	50	50		
4.4'-DDE	72-55-9	7.9992	1.849815	ug/kg	30-150	30	30-150	50	50		
4,4'-DDD	72-54-8	7.9992	2.853048	ug/kg	30-150	30	30-150	50	50		†
4,4'-DDT	50-29-3	14.9985	6.43269	ug/kg	30-150	30	30-150	50	50		
Endosulfan I	959-98-8	7.9992	1.889811	ug/kg ug/kg	30-150	30	30-150	50	50		
Endosulfan II	33213-65-9	7.9992	2.673066	ug/kg	30-150	30	30-150	50	50		
Endosulfan sulfate	1031-07-8	3.333	1.523181	ug/kg	30-150	30	30-150	50	50		
Methoxychlor	72-43-5	14.9985	4.6662	ug/kg ug/kg	30-150	30	30-150	50	50		
Toxaphene	8001-35-2	149.985	41,9958	ug/kg	30-150	30	30-150	50	50		
cis-Chlordane	5103-71-9	9.999	2.786388	ug/kg	30-150	30	30-150	50	50		
trans-Chlordane	5103-71-9	9.999	2.639736	ug/kg ug/kg	30-150	30	30-150	50	50		
Chlordane	57-74-9	64.9935	26.49735	ug/kg	30-150	30	30-150	50	50		
2,4,5,6-Tetrachloro-m-xylene	877-09-8	04.5555	20.43733	ug/kg	30-130	30	30-130	30	30	30-150	
Decachlorobiphenvl	2051-24-3						1			30-150	
Decachioropiphenyi	2031-24-3						1			30-130	
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Roux Associates, Inc. TCL-SOIL
TCL Volatiles - EPA 8260C/5035 High&Low (SOIL) Date Created: 06/15/17 Created By: Karyn Raymond File: PM3678-1 Page: 1

Holding Time: 14 days Container/Sample Preservation: 1 - 1 Vial MeOH/2 Vial Water

					LCS Criteria		MS Criteria		Duplicate RPD	Surrogate	
Analyte	CAS#	RL	MDL	Units		LCS RPD		MS RPD	-	Criteria	
Methylene chloride	75-09-2	10	1.65	ug/kg	70-130	30	70-130	30	30		
1,1-Dichloroethane	75-34-3	1.5	0.27	ug/kg	70-130	30	70-130	30	30		
Chloroform	67-66-3	1.5	0.37	ug/kg	70-130	30	70-130	30	30		
Carbon tetrachloride	56-23-5	1	0.345	ug/kg	70-130	30	70-130	30	30		
1,2-Dichloropropane	78-87-5	3.5	0.228	ug/kg	70-130	30	70-130	30	30		
Dibromochloromethane	124-48-1	1	0.176	ug/kg	70-130	30	70-130	30	30		
1,1,2-Trichloroethane	79-00-5	1.5	0.313	ug/kg	70-130	30	70-130	30	30		
Tetrachloroethene	127-18-4	1	0.302	ug/kg	70-130	30	70-130	30	30		
Chlorobenzene	108-90-7	1	0.348	ug/kg	70-130	30	70-130	30	30		
Trichlorofluoromethane	75-69-4	5	0.417	ug/kg	70-139	30	70-139	30	30		
1,2-Dichloroethane	107-06-2	1	0.246	ug/kg	70-130	30	70-130	30	30		
1,1,1-Trichloroethane	71-55-6	1	0.35	ug/kg	70-130	30	70-130	30	30		
Bromodichloromethane	75-27-4	1	0.308	ug/kg	70-130	30	70-130	30	30		
trans-1,3-Dichloropropene	10061-02-6	1	0.208	ug/kg	70-130	30	70-130	30	30		
cis-1,3-Dichloropropene	10061-01-5	1	0.231	ug/kg	70-130	30	70-130	30	30		
1,3-Dichloropropene, Total	542-75-6	1	0.208	ug/kg				30	30		
1.3-Dichloropropene, Total	542-75-6	1	0.208	ua/ka				30	30		
1,1-Dichloropropene	563-58-6	5	0.328	ug/kg	70-130	30	70-130	30	30		
Bromoform	75-25-2	4	0.237	ug/kg	70-130	30	70-130	30	30		
1.1.2.2-Tetrachloroethane	79-34-5	1	0.298	ua/ka	70-130	30	70-130	30	30		
Benzene	71-43-2	1	0.193	ua/ka	70-130	30	70-130	30	30		
Toluene	108-88-3	1.5	0.195	ua/ka	70-130	30	70-130	30	30		
Ethylbenzene	100-41-4	1	0.17	ua/ka	70-130	30	70-130	30	30		
Chloromethane	74-87-3	5	0.436	ua/ka	52-130	30	52-130	30	30		
Bromomethane	74-83-9	2	0.338	ug/kg	57-147	30	57-147	30	30		
Vinvl chloride	75-01-4	2	0.315	ua/ka	67-130	30	67-130	30	30		
Chloroethane	75-00-3	2	0.316	ua/ka	50-151	30	50-151	30	30		
1.1-Dichloroethene	75-35-4	1	0.372	ug/kg	65-135	30	65-135	30	30		
trans-1.2-Dichloroethene	156-60-5	1.5	0.241	ug/kg	70-130	30	70-130	30	30		
Trichloroethene	79-01-6	1	0.302	ua/ka	70-130	30	70-130	30	30		
1.2-Dichlorobenzene	95-50-1	5	0.182	ua/ka	70-130	30	70-130	30	30		
1.3-Dichlorobenzene	541-73-1	5	0.218	ua/ka	70-130	30	70-130	30	30		
1.4-Dichlorobenzene	106-46-7	5	0.182	ug/kg	70-130	30	70-130	30	30		
Methyl tert butyl ether	1634-04-4	2	0.153	ug/kg	66-130	30	66-130	30	30		
p/m-Xvlene	179601-23-1	2	0.351	ug/kg	70-130	30	70-130	30	30		
o-Xylene	95-47-6	2	0.338	ug/kg	70-130	30	70-130	30	30		1
Xvlene (Total)	1330-20-7	2	0.338	ug/kg	. 0 100	50	100	30	30		
Xvlene (Total)	1330-20-7	2	0.338	ug/kg			1	30	30		1
cis-1.2-Dichloroethene	156-59-2	1	0.342	ug/kg	70-130	30	70-130	30	30		<u>†</u>
1,2-Dichloroethene (total)	540-59-0	1	0.241	ug/kg	70 100	- 50	70 100	30	30		<u>†</u>
1,2-Dichloroethene (total)	540-59-0	1	0.241	ug/kg			1	30	30		<u>†</u>
Dibromomethane	74-95-3	10	0.239	ug/kg ug/kg	70-130	30	70-130	30	30		<del> </del>
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Roux Associates, Inc. TCL-SOIL
TCL Volatiles - EPA 8260C/5035 High&Low (SOIL) Date Created: 06/15/17 Created By: Karyn Raymond File: PM3678-1 Page: 2

Holding Time: 14 days Container/Sample Preservation: 1 - 1 Vial MeOH/2 Vial Water

									I	Surrogate	
Analyte	CAS#	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Criteria	
Styrene	100-42-5	2	0.401	ug/kg	70-130	30	70-130	30	30		
Dichlorodifluoromethane	75-71-8	10	0.5	ug/kg	30-146	30	30-146	30	30		
Acetone	67-64-1	10	2.29	ug/kg	54-140	30	54-140	30	30		
Carbon disulfide	75-15-0	10	1.1	ug/kg	59-130	30	59-130	30	30		
2-Butanone	78-93-3	10	0.69	ug/kg	70-130	30	70-130	30	30		
Vinyl acetate	108-05-4	10	0.153	ug/kg	70-130	30	70-130	30	30		
4-Methyl-2-pentanone	108-10-1	10	0.244	ug/kg	70-130	30	70-130	30	30		
1,2,3-Trichloropropane	96-18-4	10	0.177	ug/kg	68-130	30	68-130	30	30		
2-Hexanone	591-78-6	10	0.666	ug/kg	70-130	30	70-130	30	30		
Bromochloromethane	74-97-5	5	0.357	ug/kg	70-130	30	70-130	30	30		
2,2-Dichloropropane	594-20-7	5	0.45	ug/kg	70-130	30	70-130	30	30		
1,2-Dibromoethane	106-93-4	4	0.199	ug/kg	70-130	30	70-130	30	30		
1,3-Dichloropropane	142-28-9	5	0.183	ug/kg	69-130	30	69-130	30	30		
1,1,1,2-Tetrachloroethane	630-20-6	1	0.318	ug/kg	70-130	30	70-130	30	30		
Bromobenzene	108-86-1	5	0.219	ug/kg	70-130	30	70-130	30	30		
n-Butylbenzene	104-51-8	1	0.228	ug/kg	70-130	30	70-130	30	30		
sec-Butylbenzene	135-98-8	1	0.217	ug/kg	70-130	30	70-130	30	30		
tert-Butylbenzene	98-06-6	5	0.247	ug/kg	70-130	30	70-130	30	30		
o-Chlorotoluene	95-49-8	5	0.221	ug/kg	70-130	30	70-130	30	30		
p-Chlorotoluene	106-43-4	5	0.183	ug/kg	70-130	30	70-130	30	30		
1,2-Dibromo-3-chloropropane	96-12-8	5	0.396	ug/kg	68-130	30	68-130	30	30		
Hexachlorobutadiene	87-68-3	5	0.348	ug/kg	67-130	30	67-130	30	30		
Isopropylbenzene	98-82-8	1	0.194	ug/kg	70-130	30	70-130	30	30		
p-Isopropyltoluene	99-87-6	1	0.202	ug/kg	70-130	30	70-130	30	30		
Naphthalene	91-20-3	5	0.138	ug/kg	70-130	30	70-130	30	30		
Acrylonitrile	107-13-1	10	0.514	ug/kg	70-130	30	70-130	30	30		
n-Propylbenzene	103-65-1	1	0.215	ug/kg	70-130	30	70-130	30	30		
1,2,3-Trichlorobenzene	87-61-6	5	0.251	ug/kg	70-130	30	70-130	30	30		
1,2,4-Trichlorobenzene	120-82-1	5	0.215	ug/kg	70-130	30	70-130	30	30		
1,3,5-Trimethylbenzene	108-67-8	5	0.161	ug/kg	70-130	30	70-130	30	30		
1,2,4-Trimethylbenzene	95-63-6	5	0.186	ug/kg	70-130	30	70-130	30	30		
1,4-Dioxane	123-91-1	40	14.4	ug/kg	65-136	30	65-136	30	30		
1,4-Diethylbenzene	105-05-5	4	4	ug/kg	70-130	30	70-130	30	30		
4-Ethyltoluene	622-96-8	4	0.234	ug/kg	70-130	30	70-130	30	30		
1,2,4,5-Tetramethylbenzene	95-93-2	4	0.156	ug/kg	70-130	30	70-130	30	30		
Ethyl ether	60-29-7	5	0.26	ug/kg	67-130	30	67-130	30	30		
trans-1,4-Dichloro-2-butene	110-57-6	5	0.392	ug/kg	70-130	30	70-130	30	30		
1,2-Dichloroethane-d4	17060-07-0									70-130	
2-Chloroethoxyethane							ĺ				
Toluene-d8	2037-26-5									70-130	
4-Bromofluorobenzene	460-00-4									70-130	
Dibromofluoromethane	1868-53-7						1			70-130	

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Roux Associates, Inc. TCL-SOIL
NYTCL Semivolatiles - EPA 8270D (SOIL) Date Created: 06/15/17 Created By: Karyn Raymond File: PM3678-1 Page: 1

Holding Time: 14 days Container/Sample Preservation: 1 - Glass 250ml/8oz unpreserved

Analyte	CAS#	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Surrogate Criteria	
Acenaphthene	83-32-9	0.1332	0.0172494	ma/ka	31-137	50	31-137	50	50	Citteria	
1,2,4-Trichlorobenzene	120-82-1	0.1665	0.0190476	ma/ka	38-107	50	38-107	50	50		
Hexachlorobenzene	118-74-1	0.0999	0.018648	ma/ka	40-140	50	40-140	50	50		
Bis(2-chloroethyl)ether	111-44-4	0.14985	0.0225774	ma/ka	40-140	50	40-140	50	50		
2-Chloronaphthalene	91-58-7	0.1665	0.0165168	ma/ka	40-140	50	40-140	50	50		
1.2-Dichlorobenzene	95-50-1	0.1665	0.0299034	ma/ka	40-140	50	40-140	50	50		
1,3-Dichlorobenzene	541-73-1	0.1665	0.028638	ma/ka	40-140	50	40-140	50	50		
1.4-Dichlorobenzene	106-46-7	0.1665	0.0290709	ma/ka	28-104	50	28-104	50	50		
3.3'-Dichlorobenzidine	91-94-1	0.1665	0.044289	ma/ka	40-140	50	40-140	50	50		
2.4-Dinitrotoluene	121-14-2	0.1665	0.0333	ma/ka	28-89	50	28-89	50	50		
2.6-Dinitrotoluene	606-20-2	0.1665	0.0285714	ma/ka	40-140	50	40-140	50	50		
Fluoranthene	206-44-0	0.0999	0.0191142	ma/ka	40-140	50	40-140	50	50		
4-Chlorophenyl phenyl ether	7005-72-3	0.1665	0.0178155	mg/kg	40-140	50	40-140	50	50		
4-Bromophenyl phenyl ether	101-55-3	0.1665	0.0254079	ma/ka	40-140	50	40-140	50	50		
Bis(2-chloroisopropyl)ether	108-60-1	0.1998	0.0284382	ma/ka	40-140	50	40-140	50	50		
Bis(2-chloroethoxy)methane	111-91-1	0.17982	0.0166833	mg/kg	40-117	50	40-117	50	50		
Hexachlorobutadiene	87-68-3	0.1665	0.0243756	ma/ka	40-140	50	40-140	50	50		
Hexachlorocyclopentadiene	77-47-4	0.47619	0.150849	ma/ka	40-140	50	40-140	50	50		
Hexachloroethane	67-72-1	0.1332	0.0269397	ma/ka	40-140	50	40-140	50	50		
Isophorone	78-59-1	0.14985	0.0216117	ma/ka	40-140	50	40-140	50	50		
Naphthalene	91-20-3	0.1665	0.0202797	ma/ka	40-140	50	40-140	50	50		
Nitrobenzene	98-95-3	0.14985	0.024642	mg/kg	40-140	50	40-140	50	50		
NitrosoDiPhenvlAmine(NDPA)/DPA	86-30-6	0.1332	0.0189477	ma/ka	36-157	50	36-157	50	50		
n-Nitrosodi-n-propylamine	621-64-7	0.1665	0.0257076	ma/ka	32-121	50	32-121	50	50		
Bis(2-Ethylhexyl)phthalate	117-81-7	0.1665	0.057609	ma/ka	40-140	50	40-140	50	50		
Butyl benzyl phthalate	85-68-7	0.1665	0.041958	ma/ka	40-140	50	40-140	50	50		
Di-n-butylphthalate	84-74-2	0.1665	0.0315684	ma/ka	40-140	50	40-140	50	50		
Di-n-octylphthalate	117-84-0	0.1665	0.05661	ma/ka	40-140	50	40-140	50	50		
Diethyl phthalate	84-66-2	0.1665	0.0154179	ma/ka	40-140	50	40-140	50	50		
Dimethyl phthalate	131-11-3	0.1665	0.034965	ma/ka	40-140	50	40-140	50	50		
Benzo(a)anthracene	56-55-3	0.0999	0.0187479	ma/ka	40-140	50	40-140	50	50		
Benzo(a)pyrene	50-32-8	0.1332	0.040626	ma/ka	40-140	50	40-140	50	50		
Benzo(b)fluoranthene	205-99-2	0.0999	0.0280386	ma/ka	40-140	50	40-140	50	50		
Benzo(k)fluoranthene	207-08-9	0.0999	0.02664	ma/ka	40-140	50	40-140	50	50		
Chrysene	218-01-9	0.0999	0.017316	ma/ka	40-140	50	40-140	50	50		
Acenaphthylene	208-96-8	0.1332	0.0257076	ma/ka	40-140	50	40-140	50	50		
Anthracene	120-12-7	0.0999	0.0324675	ma/ka	40-140	50	40-140	50	50		
Benzo(ghi)perylene	191-24-2	0.1332	0.0195804	mg/kg	40-140	50	40-140	50	50		
Fluorene	86-73-7	0.1665	0.0161838	ma/ka	40-140	50	40-140	50	50		
Phenanthrene	85-01-8	0.0999	0.0202464	ma/ka	40-140	50	40-140	50	50		i
Dibenzo(a,h)anthracene	53-70-3	0.0999	0.0192474	mg/kg	40-140	50	40-140	50	50		
Indeno(1,2,3-cd)Pyrene	193-39-5	0.1332	0.0232101	ma/ka	40-140	50	40-140	50	50		

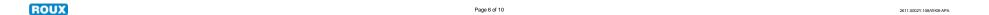
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Roux Associates, Inc. TCL-SOIL
NYTCL Semivolatiles - EPA 8270D (SOIL) Date Created: 06/15/17 Created By: Karyn Raymond File: PM3678-1 Page: 2

Holding Time: 14 days Container/Sample Preservation: 1 - Glass 250ml/8oz unpreserved

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Analyte	CAS#	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MSRPD	Duplicate RPD	Criteria		
Pyrene	129-00-0	0.0999	0.0165501	ma/ka	35-142	50	35-142	50	50	Ontona		
Biphenyl	92-52-4	0.37962	0.038628	mg/kg	54-104	50	54-104	50	50			
4-Chloroaniline	106-47-8	0.1665	0.030303	ma/ka	40-140	50	40-140	50	50			
2-Nitroaniline	88-74-4	0.1665	0.0321012	ma/ka	47-134	50	47-134	50	50			
3-Nitroaniline	99-09-2	0.1665	0.0314019	ma/ka	26-129	50	26-129	50	50			
4-Nitroaniline	100-01-6	0.1665	0.068931	mg/kg	41-125	50	41-125	50	50			
Dibenzofuran	132-64-9	0.1665	0.0157509	mg/kg	40-140	50	40-140	50	50		İ	
2-Methylnaphthalene	91-57-6	0.1998	0.0201132	mg/kg	40-140	50	40-140	50	50			
1,2,4,5-Tetrachlorobenzene	95-94-3	0.1665	0.0173826	mg/kg	40-117	50	40-117	50	50		İ	
Acetophenone	98-86-2	0.1665	0.0206127	ma/ka	14-144	50	14-144	50	50			
2,4,6-Trichlorophenol	88-06-2	0.0999	0.0315684	mg/kg	30-130	50	30-130	50	50			
P-Chloro-M-Cresol	59-50-7	0.1665	0.0248085	mg/kg	26-103	50	26-103	50	50		İ	
2-Chlorophenol	95-57-8	0.1665	0.0196803	mg/kg	25-102	50	25-102	50	50			
2.4-Dichlorophenol	120-83-2	0.14985	0.0267732	ma/ka	30-130	50	30-130	50	50			
2,4-Dimethylphenol	105-67-9	0.1665	0.054945	mg/kg	30-130	50	30-130	50	50		İ	
2-Nitrophenol	88-75-5	0.35964	0.062604	mg/kg	30-130	50	30-130	50	50			
4-Nitrophenol	100-02-7	0.2331	0.067932	mg/kg	11-114	50	11-114	50	50		İ	
2,4-Dinitrophenol	51-28-5	0.7992	0.077589	mg/kg	4-130	50	4-130	50	50			
4,6-Dinitro-o-cresol	534-52-1	0.4329	0.07992	mg/kg	10-130	50	10-130	50	50			
Pentachlorophenol	87-86-5	0.1332	0.03663	mg/kg	17-109	50	17-109	50	50		İ	
Phenol	108-95-2	0.1665	0.0251415	mg/kg	26-90	50	26-90	50	50			
2-Methylphenol	95-48-7	0.1665	0.0258075	mg/kg	30-130.	50	30-130.	50	50			
3-Methylphenol/4-Methylphenol	106-44-5	0.23976	0.0260739	mg/kg	30-130	50	30-130	50	50			
2,4,5-Trichlorophenol	95-95-4	0.1665	0.0319014	mg/kg	30-130	50	30-130	50	50			
Benzoic Acid	65-85-0	0.53946	0.168498	mg/kg	10-110	50	10-110	50	50			
Benzyl Alcohol	100-51-6	0.1665	0.050949	mg/kg	40-140	50	40-140	50	50			
Carbazole	86-74-8	0.1665	0.0161838	mg/kg	54-128	50	54-128	50	50			
2-Fluorophenol	367-12-4									25-120		
Phenol-d6	13127-88-3									10-120		
Nitrobenzene-d5	4165-60-0									23-120		
2-Fluorobiphenyl	321-60-8									30-120		
2,4,6-Tribromophenol	118-79-6									10-136		
4-Terphenyl-d14	1718-51-0									18-120		
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Roux Associates, Inc. TCL-SOIL Herbicides -EPA 8151A (SOIL) Date Created: 06/15/17 Created By: Karyn Raymond File: PM3678-1 Page: 1

Holding Time: 14 days Container/Sample Preservation: 1 - Glass 250ml/8oz unpreserved

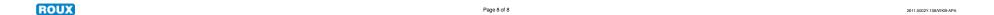
Analyte	CAS#	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Surrogate Criteria		
2,4-D 2,4,5-T 2,4,5-TP (Silvex)	CAS # 94-75-7	RL 166.5	MDL 10.4895	ug/kg	30-150	30	30-150	30	30	Ontona		
2.4.5-T	93-76-5	166.5	5.1615	ug/kg	30-150	30 30	30-150	30 30	30			
2.4.5-TP (Silvex)	93-72-1	166.5	4.4289	ug/kg	30-150	30	30-150	30	30			
DCAA	19719-28-9			- 22 - 22						30-150		
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Roux Associates, Inc. TCL-SOIL
TCL PCBs - EPA 8082A (SOIL) Date Created: 06/15/17 Created By: Karyn Raymond File: PM3678-1 Page: 1

Holding Time: 14 days Container/Sample Preservation: 1 - Glass 250ml/8oz unpreserved

Analyte	CAS#	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Surrogate Criteria		
Aroclor 1016	12674-11-2	33.5	2.6465	ug/kg	40-140	50	40-140	50	50			
Aroclor 1221	11104-28-2	33.5	3.0887	ug/kg	40-140	50	40-140	50	50			
Aroclor 1232	11141-16-5	33.5	3.9262	ug/kg	40-140	50	40-140	50	50			
Aroclor 1242	53469-21-9	33.5	4.1004	ug/kg	40-140	50	40-140	50	50			
Aroclor 1248	12672-29-6	33.5	2.8274	ug/kg	40-140	50	40-140	50	50			
Aroclor 1254	11097-69-1	33.5	2.7537	ug/kg	40-140	50	40-140	50	50			
Aroclor 1260	11096-82-5	33.5	2.5527	ug/kg	40-140	50	40-140	50	50			
Aroclor 1262	37324-23-5	33.5	1.6616	ug/kg	40-140	50	40-140	50	50			
Aroclor 1268	11100-14-4	33.5	4.8575	ug/kg	40-140	50	40-140	50	50			
PCBs, Total	1336-36-3	33.5	1.6616	ug/kg				50	50			
PCBs, Total	1336-36-3	33.5	1.6616	ug/kg				50	50			
2,4,5,6-Tetrachloro-m-xylene	877-09-8									30-150		
Decachlorobiphenyl	2051-24-3									30-150		
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Roux Associates, Inc. TCL-SOIL WETCHEM (SOIL) Date Created: 06/15/17 Created By: Karyn Raymond File: PM3678-1 Page: 1

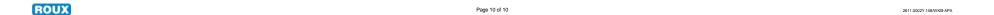
Analyte	CAS#	RL	MDL	Units	LCS Criteria	LCS RPD	MS Criteria	MS RPD	Duplicate RPD	Method	Holding Time	Container
Cyanide, Total	57-12-5	1	0.166	mg/kg	80-120	35	75-125	35	35	9010C/9012A	14 days	1 - Glass 250ml/8oz unpreserved
Chromium, Hexavalent	18540-29-9	0.8	0.16	mg/kg	80-120	20	75-125	20	20	7196A	30 days	1 - Glass 120ml/4oz unpreserved
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# **Quality Assurance Project Plan 1221 Spofford Avenue, Bronx, NY**

## **APPENDICES**

- A. Professional Profiles
- B. Roux Standard Operating Procedures
- C. QA Glossary

2611.0002Y.108/APA-CVRS ROUX

# Quality Assurance Project Plan 1221 Spofford Avenue, Bronx, NY

## **APPENDIX A**

**Professional Profiles** 

2611.0002Y.108/APA-CVRS ROUX



## Dana M. Hignell Senior Engineer

#### **TECHNICAL SPECIALTIES**

Engineering services for the investigation, design, construction, and operation and maintenance of remedial systems for the treatment of contaminated soil, sediment, and groundwater. Remedial designs have included excavation, groundwater pump and treat systems, air sparging with soil vapor extraction, vapor barriers and subslab depressurization systems, and landfill soil cover systems.

#### **EXPERIENCE SUMMARY**

Over seventeen years of experience: Staff, Project, and Senior Engineer with Roux Associates, Inc.

#### **CREDENTIALS**

B.S., Chemical Engineering, Cornell University, 2000.OSHA 40 hour Health & Safety Course, 2000.OSHA 8-hour Health & Safety Refresher Course, 2000-Present.

#### **KEY PROJECTS**

- Senior Engineer for the design and implementation of a passive product-recovery system using horizontal recovery wells at a former bus garage in Newark, New Jersey. The remedial action also included excavation and offsite disposal of approximately 7,000 tons of petroleum contaminated soil, and in-situ chemical oxidation to treat residual soil and groundwater contamination.
- Senior Engineering managing the investigation, design and implementation of product-recovery skimming systems for a former petroleum refinery in Queens, New York. Approximately 80,000 gallons of product has been recovered to date.
- Senior Engineer for the design of a sub-slab depressurization system with vapor barrier for the construction of a 19 story residential building in Brooklyn, New York.
- Senior Engineer for the investigation, design and implementation of a soil remediation project at a Former Oil Terminal in Sag Harbor, New York. The remedy completed includes excavation and offsite disposal of approximately 2,000 tons of petroleum contaminated soil in an active roadway surrounded by underground utilities.
- Senior Engineer for the investigation, design, and implementation of a soil remediation project at a 4-acre Former Oil Terminal in Cold Spring Harbor, New York. The remedy completed includes excavation and offsite disposal of approximately 20,000 tons of petroleum contaminated and/or hazardous lead contaminated soil in accordance with the future use of the site under an Environmental Easement. Additional activities completed at the site included asbestos remediation followed by building demolition, UST removal, and cesspool remediation.
- Project Engineer for the complete design for a 9-acre landfill in Rensselaer, New York as part of the

- NYSDEC Voluntary Cleanup Program. The design was in accordance with the future use of the Site as a landfill with an integrated wildlife habitat vegetative cap and included hot spot soil excavation and installation of a vegetative cap.
- Project Engineer for the design of a soil and groundwater remediation system for a Former Oil Terminal in Oceanside, New York. A risk-based remedial approach that called for the remediation of "hot spot" source area soils, and mass-reduction of VOCs in groundwater was successfully utilized for the Site. To address the soil contamination in the source areas, "hot spot" soil excavation was completed. A groundwater pump and treat system was designed, constructed, and continues to be operated and maintained to address the VOC contaminants in groundwater. The system consists of 7 recovery wells, an oil/water separator, and a packed column air stripping tower. Over 11 million gallons of groundwater have been recovered and treated.
- Project Engineer for the design and start up of a soil vapor extraction (SVE) and air sparge (AS) system at an 11-acre active Oil Terminal in Glenwood Landing, NY. The system was installed to address soil and groundwater contaminants and consists of 4 horizontal SVE wells and 8 AS wells. The recovered soil vapor is treated by carbon units before being discharged. Approximately 12,000 pounds of hydrocarbon have been recovered since system start up.
- Project Engineer for the design and start up of a soil vapor extraction (SVE) and air sparge (AS) system at an 11-acre active Oil Terminal in Inwood, NY. The system was installed to address soil and groundwater contaminants and consists of 4 vertical SVE wells and 6 AS wells. The recovered soil vapor is treated by carbon units before being discharged. Approximately 32,000 pounds of hydrocarbon have been recovered since system start up.

#### Operation and Maintenance (O&M) Experience:

- \* Project Engineer responsible for the O&M and monitoring of a SVE system and a dual-pump, product-recovery system at an active Oil Terminal in Inwood, New York. O&M activities included system operation and maintenance, performance monitoring, and preparation of quarterly status reports for submission to the NYSDEC. The SVE system consists of 5 SVE wells and was designed, constructed, operated and maintained for a period of approximately 6 years. The SVE system was permanently shut down and this area of the Site is currently in the post-remediation monitoring phase. The dual-pump system, including groundwater and product recovery and packed column air stripping towers, is currently still in operation.
- \* Project Engineer responsible for the operation and maintenance of soil and groundwater remediation systems for an active Oil Terminal in Glenwood



## Dana M. Hignell Senior Engineer

Landing, New York. A groundwater pump and treat system, consisting of 1 recovery well, two packed column air stripping towers, bag filters and granular activated carbon units, has been in operation at the Site to address VOC contaminants in groundwater. In addition, a SVE/AS system, previously installed, was upgraded to further address soil and groundwater contaminants at the Site boundaries. The SVE system consisted of vertical wells in an area of shallow groundwater. The system was upgraded with 7 horizontal wells and an additional 5 AS wells were Following an on-site diesel spill of approximately 5,000 gallons in 2005, free-product recovery efforts were implemented, including removal of saturated soils and installation of a freeproduct recovery system.

- \* Staff Engineer responsible for the O&M and monitoring of a SVE/AS system for nationwide distribution center in Brooklyn, New York as part of the NYSDEC Voluntary Cleanup Program. O&M activities included system operation and maintenance, performance monitoring, soil gas monitoring, quarterly monitoring, and preparation of quarterly and annual status reports for submission to the NYSDEC. The SVE and AS system consists of 8 SVE wells and 17 AS wells and was designed, constructed, operated and maintained for a period of approximately 3 years. The SVE and AS system is permanently shut down and the Site is currently in the post-remediation monitoring phase.
- \* Staff Engineer responsible for the O&M of a 430-gpm, dual-pump, product-recovery system in Greenpoint, Brooklyn, New York. Processes and system maintained include dual-pump ground-water and product recovery, low profile air strippers and a catalytic oxidation unit. The Site encompasses one of the nation's largest petroleum releases (18 million gallons).

## **UST Experience:**

- \* Project Engineer for the management of the excavation and removal of a 10,000-gallon UST and four ASTs ranging from 284,000-gallon capacity to 976,000-gallon capacity at a former Oil Terminal in Cold Spring Harbor, New York. The scope of work entailed preparation of a UST and AST closure work plan, project management of the field work, post-excavation and tank footprint sampling and preparation of a UST and AST Closure Report.
- \* Project Engineer for the excavation oversight of a 2,000-gallon heating oil UST at an active Oil Terminal in Glenwood Landing, New York. Field oversight included post-excavation and waste characterization soil sampling, health and safety monitoring, supervision during the removal, cleaning, and disposal of the USTs and preparation of a Closure Report.
- \* Project Engineer for the excavation oversight of a 2,000-gallon heating oil UST at an active Oil Terminal in Inwood, New York. Field oversight included postexcavation and waste characterization soil sampling,

health and safety monitoring, supervision during the removal, cleaning, and disposal of the USTs and preparation of a Closure Report. Also included was the management and field oversight of the closure of an in ground oil/water separator at an active Oil Terminal Inwood, New York. The scope of work entailed preparation of an oil/water separator closure work plan, project management of the field work, excavation of petroleum contaminated soils associated with the separator, post-excavation sampling, and preparation of an Oil/Water Separator Closure Report.

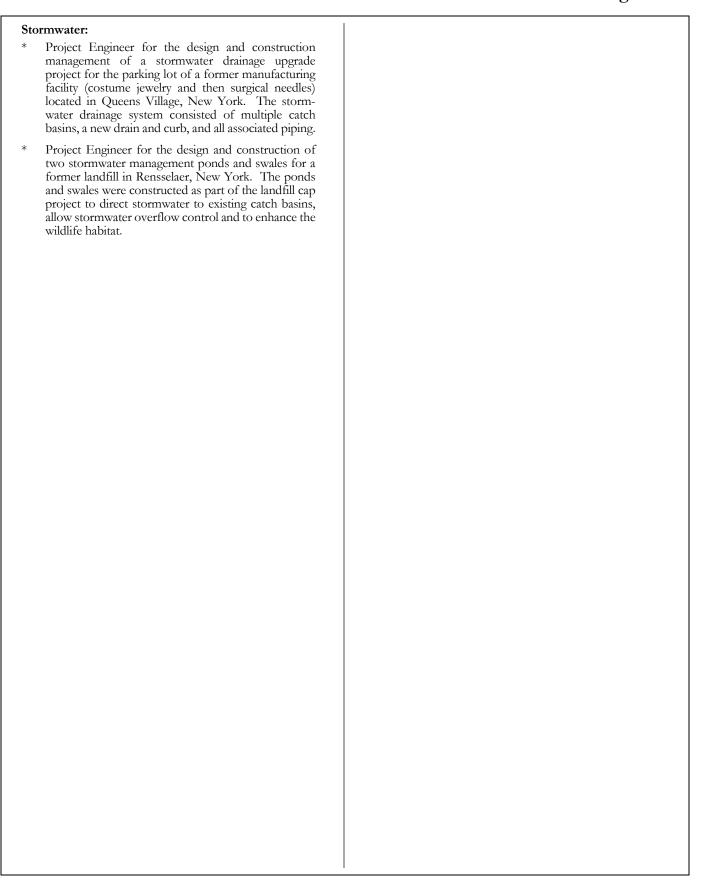
- \* Staff Engineer for the excavation oversight of three 8,000-gallon USTs, two pump islands and three hydraulic lifts and all associated piping at a former service station in Norwalk, Connecticut. Field oversight included post-excavation and waste characterization soil sampling, health and safety monitoring, supervision during the removal, cleaning, and disposal of the USTs and preparation of a Closure Report.
- \* Staff Engineer for the excavation oversight of three 8,000-gallon USTs, two pump islands and all associated piping at a former service station in Hartford, Connecticut. Field oversight included post-excavation and waste characterization soil sampling, health and safety monitoring, supervision during the removal, cleaning, and disposal of the USTs and preparation of a Closure Report.

#### Soil and Groundwater Remediation:

- \* Project Engineer for the design of soil remediation at an active Oil Terminal in Stamford, Connecticut to remove contaminated soils following a 30,000-gallon petroleum spill in 2006. The remediation included excavation of approximately 1,000 cubic yards of petroleum-impacted soil with post-excavation sampling.
- Staff Engineer responsible for construction management of remediation of a former major pharmaceutical plant located in Hicksville, New York as part of the State Superfund Program. The project consisted of the excavation of non-hazardous soil from 5 on-site drywells and a former waste disposal area, implementation of a community air monitoring plan, coordination with the Long Island Rail Road (LIRR) for work performed within the LIRR's right of way, steel sheeting installation and removal, backfilling, monitoring well abandonment and replacement, transportation and disposal of 3,300 tons of VOC, SVOC and metal contaminated soil, and restoration of approximately 9,800 square feet of asphalt. A 7-foot diameter steel caisson was used to support the deeper excavation required at the invert of two drywells. This innovative approach saved the client approximately \$50,000 in costs that would have been incurred by using a traditional steel sheeting support system to protect the on-site commercial building.



# Dana M. Hignell Senior Engineer





# Frank Cherena Principal Geologist

#### **TECHNICAL SPECIALTIES**

Project Management and Field Management of Phase I and Phase II Environmental site assessments. GIS data analysis and mapping. Project Management and oversight of remediation and construction activities. Additional experience includes the performance of investigation design and agency correspondence for petroleum and chlorinated solvent remediation projects.

#### **EXPERIENCE SUMMARY**

Fifteen years of experience: Principal Geologist with Roux Associates, Inc., Islandia, New York; Staff Geologist with RTP Environmental Associates, Inc., Green Brook, New Jersey.

#### **CREDENTIALS**

B.A., Geology, Colgate University, 2003
OSHA 40-Hour Hazardous Materials Training, 2003
OSHA 8-Hour Supervisor Training, 2004
Accredited AHERA Inspector, 2004
State of New York Asbestos Inspector Certificate, 2004
NJ UST Subsurface Evaluator Certification# 491925, 2009

#### **KEY PROJECTS**

- Principal in charge of large university tech development project in New York City. The project consists of the demolition and decommissioning of a former hospital building, and excavation for redevelopment of four separate buildings for the first phase of campus construction. Environmental considerations on the project included site assessment, remediation design and oversight, SDPES permitting (construction dewatering and geothermal well discharge), soil characterization for reuse and capping of soils. Coordinated with NYCDEP, and other project stakeholders concerning community protection and monitoring concerns.
- Principal in charge of redevelopment of shopping mall in Staten Island, New York. The Site will consist of the construction of two commercial out parcel buildings, a new parking deck, and an expansion of the existing mall building. Areas of concern include historical fill, sitewide soil contamination (arsenic and pesticides). In addition, also responsible for agency coordination with FDNY, NYSDEC, and NYCOER for mitigation of methane and chlorinated volatile organic compounds vapor issues.
- Principal in charge for new development of a large regional mall in Norwalk, Connecticut with underground parking. The proposed redevelopment will result in the construction of a retail shops, restaurants, hotel, and entertainment. Previous usage of the property included over 30 different parcels including three establishments, gasoline filling stations, fuel oil terminal storage, hazardous waste disposal areas. The project includes investigation and subsequent remediation of petroleum and hazardous waste releases, filing of the Environmental Conditions

- Assessment Form (ECAF) associated with the three transfer act parcels
- Project Manager for the largest redevelopment project in New York City (over \$4.5 billion). Project includes Phase I and Phase II ESAs (investigation of soil, groundwater, and soil vapor) at over 75 properties; Construction support for excavation of one million cubic yards of soil including implementing an in situ waste characterization program; Environmental support for demolition, asbestos and lead abatement, site remediation using In Situ Chemical Oxidation, and relocating of an active 9-acre 100-year old railyard; Property acquisition support throughout the project (7 city blocks); and Agency support for NYSDEC, NYCDEP, MTA (LIRR/NYCT), and ESDC. The environmental data was used as an integral component of the New York State Environmental Quality Review Act (SEQRA) final Environmental Impact Statement (EIS). The project will encompass 336,000 sq ft of office space, 6.4 million sq ft of residential space, an 18,000 seat sports and entertainment venue - the Barclays Center (home of the Nets professional basketball team) - 247,000 sq ft of retail space, a 165,000 square-foot hotel, and over 8 acres of intricately designed publicly accessible open space.
- Principal in Charge of numerous due diligence projects for owners, developers, managers, municipalities, and lenders at commercial and industrial properties throughout the Northeast. Activities included performance of UST evaluations and closures, hot spot remediations, Phase I and Phase II Site Assessments, vapor intrusion studies and mitigation, lead based paint, asbestos and hazardous materials surveys, interaction with regulatory agencies on behalf of clients and development of remedial cost estimates for planning and negotiation.
- Principal in Charge for investigation and review of a former electroplating facility in Bay Shore, New York with chlorinated solvent DNAPL. Activities included historical document review, subsurface investigation, and coordination with outside legal counsel and NYSDEC.
- Implemented GIS analysis and mapping for a remedial study and alternative analysis report (AAR) for an active petroleum storage terminal in Buffalo, New York under jurisdiction of the NYSDEC. The AAR required spatial analyses in order to categorize and analyze contaminant data from multiple investigations, investigate remedial alternatives, and to help focus ongoing additional investigations.
- Project manager for a property transfer support project at a heavily contaminated state-of-the-art distribution facility in the Bronx, New York. The site was a former MGP being handled under the VCP in central office, the site had an open spill under the regional spills group



# Frank Cherena Principal Geologist

and the site was attempting to apply to the BCP through the regional office. Roux performed a Phase I for the buyer, a Phase II and remedial cost estimate for the owner and negotiated with the buyer's consultant and NYSDEC to limit the scope of the investigation and cleanup.	Served as Environmental Professional on hundreds of Phase I Environmental Site Assessments according to ASTM E1527-00, ASTM E1527-05, and ASTM E1527-13 for due diligence of large retail shopping centers, industrial facilities, and office buildings. Associated activities included agency contact, database management and interpretation, report preparation, and recommendations for additional work.
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# Jeffrey Wills Senior Hydrogeologist

#### **TECHNICAL SPECIALTIES**

Design, implementation, and management of remedial investigations and Phase II ESAs. New York State Brownfields Cleanup Program; New York City Office of Environmental Remediation Voluntary Cleanup Program; and New York State Inactive Hazardous Wastes Site Program and Spills.

#### **EXPERIENCE SUMMARY**

12 years of experience: Staff Assistant Scientist, Staff Geologist, Project Hydrogeologist and Senior Hydrogeologist with Roux Environmental Engineering and Geology, D.P.C., Islandia, New York.

#### **CREDENTIALS**

B.S., Environmental Resources/Geology, Hofstra University, 2006

Co-author, Post-Alleghenian Deformation of the Shawangunk Ridge in New York and New Jersey, 2005

OSHA 40-Hour HAZWOPER Training: 2006

OSHA 8-Hour Refresher: 2017

OSHA 10-Hour Training: 2018

Loss Prevention Systems Training Certification: 2008 Loss Prevention Systems Training Refresher: 2014

#### **KEY PROJECTS**

- Project Manager for a site in the New York State Brownfields Cleanup Program. The site was formally used for the manufacturing and storage of disinfectants, soaps and pesticides located in Long Island City, New York. This project included due diligence environmental investigations (onsite and offsite) that identified a large creosote plume beneath portions of the site as well as 45 subsurface vaults/kettles, which contained chemicals used for the manufacturing of disinfectants, soaps and pesticides as well as in situ waste characterization sampling program and a Remedial Action Work Plan, which included the removal of the 45 subsurface vaults/kettles contents and structures, excavation of soils below grade and soil management, design, installation and operation of a recovery well and an in situ chemical oxidation (ISCO) program utilizing alkaline-activated Persulfate.
- Project Manager for a site in the New York State
  Brownfields Cleanup Program that was an Affordable
  Housing redevelopment project in Bronx, New York.
  The site was formally used as a juvenile detention
  center. This project included due diligence
  environmental investigation, remedial investigations
  (soil, groundwater and soil vapor), site-wide in situ
  waste characterization sampling program and a
  Remedial Action Work Plan and management of soil
  excavations.
- Project Manager for a 13 acre redevelopment site in Norwalk, Connecticut. The site was formally used for multiple gasoline service stations, automotive repair

- shops and a waste hauler and storage. This project included due diligence environmental investigations, site-wide in situ waste characterization sampling program and a Remedial Action Plan and management of soil excavations.
- Project Manager for a former dry cleaner site in Plainview, New York. This project included a remedial investigation to identify source(s) of impacted soil, groundwater, soil vapor and indoor air as well as the preparation of Remedial Investigation/Feasibility Study Report, Interim Remedial Measure Work Plan and Remedial Action Work Plan.
- Field Manager for a 40,000 square foot facility in the New York State Brownfields Cleanup Program located in Williamsburg, Brooklyn. The site was formally a storage and distributer of dry cleaner chemicals. Remedial investigation work included the collection of soil, groundwater and soil vapor samples as well as the installation of multiple groundwater monitoring wells. Responsibilities included the oversight of all field work, site management, scheduling and coordination with Subcontractors, invoicing and compliance with NYSDEC regulations.
- Field Manager for a site in the New York State
  Brownfields Cleanup Program. The site was formally a
  used car dealership in Corona, Queens, New York.
  This project included an ISCO program utilizing
  RegenOx<sup>TM</sup> oxidant compound, which was injected
  into 40 injection points throughout the site.
  Responsibilities included: Site management; budgeting;
  scheduling, coordination, and negotiations with
  subcontractors; post-injection groundwater
  monitoring, and USEPA and NYSDEC compliance,
  review and evaluation of laboratory data and reporting.
- Project Hydrogeologist responsible for the management of investigation and remediation at various mixed development sites containing hazardous and non-hazardous soils in New York City. These projects included the implementation of Remedial Investigations, in situ waste characterization sampling program and a Remedial Action Work Plan, which included excavation of soils below grade and management of soils including transportation and disposal and coordination with various disposal facilities. Some of these sites were accepted into the New York City Office of Environmental Remediation (NYC OER) and Brownfield Cleanup Program (BCP).
- Project manager for an 11 acre redevelopment site in the New York State Volunteer Cleanup Program. The site was formally a Steel Factory located in Manorhaven, New York. Completed multiple soil and groundwater investigations as well as utilized Membrane Interface Probe (MIP) technology and



# Jeffrey Wills Senior Hydrogeologist

Cone Penetration Test (CPT) to delineate both the extent of contamination plume and subsurface geology; Responsibilities included MIP/CPT oversight, monitoring well installation, collection of soil and groundwater samples and construction of geological cross-sections; Supervised a challenging four phase ISCO injection program that utilized RegenOx<sup>TM</sup> oxidant compound, which was injected into over 120 injection points throughout the site; Responsibilities included: Site management, budgeting, implementation of a pressure pulse technology (Sidewinder tool) pilot study, scheduled and coordinated with subcontractors, post-injection groundwater monitoring, USEPA and NYSDEC compliance, review and evaluation of laboratory data and reporting.

- Field Manager for the investigation and remediation of chlorinated volatile organic compounds (CVOCs) at an active shopping center in Parsippany, New Jersey. Field activities included the completion of soil and groundwater sampling activities as well as groundwater monitoring well installations and abandonments. Remedial action activities included the injection of zero valent iron and emulsified vegetable oil (ZVI/EVO) at 28 temporary injection borings throughout the impacted portion of the site. Responsibilities included: site management, oversight for all field work; budgeting, scheduled and coordinated subcontractors, post-injection groundwater monitoring, compliance with NJDEP regulations, review and evaluation of laboratory data and reporting.
- Field Investigations Manager for Phase II Remedial Investigations associated with petroleum contamination at a former petroleum refinery and terminal in Brooklyn, New York. The field investigations included the completion of cone penetrometer test (CPT) and laser induced fluorescence (LIF) soil borings, a membrane interface probe (MIP) investigation, installation and development of over 50 groundwater monitoring wells, installation of 30 permanent soil vapor monitoring points, completion of trial borings, design/installation of product recovery abandonment of multiple groundwater monitoring and product recovery wells.
- Field Manager of an annual soil vapor monitoring program for a former petroleum refinery and terminal in Brooklyn, New York. Field work included the sampling and screening of 100 permanent soil vapor monitoring points and the screening of indoor air within multiple buildings for soil vapor intrusion monitoring.
- Site/Field manager at 100+ facilities owned and/or operated by various city agencies in New York City, Brooklyn, Queens and Staten Island. Responsibilities included supervising and conducting soil, groundwater

and soil vapor sampling work under NYSDECapproved work plans; Responsible for the preparation of quarterly/semiannual monitoring reports and construction of groundwater contour maps and geologic cross-sections for submittal to NYSDEC; Evaluation of field data and preparation of soil boring and well construction logs using gINT© software; Assisted in scheduling and coordinating with subcontractors (drillers, surveyors, enhanced fluid recovery [EFR] events) as well as review subcontractors work invoices. Provided oversight during the installation of several monitoring wells at multiple Sites throughout Brooklyn, Queens, and Staten Island, New York; Responsibilities included health and safety supervision for utility clearances, soil sampling, recording of lithology, well development, and groundwater sampling.

- Field manager for multiple soil investigations at Department of Sanitation (DOS) garages in Staten Island, New York; Responsibilities included negotiating the scope of work with the DOS Supervisor, scheduling of work and collection of soil and groundwater samples; Supervised surveying of monitoring wells and geophysical surveying using ground penetrating radar to locate petroleum underground storage tanks and affiliated piping.
- Field manager for several enhanced bioremediation programs at NYPD precincts and NYC Parks facilities, which included the installation of multiple oxygen releasing compound (ORC) injection point wells.
- Performed field investigations for petroleum contamination at FDNY Engine Company 243, New York, Responsibilities included location of former AST area, interviewing of FDNY employees, and gathering of historical records.
- Field manager for well decommissioning at various sites in Brooklyn, New York; Additional responsibilities included the preparation of well decommissioning logs for submittal to NYSDEC.
- Field manager for sub-slab soil vapor sampling at a factory in Deer Park, New York.
- Assisted in the collection of wall rinsate samples for a hazardous-waste Site in Brooklyn, New York.



# Ronald Lombino II Project Hydrogeologist

#### **TECHNICAL SPECIALTIES**

Design, implementation, and management of remedial investigations and Phase II ESAs. New York State Brownfields Cleanup Program; New York City Office of Environmental Remediation Voluntary Cleanup Program. Application of computer models to solve hydrogeologic problems. Investigation and evaluation of petroleum-related and chlorinated solvent contamination. Completion of remedial investigations, environmental site assessments, aquifer testing, remediation oversight, and demolition oversight.

#### EXPERIENCE SUMMARY

Five years' experience: Staff Assistant Geologist, Staff Geologist, Project Hydrogeologist with Roux Associates, Inc., Islandia, New York

#### **CREDENTIALS**

B.S., Geology, Hofstra University, 2012.
OSHA 40-Hour Health and Safety Course, 2012
OSHA 10-Hour Outreach Construction Training
OSHA 8-Hour Annual Refresher Course
DOT Hazardous Waste Shipping Training
Loss Prevention System (LPS) Awareness,
8-Hour Certified
First Aid and CPR Certified
Transportation Worker Identification Credential (TWIC)

## KEY PROJECTS

Certification

- Project Hydrogeologist responsible for the management of investigation and remediation at various mixed development sites containing hazardous and nonhazardous soils in New York City. These projects included the implementation of Remedial Investigations, in situ waste characterization sampling program and a Remedial Action Work Plan, which included excavation of soils below grade and management of soils including transportation and disposal and coordination with various disposal facilities. Some of these sites were accepted into the New York City Office of Environmental Remediation (NYCOER) and Brownfield Cleanup Program (BCP).
- Field Manager for a 40,000-square foot facility in the New York State Brownfields Cleanup Program located in Williamsburg, Brooklyn. The site was formally a storage and distributer of dry cleaner chemicals. Remedial investigation work included the collection of soil, groundwater, and soil vapor samples as well as the installation of multiple groundwater monitoring wells. Responsibilities included the oversight of all field work, site management, scheduling and coordination with Subcontractors, invoicing, and compliance with NYSDEC regulations.
- Field Manager addressing the largest subsurface freeproduct plume in North America at a former petroleum refinery and terminal in Brooklyn, New York. Responsibilities include construction oversight of subcontractors, implementation of site specific health and

safety plan. Tasks include: implementation of cone penetrometer testing (CPT) soil boring programs, installation of single and double cased monitoring wells using Sonic and Hollow Stem Auger drilling methods, classification of soil lithology, collection and screening of soil samples, development, and review of job safety analysis (JSA).

- Field manager for a vacuum enhanced recovery pilot study at an operational dual pump liquid extraction recovery well system at a former refinery and petroleum storage terminal in Brooklyn, New York. Field activities included the installation of the control manifold within the dual-phase extraction well along with air sampling from the recovery well and the SVE system, product, and groundwater sampling from the recovery well and surrounding monitoring wells, fluid level gauging, and monitoring of SVE system influent trends using a hydrocarbon flame ionization detector.
- Field Manager for an Aquifer Pump Test of a new Recovery Wells installed at a former petroleum refinery and terminal in Brooklyn, New York. Field activities associated with the pump test included testing the hydraulic conductivity of the surrounding well network to determine radius of influence by gauging and collecting LevelTroll Data.
- Construction oversight of sidewalk flag removal and installation. Field activities included coordination of contractors, disposal, monitoring of airborne dust and VOCs, reviewing contractor invoices, and providing contractor health and safety recommendations/action items in accordance with Occupational Safety and Health Administration requirements for trench safety.
- Field Manager for Phase IV Wavefront Water Flooding Pilot Study. Field activities included gauging over 80 Monitoring Wells, recording, entering, and reviewing data as well as downloading and uploading LevelTroll Data.
- Responsible for the maintenance and upkeep of over 300 monitoring wells at the former petroleum refinery and terminal in Brooklyn, New York.
- Responsible for the design of two new dual phase recovery wells at the former petroleum refinery and terminal in Brooklyn, New York. Field manager for the installation of the two new recovery wells.
- Field manager for multiple Remedial Investigation and Phase II Brownfield sites throughout Manhatten, Brooklyn, and Queens.
- Conducted community air monitoring for multiple sites.
- Conducted soil, groundwater and soil vapor sampling across multiple sites using multiple techniques for the collection of groundwater.

## JUDY V. HARRY

## P. O. Box 208 120 Cobble Creek Rd. North Creek, NY 12853

Occupation: Data Validator/Environmental Technical Consultant

Years Experience: 41

Education: B.S., Chemistry, Magna cum laude, 1976, Phi Beta Kappa

Certifications: New York State Woman-Owned Business Enterprise (WBE)

Relevant Work History:

Data Validation Services: September 1989 - present

Sole proprietor of Data Validation Services, a woman-owned small business registered with SAM, providing consultation/validation services to regulatory and commercial clients.

These services include the review of analytical laboratory data for compliance with respect to specific protocols, accuracy and defensibility of data, verification of reported values, and evaluation of quality parameters for analytical usability of results. Approved by USEPA, NYSDEC, NJDEP, NYSERDA, and NYCDEP as a data validator for projects, including USEPA Superfund, Brownfield, and lead sites, and those contracted through the NYSDEC Division of Hazardous Waste Remediation, Division of Solid Waste, and Division of Water Quality.

Performed validation for compliance with laboratory analytical protocols including USEPA OLM, USEPA OLC, USEPA ILM, USEPA DFLM, USEPA SOW3/90, USEPA SOW 7/87 CLP, USEPA SOW 2/88 CLP, USEPA SW846, RCRA, AFCEE, NYS 6 NYCRR Part 360, 40 CFR, Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air, including TO-15, 1989/1991/1995/2000/2005 NYSDEC ASPs, and 1987 NYSDEC CLP.

Performed validation according to the USEPA National and Regional SOPs and Functional Guidelines, AFCEE requirements, NYSDEC Validation Scope of Work, NYS DUSR, and NJDEP Division of Hazardous Site Mitigation/Publicly Funded Site Remediation SOPs.

Performed validation for USEPA Superfund Sites including Salem Acres, York Oil, Port Washington L-4 Landfill, Bridgeport Rental and Oil Services, GE-MRFA, MMR/ OTIS AFB, LCP, and Peter Cooper site; and for USEPA lead sites including SJ&J Piconne, Maska, Bowe System, Jones Sanitation, and Syossett Landfill, involving CLP, RAS, and SAS protocols.

Contracted for NYSDEC Superfund Standby Contracts with LMS Engineers, HDR, CDM Smith, Malcolm-Pirnie/ARCADIS, Ecology & Environment, Shaw Environmental, CG&I, O'Brien & Gere Engineers, and EC Jordan, involving samples collected at NYS Superfund Sites and analyzed under the NYSDEC ASP.

Performed validation services for NYSDEC Phase II remedial investigations, RI/FS projects, Brownfield sites, and PRP over-site projects for hazardous waste sites.

Performed validation services for clients conducting RI/FS activities involving samples of many matrices, including waste, air, sludges, leachates, solids/sediments, aqueous, and biota.

Clients have included AECOM, ARCADIS, Barton & Loguidice, Benchmark Engineering, Bergmann Associates, Blasland, Bouck & Lee, Brown and Caldwell, CDM Smith, CB&I Shaw Environmental, C&S Consulting Engineers, Chazen Companies, Clough Harbour & Associates, Columbia Analytical Services, C.T. Male, Dames & Moore, Day Engineering, EA Engineering, EcolSciences, Ecology & Environment, Ecosystems, EC Jordan, Environmental Chemical Corporation, EHRT, ENSR Consulting, ELM, ERM-Northeast, Fagan Engineers, Fanning Phillips & Molnar, FluorDaniel GTI, Frontier, Foster Wheeler Environmental Corp, Frontier Technical, Galson Consultants, GE&R, Geomatrix Consultants, GZA Environmental, Handex of N, H2M Group, HDR, HRP, IT Corp, Jacques Whitford, JTM Associates, Labella Associates, Langan Engineers, Leader Environmental, Lockwood, Kessler & Bartlett, LMS Engineers, Malcolm-Pirnie, Metcalf & Eddy, NWEC&C, O'Brien & Gere Engineers, Pace, Parsons Engineering-Science, Plumley Engineering, Prescott Environmental, P. W. Grosser, Rizzo Associates, Roux Associates, Sear Brown Group, SECOR, Shaw Environmental, Stantec, ThermoRemediation Inc., TRC Environmental, Turnkey Environmental Restoration, TVGA Engineering, URS Consultants, Wehran Emcon, Weston, YEC, and private firms.

Provided consultation services to laboratories regarding analytical procedures and protocol interpretation, and to law firms for litigation support.

Provided services to firms involving audits of environmental analytical laboratories to determine analytical capability, particularly for compliance with NYSDEC ASP and AFCEE requirements.

Guest speaker on a panel discussing Data Review/Compliance and Usability, for an analysis workshop for the New York Association of Approved Environmental Laboratories, 1993.

## Adirondack Environmental Services: June 1987 - August 1989

Senior mass spectroscopist for AES. Responsible for GC/MS analyses of environmental samples by USEPA and NYSDEC protocols, development of the GC/MS laboratory, initiating the instrumental and computer operations from the point of installation, and for implementing the procedures and methodologies for Contract Laboratory Protocol.

## CompuChem Laboratories: May 1982 - January 1987

Managed a GC/MS production laboratory; developed, implemented, and supervised QA/QC criteria at three different levels of review; and was responsible for the development and production of the analysis of environmental and clinical samples. Directed a staff of 23 technical and clerical personnel, and managed the extraction and GC/MS labs and data review operations.

## Research Triangle Institute: December 1979 - May 1982

Worked as an analytical research chemist responsible for development of analytical methods for the EPA Federal Register at RTI. This involved analysis of biological and environmental samples for priority pollutants, primarily relating to wastewaters and to human sampling studies. Method development included modification and interfacing of the initially developed Tekmar volatile purge apparatus to GC/MS, development and refinement of methods for entrapment and concentration of the air medium for subsequent volatile analysis, and the analysis and resolution/identification of individual PCB congeners within Aroclor mixtures by capillary column and mass spectra.

## **Guardsman Chemical Company: February 1977 - November 1979**

Performed all quality control functions for the manufacturing plant. Performed research and development on coatings and dyes.

## Almay Cosmetics: May 1976 - December 1976

Product evaluation chemist. Responsible for analytical QC of manufactured products.

#### **Publication**

Pellizzzari, E.D., Moseley, M.A., Cooper, S.D., Harry, J.V., Demian, B., & Mullin, M. D. (1985). Recent Advances in the Analysis of Polychlorinated Biphenyls in Environmental and Biological Media. *Journal of Chromatography*, 334(3) 277-314.

# **Quality Assurance Project Plan 1221 Spofford Avenue, Bronx, NY**

## **APPENDIX B**

**Roux Standard Operating Procedures** 

2611.0002Y.108/APA-CVRS ROUX

Date: January 9, 2011 Revision: May 12, 2015

## 1.0 PURPOSE

The purpose of this Standard Operating Procedure (SOP) is to establish guidelines for the collection of soil samples for laboratory analysis. This SOP is applicable to soil samples collected from split-spoon, Geoprobe<sup>TM</sup> core samples, and Sonic core samplers during drilling, hand auger samples, grab samples from stockpiled soils, surface samples, test pit samples, etc.

## 2.0 CONSIDERATIONS

Soil samples may be collected in either a random or biased manner. Random samples can be based on a grid system or statistical methodology. Biased samples can be collected in areas of visible impact or suspected source areas. Soil samples can be collected at the surface, shallow subsurface, or at depth. When samples are collected at depth, the water content should be noted, since generally "soil sampling" is restricted to the unsaturated zone. Equipment selection will be determined by the depth of the sample to be collected. A thorough description of the sampling locations and proposed methods of sample collection should be included in the work plan.

Commonly, surface sampling refers to the collection of samples at a 0 to 6 inch depth interval. Certain regulatory agencies may define the depth interval of a surface sample differently, and this must be defined in the work plan. Collection of surface soil samples is most efficiently accomplished with the use of a stainless steel trowel or scoop. For samples at greater depths, a Geoprobe<sup>TM</sup> or other direct push sampling method, or a decontaminated bucket auger or power auger may be needed to advance the hole to the point of sample collection. If augering to depth, once the sampling depth is reached a clean bucket auger should be used to collect the sample. To collect samples at depths of greater than approximately six feet, the use of a drill rig (direct push, split spoon, etc) will usually be necessary. In some situations, such as an excavation or trench, sample locations are accessed with the use of a backhoe.

## 3.0 EQUIPMENT AND MATERIALS

- a. Safety first. Obtain the appropriate Job Safety Analysis (JSA) and personal protection equipment (PPE), as specified in the site Health and Safety Plan (HASP).
- b. A work plan which outlines soil sampling requirements.
- c. Field notebook, field form(s), maps, chain-of-custody forms, and custody seals.

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d. Decontamination supplies (including: non-phosphate laboratory grade detergent, buckets, brushes, potable water, distilled water, plastic sheeting, etc.).

- e. Sampling device (split-spoon sampler, stainless steel hand auger, stainless steel trowel, etc.).
- f. Stainless steel spoons or spatulas.
- g. Disposable Nitrile sampling gloves and cut-proof gloves.
- h. Laboratory-supplied sample containers with labels.
- i. Cooler with blue or wet ice.
- j. Plastic sheeting.
- k. Black pen and indelible marker.
- 1. Zip-lock bags and packing material.
- m. Tape measure.
- n. Paper towels or clean rags.
- o. Masking and packing tape.
- p. Overnight (express) mail forms or schedule courier pickup.

## 4.0 DECONTAMINATION

All reusable sampling equipment will be thoroughly cleaned according to the decontamination SOP (ROUX SOP 9.1). Where possible, thoroughly pre-cleaned and wrapped sampling equipment should be used and dedicated to individual sampling locations. Disposable items such as sampling gloves and plastic sheeting will be changed after each use and discarded in an appropriate manner.

## 5.0 PROCEDURE

- Prior to collecting soil samples, ensure that all sampling equipment has been thoroughly cleaned according to the ROUX SOP 9.1 decontamination procedures. If samples are to be collected at depth, then the boring must be advanced with thoroughly cleaned equipment to the desired sampling horizon and a different thoroughly cleaned sampler must be used to collect the sample.
- 5.2 Using disposable gloves and a pre-cleaned, stainless steel spatula or spoon, extract the soil sample from the sampler, measure the recovery, and separate the wash from the true sample. Where allowed by regulatory agency(ies), disposable plastic spoons may be used. The gloves should not come in contact with the media being sampled and should be changed any time during sample collection when their cleanliness is compromised

When sampling shallow soils, if a thick, matted root zone, gravel, concrete, etc. is present at or near the surface, it should be removed before the sample is collected. The depth measurement for the sample begins at the top of the soil horizon, immediately following any removed materials.

When using direct push sampling methods, it is important to maintain the proper orientation of the sample when the sampling liners are removed from the sample tubes define precisely the depth at which an aliquot was collected. This is particularly important when multiple sample depths are collected from the same push.

When utilizing a split spoon sampling method, always discard the top several inches of material in the spoon before removing any portion for sampling. This material normally consists of borehole wall material that has sloughed off of the boregole wall after removal of the drill string prior to inserting the split spoon.

When utilizing a backhoe to collect soil samples from a trench or excavation, measures should be taken to ensure that the bucket is decontaminated and that no paint, grease, and rust is present prior to sample collection.

5.3 Place the sample in a laboratory-supplied, pre-cleaned sample container. Cutproof gloves should be worn at all times when handling glassware. This should be done as quickly as possible and this is especially important when sampling for volatile organic compounds (VOCs). Samples to be analyzed for VOCs must be collected prior to other constituents.

If samples are to be analyzed for VOCs, they should be collected in a manner that minimizes disturbance of the sample. *Samples for VOC analysis must not be homogenized.* 

- 5.4 The sample container will be labeled with appropriate information such as, client name, site location, sample identification (location, depth, etc.), date and time of collection, and sampler's initials.
- 5.5 Using the remaining portion of soil from the sampler, log the sample in detail and record physical characteristics (color, odor, moisture, texture, density, consistency, organic content, layering, grain size, etc.). Refer to Soil Classification and logging SOP.
- 5.6 If soil samples are to be composited in the field, then equal portions from selected locations will be placed on a clean plastic sheet or in a Zip-lock bag and homogenized. make sure that each composite location (aliquot) consist of equal volumes, (i.e., same number of equal spoonfuls). Alternately, several samples may be submitted to the laboratory for compositing by weight. The method used is dependent upon regulatory requirements. Specific compositing procedures shall be approved by the appropriate regulatory agency and described in the work

- plan. Samples to be analyzed for VOCs will not be composited unless required by a regulatory agency.
- 5.7 After the sample has been collected, labeled, and logged in detail, it is placed in a zip-lock bag and stored in a cooler with ice, at 4°C. Store the sample cooler in a secure location.
- 5.8 A chain-of-custody form is completed for all samples collected. One copy is retained and two are sent with the samples in a Zip-lock bag to the laboratory. A signed and dated custody seal is placed on the cooler prior to shipment.
- 5.9 Samples collected from Monday to Friday are typically to be delivered to the laboratory within 24 hours of collection. If Saturday delivery is unavailable, samples collected on Friday must be delivered by Monday morning. Check the work plan to determine if any analytes require a shorter delivery time.
- 5.10 The field notebook and appropriate forms should include, but not be limited to, the following: client name, site location, sample location, sample depth, sample identification, sample date and time collected, sampler's name, method of sample collection, number and type of containers, geologic description of material, description of decontamination procedures, etc. A site map should be prepared with exact measurements to each sample location in case follow-up sampling is necessary.
- 5.11 All reusable sampling equipment must be thoroughly cleaned in accordance with the ROUX SOP 9.1 decontamination procedures. Following the final decontamination (after all samples are collected), the sampling equipment is wrapped with plastic. Discard any gloves, plastic, etc. in an appropriate manner that is consistent with site conditions.

END OF PROCEDURE

## STANDARD OPERATING PROCEDURE 9.1 FOR DECONTAMINATION OF FIELD EQUIPMENT

Date: January 9, 2011 Revision: May 5, 2015

#### 1.0 PURPOSE

The purpose for this standard operating procedure (SOP) is to establish the guidelines for decontamination of all field equipment potentially exposed to contamination during field investigation activities (i.e. drilling, soil and water sampling).

The objective of decontamination is to ensure that all field samplingequipment is decontaminated (free of potential contaminants): 1) prior to being brought onsite to avoid the introduction of potential contaminants to the site; 2) between drilling and sampling events/activities onsite to eliminate the potential for cross-contamination between boreholes and/or wells; and 3) prior to the removal of equipment from the site to prevent the transportation of potentially contaminated equipment offsite.

The decontamination line is setup so that the first station is used to clean the most contaminated item. It progresses to the last station where the least contaminated item is cleaned. A site is typically divided up into the following boundaries: Hot Zone or Exclusion Zone (EZ), the Contamination Reduction Zone (CRZ), and the Support or Safe Zone (SZ). The decontamination line should be setup in the Contamination Reduction Corridor (CRC).

In considering decontamination procedures, state and federal regulatory agency requirements must be considered because of potential variability between state and federal requirements. Decontamination procedures must be in compliance with state and/or federal protocols in order that regulatory agency(ies) scrutiny of the procedures and data collected do not result in non acceptance (invalidation) of the work undertaken and data collected.

The equipment and materials list for decontamination activities may include, but not necessarily be limited to, the following:

- a. A work plan and health and safety plan which outlines decontamination procedures and requirements.
- b. Field notebook and field form(s).
- c. Decontamination solutions, including as necessary: non-phosphate, laboratory-grade detergent; distilled/deionized water; potable water; cleaning solvents if needed [e.g., hexane, acetone, nitric acid).

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- d. Long and short handled brushes,
- e. Bottle brushes
- f. Drop cloth/plastic sheeting
- g. Paper towels

- h. Plastic or galvanized tubs or buckets
- i. Pressure washers or steam cleaners
- j. Solvent sprayers
- k. Trash / bilge pumps
- 1. Aluminum foil
- m. 55-gallon drums.

## 2.0 PROCEDURE FOR DRILLING EQUIPMENT

The following is a minimum decontamination procedure for drilling equipment. Drilling equipment decontamination procedures will be documented on an appropriate field form or in the field notebook, especially any variation from the method itemized below:

- 2.1 Safety first. Obtain the appropriate Job Safety Analysis (JSA) and personal protection equipment (PPE), as specified in the site Health and Safety Plan (HASP). Prior to mobilization to a site, the expected types of contamination should be evaluated to determine if the field cleaning and decontamination activities will generate rinsates and other waste waters that might be considered RCRA hazardous waste or may require special handling.
- 2.2 The drill rig and all associated equipment should be properly decontaminated by the contractor before arriving at the site.
- 2.3 The augers, drilling casings, rods, samplers, tools, and any piece of equipment that can come in contact (directly or indirectly) with the soil, requires proper decontamination on-site prior to commencing drilling. The project work plan or HASP, and appropriate regulatory requirements, should be consulted to determine site-specific decontamination requirements.
- 2.4 The same decontamination procedures used prior to drilling will be followed between boreholes (at a fixed on-site location[s], if appropriate) and before leaving the site at the end of the investigation.
- 2.5 All on-site steam cleaning or (decontamination) activities will be monitored and documented by a member(s) of the staff of Roux Associates, Inc. and should be performed on a decontamination pad that meets the following specifications:
  - 1. The pad should be constructed in an area known or believed to be free of surface contamination.
  - 2. A temporary pad should be lined with a water impermeable material with no seams within the pad. This material should be either easily replaced disposable) or repairable. The pad should be regularly inspected to ensure there are no leaks.

## STANDARD OPERATING PROCEDURE 9.1 FOR DECONTAMINATION OF FIELD EQUIPMENT

- 3. Water should be removed from the decontamination pad frequently.
- 2.6 If drilling activities are conducted in the presence of thick, sticky oils (e.g., PCB oil) which coat drilling equipment, then special decontamination procedures may have to be utilized before steam cleaning (e.g., hexane scrub and wash).
- 2.7 Containment of decontamination fluids may be necessary (e.g., rinseate from steam cleaning) or will be required (e.g., hexane), and disposal must be in accordance with state and/or federal regulatory requirements.

## 3.0 PROCEDURE FOR SOIL-SAMPLING EQUIPMENT

The following is a minimum decontamination procedure for soil-sampling equipment (e.g., split spoons, stainless-steel spatulas). Soil-sampling equipment decontamination procedures, especially any variation from the method itemized below, will be documented on an appropriate field form or in the field notebook.

- 3.1 Safety first. Obtain JSA and PPE, as specified in the site HASP.
- 3.2 Wear disposable gloves while cleaning equipment to avoid cross-contamination and change gloves as needed.
- 3.3 Steam clean the sampler or rinse with potable water. If soil-sampling activities are conducted in the presence of thick, sticky oils (e.g., PCB oil) which coat sampling equipment, then special decontamination procedures may have to be utilized before steam cleaning and washing in detergent solution (e.g., hexane scrub and wash).
- 3.4 Prepare a non-phosphate, laboratory-grade detergent solution and distilled or potable water in a clean bucket.
- 3.5 Disassemble the sampler, as necessary and immerse all parts and other sampling equipment in the solution.
- 3.6 Scrub all equipment in the bucket with a brush to remove any adhering particles.
- 3.7 Rinse all equipment with copious amounts of potable water followed by distilled or deionized water.
- 3.8 Place clean equipment on a clean plastic sheet (e.g., polyethylene)
- 3.9 Reassemble the cleaned sampler, as necessary.
- 3.10 After equipment has been cleaned, all individuals involved in equipment handling should don clean gloves, or wrap the equipment with a suitable material (e.g., plastic bag, aluminum foil).

As part of the decontamination procedure for soil-sampling equipment, state and/or federal protocols must be considered. These may require procedures above those specified as minimum for Roux Associates, Inc., such as the use of nitric acid,

acetone, etc. Furthermore, the containment and proper disposal of decontamination fluids must be considered with respect to regulatory agency(ies) requirements.

## 4.0 PROCEDURE FOR WATER-SAMPLING EQUIPMENT

The following is a decontamination procedure for water-sampling equipment (e.g., bailers, pumps). Water-sampling equipment decontamination procedures, especially any variation from the method itemized below, will be documented on an appropriate field form or in the field notebook.

- 4.1 Safety first. Obtain the JSAs and PPE, as specified in the site HASP.
- 4.2 Decontamination procedures for bailers follow:
  - a. Wear disposable gloves while cleaning bailer to avoid cross-contamination and change gloves as needed.
  - b. Prepare a non-phosphate, laboratory-grade detergent solution and potable water in a bucket.
  - c. Disassemble sampling equipment. Discard all used sampling tubes and cords in an appropriate manner. Disconnect all power sources from electrical equipment (i.e. pumps). Scrub each piece of equipment with a brush and solution.
  - d. Rinse all sampling equipment with copious amounts of potable, distilled or deionized water, Reassemble equipment as per the manufacturer's instructions.
  - f. Air dry.
  - g. Wrap equipment with a suitable material (e.g., clean plastic bag, aluminum foil).
- 4.3 Decontamination procedures for pumps follow:
  - a. Wear disposable gloves while cleaning pump to avoid cross-contamination and change gloves as needed.
  - b. Prepare a non-phosphate, laboratory-grade detergent solution and potable water in a clean bucket, clean garbage can, or clean 55-gallon drum.
  - c. Flush the pump and discharge hose (if not disposable) with the detergent solution, and discard disposable tubing and/or cord in an appropriate manner.
  - d. Flush the pump and discharge hose (if not disposable) with potable water.
  - e. Place the pump on clear plastic sheeting.

- f. Wipe any pump-related equipment (e.g., electrical lines, cables, discharge hose) that entered the well with a clean cloth and detergent solution, and rinse or wipe with a clean cloth and potable water.
- g. Air dry.
- h. Wrap equipment with a suitable material (e.g., clean plastic bag).

As part of the decontamination procedure for water-sampling equipment, state and/or federal protocols must be considered. These may require procedures above those specified as minimum for Roux Associates, Inc., such as the use of nitric acid, acetone, etc. Furthermore, the containment and proper disposal of decontamination fluids must be considered with respect to regulatory agency(ies) requirements.

END OF PROCEDURE

# Quality Assurance Project Plan 1221 Spofford Avenue, Bronx, NY

## **APPENDIX C**

QA Glossary

2611.0002Y.108/APA-CVRS ROUX

## **QUALITY ASSURANCE GLOSSARY**

- "Alteration" means altering a sample collected for analysis in any way other than by adding a preservative, such as nitric acid to lower pH. Examples of alteration include, but are not limited to: filtering, settling and decanting, centrifuging and decanting and acid extracting.
- "Analytical Services Protocol" or "ASP" means DEC's compilation of approved EPA laboratory methods for sample preparation, analysis and data handling procedures.
- "Correlation sample" means a sample taken, when using a field-testing technology, to be analyzed by an ELAP-certified laboratory to determine the correlation between the laboratory and field analytical results.
- "Effective solubility" means the theoretical aqueous solubility of an organic constituent in groundwater that is in chemical equilibrium with a separate-phase (NAPL) mixed product (product containing several organic chemicals). The effective solubility of a particular organic chemical can be estimated by multiplying its mole fraction in the product mixture by its pure-phase solubility.
- "Environmental Laboratory Accreditation Program" or "ELAP" means a program conducted by the NYSDOH which certifies environmental laboratories through on-site inspections and evaluation of principles of credentials and proficiency testing. Information regarding ELAP is available at the NYSDOH Wadsworth Laboratory website.
- "Filtration" means the filtering of a groundwater or surface water sample, collected for metals analysis, at the time of collection and prior to preservation. Filtering includes but is not limited to the use of any membrane, fabric, paper or other filter medium, irrespective of pore size, to remove particulates from suspension.
- "Final delineation sample" means a sample taken to make a decision regarding the extent of contamination at a site during the investigation and the design of the remedy or confirmation/ documentation sampling during remedial construction, which is to be analyzed by an ELAP-certified laboratory.
- "Intermediate sample" means a sample taken during the investigation or remediation process that will be followed by another sampling event to confirm that remediation was successful or to confirm that the extent of contamination has been defined to below a level of concern.
- "Method detection limit" or "MDL" means the minimum concentration of a substance detected and which can be reported with a reasonable degree of accuracy. It is the lowest concentration that can be measured, a lab-specific number, developed from minimum detection limits, and is also referred to as the practical quantitation limit (PQL).
- "Nephelometric Turbidity Unit" or "NTU" is the unit by which turbidity in a sample is measured.
- "Preservation" means preventing the degradation of a sample due to precipitation, biological action, or other physical/chemical processes between the time of sample collection and analysis. The most common examples involve refrigeration at 4 degrees Celsius and lowering sample pH by the addition of acid to keep dissolved metals in solution or to reduce the biodegradation of dissolved organic analytes.
- "Target analyte list" or "TAL" means the list of inorganic compounds/elements designated for analysis as contained in the version of the EPA Contract Laboratory Program Statement of Work for Inorganics Analysis, Multi-Media, Multi-Concentration in effect as of the date on which the laboratory is performing the analysis. For the purpose of this chapter, a Target Analyte List scan means the analysis of a sample for Target Analyte List compounds/elements.
- "Targeted compound" means a contaminant for which a specific analytical method is designed to detect that potential contaminant both qualitatively and quantitatively.

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- "Target compound list plus 30" or "TCL+30" means the list of organic compounds designated for analysis (TCL) as contained in the version of the EPA Contract Laboratory Program Statement of Work for Organics Analysis, Multi-Media, Multi-Concentration in effect as of the date on which the laboratory is performing the analysis, and up to 30 non-targeted organic compounds (plus 30) as detected by gas chromatography/mass spectroscopy (GC/MS) analysis.
- "Tentatively identified compound or TIC" means a chemical compound that is not on the target compound list but is detected in a sample analyzed by a GC/MS analytical method. TICs are only possible with methods using mass spectrometry as the detection technique. The compound is tentatively identified using a mass spectral instrumental electronic library search and the concentration of the compound estimated.
- "Well development" means the application of energy to a newly installed well to establish a good hydraulic connection between the well and the surrounding formation. During development, fine-grained formation material that may have infiltrated the sand pack and/or well during installation is removed, allowing water from the formation to enter the well without becoming turbid and unrepresentative of groundwater in the formation.

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## Interim Remedial Measure Work Plan 1221 Spofford Avenue, Bronx, New York

## **APPENDIX B**

Health and Safety Plan

2611.0002Y108/CVRS ROUX



# Site-Specific Health and Safety Plan

1221 Spofford Avenue Tax Lots 35 of Tax Block 2738 Bronx, New York

August 6, 2018

Prepared for:

THE PENINSULA JV, LLC 111 8<sup>th</sup> Avenue New York, New York 10011

Prepared by:

Roux Environmental Engineering and Geology, D.P.C. 209 Shafter Street Islandia, New York 11749

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- D. Health and Safety Briefing / Meeting Log and Daily Site Safety Checklist
- E. Roux Heavy Equipment Exclusion Zone Policy
- F. Roux Subsurface Utility Clearance Procedure
- G. ACORD® Automobile Loss Notice Form
- H. Job Safety and Health Protection Poster
- Generic Community Air Monitoring Plan (CAMP)

#### List Job Safety Analyses Forms which are required for the project and are included in Appendix A below:

- 1. Job Safety Analysis Form
- 2. Site Walk and Inspection
- 3. Mobilization and Demobilization
- 4. Excavation and Trenching
- 5. Soil Sampling
- 6. Backfilling Excavation and Compaction
- 7. Trucking

## 1. INTRODUCTION

This site-specific Health and Safety Plan (HASP) has been prepared in accordance with 29 CFR 1910.120 Occupational Safety and Health Act (OSHA) Hazardous Waste Operations and Roux Associates, Inc. (Roux Associates) Standard Operating Procedures (SOPs). It addresses all the activities described below that are associated with the property located at 1221 Spofford Avenue in the Borough of Bronx, City, and State of New York (the Site, Figure 1) and will be implemented by the designated Site Health and Safety Officer (SHSO) during Site work.

When activities are to be conducted, which are not specifically addressed by this HASP, appropriate SOPs and Job Safety Analyses (JSAs) will be reviewed to determine the appropriate work approach and associated levels of health and safety required. If a JSA for the specific activity does not exist, one will be prepared by the field work team, reviewed for completeness by the Project Manager, and implemented as required by the JSA (see Section 6.3 and Appendix A).

Compliance with this HASP is required for all Roux Associates personnel and subcontractors contracted directly by Roux Associates. Assistance in implementing this HASP can be obtained from the Roux Associates Office Health and Safety Manager (OHSM). The content of this HASP may undergo revision based upon additional information made available. Any changes proposed to this HASP must be reviewed and approved by the OHSM or his/her designee [and the Client contact, if applicable].

All Site operations are under the direction of The Peninsula JV, LLC (Client) and any operations or activities covered under this safety plan, which are also addressed by the Client's procedures and protocols will be performed in compliance with their requirements. Specifically, routine operations or activities performed at the Site that commonly require adherence to Clients procedures and protocols include confined space entry, welding, other "hot work" operations, lock-out/tag-out and the use of personal protective equipment/clothing. These requirements were incorporated into Section 8.2 of this HASP and, at a minimum, include the use of high visibility clothing, hardhats, steel toe boots/shoes, work gloves, and safety glasses.

Prior to performing work each task should be evaluated to determine the appropriate procedures that need to be followed.

Responsibility	Name	Telephone Number
Roux Associates Contacts		
Project Principal	Frank Cherena	631-232-2600
Project Manager	Jeffrey Wills	631-232-2600
Site Health and Safety Officer	TBD	
Client Contacts		
Client Contact	Arianna Sacks Rosenberg	

#### Scope of Work:

The scope of work will include the following:

- · Oversight of building demolition activities;
- Oversight of the temporary closure of two (2) 12,000-gallon Underground Storage Tanks (USTs);
- · Oversight of geotechnical test pits;
- Community Air Monitoring; and
- Collection of waste characterization samples.

Detailed scopes of work for these activities will be prepared prior to implementation of the tasks.

#### **Emergency Information**

Multiple emergency services may be obtained by calling 911. More specific numbers for local services are listed below but should not be used until after 911 is alerted.

Туре	Name	Telephone Numbers
Police	NYPD	911
Fire	FDNY	911
Urgent Care Facility (map attached)	City MD	(212) 913-0820
Hospital (map attached)	Bronx Lebanon Hospital	(718) 860-6169

#### **Environmental Emergency**

(e.g., release or spill)

Туре	Name	Telephone Numbers
Corporate Health and Safety Manager	Joseph Gentile	(856) 832-3768 (Office) (610) 844-6911 (Cell)
Office Health and Safety Manager	Brian Hobbs	(631) 232-2600 (Office) (631) 807-0193 (Cell)
Project Manager	Jeffrey Wills	(516) 637-0213 (Cell)
Project Principal	Frank Cherena	(631) 445-0357 (Cell)

## 2. PERSONNEL DESIGNATIONS

#### **Project Manager**

The Project Manager (PM) is responsible for coordination of subcontractors and tasks related to accomplishment of the scope of work. The PM for this project is Jeffrey Wills.

#### Site Manager

The Site Manager (SM) is responsible for committing to a goal of ZERO environmental, health and safety incidents. The SM is also responsible for making certain that personnel receive and are aware of the provisions of this HASP, are instructed in the work practices necessary to ensure safety and are familiar with planned procedures for dealing with emergencies. The SM assures that personnel are aware of the potential hazards associated with site operations and correcting any work practices or conditions that may result in injury or exposure to hazardous substances. The SM ensures that at least one person on site, prior to assignment, is trained and certified by the American Red Cross or equivalent and is responsible for rendering first aid. These individuals will be identified by job function and will be recertified per the certifying agency's time schedule. Blood borne Pathogens training will be conducted concurrently and will be provided annually. Potential exposure to blood borne pathogens will be determined without regard for personal protective equipment. When rendering first aid or CPR universal precautions will be observed. Labels and signs will be used to serve as warnings of infectious materials. Employees will also have a copy of the site-specific exposure control plan. The use of PPE/PPC provides for work practice controls. This PPE/PPC will be provided at no cost to employees. Where PPE is provided to minimize exposure to lead, gloves, hats, vented goggles, shoes, or disposable shoe covers are provided. Protective clothing shall be in clean and dry condition at least weekly. Protective clothing shall be cleaned, laundered, properly disposed, and repaired or replaced as necessary. Any blood-soaked bandages, etc., will be placed in leak proof bags for handling, storage, and transport. After contact with blood or other potentially infectious material, all equipment and surfaces shall be cleaned and decontaminated. Hepatitis B vaccine is made available to all employees that have occupational exposure to BBP at no cost. The SM assures that all field personnel are in compliance with the hazardous waste worker health and safety training and medical surveillance requirements of 29 CFR 1910.120 and all other applicable regulations. The SM for this project is yet to be determined.

#### **Corporate Health and Safety Manager**

The Corporate Health and Safety Manager (CHSM) is responsible for assuring that the appropriate monitoring and safety equipment and other resources necessary to perform Site activities safely are addressed in the HASP. The CHSM provides consultation to Site personnel on all questions related to health and safety. The CHSM also provides HAZWOPER training based on his extensive industrial experience and technical background (i.e., CIH). The CHSM for Roux Associates is Mr. Joseph Gentile.

#### Site Health and Safety Officer

The Site Health and Safety Officer (SHSO) will be present onsite during the conduct of all field operations, will be responsible for all health and safety activities, and has the authority to make all health and safety related decisions. The SHSO ensures that all personnel working onsite are qualified according to applicable Environmental Protection Agency, Occupational Safety and Health Association (OSHA) and state requirements. The determination of hazard concentrations will be made by the SHSO in consultation with the CHSM. The SHSO has stop-work authorization which he or she will execute upon determination of an imminent safety hazard, emergency situations, or other potentially dangerous situation, such as detrimental

weather conditions. Authorization to proceed with work will be issued by the SHSO or CHSM in consultation with the SM after such action. The SHSO or SM will initiate and execute all contact with emergency facilities and personnel when this action is appropriate. The SHSO will also monitor decontamination procedures to determine their effectiveness. When such procedures are found to be ineffective, appropriate steps shall be taken to correct any deficiencies. The SHSO for this site is yet to be determined. An assistant SHSO may be designated by the SHSO if required but must be pre-qualified and approved by the CHSM.

#### Office Health and Safety Manager

The New York Office Health and Safety Manager (OHSM) is responsible for providing support, as needed, to the Project and serves as back-up to the Site Health and Safety Officer. The OHSM assures that field personnel assigned to the project receive a health and safety orientation and are provided with the necessary personal protective equipment and clothing. The OHSM may periodically perform field audits, participate in field assessments, and prepare information to be used for safety communication. The OHSM for this project is Brian Hobbs.

#### **Project Personnel**

Project personnel will be responsible for: complying with this HASP; taking all reasonable precautions to prevent injury to themselves and to their fellow employees; performing only those tasks that they believe they can do safely; immediately reporting any accidents and/or unsafe conditions to the SHSO; notifying the SM and the SHSO of any special medical problems (e.g., allergies) and making certain that all on-site personnel are aware of any such problems.

## 3. SITE HISTORY AND PHYSICAL DESCRIPTION

This section provides a brief summary of the history and physical description of the Site.

The Site is located in the Borough of Bronx, City and State of New York and is identified as Tax Lot 35, of Tax Block 2738 on the New York City Tax Map. Figure 1 is a Site Location Map and Figure 2 is a Site Plan. The Site is approximately 165,528-square feet (3.8 acres) and is bordered to the south by mixed use multifamily residential properties and commercial properties. The Corpus Christi Monastery is located to the north of the Site. Multi/single-family residential properties and commercial properties are located west of the Site. Single-family residential properties are located to the east of the Site.

The Site consists of the following buildings and improvements:

#### **Block 2738**

Contains a three to six-story building, asphalt paved parking, and recreation/playground spaces such as tennis and basketball courts.

## 4. SITE-RELATED INCIDENTS, COMPLAINTS AND ACTIONS

Historical evidence supporting the potential occurrence of releases exists in two forms, those supported by documentation, and those based on the knowledge of Client personnel. These incidents are presented below by geographical area with documented information first, then "knowledge" information procured from Client personnel. Locations of the tanks, buildings, and Site features mentioned in this HASP are shown on maps maintained in on-site files.

A Phase I Environmental Site Assessment completed in 2017 identified the following recognized environmental concerns (RECs):

- 1. Reported Spill Incidents: New York State Department of Conservation (NYSDEC) Spill Numbers 9610764, 9901578 and 0812579 were assigned the Site (specifically Lot 35). Spill #9610764 was assigned for a release of 40 gallons of #6 fuel oil due a faulty gauge; and was closed on the same day it was assigned. NYSDEC Spill #9901578 was assigned for discovery of contaminated soil during a subsurface investigation; and was closed on April 6, 2017. Spill # 0812579 was assigned for the release of approximately 2,000 gallons of #2 fuel oil from the underground storage tanks (USTs) located in the southeast courtyard of Lot 35. Several investigations have been performed confirming subsurface soil and groundwater impacts. Also, there is the potential for soil vapor migration and intrusion into the Site buildings, due to the extent of the release. A product recovery program consisting of monthly product recovery and quarterly groundwater monitoring was performed until approximately October 2016. However, no additional information regarding remedial activities since that time have been provided. Therefore, it is assumed separate phase petroleum product and extensive soil contamination still exists at the Site. The impacts to soil, groundwater and, potentially soil vapor, beneath the Site is considered a REC in relation to the Site.
- 2. Petroleum Use and Storage: Two 12,000-gallon #2 fuel oil USTs are registered as in-service at the site under NYSDEC Petroleum Bulk Storage (PBS) #2-604085; and are located in the in the southeast courtyard of Lot 35. In addition, one 5,000-gallon diesel aboveground storage tank (AST), located in a vault adjacent to the 12,000-gallon USTs, was utilized for a back-up generator was closed-in-place. The location of two additional tanks (one 20,000 gallon #6 fuel oil UST; and one 20,000-gallon AST were, reportedly, closed-in-place. However, the actual locations of these two tanks are not known. Petroleum use and storage at the Site, including the unknown locations of two tanks, is considered a REC in relation to the Site.
- 3. Staining: Staining observed on the concrete basement floor was presumably associated with oil spills and cleanup materials, and other universal wastes (such as batteries or degreasers, electrical equipment, and lubricating oils). Staining on the concrete basement floor; and is considered a REC in relation to the Site given the presence of floor drains and other penetrations in the concrete.
- 4. Surrounding Property Use: According to the resources utilized in this Phase I ESA, garages utilizing USTs as well as metal works/fabrication and automobile repair facilities were noted in the surrounding area of the Site. USTs have the potential to release petroleum products to the environment and metal works/fabrication and automobile repair facilities have the potential for using solvents and petroleum products. Therefore, these surrounding properties are, collectively, considered a REC in relation to the Site.

### 5. 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, being crushed, head injuries, punctures, cuts, falls, electrocution, bruises and other physical hazards due to motor vehicle operation, equipment use 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, a job safety analysis (JSA) (Appendix A) will be prepared by the SSO with assistance from the OHSM. 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. JSAs for each task will be reviewed with onsite personnel at each morning tailgate meeting and as tasks change throughout the day.

#### 5.1 Chemical Hazards

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

- Temporary closure of the USTs;
- Excavation of soil for geotechnical test pits; and
- Waste characterization sampling.

For chronic and acute toxicity data, refer to Summary of Toxicological Data Sheets in Table 1 for further details on compound characteristics.

#### 5.1.1 Carbon Monoxide Hazards

Carbon monoxide (CO) is a colorless, odorless, and toxic gas, which is predominately produced by incomplete combustion of carbon-containing materials. Incomplete combustion occurs when insufficient oxygen is used in the fuel (hydrocarbon) burning process. Common sources of CO may include: motor vehicle exhausts, fuel burning<sup>1</sup>, furnaces, coal burning power plants, small gasoline engines including electric generators, demolition equipment, chain saws, lawn mowers and power washers, marine engines, fuel powered forklifts, propane or kerosene-powered heaters, and fuel burning water heaters.

Exposure to CO impedes the blood's ability to carry oxygen to body tissues and vital organs. When CO is inhaled, it combines with hemoglobin (an iron-protein component of red blood cells), producing carboxyhemoglobin, which greatly diminishes hemoglobin's oxygen-carrying capacity. **Hemoglobin's** 

<sup>1</sup> Fuel burning may include natural gas, propane, fuel oil, kerosene, gasoline, coal, or other carbon-based items.

binding affinity for CO is 300 times greater than its affinity for oxygen. As a result, small amounts of CO can dramatically reduce hemoglobin's ability to transport oxygen.

Common symptoms of CO exposure are headache, nausea, rapid breathing (i.e., shortness of breath), weakness, exhaustion, dizziness, and confusion (i.e., light headedness). Hypoxia (severe oxygen deficiency) due to acute CO poisoning may result in reversible neurological effects, or it may result in long-term (and possibly delayed) irreversible neurological (brain damage) or cardiological (heart damage) effects.

CO exposure can be dangerous during pregnancy for both the mother and the developing fetus. Please contact CDC-INFO (800-232-4636) if you have any questions regarding CO exposure during pregnancy.

At work sites where carbon-containing fuels are used, such as in internal combustion engines and generators, the exhausts from these units can contain significant concentrations of CO. In situations where the exhausts create exposure to CO, the exhausts of these units should be extended via appropriate hoses/piping to well ventilated exterior areas (i.e., outside and downwind of structures). Where the concentrations of CO exceed the following "action levels," notify the Project Manager and immediately implement the corresponding actions to mitigate exposure.

Action Levels Table (CO)		
Carbon Monoxide (CO) Action Levels <sup>2</sup>		
Concentration of CO in air	Action	
< 25 ppm	Inspect exhaust system for leaks or other sources of CO. Monitor initially and every 15 minutes during use of CO- generating equipment.	
25 – 50 ppm	Ventilate area. Monitor continuously and record measurements. Contact PM.	
> 50 ppm	Stop work activities. Ventilate area.	

#### **5.2 Physical Hazards**

A variety of physical hazards may be present during Site activities. These hazards are similar to those associated with any construction-type project. These physical hazards are due to motor vehicle and heavy equipment operation and hazardous walking and working surfaces. In particular, when entering or exiting a bermed area surrounding a storage tank, use the stairways provided. Do not enter or exit the bermed area by walking on the bermed surface itself. A hard hat must be worn at all times while working at the base of the cliffs. Additionally, when performing activities at the Site, a hard hat and reflective vest must be worn at all times. Workers must also be aware of electrical hazards, such as overhead power lines, while performing their assigned tasks. These hazards are not unique and are generally familiar to most field personnel. These will be addressed in accordance with Roux's Lock, Tag, and Try Program. Additional task-specific requirements may be covered during safety briefings.

<sup>2</sup> Based upon The American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Value (TLV) of 25 ppm as an 8-hour time-weighted average (TWA) [ACGIH 2014 TLVs® and BEIs®] and OSHA's Permissible Exposure Limit (PEL) of 50 ppm as an 8-hour TWA concentration [29 CFR Table Z-1].

#### 5.2.1 Flammability/Explosive Hazards

A variety of highly flammable/explosive materials may be stored at the Site. Prior to performing activities near potentially flammable/explosive materials (i.e., within storage tank bermed areas), all applicable sections of this HASP and any Client procedures specific to these areas need to be thoroughly understood and adhered to. Any questions or concerns should be directed to the SHSO or the Client's Project Engineer.

#### 5.3 Biological Hazards

Biological hazards include exposure to poison ivy/oak, the possibility of disease carrying insects (i.e., ticks) and a variety of wild animals (i.e., coyotes, raccoons, etc.).

#### 5.3.1 Insect Stings

Stings from insects are often painful, may 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 an ice pack. Personnel allergic to bee and/or wasp stings shall alert their PM, SHSO and coworkers immediately, and provide/self-administer medicine and antidotes to treat allergic reactions immediately as prescribed by their personal physician, or if the victim has a history of allergic reaction, he/she should be taken to the designated hospital.

#### 5.3.2 Tick Injury Prevention Program

Ticks may carry Lyme disease, Rocky Mountain spotted fever or other diseases. As such, Roux Associates has instituted a program to prevent tick bites and to provide prompt, adequate and appropriate notifications and treatment in the event of a work-related tick bite. This SOP applies to all Roux Associates employees and their subcontractors and is additionally addressed by applicable JSAs.

#### 5.3.3 Project Planning

Pre-planning is the first step in tick avoidance. Where possible, plan the work to avoid tick-infested areas.

- Avoid brushy, overgrown grassy and wooded habitats, particularly in spring and early summer when nymphal-stage ticks feed.
- Remove leaves, tall grass and brush from areas surrounding work areas (to include residential Sites), thereby reducing tick, deer, and rodent habitat.
- Consider having a licensed applicator apply tick-toxic chemicals (e.g., Damminix, Dursban, Sevin, etc.) to surrounding work or residential areas to suppress the tick population.
- Consider performing work during dormant (sub-freezing) seasons; or not during maximum season (spring and early summer) unless it is not practical or rescheduling may introduce other hazards.

#### **5.3.4 Tick Injury Prevention Measures**

Where avoidance of tick habitat or clearing of the area is not possible, follow Roux Associates' Tick Prevention SOP which includes the use of PPE and other measures to avoid tick bites. These include:

- Using Permethrin on clothes to kill ticks on contact;
- Wearing light-colored clothing so that ticks can be more easily seen and removed before attachment occurs;
- Wearing long-sleeved shirts and tucking in (or taping) pant legs into socks or boots to prevent ticks from reaching the skin;

- Wearing high boots or closed shoes that cover the entire foot;
- Wearing a hat; and
- Spraying insect repellents containing n,n-diethylm-toluamide (DEET) on exposed skin, excluding the face, in accordance with United States Environmental Protection Agency (USEPA) guidelines.

Tick prevention measures as described above must be implemented prior to entering a potentially tick-infested area. This usually means that the PPE needs to be in place and properly worn before stepping off of a paved or concrete area onto a grassy or wooded area. Pant legs need to be tucked into socks. Where Tyvek is used, the pant legs need to be taped at the ankles.

Insect repellent should be applied in accordance with the manufacturer's instructions. In the event of sensitive ecosystems ensure that the application does not need to be applied at a certain distance from the habitat.

The PPE needs to remain on with the tucking or taping of pant legs, all closures fastened, etc., until leaving the potentially tick-infested area. Upon leaving the area, remove the PPE and bag it to prevent ticks from traveling and subsequently attaching themselves to your skin.

Workers are to inspect themselves and co-workers frequently to see if any ticks are on their clothing and remove them as soon as they are identified. If an embedded tick is found, it should be promptly removed with tweezers. This should be done by grasping the tick firmly and as close to the skin as possible. Then, with a steady motion, pull the tick's body away from the skin. Cleanse the area with an antiseptic. DO NOT use petroleum jelly, a hot match, nail polish or other products to remove the tick. Preserve the tick for analysis (i.e., by placing in a zip lock bag, envelope, or jar). The tick will be analyzed to determine if it contains the bacteria capable of causing Lyme disease. After returning home, it is also important to do another thorough examination while showering as a further check that no ticks were missed in previous inspections. Also, it is recommended that any work clothes be washed and dried at high temperatures.

#### 5.3.5 Responding to Known or Suspected Tick Bites

Any discovery of a tick embedded in the skin where the tick contact may have occurred at work will require (in addition to project management) immediate contact of the Office Manager, OHSM, and CHSM.

Medical practitioners consulted by Roux Associates recommend not administering an antibiotic until AFTER symptoms such as rash, flu-like symptoms, fever, joint or muscle aches, nausea or vomiting develop which could take a few days. Therefore, for tick bites determined to be work related, **antibiotics should not be prescribed or administered until AFTER the results of the tick testing are reviewed and until after any characteristic symptoms develop.** 

#### 5.3.6 Tick Incident Investigation and Reporting

Investigation and reporting of a work-related tick bite will follow established incident investigation and reporting procedures. The Roux Associates Health and Safety Lessons Learned (H&SLL) / Accident Report Forms (ARF) will be used for documenting incidents as appropriate, and are provided in Appendix C.

#### 5.3.7 Animals and Animal Wastes

There is potential for various wildlife to reside within the structures, including, but not limited to pigeons, bats, mice, rats, squirrels, raccoons, stray dogs, 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 dead 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.

#### 5.3.8 Blood-Borne Pathogens

The majority of the occupational tasks on-Site will not involve a significant risk of exposure to blood, blood components, or body fluids. The highest risk of acquiring any blood borne pathogen for employees on-Site will be following an injury. When administering first aid care, there are potential hazards associated with blood borne 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 and blood borne pathogens training should never perform first aid and/or cardiopulmonary resuscitation (CPR).

In order to minimize any potential pathogen exposure, all employees should use the hand washing facilities on a regular basis. The decontamination area will provide an adequate supply of water, soap, and single use towels for hand washing. 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.
- Cut-resistant work gloves will be worn to minimize the risk of injury to the hands and finger when working on all equipment with sharp or rough edges.
- Broken glass or possible contaminated material shall be avoided with unprotected hands.

#### 5.3.9 Mold

A collection of moisture inside on-Site structures may lead to the growth of mold within the structures.

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 ten square feet need to notify the SHSO 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 SHSO.

#### 5.3.10 Other Biohazards

Other biological hazards include mosquitoes which generally live in the vicinity of brush, trees, and stagnant water. Some areas have mosquitoes that carry viruses (for example, West Nile virus, or Eastern Equine Encephalitis). Another category of biohazards includes plants such poison ivy, poison oak, and poison sumac. If exposed to these plants, personnel will wash skin thoroughly with soap and water or post-contact cleansers.

#### 5.4 Heat/Cold Stress

Heat and cold stress are potential hazards associated with heavy physical activity and/or the use of personal protective equipment in hot or cold weather environments. Heat and Cold stress are discussed in Sections 9.13 and 9.14. Protection against sun exposure by wearing a sun screen, hat, and long-sleeved shirts must be implemented when warranted in addition to frequent and proactive hydration of workers.

#### 5.5 Noise

Noise is associated with the operation of heavy equipment, power tools, pumps, and generators. Personnel with 8-hour time weighted average (TWA) exposures exceeding 85 decibels (dB) must be included in a hearing conservation program in accordance with 29 CFR 1910.95. High noise operations will be evaluated by the SHSO. Noise exposure will be controlled through the use of hearing protection such as ear plugs or ear muffs or by maintaining set-backs from high-noise equipment as warranted.

#### 5.6 Hazards Caused by Roux's Work

Roux Associates will advise the Client of any unique hazards presented by its work or of any hazards found by Roux during the course of its work for the Client.

- Heavy equipment and motor vehicle traffic- Workers shall wear fluorescent, reflective Class 3 vests
  or high visibility outerwear in high traffic areas and utilize traffic cones, barricades, and caution tape
  to protect work areas, as necessary;
- Slip, trip, fall hazards associated with uneven terrain, obstacles, and slippery or icy surfaces- General housekeeping will be performed to reduce slip, trip and fall hazards;
- Sharp edges, broken glass, exposed nails, rusty metal (wear leather or ANSI Level 2 cut-resistant gloves);
- Pinch points (wear leather or ANSI Level 2 cut-resistant gloves);
- · Overhead hazards (wear hard hats as applicable); and
- Flying objects and airborne particulate hazards (Wear safety glasses, goggles, or face shields when appropriate).

#### 5.7 Electrical Hazards

Portable pumps, generators, and other power tools require proper grounding and/or a ground fault circuit interrupter (GFCI) before operation. Personnel should never attempt to move an operating pump or generator.

## 6. TRAINING REQUIREMENTS

#### 6.1 Basic Training

All site personnel who will perform work in areas where there exists the potential for toxic exposure will be health and safety trained prior to performing work onsite per OSHA (29 CFR 1920.120(e)). Initial and annual training will include the locations of and proper use of safety equipment such as portable fire extinguishers. American Red Cross basic first aid and adult CPR will be offered to employees approximately every two years. Training records will be maintained by the SHSO onsite and as described in Section 6.4. OSHA HAZWOPER training will be provided annually and is limited to first responder awareness level only. Where training is required by a specific health or safety standard, this will be conducted initially and annually and will include the information summarized in the Toxicological Table, Table 1 of this HASP.

#### 6.2 Site-Specific Training

Training will be provided by the SHSO and SM that specifically addresses the activities, procedures, monitoring and equipment to be utilized by site personnel and visitors. The training will include site and facility layout, hazards, emergency services at the site, and will detail all provisions contained within this HASP. Site-specific training will be documented and kept as part of the project records.

#### 6.3 Safety Briefings

Project personnel will be given briefings by the SHSO, the PM and/or the Client's Project Engineer on an asneeded basis to further assist them in conducting their activities safely. Safety briefings will be provided each morning and when new operations are to be conducted; changes in work practices must be implemented due to new information made available and before work is begun at each onsite work area. Safety briefings will include a discussion of anticipated hazards, review Job Safety Analyses for tasks to be implemented, pertinent Loss, Lessons Learned, Peer Observation finding, and safety violations. These include not following Client rules or procedures, not following established safe work practices, and lack or improper use of personal protective equipment/clothing, etc. On-site safety briefings will be documented daily on the forms included as Appendix D (Health and Safety Briefing/Meeting Log and Daily Site Safety Checklist), and will be kept by the SHSO as part of the project records. In addition, when activities are to be conducted which are not specifically addressed by this HASP, appropriate JSAs will be reviewed to determine the appropriate levels of health and safety required. If a JSA for the specific activity does not exist, one will be prepared by the field work team, reviewed for completeness by the Project Manager, and implemented as required by the work scope. Copies of the completed JSA forms for various tasks are included in Appendix A. Modifications to JSAs will be documented on these forms and maintained in the project file. Observed safety violations will be addressed by coaching and mentoring of personnel.

#### **6.4 Record Keeping Requirements**

All record keeping requirements mandated by OSHA (29 CFR 1910.120) will be strictly followed. Specifically, all current personnel training records, medical fit for duty papers, and respirator fit test forms will be required before work can begin and maintained onsite during the length of the project. These records along with injury/incident reports, medical examination records and exposure monitoring records will become a permanent part of the project records. Each subcontractor will maintain the above-mentioned records for his employees.

Medical and exposure records maintained per 29 CFR 1910.1020 will be maintained for at least the duration of employment plus 30 years. Training records will be maintained for 3 years from the date of training.

Medical and exposure records shall be made available upon request to employees, and to the Assistant Secretary or the Director (OSHA) for examination and copying. Medical records must have written consent of employee before being released. Transfer of records will be in compliance with 29 CFR 1910.1020 (h).

## 7. ZONES, PROTECTION, AND COMMUNICATIONS

#### 7.1 Site Zones

A three-zone approach to site operations to control the potential spread of contamination will be employed. The three zones are:

- The Exclusion Zone;
- The Contamination Reduction Zone; and
- The Support Zone.

The establishment of work zones will ensure that: personnel are properly protected against the potential hazards in the area where they are working; work activities and potential contamination are limited to the specific areas; and personnel can be easily located and evacuated in an emergency.

The establishment of work zones and the levels of protection required within the zones will be determined on a case-by-case basis. The SHSO, PM and the Client's Project Engineer will determine the need for work zones, and based upon Site-specific knowledge and data, determine the levels of protection within the established zones. The following sections provide general specifications for the three work zones.

#### 7.1.1 Exclusion Zone

The area(s) which contain, or are suspected to contain, hazardous materials or activities will be considered the Exclusion Zone (EZ). The SHSO may establish more than one restricted area within the EZ when different levels of protection may be employed or different hazards exist. Signs will be posted in and around areas required to be posted by a specific health or safety standard. No personnel are allowed in the EZ without:

- The proper personal protective equipment;
- Medical authorization per Section 8.4;
- A need to be in the zone: and
- · Training certification.

During excavation, drilling and sampling activities, the Exclusion Zone is defined as the excavation and a 10-foot radius around the excavation boundary, or drilling or sampling locations. For the purposes of this project, the Exclusion Zone(s) will be delineated once the work sites have been determined.

#### 7.1.2 Contamination Reduction Zone

A Contamination Reduction Zone (CRZ) will be established between the Exclusion Zone and the Support Zone. The CRZ will contain the contamination reduction corridor (CRC) and is designed to reduce the probability that the uncontaminated clean areas will become contaminated or affected by other site hazards. It is the area where decontamination of personnel and equipment takes place and serves to limit the physical transfer of hazardous substances into clean areas. Decontamination shall be performed in geographical areas that minimize the exposure of uncontaminated employees or equipment to contaminated employees or equipment. The CRZ is to be used for general site entry and egress including access for heavy equipment for investigation activities. The CRZ will also contain safety and emergency equipment (see Section 7.2.3). No personnel are allowed in the CRZ without:

- The proper personal protective equipment;
- Medical authorization per Section 8.4;
- A need to be in the zone; and
- Training certification.

#### 7.1.3 Support Zone

The Support Zone (SZ) is considered the uncontaminated area and will be separated from the CRZ by the "Contamination Control Line". The SZ will contain the support facility that will provide for team communications and emergency response. Appropriate sanitary facilities and safety and support equipment will be located in this zone. The majority of site operations as well as site access of authorized persons will be controlled from this location. The support facility will be located up-wind of site operations, if possible, and may be used as a potential evacuation point. No potentially contaminated personnel or materials are allowed in this zone.

#### 7.1.4 Buddy System

Select field activities conducted in contaminated, hazardous, and remote areas of the Site may require the use of the buddy system. Instances when the buddy system should be employed include, but are not limited to activities performed in wetland areas (i.e., surface-water sampling, etc.), excavation activities, drilling activities and confined space entry (permit required and non-permit required). Prior to commencing with field tasks in a potentially hazardous area, the need for using the buddy system should be evaluated. If required, a buddy should be able to:

- Provide his/her partner with assistance:
- Observe his/her partner for signs of chemical or heat/cold exposure;
- Periodically check the integrity of his/her partner's protective clothing; and
- Notify the SHSO or others if emergency help is needed.

#### 7.2 Personal Protection

This section describes the levels of protection that will be required by on-site personnel during Site activities.

#### 7.2.1 General

The level of protection to be worn by field personnel and visitors will be defined and controlled by the SHSO, the PM and the Client's Project Engineer. Where more than one hazard is indicated, further definition shall be provided by review of Site hazards, conditions, and operational requirements and by monitoring at the particular operation being conducted.

Intrusive activities (i.e., drilling, excavation activities, etc.) include any Site activity which will, or potentially will, result in exposure(s) to hazardous or toxic chemicals or physical agents at or above the permissible exposure limit (PEL), or to flammable or oxygen-deficient atmospheres. Prior to commencing with any field activity, the potential for such conditions should be evaluated to determine air monitoring requirements. General procedures for air monitoring are described below.

During intrusive activities, continuous monitoring will be performed using the photoionization detector (PID). If personal monitoring is needed, it will only be undertaken under the direction and direct supervision of the CHSM.

Based upon the results of air measurements of intrusive activities in these worst case areas, the level of personnel protection will be established for the remainder of the Site. Protection may be upgraded or downgraded by the SHSO in conjunction with the PM based upon the PID instrument.

All non-intrusive activities that preclude contact with contaminated media will be performed in Level D protection without continuous monitoring, unless periodic PID monitoring indicates additional monitoring is warranted. However, initial monitoring may be necessary utilizing the PID.

#### 7.2.2 Respiratory Protection and Clothing

Three levels of protective equipment are discussed below including Level D, Level C, and Level B.

#### **Level D Protection**

- 1. Personal Protective Equipment:
  - High visibility/reflective coveralls/clothing
  - Cut Resistant gloves (or leather work gloves);
  - Boots/shoes, leather, or chemical-resistant, steel toe and shank;
  - lce cleats<sup>(1)</sup>;
  - Boots (outer), chemical-resistant (disposable)\*;
  - Chemical resistant gloves nitriles\*;
  - Chemical resistant clothing (e.g., Tyveks)\*;
  - Fire Retardant Clothing<sup>(2)\*</sup>
  - Safety glasses or chemical splash goggles<sup>(3)</sup>;
  - Hard hat; and
  - Hearing protection.
    - \* Optional for activities except when handling petroleum product (i.e., well bailing) and materials (i.e., soil, sorbent products, etc.) exhibiting high degrees of petroleum contamination
    - (1) Ice Cleats to be worn with approved safety shoes when working in areas with snow/ice cover.
    - (2) Fire retardant coveralls required in areas of hot work/areas with potential for flash (i.e., truck flammable loading rack, within tank berms).
    - (3) Clear lenses to be worn when working in low light areas inside site buildings and outside during overcast days that may limit visibility.

#### 2. Criteria for Selection.

 Non-intrusive activities and intrusive activities in areas where the potential airborne hazards are substantially characterized and do not pose a threat of exposure in excess of one-half the PEL.

- PID instrument (such as the MiniRAE 3000 or other comparable instrument) readings in the breathing zone are less than 5 ppm. Work functions preclude splashes, immersion, or potential for unexpected inhalation of any chemicals.
- 3. Modifications of Level D will be used to increase or decrease the level of skin protection during activities that increase or preclude, respectively, the degree of contact with chemical hazards. Modifications for increased protection may include the use of chemical resistant coveralls (e.g., Tyveks) and chemical resistant gloves. Chemical resistant coveralls, gloves, and boots will be used when the handling of petroleum products is required (i.e., well bailing). Any modifications of Level D will require approval of the SHSO and PM.

Protection may be upgraded or downgraded by the SHSO in conjunction with the Project Principal on the basis of action levels presented below:

#### **Action Levels for Respiratory Protection (Total Organic Vapors)**

Total Organic Vapors in Breathing Zone (ppm) <sup>(1)</sup>	Action
≤ 5	No Action
> 5 - < 25	Cease Field Operations
≥ 25	Cease Field Operations

<sup>(1)</sup> Based on relative response (sensitivity of PID to total organic vapors).

#### **PID Action Levels**

If photoionization detector measurements are above 5 ppm-v but below 25 ppm-v above background for five minutes in the breathing zone, employee protection will be upgraded to Level C with the use of a full-face respirator.

If PID measurements exceed 25 ppm-v above background for five minutes in the breathing zone, work activities will cease until airborne vapor levels can be reduced to less than 25 ppm-v and are quantified or the SHSO determines alternate methods to be followed in order to proceed.

Most activities are conducted outdoors, where breathing of high vapor levels are not likely in aboveground areas. Excavations which are not to be entered are likely to have higher vapor concentrations. Where a spill occurs in a basement or other indoor area, ventilation will not be as good as outdoors and extra care shall be taken in monitoring vapor levels.

#### **Action Levels for Oxygen Levels and Combustible Gases**

COMBUSTIBLE GASES <sup>1</sup>		
0-2.0 – 2.0% LEL	Continue monitoring	
2.0 – 5.0% LEL	Notify SHSO	
5.0% LEL or greater	Potential explosion hazard Interrupt task / Evacuate Area	

#### **Action Levels for Oxygen Levels and Combustible Gases**

OXYGEN <sup>1</sup>		
20.8% O <sub>2</sub>	Oxygen level normal	
Greater than 22.0% O <sub>2</sub> / Less than 20.0% O <sub>2</sub>	Oxygen enriched / deficient – notify SHSO	
Greater than 23.5% O <sub>2</sub> / Less than 19.5% O <sub>2</sub>	Oxygen enriched / deficient Interrupt task / Evacuate area	

Action levels are based on Environmental Protection Agency Standard Operating Safety Guides; Table 5-1, Atmospheric Hazard Action Guidelines may be further restricted based on the CIH's professional judgment and experience.

#### **Level C Protection**

- 1. Personal Protective Equipment:
  - Full-face, air-purifying, cartridge-equipped respirator (MSHA/NIOSH specifically approved for protection from organic vapors per OSHA 1910.1028);
  - Chemical-resistant clothing (coverall; hooded, two-piece chemical splash suit; chemical-resistant hood and apron; disposable chemical-resistant coveralls);
  - Gloves (outer), chemical-resistant nitriles;
  - Gloves (inner), chemical-resistant latex;
  - Boots (inner), chemical-resistant, steel toe and shank;
  - Boots (outer), chemical-resistant (disposable\*);
  - Hard hat:
  - Hearing protection; and
  - Escape mask\*.
    - \* Optional
- 2. Criteria for Selection.

Meeting any of these criteria warrants use of Level C protection.

- Airborne hazards are known to be present but are unlikely to exceed protection factors provided by air-purifying respirators.
- Continuous total organic vapor readings in the breathing zone register between 5 ppm and 25 ppm on a PID (such as the MiniRAE 3000 or other comparable instrument), benzene and furfural readings utilizing colorimetric indicator tubes (e.g., Dräeger or Sensidyne) are detectable but less than 5 ppm.
- Measured air concentrations of known organic vapors will be reduced by the respirator to, at, or below one-half the permissible exposure limits, and the individual and combined compound concentrations are within the service limit of the respirator cartridge.
- Atmospheric contaminant concentrations do not exceed Immediately Dangerous to Life and Health (IDLH) concentrations.
- Atmospheric contaminants, liquid splashes, or other direct contact will not adversely affect the small area of skin left unprotected by chemical-resistant clothing.
- Job functions have been determined not to require self-contained breathing apparatus.

Notes: 1. Benzene and furfural may also be monitored initially and periodically in the breathing zone utilizing activated charcoal sampling devices.

 Modifications of Level C will be used to increase or decrease the level of skin protection during activities that increase or preclude, respectively, the degree of contact with chemical hazards. Modifications for increased protection may include the use of chemical resistant coveralls (e.g., Tyveks) and chemical resistant gloves. Any modifications to Level C will require approval of the SHSO and PM.

#### **Level B Protection**

- 1. Personal Protection Equipment:
  - Pressure-demand, self-contained breathing apparatus (MSHA/NIOSH approved);
  - Chemical-resistant clothing (overall and long-sleeved jacket; coveralls; hooded, one or two-piece chemical-splash suit; disposable chemical-resistant coveralls);
  - Gloves (outer), chemical-resistant;
  - Gloves (inner), chemical-resistant;
  - Boots (inner), chemical-resistant, steel toe and shank;
  - Boots (outer), chemical-resistant, (disposable);
  - Hard hat;
  - Hearing protection; and
  - Two-way radio communications (intrinsically safe).

#### 2. Criteria for Selection

Meeting any one of these criteria warrants use of Level B protection:

- PID instrument (such as the MiniRAE 3000 or other comparable instrument) readings in the breathing zone are greater than 25 ppm and less than 500 ppm, benzene and furfural are detectable at concentrations at or above 5 ppm utilizing colorimetric indicator tubes (e.g., Dräeger or Sensidyne).
- Airborne hazards are known to be present, but are not identified or quantified.
- The type(s) and atmospheric concentration(s) of toxic substance(s) have been identified and require the highest level of respiratory protection, but a lower level of skin and eye protection. These would be atmospheres:
  - With IDLH concentrations;
  - Exceeding limits of protection afforded by a full-face, air-purifying respirator; or
  - Containing substances requiring air-supplied equipment, but substances and/or concentrations do not represent a serious skin hazard.
- The atmosphere contains less than 19.5% oxygen.
- Site operations make it highly unlikely that the small, unprotected arc of the head or neck will be contacted by splashes of extremely hazardous substances.
- If work is performed in an enclosed space where the exposure to toxics or an oxygen deficient atmosphere may be present.

#### 7.2.3 Safety Equipment

Basic emergency and first aid equipment will be available at the Support Zone and/or the CRZ as appropriate. This shall include first aid kit, emergency eyewash, fire extinguishers, and other safety-related equipment. Basic emergency and first aid equipment is available onsite. Field personnel will be notified of the locations of emergency and first aid equipment prior to commencing with field activities.

#### **Hand Tools**

Where hand and power tools are used and employees are potentially exposed to the hazard of falling, flying, abrasive, or splashing objects, or are exposed to harmful dust, fumes, mists, vapors, or gases, the employees shall be provided the appropriate Personal Protective Equipment as necessary to protect them from the hazard.

#### Communications

Mobile Telephones – for communication with emergency support services/facilities. All Roux Associates, Inc. site personnel will be equipped with a mobile phone. Mobile communications, however, will be prohibited when the user is within the work area to avoid injuries resulting from distraction.

## 8. MONITORING PROCEDURES FOR SITE OPERATIONS

#### 8.1 Air Quality Monitoring During Site Operations

The SHSO will monitor wind direction and temperature during monitoring and record all data in a log book. All monitoring equipment will be calibrated to the manufacturer's specifications each day prior to use and documented in Site field books.

#### 8.2 Air Quality Monitoring During Intrusive Activities

Intrusive activities include any Site activity which will, or will possibly, result in exposure(s) to hazardous or toxic chemicals or physical agents at or above a permissible exposure limit (PEL), or to flammable or oxygendeficient atmospheres. Prior to commencing with any field activity, the potential for such conditions should be evaluated to determine air monitoring requirements. General procedures for air monitoring are described below.

Air monitoring will be performed to establish the concentrations of volatile organic compounds during invasive activities using the following instrument(s):

- Photoionization detector;
- Colorimetric indicator tubes (e.g., Dräeger or Sensidyne), if necessary; and
- · Activated charcoal sampling devices, if necessary.

The PID will be used to provide direct readings of organic vapor concentrations during intrusive activities to determine that personnel protection is adequate.

A combustible gas LEL/O<sub>2</sub> meter will be used to monitor the potential for oxygen-deficient atmospheres and for explosive concentrations of organic vapors during intrusive operations and any potential confined space work. Monitoring will be performed according to the action levels for oxygen and combustible gases provided in Section 7.2.2.

In accordance with the DER-10 Technical Guidance for Site Investigation and Remediation dated May 2010 (DER-10) issued by the New York State Department of Environmental Conservation (NYSDEC), a community air monitoring plan (CAMP) will be implemented during intrusive Site activities. The Generic CAMP as provided in DER-10, Appendix 1A, is included in Appendix I of this HASP.

#### 8.2.1 Level D Intrusive Activities

Level D intrusive activities will initially include all intrusive Site activities. These investigations/activities will begin utilizing Level D protection as described in Section 7.2.2, with upgrading as necessary to assure adequate personnel protection.

The SHSO will monitor the breathing zone with the PID in continuous operating mode and with the alarm activated. The alarm will be set at 5 ppm, which is below the permissible exposure level (PEL) for all constituents of concern, except benzene and furfural. If the PID indicates the 5-ppm concentration has been exceeded, the SHSO will order cessation of the activity and the exclusion zone cleared of all personnel until

the PID indicates a reading less than 5 ppm, or until the nature of the hazard has been more thoroughly evaluated.

#### 8.2.2 Level C Intrusive Activities

Level C intrusive activities will initially include only those activities which require upgrading from Level D. Level C protection will be as described in Section 7.2.2, with upgrading, as necessary, to Level B to assure adequate personnel protection. Downgrading to Level D protection will also be possible if monitoring demonstrates no inhalation hazard exists for the activity.

The SHSO will monitor the breathing zone with the PID in continuous operating mode and with the alarm activated. The alarm will be set at 5 ppm, which is below the permissible exposure level (PEL) for all constituents of concern except benzene and furfural. If the PID indicates the 5-ppm concentration has been exceeded, the SHSO will initiate measurements utilizing the colorimetric indicator tubes for benzene and furfural.

If the PID readings exceed 25 ppm total organic vapor, or the benzene and/or furfural colorimetric indicator tube readings exceed 5 ppm, the SHSO will order cessation of the activity until: 1) the PID indicates a reading less than 25 ppm, and the benzene and/or furfural concentrations are below 5 ppm based upon the colorimetric indicator tube readings, 2) all potentially exposed personnel have donned Level B respiratory protection or, 3) the nature of the hazard has been more thoroughly evaluated and it is determined that the measured concentrations do not pose a potential exposure in excess of the PEL utilizing the Level C protection.

To confirm the adequacy of respiratory protection, personnel monitoring utilizing activated charcoal sampling devices may be performed to measure the airborne concentrations of benzene and furfural and possibly other organic compounds (as necessary) at the beginning of new activities and periodically during intrusive activities. These samples would be sent to an AIHA accredited laboratory for analysis using the approved NIOSH analytical methods.

#### 8.2.3 Level B Intrusive Activities

Level B intrusive activities will initially include only those activities that require upgrading from Level C, and only those activities required to bring work to a safe stoppage. No work is currently planned utilizing Level B protection, and this HASP will require amendment at such time as Level B work becomes necessary (except for safe work stoppage activities).

When Level B protection is utilized, the SHSO will monitor the breathing zone with the PID in continuous operating mode and with the alarm activated. The alarm will be set at 100 ppm. If the PID indicates the 100-ppm concentration is exceeded, the SHSO will order cessation of the activity until: 1) the PID readings are below 100 ppm or; 2) until the nature of the hazard has been more thoroughly evaluated and it is determined that the measured concentrations do not pose a potential exposure in excess of a PEL utilizing the Level B protection.

To confirm the adequacy of respiratory protection, personnel monitoring utilizing activated charcoal sampling devices may be performed to measure the airborne concentrations of benzene and furfural and possibly other organic compounds (as necessary) whenever Level B protection is utilized.

#### 8.3 Air Quality Monitoring During Non-Intrusive Activities

Non-intrusive activities include any Site activity which would not reasonably be expected to result in exposure(s) to hazardous or toxic chemicals or physical agents at or above the permissible exposure limit (PEL), or to flammable or oxygen-deficient atmospheres. Based upon the current understanding of Site conditions no monitoring is required during non-intrusive activities.

#### 8.4 Medical Surveillance Requirements

Medical surveillance specifies any special medical monitoring and examination requirements as well as stipulates that all Roux Associates personnel and subcontractors contracted directly by Roux Associates are required to pass the medical surveillance examination or equivalent for hazardous waste work required by 29 CFR 1910.120.

The examination will be taken annually, at a minimum, and upon termination of employment with the company at no cost to employees. Additional medical testing may be required by the CHSM, or CHSM in consultation with the company physician and the SHSO, if an overt exposure or accident occurs, or if other site conditions warrant further medical surveillance.

Medical examinations and procedures shall be performed by or under the supervision of a licensed physician. Medical surveillance is provided without cost to the employees.

## 9. SAFETY CONSIDERATIONS FOR SITE OPERATIONS

#### 9.1 General

In this section, non-monitoring, safety-related procedures are described. In general, all site activities should be conducted in accordance with the Client's Safe Work Practices Requirements and Contractor Safety Rules and Work Procedures.

#### 9.2 Site Walk-Throughs

Safety considerations during site walk-throughs are important since this activity will usually precede all other field operations. Air monitoring will be performed as indicated in Section 8.0 and will be used to assist in prescribing levels of protection for future site operations, designating site layout and identifying areas of particular hazard, if any.

#### 9.3 Construction Activities

Activities involved with construction of remedial action treatment systems will initially be considered non-intrusive activities. However, initial and/or periodic monitoring, as described in Section 7.2 may be performed by the SHSO.

A variety of physical hazards may be present during any construction-type project. Personnel should be aware of safety issues associated with; noise, cold, hot work such as welding, cutting and burning, heavy lifting, rough terrain, heavy equipment operation, ladders, scaffolding, excavating and trenching, underground and overhead utilities, electrical hazards, and the hazards associated with hand and power tools. These hazards are not unique and are generally familiar to most construction personnel.

### 9.4 Heavy Equipment and Traffic Safety

The SHSO will be present onsite during all invasive operations and will provide health and safety monitoring to ensure that appropriate levels of protection and safety procedures are utilized.

This Site utilizes all of the mechanical equipment used on any major construction site. Typical machinery to be found includes pumps, compressors, generators, portable lighting systems, pneumatic tools (drum openers), hydraulic drum crushers, pug mills, forklifts, trucks, dozers, and backhoes, drill rigs. It poses a serious hazard if not operated properly, or if personnel near machinery cannot be seen by equipment operators.

Roux SOP 1.13R1 outlines Roux policies and procedures regarding Heavy Equipment Exclusion Zone (HEEZ) set up and use. The objective of the Exclusion Zone Policy is to establish the minimum clearance distance that must be maintained between workers and heavy equipment while equipment is in operation (i.e., engaged or moving). The intent is to have no personnel or other equipment entering the HEEZ while the equipment is in operation/moving, to ensure that Roux and Subcontractor employees are not unnecessarily exposed to the hazards of the equipment. Appendix E provides Roux Associates' Heavy Equipment Exclusion Zone SOP.

In addition, safety procedures relating to traffic safety must be followed while performing on-site and off-site activities.

#### **On-Site Traffic Safety Procedures**

When performing activities on, or adjacent to on-site roads, the following traffic safety procedures must be followed.

- High-visibility coveralls must be worn during Site activities as described in Section 7.2 of this HASP.
   If possible, the coveralls being worn should be modified via wearing of a reflective vest or with a reflective, reflective stripe(s) when working on, or adjacent to all paved and unpaved roads at the Site.
- When performing activities on, or on the shoulder of any paved roads (e.g., Site entrance and exit roads, the primary roads leading to a truck loading rack, paved areas at a truck loading rack), a minimum of two people must be present. One person will serve as a "traffic watchman" whose sole responsibility is to monitor traffic conditions and alert worker(s) of potential traffic hazards. The "traffic watchman" must be alert at all times and focused on traffic conditions. At no time should the "traffic watchman" engage in activities other than monitoring traffic conditions.
- When performing activities at wells, well vaults, manholes, etc., on, or adjacent to all paved and unpaved roads at the Site, the work vehicle should be positioned, to the fullest extent possible, to form a barrier between the worker(s) and oncoming traffic. In addition, each work vehicle will be equipped with a minimum of four high visibility traffic cones. All traffic cones will be placed as necessary to alert traffic of ongoing activities.
- All Client and Roux Associates subcontractors performing work at the Site must also adhere to the above safety procedures.

#### **Off-Site Traffic Safety Procedures**

When performing activities on or adjacent to off-site roads, the following traffic safety procedures must be followed.

- When performing activities on, or adjacent to off-site roads (paved and unpaved), a reflective vest or high visibility outerwear will be worn at all times.
- As described in on-site procedures, when performing activities on, or adjacent to off-site paved roads, a "traffic watchman" must be used at all times.
- As described in on-site procedures, when performing activities on, or adjacent to off-site roads, the
  work vehicle should be positioned, to the fullest extent possible, to form a barrier between the
  worker(s) and oncoming traffic. In addition, a minimum of four 42" high traffic cones will be placed
  as necessary to alert traffic of ongoing activities.

#### 9.4.1 Inspection

Each piece of potentially hazardous equipment (i.e., power tools) will be inspected for proper and safe operation prior to its use.

- All mechanical and rigging equipment will be inspected by the operators prior to beginning this work effort, and at least daily thereafter, to ensure proper operating capability and that all guards are adequate and in place. Defective equipment must be repaired or replaced prior to continued use/operation.
- Inspect all cables, sheaves, slings, chains, hooks, and eyes prior to use.
- Secure equipment firmly or make sure it is supported.
- Be sure all power lines are inactivated, removed, or at a safe distance.

- Always use proper loading for capacity at lifting radius.
- Keep all equipment lubricated and maintained.
- · Employ signal persons whenever needed.
- Make certain that signals are understood and observed.

#### 9.5 Drilling Operations

The SHSO will be present onsite during all Roux Associates contracted, and when requested, Client contracted, drilling operations. The SHSO will provide health and safety monitoring to ensure that appropriate levels of protection and safety procedures are utilized. The proximity of chemical, water, sewer, and electrical lines will be identified by the Client's Project Engineer before any subsurface activity or sampling is attempted. Refer to Appendix F for the Roux Associates' Subsurface Utility Clearance Procedure, which provides guidance regarding the identification of subsurface structures through exploratory test-hole advancement to target depths in order to be protective of underground utilities potentially in the borehole location and the health and safety of both onsite personnel and the public.

Proper stockpiling, containment, and disposal practices will be utilized in regard to the potential amount of waste generated during operations. The location of safety equipment and evacuation procedures will be established prior to initiation of operations according to this HASP. The use of hard hats, eye protection, ear protection, hand protection, and steel-toed boots will be required during all drilling operations.

#### 9.6 Excavation and Backfill Operations

The SHSO will be present onsite during all Roux Associates contracted excavation and backfill operations and will provide health and safety monitoring to ensure that appropriate levels of protection and safety procedures are utilized. The proximity of chemical, water, sewer, and electrical lines will be identified by the Client's Project Engineer before any subsurface activity or sampling is attempted.

The following safe work practices will be followed during this task:

- The proximity of chemical, water, sewer and electrical lines will be identified by a facility representative prior to any subsurface activity beginning.
- Roux's subsurface protocol or the Client's protocol will be used, whichever is more stringent.
- While excavating, stay out of the reach of the backhoe arm's swing by standing at the end of the excavation, not near the sides (sides have the potential to cave in).

#### **Maximum Allowable Slopes**

Soil or Rock Type	Maximum Allowable Slopes (H:V) <sup>1</sup> for Excavations less than 20 Feet Deep <sup>3</sup>
Stable Rock	Vertical (90°)
Type A <sup>2</sup>	³⁄4 : 1 (53°)
Type B	1 : 1 (45°)
Type C	1½ : 1 (34°)

#### **Maximum Allowable Slopes**

	Maximum Allowable Slopes (H:V) <sup>1</sup> for
Soil or Rock Type	Excavations less than 20 Feet Deep <sup>3</sup>

OSHA (29 CFR 1926.652, Subpart P, Appendices A and B)

#### Notes:

- Numbers shown in parentheses next to maximum allowable slopes are angles expressed in degrees from the horizontal. Angles have been rounded off.
- <sup>2</sup> A short term maximum allowable slope of 1/2H: 1V (63°) is allowed in excavations in Type A soil that are 12 feet (3.67 m) or less in depth. Short term maximum allowable slopes for excavations greater than 12 feet (3.67 m) in depth shall be 3/4H: 1V (53°).
- Sloping or benching for excavations greater than 20 feet deep shall be designed by a Registered Professional Engineer.

Proper stockpiling, containment, and disposal practices will be utilized in regard to the potential amount of waste generated during operations. The location of safety equipment and evacuation procedures will be established prior to initiation of operations according to this HASP. The use of hard hats, eye protection, ear protection, hand protection and steel-toed boots will be required during excavation or other heavy equipment operations.

#### 9.7 Overhead/Underground Power Lines

The positioning or operation of heavy equipment in the vicinity of utility services will not be initiated until the activities have been coordinated with the Client's Project Engineer and SM. Operation of equipment adjacent to or under overhead power lines, in such a manner that encroaches on authorized clearances, will not take place unless one of the following are satisfied:

- Power has been shut off and positive steps are taken to prevent the lines from being energized;
- The equipment does not have the ability to move laterally or horizontally within the minimum clearance specified in the table below, from energized power lines;
- The equipment has been positioned and blocked to allow no part, including cables, to come within the minimum clearance specified in the table below; or
- Excavation operations are not initiated within 25 feet of the verified position of underground power lines.

#### Minimum Required Clearances for Energized Overhead Power Lines

Nominal System Voltage of Power Line (K V)	Minimum Required Clearance (feet)
0-50	10
51-100	12
101-200	15
201-300	20
301-500	25
501-750	35
751-1000	45

1 kilovolt (KV) = 1,000 volts

#### 9.8 Heavy Equipment Decontamination

If a steam cleaner will be utilized to decontaminate equipment, personnel should exercise caution as the high pressure steam can cause severe burns. Protective gloves, face shields, hard hats, steel-toed boots, and Tyvek suits or rain gear will be worn when using steam cleaners.

#### 9.9 Hot/Cold Work

Roux Associates shall not perform welding unless specific clearance and a hot work permit have been obtained from the Client's Project Engineer, PM or SM. Any contractors or Roux Associates personnel performing welding must adhere to the Client's Hot Work Procedures and the procedures outlined below.

Welding equipment shall be chosen for safe application to the work and shall be installed properly. Employees designated to operate welding equipment shall be properly instructed and qualified to operate it. Mechanical ventilation shall be provided when welding or cutting:

- Where there is less than 10,000 cubic feet of air per welder;
- Where the overhead height is less than 16 feet; and
- Where required by Client practices and procedures (e.g., Confined Space Permitting).

Proper shielding and eye protection shall be used to prevent exposure of personnel to welding hazards. Proper precautions (isolating welding and cutting, removing fire hazards from vicinity, etc.) for fire prevention shall be taken in areas where welding or other "hot work" is being done. All welding operations and other "hot work" shall be scheduled and performed in accordance with the Client's permitting system. The SHSO will be responsible for securing these permits.

#### 9.9.1 Welding in Confined Spaces

All welding and cutting operations carried out in confined spaces shall be adequately ventilated to prevent the accumulation of toxic materials or possible oxygen deficiency and shall be performed in compliance with the Client's and Roux Associates' Confined Space Entry Procedures. In general, oxygen shall never be used for ventilation. In such circumstances where it is impossible to provide ventilation, OSHA requires airline respirators or hose masks approved by the National Institute for Occupational Safety and Health (NIOSH) for this purpose to be utilized. In areas immediately dangerous to life, NIOSH approved powered air purifying respirators (PAPR) or self-contained breathing apparatus (SCBA) shall be used. These exposures and tasks are not to be performed by Roux employees. If the work requires welding in confined spaces, this will only be performed by a qualified welder who is Confined Space Entry Trained (for permit-required entries) and provided with procedures and PPE that satisfy OSHA 29 CFR 1910.134.

#### 9.10 Asbestos

Asbestos may be present at the site as pipe wrap, as part of the pipe material itself (asbestos-cement pipe), or as part of other building materials (e.g., in floor tiles and roofing). Asbestos shall be abated by a licensed abatement contractor according to all applicable laws and standards. Personnel should be aware of the presence of asbestos and avoid contact with friable material. Asbestos-cement pipe can emit airborne fibers if the materials are cut or sawed, or if they are damaged during demolition operations. Handling of these non-friable materials shall be limited to activities that will not generate airborne fibers.

### 9.11 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/clothing 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 stress 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 shade, rest, and fluid replacement. Normally, the individual should recover within one-half hour. If the individual is not better within 30 minutes and the body temperature has not decreased, the individual should be transported to an occupational health clinic or hospital for medical attention.

Heat exhaustion may occur in a healthy individual who has been exposed to excessive heat while working or exercising. 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. If the individual is not better within 30 minutes and the body temperature has not decreased, the individual should be transported to an occupational health clinic or hospital for medical attention. A New York vicinity city map with the location of Lincoln Hospital Center and City MD and Urgent Care Facility is included as Figure 3 and 4 (see colored tabs).

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

- Dry, hot red skin;
- Body temperature approaching or above 105 degrees F;
- Large (dilated) pupils; and
- Loss of consciousness the individual may go into a coma.

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

Heat stress is a significant hazard if any type of protective equipment (semipermeable or impermeable) which prevents evaporative cooling is worn in hot weather environments.

### 9.12 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. A work/rest regimen will be initiated when ambient temperatures and protective clothing cause a stressful situation. In addition, reduced work periods followed by rest in a warm area may be necessary in extreme conditions. The signs and symptoms of cold stress include the following:

- Severe shivering;
- Abnormal behavior;
- Slowing;
- Weakness:
- Stumbling or repeated falling;
- Inability to walk;
- Collapse; and/or
- Unconsciousness.

First aid requires removing the victim from the cold environment, and preventing further body heat loss by covering the victim lightly with blankets. <u>Do not cover the victim's face</u>. If the victim is still conscious, administer hot drinks and encourage activity such as walking, wrapped in a blanket. If the victim's conditions do not improve, seek further medical attention.

### 9.13 Communications

## **Telephones**

Telephones will be available for communication with emergency support services/ facilities.
Telephones are located in the kiosk and are available for communication with emergency support
services. In addition, Site personnel are equipped with cellular telephones. Applicable telephone
and cellular phone numbers are provided in Section 1.0 (page 3) and in the colored tab section
located in the back of this HASP.

### Hand Signals

• To be employed by personnel required to use Level C respiratory protection. They shall be known by the entire field team before operations commence and covered during Site-specific training.

#### **Hand Signals**

SIGNAL	MEANING				
Hand gripping throat	Out of air, can't breathe				
Grip partner's wrist	Leave area immediately				
Hands on top of head	Need assistance				
Thumbs up	I'm alright, okay				
Thumbs down	No, negative				

### 9.14 Additional Safe Work Practices

Refer to the SHSO for specific concerns on each individual site task. The safety rules listed below, as well as in the Client's Safe Work Practices Requirements, must be strictly followed:

- Inform SM of planned activities and evaluate the degree of health and safety protection required for each task;
- Practice contamination avoidance, avoid any skin contact with potentially contaminated materials (i.e., surface or ground water, soil, etc.);
- Hard hat and safety eye protection will be worn when inside the exclusion zone;
- Do not carry gum, cigarettes, food drink or cosmetics of any kind into contaminated areas;
- Wash hands before handling food and drink and other activities that could cause hand-to-mouth transfer of contaminants;
- Appropriate foot, hearing, eye, head, and hand protection will be worn by those directly involved in the work efforts when warranted;
- No facial hair that interferes with the face to face piece seal of respirators will be allowed;
- Personnel not involved in the operations, excavating, or monitoring activities will remain a safe distance from the equipment;
- Do not climb over/under obstacles or barricades;
- Be alert to your own physical condition;
- Watch your buddy for signs of fatigue, exposure, heat, or cold stress, etc.;
- No work will be conducted without adequate light;
- Report all accidents, no matter how minor, immediately to the SHSO and the Project Engineer; and

### KNOW YOUR HEALTH AND SAFETY PLAN.

# 10. DECONTAMINATION PROCEDURES

## 10.1 Contamination Prevention

One of the most important aspects of decontamination is the prevention of contamination. Good 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 handle or touch contaminated materials directly;
- Make sure all personal protective equipment (PPE) has no cuts, tears, or other signs of deterioration prior to donning;
- Fasten all closures on suits, covering with tape, if necessary;
- Take particular care to protect any skin injuries;
- Stay upwind of airborne contaminants; and
- Do not carry cigarettes, gum, etc., into contaminated areas.

## Sampling/Monitoring

- When required by the SHSO, cover instruments with clear plastic, leaving opening for sampling and exhaust ports; and
- Bag sample containers prior to the placement of sample material.

#### **Heavy Equipment**

- Care should be taken to limit the amount of contamination that comes in contact with heavy equipment;
- Excavated soils should be contained and kept away from workers; and
- Decontaminate equipment prior to moving to another work area.

## 10.2 Decontamination

The SHSO shall be responsible for determining appropriate decontamination methods for all Site activities. Decontamination water should be collected, handled, drummed, and/or containerized prior to determination of classification and appropriate disposal method (see Section 11.0).

## **Equipment Decontamination**

Sampling equipment will be decontaminated through the following steps, if necessary:

- fresh water rinse;
- · non-phosphate detergent wash;
- fresh water rinse; and
- distilled water rinse.

## 11. DISPOSAL PROCEDURES

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 should be bagged, drummed, or placed in waste wranglers, as necessary, and placed in a designated area determined by the Client.

All personal protective clothing and sorbent products contaminated with petroleum product will be stored in waste storage containers (i.e., waste wranglers). Additionally, all petroleum products generated from product recovery activities (i.e., well bailing, etc.) will be drummed and stored within the hazardous waste storage area or placed in drums/storage tanks positioned in an area to be determined. All hazardous waste storage containers, tanks, and drums will be labeled with the appropriate hazardous waste labels and/or placards. All contaminated materials will be disposed of in accordance with appropriate regulations. All noncontaminated materials shall be collected and bagged for appropriate disposal as normal domestic waste.

PPE & equipment shall be decontaminated, cleaned, laundered, maintained, or replaced as needed to maintain their effectiveness. Employees whose non-impermeable clothing becomes wetted with hazardous substances shall immediately remove the clothing.

## 12. EMERGENCY PLAN

As a result of the hazards onsite and the conditions under which operations are conducted, the possibility of an emergency exists. An emergency plan is required by OSHA (29 CFR 1910.120) to be available for use and is included below. A copy of this plan shall be available in the Support zone at each work site.

In the event of an emergency situation, such as fire, explosion, significant release of particulates, etc., all persons in both the restricted and non-restricted areas will evacuate and assemble near the Support Zone or other safe area as identified by the Site Emergency Coordinator(s). The Site Emergency Coordinator(s) will have authority to initiate proper action if outside services are required. Under no circumstances will incoming personnel or visitors be allowed to proceed into the area once the emergency signal has been given. The SHSO or SM must see that access for emergency equipment is provided and that all spark-producing apparatus has been shut down once the alarm has been sounded. Once the safety of all personnel is established, the fire department and other emergency response groups will be notified by telephone of the emergency. Then, other personnel listed in Section 12.4 shall be notified.

## 12.1 Site Emergency Coordinator(s)

The Site Emergency Coordinator(s) are:

- Site Manager;
- · Site Health and Safety Officer;
- · Project Engineer; and
- Facility Manager.

The Site Emergency Coordinator(s) shall implement this emergency plan whenever conditions at the site warrant such action. The coordinator(s) will be responsible for assuring the evacuation, emergency treatment, emergency transport of site personnel as necessary, and notification of emergency response units and the appropriate management staff.

#### 12.2 Evacuation

### Withdrawal Upwind

The work party will continually note general wind directions while onsite. Upon noting the conditions warranting movement away from the work site, the crew will move upwind a distance of approximately 100 feet or farther, as indicated by the site monitoring instruments. Donning SCBA and a lifeline, SHSO will return to the work site to determine if the condition noted was transient or persistent. If persistent, on-site personnel will be notified of the situation and the need to leave the site or don SCBA. When access to the site is restricted and escape possibly hindered, the crew may be instructed to evacuate the site rather than move upwind, especially if withdrawal upwind moves the crew away from escape routes.

## **Site Evacuation**

Upon determination of conditions warranting site evacuation, the work party will proceed upwind of the work site and notify the SHSO and the Client's Project Engineer of site conditions. If the hazard is toxic gas, respirators will be donned. The crew will proceed to the field office to assess the situation. The advisability and type of further response action will be coordinated and carried out by the SHSO, the PM and the Client's Project Engineer. Site evacuation routes are illustrated in Figure 7.

## 12.3 Potential or Actual Fire or Explosion

If the potential for a fire exists or if an actual fire or explosion occurs, the following procedure will be implemented:

- Immediately evacuate the site as described above (Section 12.2);
- Notify Client's Project Engineer, SHSO and PM; and
- Notify fire and security. Call 911

 Fire Department
 –
 911

 Police Department
 –
 911

## 12.4 Environmental Incident (Release or Spread of Contamination)

If possible, the spread of contamination should be controlled or stopped. The Facility Manager must be informed of the need to contact police and fire authorities to inform them of the possible or immediate need for nearby evacuation. If a significant release has occurred, the National Response Center and other appropriate groups should be contacted by the Facility Manager or his designee. Those groups will alert National or Regional Response Teams as necessary. Following these emergency calls, the remaining personnel listed in the table below shall be notified:

## **Emergency Telephone Numbers**

Туре	Name	Telephone #		
Fire Department	FDNY	911		
HazMat Emergency Response		911		
Law Enforcement	NYPD	911		
Hospital	Bronx Lebanon Hospital	(718) 860-6169		
Ambulance	FDNY	911		
Urgent Care Center	City MD	(212) 913-0820		
National Response Center (Release or Spill)		(800) 424-8802		
Client Contact	Arianna Sacks Rosenberg			
Site Health and Safety Officer	TBD			
Project Manager	Jeffrey Wills	(516) 637-0213		
Corporate H&S Manager	Joseph Gentile	(856) 832-3768 (Office) (610) 844-6911 (Cell)		

These contacts and phone numbers will be posted in the SZ.

## 12.5 Personal Injury

If on-site personnel require emergency medical treatment, the following steps will be taken:

- 1. Notify the Project Manager, Principal, and/or other Roux Senior Management for Illness or Injury Case Management protocol to be initiated.
- 2. Notify the Fire Department or Ambulance service and request an ambulance or transport the victim to the hospital, as appropriate.
- 3. Decontaminate to the extent possible prior to administration of first aid or movement to emergency facilities.
- 4. First aid will be provided by emergency medical services (EMS) or by on-site personnel trained in first aid, CPR, and blood borne pathogens, if available.
- 5. The OHSM will supply medical data sheets on the victim (if a Roux Associates, Inc. employee) to appropriate medical personnel.

Accident Report Forms and Medical Services Form are provided in Appendix C.

## 12.6 Overt Personnel Exposure

If an overt exposure to toxic materials should occur, the exposed person shall be treated onsite as follows:

Skin Contact: Wash/rinse affected area thoroughly with copious amounts of soap and water,

then provide appropriate medical attention. An emergency shower or drench system shall be accessible at the Site at all times. Utilizing eyewash, eyes should be rinsed for at least fifteen (15) minutes upon chemical contamination.

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

hospital.

Ingestion: Decontaminate and transport to emergency medical facility.

Puncture Wound or

Laceration:

Decontaminate and transport to emergency medical facility. SHSO will coordinate with the CHSM and the HR Director to obtain medical information

on the injured if necessary.

#### 12.7 Adverse Weather Conditions

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

- Heavy rainfall;
- High wind;
- Potential for heat stress:
- Potential for cold stress and cold-related injuries;
- Limited visibility;
- Potential for electrical storms stop work for a minimum of 15 minutes after observing a lightning strike and for at least 15 minutes after the storm has passed;
- Potential for malfunction of H&S monitoring equipment or gear; and
- Potential for accidents.

## 12.8 Reportable Incidents at the Site

Since submission of the revised HASP, there has been zero reportable incident(s) at the Site. Any incident where Roux Associates' or Roux employees' vehicles are involved in a collision with structures, equipment, other vehicles, or pedestrians will result in the notification of Roux Associates personnel and Client Managers and completion of an *ACORD*® Automobile Loss Notice Form (attached as Appendix G).

# 13. FIELD TEAM REVIEW

Each person performing work at or visiting this site shall sign this section after site-specific training is completed and before being permitted to access the CRZ or Exclusion Zone.

I have read and understand this Site-Specific Health and Safety Plan. I will comply with the provision contained therein.

Site/Project: The Peninsula Redevelopment Project									
Name Printed	Signature	Date							
<u> </u>									
	_								
		-							

# 14. APPROVALS

By their signature, the undersigned certify that this HASP is approved Redevelopment Project.	d and will be utilized at The Peninsula
Site Health and Safety Officer	Date
Brian Hobbs – Corporate Health and Safety Manager	Date
Jeffrey Wills – Project Manager	Date
Frank Cherena – Project Principal	Date

# Site-Specific Health and Safety Plan The Peninsula Redevelopment Project 1221 Spofford Avenue, Bronx, New York

**TABLE** 

Toxicological, Physical, and Chemical Properties of Compounds Potentially Present at the Site

2611.0002Y.108.APB/CVRS ROUX

#### Table 1. Toxicological, Physical, and Chemical Properties of Compounds Potentially Present at 1221 Spofford Avenue, Bronx, New York

#### References

U.S. Department of Labor. 1990. OSHA Regulated Hazardous Substances, industrial Exposure and Control Technologies Government Institutes, Inc.

Hawley's Condensed Chemical Dictionary, Sax, N. Van Nostrand and Reinhold Company, 11th Edition, 1987.

Proctor, N.H., J.P. Hughes and M.L. Fischman, 1989. Chemical Hazards of the Workplace. Van Nostrand Reinhold. New York.

Sax, N.I. and R.J. Lewis. 1989. Dangerous Properties of Industrial Materials. 7th Edition. Van Nostrand Reinhold. New York.

Guide to Occupational Exposure Values. 2008. American Conference of Governmental Industrial Hygienists (ACGIH).

NIOSH Pocket Guide to Chemical Hazards. 2005. Department of Health and Human Services, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health

#### Abbreviations:

ACGIH - American Conference of Governmental Industrial Hygienists.

BP - boiling point at 1 atmosphere, °F

C - Ceiling, is a concentration that should not be exceeded during and part of the working exposure.

Ca - considered by NIOSH to be a potential occupational carcinogen

CAS# Chemical Abstracts Service registry number which is unique for each chemical.

Fl. Pt. - Flash point

IDLH - Immediately Dangerous to Life and Health concentrations represent the maximum concentration

from which, in the event of respirator failure, one could escape within 30 minutes without a respirator and

without experiencing any escape-impairing or irreversible health effects.

LEL – Lower explosive (flammable) limit in air, % by volume (at room temperature)

mg/m3 - Milligrams of substance per cubic meter of air

NIOSH -National Institute for Occupational Safety and Health.

OSHA - Occupational Safety and Health Administration

PEL - OSHA Permissible Exposure Limit (usually) a time weighted average concentration that must not be exceeded during any 8 hour work shift of a 40 hr work week.

ppm - parts per million

REL - NIOSH Recommended Limit indicated a time weighted average concentration that must not be exceeded during any 10 hour work shift of a 40 hr work week

STEL - Short-term exposure limit

TLV -ACGIH Threshold Limit Values (usually 8 hour time weighted average concentrations).

TWA - 8-hour, time-weighted average

UEL - Upper explosive (flammable) limit in air, % by volume (at room temperature)



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Table 1. Toxicological, Physical, and Chemical Properties of Compounds Potentially Present at 430 Westchester Avenue, Bronx, New York

Compound	CAS#	ACGIH TLV	NIOSH REL	OSHA PEL	IDLH	Routes of Exposure	e 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/m³) [15-minute]	TWA 350 ppm (1900 mg/m³)	700 ppm	inhalation, ingestion, skin and/or eye contact	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/m³) [skin]	TWA 10 ppm (45 mg/m³) [skin]	Ca [100 ppm]	inhalation, skin absorption, ingestion skin and/or eye contact	liver damane Irritation eyes, nose; central I, 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/m³)	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 I.P: 2°F UEL: 11.4% LEL: 5.4%
1,1-Dichloroethene	75-35-4	TWA 5 ppm	Ca (lowest feasible concentration	n) TWA 1ppm	Ca [N.D.]	inhalation, skin absorption, ingestion skin and/or eye contact	Irritation eyes, skin, throat; n, 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 FI.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/m³)	None established	N.D.	Inhalation; ingestion; skin and/o eye contact	Eye, skin, nose, and throat, resp r 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 r	ng TWA 25 ppm (125 mg/m³)	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 FI.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/m³)	200 ppm	inhalation, skin absorption, ingestion skin and/or eye contact	Irritation eyes, nose; liver, kidney ı, damage; skin blisters	Eyes, skin, respiratory system, liver, kidneys	Colorless to pale-yellow liquid with a pleasant, aromatic odor. [herbicide] BP: 357°F FI.P: 151°F UEL: 9.2% LEL: 2.2% Class IIIA Combustible Liquid



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Table 1. Toxicological, Physical, and Chemical Properties of Compounds Potentially Present at 430 Westchester Avenue, Bronx, New York

Compound	CAS#	ACGIH TLV	NIOSH REL	OSHA PEL	IDLH	Routes of Exposure	e Toxic Properties	Target Organs	Physical/Chemical Properties
1,2-Dichloroethane	107-06-2	TWA 10 ppm	Ca TWA 1 ppm (4 mg/m³) STEL 2 ppm (8 mg/m³)	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		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 FI.P: 56°F UEL: 16% LEL: 6.2% Class IB Flammable Liquid
1,2-Dichloroethene (total)	540-59-0	TWA 200 ppm (790	m TWA 200 ppm (790 mg/m³)	TWA 200 ppm (790 mg/m³)	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 acrid, chloroform-like odor BP: 118-140°F FI.P: 36-39°F UEL: 128% LEL: 5.6% Class IB Flammable Liquid
1,3,5-Trimethylbenzene	108-67-8	None established	TWA 25 ppm (125mg/m³)	None established	N.D.	Inhalation; ingestion; skin and/o eye contact	Eye, skin, nose, and throat, resp r 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 FL.P: 122°F Class II Flammable liquid
1,3,5-Trimethylbenzene	108-67-8	TWA 25 ppm (125 n	ng TWA 25 ppm (125 mg/m³)	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 FI.P: 122°F Class II Flammable Liquid
1,4-Dichlorobenzene	106-46-7	TWA 10 ppm	Ca	TWA 75 ppm (450 mg/m³)	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, e eyes, kidneys, skin	Colorless or white crystalline solid with a mothball-like odor. [insecticide] BP: 345°F FI.P: 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



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Table 1. Toxicological, Physical, and Chemical Properties of Compounds Potentially Present at 430 Westchester Avenue, Bronx, New York

Compound	CAS#	ACGIH TLV	NIOSH REL	OSHA PEL	IDLH	Routes of Exposur	e Toxic Properties	Target Organs	Physical/Chemical Properties
2-Butanone (MEK)	78-93-3	TWA 200 ppm (590 mg/m³) STEL 300 ppm (885 mg/m³)	TWA 200 ppm (590 mg/m³) STEL 300 ppm (885 mg/m³)	TWA 200 ppm (590 mg/m³)	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 FI.P: 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 500 ppm STEL 50 ppm	TWA 250 ppm (590 mg/m <sup>3</sup> )	TWA 1000 ppm (2400 mg/m³)	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 FI.P: 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/m³ (cyclohexane-extractable fraction)	TWA 0.2 mg/m³ (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/m³ (as S	<sub>b</sub> 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/m3	Ca C 0.002 mg/m3 [15-min]	TWA 0.010 mg/m3	Ca [5 mg/m3 (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: sliver-gray or tin-white, brittle, odorless solid BP: sublimes
Asbestos	1332-21-4	TWA 0.1 f/cc	Ca 100,000 fibers/m3	TWA 0.1 fiber/cm3	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/m³(fumes)	Ca C 5 mg/m3 [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/m3	None established	TWA 0.5 mg/m3	None established	Inhalation, ingestion skin contact	, Irritation skin, respiratory system,	d Skin, eyes, respiratory system	Yellow white powder BP: 1640 C
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, ingestior skin and/or eye contact	Irritation eyes, skin, nose, n, 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 FI.Pt = 12°F LEL: 1.2% UEL: 7.8% Class B Flammable liquid



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Table 1. Toxicological, Physical, and Chemical Properties of Compounds Potentially Present at 430 Westchester Avenue, Bronx, New York

Compound	CAS#	ACGIH TLV	NIOSH REL	OSHA PEL	IDLH	Routes of Exposure	Toxic Properties	Target Organs	Physical/Chemical Properties
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/m3	TWA 0.2 mg/m3	None established	Inhalation; ingestion; skin absorption; skin and/or eye contact	POISON. This material is an experimental carcinogen, mutagen, tumorigen, neoplastiger 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/m3	TWA 0.2 mg/m3	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, ingestion 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>		s 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
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 andy 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/m³)	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



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Table 1. Toxicological, Physical, and Chemical Properties of Compounds Potentially Present at 430 Westchester Avenue, Bronx, New York

Compound	CAS#	ACGIH TLV	NIOSH REL	OSHA PEL	IDLH	Routes of Exposure	e Toxic Properties	Target Organs	Physical/Chemical Properties
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/m³ (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/m³) STEL 10 ppm (30 mg/m³) [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 FI.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/m³)	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 FI.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 FI.P: N4 (Gas) -58°F (Liquid) UEL: 15.4% LEL: 3.8% Flammable Gas
Chloroform	67-66-3	TWA 10 ppm	Ca STEL 2 ppm (9.78 mg/m³) [60- minute]	C 50 ppm (240 mg/m³)	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
Chromium	7440-47-3	TWA 0.5 mg/m³ (metal and Cr III compounds) TWA 0.05 mg/m³ (water-soluble Cr IV compounds) TWA 0.01 mg/m³ (insoluble Cr IV compounds)	TWA 0.5 mg/m <sup>3</sup>	TWA 1 mg/m <sup>3</sup>	250 mg/m³ (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/m3	Ca TWA 0.1 mg/m³ (cyclohexane- extractable fraction)	TWA 0.2 mg/m³ (benzene-soluble fraction)	Ca [80 mg/m³]	Inhalation, skin and/or eye contact	Dermatitis, bronchitis, [potential occupational carcinogen]	Respiratory system, skin, bladder, kidneys	Black or dark-brown amorphous residue. Combustible Solids



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Table 1. Toxicological, Physical, and Chemical Properties of Compounds Potentially Present at 430 Westchester Avenue, Bronx, New York

Compound	CAS#	ACGIH TLV	NIOSH REL	OSHA PEL	IDLH	Routes of Exposure	Toxic Properties	Target Organs	Physical/Chemical Properties
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 FI.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/m³ (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 FI.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/m³) STEL 125 ppm (545 mg/m³)	TWA 100 ppm (435 mg/m³)	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 FI.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
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]		Clear liquid with a characteristic dor, aromatic FI.Pt = -45°F LEL = 1.4% UEL = 7.6% Classs 1B Flammable Liquid



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Table 1. Toxicological, Physical, and Chemical Properties of Compounds Potentially Present at 430 Westchester Avenue, Bronx, New York

Compound	CAS#	ACGIH TLV	NIOSH REL	OSHA PEL	IDLH	Routes of Exposure	Toxic Properties	Target Organs	Physical/Chemical Properties
Hexachlorobutadiene	87-68-3	TWA 0.02 ppm	Ca TWA 0.02 ppm (0.24 mg/m³) [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 (1 ppm) STEL (5 ppm) (adopted values for which changes are proposed in the NIC)	C 10 ppm (15 mg/m³) [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	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/m³) [skin]	TWA 50 ppm (245 mg/m³) [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 FI.P: 96°F UEL: 6.5% LEL: 0.9%
Kerosene	8008-20-6	TWA 200 mg/m³	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 FI.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/m³ (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



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Table 1. Toxicological, Physical, and Chemical Properties of Compounds Potentially Present at 430 Westchester Avenue, Bronx, New York

Compound	CAS#	ACGIH TLV	NIOSH REL	OSHA PEL	IDLH	Routes of Exposure	e Toxic Properties	Target Organs	Physical/Chemical Properties
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/m³ (as Mn)			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/m³ (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		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/m3 [skin]	TWA 0.1 mg/m³	10 mg/m³ (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	system, central nervous	Metal: Silver-white, heavy, odorless liquid. [Note: "Other" Hg compounds include all inorganic & aryl Hg compounds except (organo) alkyls.] BP: 674°F
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 - suspected human carcinogen	Ca	TWA 25 ppm STEL 125 ppm	Ca [2300 ppm]		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%
Naphtha (coal tar)	8030-30-6	None established	TWA 100 ppm (400 mg/m <sup>3</sup> )	TWA 100 ppm (400 mg/m³)	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 FI.P: 100-109°F Class II Combustible Liquid
Naphthalene	91-20-3	TWA 10 ppm STEL 15 ppm	TWA 10 ppm (50 mg/m³) STEL 15 ppm (75 mg/m³)	TWA 10 ppm (50 mg/m³)	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; dermattits, optical neuritis, corneal damage	Eyes, skin, blood, liver, kidneys, central nervous system	Colorless to brown solid with an odor of mothballs. BP: 424°F I.P: 174°F UEL: 5.9% LEL: 0.9%



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Table 1. Toxicological, Physical, and Chemical Properties of Compounds Potentially Present at 430 Westchester Avenue, Bronx, New York

Compound	CAS#	ACGIH TLV	NIOSH REL	OSHA PEL	IDLH	Routes of Exposure	Toxic Properties	Target Organs	Physical/Chemical Properties
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, blured vision, drowsiness, confusion, disorientation	Eyes, skin,repiratory system central nervous system	Colorless liquid with a sweet odor BP: 183 C FI.P: 59 C UEL: 5.8% LEL: 0.8%
Nickel	7440-02-0 (Metal)	TWA 1.5 mg/m³ (elemental) TWA 0.1 mg/m³ (soluble inorganic compounds) TWA 0.2 mg/m³ (insoluble inorganic compounds) TWA 0.1 mg/m³ (Nickle subsulfide)	Ca TWA 0.015 mg/m <sup>3</sup>	TWA 1 mg/m³	Ca [10 mg/m³ (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
Nitrobenzene	98-95-3	TWA 1 ppm	TWA 1 ppm (5 mg/m³) [skin]	TWA 1 ppm (5 mg/m³) [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 FI.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 FI.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/m³)	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		Colorless liquid with a gasoline or kerosene-like odor BP: 86-460°F FI. 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/m³) C 15.6 ppm (60 mg/m³) [15-minute] [skin]	TWA 5 ppm (19 mg/m³) [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
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		Colorless liquid BP: 344°F FI.P: 126°F UEL: 6.9% LEL: 0.8% Combustible liquid



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Table 1. Toxicological, Physical, and Chemical Properties of Compounds Potentially Present at 430 Westchester Avenue, Bronx, New York

Compound	CAS#	ACGIH TLV	NIOSH REL	OSHA PEL	IDLH	Routes of Exposure	e 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>		inhalation, ingestion, skin and/or eye contact	•	Eyes, skin, respiratory	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/m³ (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 FI.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, skir burns; dermatitis	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 n, depression; liver or kidney damage	Respiratory system, central nervous system, eyes, liver, kidney	Colorless liquid with an aromatic odor BP: 168 - 169 C FI.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	e 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, n, respiratory system; nausea; flush face, neck; dizziness, incoordination; headache, drowsiness; skin erythema (skin redness); liver damage; [potential occupational carcinogen]	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/m³) STEL 150 ppm (560 mg/m³)	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 n, (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 FI.P: 40°F UEL: 7.1% LEL: 1.1% Class IB Flammable Liquid
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, n, respiratory tract, mucous membrane; CNS depression.	Respiratory tract, mucous membrane, eyes, skin, CNS	Colorless liquid with a fruity pleasant odor BP: 48°C FI.P 6C UEL: 12.8% LEL: 9.7%



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Table 1. Toxicological, Physical, and Chemical Properties of Compounds Potentially Present at 430 Westchester Avenue, Bronx, New York

Compound	CAS#	ACGIH TLV	NIOSH REL	OSHA PEL	IDLH	Routes of Exposur	e Toxic Properties	Target Organs	Physical/Chemical Properties
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]		Irritation eyes, skin; headache, n, visual disturbance, lassitude (weakness, exhaustion), dizziness, tremor, drowsiness, nausea, vomiting; dermatitis; cardiac arrhythmias, paresthesia; liver injury; [potential occupationa carcinogen]		Colorless liquid (unless dyed blue) , with a chloroform-like odor. BP: 188°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; enlarger liver; pallor or cyanosis of extremities; iquid: frostbite; [potential occupational carcinogen]	Liver, central nervous system, blood, respiratory d 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/m³) STEL 150 ppm	TWA 100 ppm (435 mg/m³)	TWA 100 ppm (435 mg/m³)	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 FI. Pt. 82°F, 90°F, 81°F LEL: 1.1%, 0.9%, 1.1% UEL: 7.0%, 6.7%, 7.0% Classs 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 disturbance	Eyes, skin, respiratory s system	Bluish gray solid BP: 1664.6°F Flammable



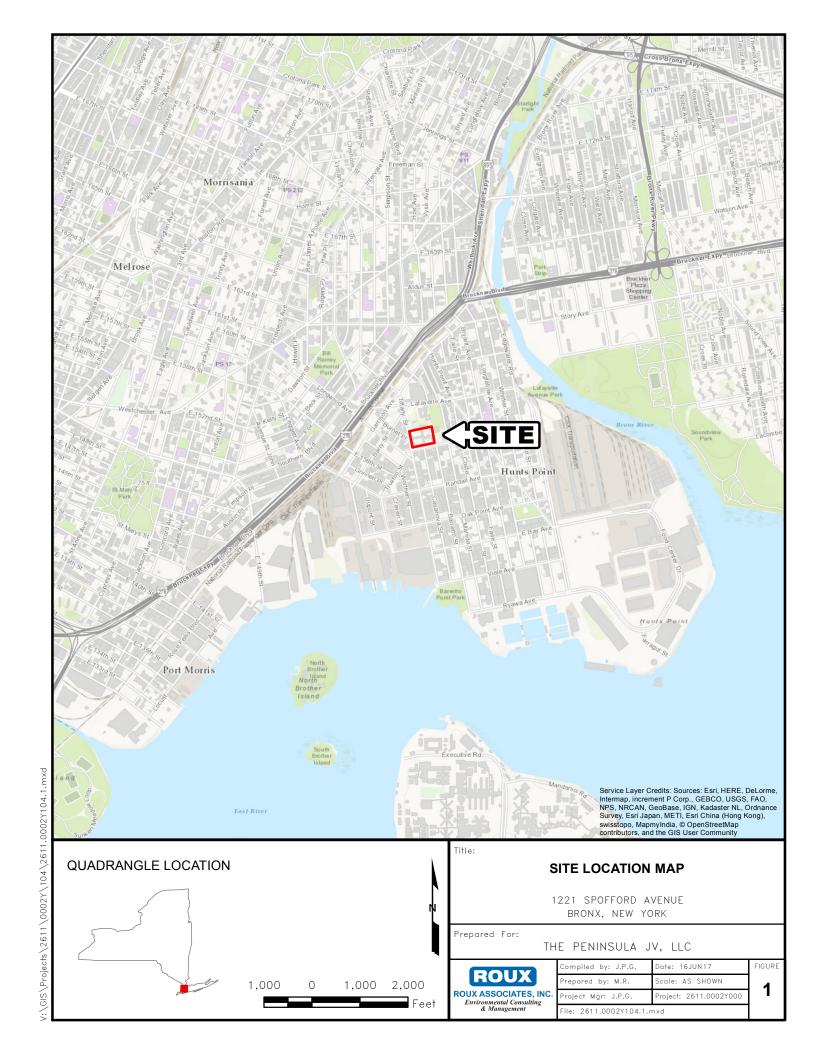
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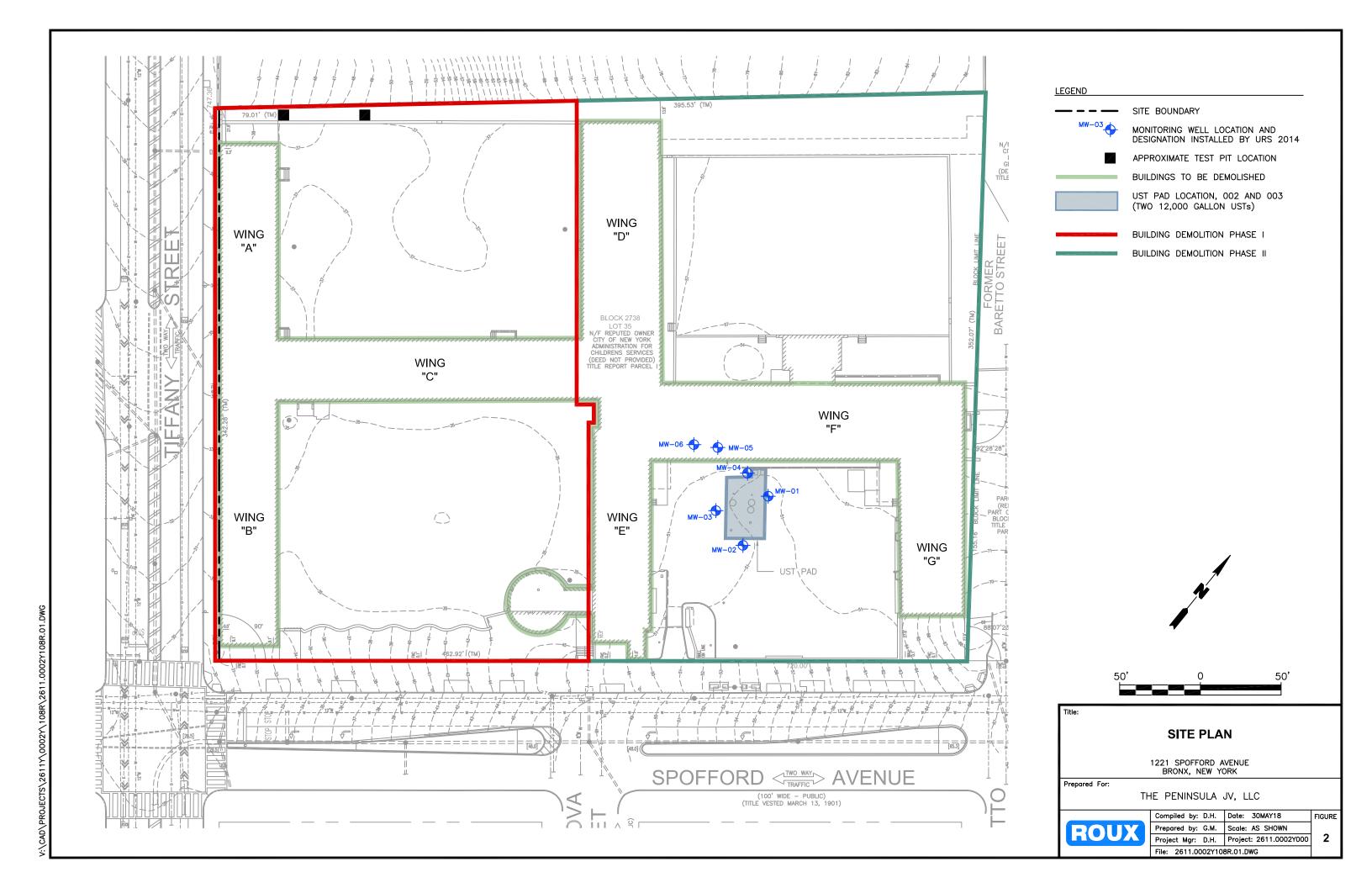
# Site-Specific Health and Safety Plan The Peninsula Redevelopment Project 1221 Spofford Avenue, Bronx, New York

## **FIGURES**

- 1. Site Location
- 2. Site Plan
- 3. Route to Hospital
- 4. Route to Urgent Care Center

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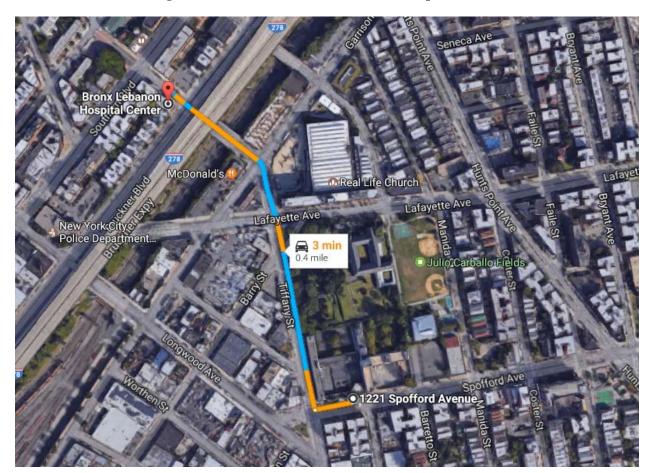


Figure 3. Directions to Bronx Lebanon Hospital Center

Bronx Lebanon Hospital Center 853 Tiffany Street Bronx, New York, 10459

- Head west on Spofford Avenue toward Tiffany Street (187 feet);
- Turn right onto Tiffany Street (0.3 mi);
- Slight left near Garrison Ave;
- Destination will be on the left.



Figure 4. Directions to City MD

City MD 80 West 125<sup>th</sup> Street New York, New York

- 1221 Spofford Avenue, Bronx, New York;
- Head west on Spofford Avenue toward Tiffany Street (413 feet);
- Turn Right onto Longwood Avenue (0.2 mi);
- Turn left at the 3<sup>rd</sup> cross street onto Bruckner Blvd (1.0 mi);
- Keep left to stay on Bruckner Blvd (1.2 mi);
- Use middle lane to continue on Third Avenue Bridge (0.3 mi);
- Keep right to stay on Third Avenue Bridge (243 ft);
- Continue straight on E 129<sup>th</sup> Street (0.3 mi);
- Turn left onto 5<sup>th</sup> Avenue. (0.2 mi);
- Turn right onto West 125<sup>th</sup> Street, destination will be on the left (0.2 mi).

# Site-Specific Health and Safety Plan The Peninsula Redevelopment Project 1221 Spofford Avenue, Bronx, New York

## **APPENDICES**

- A. Job Safety Analysis Forms
- B. Hazard Communication MSDS/SDS for Chemicals Used
- C. Roux Health and Safety Lessons Learned/Accident Report Forms
- D. Health and Safety Briefing/Meeting Log and Daily Site Safety Checklist
- E. Roux Heavy Equipment Exclusion Zone Policy
- F. Roux Subsurface Utility Clearance Procedure
- G. ACORD® Automobile Loss Notice Form
- H. Job Safety and Health Protection Poster
- I. Generic Community Air Monitoring Plan (CAMP)

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## **APPENDIX A**

# Job Safety Analysis Forms

List Job Safety Analyses Forms which are required for the project and are included in Appendix A below:

- 1. Job Safety Analysis Form
- 2. Site Walk and Inspection
- 3. Mobilization and Demobilization
- 4. Excavation and Trenching
- 5. Soil Sampling
- 6. Backfilling Excavation and Compaction
- 7. Trucking

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JOB SAFETY ANALYSIS	Cntrl. No.	DATE:		PAGE 1 of 2			
JSA TYPE CATEGORY <b>GENERIC</b>	WORK TYPE		WORK ACTIVITY	REVISED (Description)			
DEVELOPMENT TEAM	POSITION / TITLE		REVIEWE	ED BY:	POSITION / TITLE		
	EQUIRED AND / OR RECOM	MENDED PERSO					
☐ LIFE VEST ☐ HARD HAT	☐ GOGGLES ☐ FACE SHIELD		AIR PURIFY RESPIRATO		☐ GLOVES: ☐ OTHER		
☐ LIFELINE / BODY HARNESS☐ SAFETY GLASSES	<ul><li>☐ HEARING PROTECT</li><li>☐ SAFETY SHOES</li></ul>	ION	SUPPLIED PPE CLOTH	RESPIRATOR			
		/ OR RECOMMEN	IDED EQUIPMENT				
Required Equipment:							
Commitment to LPS – All person	nel onsite will actively p	articipate in SI	PSA performance	e by verbalizing S	PSAs throughout the day.		
EXCLUSION ZONE: A _ foot exclus	ion zone will be maintain	ed around (indi	cate equipment).				
Assess	Analyze	4000		Act	TIONS		
1JOB STEPS 1. [INSERT JOB STEP]	<sup>2</sup> POTENTIAL HAZ		1a.	3CRITICAL AC	TIONS		
1. [INSERT JOB STEF]	ia. CONTACT. [INSEN	TTAZANDJ	ıa.				
	1b. CAUGHT: [INSERT	HAZARD]	1b.				
	1c. FALL: [INSERT HA	ZARD]	1c.				
	1d. EXPOSURE: [INSE		1d.				
	Id. EXPOSURE. [INSE	KT HAZAKUJ	Tu.				
	1e. EXERTION: [INSER	RT HAZARD]	1e.				
	1f. ENERGY SOURCE: HAZARD]	[INSERT	1f.				
	TIAZARDJ						
2. [INSERT JOB STEP]	2a. CONTACT: [INSER	Τ ΗΔ7ΔΡΝΙ	2a.				
2. [MOLINI JOB STEF]	Za. CONTACT. [INSER	I IIALANU]					
	2b. CAUGHT: [INSERT	HAZARD]	2b.				

<sup>&</sup>lt;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.

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.

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."

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

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<sup>&</sup>lt;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".

JOB SAFETY ANALYSIS	Cntr	l. No. GEN-011	DATE: 1/1			⊠REVISED	PAGE 1 of 2	
JSA TYPE CATEGORY	WORK TYPE				RK ACTIVITY			
GENERIC	Site Recon			Site Walk and Inspection				
DEVELOPMENT TEAM		POSITION / TITLE		REVIEWED BY:			POSITION / TITLE	
Anthony Giannetti	Staff Geologist			Daniel Abberton SH			SHSM	
					e Ritorto		Project Hydrogeologist	
				Joe	Gentile		CHSM	
		UIRED AND / OR RECOMMI	ENDED PER					
☐ LIFE VEST ☑ HARD HAT		GOGGLES FACE SHIELD		Ш	AIR PURIF		□ GLOVES: Leather/cut- resistant/chemical	
☐ LIFELINE / BODY HARNESS	Ħ	HEARING PROTECTION: e	ar			RESPIRATOR	resistant	
SAFETY GLASSES		plugs as necessary		$\boxtimes$	PPE CLOTI	HING: <u>High-</u>	OTHER: tyvek and rubber	
	$\boxtimes$	SAFETY SHOES: Steel or			visibility ves		boots as necessary, dust	
		composite toed  REQUIRED AND / OR F	RECOMMEN	DED I		sleeved shirt	mask as necessary	
Required Equipment: Site map and	l/or au	ide familiar with Site, oper				kie if Site allows.		
	o. ga		а9 оо р					
Commitment to LPS - All personnel of	onsite	will actively participate in S	SPSA perfo	rman	ce by verbali	zing SPSAs throug	hout the day.	
EXCLUSION ZONE (EZ): A minimum	n 10' e	exclusion zone will be ma	aintained a	aroun	d equipmer	ıt.		
					ш очинрино.			
Assess		Analyze				Act		
1JOB STEPS		<sup>2</sup> POTENTIAL HAZARDS	;			3CRITICAL AC	CTIONS	
Check in with Site manager.	1a.	CONTACT/EXPOSURE/	FALL:	1a.	Inform Site		scope, timeline and location(s).	
G	Lack	of communication could re	esult in				er activities taking place at the	
	H&S	incident.			Site.			
				1a.		• •	n procedures and muster points	
2. Transparing the City and patting up	0-	CONTACT		2-	with Site ma		an aita	
2. Traversing the Site and setting up at work locations.	2a.	CONTACT: Property damage and pe	reonal			eed limit of 5 mph o	and secured prior to moving.	
at work locations.		injury caused by	isonai	Za.			ruction vehicles when not in	
		obstructions/vehicles or			motion.	ondono on an donon	dottori veriloles when het in	
		unauthorized personnel	at remote	2a.		tablished roadways	i.	
		Sites.			Yield to all	•		
				2a.			spotter where visibility is limited;	
							into parking spots; use an	
				0-			arm) when backing up vehicles.	
				2a.			fety vest. If working at remote during hunting season.	
					Site, add or	ange accessones	during numbers season.	
	2b.	FALL:		2b.			n terrain, weather-related	
		Uneven terrain and weat	her				w, etc.), and obstructions prior to	
		conditions.		26	mobilizing e		walk on stable, secure ground.	
		Overgrown shrubs and v		20. 2h	Communica	ate traversing hazar	rds with others	
		Equipment in the work zo	me.	20.	Communic	ate traveroring mazar	do with others	
	20	OVEREVERTION		2c	When carry	ing equipment to/fro	om work area, use proper lifting	
	2c.	OVEREXERTION:  Muscle strain while carry	ina	20.			, lift with legs, keep load close to	
		equipment.	iiig				Ensure that loads are balanced	
		oquipinoni.			to reduce th	e potential for mus	cle strain. Use mechanical	
						•	ps to carry equipment.	
				2c.			ting device are required when	
							en the shape makes the object	
					difficult to lif	ι.		
	2d.	EXPOSURE:				a to avoid contact w	vith biological hazards.	
		Biological hazards - ticks	,	2d.	Ticks:			
		bees/wasps, poison ivy,					ng pants, shirts, socks, boots	
		etc. (Ticks are most activ	e any			s the evening before us	e use with Permethrin (allowing	
		time the temperature is a					in before travelling to the Site	
		freezing, typically from M	arcn to			pply after two hours	<u>-</u>	
		November.)				or ticks during and		
				2d.			e nests. Protect exposed skin	
					with insect		·	
				2d.	Poison Ivy:			
							and spray with weed killer. Don	
					•		nile traversing poison ivy areas.	
						omes in contact wit hly with soap and v	th poison ivy, wash skin	
					ulolody	iny with soap and v	valor.	

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

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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; Energy Source - electricity, pressure, compression/tension.

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."

PL-2204			
3. Define and secure the work area.	2e. EXPOSURE: Heat Stress & Cold Stress. Personal injury from working in inclement weather conditions.   3a. CONTACT: Personal injury or property damage	2e. 2e. 2e. 2e. 2e. 3a.	Wear sunscreen with SPF 15 or greater on exposed skin whenever 30 minutes or more of sun exposure is expected. Watch for heat stress symptoms (muscle cramping, exhaustion, dizziness, rapid and shallow breathing). Take breaks as needed.  Watch for cold stress symptoms (severe shivering, slowing of body movement, weakness, stumbling or inability to walk, collapse). Take breaks as needed.  Wear appropriate rain gear as needed.  Take frequent breaks if tired, wet, or cold/hot. Drink water. If lightning is observed, wait 30 minutes after last thunder boom/lightning bolt in a sheltered location (car acceptable) before starting work again.  Face traffic, maintain eye contact with oncoming vehicles, and establish a safe exit route.
	from other vehicles on-site.	3a. 3a. 3a.	Look both ways in high traffic areas.  Position vehicle to protect against oncoming traffic.  Use 42" traffic cone and caution tape to delineate work area.  Use a spotter in high traffic areas.  Wear high visibility clothing/safety vest.
Walking near heavy equipment and machinery.	4a. CONTACT: Personal injury from Site and roadway traffic. Personal injury from flying debris.	4a. 4a. 4a. 4a.	See 3a. Place traffic cones to re-direct traffic flow around work area and to alert others as to activity taking place. Evaluate possible need for police detail and request as needed. Maintain a minimum exclusion zone of 10 feet from all equipment. Task specific JSAs should be referenced to determine the actual exclusion zone for the piece of equipment being used. Keep body parts out of the line of fire of pinch points. Routinely inspect work area and be aware of location of all Site personnel. Make eye contact with spotter, if provided, or operator prior to entering the work area. Wear safety glasses at all times.
	4b. OVEREXERTION: Personal injury from lifting/moving/rotating equipment.	4b.	See 2c.
	4c. EXPOSURE: Hearing damage from excavation activities. Inhalation/exposure to hazardous vapors and or dust.	4c. 4c. 4c.	Monitor air quality with multi-gas meter and dust meter, if necessary. Use water to suppress dust, if necessary. Wear dust mask, if necessary.  Wear hearing protection if >85 dBA.  Always wear leather gloves when handling any tools or equipment. Wear cut-resistant gloves (Kevlar or similar) when handling sharp objects, glassware or cutting tools.
	4d. EXPOSURE: Working in a remote area.	4d.	Use the "buddy system" whenever possible. If working alone, contact PM upon arrival/departure, as well as during work activities prior to commencing work.  Always carry a communication (i.e., cell phone, walkie-talkie) or directional (i.e., map, compass, etc.) device when traversing remote areas.
5. Working in adverse weather conditions.	5a. EXPOSURE: Heat Stress & Cold Stress. Personal injury from working in inclement weather conditions.	<ul><li>5a.</li><li>5a.</li><li>5a.</li><li>5a.</li><li>5a.</li><li>5a.</li></ul>	Watch for heat stress symptoms (muscle cramping, exhaustion, dizziness, rapid and shallow breathing). Take breaks as needed. Watch for cold stress symptoms (severe shivering, slowing of body movement, weakness, stumbling or inability to walk, collapse). Take breaks as needed. Wear appropriate rain gear as needed. Take frequent breaks if tired, wet, or cold/hot. Drink water. If lightning is observed, wait 30 minutes after last thunder boom/lightning bolt in a sheltered location (car acceptable) before starting work again.
6. Departing Site.	6a. EXPOSURE: Exposure to unnecessary hazards should personnel believe Roux is on-Site during an emergency and conduct a search.	6a.	Sign out or notify Site personnel of your departure.

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IOD CAFETY ANALYCIC COURT No. OFN 040				□NEW				
JOB SAFETY ANALYSIS  JSA TYPE CATEGORY	Cntrl. No. GEN-010 DATE: 1/15 WORK TYPE			☐ REVISED  ACTIVITY (Description)	PAGE 1 of 2			
GENERIC	Site Recon			Mobilization/Demobilization				
DEVELOPMENT TEAM	POSITION / TITLE		11.010	REVIEWED BY:	POSITION / TITLE			
Jared Lefkowitz	Staff Assistant Scientist			I Abberton	SHSM			
John Williams	OHSM		Mike F		Project Hydrogeologist			
	PEOUBER AND LOD RECOMMENT	DED DEDGO	Joe G		CHSM			
LIFE VEST	REQUIRED AND / OR RECOMMENT GOGGLES	JED PERSO		AIR PURIFYING	☐ GLOVES: Leather, nitrile,			
☐ HARD HAT ☐ LIFELINE / BODY HARNESS ☐ SAFETY GLASSES	FACE SHIELD HEARING PROTECTION (ineeded) SAFETY SHOES: Steel Too composite toe  REQUIRED AND / OR	e or		RESPIRATOR SUPPLIED RESPIRATOR PPE CLOTHING: Fluorescent reflective vest of high-visibility clothing; sleeved shirt; long pants	and cut resistant (as needed)  OTHER			
Required Equipment: None	REQUIRED AND / OR	RECOMMEN	IDED EQ	OIFMENT				
Commitment to LPS – All person	nnel onsite will actively partic	ipate in SF	PSA pe	rformance by verbalizing S	SPSAs throughout the day.			
EXCLUSION ZONE: A minimum exc	clusion zone of 10' will be mai	ntained are	ound m	oving equipment (if heavy e	quipment is utilized)			
Assess	Analyze			Act	STICNE			
1JOB STEPS  1. Mobilize/demobilize and	2POTENTIAL HAZARDS		10 I	3CRITICAL AC				
establish work area	1a. FALL: Slip/trips/falls from obstructions, uneven terra weather conditions, heavy and/or poor housekeeping.      1b. CONTACT: Personal injurt property damage caused struck by Site traffic or equived in Site activities.	ain, y loads, g. ury and/or by being	1a. Ir. o a pp 1a. C F F F T T T T T T T T T T T T T T T T	and exiting vehicle.  Aspect walking path for unever obstructions, and/or weather-read puddles) prior to mobilizing athways. Walk on stable/secutor on the control of the c	elated hazards (i.e., ice, snow, grequipment. Use established re ground. ials/equipment; walk around. organize and store equipment ds.  "cones, caution tape and/or ed speed limits. vehicles in designated parking eations. Use parking brake on all rk trucks and trailers. pervisor to ensure coordination discuss any special hazards. oyees (SSE) are identified. It is clothing or reflective vest. It vehicles; plan ahead to avoid ion zone when vehicles are in k rig with an attached trailer use to clearance simultaneously on the or if turning angles limit driver ones, flags, caution tape, and/or exit entrances, if possible, or at exit against oncoming traffic. The cate with oncoming vehicles, use exit route.  In ground surface features that pment. Clear the path of physical			
	1c.CAUGHT: Personal injury pinch points and being in li of vehicle and/or equipmer	ne-of-fire	1c. M c is 1c. V v s 1c. K 1c. A	Nake sure driver has engaged	parking brake and placed wheel movement. Be sure that vehicle to fwork area. dling any tools or equipment. lar or similar) when handling s. e-of-fire of equipment. les and/or designated carrier.			

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		<ul><li>1c. Remove any loose jewelry. Avoid wearing loose clothing and/or ensure loose clothing is secure.</li><li>1c. Secure all items on the equipment, tighten up any items or features that have potential to shift or break during mobilization.</li></ul>
1d.	<b>OVEREXERTION:</b> Muscle strains while lifting/carrying equipment.	<ul> <li>1d. Use body positioning and lifting techniques that avoid muscle strain; keep back straight, lift with legs, keep load close to body, and never reach with a load.</li> <li>1d. Ensure that loads are balanced. Use assistance (mechanical or additional person) to carry equipment that is either unwieldy or over 50 lbs.</li> </ul>
1e.	<b>EXPOSURE:</b> Personal injury from exposure to biological and environmental hazards.	<ul> <li>1e. Inspect area to avoid contact with biological hazards (i.e. poisonous plants, stinging insects, ticks, etc.).</li> <li>1e. Wear long sleeved clothes treated with Permethrin, apply insect repellant containing DEET to exposed skin, and inspect clothes and skin for ticks during and after work.</li> <li>1e. Apply sunscreen (SPF 15+) if exposure to sun for 30 minutes or more is expected.</li> </ul>
1f.	<b>EXPOSURE:</b> Heat and cold related injuries.	<ul> <li>1f. Watch for heat stress symptoms (muscle cramping, exhaustion, dizziness, rapid and shallow breathing). Take breaks as needed.</li> <li>1f. Watch for cold stress symptoms (severe shivering, slowing of body movement, weakness, stumbling or inability to walk, collapse). Take breaks as needed.</li> <li>1f. Wear clothing appropriate for weather and temperature conditions (e.g., rain jackets, snow pants, multiple layers).</li> <li>1f. If lightning is observed, wait 30 minutes in a sheltered location (car is acceptable) before resuming work.</li> </ul>
1g.	<b>EXPOSURE:</b> Personal injury from noise hazards.	<ol> <li>Wear hearing protection if sound levels exceed 85 dBA (if you must raise your voice for normal conversation).</li> </ol>

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JOB SAFETY ANALYSIS	Ctrl. No. GEN-011	DATE: 1/4/2018		□ NEW ⊠ REVISED	PAGE 1 of 2
JSA TYPE CATEGORY <b>Generic</b>	WORK TYPE  Construction - Exc	avation	WORK ACTIVITY  Excavation	(Description) / Trenching	
DEVELOPMENT TEAM	POSITION / TITLE		REVIEWE		POSITION / TITLE
David Kaiser	Project Engineer		Brian Hobbs	-551.	Senior Health & Safety Manager
lan Holst	Project Engineer		Joseph Gentile	9	Corporate Health & Safety Manager
	REQUIRED AND / OR RECOM	MENDED PERSON	IAL PROTECTIVE I	EQUIPMENT	
☐ LIFE VEST ☑ HARD HAT ☑ LONG SLEEVED SHIRT ☐ LIFELINE / BODY HARNESS ☑ SAFETY GLASSES	☐ GOGGLES ☐ FACE SHIELD ☒ HEARING PROTECTION ☒ SAFETY SHOES: Steel-to	oe boots	☐ SUPPLIED R ☑ PPE CLOTH	ING RESPIRATOR ESPIRATOR ING: <u>Fluorescent</u> It or high visibility long ing	GLOVES: Leather or cut resistant  OTHER
<b>2</b> 0/11 2 1 1 0 2 1 0 0 2 0	REQUIRED AND	/ OR RECOMMEN			
Jackhammer, Excavator, Backhoe, F fence, ladders, shovels, digging bars	land Tools, Photoionization D	etector, barrels, 4	12" traffic cones, s		
COMMITMENT TO SAFETY- All per	sonnel onsite will actively part	ticipate in hazard	recognition and r	mitigation throughoເ	t the day by verbalizing SPSAs
EXCLUSION ZONE (EZ): A 10-foot		ntained around	equipment in mo	otion and outside t	he swing/tip radius.
Assess ¹JOB STEPS	Analyze <sup>2</sup> POTENTIAL HAZAI	RDS		Act 3CRITICAL A	
Pre-Clearance Protocol.	1a. CONTACT:  Damage to undergro	ound utility.	local utility	companies were confirm utility ma	Call Before You Dig" and contacted prior to trenching rk outs. Must have a case #
	1b. ENERGY SOURCE/ Property damage; Pressurized water m cause lacerations or bones. Pressurized gas mai explode causing seri death.	ains may broken ns may	to a minim (10 feet m (shovel an Superviso pre-clearir	num of 5 vertical for inimum for Criticated and non-metallic dig r should be conta	g location must be conducted eet below the ground surface Il Zone) using hand tools g bar) prior to trenching. cted to discuss appropriate ance checklist.
	Underground electric severe burns, shock,				
	1c. FALL: Slip, Trip or Fall may muscle strains or tea lacerations, or broke	ırs, abrasions,	equipment avoiding u hazards.	t and working. Wa neven surfaces.	when walking or loading alk within established pathway Remove potential slip/trip/fall
2. Set up work zone.	2a. CONTACT/CAUGHT Cuts/lacerations from Broken bones from ovehicle.	n equipment.	and snow link fence. third party and for de	fencing, telescop Utilize a flag pers traffic in area). In tours.	ards with cones, barricades, ing poles or temporary chain son when necessary (i.e., stall traffic signs in roadways inforce exclusion zone.
	2b. FALL: Slip, Trip or Fall may muscle strains or tea lacerations, or broke	ırs, abrasions,	2b. See 1c.		

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Assess	Analyze	Act
1JOB STEPS	<sup>2</sup> POTENTIAL HAZARDS	3CRITICAL ACTIONS
3. Trenching Activity.	3a. CONTACT: Serious injury including broken bones, muscle strains or tears, and possibly death due to contact with machine.  3b. FALL:	3a. Spotter(s) required for all heavy equipment operation. No worker shall be allowed inside the exclusion zone or along the trench/excavation area while any equipment is in operation. A minimum exclusion zone greater than the length of the equipment boom must be established. Workers only allowed in exclusion zone if the operator is in "Hands Off "mode. Operator will not operate equipment until worker is out of exclusion zone. Spotters and operators will have radios for communication, when either loses sight of one another, and/or in case of emergency.
	Slip, Trip or Fall may cause muscle strains or tears, abrasions, lacerations, or broken bones	<ul> <li>3b. Any trench/excavation deeper than 3' must have a ladder within 25' of any worker in the excavation. At least 3'(rungs) of the ladder shall be above the top of the excavation. All spoil piles shall be maintained 2' minimum from edge of excavation.</li> <li>3b. Any trench/excavation deeper than 6' must have fall protection, retractable lanyard for ladder use, and 42" high guardrails along the edge of the trench/excavation.</li> </ul>
	3c. EXPOSURE: Noise, Dust, Concrete- Asphalt, petroleum hydrocarbon vapors may cause damage to ears and lungs	3c. Air monitoring using a calibrated photoionization detector (PID) will be used to monitor the breathing zone of the work area. If a reading of >5ppm is recorded, the oversight personnel must temporarily cease work and instruct all Site personnel to step away from the area of elevated readings.
<b>4.</b> Setting Trench protections if necessary.	4a. CAUGHT: Injury due to contact with failed trench, may include muscle strains or tears, abrasions or lacerations, broken bones and possibly death.	4a. To prevent cave-ins and avoid caught by/between, excavations over 4' in depth, unless working in stable rock, shall have engineer approved shoring, sheeting or trench box. Top of protection shall be at least 2' above top of excavation.
	4b. CONTACT/CAUGHT: Injury due to rigging activities and entering exclusion zone during lifting and/or transport of shoring/trench box/material may include muscle strains or tears, abrasions or lacerations, broken bones and possibly death.	4b. Use only inspected rigging with 2, 3 or 4 lift points; wear cut-resistant gloves. Rigging to be hooked up to factory installed hook up points on equipment. Control load with non-conductive tag lines with workers out of exclusion zone. Don't stand underneath suspended load; wear steel toed boots and hard hat.
	4c. FALL: Possible injury due to fall into excavation may include muscle strains or tears, abrasions or lacerations, or broken bones.	4c. Shoring to be set and sides will be backfilled to avoid fall hazards before workers are allowed to enter area.  Operator will be in "HANDS OFF" mode before workers enter work area to unhook rigging. An inspected ladder extending 3' above top of the shoring will be used to enter and exit the shoring. Workers will use three points of contact when using the ladder.
5. Secure/Leave Site. If backfilling, see excavation backfilling and compaction JSA for potential hazards and critical actions.	<b>5a. FALL:</b> Potential Slip, Trip or Fall - may cause muscle strains or tears, abrasions or lacerations, or broken bones.	<ul><li>5a. See 1c.</li><li>5a. All open excavations must be backfilled or secured prior to departure with steel plates, orange construction fence or temporary chain link fencing.</li></ul>

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JOB SAFETY ANALYSIS	Cntrl	. No. GEN-012	DATE:	2/3/2015	□NEW ☑REVISED		PAGE 1 of 2
JSA TYPE CATEGORY:	WORK TY			WORK ACTIVITY (Description):			
GENERIC	Gauging	g & Sampling		Soil Sampling			
DEVELOPMENT TEAM		ITION / TITLE		REVIEWED BY:			POSITION / TITLE
Michael Hodess	Staff Enviro	onmental Scientist	М	ike Ritorto		Senio	or Hydrogeologist
				eo Kurylo		IL-O	HSM
REC	QUIRED AN	D / OR RECOMME	NDED P	ERSONAL PROTEC	TIVE EQUIPMEN	NT	
☐ LIFE VEST ☐ HARD HAT ☐ LIFELINE / BODY HARNESS ☐ SAFETY GLASSES ☐ FLAME RESISTANT CLOTHING (as needed)	HEARI needed SAFET or stee	SHIELD: ING PROTECTION: ( <u>i</u> d) IY SHOES: <u>Composit</u> el toe boots	e-toe		ATOR luorescent h visibility		GLOVES: <u>Leather</u> , <u>Nitrile and cut resistant</u> OTHER: <u>Insect repellant</u> , <u>sunscreen (as needed)</u>
Recommended Equipment: 42" t				MIMENDED EQUIPM	ENI		
• •	•						
COMMITMENT TO LPS - All p	ersonnel on	nsite will actively p	articipat	e in SPSA performa	nce by verbaliz	ing S	PSAs throughout the day.
<b>EXCLUSION ZONE:</b> A minir	num 10' exc	clusion zone will b	e mainta	ined around moving	g equipment, if	prese	nt.
Assess		Analyze			Act		
<sup>1</sup> JOB STEPS	<sup>2</sup> POTEN	ITIAL HAZARDS			3CRITICAL AC	CTION	S
Secure location	Pers	NTACT: sonnel and vehicula ic may enter the wo a.	ir ork 1a 1a	42" traffic cones a and inform others a. Wear reflective ve	and/or caution tape of work activity. est and/or high vin of any vehicula c.	pe to pisibility	c. Position vehicle to protect
	une	.L: ping/falling due to ven terrain or entry/ n excavations.	exit 11	hazards (i.e., ice, b. Use established p b. Stage equipment orderlymanner. S b. Roux employees and trenches. Sh	puddles, snow, o pathways and wa and tools in a co tore equipment a should stay 5 fee rould entry to an implete), ladders	etc.), a alk on sonvenion at lowed et from excav must l	stable, secure ground. ent, stable, and est potential energy. n in-progress excavations ation be appropriate (when be employed for steep
	Expressed excessed exhause exhause expressed e	POSURE: osure to sun and essive heat, possibl sing sunburn, heat austion or heat strol osure to cold peratures possibly sing cold stress. a burn as a result of epicable. Exposure osive vapors due to farm operations, ogical hazards - tick s/wasps, poison ivy ns, insects, etc.	y 10 10 10 10 10 10 10 10 10 10 10 10 10	more of exposure c. Use a tent to shad when warm tempe c. Be aware of the le c. Watch for heat sti dizziness, rapid a c. Watch for cold str movement, weak c. Take breaks for re well shaded or a c c. No open flames/he c. Flame resistant clc c. Cell phones shou c. Pre-treat field clot ticks and insects. c. Wear long sleeve boots to prevent t c. Spray insect repe working in overgre c. Inspect area to av Wear cut-resistan may lie within the c. Personnel shall e for ticks periodica c. If skin comes in c soap and water.	is expected. de the work area eratures are expocation of all Site ress symptoms (ind shallow breat ress symptoms (shees, stumbling est and water as climate controlled eat sources. othing must be would be disabled withing with Permet dishirts and tuck icks from reachirdlant containing I own areas of the void contact with it gloves when he walking path. xamine themselvilly when onsite. ontact with poisso If rash persists and the CHSM for	from ected. e person ected. e person ected. e person ected. e person ected e pers	e cramping, exhaustion, e shivering, slowing of body bility to walk, collapse). esary. Move to an area that is (i.e., car, site trailer, etc.). en specified by Site policy. becified by Site policy. brior to site visit to kill/repel tape) pant legs into socks or n. on exposed skin when gical hazards. g branches, shrubs, etc. that d co-worker's outer clothing wash skin thoroughly with ashing, immediately notify ible consultation with a

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Assess 1JOB STEPS	Analyze  2POTENTIAL HAZARDS	Act 3CRITICAL ACTIONS
2. Collect Soil Sample	2a. CONTACT:  Personal injury from pinch points, cuts, and abrasions from sampling equipment tools, and material within soil sample.  Personal injury from contact with moving equipment while sampling.	<ul> <li>2a. Wear cut-resistant (i.e., Kevlar) gloves under chemical-resistant disposable gloves when handling soil samples and sampling jars.</li> <li>2a. Where possible, use trowel or equivalent tool to avoid contact with soil.</li> <li>2a. If sampling from bucket of heavy equipment, ensure all equipment is off and operator utilizes the "show me your hands" policy.</li> <li>2a. See 1a.</li> </ul>
	2b. EXPOSURE: Exposure to contamination (impacted soil) and/or lab preservatives.	<ul> <li>2b. Wear chemical-resistant disposable gloves over cut resistant gloves to protect hands when handling samples; use containment material or plastic sheeting to protect surrounding areas.</li> <li>2b. When collecting soil sample from hand auger, put large zip lock bag over entire auger to prevent spillage of soil on to the ground.</li> <li>2b. Open sample jars slowly and fill carefully to avoid contact with preservatives.</li> </ul>
3. Decontaminate equipment	3a. EXPOSURE/CONTACT: Contamination (e.g., Separate Phase Hydrocarbons (SPH), contaminated vapors and/or soil).	<ul> <li>3a. Wear chemical-resistant disposable gloves and safety glasses.</li> <li>3a. Use an absorbent pad to clean spills.</li> <li>3a. Properly dispose of used materials/PPE in provided drums in designated drum storage area.</li> <li>3a. Remain upwind of sample and avoid breathing contaminant vapors, if they are present.</li> </ul>
	3b. <b>EXPOSURE:</b> Chemicals in cleaning solution including ammonia.	<ul> <li>3b. Wear chemical-resistant disposable gloves and safety glasses.</li> <li>3b. Work on the upwind side of decon. area.</li> <li>3b. Use an absorbent pad to clean spills.</li> <li>3b. Properly dispose of used materials/PPE in provided drums in designated drum storage area.</li> </ul>

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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; Energy Source - electricity, pressure, compression/tension.

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JOB SAFETY ANALYSIS	Ctrl. No. GEN-003	DATE 1/4			NTI) (IT) ( (D	,	REVISED	PAGE 1 of 2	
JSA TYPE CATEGORY  GENERIC	WORK TYPE  Construction -			WORK ACTIVITY (Description)  Backfilling Excavation & Co		mnaction			
GENERIC	Excavation		Dai	CKII	illing Exc	ava	ition a C	inpaction	
DEVELOPMENT TEAM	POSITION / TITLE				REVIEWED	RY.		POSITION / TITLE	
David Kaiser	Project Engineer		Bria	n Ho	obbs	<u> </u>		Senior Health & Safe	
	3							Manager	,
Edward Lacina	Senior Construction Manag	ger	Joe	Ger	ntile			Corporate Health & S Manager	Safety
☐ LIFE VEST	REQUIRED AND / OR RECOM! GOGGLES	MENDED PE			PURIFYING RI			☐ GLOVES: Leather/ cu	ıt-resistant
☐ HARD HAT	☐ FACE SHIELD			SUP	PLIED RESPIR	RATO	R	level 2	it i ooiotain
<ul><li>☐ LIFELINE / BODY HARNESS</li><li>☒ SAFETY GLASSES</li></ul>	<ul><li>☑ HEARING PROTECTION</li><li>☑ SAFETY TOE BOOTS</li></ul>				CLOTHING: re oved safety	eflectiv	<u>/e DOT</u>	OTHER	
	REQUIRED AND		IMEND	ED E	QUIPMENT				
Payloader, Backhoe, Dump Trucks,	Mechanical gas powered tampe	rs, Excavato	or with	hyd	raulic tamper	r. APF	R when tamp	ng if dust present. Two-wa	ay radios.
COMMITMENT TO SAFETY- All per	sonnel onsite will actively partic	ipate in haz	ard re	cogn	ition and miti	igatio	n throughout	he day by verbalizing SP	SAs.
EXCLUSION ZONE: A 10' minimul	m exclusion zone will be main	tained arou	und ex	xcav	ator, backho	oe, ta	mpers, and	ump trucks.	
Assess	Analyze						Ac		
<sup>1</sup> JOB STEPS	<sup>2</sup> POTENTIAL HAZAR	DS					3CRITICAL		
Pre-construction meeting:	1a. CONTACT:	tlala				-		service and one call tid	
Review proposed excavation locations	Potential for contact wi utilities and above grou			1a.	Obtain priv	vate ı	utility mark	ut service as necessa	ry.
locations	diffiles and above grou	ina amines	`	1a.	Review an	id ma	ark propose	excavations w/white	oaint.
				1a.			ical" zones. f any opera	A Critical zone is any a ing utility.	area
				1a.	Complete	sub	surface cle	arance checklist.	
					Soft dig m	ust b		within 2 lateral feet of	any
				1a.	=		-	utilities identified as be	eina
						thin t	he work zor	e must be coordinated	
2. Secure Work Area	2a. CONTACT:			2a.		ork ar	ea is secur	and inform others of v	work
	Potential for personnel	to enter th	ne		activity.			-4	<b>-</b> >
	work area.					traffic	cones, bai	nt exclusion zone (HEI els & snow fencing or	EZ)
					Use of flag	n pers	sons to mai	tain clear traffic and to	)
	Potential for equipment or crush personnel.	t to contac	t,					during set-up of new	
					HEEZ to in	nclud	e tip/swing	adius of equipment.	
				2a.				loader/Backhoe equip	
								are familiar with mac	
					Spotters si			or all equipment. and to	o control
				2a				hen driver is not in tru	ick and
				zu.	engine shu				ion and
				22	Parsonnal	chall	stay out of	he exclusion zone (10	,
				zu.	minimum o	or gre		e equipment boom) wh	
	2b. EXERTION:			2b.	Keep back	stra	ight, keep le	ad close to the body a	nd bend
	Potential for muscle str while installing traffic of barrel				knees whil	le lifti	ng and wor	ing. If over 50 lbs., use use of equipment.	

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

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; Energy Source - electricity, pressure, compression/tension.

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".

Assess	Analyze	Act
3. Backfilling excavation, and compaction	POTENTIAL HAZARDS  3a. CONTACT:  Traffic and live equipment.	3a. Equipment and trucks shall be isolated from other workers, subcontractors and third party traffic with 42" traffic cones, barricades, snow fencing or telescoping poles, and/or Jersey barriers. Spotters shall direct dump truck for placement of fill near excavation. Pay loader/ Excavator, as directed by spotter, shall move fill into trench where it shall be placed in layers and compacted by mechanical means.  3a. Spotters will wear florescent vests at all times.  3a. Spotters will remain out of the exclusion zone, line of fire from equipment and third-party vehicles.  3a. Spotters and operators will have radios for communication, when other visual and/or hand signals are
		insufficient.  3a. Locate all overhead utilities. All personnel and machinery should maintain a 10' distance from overhead electric lines. Refer to OSHA chart for distances and voltage.
	3b. EXPOSURE:	3a. For excavations engineered (shored, sloped, benched) all personnel, equipment, and materials must remain a minimum of 2 feet from edge of excavation.
	Fumes from gas powered tamper	3b. Fueling of all equipment will be done outside of work area in a well-ventilated area. Refueling will be done only after a 2-5-minute cool down.
	3c. FALL: Slips, trips, fall hazards.	<ul> <li>3c. Work area will be clean and free of any debris to remove slip, trip and fall hazards. All tools will be kept in designated areas. Insure work area is well illuminated.</li> <li>3c. Workers should only be working in areas that have been leveled with a machine.</li> <li>3c. All persons working at elevations over 6' shall use a guardrail system or personal fall arrest system while around excavation.</li> </ul>
	3d. OVEREXERTION: Muscle strain, or tear.	<ul><li>3d. Keep knees bent and back straight while transferring/ lifting/lowering tamper from elevated areas. Utilize a coworker to avoid staining muscles.</li><li>3d. Keep knees bent and back straight while maneuvering tamper. Utilize a co-worker to avoid staining muscles.</li></ul>
	3e. EXPOSURE:  Noise from tamper.	Workers will wear hearing protection during compaction tamper activities.
	Dust inhalation.	3e. Wear NIOSH approved dust mask for personal comfort. If dust is visible for extended time, limit by wetting down area.
4. Secure/leave site.	4a. FALL: Slip, trip, fall	<ul><li>3e. If dust continues stop work and evaluate if APR is needed with approval and clearance.</li><li>4a. Clear work area of all debris and store all equipment in designated areas/containers before opening to traffic.</li></ul>
		4a. Replace fencing and barricades as needed to secure path before opening roadway or area up to traffic(vehicle, pedestrian and/or bicycle).

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

A hazard is a potential danger. Break hazards into five types: Contact - victim is struck by or strikes an object;
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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".

JOB SAFETY ANALYSIS	Ctrl. No. GEN-025	DATE: 1/4/2018		□ NEW ⊠ REVISED	PAGE 1 of 1
JSA TYPE CATEGORY <b>Generic</b>	WORK TYPE General		WORK ACTIVITY (Description)  Trucking		
DEVELOPMENT TEAM	POSITION / TITLE		REVIEWE	D BY:	POSITION / TITLE
Lauren Dolginko	Project Geologist	В	rian Hobbs		Senior Health & Safety Manager
		Jo	oe Gentile		Corporate Health & Safety Manager
	REQUIRED AND / OR RECOM	MENDED PERSONAL	L PROTECTIVE E	QUIPMENT	, ,
☐ LIFE VEST ☐ HARD HAT ☐ LONG SLEEVED SHIRT ☐ LIFELINE / BODY HARNESS ☐ SAFETY GLASSES	GOGGLES FACE SHIELD HEARING PROTECTION SAFETY SHOES: Steel-to		SUPPLIED RI PPE CLOTHII reflective vest sleeved clothi	NG: Fluorescent or high visibility long	☐ GLOVES: Leather or cut resistant ☐ OTHER
Heavy equipment (i.e. trucks)	REQUIRED AND	OR RECOMMENDE	DEQUIPMENT		
COMMITMENT TO SAFETY- All pe	rsonnel onsite will actively par	ticipate in Hazard r	ecognition and	mitigation througho	ut the day by verbalizing SPSAs.
EXCLUSION ZONE: A 10' minimu	ım exclusion zone will be ma	aintained around e	excavator, bac	khoe, dump trucks	s and other heavy equipment.
Assess 1JOB STEPS	Analyze <sup>2</sup> POTENTIAL HAZAF	RDS		Act 3CRITICAL AC	CTIONS
1. Set up work zone.	1a. CONTACT: Personal injury/prope caused by obstruction	erty damage	communica	vork zone for mar ating with workers 10 ft Exclusion	nifesting/paperwork by s before task begins. <b>Zone (EZ)</b> around all heavy
2. Loading of truck.	<ul> <li>2a. CONTACT:     Rolling Vehicle could harm.</li> <li>2b. CONTACT:     Machine or load may personnel, property or contact:     Load shifting during to contact.</li> </ul>	cause bodily 2 crush or machinery. 2 ravel. 2 2	their enginarea shoulb. All machine spotter. Spas other personnel. b. Loads muspersonnel. b. Maintain 1c. Secure all straps or cc. Any loose sides prior c. All truck be	es off and wheels do be on level groups (Excavator, Lubotter must commersonnel in the wold operator should hand signals to the strong of the EZ around all loads prior to moribbing.  Soil or debris should to truck mobilizateds must be secul	ull, Backhoe) must have a sunicate contact hazards such ork area, objects in the verhead lines to the operator. If have 2-way radios or communicate when needed, over other vehicles or equipment, wing the truck with chains or ould be cleaned off truck tion.
3. Dumping loads.	3a. CONTACT: Truck may flip sidewa backwards.	ays or	trucks that potentially maintained	are dumping to a tipping sideways I equal to the heigh	nd and away from the side of avoid contact with the truck or backwards. EZ must be ght of bed while lifted.
4. Exchanging paperwork with truck driver.	<ul> <li>4a. CONTACT/CAUGHT Broken bones from c vehicle.</li> <li>4b. FALL: Slip, Trip or Fall may muscle strains or tea or lacerations, or broken</li> </ul>	ontact by  4.  4.  cause rs, abrasions	the establis Site-specif truck, wait turned off, a. Always es approachir a. Confirm si prior to app b. Survey wai Avoid icy/w present. b. Communic	shed work zone to ic safety prohibits until truck is finish before approachi tablish eye contain g truck. Ides of truck have proaching truck. Iking route to ider wet surfaces. Rem cate with driver and g truck. Maintain	k with proper PPE and enter of complete paperwork. If a drivers from exiting the hed loading, with engineing truck. It with driver prior to been cleaned/brushed off the hed loading with engineing truck. It with driver prior to been cleaned/brushed off the hed spotter prior to a 10 ft EZ around all heavy

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

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, energy source; Energy Source - electricity, pressure, compression/tension.

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".

## Site-Specific Health and Safety Plan The Peninsula Redevelopment Project 1221 Spofford Avenue, Bronx, New York

## **APPENDIX B**

Hazard Communication MSDS / SDS for Chemicals Used

2611.0002Y.108.APB/CVRS ROUX







# Material Safety Data Sheet Benzene MSDS

## **Section 1: Chemical Product and Company Identification**

Product Name: Benzene

Catalog Codes: SLB1564, SLB3055, SLB2881

CAS#: 71-43-2

**RTECS:** CY1400000

TSCA: TSCA 8(b) inventory: Benzene

CI#: Not available.

Synonym: Benzol; Benzine

Chemical Name: Benzene

**Chemical Formula:** C6-H6

**Contact Information:** 

Sciencelab.com, Inc. 14025 Smith Rd. Houston. Texas 77396

US Sales: 1-800-901-7247

International Sales: 1-281-441-4400

Order Online: ScienceLab.com

CHEMTREC (24HR Emergency Telephone), call:

1-800-424-9300

International CHEMTREC, call: 1-703-527-3887

For non-emergency assistance, call: 1-281-441-4400

## **Section 2: Composition and Information on Ingredients**

#### Composition:

Name	CAS#	% by Weight
Benzene	71-43-2	100

**Toxicological Data on Ingredients:** Benzene: ORAL (LD50): Acute: 930 mg/kg [Rat]. 4700 mg/kg [Mouse]. DERMAL (LD50): Acute: >9400 mg/kg [Rabbit]. VAPOR (LC50): Acute: 10000 ppm 7 hours [Rat].

#### Section 3: Hazards Identification

#### **Potential Acute Health Effects:**

Very hazardous in case of eye contact (irritant), of inhalation. Hazardous in case of skin contact (irritant, permeator), of ingestion. Inflammation of the eye is characterized by redness, watering, and itching.

#### **Potential Chronic Health Effects:**

CARCINOGENIC EFFECTS: Classified A1 (Confirmed for human.) by ACGIH, 1 (Proven for human.) by IARC. MUTAGENIC EFFECTS: Classified POSSIBLE for human. Mutagenic for mammalian somatic cells. Mutagenic for bacteria and/or yeast. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Classified Reproductive system/toxin/female [POSSIBLE]. The substance is toxic to blood, bone marrow, central nervous system (CNS). The substance may be toxic to liver, Urinary System. Repeated or prolonged exposure to the substance can produce target organs damage.

#### Section 4: First Aid Measures

#### **Eye Contact:**

Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Cold water may be used. WARM water MUST be used. Get medical attention immediately.

#### Skin Contact:

In case of contact, immediately flush skin with plenty of water. Cover the irritated skin with an emollient. Remove contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention.

#### **Serious Skin Contact:**

Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek immediate medical attention.

#### Inhalation:

If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention if symptoms appear.

#### Serious Inhalation:

Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek medical attention.

#### Ingestion:

Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If large quantities of this material are swallowed, call a physician immediately. Loosen tight clothing such as a collar, tie, belt or waistband.

Serious Ingestion: Not available.

## **Section 5: Fire and Explosion Data**

Flammability of the Product: Flammable.

Auto-Ignition Temperature: 497.78°C (928°F)

Flash Points: CLOSED CUP: -11.1°C (12°F). (Setaflash)

Flammable Limits: LOWER: 1.2% UPPER: 7.8%

**Products of Combustion:** These products are carbon oxides (CO, CO2).

#### Fire Hazards in Presence of Various Substances:

Highly flammable in presence of open flames and sparks, of heat. Slightly flammable to flammable in presence of oxidizing materials. Non-flammable in presence of shocks.

## **Explosion Hazards in Presence of Various Substances:**

Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available. Explosive in presence of oxidizing materials, of acids.

#### **Fire Fighting Media and Instructions:**

Flammable liquid, soluble or dispersed in water. SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use alcohol foam, water spray or fog.

#### **Special Remarks on Fire Hazards:**

Extremely flammable liquid and vapor. Vapor may cause flash fire. Reacts on contact with iodine heptafluoride gas. Dioxygenyl tetrafluoroborate is as very powferful oxidant. The addition of a small particle to small samples of benzene, at ambient temperature, causes ignition. Contact with sodium peroxide with benzene causes ignition. Benzene ignites in contact with powdered chromic anhydride. Virgorous or incandescent reaction with hydrogen + Raney nickel (above 210 C) and bromine trifluoride.

#### **Special Remarks on Explosion Hazards:**

Benzene vapors + chlorine and light causes explosion. Reacts explosively with bromine pentafluoride, chlorine, chlorine trifluoride, diborane, nitric acid, nitryl perchlorate, liquid oxygen, ozone, silver perchlorate. Benzene + pentafluoride and methoxide (from arsenic pentafluoride and potassium methoxide) in trichlorotrifluoroethane causes explosion. Interaction

of nitryl perchlorate with benzene gave a slight explosion and flash. The solution of permanganic acid ( or its explosive anhydride, dimaganese heptoxide) produced by interaction of permanganates and sulfuric acid will explode on contact with benzene. Peroxodisulfuric acid is a very powferful oxidant. Uncontrolled contact with benzene may cause explosion. Mixtures of peroxomonsulfuric acid with benzene explodes.

#### **Section 6: Accidental Release Measures**

Small Spill: Absorb with an inert material and put the spilled material in an appropriate waste disposal.

## Large Spill:

Flammable liquid. Keep away from heat. Keep away from sources of ignition. Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. Do not touch spilled material. Prevent entry into sewers, basements or confined areas; dike if needed. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

## **Section 7: Handling and Storage**

#### **Precautions:**

Keep locked up.. Keep away from heat. Keep away from sources of ignition. Ground all equipment containing material. Do not ingest. Do not breathe gas/fumes/ vapor/spray. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes. Keep away from incompatibles such as oxidizing agents, acids.

#### Storage:

Store in a segregated and approved area. Keep container in a cool, well-ventilated area. Keep container tightly closed and sealed until ready for use. Avoid all possible sources of ignition (spark or flame).

## **Section 8: Exposure Controls/Personal Protection**

#### **Engineering Controls:**

Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location.

#### **Personal Protection:**

Splash goggles. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

#### Personal Protection in Case of a Large Spill:

Splash goggles. Full suit. Vapor respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

## **Exposure Limits:**

TWA: 0.5 STEL: 2.5 (ppm) from ACGIH (TLV) [United States] TWA: 1.6 STEL: 8 (mg/m3) from ACGIH (TLV) [United States] TWA: 0.1 STEL: 1 from NIOSH TWA: 1 STEL: 5 (ppm) from OSHA (PEL) [United States] TWA: 10 (ppm) from OSHA (PEL) [United States] TWA: 3 (ppm) [United Kingdom (UK)] TWA: 1.6 (mg/m3) [United Kingdom (UK)] TWA: 1 (ppm) [Canada] TWA: 3.2 (mg/m3) [Canada] TWA: 0.5 (ppm) [Canada] Consult local authorities for acceptable exposure limits.

## **Section 9: Physical and Chemical Properties**

Physical state and appearance: Liquid.

Odor:

Aromatic. Gasoline-like, rather pleasant. (Strong.)

**Taste:** Not available.

Molecular Weight: 78.11 g/mole

Color: Clear Colorless. Colorless to light yellow.

pH (1% soln/water): Not available.

Boiling Point: 80.1 (176.2°F) Melting Point: 5.5°C (41.9°F)

Critical Temperature: 288.9°C (552°F)

**Specific Gravity:** 0.8787 @ 15 C (Water = 1)

Vapor Pressure: 10 kPa (@ 20°C)

Vapor Density: 2.8 (Air = 1)

Volatility: Not available.

Odor Threshold: 4.68 ppm

Water/Oil Dist. Coeff.: The product is more soluble in oil; log(oil/water) = 2.1

Ionicity (in Water): Not available.

**Dispersion Properties:** See solubility in water, diethyl ether, acetone.

Solubility:

Miscible in alcohol, chloroform, carbon disulfide oils, carbon tetrachloride, glacial acetic acid, diethyl ether, acetone. Very slightly soluble in cold water.

## **Section 10: Stability and Reactivity Data**

Stability: The product is stable.

**Instability Temperature:** Not available.

Conditions of Instability: Heat, ignition sources, incompatibles.

**Incompatibility with various substances:** Highly reactive with oxidizing agents, acids.

Corrosivity: Non-corrosive in presence of glass.

#### **Special Remarks on Reactivity:**

Benzene vapors + chlorine and light causes explosion. Reacts explosively with bromine pentafluoride, chlorine, chlorine trifluoride, diborane, nitric acid, nitryl perchlorate, liquid oxygen, ozone, silver perchlorate. Benzene + pentafluoride and methoxide (from arsenic pentafluoride and potassium methoxide) in trichlorotrifluoroethane causes explosion. Interaction of nitryl perchlorate with benzene gave a slight explosion and flash. The solution of permanganic acid ( or its explosive anhydride, dimaganese heptoxide) produced by interaction of permanganates and sulfuric acid will explode on contact with benzene. Peroxodisulfuric acid is a very powferful oxidant. Uncontrolled contact with benzene may cause explosion. Mixtures of peroxomonsulfuric acid with benzene explodes.

Special Remarks on Corrosivity: Not available.

Polymerization: Will not occur.

## **Section 11: Toxicological Information**

Routes of Entry: Absorbed through skin. Dermal contact. Eye contact. Inhalation.

#### **Toxicity to Animals:**

WARNING: THE LC50 VALUES HEREUNDER ARE ESTIMATED ON THE BASIS OF A 4-HOUR EXPOSURE. Acute oral toxicity (LD50): 930 mg/kg [Rat]. Acute dermal toxicity (LD50): >9400 mg/kg [Rabbit]. Acute toxicity of the vapor (LC50): 10000 7 hours [Rat].

**Chronic Effects on Humans:** 

CARCINOGENIC EFFECTS: Classified A1 (Confirmed for human.) by ACGIH, 1 (Proven for human.) by IARC. MUTAGENIC EFFECTS: Classified POSSIBLE for human. Mutagenic for mammalian somatic cells. Mutagenic for bacteria and/or yeast. DEVELOPMENTAL TOXICITY: Classified Reproductive system/toxin/female [POSSIBLE]. Causes damage to the following organs: blood, bone marrow, central nervous system (CNS). May cause damage to the following organs: liver, Urinary System.

#### Other Toxic Effects on Humans:

Very hazardous in case of inhalation. Hazardous in case of skin contact (irritant, permeator), of ingestion.

Special Remarks on Toxicity to Animals: Not available.

#### Special Remarks on Chronic Effects on Humans:

May cause adverse reproductive effects (female fertility, Embryotoxic and/or foetotoxic in animal) and birth defects. May affect genetic material (mutagenic). May cause cancer (tumorigenic, leukemia)) Human: passes the placental barrier, detected in maternal milk.

#### Special Remarks on other Toxic Effects on Humans:

Acute Potential Health Effects: Skin: Causes skin irritation. It can be absorbed through intact skin and affect the liver, blood, metabolism, and urinary system. Eyes: Causes eye irritation. Inhalation: Causes respiratory tract and mucous membrane irritation. Can be absorbed through the lungs. May affect behavior/Central and Peripheral nervous systems (somnolence, muscle weakness, general anesthetic, and other symptoms similar to ingestion), gastrointestinal tract (nausea), blood metabolism, urinary system. Ingestion: May be harmful if swallowed. May cause gastrointestinal tract irritation including vomiting. May affect behavior/Central and Peripheral nervous systems (convulsions, seizures, tremor, irritability, initial CNS stimulation followed by depression, loss of coordination, dizziness, headache, weakness, pallor, flushing), respiration (breathlessness and chest constriction), cardiovascular system, (shallow/rapid pulse), and blood.

## **Section 12: Ecological Information**

Ecotoxicity: Not available.

BOD5 and COD: Not available.

#### **Products of Biodegradation:**

Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The products of degradation are less toxic than the product itself.

Special Remarks on the Products of Biodegradation: Not available.

## **Section 13: Disposal Considerations**

#### **Waste Disposal:**

Waste must be disposed of in accordance with federal, state and local environmental control regulations.

## **Section 14: Transport Information**

**DOT Classification:** CLASS 3: Flammable liquid. **Identification:** : Benzene UNNA: 1114 PG: II **Special Provisions for Transport:** Not available.

## **Section 15: Other Regulatory Information**

#### Federal and State Regulations:

California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer, birth defects or other reproductive harm, which would require a warning under the statute: Benzene California prop. 65 (no significant risk level): Benzene: 0.007 mg/day (value) California prop. 65: This product contains the following ingredients

for which the State of California has found to cause cancer which would require a warning under the statute: Benzene Connecticut carcinogen reporting list.: Benzene Connecticut hazardous material survey.: Benzene Illinois toxic substances disclosure to employee act: Benzene Illinois chemical safety act: Benzene New York release reporting list: Benzene Rhode Island RTK hazardous substances: Benzene Pennsylvania RTK: Benzene Minnesota: Benzene Michigan critical material: Benzene Massachusetts RTK: Benzene Massachusetts spill list: Benzene New Jersey: Benzene New Jersey spill list: Benzene Louisiana spill reporting: Benzene California Director's list of Hazardous Substances: Benzene TSCA 8(b) inventory: Benzene SARA 313 toxic chemical notification and release reporting: Benzene CERCLA: Hazardous substances.: Benzene: 10 lbs. (4.536 kg)

## Other Regulations:

OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200). EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances.

#### Other Classifications:

#### WHMIS (Canada):

CLASS B-2: Flammable liquid with a flash point lower than 37.8°C (100°F). CLASS D-2A: Material causing other toxic effects (VERY TOXIC).

## DSCL (EEC):

R11- Highly flammable. R22- Harmful if swallowed. R38- Irritating to skin. R41- Risk of serious damage to eyes. R45- May cause cancer. R62- Possible risk of impaired fertility. S2- Keep out of the reach of children. S26- In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. S39- Wear eye/face protection. S46- If swallowed, seek medical advice immediately and show this container or label. S53- Avoid exposure - obtain special instructions before use.

## HMIS (U.S.A.):

Health Hazard: 2 Fire Hazard: 3 Reactivity: 0

Personal Protection: h

#### National Fire Protection Association (U.S.A.):

Health: 2

Flammability: 3
Reactivity: 0
Specific hazard:

#### **Protective Equipment:**

Gloves. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Splash goggles.

## **Section 16: Other Information**

References: Not available.

Other Special Considerations: Not available.

Created: 10/10/2005 08:35 PM

Last Updated: 11/06/2008 12:00 PM

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# Material Safety Data Sheet Toluene MSDS

## **Section 1: Chemical Product and Company Identification**

Product Name: Toluene

Catalog Codes: SLT2857, SLT3277

CAS#: 108-88-3

RTECS: XS5250000

TSCA: TSCA 8(b) inventory: Toluene

CI#: Not available.

**Synonym:** Toluol, Tolu-Sol; Methylbenzene; Methacide;

Phenylmethane; Methylbenzol

Chemical Name: Toluene

Chemical Formula: C6-H5-CH3 or C7-H8

### **Contact Information:**

Sciencelab.com, Inc. 14025 Smith Rd. Houston, Texas 77396

US Sales: 1-800-901-7247

International Sales: 1-281-441-4400
Order Online: ScienceLab.com

CHEMTREC (24HR Emergency Telephone), call:

1-800-424-9300

International CHEMTREC, call: 1-703-527-3887

For non-emergency assistance, call: 1-281-441-4400

## Section 2: Composition and Information on Ingredients

#### Composition:

	Neight
Toluene 108-88-3 100	

**Toxicological Data on Ingredients:** Toluene: ORAL (LD50): Acute: 636 mg/kg [Rat]. DERMAL (LD50): Acute: 14100 mg/kg [Rabbit]. VAPOR (LC50): Acute: 49000 mg/m 4 hours [Rat]. 440 ppm 24 hours [Mouse].

#### Section 3: Hazards Identification

#### **Potential Acute Health Effects:**

Hazardous in case of skin contact (irritant), of eye contact (irritant), of ingestion, of inhalation. Slightly hazardous in case of skin contact (permeator).

#### **Potential Chronic Health Effects:**

CARCINOGENIC EFFECTS: A4 (Not classifiable for human or animal.) by ACGIH, 3 (Not classifiable for human.) by IARC. MUTAGENIC EFFECTS: Not available. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Not available. The substance may be toxic to blood, kidneys, the nervous system, liver, brain, central nervous system (CNS). Repeated or prolonged exposure to the substance can produce target organs damage.

#### Section 4: First Aid Measures

#### **Eye Contact:**

Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention.

#### Skin Contact:

In case of contact, immediately flush skin with plenty of water. Cover the irritated skin with an emollient. Remove contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention.

#### **Serious Skin Contact:**

Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek immediate medical attention.

#### Inhalation:

If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

#### Serious Inhalation:

Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. WARNING: It may be hazardous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled material is toxic, infectious or corrosive. Seek medical attention.

#### Ingestion:

Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If large quantities of this material are swallowed, call a physician immediately. Loosen tight clothing such as a collar, tie, belt or waistband.

Serious Ingestion: Not available.

## **Section 5: Fire and Explosion Data**

Flammability of the Product: Flammable.

**Auto-Ignition Temperature:** 480°C (896°F)

Flash Points: CLOSED CUP: 4.4444°C (40°F). (Setaflash) OPEN CUP: 16°C (60.8°F).

Flammable Limits: LOWER: 1.1% UPPER: 7.1%

**Products of Combustion:** These products are carbon oxides (CO, CO2).

#### **Fire Hazards in Presence of Various Substances:**

Flammable in presence of open flames and sparks, of heat. Non-flammable in presence of shocks.

#### **Explosion Hazards in Presence of Various Substances:**

Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available.

#### **Fire Fighting Media and Instructions:**

Flammable liquid, insoluble in water. SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use water spray or fog.

Special Remarks on Fire Hazards: Not available.

#### Special Remarks on Explosion Hazards:

Toluene forms explosive reaction with 1,3-dichloro-5,5-dimethyl-2,4-imidazolididione; dinitrogen tetraoxide; concentrated nitric acid, sulfuric acid + nitric acid; N2O4; AgClO4; BrF3; Uranium hexafluoride; sulfur dichloride. Also forms an explosive mixture with tetranitromethane.

#### **Section 6: Accidental Release Measures**

Small Spill: Absorb with an inert material and put the spilled material in an appropriate waste disposal.

#### Large Spill:

Toxic flammable liquid, insoluble or very slightly soluble in water. Keep away from heat. Keep away from sources of ignition. Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. Do not get water inside container. Do not touch spilled material. Prevent entry into sewers, basements or confined areas; dike if needed. Call for assistance on disposal. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

## Section 7: Handling and Storage

#### **Precautions:**

Keep away from heat. Keep away from sources of ignition. Ground all equipment containing material. Do not ingest. Do not breathe gas/fumes/ vapor/spray. Wear suitable protective clothing. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes. Keep away from incompatibles such as oxidizing agents.

#### Storage:

Store in a segregated and approved area. Keep container in a cool, well-ventilated area. Keep container tightly closed and sealed until ready for use. Avoid all possible sources of ignition (spark or flame).

## **Section 8: Exposure Controls/Personal Protection**

#### **Engineering Controls:**

Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location.

#### **Personal Protection:**

Splash goggles. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

#### Personal Protection in Case of a Large Spill:

Splash goggles. Full suit. Vapor respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

#### **Exposure Limits:**

TWA: 200 STEL: 500 CEIL: 300 (ppm) from OSHA (PEL) [United States] TWA: 50 (ppm) from ACGIH (TLV) [United States] SKIN TWA: 100 STEL: 150 from NIOSH [United States] TWA: 375 STEL: 560 (mg/m3) from NIOSH [United States] Consult local authorities for acceptable exposure limits.

## **Section 9: Physical and Chemical Properties**

Physical state and appearance: Liquid.

Odor: Sweet, pungent, Benzene-like.

Taste: Not available.

Molecular Weight: 92.14 g/mole

Color: Colorless.

**pH (1% soln/water):** Not applicable. **Boiling Point:** 110.6°C (231.1°F)

Melting Point: -95°C (-139°F)

Critical Temperature: 318.6°C (605.5°F)

Specific Gravity: 0.8636 (Water = 1)

Vapor Pressure: 3.8 kPa (@ 25°C)

Vapor Density: 3.1 (Air = 1)

Volatility: Not available.

Odor Threshold: 1.6 ppm

Water/Oil Dist. Coeff.: The product is more soluble in oil; log(oil/water) = 2.7

Ionicity (in Water): Not available.

**Dispersion Properties:** See solubility in water, diethyl ether, acetone.

Solubility:

Soluble in diethyl ether, acetone. Practically insoluble in cold water. Soluble in ethanol, benzene, chloroform, glacial acetic acid, carbon disulfide. Solubility in water: 0.561 q/l @ 25 deg. C.

## Section 10: Stability and Reactivity Data

Stability: The product is stable.

**Instability Temperature:** Not available.

Conditions of Instability: Heat, ignition sources (flames, sparks, static), incompatible materials

**Incompatibility with various substances:** Reactive with oxidizing agents.

Corrosivity: Non-corrosive in presence of glass.

#### Special Remarks on Reactivity:

Incompatible with strong oxidizers, silver perchlorate, sodium difluoride, Tetranitromethane, Uranium Hexafluoride. Frozen Bromine Trifluoride reacts violently with Toluene at -80 deg. C. Reacts chemically with nitrogen oxides, or halogens to form nitrotoluene, nitrobenzene, and nitrophenol and halogenated products, respectively.

Special Remarks on Corrosivity: Not available.

Polymerization: Will not occur.

## **Section 11: Toxicological Information**

Routes of Entry: Absorbed through skin. Dermal contact. Eye contact. Inhalation. Ingestion.

#### **Toxicity to Animals:**

WARNING: THE LC50 VALUES HEREUNDER ARE ESTIMATED ON THE BASIS OF A 4-HOUR EXPOSURE. Acute oral toxicity (LD50): 636 mg/kg [Rat]. Acute dermal toxicity (LD50): 14100 mg/kg [Rabbit]. Acute toxicity of the vapor (LC50): 440 24 hours [Mouse].

#### **Chronic Effects on Humans:**

CARCINOGENIC EFFECTS: A4 (Not classifiable for human or animal.) by ACGIH, 3 (Not classifiable for human.) by IARC. May cause damage to the following organs: blood, kidneys, the nervous system, liver, brain, central nervous system (CNS).

#### Other Toxic Effects on Humans:

Hazardous in case of skin contact (irritant), of ingestion, of inhalation. Slightly hazardous in case of skin contact (permeator).

### **Special Remarks on Toxicity to Animals:**

Lowest Published Lethal Dose: LDL [Human] - Route: Oral; Dose: 50 mg/kg LCL [Rabbit] - Route: Inhalation; Dose: 55000 ppm/40min

## **Special Remarks on Chronic Effects on Humans:**

Detected in maternal milk in human. Passes through the placental barrier in human. Embryotoxic and/or foetotoxic in animal. May cause adverse reproductive effects and birth defects (teratogenic). May affect genetic material (mutagenic)

## **Special Remarks on other Toxic Effects on Humans:**

Acute Potential Health Effects: Skin: Causes mild to moderate skin irritation. It can be absorbed to some extent through the skin. Eyes: Cauess mild to moderate eye irritation with a burning sensation. Splash contact with eyes also causes conjunctivitis, blepharospasm, corneal edema, corneal abraisons. This usually resolves in 2 days. Inhalation: Inhalation of vapor may cause respiratory tract irritation causing coughing and wheezing, and nasal discharge. Inhalation of high concentrations may affect behavior and cause central nervous system effects characterized by nausea, headache, dizziness, tremors, restlessness, lightheadedness, exhilaration, memory loss, insomnia, impaired reaction time, drowsiness, ataxia, hallucinations, somnolence, muscle contraction or spasticity, unconsciousness and coma. Inhalation of high concentration of vapor may also affect the cardiovascular system (rapid heart beat, heart palpitations, increased or decreased blood pressure, dysrhythmia, ), respiration (acute pulmonary edema, respiratory depression, apnea, asphyxia), cause vision disturbances and dilated pupils, and cause loss of appetite. Ingestion: Aspiration hazard. Aspiration of Toluene into the lungs may cause chemical pneumonitis. May cause irritation of the digestive tract with nausea, vomiting, pain. May have effects similar to that of acute inhalation. Chronic Potential Health Effects: Inhalation and Ingestion: Prolonged or repeated exposure via inhalation may cause central nervous system and cardiovascular symptoms similar to that of acute inhalation and ingestion as well liver damage/failure, kidney damage/failure (with hematuria, proteinuria, oliguria, renal tubular acidosis), brain damage, weight loss, blood (pigmented or nucleated red blood cells, changes in white blood cell count), bone marrow changes, electrolyte imbalances (Hypokalemia, Hypophostatemia), severe, muscle weakness and Rhabdomyolysis. Skin: Repeated or prolonged skin contact may cause defatting dermatitis.

## Section 12: Ecological Information

#### **Ecotoxicity:**

Ecotoxicity in water (LC50): 313 mg/l 48 hours [Daphnia (daphnia)]. 17 mg/l 24 hours [Fish (Blue Gill)]. 13 mg/l 96 hours [Fish (Blue Gill)]. 56 mg/l 24 hours [Fish (Fathead minnow)]. 34 mg/l 96 hours [Fish (Fathead minnow)]. 56.8 ppm any hours [Fish (Goldfish)].

BOD5 and COD: Not available.

#### **Products of Biodegradation:**

Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

**Toxicity of the Products of Biodegradation:** The products of degradation are less toxic than the product itself.

Special Remarks on the Products of Biodegradation: Not available.

## **Section 13: Disposal Considerations**

#### Waste Disposal:

Waste must be disposed of in accordance with federal, state and local environmental control regulations.

## **Section 14: Transport Information**

**DOT Classification:** CLASS 3: Flammable liquid.

Identification: : Toluene UNNA: 1294 PG: II

**Special Provisions for Transport:** Not available.

## **Section 15: Other Regulatory Information**

#### Federal and State Regulations:

California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer, birth defects or other reproductive harm, which would require a warning under the statute: Toluene California prop. 65 (no significant risk level): Toluene: 7 mg/day (value) California prop. 65 (acceptable daily intake level): Toluene: 7 mg/day (value) California prop. 65: This product contains the following ingredients for which the State of California has found to cause birth defects which would require a warning under the statute: Toluene Connecticut hazardous material survey.: Toluene Illinois

toxic substances disclosure to employee act: Toluene Illinois chemical safety act: Toluene New York release reporting list: Toluene Rhode Island RTK hazardous substances: Toluene Pennsylvania RTK: Toluene Florida: Toluene Minnesota: Toluene Michigan critical material: Toluene Massachusetts RTK: Toluene Massachusetts spill list: Toluene New Jersey: Toluene New Jersey spill list: Toluene Louisiana spill reporting: Toluene California Director's List of Hazardous Substances.: Toluene TSCA 8(b) inventory: Toluene TSCA 8(d) H and S data reporting: Toluene: Effective date: 10/04/82; Sunset Date: 10/0/92 SARA 313 toxic chemical notification and release reporting: Toluene CERCLA: Hazardous substances.: Toluene: 1000 lbs. (453.6 kg)

#### Other Regulations:

OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200). EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances.

#### Other Classifications:

#### WHMIS (Canada):

CLASS B-2: Flammable liquid with a flash point lower than 37.8°C (100°F). CLASS D-2A: Material causing other toxic effects (VERY TOXIC).

#### DSCL (EEC):

R11- Highly flammable. R20- Harmful by inhalation. S16- Keep away from sources of ignition - No smoking. S25- Avoid contact with eyes. S29- Do not empty into drains. S33- Take precautionary measures against static discharges.

#### HMIS (U.S.A.):

Health Hazard: 2 Fire Hazard: 3 Reactivity: 0

Personal Protection: h

#### National Fire Protection Association (U.S.A.):

Health: 2

Flammability: 3
Reactivity: 0
Specific hazard:

#### **Protective Equipment:**

Gloves. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Splash goggles.

#### **Section 16: Other Information**

References: Not available.

Other Special Considerations: Not available.

Created: 10/10/2005 08:30 PM

Last Updated: 11/06/2008 12:00 PM

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# Material Safety Data Sheet Ethylbenzene MSDS

## **Section 1: Chemical Product and Company Identification**

Product Name: Ethylbenzene

Catalog Codes: SLE2044

CAS#: 100-41-4

RTECS: DA0700000

TSCA: TSCA 8(b) inventory: Ethylbenzene

CI#: Not available.

Synonym: Ethyl Benzene; Ethylbenzol; Phenylethane

Chemical Name: Ethylbenzene

**Chemical Formula:** C8H10

**Contact Information:** 

Sciencelab.com, Inc. 14025 Smith Rd. Houston. Texas 77396

US Sales: 1-800-901-7247

International Sales: 1-281-441-4400

Order Online: ScienceLab.com

CHEMTREC (24HR Emergency Telephone), call:

1-800-424-9300

International CHEMTREC, call: 1-703-527-3887

For non-emergency assistance, call: 1-281-441-4400

## **Section 2: Composition and Information on Ingredients**

#### Composition:

Name	CAS#	% by Weight
Ethylbenzene	100-41-4	100

Toxicological Data on Ingredients: Ethylbenzene: ORAL (LD50): Acute: 3500 mg/kg [Rat].

#### Section 3: Hazards Identification

#### **Potential Acute Health Effects:**

Hazardous in case of eye contact (irritant), of ingestion, of inhalation. Slightly hazardous in case of skin contact (irritant, permeator).

#### **Potential Chronic Health Effects:**

Slightly hazardous in case of skin contact (irritant, sensitizer). CARCINOGENIC EFFECTS: Classified 2B (Possible for human.) by IARC. MUTAGENIC EFFECTS: Mutagenic for mammalian somatic cells. Mutagenic for bacteria and/or yeast. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Not available. The substance may be toxic to central nervous system (CNS). Repeated or prolonged exposure to the substance can produce target organs damage.

#### **Section 4: First Aid Measures**

#### **Eye Contact:**

Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Cold water may be used. WARM water MUST be used. Get medical attention.

Skin Contact: Wash with soap and water. Cover the irritated skin with an emollient. Get medical attention if irritation develops.

Serious Skin Contact: Not available.

#### Inhalation:

If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

#### Serious Inhalation:

Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. WARNING: It may be hazardous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled material is toxic, infectious or corrosive. Seek medical attention.

#### Ingestion:

Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention if symptoms appear.

Serious Ingestion: Not available.

## **Section 5: Fire and Explosion Data**

Flammability of the Product: Flammable.

**Auto-Ignition Temperature:** 432°C (809.6°F)

Flash Points:

CLOSED CUP: 15°C (59°F). (Tagliabue.) OPEN CUP: 26.667°C (80°F) (Cleveland) (CHRIS, 2001) CLOSED CUP: 12.8 C (55 F) (Bingham et al., 2001; NIOSH, 2001) CLOSED CUP: 21 C (70 F) (NFPA)

Flammable Limits: LOWER: 0.8% - 1.6% UPPER: 6.7% - 7%

**Products of Combustion:** These products are carbon oxides (CO, CO2).

Fire Hazards in Presence of Various Substances: Highly flammable in presence of open flames and sparks, of heat.

#### **Explosion Hazards in Presence of Various Substances:**

Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available. Slightly explosive in presence of heat.

#### Fire Fighting Media and Instructions:

Flammable liquid, soluble or dispersed in water. SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use alcohol foam, water spray or fog.

#### **Special Remarks on Fire Hazards:**

Vapor may travel considerable distance to source of ignition and flash back. Vapors may form explosive mixtures with air. When heated to decomposition it emits acrid smoke and irritating fumes.

**Special Remarks on Explosion Hazards:** Vapors may form explosive mixtures in air.

#### **Section 6: Accidental Release Measures**

Small Spill: Absorb with an inert material and put the spilled material in an appropriate waste disposal.

#### Large Spill:

Flammable liquid. Keep away from heat. Keep away from sources of ignition. Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. Do not touch spilled material. Prevent entry into sewers, basements or confined areas; dike if needed. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

## **Section 7: Handling and Storage**

#### Precautions:

Keep away from heat. Keep away from sources of ignition. Ground all equipment containing material. Do not ingest. Do not breathe gas/fumes/ vapor/spray. Avoid contact with eyes. Wear suitable protective clothing. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Keep away from incompatibles such as oxidizing agents.

## Storage:

Store in a segregated and approved area. Keep container in a cool, well-ventilated area. Keep container tightly closed and sealed until ready for use. Avoid all possible sources of ignition (spark or flame). Sensitive to light. Store in light-resistant containers.

## **Section 8: Exposure Controls/Personal Protection**

#### **Engineering Controls:**

Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location.

#### **Personal Protection:**

Splash goggles. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

#### Personal Protection in Case of a Large Spill:

Splash goggles. Full suit. Vapor respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

#### **Exposure Limits:**

TWA: 100 STEL: 125 (ppm) from OSHA (PEL) [United States] TWA: 435 STEL: 545 from OSHA (PEL) [United States] TWA: 435 STEL: 545 from OSHA (PEL) [United States] TWA: 435 STEL: 545 (mg/m3) from NIOSH [United States] TWA: 100 STEL: 125 (ppm) from NIOSH [United States] TWA: 100 STEL: 125 (ppm) [United Kingdom (UK)] TWA: 100 STEL: 125 (ppm) [Belgium] TWA: 100 STEL: 125 (ppm) [Finland] TWA: 50 (ppm) [Norway] Consult local authorities for acceptable exposure limits.

## Section 9: Physical and Chemical Properties

Physical state and appearance: Liquid.

Odor: Sweetish. Gasoline-like. Aromatic.

Taste: Not available.

Molecular Weight: 106.16 g/mole

Color: Colorless.

pH (1% soln/water): Not available. Boiling Point: 136°C (276.8°F) Melting Point: -94.9 (-138.8°F)

**Critical Temperature:** 617.15°C (1142.9°F)

Specific Gravity: 0.867 (Water = 1) Vapor Pressure: 0.9 kPa (@ 20°C)

**Vapor Density:** 3.66 (Air = 1)

Volatility: 100% (v/v).
Odor Threshold: 140 ppm

Water/Oil Dist. Coeff.: The product is more soluble in oil; log(oil/water) = 3.1

Ionicity (in Water): Not available.

**Dispersion Properties:** See solubility in water, diethyl ether.

#### Solubility:

Easily soluble in diethyl ether. Very slightly soluble in cold water or practically insoluble in water. Soluble in all proportions in Ethyl alcohol. Soluble in Carbon tetrachloride, Benzene. Insoluble in Ammonia. Slightly soluble in Chloroform. Solubility in Water: 169 mg/l @ 25 deg. C.; 0.014 g/100 ml @ 15 deg. C.

## Section 10: Stability and Reactivity Data

**Stability:** The product is stable.

**Instability Temperature:** Not available.

Conditions of Instability: Heat, ingnition sources (flames, sparks, static), incompatible materials, light

Incompatibility with various substances: Reactive with oxidizing agents.

Corrosivity: Not considered to be corrosive for metals and glass.

Special Remarks on Reactivity:

Can react vigorously with oxidizing materials. Sensitive to light.

Special Remarks on Corrosivity: Not available.

Polymerization: Will not occur.

## **Section 11: Toxicological Information**

Routes of Entry: Absorbed through skin. Inhalation.

**Toxicity to Animals:** Acute oral toxicity (LD50): 3500 mg/kg [Rat].

#### **Chronic Effects on Humans:**

CARCINOGENIC EFFECTS: Classified 2B (Possible for human.) by IARC. MUTAGENIC EFFECTS: Mutagenic for mammalian somatic cells. Mutagenic for bacteria and/or yeast. May cause damage to the following organs: central nervous system (CNS).

#### **Other Toxic Effects on Humans:**

Hazardous in case of ingestion, of inhalation. Slightly hazardous in case of skin contact (irritant, permeator).

#### **Special Remarks on Toxicity to Animals:**

Lethal Dose/Conc 50% Kill: LD50 [Rabbit] - Route: Skin; Dose: 17800 ul/kg Lowest Published Lethal Dose/Conc: LDL[Rat] - Route: Inhalation (vapor); Dose: 4000 ppm/4 H

#### **Special Remarks on Chronic Effects on Humans:**

May cause adverse reproductive effects and birth defects (teratogenic) based on animal test data. May cause cancer based on animals data. IARC evidence for carcinogenicity in animals is sufficient. IARC evidence of carcinogenicity in humans inadequate. May affect genetic material (mutagenic).

## **Special Remarks on other Toxic Effects on Humans:**

Acute Potential Health Effects: Skin: Can cause mild skin irritation. It can be absorbed through intact skin. Eyes: Contact with vapor or liquid can cause severe eye irritation depending on concentration. It may also cause conjunctivitis. At a vapor exposure level of 85 - 200 ppm, it is mildly and transiently irritating to the eyes; 1000 ppm causes further irritation and tearing; 2000 ppm results in immediate and severe irritation and tearing; 5,000 ppm is intolerable (ACGIH, 1991; Clayton and Clayton, 1994). Standard draize test for eye irritation using 500 mg resulted in severe irritation (RTECS) Inhalation: Exposure to high concentrations can cause nasal, mucous membrane and respiratory tract irritation and can also result in chest constriction and, trouble breathing, respiratory failure, and even death. It can also affect behavior/Central Nervous System. The effective dose for CNS depression in experimental animals was 10,000 ppm (ACGIH, 1991). Symptoms of CNS depression include

headache, nausea, weakness, dizziness, vertigo, irritability, fatigue, lightheadedness, sleepiness, tremor, loss of coordination, judgement and conciousness, coma, and death. It can also cause pulmonary edema. Inhalation of 85 ppm can produce fatigue, insomnia, headache, and mild irritation of the respiratory tract (Haley & Berndt, 1987). Ingestion: Do not drink, pipet or siphon by mouth. May cause gastroinestinal/digestive tract irritation with Abdominal pain, nausea, vomiting. Ethylbenzene is a pulmonary aspiration hazard. Pulmonary aspiration of even small amounts of the liquid may cause fatal pneumonitis. It may also affect behavior/central nervous system with

## **Section 12: Ecological Information**

#### **Ecotoxicity:**

Ecotoxicity in water (LC50): 14 mg/l 96 hours [Fish (Trout)] (static). 12.1 mg/l 96 hours [Fish (Fathead Minnow)] (flow-through)]. 150 mg/l 96 hours [Fish (Blue Gill/Sunfish)] (static). 275 mg/l 96 hours [Fish (Sheepshead Minnow)]. 42.3 mg/l 96 hours [Fish (Fathead Minnow)] (soft water). 87.6 mg/l 96 hours [Shrimp].

BOD5 and COD: Not available.

#### **Products of Biodegradation:**

Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The products of degradation are less toxic than the product itself.

Special Remarks on the Products of Biodegradation: Not available.

## **Section 13: Disposal Considerations**

#### Waste Disposal:

Waste must be disposed of in accordance with federal, state and local environmental control regulations.

## **Section 14: Transport Information**

**DOT Classification:** CLASS 3: Flammable liquid. **Identification:** : Ethylbenzene UNNA: 1175 PG: II **Special Provisions for Transport:** Not available.

## **Section 15: Other Regulatory Information**

#### **Federal and State Regulations:**

Connecticut hazardous material survey.: Ethylbenzene Illinois toxic substances disclosure to employee act: Ethylbenzene Illinois chemical safety act: Ethylbenzene New York release reporting list: Ethylbenzene Rhode Island RTK hazardous substances: Ethylbenzene Pennsylvania RTK: Ethylbenzene Minnesota: Ethylbenzene Massachusetts RTK: Ethylbenzene Massachusetts spill list: Ethylbenzene New Jersey: Ethylbenzene New Jersey spill list: Ethylbenzene Louisiana spill reporting: Ethylbenzene California Director's List of Hazardous Substances: Ethylbenzene TSCA 8(b) inventory: Ethylbenzene TSCA 4(a) proposed test rules: Ethylbenzene TSCA 8(d) H and S data reporting: Ethylbenzene: Effective Date: 6/19/87; Sunset Date: 6/19/97 SARA 313 toxic chemical notification and release reporting: Ethylbenzene

### Other Regulations:

OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200). EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances.

## Other Classifications:

#### WHMIS (Canada):

CLASS B-2: Flammable liquid with a flash point lower than 37.8°C (100°F). CLASS D-2A: Material causing other toxic effects (VERY TOXIC). CLASSE D-2B: Material causing other toxic effects (TOXIC).

#### DSCL (EEC):

R11- Highly flammable. R20- Harmful by inhalation. S16- Keep away from sources of ignition - No smoking. S24/25- Avoid contact with skin and eyes. S29- Do not empty into drains.

#### HMIS (U.S.A.):

Health Hazard: 2

Fire Hazard: 3
Reactivity: 0

Personal Protection: h

#### National Fire Protection Association (U.S.A.):

Health: 2

Flammability: 3

Reactivity: 0

Specific hazard:

#### **Protective Equipment:**

Gloves. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Splash goggles.

## **Section 16: Other Information**

#### References:

-Manufacturer's Material Safety Data Sheet. -Fire Protection Guide to Hazardous Materials, 13th ed., Nationial Fire Protection Association (NFPA) -Registry of Toxic Effects of Chemical Substances (RTECS) -Chemical Hazard Response Information System (CHRIS) -Hazardous Substance Data Bank (HSDB) -New Jersey Hazardous Substance Fact Sheet -Ariel Global View -Reprotext System

Other Special Considerations: Not available.

Created: 10/09/2005 05:28 PM

Last Updated: 11/06/2008 12:00 PM

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## Material Safety Data Sheet Xylenes MSDS

## **Section 1: Chemical Product and Company Identification**

**Product Name:** Xylenes

Catalog Codes: SLX1075, SLX1129, SLX1042, SLX1096

**CAS#:** 1330-20-7

RTECS: ZE2100000

TSCA: TSCA 8(b) inventory: Xylenes

CI#: Not available.

**Synonym:** Xylenes; Dimethylbenzene; xylol;

methyltoluene

Chemical Name: Xylenes (o-, m-, p- isomers)

Chemical Formula: C6H4(CH3)2

#### **Contact Information:**

Sciencelab.com, Inc. 14025 Smith Rd. Houston, Texas 77396

US Sales: 1-800-901-7247

International Sales: 1-281-441-4400
Order Online: ScienceLab.com

CHEMTREC (24HR Emergency Telephone), call:

1-800-424-9300

International CHEMTREC, call: 1-703-527-3887

For non-emergency assistance, call: 1-281-441-4400

## **Section 2: Composition and Information on Ingredients**

#### Composition:

Name	CAS#	% by Weight
Xylenes	1330-20-7	100

**Toxicological Data on Ingredients:** Xylenes: ORAL (LD50): Acute: 4300 mg/kg [Rat]. 2119 mg/kg [Mouse]. DERMAL (LD50): Acute: >1700 mg/kg [Rabbit].

#### Section 3: Hazards Identification

Potential Acute Health Effects: Hazardous in case of skin contact (irritant, permeator), of eye contact (irritant), of ingestion, of inhalation.

#### **Potential Chronic Health Effects:**

CARCINOGENIC EFFECTS: 3 (Not classifiable for human.) by IARC. MUTAGENIC EFFECTS: Not available. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Not available. The substance may be toxic to blood, kidneys, liver, mucous membranes, bone marrow, central nervous system (CNS). Repeated or prolonged exposure to the substance can produce target organs damage.

#### **Section 4: First Aid Measures**

#### **Eye Contact:**

Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention.

#### **Skin Contact:**

In case of contact, immediately flush skin with plenty of water. Cover the irritated skin with an emollient. Remove contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention.

#### Serious Skin Contact:

Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek immediate medical attention.

#### Inhalation:

If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention if symptoms appear.

#### Serious Inhalation:

Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek medical attention.

#### Ingestion:

Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention if symptoms appear.

Serious Ingestion: Not available.

## **Section 5: Fire and Explosion Data**

Flammability of the Product: Flammable.

**Auto-Ignition Temperature:** 464°C (867.2°F)

Flash Points: CLOSED CUP: 24°C (75.2°F). (Tagliabue.) OPEN CUP: 37.8°C (100°F).

Flammable Limits: LOWER: 1% UPPER: 7%

Products of Combustion: These products are carbon oxides (CO, CO2).

#### Fire Hazards in Presence of Various Substances:

Highly flammable in presence of open flames and sparks, of heat. Non-flammable in presence of shocks.

## **Explosion Hazards in Presence of Various Substances:**

Risks of explosion of the product in presence of mechanical impact: Not available. Slightly explosive in presence of open flames and sparks, of heat.

#### **Fire Fighting Media and Instructions:**

Flammable liquid, soluble or dispersed in water. SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use alcohol foam, water spray or fog. Cool containing vessels with water jet in order to prevent pressure build-up, autoignition or explosion.

Special Remarks on Fire Hazards: Vapors may travel to source of ignition and flash back.

#### **Special Remarks on Explosion Hazards:**

Vapors may form explosive mixtures with air. Containers may explode when heated. May polymerize explosively when heated. An attempt to chlorinate xylene with 1,3-Dichloro-5,5-dimethyl-2,4-imidazolidindione (dichlorohydrantoin) caused a violent explosion

#### Section 6: Accidental Release Measures

Small Spill: Absorb with an inert material and put the spilled material in an appropriate waste disposal.

#### Large Spill:

Flammable liquid. Keep away from heat. Keep away from sources of ignition. Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. Do not touch spilled material. Prevent entry into sewers, basements or confined

areas; dike if needed. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

## **Section 7: Handling and Storage**

#### Precautions:

Keep away from heat. Keep away from sources of ignition. Ground all equipment containing material. Do not ingest. Do not breathe gas/fumes/ vapor/spray. Wear suitable protective clothing. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes. Keep away from incompatibles such as oxidizing agents, acids.

#### Storage:

Store in a segregated and approved area. Keep container in a cool, well-ventilated area. Keep container tightly closed and sealed until ready for use. Avoid all possible sources of ignition (spark or flame).

## **Section 8: Exposure Controls/Personal Protection**

#### **Engineering Controls:**

Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location.

#### **Personal Protection:**

Splash goggles. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

#### Personal Protection in Case of a Large Spill:

Splash goggles. Full suit. Vapor respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

#### **Exposure Limits:**

TWA: 100 (ppm) [Canada] TWA: 435 (mg/m3) [Canada] TWA: 434 STEL: 651 (mg/m3) from ACGIH (TLV) [United States] TWA: 100 STEL: 150 (ppm) from ACGIH (TLV) [United States] Consult local authorities for acceptable exposure limits.

## **Section 9: Physical and Chemical Properties**

Physical state and appearance: Liquid.

Odor: Sweetish.

Taste: Not available.

Molecular Weight: 106.17 g/mole

Color: Colorless. Clear

pH (1% soln/water): Not available.

Boiling Point: 138.5°C (281.3°F)

Melting Point: -47.4°C (-53.3°F)

Critical Temperature: Not available.

Specific Gravity: 0.864 (Water = 1)

Vapor Pressure: 0.9 kPa (@ 20°C)

Vapor Density: 3.7 (Air = 1)

Volatility: Not available.

Odor Threshold: 1 ppm

p. 3

Water/Oil Dist. Coeff.: The product is more soluble in oil; log(oil/water) = 3.1

Ionicity (in Water): Not available.Dispersion Properties: Not available.

Solubility:

Insoluble in cold water, hot water. Miscible with absolute alcohol, ether, and many other organic liquids.

## Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Heat, ignition sources, incompatibles

Incompatibility with various substances: Reactive with oxidizing agents, acids.

Corrosivity: Non-corrosive in presence of glass.

Special Remarks on Reactivity: Store away from acetic acid, nitric acid, chlorine, bromine, and fluorine.

Special Remarks on Corrosivity: Not available.

Polymerization: Will not occur.

## **Section 11: Toxicological Information**

Routes of Entry: Absorbed through skin. Dermal contact. Eye contact. Inhalation.

#### **Toxicity to Animals:**

WARNING: THE LC50 VALUES HEREUNDER ARE ESTIMATED ON THE BASIS OF A 4-HOUR EXPOSURE. Acute oral toxicity (LD50): >1700 mg/kg [Rabbit]. Acute toxicity of the vapor (LC50): 5000 4 hours [Rat].

#### **Chronic Effects on Humans:**

CARCINOGENIC EFFECTS: 3 (Not classifiable for human.) by IARC. May cause damage to the following organs: blood, kidneys, liver, mucous membranes, bone marrow, central nervous system (CNS).

Other Toxic Effects on Humans: Hazardous in case of skin contact (irritant, permeator), of ingestion, of inhalation.

#### **Special Remarks on Toxicity to Animals:**

Lowest Lethal Dose: LDL [Human] - Route: Oral; Dose: 50 mg/kg LCL [Man] - Route: Oral; Dose: 10000 ppm/6H

#### **Special Remarks on Chronic Effects on Humans:**

Detected in maternal milk in human. Passes through the placental barrier in animal. Embryotoxic and/or foetotoxic in animal. May cause adverse reproductive effects (male and femael fertility (spontaneous abortion and fetotoxicity)) and birth defects based animal data.

#### **Special Remarks on other Toxic Effects on Humans:**

Acute Potential Health Effects: Skin: Causes skin irritation. Can be absorbed through skin. Eyes: Causes eye irritation. Inhalation: Vapor causes respiratory tract and mucous membrane irritation. May affect central nervous system and behavior (General anesthetic/CNS depressant with effects including headache, weakness, memory loss, irritability, dizziness, giddiness, loss of coordination and judgement, respiratory depression/arrest or difficulty breathing, loss of appetite, nausea, vomiting, shivering, and possible coma and death). May also affects blood, sense organs, liver, and peripheral nerves. Ingestion: May cause gastrointestinal irritation including abdominal pain, vomiting, and nausea. May also affect liver and urinary system/kidneys. May cause effects similar to those of acute inhalation. Chronic Potential Health Effects: Chronic inhalation may affect the urinary system (kidneys) blood (anemia), bone marrow (hyperplasia of bone marrow) brain/behavior/Central Nervous system. Chronic inhalation may alsocause mucosal bleeding. Chronic ingestion may affect the liver and metabolism (loss of appetite) and may affect urinary system (kidney damage)

## Section 12: Ecological Information

**Ecotoxicity:** Not available.

BOD5 and COD: Not available.

## **Products of Biodegradation:**

Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The products of degradation are less toxic than the product itself.

Special Remarks on the Products of Biodegradation: Not available.

## **Section 13: Disposal Considerations**

#### Waste Disposal:

Waste must be disposed of in accordance with federal, state and local environmental control regulations.

## **Section 14: Transport Information**

**DOT Classification:** CLASS 3: Flammable liquid. **Identification:** : Xylenes UNNA: 1307 PG: III

Special Provisions for Transport: Not available.

## **Section 15: Other Regulatory Information**

#### **Federal and State Regulations:**

Connecticut hazardous material survey.: Xylenes Illinois chemical safety act: Xylenes New York acutely hazardous substances: Xylenes Rhode Island RTK hazardous substances: Xylenes Pennsylvania RTK: Xylenes Minnesota: Xylenes Michigan critical material: Xylenes Massachusetts RTK: Xylenes Massachusetts spill list: Xylenes New Jersey: Xylenes New Jersey spill list: Xylenes Louisiana spill reporting: Xylenes California Director's List of Hazardous Substances: Xylenes TSCA 8(b) inventory: Xylenes SARA 302/304/311/312 hazardous chemicals: Xylenes SARA 313 toxic chemical notification and release reporting: Xylenes CERCLA: Hazardous substances.: Xylenes: 100 lbs. (45.36 kg)

#### Other Regulations:

OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200). EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances.

#### Other Classifications:

#### WHMIS (Canada):

CLASS B-2: Flammable liquid with a flash point lower than 37.8°C (100°F). CLASS D-2A: Material causing other toxic effects (VERY TOXIC).

#### DSCL (EEC):

R10- Flammable. R21- Harmful in contact with skin. R36/38- Irritating to eyes and skin. S2- Keep out of the reach of children. S36/37- Wear suitable protective clothing and gloves. S46- If swallowed, seek medical advice immediately and show this container or label.

#### HMIS (U.S.A.):

**Health Hazard: 2** 

Fire Hazard: 3

Reactivity: 0

Personal Protection: h

National Fire Protection Association (U.S.A.):

Health: 2

Flammability: 3
Reactivity: 0

Specific hazard:

## **Protective Equipment:**

Gloves. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Splash goggles.

#### **Section 16: Other Information**

References: Not available.

Other Special Considerations: Not available.

Created: 10/11/2005 12:54 PM

Last Updated: 11/06/2008 12:00 PM

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## MATERIAL SAFETY DATA SHEET

#### SECTION 1 ◆ PRODUCT AND COMPANY IDENTIFICATION FOR EMERGENCY SOURCE INFORMATION CONTACT: Explorer Pipeline Company (918) 493 - 5100 6846 South Canton CHEMTREC: (800) 424-9300 (24 hour contact) P.O. Box 2650 CANUTEC: (613) 996-6666 Tulsa, Oklahoma 74101 SETIQ: 91-800-00214

TRADE NAMES/SYNONYMS:

Methyl Tertiary Butyl Ether, Methyl Ether, Butyl Ether, or MTBE

CHEMICAL FAMILY: Alkyl Ethyl

EPL Code: 17

This material safety data sheet represents the composite characteristics and properties of fungible petroleum hydrocarbons and other related substances transported by explorer pipeline company. The information presented was compiled from one or more product shipper sources and is intended to provide health and safety guidance for these fungible products. Individual shipper and manufacturer MSDSs are available at Explorer Pipeline Company's, Tulsa, Oklahoma, offices.

## SECTION 2 \* HAZARDS IDENTIFICATION

# **♦**♦♦♦♦♦ Emergency Overview♦♦♦♦♦♦♦

## DANGER! EXTREMELY FLAMMABLE LIQUID

- Clear, colorless liquid with ether-like odor;
- Eye and mucous membrane irritant effects central Nervous system harmful or fatal if swallowed aspiration hazard;
- High fire hazard. Keep away from heat, spark, open flame, and other ignition sources;

<del></del>

- Contact may cause eye, skin and mucous membrane irritation. Avoid prolonged breathing of vapors or mists;
- Inhalation may cause irritation, anesthetic effects (dizziness, nausea, headache, intoxication), and respiratory system effects;
- If ingested, do NOT induce vomiting, as this may cause chemical pneumonia (fluid in the lungs); and
- Obtain prompt medical attention. Keep Out of Reach of Children!

## SECTION 3 ▼ COMPOSITION/INFORMATION OF INGREDIENTS

INGREDIENT	CAS NUMBER	PERCENTAGE (%)
Methyl Tertiary Butyl Ether	1634-04-4	97+%

#### ACUTE

#### GETTING IT IN YOUR EYE...

May cause minor eye irritation.

### GETTING IT ON YOUR SKIN...

- > No significant signs or symptoms indicative of any health hazard are expected to occur as a result of skin absorption exposure.
- May produce skin irritation.

## SWALLOWING IT...

The major health threat of ingestion occurs from the danger of aspiration (breathing) of liquid drops into the lungs, particularly from vomiting. Aspiration may result in chemical pneumonia (fluid in the lungs), severe lung damage, respiratory failure and even death.

#### BREATHING IT...

Excessive exposure may cause irritation to the nose, throat, lungs and respiratory tract. Central nervous system (brain) effects may include headache, dizziness, loss of balance and coordination, unconsciousness, coma, respiratory failure, and death.



#### **CHRONIC**

Medical information regarding special health effects is not conclusive.

#### CANCER, REPRODUCTIVE AND GENETIC EFFECTS

> This product has produced cancer, developmental and systemic toxicity in laboratory animals following repeated exposure. The significance of these results to human exposures has not been determined.

See Toxicological Information (Section 11) For More Information

## SECTION 4 ♣ FIRST AID MEASURES

EYES: In case of eye contact, immediately rinse with clean water for 20-30 minutes. Retract eyelids often. Obtain emergency medical attention if pain, blinking, tears or redness persist.

**SKIN:** Immediately remove contaminated clothing. Wash skin thoroughly with mild soap/water. Flush with lukewarm water for 15 minutes. If sticky, use waterless cleaner first.

**INGESTION:** If large quantity swallowed, give lukewarm water (pint) if victim completely conscious/alert. Do not induce vomiting/risk of damage to lungs exceeds poisoning risk. Obtain emergency medical attention.

**INHALATION:** If overcome by exposure, remove victim to fresh air immediately. Give oxygen or artificial respiration as needed. Obtain emergency medical attention. Prompt action is essential.

## NOTE TO PHYSICIAN: TREAT SYMPTOMATICALLY AND SUPPORTIVELY

## SECTION 5 % FIRE FIGHTING MEASURES

Releases flammable vapors below normal ambient temperatures. When mixed with air and exposed to ignition source, vapors can burn in open or explode if confined. Flammable vapors may be heavier than air. May travel long distances along ground before igniting/flashing back to vapor source.

FLASH POINT: (Method Used) -30°F

FLAMMABLE LIMITS:

LEL: 1.0%

UEL: 8.0%

**AUTOIGNITION TEMPERATURE: 797°F** 

EXTINGUISHING MEDIA: Dry Chemical, CO<sub>2</sub>, Foam for Alcohols, Water spray, and fog to cool exposures

HAZARDOUS REACTIONS/DECOMPOSITION: Combustion may produce carbon monoxide, carbon dioxide, and acrid fumes. Incomplete combustion generates highly poisonous carbon monoxide and perhaps other toxic gases.

SPECIAL INSTRUCTIONS: Do not enter fire area without proper protection. Decomposition products possible. Fight fires from safe distance/protected location. Heat may build pressure/rupture closed containers, spreading fire, increasing risk of burns/injuries. Water may be ineffective due to low flash point. Even if material is water soluble, may not be practicable to extinguish fire by water dilution. Apply water spray/fog for cooling. Notify authorities if liquid enters sewer/public waters.

## SECTION 6 \* ACCIDENTAL RELEASE MEASURES

Flammable liquid. Release can cause fire/explosion. Liquids/vapors may ignite. Evacuate/limit access. Equip responders with proper protection. Kill all ignition sources. Stop release. Prevent flow to sewers/public waters. Notify fire/environmental authorities. Blanket with firefighting foam. Restrict water use for cleanup. Impound/recover large land spill. Soak up small spill with inert solids. Use suitable disposal containers. On water material partially soluble/may float or sink. Contain/minimize dispersion/collect. Disperse residue to reduce aquatic harm.

## SECTION 7 % HANDLING AND STORAGE

- Prior to working with this product workers should be trained on its proper handling and storage

  Store in tightly closed/properly vented containers away from heat/sparks/open flame/strong oxidizers. Use only non-sparking tools. Store drums with bung in up position. Carefully vent internal pressure before removing closure. Containers must be grounded before transfer. Electrical equipment should conform to National Electric Code. Handle used containers with care; residue may be flammable/explosive, unless blanketed with inert gas.
- ➤ Isolate, vent, drain, wash, and purge equipment before maintenance. Remove all ignition sources, check atmosphere for explosiveness and oxygen deficiencies. Use adequate personal protective equipment. Observe precautions pertaining to confined space entry.



## SECTION 8 # EXPOSURE CONTROLS / PERSONAL PROTECTION

**ENGINEERING CONTROLS:** No special ventilation is usually required beyond that needed for normal comfort control.

OTHER HYGIENIC AND WORK PRACTICES: Emergency eye wash fountains and safety showers should be available in the immediate vicinity or any potential exposure. Use good personal hygiene practices. Wash hands before eating, drinking, smoking, or using toilet facilities. Promptly remove soiled clothing/wash thoroughly before reuse. Shower after work using plenty of soap and water.

EXPOSURE LIMITS					
OSHA PEL ACGIH TLV (2005)					
METHYL TERT BUTYL ETHER					
TWA	STEL	TWA	STEL		
Not Applicable (N.A.) N.A.		50 ppm	N.A.		

#### PERSONAL PROTECTIVE EQUIPMENT

- EYES: Eye protection such as chemical splash goggles and/or face shield must be worn when possibility exists for eye contact due to splashing or spraying liquid, airborne particles, or vapor. Contact lenses should not be worn.
- SKIN: Depending on the conditions of use, protective gloves, apron, boots, head and face protection should be worn. This equipment should be cleaned thoroughly after each use.
- > RESPIRATORY PROTECTION: No occupational exposure standards have been developed for this material. Where exposure through inhalation may occur from use, NIOSH/MSHA approved respiratory protection is recommended.

SECTION 9 2 PHYSI	CAL AND CHEMICAL PROPERTIES		
BOILING POINT (760 MM HG): 131°F	PERCENT VOLATILE BY VOLUME: 100%		
<b>SPECIFIC GRAVITY (H<sub>2</sub>O = 1):</b> 0.74 @ 68°F	VISCOSITY UNITS, TEMP: No Data		
FREEZING POINT: -164°F	VAPOR DENSITY (AIR =1): 3.1		
VAPOR PRESSURE AT 68°F: 75 mm Hg SOLUBILITY IN WATER: Approximately 4% to 5%			
APPEARANCE AND ODOR: Clear, colorless liqui	id with ether-like odor.		

## SECTION 10 X STABILITY AND REACTIVITY

CHEMICAL STABILITY: Stable

CONDITIONS TO AVOID: High temperature, open flame or spark.

OTHER PHYSICAL AND CHEMICAL PROPERTIES: No Data

MATERIALS TO AVOID: Strong oxidizing agents, ungrounded electrical equipment, open flames and spark.

HAZARDOUS POLYMERIZATION: Not Expected to Occur

#### SECTION 11 ® TOXICOLOGICAL INFORMATION

## METHYL TERT BUTYL ETHER (MTBE)

Acute symptoms associated with human exposure to MTBE appear to be mild and transient. Breathing small amounts of MTBE for short periods may cause nose and throat irritation. In laboratory studies, rodents exposed to high doses of MTBE exhibited blood chemistry changes and liver and kidney abnormalities.

TOXICITY								
Type Of Dose	Specie	Result	Type Of Dose	Specie	Result	Type Of Dose	Specie	Result
LD <sub>50(oral)</sub>	Mouse	3,500 mg/kg	LC <sub>50(inh)</sub>	Mouse	35,000 ppm	LD <sub>LO(oral)</sub>	Human	No Data Available
CARCINOGENICITY								

IARC	Annual An	Inadequate evidence in humans	Group 3: Possible human
NTP	carcinogen Human Carcinogen		

California (Prop 65):
Listed as carcinogen

NIOSH: Not Listed

ACGIH: A3 – Confirmed Animal

Animal

OSHA: not classifiable as a human carcinogen

## MUTAGENICITY, TERATOGENICITY AND REPRODUCTIVE EFFECTS

In laboratory studies, MTBE vapor exposure at the high dose concentration was associated with an increased incidence of liver tumors in female mice. Also, at high dose concentration exposures, MTBE was associated with an increased incidence of kidney and testicular (Leydig cell) tumors in male rats. There is no evidence that MTBE causes cancer in humans.

## **SECTION 12 \* ECOLOGICAL INFORMATION**

**ACUTE EFFECTS:** MTBE is considered moderately toxicity to aquatic life. Insufficient data are available to evaluate or predict the short-term effects to birds or land animals.

CHRONIC EFFECTS: MTBE is considered moderately toxicity to aquatic life. Insufficient data are available to evaluate or predict the long-term effects to birds or land animals.

**DISTRIBUTION AND PERSISTENCE IN THE ENVIRONMENT:** MTBE evaporates when exposed to air. It dissolves when mixed with water. Most direct releases of MTBE to the environment are to air. MTBE also evaporates from water and soil exposed to air. Once in air, it is expected to break down to other chemicals. Because it is a liquid that does not bind well to soil, MTBE that makes its way into the ground can move through the ground and enter groundwater. Plants and animals are not likely to store methyl tertiary-butyl ether..

## SECTION 13 # DISPOSAL CONSIDERATIONS

Contaminated product/soil/water may be RCRA/OSHA hazardous waste due to low flash point. Use registered transporters. Dilute aqueous waste may biodegrade.

	SECTION 14 ★ TRANSPO	RTATION INFORM	ATION	
Not Me	eant To Be All Inclusive - Check Loca	l, State, And Federal Lav	ws And Regulations	
Agency Shipping Name Packing Group Hazard Class				
U.S. DOT	Methyl tert-butyl ether	II	Flammable Liquid	UN 2398

SECTION 1	5 ) REGULATORY INFORMATION	
CERCLA RQ's (40 CFR Part 302)	MTBE - 1,000 pounds	
RCRA	Not Listed	
SARA (40 CFR Part 355) TPQ's	None of the ingredients are listed	
SARA Title III Section 313	All ingredients listed	
California's Prop 65	All ingredients listed	

California's Prop 65	All ingredients listed
OSHA	All ingredients are listed as hazardous under 29 CFR 1910.1200

SECTION 16 ® OTHER INFORMATION

NFPA 704 LABEL:

HMIS LABEL

1-4-0

<b>V</b>			
MSDS REVISIONS: Change in Format and update of	Information		
MCDC CDE ATION DATE: July 1007	REVISION #1.	01/03/06	

#### DISCLAIMER

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This MSDS was prepared and is to be used only for this product. If the product is used as a component in another product, such as refined petroleum hydrocarbon mixtures, this MSDS information may not be applicable.

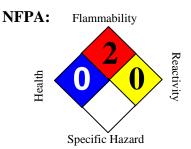
Cuso Willas

Cass Willard, CIH

MSDS DEVELOPER:

DATE: <u>01/03/06</u>

# Material Safety Data Sheet Fuel Oil





#### SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product name : Fuel Oil

Synonyms : Bunkers, Black Fuel Oil, MFO, Industrial Fuel Oil, 6 Oil, Slurry Fuel Oil, RFO,

Refinery Fuel Oil, High Sulfur Fuel Oil, HSFO, IFO-30, IFO-180, IFO-380, IFO-510, IFO-700, Bunker C, Bunker Fuel Oil, Marine Fuel Oil, Decant Oil, Utility Fuel

Oil, LSFO, Six Oil, 888100008793

Product Use Description : Fuel, Intermediate Stream

**Company** : For: Tesoro Refining & Marketing Co.

19100 Ridgewood Parkway, San Antonio, TX 78259

(Emergency Contact)

## **SECTION 2. HAZARDS IDENTIFICATION**

Classifications Flammable Liquid – Category 4

Carcinogenicity – Category 1B Toxic to Reproduction – Category 1B

Specific Target Organ Toxicity (Repeated Exposure) - Category 2

Acute Toxicity – Inhalation – Category 4 Acute Aquatic Toxicity – Category 3

**Pictograms** 





Signal Word DANGER

Hazard Statements Combustible liquid.

May cause cancer from prolonged and repeated skin contact.

May damage fertility or the unborn child.

May cause damage to liver, kidney and nervous system through prolonged or

repeated exposure. Harmful if inhaled. Harmful to aquatic life Skin and eye irritant.

May contain and release toxic hydrogen sulfide (H2S) gas.

#### **Precautionary Statements**

**Prevention** Obtain special instructions before use.

Do not handle until all safety precautions have been read and understood.

Keep away from flames and hot surfaces. No smoking.

Wear gloves, eye protection and face protection as needed to prevent skin

and eye contact with liquid.

Wash hands or liquid-contacted skin thoroughly after handling.

Do not eat, drink or smoke when using this product.

Do not breathe vapors or mists.

Use only outdoors or in a well-ventilated area

**Response** In case of fire: Use dry chemical, CO2, water spray or fire fighting foam to

extinguish.

Get medical advice or attention if you feel unwell, are exposed, or become

concerned.

If on skin (or hair): Take off immediately all contaminated clothing. Rinse

skin with water or shower.

If in eye: Rinse cautiously with water for several minutes. Remove contact lenses,

if present and easy to do. Continue rinsing.

If skin or eye irritation persists, get medical attention.

If inhaled: Remove person to fresh air and keep comfortable for breathing.

Immediately call or doctor or emergency medical provider

Storage Store in a well ventilated place. Keep cool. Store locked up. Keep container

tightly closed. Use only approved containers.

**Disposal** Dispose of contents/containers to approved disposal site in accordance with

local, regional, national, and/or international regulations.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS				
Component	CAS-No.	Weight %		
Clarified oils (petroleum), catalytic cracked; Heavy Fuel oil	64741-62-4	100%		
Polycyclic aromatic compounds (PACs or PNAs)		Typically 1.5%		
Benzo[a]pyrene; Benzo[def]chrysene	50-32-8	Trace to 0.2%		
Hydrogen Sulfide	7783-06-4	Trace to 0.2%		
Sulfur (for waters within 25 miles of California shores)	17704-34-9	Trace to 0.1%		
Sulfur (for waters within 200 miles of American shores)	17704-34-9	Trace to 1.0%		
Sulfur (for International waters)	17704-34-9	Trace to 3.5%		

## **SECTION 4. FIRST AID MEASURES**

**Inhalation** : Move to fresh air. Give oxygen. If breathing is irregular or stopped, administer

artificial respiration. Seek medical attention immediately.

Skin contact : Take off all contaminated clothing immediately. Wash off immediately with soap

and plenty of water. Wash contaminated clothing before re-use. If skin irritation persists, call a physician.

**Eye contact** : Remove contact lenses. Rinse immediately with plenty of water, also under the

eyelids, for at least 15 minutes. If eye irritation persists, consult a specialist.

**Ingestion** : Do NOT induce vomiting. Do not give liquids. Seek medical attention immediately.

If vomiting does occur naturally, keep head below the hips to reduce the risks of aspiration. Monitor for breathing difficulties. Small amounts of material which enter

the mouth should be rinsed out until the taste is dissipated.

Notes to physician : Symptoms: Dizziness, Discomfort, Headache, Nausea, Disorder, Vomiting, Liver

disorders, Kidney disorders, Aspiration may cause pulmonary edema and

pneumonitis.

#### **SECTION 5. FIRE-FIGHTING MEASURES**

Suitable extinguishing media : Carbon dioxide (CO2), Water spray, Dry chemical, Foam, Keep containers and

surroundings cool with water spray.

**Specific hazards during fire** : Isolate area around container involved in fire. Cool tanks, shells, and containers exposed to fire and excessive heat with water. For massive fires the use of

unmanned hose holders or monitor nozzles may be advantageous to further minimize personnel exposure. Major fires may require withdrawal, allowing the tank to burn. Large storage tank fires typically require specially trained personnel and equipment to extinguish the fire, often including the need for properly applied

fire fighting foam.

**Special protective equipment**: Firefighting activities that may result in potential exposure to high heat, smoke or toxic by-products of combustion should require NIOSH/MSHA- approved pressure.

toxic by-products of combustion should require NIOSH/MSHA- approved pressuredemand self-contained breathing apparatus with full facepiece and full protective

clothing.

**Further information** : Flammable vapor production at ambient temperature in the open is expected to be

minimal, as the material is generally wet. However, depending on oil content and conditions, it is possible flammable vapors could accumulate in the headspace of storage containers, presenting a flammability and explosion hazard. Being heavier than air, vapors may travel long distances to an ignition source and flash back.

Runoff to sewer may cause fire or explosion hazard.

#### **SECTION 6. ACCIDENTAL RELEASE MEASURES**

**Personal precautions** : Evacuate nonessential personnel and remove or secure all ignition sources.

Consider wind direction; stay upwind and uphill, if possible. Evaluate the direction

of product travel, diking, sewers, etc. to contain spill areas.

**Environmental precautions** : Carefully contain and stop the source of the spill, if safe to do so. Protect bodies of

water by diking, absorbents, or absorbent boom, if possible. Do not flush down sewer or drainage systems, unless system is designed and permitted to handle

such material.

Methods for cleaning up : Take up with sand or oil absorbing materials. Carefully vacuum, shovel, scoop or

sweep up into a waste container for reclamation or disposal.

## **SECTION 7. HANDLING AND STORAGE**

**Precautions for safe handling**: Keep away from fire, sparks and heated surfaces. No smoking near areas where

material is stored or handled. The product should only be stored and handled in areas with intrinsically safe electrical classification.

Hydrocarbon liquids including this product can act as a non-conductive flammable liquid (or static accumulators), and may form ignitable vapor-air mixtures in storage tanks or other containers. Precautions to prevent static-initated fire or explosion during transfer, storage or handling, include but are not limited to these examples:

- (1) Ground and bond containers during product transfers. Grounding and bonding may not be adequate protection to prevent ignition or explosion of hydrocarbon liquids and vapors that are static accumulators.
- (2) Special slow load procedures for "switch loading" must be followed to avoid the static ignition hazard that can exist when higher flash point material (such as fuel oil or diesel) is loaded into tanks previously containing low flash point products (such gasoline or naphtha).
- (3) Storage tank level floats must be effectively bonded.

For more information on precautions to prevent static-initated fire or explosion, see NFPA 77, Recommended Practice on Static Electricity (2007), and API Recommended Practice 2003, Protection Against Ignitions Arising Out of Static, Lightning, and Stray Currents (2008).

Conditions for storage, including any incompatabilities

Keep away from flame, sparks, excessive temperatures and open flame. Use approved containers. Keep containers closed and clearly labeled. Empty or partially full product containers or vessels may contain explosive vapors. Do not pressurize, cut, heat, weld or expose containers to sources of ignition. Store in a well-ventilated area. The storage area should comply with NFPA 30 "Flammable and Combustible Liquid Code". The cleaning of tanks previously containing this product should follow API Recommended Practice (RP) 2013 "Cleaning Mobile Tanks In Flammable and Combustible Liquid Service" and API RP 2015 "Cleaning Petroleum Storage Tanks".

Hydrogen sulfide may accumulate in tanks and bulk transport compartments. Consider appropriate respiratory protection (see Section 8). Stand upwind. Avoid vapors when opening hatches and dome covers. Confined spaces should be ventilated and gas tested prior to entry.

Keep away from food, drink and animal feed. Incompatible with oxidizing agents. Incompatible with acids.

No decomposition if stored and applied as directed.

#### **SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION**

#### **Exposure Guidelines**

List	Components	CAS-No.	Type:	Value
OSHA	Polycyclic aromatic compounds (or coal tar pitch volatiles – benzene soluble)		PEL	0.2 mg/m3
	Clarified oils (petroleum), catalytic cracked; Heavy Fuel oil	64741-62-4	PEL	5 mg/m3 (as mineral oil mist)
	Hydrogen Sulfide	7783-06-4	STEL	20 ppm
ACGIH	Hydrogen Sulfide	7783-06-4	TWA	1 ppm
		7783-06-4	STEL	5 ppm

Clarified oils (petroleum), catalytic cracked; Heavy Fuel oil	64741-62-4	TWA	0.2 mg/m3 (as mineral oil) Sum of 15 NTP-listed polynuclear aromatic hydrocarbons 0.005 mg/m3
Polycyclic aromatic compounds (or coal tar pitch volatiles – benzene soluble)		TWA	0.2 mg/m3

**Engineering measures** 

: Use adequate ventilation to keep gas and vapor concentrations of this product below occupational exposure and flammability limits, particularly in confined spaces.

Eye protection

: Safety glasses or goggles are recommended where there is a possibility of splashing or spraying.

**Hand protection** 

: Gloves constructed of nitrile, neoprene, or PVC are recommended.

Skin and body protection

Chemical protective clothing such as DuPont Tyvek QC, TyChem® or equivalent, recommended based on degree of exposure. The resistance of specific material may vary from product to product as well as with degree of exposure.

**Respiratory protection** 

If hydrogen sulfide concentration may exceed permissible exposure limit, a positive-pressure SCBA or Type C supplied air respirator with escape bottle is required as respiratory protection. If hydrogen sulfide concentration is below H2S permissible exposure limit a NIOSH/ MSHA-approved air-purifying respirator with acid gas cartridges may be acceptable for odor control, but continuous air monitoring for H2S is recommended. Protection provided by air-purifying respirators is limited. Use a NIOSH/ MSHA-approved positive-pressure supplied-air respirator if there is a potential for uncontrolled release, exposure levels are not known, in oxygen-deficient atmospheres, or any other circumstance where an air-purifying respirator may not provide adequate protection. Refer to OSHA 29 CFR 1910.134, ANSI Z88.2-1992, NIOSH Respirator Decision Logic, and the manufacturer for additional guidance on respiratory protection selection.

Work / Hygiene practices

Emergency eye wash capability should be available in the near proximity to operations presenting a potential splash exposure. Use good personal hygiene practices. Avoid repeated and/or prolonged skin exposure. Wash hands before eating, drinking, smoking, or using toilet facilities. Do not use as a cleaning solvent on the skin. Do not use solvents or harsh abrasive skin cleaners for washing this product from exposed skin areas. Waterless hand cleaners are effective. Promptly remove contaminated clothing and launder before reuse. Use care when laundering to prevent the formation of flammable vapors which could ignite via washer or dryer. Consider the need to discard contaminated leather shoes and gloves.

#### **SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES**

**Appearance** Dark green to brown or black liquid

Odor Petroleum asphalt odor

Odor threshold No data available

**pH** Not applicable

Melting point/freezing point 32° - 80°C (89.6° - 176°F)

Initial boiling point & range 154 - 372 °C (310° - 702 °F)

Flash point 60°C (140°F) minimum

**Evaporation rate** Higher initially and declining as lighter components evaporate

Flammability (solid, gas) Flammable vapor released by heated liquid

Upper explosive limitNo data availableLower explosive limitNo data availableVapor pressure210 Pa at 25°C

Vapor density (air = 1) >5

Relative density (water = 1) >0.9 to 1.2 g/mL

**Solubility (in water)** 6 to 1400 mg/L at 25°C

Partition coefficient (n-octanol/water)

3.4 to 5 as log Pow at 25°C

Auto-ignition temperature >176°C (>350 °F)

**Decomposition temperature** Will evaporate or boil and possibly ignite before decomposition occurs.

Kinematic viscosity >300 cST typical at 40°C

## **SECTION 10. STABILITY AND REACTIVITY**

**Reactivity** : Vapors may form explosive mixtures with air. Hazardous polymerization does not

occur.

**Chemical Stability** Stable under normal conditions.

Possibility of hazardous

reactions

Can react with strong oxidizing agents and peroxides. Keep away from strong

acids and bases.

**Conditions to avoid**Avoid high temperatures, open flames, sparks, welding, smoking and other

ignition sources. Keep away from strong oxidizers.

**Hazardous decomposition** 

products

Carbon monoxide, carbon dioxide and noncombusted hydrocarbons (smoke).

#### **SECTION 11. TOXICOLOGICAL INFORMATION**

Inhalation

: Because of its low vapor pressure, this product presents a minimal inhalation hazard at ambient temperature. Upon heating, fumes may be evolved. Inhalation of fumes or mist may result in respiratory tract irritation and central nervous system (brain) effects may include headache, dizziness, loss of balance and coordination, unconsciousness, coma, respiratory failure, and death. The burning of any hydrocarbon as a fuel in an area without adequate ventilation may result in hazardous levels of combustion products, including carbon monoxide, and inadequate oxygen levels, which may cause unconsciousness, suffocation, and death. Irritating and toxic hydrogen sulfide gas may be present. Greater than 15 - 20 ppm continuous exposure can cause mucous membrane and respiratory tract

irritation. 50 - 500 ppm can cause headache, nausea, and dizziness. Continued exposure at these levels can lead to loss of reasoning and balance, difficulty in breathing, fluid in the lungs, and possible loss of consciousness. Greater than 500 ppm can cause rapid unconsciousness due to respiratory paralysis and death by suffocation unless the victim is removed from exposure and successfully resuscitated. Greater than 1000 ppm can cause immediate unconsciousness and death if not promptly revived. After-effects from overexposure are not anticipated except what would be expected if the victim was without oxygen for more than 3 to 5 minutes (asphyxiation). The "rotten egg" odor of hydrogen sulfide is not a reliable indicator for warning of exposure, since olfactory fatigue (loss of smell) readily occurs, especially at concentrations above 50 ppm. At high concentrations, the victim may not even recognize the odor before becoming unconscious.

Skin irritation

May cause skin irritation with prolonged or repeated contact. Practically non-toxic if absorbed following acute (single) exposure. Exposure may cause a phototoxicity reaction: liquid or mist on the skin may produce a painful sunburn reaction when exposed to sunlight. Product may be hot which could cause 1st, 2nd, or 3rd degree thermal burns.

Eye irritation

May cause irritation, experienced as mild discomfort and seen as slight excess redness of the eye.

Ingestion

This material has a low order of acute toxicity. If large quantities are ingested, nausea, vomiting and diarrhea may result. Ingestion may also cause effects similar to inhalation of the product. Could present an aspiration hazard if liquid is inhaled into lungs, particularly from vomiting after ingestion. Aspiration may result in chemical pneumonia, severe lung damage, respiratory failure and even death.

**Further information** 

This material contains polynuclear aromatic hydrocarbons (PNAs), some of which are animal carcinogens. Studies have shown that similar products produce skin cancer or skin tumors in laboratory animals following repeated applications without washing or removal. The significance of this finding to human exposure has not been determined. Other studies with active skin carcinogens have shown that washing the animal's skin with soap and water between applications reduced tumor formation. The presence of carcinogenic PNAs indicates that precautions should be taken to minimize repeated and prolonged inhalation of fumes or mists. Dermal application of gas oil to rats resulted in limited evidence of liver damage (i.e., increased liver weight and changes in hepatic serum enzyme activity) and bone marrow toxicity (hypoplasia and decreased hemoglobin.) Petroleum industry experience indicates that a program providing for good personal hygiene, proper use of personal protective equipment, and minimizing the repeated and prolonged exposure to liquids and fumes, is effective in reducing or eliminating the carcinogenic risk of high boiling aromatic oils (polynuclear aromatic hydrocarbons) to humans.

Liver and kidney injuries may occur.

Components of the product may affect the nervous system.

#### Component:

Clarified oils (petroleum), catalytic cracked; Heavy Fuel oil

64741-62-4 Acute oral toxicity: LD50 rat

Dose: 4,320 mg/kg

Acute dermal toxicity: LD50 rabbit

Dose: 2,001 mg/kg

Skin irritation: Classification: Irritating to skin.

Result: Mild skin irritation

Eye irritation: Classification: Irritating to eyes.

Result: Mild eye irritation

<u>Carcinogenicity:</u> Animal experiments showed a statistically significant number of tumors.

Carcinogenicity

NTP Benzo[a]pyrene; Benzo[def]chrysene (CAS-No.: 50-32-8)

IARC Benzo[a]pyrene; Benzo[def]chrysene (CAS-No.: 50-32-8)

**OSHA**No component of this product present at levels greater than or equal to 0.1% is

identified as a carcinogen or potential carcinogen by OSHA.

CA Prop 65 WARNING! This product contains a chemical known to the State of California to

cause cancer.

Benzo[a]pyrene; Benzo[def]chrysene (CAS-No.: 50-32-8)

## **SECTION 12. ECOLOGICAL INFORMATION**

Additional ecological

information

Keep out of sewers, drainage areas, and waterways. Report spills and releases, as

applicable, under Federal and State regulations.

#### **SECTION 13. DISPOSAL CONSIDERATIONS**

Disposal : Consult federal, state and local waste regulations to determine appropriate waste

characterization of material and allowable disposal methods.

#### **SECTION 14. TRANSPORT INFORMATION**

**CFR** 

Proper shipping name : Not regulated if shipped below 140°F (60°C)

Elevated temperature liquid, flammable (if shipped above 140°F

(60°C)).

UN-No. : Not regulated if shipped below 140°F (60°C)

3256 if shipped above 140°F (60°C)

Class : 9 Packing group : III

Hazard inducer : (Clarified oils (petroleum), catalytic cracked; Heavy Fuel oil)

TDG

Proper shipping name : Not regulated if shipped below 140°F (60°C)

Elevated temperature liquid, flammable (if shipped above 140°F

(60°C)).

UN-No. : Not regulated if shipped below 140°F (60°C)

3256 if shipped above 140°F (60°C)

Class : 9 Packing group : III

Hazard inducer : (Clarified oils (petroleum), catalytic cracked; Heavy Fuel oil)

**IATA Cargo Transport** 

UN-No. : Not regulated if shipped below 140°F (60°C)

3256 if shipped above 140°F (60°C)

Class : Not regulated if shipped below 140°F (60°c)

Not permitted for transport (at 140°F (60°C) or higher temperature)

9

**IATA Passenger Transport** 

UN-No. : Not regulated if shipped below 140°F (60°C)

3256 if shipped above 140°F (60°C)

Class : Not regulated if shipped below 140°F (60°c)

Not permitted for transport (at 140°F (60°C) or higher temperature)

9

**IMDG-Code** 

UN-No. : Not regulated if shipped below 140°F (60°C)

3256 if shipped above 140°F (60°C)

Description of the goods : Elevated temperature liquid, n.o.s.

(Clarified oils (petroleum), catalytic cracked; Heavy Fuel oil)

Class

Not regulated if shipped below 140°F (60°c)

Not permitted for transport (at 140°F (60°C) or higher temperature)

9

Packaging group : III
IMDG-Labels : 9
EmS Number : F-A S-P
Marine pollutant : No

#### SECTION 15. REGULATORY INFORMATION

#### CERCLA SECTION 103 and SARA SECTION 304 (RELEASE TO THE ENVIROMENT)

The CERCLA definition of hazardous substances contains a "petroleum exclusion" clause which exempts crude oil. Fractions of crude oil, and products (both finished and intermediate) from the crude oil refining process and any indigenous components of such from the CERCLA Section 103 reporting requirements. However, other federal reporting requirements, including SARA Section 304, as well as the Clean Water Act may still apply.

TSCA Status : On TSCA Inventory

DSL Status : All components of this product are on the Canadian DSL list.

SARA 311/312 Hazards : Fire Hazard

Acute Health Hazard Chronic Health Hazard

SARA III US. EPA Emergency Planning and Community Right-To-Know Act (EPCRA) SARA Title III Section 313 Toxic

Chemicals (40 CFR 372.65) - Supplier Notification Required

Components CAS-No.

Benzo[a]pyrene; Benzo[def]chrysene 50-32-8

SARA III US. EPA Emergency Planning and Community Right-To-Know Act (EPCRA) SARA Title III Section 302 Extremely

Hazardous Substance (40 CFR355, Appendix A)

<u>CAS-No.</u>

PENN RTK US. Pennsylvania Worker and Community Right-to-Know Law (34 Pa. Code Chap. 301-323)

<u>CAS-No.</u>

Clarified oils (petroleum), catalytic cracked; Heavy Fuel 64741-62-4

oil

Benzo[a]pyrene; Benzo[def]chrysene 50-32-8

MASS RTK US. Massachusetts Commonwealth's Right-to-Know Law (Appendix A to 105 Code of Massachusetts Regulations

Section 670.000)

<u>CAS-No.</u>

Benzo[a]pyrene; Benzo[def]chrysene 50-32-8

NJ RTK US. New Jersey Worker and Community Right-to-Know Act (New Jersey Statute Annotated Section 34:5A-5)

<u>CAS-No.</u>

Clarified oils (petroleum), catalytic cracked; Heavy Fuel 64741-62-4

oil

Benzo[a]pyrene; Benzo[def]chrysene 50-32-8

California Prop. 65 : WARNING! This product contains a chemical known in the State of California to

cause cancer.

Benzo[a]pyrene; 50-32-8

Benzo[def]chrysene

#### **SECTION 16. OTHER INFORMATION**

#### Further information

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

**Revision Date** : 07/26/2012

65, 66, 121, 295, 296, 347, 1003, 1006, 1007, 1009, 1010, 1022, 1054, 1083, 1084, 1085, 1089, 1586, 1886





Health	1
Fire	0
Reactivity	0
Personal Protection	E

# **Material Safety Data Sheet Lead MSDS**

## Section 1: Chemical Product and Company Identification

Product Name: Lead

Catalog Codes: SLL1291, SLL1669, SLL1081, SLL1459,

SLL1834

CAS#: 7439-92-1

RTECS: OF7525000

TSCA: TSCA 8(b) inventory: Lead

CI#: Not available.

Synonym: Lead Metal, granular; Lead Metal, foil; Lead

Metal, sheet; Lead Metal, shot

Chemical Name: Lead Chemical Formula: Pb **Contact Information:** 

Sciencelab.com. Inc. 14025 Smith Rd. Houston, Texas 77396

US Sales: 1-800-901-7247 International Sales: 1-281-441-4400

Order Online: ScienceLab.com

CHEMTREC (24HR Emergency Telephone), call:

1-800-424-9300

International CHEMTREC, call: 1-703-527-3887

For non-emergency assistance, call: 1-281-441-4400

# Section 2: Composition and Information on Ingredients

#### Composition:

Name	CAS#	% by Weight
Lead	7439-92-1	100

Toxicological Data on Ingredients: Lead LD50: Not available. LC50: Not available.

#### Section 3: Hazards Identification

Potential Acute Health Effects: Slightly hazardous in case of skin contact (irritant), of eye contact (irritant), of ingestion, of inhalation.

#### **Potential Chronic Health Effects:**

Slightly hazardous in case of skin contact (permeator).

CARCINOGENIC EFFECTS: Classified A3 (Proven for animal.) by ACGIH, 2B (Possible for human.) by IARC.

MUTAGENIC EFFECTS: Not available. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Not available.

The substance may be toxic to blood, kidneys, central nervous system (CNS).

Repeated or prolonged exposure to the substance can produce target organs damage.

#### **Section 4: First Aid Measures**

#### **Eye Contact:**

Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention if irritation occurs.

Skin Contact: Wash with soap and water. Cover the irritated skin with an emollient. Get medical attention if irritation develops.

Serious Skin Contact: Not available.

#### Inhalation:

If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Serious Inhalation: Not available.

#### Ingestion:

Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If large quantities of this material are swallowed, call a physician immediately. Loosen tight clothing such as a collar, tie, belt or waistband.

Serious Ingestion: Not available.

## **Section 5: Fire and Explosion Data**

**Flammability of the Product:** May be combustible at high temperature.

Auto-Ignition Temperature: Not available.

Flash Points: Not available.

Flammable Limits: Not available.

Products of Combustion: Some metallic oxides.

Fire Hazards in Presence of Various Substances: Non-flammable in presence of open flames and sparks, of shocks, of

heat.

#### **Explosion Hazards in Presence of Various Substances:**

Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available.

#### **Fire Fighting Media and Instructions:**

SMALL FIRE: Use DRY chemical powder.

LARGE FIRE: Use water spray, fog or foam. Do not use water jet.

**Special Remarks on Fire Hazards:** When heated to decomposition it emits highly toxic fumes of lead.

Special Remarks on Explosion Hazards: Not available.

#### Section 6: Accidental Release Measures

#### Small Spill:

Use appropriate tools to put the spilled solid in a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and dispose of according to local and regional authority requirements.

#### Large Spill:

Use a shovel to put the material into a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and allow to evacuate through the sanitary system. Be careful that the product is not

present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

## Section 7: Handling and Storage

#### **Precautions:**

Keep locked up.. Keep away from heat. Keep away from sources of ignition. Empty containers pose a fire risk, evaporate the residue under a fume hood. Ground all equipment containing material. Do not ingest. Do not breathe dust. Wear suitable protective clothing. If ingested, seek medical advice immediately and show the container or the label. Keep away from incompatibles such as oxidizing agents.

Storage: Keep container tightly closed. Keep container in a cool, well-ventilated area.

## **Section 8: Exposure Controls/Personal Protection**

## **Engineering Controls:**

Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

**Personal Protection:** Safety glasses. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

## Personal Protection in Case of a Large Spill:

Splash goggles. Full suit. Dust respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

#### **Exposure Limits:**

TWA: 0.05 (mg/m3) from ACGIH (TLV) [United States] TWA: 0.05 (mg/m3) from OSHA (PEL) [United States] TWA: 0.03 (mg/m3) from NIOSH [United States]

TWA. 0.05 (mg/m5) from MOOFF [Officed States]

TWA: 0.05 (mg/m3) [Canada]Consult local authorities for acceptable exposure limits.

## **Section 9: Physical and Chemical Properties**

Physical state and appearance: Solid. (Metal solid.)

Odor: Not available.

Taste: Not available.

Molecular Weight: 207.21 g/mole

Color: Bluish-white. Silvery. Gray

pH (1% soln/water): Not applicable.

Boiling Point: 1740°C (3164°F)

**Melting Point:** 327.43°C (621.4°F)

Critical Temperature: Not available.

**Specific Gravity:** 11.3 (Water = 1)

Vapor Pressure: Not applicable.

Vapor Density: Not available.

Volatility: Not available.

Odor Threshold: Not available.

Water/Oil Dist. Coeff.: Not available.

**Ionicity (in Water):** Not available.

**Dispersion Properties:** Not available.

Solubility: Insoluble in cold water.

## Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Incompatible materials, excess heat

**Incompatibility with various substances:** Reactive with oxidizing agents.

Corrosivity: Non-corrosive in presence of glass.

#### **Special Remarks on Reactivity:**

Can react vigorously with oxidizing materials.

Incompatible with sodium carbide, chlorine trifluoride, trioxane + hydrogen peroxide, ammonium nitrate, sodium azide, disodium acetylide, sodium acetylide, hot concentrated nitric acid, hot concentrated hydrochloric acid, hot concentrated sulfuric acid, zirconium.

Special Remarks on Corrosivity: Not available.

Polymerization: Will not occur.

## **Section 11: Toxicological Information**

Routes of Entry: Absorbed through skin. Inhalation. Ingestion.

## **Toxicity to Animals:**

LD50: Not available. LC50: Not available.

#### **Chronic Effects on Humans:**

CARCINOGENIC EFFECTS: Classified A3 (Proven for animal.) by ACGIH, 2B (Possible for human.) by IARC.

May cause damage to the following organs: blood, kidneys, central nervous system (CNS).

Other Toxic Effects on Humans: Slightly hazardous in case of skin contact (irritant), of ingestion, of inhalation.

Special Remarks on Toxicity to Animals: Not available.

Special Remarks on Chronic Effects on Humans: Not available.

#### **Special Remarks on other Toxic Effects on Humans:**

Acute Potential:

Skin:

Lead metal granules or dust: May cause skin irritation by mechanical action.

Lead metal foil, shot or sheets: Not likely to cause skin irritation

Eves:

Lead metal granules or dust: Can irritate eyes by mechanical action.

Lead metal foil, shot or sheets: No hazard. Will not cause eye irritation.

In an industrial setting, exposure to lead mainly occurs from inhalation of dust or fumes.

Lead dust or fumes: Can irritate the upper respiratory tract (nose, throat) as well as the bronchi and lungsby mechanical action. Lead dust can be absorbed through the respiratory system. However, inhaled lead does not accumulate in the lungs. All of an inhaled dose is eventually absorbed or transferred to the gastrointestinal tract. Inhalation effects of exposure to fumes or dust of inorganic lead may not develop quickly. Symptoms may include metallic taste, chest pain, decreased physical fitness, fatigue, sleep disturbance, headache, irritability, reduces memory, mood and personality changes, aching bones and muscles, constipation, abdominal pains, decreasing appetite. Inhalation of large amounts may lead to ataxia, deliriuim, convulsions/seizures, coma, and death. Lead metal foil, shot, or sheets: Not an inhalation hazard unless metal is heated. If metal is heated, fumes will be released. Inhalation of these fumes may cause "fume metal fever", which is characterized by flu-like symptoms. Symptoms may include metallic taste, fever, nausea, vomiting, chills, cough, weakness, chest pain, generalized muscle pain/aches, and increased white blood cell count. Ingestion:

Lead metal granules or dust: The symptoms of lead poisoning include abdominal pain or cramps (lead cholic), spasms, nausea, vomiting, headache, muscle weakness, hallucinations, distorted perceptions, "lead line" on the gums, metallic taste, loss of appetite, insomnia, dizziness and other symptoms similar to that of inhalation. Acute poisoning may result in high lead levels in the blood and urine, shock, coma and death in extreme cases. Lead metal foil, shot or sheets: Not an ingestion hazard for usual industrial handling.

## **Section 12: Ecological Information**

**Ecotoxicity:** Not available.

BOD5 and COD: Not available.

#### **Products of Biodegradation:**

Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

**Toxicity of the Products of Biodegradation:** The products of degradation are less toxic than the product itself.

Special Remarks on the Products of Biodegradation: Not available.

## **Section 13: Disposal Considerations**

#### Waste Disposal:

Waste must be disposed of in accordance with federal, state and local environmental control regulations.

## **Section 14: Transport Information**

**DOT Classification:** Not a DOT controlled material (United States).

**Identification:** Not applicable.

**Special Provisions for Transport:** Not applicable.

## **Section 15: Other Regulatory Information**

#### **Federal and State Regulations:**

California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer, birth defects or other reproductive harm, which would require a warning under the statute: Lead California prop. 65: This product contains the following ingredients for which the State of California has found to cause reproductive harm (female) which would require a warning under the statute: Lead

California prop. 65: This product contains the following ingredients for which the State of California has found to

cause reproductive harm (male) which would require a warning under the statute: Lead

California prop. 65 (no significant risk level): Lead: 0.0005 mg/day (value)

California prop. 65: This product contains the following ingredients for which the State of California has found to cause birth defects which would require a warning under the statute: Lead

California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer which would require a warning under the statute: Lead

Connecticut hazardous material survey.: Lead

Illinois toxic substances disclosure to employee act: Lead

Illinois chemical safety act: Lead New York release reporting list: Lead

Rhode Island RTK hazardous substances: Lead

Pennsylvania RTK: Lead

#### Other Regulations:

OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200).

EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances.

#### Other Classifications:

WHMIS (Canada): CLASS D-2A: Material causing other toxic effects (VERY TOXIC).

#### DSCL (EEC):

R20/22- Harmful by inhalation and if

swallowed.

R33- Danger of cumulative effects.

R61- May cause harm to the unborn

child.

R62- Possible risk of impaired fertility.

S36/37- Wear suitable protective clothing and

gloves.

S44- If you feel unwell, seek medical advice

(show the label when possible).

S53- Avoid exposure - obtain special

instructions before use.

## HMIS (U.S.A.):

Health Hazard: 1

Fire Hazard: 0

Reactivity: 0

**Personal Protection: E** 

#### National Fire Protection Association (U.S.A.):

Health: 1

Flammability: 0

Reactivity: 0

Specific hazard:

#### **Protective Equipment:**

Gloves.

Lab coat.

Dust respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator

when ventilation is inadequate.

Safety glasses.

## **Section 16: Other Information**

References: Not available.

Other Special Considerations: Not available.

Created: 10/10/2005 08:21 PM

Last Updated: 11/06/2008 12:00 PM

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# Material Safety Data Sheet Arsenic MSDS

## **Section 1: Chemical Product and Company Identification**

Product Name: Arsenic

Catalog Codes: SLA1006

CAS#: 7440-38-2

RTECS: CG0525000

TSCA: TSCA 8(b) inventory: Arsenic

CI#: Not applicable.

Synonym:

Chemical Name: Arsenic

Chemical Formula: As

**Contact Information:** 

Sciencelab.com, Inc. 14025 Smith Rd. Houston, Texas 77396

US Sales: 1-800-901-7247

International Sales: 1-281-441-4400

Order Online: ScienceLab.com

CHEMTREC (24HR Emergency Telephone), call:

1-800-424-9300

International CHEMTREC, call: 1-703-527-3887

For non-emergency assistance, call: 1-281-441-4400

## **Section 2: Composition and Information on Ingredients**

#### Composition:

Name	CAS#	% by Weight
Arsenic	7440-38-2	100

Toxicological Data on Ingredients: Arsenic: ORAL (LD50): Acute: 763 mg/kg [Rat]. 145 mg/kg [Mouse].

## **Section 3: Hazards Identification**

#### **Potential Acute Health Effects:**

Very hazardous in case of ingestion, of inhalation. Slightly hazardous in case of skin contact (irritant), of eye contact (irritant).

#### **Potential Chronic Health Effects:**

CARCINOGENIC EFFECTS: Classified A1 (Confirmed for human.) by ACGIH. MUTAGENIC EFFECTS: Not available. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Not available. The substance is toxic to kidneys, lungs, the nervous system, mucous membranes. Repeated or prolonged exposure to the substance can produce target organs damage.

## **Section 4: First Aid Measures**

#### **Eve Contact:**

Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention if irritation occurs.

Skin Contact: Wash with soap and water. Cover the irritated skin with an emollient. Get medical attention if irritation develops.

Serious Skin Contact: Not available.

#### Inhalation:

If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

#### Serious Inhalation:

Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek medical attention.

#### Ingestion:

Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If large quantities of this material are swallowed, call a physician immediately. Loosen tight clothing such as a collar, tie, belt or waistband.

Serious Ingestion: Not available.

## **Section 5: Fire and Explosion Data**

**Flammability of the Product:** May be combustible at high temperature.

Auto-Ignition Temperature: Not available.

Flash Points: Not available.

Flammable Limits: Not available.

Products of Combustion: Some metallic oxides.

Fire Hazards in Presence of Various Substances: Flammable in presence of open flames and sparks, of heat, of oxidizing

materials.

#### **Explosion Hazards in Presence of Various Substances:**

Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available.

#### **Fire Fighting Media and Instructions:**

SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use water spray, fog or foam. Do not use water jet.

## **Special Remarks on Fire Hazards:**

Material in powder form, capable of creating a dust explosion. When heated to decomposition it emits highly toxic fumes.

**Special Remarks on Explosion Hazards:** Not available.

## Section 6: Accidental Release Measures

**Small Spill:** Use appropriate tools to put the spilled solid in a convenient waste disposal container.

## Large Spill:

Use a shovel to put the material into a convenient waste disposal container. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

## **Section 7: Handling and Storage**

#### Precautions:

Keep locked up.. Keep away from heat. Keep away from sources of ignition. Empty containers pose a fire risk, evaporate the residue under a fume hood. Ground all equipment containing material. Do not ingest. Do not breathe dust. Wear suitable

protective clothing. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Keep away from incompatibles such as oxidizing agents, acids, moisture.

**Storage:** Keep container tightly closed. Keep container in a cool, well-ventilated area.

## **Section 8: Exposure Controls/Personal Protection**

#### **Engineering Controls:**

Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

**Personal Protection:** Safety glasses. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

#### Personal Protection in Case of a Large Spill:

Splash goggles. Full suit. Dust respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

#### **Exposure Limits:**

TWA: 0.01 from ACGIH (TLV) [United States] [1995] Consult local authorities for acceptable exposure limits.

## **Section 9: Physical and Chemical Properties**

Physical state and appearance: Solid. (Lustrous solid.)

Odor: Not available.

Taste: Not available.

Molecular Weight: 74.92 g/mole

Color: Silvery.

pH (1% soln/water): Not applicable.

Boiling Point: Not available.

Melting Point: Sublimation temperature: 615°C (1139°F)

Critical Temperature: Not available.

Specific Gravity: 5.72 (Water = 1)

Vapor Pressure: Not applicable.

Vapor Density: Not available.

Volatility: Not available.

Odor Threshold: Not available.

Water/Oil Dist. Coeff.: Not available. Ionicity (in Water): Not available.

**Dispersion Properties:** Not available.

**Solubility:** Insoluble in cold water, hot water.

## Section 10: Stability and Reactivity Data

**Stability:** The product is stable.

**Instability Temperature:** Not available. **Conditions of Instability:** Not available.

Incompatibility with various substances: Reactive with oxidizing agents, acids, moisture.

Corrosivity: Non-corrosive in presence of glass.

Special Remarks on Reactivity: Not available.

Special Remarks on Corrosivity: Not available.

Polymerization: Will not occur.

## **Section 11: Toxicological Information**

Routes of Entry: Inhalation. Ingestion.

**Toxicity to Animals:** Acute oral toxicity (LD50): 145 mg/kg [Mouse].

**Chronic Effects on Humans:** 

CARCINOGENIC EFFECTS: Classified A1 (Confirmed for human.) by ACGIH. Causes damage to the following organs:

kidneys, lungs, the nervous system, mucous membranes.

Other Toxic Effects on Humans:

Very hazardous in case of ingestion, of inhalation. Slightly hazardous in case of skin contact (irritant).

Special Remarks on Toxicity to Animals: Not available.

Special Remarks on Chronic Effects on Humans: Not available.

Special Remarks on other Toxic Effects on Humans: Not available.

# Section 12: Ecological Information

Ecotoxicity: Not available.

BOD5 and COD: Not available.

**Products of Biodegradation:** 

Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

**Toxicity of the Products of Biodegradation:** The products of degradation are as toxic as the original product.

Special Remarks on the Products of Biodegradation: Not available.

## **Section 13: Disposal Considerations**

Waste Disposal:

## **Section 14: Transport Information**

**DOT Classification:** CLASS 6.1: Poisonous material.

Identification: : Arsenic UNNA: UN1558 PG: II

Special Provisions for Transport: Not available.

## **Section 15: Other Regulatory Information**

#### **Federal and State Regulations:**

California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer, birth defects or other reproductive harm, which would require a warning under the statute: Arsenic California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer which would require a warning under the statute: Arsenic Pennsylvania RTK: Arsenic Massachusetts RTK: Arsenic TSCA 8(b) inventory: Arsenic

Other Regulations: OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200).

#### Other Classifications:

#### WHMIS (Canada):

CLASS D-1A: Material causing immediate and serious toxic effects (VERY TOXIC). CLASS D-2A: Material causing other toxic effects (VERY TOXIC).

## DSCL (EEC):

R22- Harmful if swallowed. R45- May cause cancer.

#### HMIS (U.S.A.):

Health Hazard: 3

Fire Hazard: 1

Reactivity: 2

Personal Protection: E

## National Fire Protection Association (U.S.A.):

Health: 3

Flammability: 1 Reactivity: 2

Specific hazard:

#### **Protective Equipment:**

Gloves. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Safety glasses.

#### **Section 16: Other Information**

#### References:

-Hawley, G.G.. The Condensed Chemical Dictionary, 11e ed., New York N.Y., Van Nostrand Reinold, 1987. -Liste des produits purs tératogènes, mutagènes, cancérogènes. Répertoire toxicologique de la Commission de la Santé et de la Sécurité du Travail du Québec. -Material safety data sheet emitted by: la Commission de la Santé et de la Sécurité du Travail du Québec. -SAX, N.I. Dangerous Properties of Indutrial Materials. Toronto, Van Nostrand Reinold, 6e ed. 1984. -The Sigma-Aldrich Library of Chemical Safety Data, Edition II. -Guide de la loi et du règlement sur le transport des marchandises dangeureuses au canada. Centre de conformité internatinal Ltée. 1986.

Other Special Considerations: Not available.

Created: 10/09/2005 04:16 PM

Last Updated: 11/06/2008 12:00 PM

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# Material Safety Data Sheet Copper MSDS

## **Section 1: Chemical Product and Company Identification**

Product Name: Copper

**Catalog Codes:** SLC4939, SLC2152, SLC3943, SLC1150, SLC2941, SLC4729, SLC1936, SLC3727, SLC5515

CAS#: 7440-50-8

RTECS: GL5325000

TSCA: TSCA 8(b) inventory: Copper

CI#: Not available.

Synonym:

Chemical Name: Not available.

Chemical Formula: Cu

**Contact Information:** 

Sciencelab.com, Inc. 14025 Smith Rd. Houston, Texas 77396

US Sales: 1-800-901-7247

International Sales: 1-281-441-4400
Order Online: ScienceLab.com

CHEMTREC (24HR Emergency Telephone), call:

1-800-424-9300

International CHEMTREC, call: 1-703-527-3887

For non-emergency assistance, call: 1-281-441-4400

# **Section 2: Composition and Information on Ingredients**

#### Composition:

Name	CAS#	% by Weight
Copper	7440-50-8	100

**Toxicological Data on Ingredients:** Copper LD50: Not available. LC50: Not available.

#### **Section 3: Hazards Identification**

#### **Potential Acute Health Effects:**

Very hazardous in case of ingestion. Hazardous in case of eye contact (irritant), of inhalation. Slightly hazardous in case of skin contact (irritant).

#### **Potential Chronic Health Effects:**

CARCINOGENIC EFFECTS: Not available. MUTAGENIC EFFECTS: Not available. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Not available. The substance is toxic to lungs, mucous membranes. Repeated or prolonged exposure to the substance can produce target organs damage.

#### **Section 4: First Aid Measures**

Eye Contact: Check for and remove any contact lenses. Do not use an eye ointment. Seek medical attention.

#### Skin Contact:

After contact with skin, wash immediately with plenty of water. Gently and thoroughly wash the contaminated skin with running water and non-abrasive soap. Be particularly careful to clean folds, crevices, creases and groin. Cover the irritated skin with an emollient. If irritation persists, seek medical attention. Wash contaminated clothing before reusing.

Serious Skin Contact: Not available.

Inhalation: Allow the victim to rest in a well ventilated area. Seek immediate medical attention.

Serious Inhalation: Not available.

## Ingestion:

Do not induce vomiting. Loosen tight clothing such as a collar, tie, belt or waistband. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek immediate medical attention.

Serious Ingestion: Not available.

## **Section 5: Fire and Explosion Data**

**Flammability of the Product:** May be combustible at high temperature.

**Auto-Ignition Temperature:** Not available.

Flash Points: Not available.

Flammable Limits: Not available.

Products of Combustion: Some metallic oxides.

Fire Hazards in Presence of Various Substances: Not available.

#### **Explosion Hazards in Presence of Various Substances:**

Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available.

#### Fire Fighting Media and Instructions:

SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use water spray, fog or foam. Do not use water jet.

Special Remarks on Fire Hazards: Not available.

Special Remarks on Explosion Hazards: Not available.

## **Section 6: Accidental Release Measures**

#### Small Spill:

Use appropriate tools to put the spilled solid in a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and dispose of according to local and regional authority requirements.

#### Large Spill:

Use a shovel to put the material into a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and allow to evacuate through the sanitary system. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

## **Section 7: Handling and Storage**

#### **Precautions:**

Keep away from heat. Keep away from sources of ignition. Empty containers pose a fire risk, evaporate the residue under a fume hood. Ground all equipment containing material. Do not breathe dust. Avoid contact with eyes Wear suitable protective clothing In case of insufficient ventilation, wear suitable respiratory equipment If you feel unwell, seek medical attention and show the label when possible.

#### Storage:

Keep container dry. Keep in a cool place. Ground all equipment containing material. Keep container tightly closed. Keep in a cool, well-ventilated place. Combustible materials should be stored away from extreme heat and away from strong oxidizing agents.

## **Section 8: Exposure Controls/Personal Protection**

#### **Engineering Controls:**

Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

#### **Personal Protection:**

Splash goggles. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

#### Personal Protection in Case of a Large Spill:

Splash goggles. Full suit. Dust respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

#### **Exposure Limits:**

TWA: 1 (mg/m3) from ACGIH [1990] Consult local authorities for acceptable exposure limits.

## **Section 9: Physical and Chemical Properties**

Physical state and appearance: Solid.

Odor: Not available.

Taste: Not available.

Molecular Weight: 63.54 g/mole

Color: Not available.

pH (1% soln/water): Not applicable.

Boiling Point: 2595°C (4703°F)

Melting Point: 1083°C (1981.4°F)

Critical Temperature: Not available.

Specific Gravity: 8.94 (Water = 1)

Vapor Pressure: Not applicable.

Vapor Density: Not available.

Volatility: Not available.

Odor Threshold: Not available.

Water/Oil Dist. Coeff.: Not available.

Ionicity (in Water): Not available.

**Dispersion Properties:** Not available.

Solubility: Insoluble in cold water.

## Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.Conditions of Instability: Not available.

Incompatibility with various substances: Not available.

Corrosivity: Non-corrosive in presence of glass.

Special Remarks on Reactivity: Not available.

Special Remarks on Corrosivity: Not available.

Polymerization: No.

## **Section 11: Toxicological Information**

Routes of Entry: Absorbed through skin. Eye contact. Inhalation. Ingestion.

**Toxicity to Animals:** 

LD50: Not available. LC50: Not available.

**Chronic Effects on Humans:** The substance is toxic to lungs, mucous membranes.

Other Toxic Effects on Humans:

Very hazardous in case of ingestion. Hazardous in case of inhalation. Slightly hazardous in case of skin contact (irritant).

Special Remarks on Toxicity to Animals: Not available.

Special Remarks on Chronic Effects on Humans: Human: passes through the placenta, excreted in maternal milk.

Special Remarks on other Toxic Effects on Humans: Not available.

# Section 12: Ecological Information

Ecotoxicity: Not available.

**BOD5 and COD:** Not available. **Products of Biodegradation:** 

Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

**Toxicity of the Products of Biodegradation:** The products of degradation are as toxic as the original product.

Special Remarks on the Products of Biodegradation: Not available.

## **Section 13: Disposal Considerations**

**Waste Disposal:** 

## **Section 14: Transport Information**

**DOT Classification:** Not a DOT controlled material (United States).

**Identification:** Not applicable.

**Special Provisions for Transport:** Marine Pollutant

## **Section 15: Other Regulatory Information**

## Federal and State Regulations:

Pennsylvania RTK: Copper Massachusetts RTK: Copper TSCA 8(b) inventory: Copper CERCLA: Hazardous substances.:

Copper

Other Regulations: OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200).

Other Classifications:

WHMIS (Canada): CLASS D-2A: Material causing other toxic effects (VERY TOXIC).

**DSCL (EEC):** R36- Irritating to eyes.

HMIS (U.S.A.):

Health Hazard: 2

Fire Hazard: 1
Reactivity: 0

**Personal Protection: E** 

National Fire Protection Association (U.S.A.):

Health: 2

Flammability: 1

Reactivity: 0

Specific hazard:

#### **Protective Equipment:**

Gloves. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Splash goggles.

### **Section 16: Other Information**

References: Not available.

Other Special Considerations: Not available.

Created: 10/09/2005 04:58 PM

Last Updated: 11/06/2008 12:00 PM

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#### SIGMA-ALDRICH

#### MATERIAL SAFETY DATA SHEET

Date Printed: 05/17/2006 Date Updated: 01/28/2006

Version 1.4

## Section 1 - Product and Company Information

Product Name 10.00 G ZINC FIXANAL AS ZINC SULFATE

Product Number 38950 Brand RIEDEL

Company Sigma-Aldrich

Address 3050 Spruce Street

SAINT LOUIS MO 63103 US

Technical Phone: 800-325-5832 Fax: 800-325-5052 Emergency Phone: 314-776-6555

#### Section 2 - Composition/Information on Ingredient

Substance Name ZINC STANDARD CONCENTRATE	CAS # None		SARA 313 No
Ingredient Name	CAS # 7732-18-5 7446-20-0	Percent	SARA 313
WATER		84	No
ZINC SULFATE HEPTAHYDRATE		16	Yes

#### Section 3 - Hazards Identification

#### EMERGENCY OVERVIEW

Dangerous for the environment. Harmful.

Harmful if swallowed. Irritating to eyes and skin. Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Target organ(s): Liver. Kidneys.

#### HMIS RATING

HEALTH: 2\*

FLAMMABILITY: 0
REACTIVITY: 0

#### NFPA RATING

HEALTH: 2

FLAMMABILITY: 0 REACTIVITY: 0

For additional information on toxicity, please refer to Section 11.

#### Section 4 - First Aid Measures

#### ORAL EXPOSURE

If swallowed, wash out mouth with water provided person is conscious. Call a physician.

#### INHALATION EXPOSURE

If inhaled, remove to fresh air. If breathing becomes difficult,

<sup>\*</sup>additional chronic hazards present.

call a physician.

#### DERMAL EXPOSURE

In case of contact, immediately wash skin with soap and copious amounts of water.

#### EYE EXPOSURE

In case of contact with eyes, flush with copious amounts of water for at least 15 minutes. Assure adequate flushing by separating the eyelids with fingers. Call a physician.

## Section 5 - Fire Fighting Measures

#### FLASH POINT

N/A

#### AUTOIGNITION TEMP

N/A

#### FLAMMABILITY

N/A

#### EXTINGUISHING MEDIA

Suitable: Water spray. Carbon dioxide, dry chemical powder, or appropriate foam.

#### FIREFIGHTING

Protective Equipment: Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes. Specific Hazard(s): Emits toxic fumes under fire conditions.

#### Section 6 - Accidental Release Measures

#### METHODS FOR CLEANING UP

Absorb on sand or vermiculite and place in closed containers for disposal. Ventilate area and wash spill site after material pickup is complete.

## Section 7 - Handling and Storage

#### HANDLING

User Exposure: Avoid inhalation. Avoid contact with eyes, skin, and clothing. Avoid prolonged or repeated exposure.

## STORAGE

Suitable: Keep tightly closed.

#### Section 8 - Exposure Controls / PPE

#### ENGINEERING CONTROLS

Safety shower and eye bath. Mechanical exhaust required.

#### PERSONAL PROTECTIVE EQUIPMENT

Respiratory: Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU). Respiratory protection is not required. Where protection is desired, use multi-purpose combination (US) or type ABEK (EN 14387) respirator cartridges.

Hand: Protective gloves.

Eye: Chemical safety goggles.

#### GENERAL HYGIENE MEASURES

Section 9 - Physical/Chemical Properties

Appearance	Physical	State:	Liquid		
Property	Value		At	Temperature	or Pressure
рН	N/A				
BP/BP Range	N/A				
MP/MP Range	N/A				
Freezing Point	N/A				
Vapor Pressure	N/A				
Vapor Density	N/A				
Saturated Vapor Conc.	N/A				
SG/Density	N/A				
Bulk Density	N/A				
Odor Threshold	N/A				
Volatile%	N/A				
VOC Content	N/A				
Water Content	N/A				
Solvent Content	N/A				
Evaporation Rate	N/A				
Viscosity	N/A				
Surface Tension	N/A				
Partition Coefficient	N/A				
Decomposition Temp.	N/A				
Flash Point	N/A				
Explosion Limits	N/A				
Flammability	N/A				
Autoignition Temp	N/A				
Refractive Index	N/A				
Optical Rotation	N/A				
Miscellaneous Data	N/A				
Solubility	N/A				
N/A = not available					

## Section 10 - Stability and Reactivity

## STABILITY

Stable: Stable.

Materials to Avoid: Strong oxidizing agents.

## HAZARDOUS DECOMPOSITION PRODUCTS

Hazardous Decomposition Products: Zinc/zinc oxides, Sulfur oxides.

#### HAZARDOUS POLYMERIZATION

Hazardous Polymerization: Will not occur

#### Section 11 - Toxicological Information

#### ROUTE OF EXPOSURE

Skin Contact: May cause skin irritation.

Skin Absorption: May be harmful if absorbed through the skin.

Eye Contact: May cause eye irritation.

Inhalation: May be harmful if inhaled. Material may be

irritating to mucous membranes and upper respiratory tract.

Ingestion: May be harmful if swallowed.

### TARGET ORGAN(S) OR SYSTEM(S)

Kidneys. Pancreas. Liver. Lungs.

#### SIGNS AND SYMPTOMS OF EXPOSURE

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

#### Section 12 - Ecological Information

No data available.

Section 13 - Disposal Considerations

APPROPRIATE METHOD OF DISPOSAL OF SUBSTANCE OR PREPARATION

Contact a licensed professional waste disposal service to dispose of this material. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber. Observe all federal, state, and local environmental regulations.

#### Section 14 - Transport Information

#### DOT

Proper Shipping Name: Environmentally hazardous

substances, liquid, n.o.s.

UN#: 3082 Class: 9

Packing Group: Packing Group III

Hazard Label: Class 9

PIH: Not PIH

#### IATA

Proper Shipping Name: Environmentally hazardous

substance, liquid, n.o.s. IATA UN Number: 3082

Hazard Class: 9
Packing Group: III

#### Section 15 - Regulatory Information

#### EU ADDITIONAL CLASSIFICATION

Symbol of Danger: Xi-N

Indication of Danger: Irritant. Dangerous for the environment.

R: 41-50/53

Risk Statements: Risk of serious damage to eyes. Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

S: 26-39-61

Safety Statements: In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Wear eye/face protection. Avoid release to the environment. Refer to special instructions/safety data sheets.

#### US CLASSIFICATION AND LABEL TEXT

Indication of Danger: Dangerous for the environment. Harmful. Risk Statements: Harmful if swallowed. Irritating to eyes and skin. Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Safety Statements: Avoid contact with eyes. Wear suitable protective clothing. Avoid release to the environment. Refer to special instructions/safety data sheets.

US Statements: Target organ(s): Liver. Kidneys.

#### UNITED STATES REGULATORY INFORMATION

SARA LISTED: No

#### CANADA REGULATORY INFORMATION

WHMIS Classification: This product has been classified in accordance with the hazard criteria of the CPR, and the MSDS contains all the information required by the CPR.

DSL: No NDSL: No

Section 16 - Other Information

#### DISCLAIMER

For R&D use only. Not for drug, household or other uses.

#### WARRANTY

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Inc., shall not be held liable for any damage resulting from handling or from contact with the above product. See reverse side of invoice or packing slip for additional terms and conditions of sale. Copyright 2006 Sigma-Aldrich Co. License granted to make unlimited paper copies for internal use only.

# Site-Specific Health and Safety Plan The Peninsula Redevelopment Project 1221 Spofford Avenue, Bronx, New York

## **APPENDIX C**

Roux Health and Safety Lessons Learned / Accident Report Forms

2611.0002Y.108.APB/CVRS ROUX

# **HEALTH AND SAFETY LESSONS LEARNED ROUX REPORT FORM**

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

PART 1: A	DMINIST	RATIVE INFORMAT	TION								
Office:	New York	☐ Massachusetts ☐	☐ New Jersey	☐ Illin	ois [	CA - Los Angeles	☐ CA - Oakland				
Project Manag	ger:		roject P	rincipal	:						
Project Name: Project Location						:					
PART 2: LESSONS LEARNED INCIDENT DETAILS											
Date\Time Occurred (MM/DD/YYYY HH:MM):  Date\Time Submitted (MM/DD/YYYY HH:MM):											
LESSONS LEARNED INCIDENT TYPE - What could have happened? - Select all that apply (1-7)											
1.											
Event Leading to Potential Injury/Illness:											
Job Task*:			E	quipme	nt Invol	ved*:					
WHAT HAPPENED? Do not include individuals' names. Ensure photos, sketches, etc. are not personally identifiable unless written consent has been obtained.											
Summary (1-2 sentences. Provide brief description of the incident. Provide facts only, no speculation or opinion):											
Incident Details (Brief factual details of what, where, when; include photos, sketches, etc. as attachments):											
Immediate Corrective Actions Taken:											
		ATALITY (SIF):		L SIF, U	SE EXIS	STING ROUX ACCID	ENT REPORTING F	ORM			
		in a SIF? ☐ Yes ☐N					the search adults to a section of	1/ Pf -			
altering compli		as likely to have caused a	in injury resulting	n signific	ant pnys	sicai body damage wi	th probable long tern	n and/or life			
INCIDENT IN	VOLVED:										
Roux Employ		s 🗌 No Sub	contractor Comp	any Nan	ne:						
			INVESTI	GATION	ITEAN	1					
NAME		JOB TITLE	N	IAME		JOB TI	TLE				
DART 3. IN	CIDENT	INVESTIGATION FI	NDINGS AND	REPO	RT OI	IALITY REVIEW	,				
				IXLI O	111 00	JALIII KLVILVV					
Date Investigation Team Assigned (mm/dd/yyyy):  INVESTIGATION SUMMARY: Determine from list below what behaviors and/or conditions may have contributed to the H&S Lessons Learned Incident. Then, use the "Multiple-Why Technique" for each of these behaviors/conditions; provide a narrative for each that explains how the associated Root Cause(s) was determined. Do not include individuals' names.											
associated NO	or Oduse(s)	was determined. Do not	molado marvidad	o names							
ROOT CAUSES: HOW TO REDUCE POSSIBILITY OF INCIDENT RECURRING Selection of RCs and solutions reflects the analysis of investigation team. It is not meant as a legally binding conclusion as to causal factors and/or solutions.											
PERSONAL FACTORS:			JOE	JOB FACTORS:							
A. LACK OF SKILL OR KNOWLEDGE			E. LACK OF OR INADEQUATE PROCEDURES								
B. DOING THE JOB ACCORDING TO PROCEDURES OR ACCEPTABLE PRACTICES TAKES MORE TIME OR EFFORT  F. INADEQUATE COMMUNICATION OF EXPECTATIONS REGARDING PROCEDURES OR ACCEPTABLE STANDARDS							IS REGARDING				
C. SHORT-CUTTING PROCEDURES OR ACCEPTABLE PRACTICES IS POSITIVELY REINFORCED OR TOLERATED					G. INADEQUATE TOOLS OR EQUIPMENT (available, maintained, etc.)						
		LOW PROCEDURES OR A NCIDENT OCCURRED	CCEPTABLE								
Behavior / Condition	Root Cause		olution(s) atch Root Cause	,		Person Responsible for	Completion Target Date	Completion Actual Date			

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## Health and Safety Lessons Learned Incident Report – Page 2

	Completion	

QUALITY REVIEW Correct root cause(s) identified? Do root cause(s) and solution(s) match? Are solution(s) feasible / maintainable?

Name:

Job Title:

PART 4: Date Solutions were Implemented & Validated (Were Solutions Effective?)								
Solution	Verifier / Validator Name and Job Title Details (of I & V performed)							
		V 10 /V 11 / V 11 / T/4						

JOB TASK - Select the most appropriate one (primary job associated with incident-related work activity, avoid "Other" if possible)							
Carbon Change	7. Gauging	<ol><li>12. Pavement Cutting</li></ol>	18. System Startup				
2. Construction	8. Geoprobe / Direct Push	13. Pump Test	<ol><li>19. UST Removal (includes</li></ol>				
3. Demolition	9. Mobil Remediation (includes	14. Sampling	exposure and backfill)				
4. Dewatering	vacuum event and chemical injection)	<ol><li>Site Visit / Survey</li></ol>	20. Waste Management				
<ol><li>Drilling (well install)</li></ol>	10. NAPL Recovery	<ol><li>Subsurface Clearance</li></ol>	21. Well Abandonment				
6. Excavation / Trenching	11. O&M (remediation system)	17. System Install	22. Other:				

EQUIPMENT INVOLVED THAT CONTRIBUTED TO H&S LESSONS LEARNED - Select all that apply									
1. Air Stripper	25. Fire Extinguisher	51. Maintenance Tool, General	77. Safety Shoes / Boots	98. Vapor Extraction System					
2. API Separator	26. Forklift	52. Manifold	78. Safety Vest / Clothing	99. Vapor-Phase Treatment					
3. Automobile	27. Front End Loader	53, Manlift/Basket/Cherry Picker	79. Rope	System					
4. Boom Material	28. Grader	54. Motor, Electric	80. Bailer	100. Other System, Type:					
5. Bulldozer	29. Hammer	55. Oxidizer	81. Geoprobe	101. Surge Tank					
6. Cable	30. Knife	56. Pallet	82. Hand Auger	102. Underground Tank					
7. Carbon Drum / Vessel	31. Non-Powered Equipment	57. Piping	83. PID	103. Telemetry System					
8. Chain Block	32. Powered Equipment	58. Piping, Hose	84. Multi-Gas Meter	104. Testing Devices					
9. Compressor, Air	33. Drill	59. Piping, Injection/Mixing Point	85. Sample Container	105. Tractor Trailer					
10. Control Panel (local)	34. Grinder	60. Hydrojet	86. Split-Spoon Sampler	106. Truck, Flatbed					
11. Crane (mobile)	35. Hydraulic Torque Wrench	61. Centrifugal Pump	87. Sling	107. Truck, Pickup					
12. Drill Rig	36. Powered Saw	62. Diaphragm Pump	88. Snow Blower	108. Truck, Tank Truck					
13. Drilling Equipment, Vacuum	37. Impact Wrench	63. Reciprocating Pump	89. Snow Plow	109. Truck, Vacuum					
14. Drum, Vertical	38. Saw	64. Regenerative Pump	90. Space Heater	110. Safety Valve					
15. Dump Truck	39. Screwdriver	65. Rotary Pump	91. Air Sparging System	111. Block Valve					
16. Electric Heater	40. Shears	66. Transfer Pump	92. Carbon Treatment System	112. Extraction Well					
17. Electrical Power Supply	41. Shovel	67. Submersible Pump	93. Chemical Oxidation System	113. Monitoring Well					
18. Engine, Combustion	42. Snip	68. Face Shield	94. Dual Phase Product	114. Recovery Well					
19. Equipment Safety Grounding	43. Wrench	69. Fall Protection	Recovery System	115. Winch					
20. Excavator / Power Shovel	44. Hoist	70. Gloves	95. Groundwater Pump	116. Wire Rope					
21. Exclusion Zone Equipment	45, Hook/Clamp/Buckle, etc.	71. Hard Hat / Helmet	and Treat System	117. No Equipment Involved					
22 Fan / Blower	46. Jack	72. Hearing Protection	96. POET System	118. MPT - Traffic Control					
23 Fencing	47. Ladder, Extension	73. Respiratory PPE (Chemical)	97. Shed or Trailer	Devices					
24 Filter	48. Ladder, Platform	74. Respiratory PPE (Particulate)		118. Not in List (describe):					
	49. Ladder, Step	75. Safety Glasses							
	50. Lock Out / Tag Out	76. Safety Goggles							

SEPTEMBER 2013 2611.0002Y.104/HSP-APC

☐ Roux Associates. Inc.	☐ Remedial Engineering, P.C	٠.
Itoux /toooolatoo, illo.	rronnoular Engineering, r .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

	P <i>A</i>	<b>NRT 1:</b>	ADMINISTRAT	IVE INF	ORMA	ΓΙΟΝ					
Project #:			Immediate Verb	al Notifica	tions Giv	/en	REPOR	T STATUS	(time	due):	
Project Name: Project Location (s	treet address/city/state):		То:					al (24 hr)	•	Final (5-10 da	ays)
							Date:		Date	e:	
Client Corporate Na	ame / Contact / Address / Pho	ne #·	Corporate Health	a & Safety	□Yes	□No	Accide	nt Report D	)eliver	ed To:	
			Office Health & S	Safety	□Yes	□No (	Corporat	e Health &	Safety	□Yes	□No
			Office Manager		□Yes	□No	Office He	ealth & Safe	ty	□Yes	□No
			Project Principal		□Yes		Office Ma	J		□Yes	□No
-			Project Manager		□Yes	□No I	Project P	Principal		□Yes	□No
-			Client Contact		□Yes	□No I	Project M	/lanager		□Yes	□No
			REPORT TYPE:	Los	s	☐ Near	Loss	Estimate	d Cost	s: \$	_
OSHA CASE # Assi	gned by Corporate Health & Sa	ıfetv if	Corporate Health	& Safety	Confirme	ed Final A	Accident	t Report			-
Applicable:	g,		□Yes □I	No							
DATE OF INCIDENT	T: TIME INCIDENT OCCUR		INCIDENT LOCA	TION — City	, State, an	d Country	(If outside	e U.S.A.)			
	(Select most appropriate if Loss ase select the option that best of			en selecting	ı an injury	or illness	s, also in	dicate the s	everity	/ level.	
□INJURY	□ILLNESS	_	OTHER INCIDENT	_					•		
	everity Level		☐Spill / Release			□Misd	irected V	Vaste □C	onsen	t Order □N	IOV
□Fatality	☐First Aid ☐Medical	N	Material involved:				erty Dan		xceeda		
Restricted Work	Lost Time Treatment	C	Quantity (U.S. Gallo	ns):		□Moto	r Vehicle	e ∐Fi	ine / P	enalty	
	eck most appropriate one.)		NJURY TYPE (Che					,		all applicable.	)
☐ ☐G  Decommissioning	eoprobe Sampling	L	Abrasion	□Occupati	onal Illnes	s   LResp	iratory	□Shoulde	r	□Face	
☐Demolition ☐M	otor Vehicle System Sta		☐Amputation	☐Puncture		□Neck		□Arm		□Leg	
	perations/ Trenching		Burn	Rash	o Motion	Ches		□Wrist	naoro	☐Knee	
	laintenance ☐AST/UST F ump/Pilot Test ☐Other		☐Cold/Heat Stress☐Inflammation	☐Repetitive		□Abdo □Groin		□Hand/Fii □Eye	ngers	☐Ankle ☐Foot/Toe	es
☐Gauging ☐Ri	igging/Lifting		Laceration	Other		□Back		□Head		☐Other	
• • • • • • • • • • • • • • • • • • • •	CTLY / INDIRECTLY INVOLVE		•			necessary	/applicat	ole.)	1		
Name/Phone # of Each Person Directly/Indirectly	Designate: Roux/Remedial Employee	As applica	able, ccupation;	As applicabl Employer Na						olicable, visor Name; an	nd
Involved in Incident:	Roux/Remedial Subcontractor		rent Occupation;	Address; an					Phone		iu
	Client Employee Client Contractor		osition; and rent Position:	Phone #:							
	Third Party	Yrs in Cur	rent Position:								
1											
2											
II. PERSONS INJURE	D IN INCIDENT (Attach additional	ı al informa	tion as necessary/a	policable.)							
Name/Phone # of Each	Designate:	As applic		As applicabl	e,		As a	applicable,	I	Description of I	njury:
Person Injured in	Roux/Remedial Employee Roux/Remedial Subcontractor		Occupation;	Employer Na				ervisor Name	; and		
Incident:	Client Employee		rrent Occupation; Position; and	Address; an Phone #:	a		Pho	ne #:			
	Client Contractor Third Party		rrent Position:	-							
1											
		1							+		
2											

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III. PROPERTY DAI	MAGED IN	NCID	ENT (Atta	ach additional inf	ormati	ion as necessary/applicable.	)					
Property Damaged:		Prop	erty Locat	tion:	Owne	er Name, Address & Phone	#:	Description of	Damaç	ge:	Estimated Cost:	
1)		l										
2)		I									\$	
IV. WITNESSES TO INCIDENT (Attach additional information as necessary/applicable.)												
Witness Name:	-			, <del></del>		ress:			Pho	one #:		
1)												
2)												
			P/	ART 2: WH/	AT H	APPENED AND INCI	DENT	DETAILS				
	PART 2: WHAT HAPPENED AND INCIDENT DETAILS  PROVIDE FACTUAL DESCRIPTION OF INCIDENT (e.g., describe loss/near loss, injury, response / treatment).											
					`	ch additional information as n		, ,,				
Authority/Agency Noti	fied:		ame/Phone otified:	e #/Fax # of Person	1	Address of Person Notified:	Da	ate & Time of Notific	cation:		nformation ed/Provided:	
II. PUBLIC RESPO							1			· - · -		
Response/Inquir	у Ву:		Entity Name	¥:	$\bot$	Name/Phone # of Respondent/ Inquirer:	Ad	Idress of Entity/Per	son:	Date &	Time of Response/Inquiry:	
Describe Response/Ir												
Roux/Remedial Resp												
(Check all that app ATTACHED INFO			s, drawings □Photo				Form	Police	e Repor	rt	□Other	
Name(s) of person	n(s) who pr	epare	d Initial a	and Title(s	s):			Phone nu	mber(s	s):		
			Р	'ART 3: IN	I <mark>VE</mark> S	STIGATION TEAM	<mark>/ AN</mark>	ALYSIS				
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)												
ROC	T CAUS	3E(S	) AND			: HOW TO PREVE	NT IN	ICIDENT F	ROM	RECU	RRING	
CAUSAL FACTOR	ROOT CAUSE					ON(S) ot Cause(s)]		ERSON PONSIBLE	_	REED DATE	ACTUAL COMPLETION	
		<u> </u>	#		Solu	ıtion(s)					DATE	
	<u> </u>	'		<u> </u>							<u> </u>	
		<u> </u>	ļ'	<u> </u>								
	<u> </u>	'		<u> </u>							ļ	
	<u> </u>	'										
INVESTIGATIO								DATE			· · · · · · · · · · · · · · · · · · ·	
PR	INT NAME	<u>:</u>			J	OB POSITION		DATE			SIGNATURE	
				+					-			

## Site-Specific Health and Safety Plan The Peninsula Redevelopment Project 1221 Spofford Avenue, Bronx, New York

## **APPENDIX D**

Health and Safety Briefing /
Meeting Log and Daily Site Safety Checklist

2611.0002Y.108.APB/CVRS ROUX

# HEALTH AND SAFETY BRIEFING / TAILGATE MEETING FORM

Site Name / Location		
Date:		
Names of Personnel Attending Briefing		
Planned Work		
<u>Instrument Calibration</u> : Instrument/Time/C	Cal. Gas/Cal. Concentration/A	Actual Concentration
<u>Items Discussed</u>		
Work Permit Type and Applicable Restricti	<u>ions</u>	
Signatures of Attending Personnel		

## Site-Specific Health and Safety Plan The Peninsula Redevelopment Project 1221 Spofford Avenue, Bronx, New York

## **APPENDIX E**

Roux Heavy Equipment Exclusion Zone Policy

2611.0002Y.108.APB/CVRS ROUX

## **FINAL**

## STANDARD OPERATING PROCEDURE 1.13 HEAVY EQUIPMENT EXCLUSION ZONE POLICY

CORPORATE HEALTH AND SAFETY MANAGER Joseph W. Gentile

February 2014 EFFECTIVE DATE

**REVISION NUMBER** 1

## **Objective**

The purpose of the Exclusion Zone Policy is to establish the minimum clearance distance that must be maintained between workers and heavy equipment while equipment is in operation (i.e., engaged or moving). The intent is to have no personnel or other equipment entering the Exclusion Zone while the equipment is in operation/moving to ensure that Roux and Subcontractor employees are not unnecessarily exposed to the hazards of the equipment.

## A. Definition

For the purpose of this policy, heavy equipment includes, but is not necessarily limited to: excavation equipment, drill rigs, vacuum trucks, forklifts, lull telehandlers, man lifts, bobcats, delivery trucks, etc.

## **B.** Requirements

- 1. Exclusion Zones must be established and maintained during activities involving the movement/operation of heavy equipment. The Exclusion Zone requirements apply to all personnel on the site but are primarily focused on those personnel who are required to be working in the vicinity of the equipment. The exclusion zone is in effect when heavy equipment is moving or engaged (ex. movement of an arm or bucket of an excavator, rotation of an auger, lifting of a load with a forklift, raising/lowering of a man lift, etc.).
- 2. The Exclusion Zone must meet the following minimum requirements:
  - A minimum distance of 10 feet from all heavy equipment and loads being moved by the equipment; and
  - Greater than the swing/reach radius of any moving part on the heavy equipment (i.e., for large equipment this may mean an exclusion zone distance larger than 20 feet);
  - Greater than the tip-over distance of the heavy equipment; and
  - Greater than the radius of blind spots.
- 3. The size of the Exclusion Zone will need to be determined on a task-specific basis considering the size of the heavy equipment in use and the task being performed. Prior to all heavy equipment operations, the Exclusion Zone(s) distance must be specifically identified in the Job Safety Analysis (JSA).
- 4. The spotter (or another individual) should be assigned responsibility for enforcing the Exclusion Zone. This spotter should be positioned immediately outside of the Exclusion Zone within a clear line of sight of the equipment operator. The spotter must signal the operator to stop work if anyone or anything has the potential to enter or compromise the Exclusion Zone. The operator should stop work if the spotter is not within his/her line of sight. If multiple pieces of equipment are being used, each piece of equipment must have its own Exclusion Zone and spotter. For large excavation and demolition projects the spotter should be in constant radio contact (not cell phone) with the machine driver.
- 5. If an individual must enter the Exclusion Zone, the designated Spotter must signal the Equipment Operator to stop the equipment. Once the equipment is no longer moving (ex. movement of an arm of an excavator is STOPPED, lifting of a load with a forklift STOPPED, raising/lowering of a man lift is STOPPED, etc.), the operator must DISENGAGE THE CONTROLS and STOP and SIGNAL BY "SHOWING HIS HANDS". This signal

will indicate that it is safe for the personnel to enter the limits of the Exclusion Zone to perform the required activity. The equipment must remain completely stopped/disengaged until all personnel have exited the limits of the Exclusion Zone and the designated Spotter has signaled by "SHOWING HIS HANDS" to the Equipment Operator that it is safe to resume.

- 6. When entering the limits of the Exclusion Zone, personnel must at a minimum:
  - Establish eye contact with the operator and approach the heavy equipment in a manner that is in direct line of sight to the Equipment Operator;
  - Never walk under any suspended loads or raised booms/arms of the heavy equipment; and
  - Identify a travel path that is free of Slip/Trip/Fall hazards.
- 7. The Exclusion Zone should be delineated using cones with orange snow fence or solid poles between the cones, barrels, tape or other measures. For work in rights-of-way rigid barriers, such as Jersey barriers or temporary chain link fence should be used. For certain types of wide-spread or moving/mobile equipment operations, such delineation may not be practicable around pieces of equipment or individual work areas. In such instances it is expected that the entire operation will be within a larger secure work area or that additional means will be utilized to ensure security of the work zone.

## C. Exceptions

It is recognized that certain heavy equipment activities may require personnel to work within the limits of the Exclusion Zone as specified in this policy. Such activities may include certain excavation clearance tasks, drill crew activities or construction tasks. However, any such activity must be pre-planned with emphasis on limiting the amount and potential exposure of any activity required within the zone. The critical safety steps to mitigate the hazards associated with working within the Exclusion Zone must be defined in the JSA and potentially other project-specific plans (i.e., critical lift plans, etc.), and approved by the Roux Project Principal and client representative, if required, prior to implementation.

## D. Responsibilities

1. Corporate Health and Safety Manager

Overall responsibility for administration, implementation and auditing of this policy.

2. Office Managers

Responsible for communicating this policy to all of their employees who perform or may perform field work involving heavy equipment.

3. Office Health and Safety Managers

Providing training to office field staff in this policy.

- 4. Project Principals
  - a. Responsible for ensuring their projects address heavy equipment exclusion zones.
  - b. Approving exceptions to this policy.

## 5. Project Managers

- a. Responsible for incorporating this policy into their project HASPs and applicable procedures to include JSAs.
- b. Communicating to and enforcing the policy requirements for subcontractors who work on their projects.

## 6. Field Workers

- a. Attending training in the policy.
- b. Following the requirements of the policy.

## E. Project and Site-Specific Orientation and Training

Many Roux projects have different requirements that are client-specific or site-specific in nature. It is the responsibility of the Project Principal (or Project Manager if delegated this responsibility by the Project Principal) to ensure that the workers assigned to his/her projects are provided orientation and training with respect to these client and/or site-specific requirements.

## F. Subcontractors

All subcontractors who provide heavy equipment operations to field projects must implement a policy that meets or exceeds the expectations described above as well as any additional requirements that may be required on a client or site-specific basis.

## Site-Specific Health and Safety Plan The Peninsula Redevelopment Project 1221 Spofford Avenue, Bronx, New York

## **APPENDIX F**

Roux Subsurface Utility Clearance Procedure

2611.0002Y.108.APB/CVRS ROUX

# STANDARD OPERATING PROCEDURE 1.17 SUBSURFACE UTILITY CLEARANCE

CORPORATE HEALTH AND SAFETY MANAGER : Joseph W. Gentile

EFFECTIVE DATE : 2/04/15

REVISION NUMBER : 0

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	Record	
	Recolu	

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## 1.0 PURPOSE

Roux Associates, Inc. (Roux Associates) has instituted the following Standard Operating Procedure (SOP) for completing proper utility mark-outs and for conducting subsurface clearance activities. The SOP establishes a method to ensure, to the greatest extent possible, that utilities have been identified and contact and/or damage to underground utilities and other subsurface structures will be avoided.

## 2.0 SCOPE AND APPLICABILITY

This SOP applies to all Roux Associates employees, its contractors and subcontractors. Employees are expected to follow the SOP for all intrusive work involving Roux Associates or other personnel (e.g., contractors/subcontractors) working for Roux Associates unless the client's requirements are more stringent. Deviation from the SOP regardless of the specific work activity or work location must be pre-approved per Section 4.3 of this SOP.

### 3.0 DEFINITIONS

**Intrusive Work Activities** 

All activities such as digging or scraping the surface, including but not limited to, excavation, test pitting or trenching, soil vapor sampling or the installation of soil borings, soil vapor monitoring points and wells, or monitoring wells, and drilling within the basement slab of a recently demolished building.

Mark-out / Stake Out

The process of contracting with a competent and qualified company to confirm the presence or absence of underground utilities and structures. This process will clearly mark-out and delineate utilities that are identified so that intrusive work activities can be performed without causing disturbance or damage to the subsurface utilities and structures. After utility mark-outs are completed the soft digging will be completed prior to intrusive work.

Tolerance Zone

Defined as two feet on either side of the designated centerline of an identified utility, plus half of the diameter or half of the greatest dimension (for elliptical sewers, duct backs and other non-cylindrical utilities) of that utility and two feet from the outside edge of any subsurface structure.

Structure

For the purpose of this SOP a structure is defined as any underground feature that may present potential source(s) of energy such as, but not limited to, utility vaults, bunkers, piping, electrical boxes, wires, conduits, culverts, utility lines, underground tanks and ducts.

Soft Digging

The safest way to remove material from unknown obstructions or services is by using tools such as a vactor or air knife, non-mechanical tools, or hand tools. The methods are clean and non-evasive and used for uncovering and exposing buried services and excavating and for providing a quick method of soil removal from sensitive areas.

Verification

Exploratory test-hole dug with hand tools within the Tolerance Zone to expose and verify the location, type, size, direction-of-run and depth of a utility or subsurface structure. Vacuum excavation (soft dig) methods can further facilitate exposure of a subsurface utility and accurately provide its location ad identification prior to intrusive work approaching the Tolerance Zone.

### 4.0 RESPONSIBILITIES

It shall be the responsibility of all Roux Associates employees who oversee or perform intrusive field activities to ensure adequate mark-outs of underground utilities and structures have been provided, reviewed and discussed with the field team. This includes documenting that the mark-out was correctly performed by completing the Mark-out / Stake-out Request Information Sheet (Appendix A) and using the Roux Subsurface Clearance Checklist (Appendix B). Additionally the following personnel have specific responsibilities for implementing this SOP.

## 4.1 Corporate Health and Safety Manager (CHSM)

- The CHSM has the responsibility of ensuring that a program has been established and is in place to provide guidance for performing adequate utility mark-outs and subsurface utility clearance activities.
- The CHSM has the overall responsibility of implementing this SOP and communicating the contents of this SOP to Office Managers (OMs) and Office Health and Safety Managers (OHSMs).
- The CHSM will periodically, quarterly at a minimum, communicate learnings from mark-outs and subsurface utility clearance incidents and follow-up actions taken to all personnel via Clarity®.
- The CHSM will periodically review and evaluate the effectiveness of this SOP on a quarterly basis.

## 4.2 Office Manager (OM)

- Each OM will designate an individual to serve as the respective office's OHSM. The OHSM will be vested with the responsibility of assisting in implementation of this SOP's requirements.
- Each OM will ensure that their respective office's staff are made aware of and abide by the requirements of this SOP.

## **4.3 Project Principals (PPs)**

- PPs are responsible for ensuring this SOP is followed for intrusive work performed at their sites. This SOP recognizes that Roux may only be in the position of suggesting, discussing and requesting that this SOP be implemented to our clients.
- PPs have the authority to consider exceptions to this SOP based on their client's site knowledge, site experience and the client's willingness for the use of this SOP. Any and all exceptions, however, will be documented and pre-approved by the OM.

## 4.4 Project Manager (PM)

- It shall be the PM's responsibility to ensure this SOP is properly implemented. The PM has the responsibility for sharing all Lessons Learned from subsurface utility clearance incidents with the project team.
- The PM has the responsibility of reviewing and editing draft reports of subsurface utility clearance incidents and for filing the finalized reports in the appropriate project files.

## 4.5 Office Health and Safety Manager (OHSM)

- Each OHSM will ensure that their respective office's staff is trained in this SOP.
- It is the responsibility of the OHSM to review Lessons Learned and Accident Reporting Forms (existing Roux forms) for utility mark-outs and subsurface utility clearance incidents and to assist project teams in finalizing reports.
- The OHSM will review final draft incident reports of subsurface utility clearance incidents, ensure they are finalized and provide the finalized report to the CHSM, OM and the PM for inclusion in the project files as appropriate.
- The OHSM will track all subsurface utility clearance incidents until completed.
- The OHSM will provide the CHSM with all finalized reports of subsurface utility clearance incidents containing follow-up actions for sharing throughout the firm

## 4.6 All Personnel

 All personnel are responsible for ensuring Public Utility Mark-outs were requested by the subcontractor, performed for all known or suspected utility types and document the process by completion of Roux Subsurface Utility Clearance Checklist and Utility Verification / Site Walkthrough Record.

### 5.0 PROCEDURES

## **5.1 Before Intrusive Activities**

During the project kick-off meeting for intrusive activities the PM will review the Roux Subsurface Utility Clearance Checklist and Utility Verification / Site Walkthrough Record (Appendix B) and the below bullet points with the project field team:

(Please note that these are intended as general reminders only and should not be solely relied upon.)

- Ensure the Mark-out / Stake-out Request Information Sheet (or one-call report is complete and accurate for the site including address and cross streets) is completed and review for missing utilities (note utility mark-out organizations do not have contracts with all utilities and it is often necessary to contact certain utilities separately such as the local water and sewer authorities).
- Have written confirmation prior to mobilizing to the site that the firm or Roux personnel performing the intrusive activity has correctly completed the mark-out notification process including requesting mark-outs, waiting for mark-outs to be applied to ground surfaces at the site, and receiving written confirmation of findings (via fax or email) from utility operators for all known or suspected utilities in the proposed area of intrusive activity, and provided utility owner written confirmation to Roux Associates personnel for review and project files documentation.
- Do not begin any intrusive activity until any utilities mark-out has been completed (i.e., did all utilities mark-out the site?) and any unresolved mark-out issues are finalized. Perform a site walk to review the existing utilities and determine if said utilities have been located by the utility locators.
  - (Note: The Tolerance Zone is defined as two feet plus half of the diameter or half of the greatest dimension (for elliptical sewers, duct banks and other non-cylindrical utilities) of a utility and two feet from the outside edge of any subsurface structure.)
- Install Pre-Clearance exploratory test holes (e.g., hand-dug test holes or other soft digging techniques) for the first 5-ft below land surface (BLS) at each location prior to conducting mechanized intrusive activities. The size of the pre-clearance exploratory test hole should be at a minimum twice the diameter of any downhole tool or boring device. (Note: Pre-Clearance exploratory test holes should be defined in the SOW/proposal as being provided to the client to prevent project delays and to allow adequate time for PM and PP to evaluate alternative approaches for the project. Alternative approaches will need to be pre-approved by the OM.
- For excavations, all utilities need to be marked and then exposed by hand following the protocols in this SOP. Pre-clearing for excavations may be performed by the "moat" technique (i.e., soft digging around the perimeter). In these cases, dig in small lifts (<12" for first 5 feet) using a dedicated spotter.) For Tolerance Zone work, unless

otherwise agreed upon with the Utility Operator, work within the tolerance zone requires verification by means of hand-dug test holes performed to expose the utility. Once structures have been verified a minimum clearance of two feet must be maintained between the utility and any powered equipment.

- In addition, the following activities should be conducted:
  - Review the work scope to be performed with the site owner/tenant to determine if it may impact any utilities,
  - Attempt to procure any utility maps or historic drawings of subsurface conditions of the site,
  - Determine the need for utility owner companies to be contacted or to have their representatives on site, and
  - Where mark-outs terminate at the property boundary, consider the use of private utility locating / GPR / Geophysical-type services which may be helpful in locating utilities. Use of private utility locating firms, however, does not eliminate the legal requirement for the Excavator firm to submit a request for Public Utility Mark-outs. Also, the information provided by the service may be inaccurate and unable to locate subsurface utilities and structures in urban areas, landfills, urban fill areas and below reinforced slabs, etc. They should not be relied upon as the only means of performing utility clearance.

## **5.2 During Intrusive Activities**

The PM, field team lead or personnel performing oversight is to:

- Ensure the mark-out remains valid. (In certain states there are limits regarding the duration of time after the mark-out was applied to the ground surface work can be started or interrupted.) Additionally, the mark-outs must be maintained, documented, and in many cases refreshed periodically to be considered valid.
- Ensure intrusive activities are only performed within the safe boundaries of the mark-out as detailed in the One-Call Report.
- Halt all work if intrusive activities must take place outside of the safe boundaries of a mark-out and only proceed after new mark-outs are performed.
- Halt the intrusive activities and immediately consult with the PP if an unmarked utility is encountered.
- Completing any subsurface utility clearance incident reports that are necessary.

## **6.0 APPENDICES**

- Example Completed One-Call Report (Appendix A)
- Roux Subsurface Clearance Checklist and Utility Verification / Site Walkthrough Record (Appendix B)

## APPENDIX A

## **Example Completed One-Call Report**

New York 811

Send To: C\_EMAIL Seq No: 744

Ticket No: 133451007 ROUTINE

Start Date: 12/16/13 Time: 7:00 AM Lead Time: 20

State: NY County: QUEENS Place: QUEENS

Dig Street: 46TH AVE Address:

Nearest Intersecting Street: VERNON BLVD

Second Intersecting Street: 11TH ST

Type of Work : SOIL BORINGS Type of Equipment : GEOPROBE Work Being Done For: ROUX

In Street: X On Sidewalk: X Private Property: Other: On Property Location if Private: Front: Rear: Side:

Location of Work: MARK THE ENTIRE NORTH SIDE OF THE STREET AND SIDEWALK OF: 46TH AVE BETWEEN VERNON BLVD AND 11TH STREET

#### Remarks:

Nad: Lat: Lon: Zone:

ExCoord NW Lat: 40.7475399 Lon: -73.9534811 SE Lat: 40.7457406 Lon: -73.9493680

Company : ZEBRA ENVIROMENTAL Best Time: 6AM-5PM Contact Name : DAVID VINES Phone: (516)596-6300

Field Contact: DAVID VINES
Caller Address: 30 N PROSPECT AVE
Phone: (516)596-6300
Fax Phone: (516)596-4422

LYNBROOK, NY 11563 Email Address : david@zebraenv.com

Additional Operators Notified:

ATTNY01 AT&T CORPORATION (903)753-3145 CEQ CONSOLIDATED EDISON CO. OF N.Y (800)778-9140

MCINY01 MCI (800)289-3427

PANYNJ01 PORT AUTHORITY OF NY & NJ (201)595-4841 VZQ VERIZON COMMUNICATIONS (516)297-1602

Link to Map for C EMAIL: http://ny.itic.occinc.com/XGMZ-DF2-L23-YAY

Original Call Date: 12/11/13 Time: 1:15 PM Op: webusr

IMPORTANT NOTE: YOU MUST CONTACT ANY OTHER UTILITIES DIRECTLY.

## APPENDIX B

## Roux Subsurface Utility Clearance Checklist

Date of Revision - 12/3/14

Work site set-up and work execution

Work Site Set-up and Work execution				
ACTIVITY	Yes	No	N/A	COMMENTS INCLUDING JUSTIFICATION IF RESPONSE IS NO OR NOT APPLICABLE
Daily site safety meeting conducted, SPSAs performed, JSAs reviewed, appropriate work permits obtained				
HASP is available and reviewed by site workers / visitors				
Subsurface Utility Clearance Procedure has been reviewed with all site workers				
Work area secured; traffic control established as needed. Emergency shut-off switch located. Fire extinguishers / other safety equipment available as needed				
Utility mark-outs (public / private) clear and visible. Provide Excavator's Stake-Out Reference Number / Request Date / Time				
Tolerance zone work identified				
Work execution plan reviewed and adhered to (ground disturbance methods, clearance depths, any special utility protection requirements, or any other execution requirements; especially for Tolerance Zone work)				
Verbal endorsement received from Roux PM for any required field deviations to work execution plan				

## Key reminders for execution:

The Subsurface Utility Clearance Protocol should be referenced to determine all requirements while executing subsurface work. The bullet points below are intended as general reminders only and should not be solely relied upon.

- Tolerance zone is defined as two feet plus half of the diameter or half of the greatest dimension (for elliptical sewers, duct banks and other non-cylindrical utilities) of a utility and two feet from the outside of any subsurface structure.
- Install Pre-Clearance exploratory test holes (e.g., hand-dug test holes or vacuum excavation)
  must be performed for the first five feet below land surface (BLS) at each location prior to
  conducting mechanized intrusive activities. The size of the pre-clearance exploratory test hole

- should be at a minimum twice the diameter of any downhole tool or boring device. (Note: Preclearance exploratory test holes should be defined in the SOW/proposal as being provided to the client to prevent project delays and to allow adequate time for PM and PP to evaluate alternative approaches for the project. Alternate approaches will need to be pre-approved by the OM.
- For excavations, all utilities need to be marked and then exposed by hand following the protocols in this SOP. Pre-clearing for excavations may be performed by the "moat" technique (i.e., soft digging around the perimeter). In these cases, dig in small lifts (<12" for first five feet) using a dedicated spotter.) For Tolerance Zone work, unless otherwise agreed upon with the Utility Operator, work within the tolerance zone requires verification by means of hand-dug test holes to expose the utility. Once structures have been verified a minimum clearance of two feet must be maintained between the utility and any powered equipment.

Utility verific	cation / Site walkthrough Rec	ora							
Employee Na	ame:								
Date:									
<b>Instructions:</b> For each utility suspected at the job site, indicate location on the job site, approximate burial depth, and means of detecting the utility. Leave blank if that utility is not believed to be present.									
Utility	Description of Utility Location Identified On-site	Approx. Depth (bls)	Method / Instrumentation used to determine Utility Location	Utility Owner Response (Date/Time)	Mark Out Indicates (Clear / Conflict)				
Electrical Lines									
Gas Lines									
Pipelines									
Steam Lines									
Water Lines									
Sanitary & Storm-water Sewer lines									
Pressured Air-Lines									
Tank Vent Lines									
Fiber Optic Lines									
Underground Storage Tanks									

bls - Below land surface

Phone Lines/

Other

Site Sketch Showing Utilities:	

		Color Code  ELECTRIC  Gas-oil Steam  Communications CATV  WATER  Reclaimed Water  SEWER  Temp. Survey Markings  Proposed Excavation
Other Comments	s / Findings:	
Completed by:		
Signature:	D	Pate:

## Site-Specific Health and Safety Plan The Peninsula Redevelopment Project 1221 Spofford Avenue, Bronx, New York

## **APPENDIX G**

ACORD® Automobile Loss Notice Form

2611.0002Y.108.APB/CVRS ROUX

ACORD		AUTOMO	BILE	LOSS NOT	ICE		DATE (MM/OC	NYYYY)				
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AJ Gallagher Risk Management Services 377 Oak Street				CARRIER	NAK	CODE						
Garden Cily, NY 11530				ide Insurance Compa	iny	t t	5224					
			POLICY NUMBER BAP154979912									
	Garzia			POLICY TYPE								
	322.2418				mmercial Automobile	ŀ						
PAX (AC, No): E-MAIL ADDRESS:				<del>                                     </del>		<u> </u>						
APORESS:		SUBCODE:		-								
AGENCY CUSTOMER ID:	ROUXASS-											
INSURED												
NAME OF INSURED (First	, Middle, Last)			INSURED'S MAILING	ADDRESS							
Roux Assiciates	s, Inc.			209 Shafter St	treet	-						
DATE OF BIRTH		pplicable) MARITAL CIVIL UNION	STATUS / (if applicable)									
PRIMARY HOME PHONES 631.232.26	BUS CELL	SECONDARY   HOME   BU	S CELL	PRIMARY E-MAIL ADE								
CONTACT				SECONDARY E-MAIL	ADDRESS: PAX NOTICE OF	Loss to: 631.2	32.1525					
NAME OF CONTACT (FILE	CONTACT II	(\$UKE)		CONTACT'S MAILING	ADDRESS							
Cindy Albanese				Cindy Albanese	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,							
	FJ BUS TI CELL	SECONDARY HOME BU	S CELL	209 Shafter Street Islandia, NY 11749								
WHEN TO CONTACT												
				PRIMARY E-MAIL ADDRESS: legaldept@rouxinc.com seconoary e-mail_address: Fax Notice of Loss to 631.232.1525								
LOSS				I SECONDARY E-MAIL	ADDRESS: 1 UN 11011CC OF L	2033 (0 031.23,	2.1020					
LOCATION OF LOSS			····		POLICE OR FIRE DEPARTM	ENT CONTACTED						
STREET:												
CITY, STATE, ZIP:		<del></del>			REPORT NUMBER							
COUNTRY:					İ		_					
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INSURED VEHICLE	<u> </u>		Thank'									
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DRIVER'S NAME AND ADD	RESS (Check	if same os owner)	PRIMARY HOI	NDDRESS:	ECONDARY   +	IOME   BUS	CELL.					
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#### APPLICABLE IN ALABAMA

Any person who knowingly presents a false or fraudulent claim for payment of a loss or benefit or who knowingly presents false information in an application for insurance is guilty of a crime and may be subject to restitution fines or confinement in prison, or any combination thereof.

#### **APPLICABLE IN ALASKA**

A person who knowingly and with intent to injure, defraud, or deceive an insurance company files a claim containing false, incomplete, or misleading information may be prosecuted under state law.

### 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, DELAWARE, KENTUCKY, LOUISIANA, MAINE, MICHIGAN, NEW JERSEY, NEW MEXICO, NORTH DAKOTA, PENNSYLVANIA, RHODE ISLAND, SOUTH DAKOTA, TENNESSEE, TEXAS, VIRGINIA, AND WEST 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 LA, ME, TN, and VA, insurance benefits may also be denied.

#### APPLICABLE IN CALIFORNIA

For your protection, California law requires the following to appear on this form: Any person who knowingly presents a false or fraudulent claim for payment of a loss is guilty of a crime and may be subject to fines and confinement in state prison.

#### 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 THE DISTRICT OF COLUMBIA

Warning: It is a crime to provide false or misleading information to an insurer for the purpose of defrauding the insurer or any other person. Penalties include imprisonment and/or fines. In addition, an insurer may deny insurance benefits, if false information materially related to a claim was provided by the applicant.

#### APPLICABLE IN FLORIDA

Pursuant to S. 817.234, Florida Statutes, any person who, with the intent to Injure, defraud, or deceive any insurer or insured, prepares, presents, or causes to be presented a proof of loss or estimate of cost or repair of damaged property in support of a claim under an insurance policy knowing that the proof of loss or estimate of claim or repairs contains any false, incomplete, or misleading information concerning any fact or thing material to the claim commits a felony of the third degree, punishable as provided in S. 775.083, or S. 775.084, Florida Statutes.

#### APPLICABLE IN HAWAII

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

#### **APPLICABLE IN 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.

### 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.

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#### **APPLICABLE IN KANSAS**

Any person who, knowledge and with intent to defraud, presents, causes to be presented or prepares with knowledge or belief that it will be presented to or by an insurer, purported insurer, broker or any agent thereof, any written statement as part of, or in support of, an application for the issuance of, or the rating of an insurance policy for personal or commercial insurance, or a claim for payment or other benefit pursuant to an insurance policy for commercial or personal insurance which such person knows to contain materially false information concerning any fact material thereto; or conceals, for the purpose of misleading, information concerning any fact material thereto commits a fraudulent insurance act.

#### APPLICABLE IN MARYLAND

Any person who knowingly or willfully presents a false or fraudulent claim for payment of a loss or benefit or who knowingly or willfully presents false information in an application for insurance is guilty of a crime and may be subject to fines and confinement in prison.

### 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 and with intent to defraud any insurance company or other person files an application for commercial insurance or a statement of claim for any commercial or personal insurance benefits containing any materially false information, or conceals for the purpose of misleading, information concerning any fact material thereto, and any person who in connection with such application or claim 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.

#### APPLICABLE IN WASHINGTON

It is a crime to knowingly provide false, incomplete, or misleading information to an insurance company for the purpose of defrauding the company. Penalties include imprisonment, fines and denial of insurance benefits.

## Site-Specific Health and Safety Plan The Peninsula Redevelopment Project 1221 Spofford Avenue, Bronx, New York

## **APPENDIX H**

Job Safety and Health Protection Poster

2611.0002Y.108.APB/CVRS ROUX

## You Have a Right to a Safe and Healthful Workplace.

- 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. 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.go



# Site-Specific Health and Safety Plan The Peninsula Redevelopment Project 1221 Spofford Avenue, Bronx, New York

#### **APPENDIX I**

Generic Community Air Monitoring Plan (CAMP)

2611.0002Y.108.APB/CVRS ROUX

#### **APPENDIX I**

#### New York State Department of Health Generic Community Air Monitoring Plan

#### Overview

A Community Air Monitoring Plan (CAMP) requires real-time monitoring for volatile organic compounds (VOCs) and particulates (i.e., dust) at the downwind perimeter of each designated work area when certain activities are in progress at contaminated sites. The CAMP is not intended for use in establishing action levels for worker respiratory protection. Rather, its intent is to provide a measure of protection for the downwind community (i.e., off-site receptors including residences and businesses and on-site workers not directly involved with the subject work activities) from potential airborne contaminant releases as a direct result of investigative and remedial work activities. The action levels specified herein require increased monitoring, corrective actions to abate emissions, and/or work shutdown. Additionally, the CAMP helps to confirm that work activities did not spread contamination off-site through the air.

The generic CAMP presented below will be sufficient to cover many, if not most sites. Specific requirements should be reviewed for each situation in consultation with NYSDOH to ensure proper applicability. In some cases, a separate site-specific CAMP or supplement may be required. Depending upon the nature of contamination, chemical-specific monitoring with appropriately sensitive methods may be required. Depending upon the proximity of potentially exposed individuals, more stringent monitoring or response levels than those presented below may be required. Special requirements will be necessary for work within 20 feet of potentially exposed individuals or structures and for indoor work with co-located residences or facilities. These requirements should be determined in consultation with NYSDOH.

Reliance on the CAMP should not preclude simple, common-sense measures to keep VOCs, dust, and odors at a minimum around the work areas.

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

Depending upon the nature of known or potential contaminants at each site, real-time air monitoring for VOCs and/or particulate levels at the perimeter of the exclusion zone or work area will be necessary. Most sites will involve VOC and particulate monitoring; sites known to be contaminated with heavy metals alone may only require particulate monitoring. If radiological contamination is a concern, additional monitoring requirements may be necessary per consultation with appropriate DEC/NYSDOH staff.

**Continuous monitoring** will be required for all ground intrusive activities and during the demolition of contaminated or potentially contaminated structures. Ground intrusive activities include, but are not limited to, soil/waste excavation and handling, test pitting or trenching, and the installation of soil borings or monitoring wells.

**Periodic monitoring** for VOCs will be required 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 might reasonably 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. In some instances, depending upon the proximity of potentially exposed individuals, continuous monitoring may be required 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.

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

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

- 1. 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 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.
- 2. 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 must be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities can 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.
- 3. If the organic vapor level is above 25 ppm at the perimeter of the work area, activities must be shutdown.
- 4. All 15-minute readings must be recorded and be available for State (DEC and NYSDOH) personnel to review. Instantaneous readings, if any, used for decision purposes should also be recorded.

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

Particulate concentrations should be monitored continuously at the upwind and downwind perimeters of the exclusion zone at temporary particulate monitoring stations. The particulate monitoring should 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 must 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.

- 1. If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/m³) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 mcg/m³ above the upwind level and provided that no visible dust is migrating from the work area.
- 2. If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 mcg/m³ above the upwind level, work must be stopped and a re-evaluation of activities initiated. Work can resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 mcg/m³ of the upwind level and in preventing visible dust migration.
- 3. All readings must be recorded and be available for State (DEC and NYSDOH) and County Health personnel to review.

# Interim Remedial Measure Work Plan 1221 Spofford Avenue, Bronx, New York

#### **APPENDIX C**

Community Air Monitoring Plan

2611.0002Y108/CVRS ROUX



# Community Air Monitoring Plan

1221 Spofford Avenue Tax Lot 35 of Tax Block 2738 Bronx, New York

August 6, 2018

Prepared for:

THE PENINSULA JV, LLC 111 8<sup>th</sup> Avenue New York, New York 10011

Prepared by:

Roux Environmental Engineering and Geology, D.P.C. 209 Shafter Street Islandia, New York 11749

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## **Table**

1. Action Limit Summary for VOCs and Particulates

# **Appendix**

A. Action Limit Report

#### 1. INTRODUCTION

Remedial Engineering, P.C and Roux Associates, Inc. (collectively referred to herein as Roux Associates), on behalf of Peninsula JV, LLC, (the "Volunteer"), have developed a project specific Community Air Monitoring Plan (CAMP) to implement real time monitoring at 1221 Spofford Avenue (Site) during remedial construction activities.

The monitoring program will be implemented at all times during which earth disturbance activities are occurring. The CAMP is designed 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 and construction activities. This plan is consistent with the New York State Department of Health's (NYSDOH) Generic Community Air Monitoring Plan guidance document.

The specifics of the CAMP are presented in the following four (4) sections:

- 1.1 VOC Monitoring Approach
- 1.2 Particulate Monitoring Approach
- 1.3 Meteorological Monitoring Approach
- 1.4 Available Suppression Techniques

#### 1.1 VOC Monitoring Approach

Total VOC concentrations in air will be monitored continuously at a location downwind of the excavation activities during all ground intrusive activities. An upwind monitoring station will be set up adjacent to where the excavation is occurring. 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 3000 (or equivalent) 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 (ALR) 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 ALR generation. 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.

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

Particulate concentrations will be monitored continuously at temporary particulate monitoring stations set up at the sidewalk at upwind and downwind locations. 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 defined below and summarized in Table 1). Monitoring equipment will be MIE Data Ram monitors or equivalent. A minimum of 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 micrograms per cubic meter ( $\mu$ g/m³) per 15-minute period. This setting will allow proactive evaluation of Site conditions prior to reaching Action Levels of 100  $\mu$ g/m³ above background. The equipment will be outfitted with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration will be visually assessed during all work activities. The monitoring will be used to compare values to the following:

- If the downwind PM-10 particulate level is 100 μg/m³ greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the Site, then dust suppression techniques must be employed. Work may continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 μg/m³ above the upwind level and provided that no visible dust is migrating from the Site.
- If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 μg/m³ above the upwind level, work must be stopped, a re-evaluation of activities initiated, and dust suppression techniques modified. 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/m³ of the upwind level and in preventing visible dust migration.

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 ALR will be completed, identifying the monitoring device location, the measured particulate concentration, the activity causing the exceedance, meteorological conditions, and the corrective actions taken, as provided in Appendix A. Daily monitoring equipment locations will also be documented on the daily CAMP Monitoring Location Plan. All documentation will be kept on file at the Site.

#### 1.3 Meteorological Monitoring

Wind speed (estimated) and wind direction, will be approximated based on field observations of onsite personnel. Meteorological data consisting of temperature, barometric pressure, and relative humidity will be recorded in the field book based upon publicly available information from local weather stations.

#### 1.4 Available Suppression Techniques

#### **Odor Control**

Due to the nature of the project, with excavation occurring, the potential for generation of nuisance odors and the need for odor control may be necessary. If nuisance odors are identified, work will be halted and the source of odors will be identified and corrected. Work will not resume until all nuisance odors have been abated. NYSDEC and NYSDOH will be notified of all odor events and of all other complaints about the project.

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

#### **Dust Control**

Due to the nature of the project, the potential for generation of nuisance dust and the need for dust control may be necessary. Dust suppression will be achieved through the use of water for wetting excavation areas, if required. Water will be available on-site at suitable supply and pressure for use in dust control.

#### 1.5 Reporting

All recorded monitoring data will be downloaded and field logged periodically, including action limit reports (if any) and daily CAMP monitoring location plans. All records will be maintained onsite and available for NYSDEC/NYSDOH review. A summary of CAMP findings, including excursions, will be provided in the Daily and Monthly Reports. All CAMP monitoring records will be included in the overall Final Engineering Report that will be submitted to the NYSDEC and NYSDOH and will include all of the CAMP data collected, daily monitoring station location maps, and copies of the ALRs (if any). If an ALR is generated due to VOC exceedances, the NYSDEC and NYSDOH will be notified within 24 hours of the exceedance.

# Community Air Monitoring Plan The Peninsula Redevelopment Project 1221 Spofford Avenue, Bronx, New York

**TABLE** 

1. Action Limit Summary for VOCs and Particulates

2611.0002Y.108.APC/CVRS ROUX

Table 1. Action Limit Summary for VOCs and Particulates, Peninsula Redevelopment Project, 1221 Spofford Avenue, Bronx, NY

Contaminant	Downwind Action Levels*	Action/Response	
	< 5 ppm	Resume work with continuing monitoring.	
Volatile Organic Compounds (VOCs) (Monitoring Via Photoionization Detector and Odor Observation)	5 ppm < level < 25 ppm	<ol> <li>Work activities must be temporarily halted, source vapors must be identified, suppression techniques employed to abate emissions and monitoring continued.</li> <li>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) is below 5 ppm over background, resume work.</li> </ol>	
	> 25 ppm	<ol> <li>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.</li> </ol>	
		After these steps, if VOC levels (half the distance to the nearest potential receptor or structure) are below 5 ppm over background, resume work.	
	< 100 ug/m <sup>3</sup>	<ol> <li>If dust is observed leaving the work area, then dust control techniques must be implemented or additional controls used.</li> </ol>	
	100 ug/m3 < level < 150 ug/m <sup>3</sup>	Employ dust suppression techniques.	
Particulates (Monitoring Via Particulate Meter		2. Work may continue with dust suppression techniques provided that downwind PM-10 particulate concentration do not exceed 150 ug/m³ above the upwind level and provided that no visible dust is migrating from the work area.	
and Observation)		1. STOP work	
		<ol> <li>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 ug/m³ of the upwind level and in preventing visible dust migration.</li> </ol>	

<sup>\*</sup> Instantaneous readings 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.



# Community Air Monitoring Plan The Peninsula Redevelopment Project 1221 Spofford Avenue, Bronx, New York

#### **APPENDIX**

A. Action Limit Report

2611.0002Y.108.APC/CVRS ROUX

#### **ACTION LIMIT REPORT**

Project Location: Peninsula Redevelopment Project, 1221 Spofford Avenue, Bronx, NY									
Date:			Time:						
Name:									
Contaminant:	PM-10:		VOC:						
Wind Speed:			Wind Direction:						
Temperature:			Barometric Pressure:						
DOWNWIND D	ATA								
Monitor ID #:		Location:		Level Reported:					
Monitor ID#:		Location:		Level Reported:					
UPWIND DATA	<u>.</u>								
Monitor ID #:		Location:		Level Reported:					
Monitor ID#:		Location:		Level Reported:					
BACKGROUND	CORRECTED LEVELS								
Monitor ID #:		Location:		Level Reported:					
Monitor ID#:		Location:		Level Reported:					
ACTIVITY DES	CRIPTION								
CORRECTIVE	ACTION TAKEN								
-									
-									

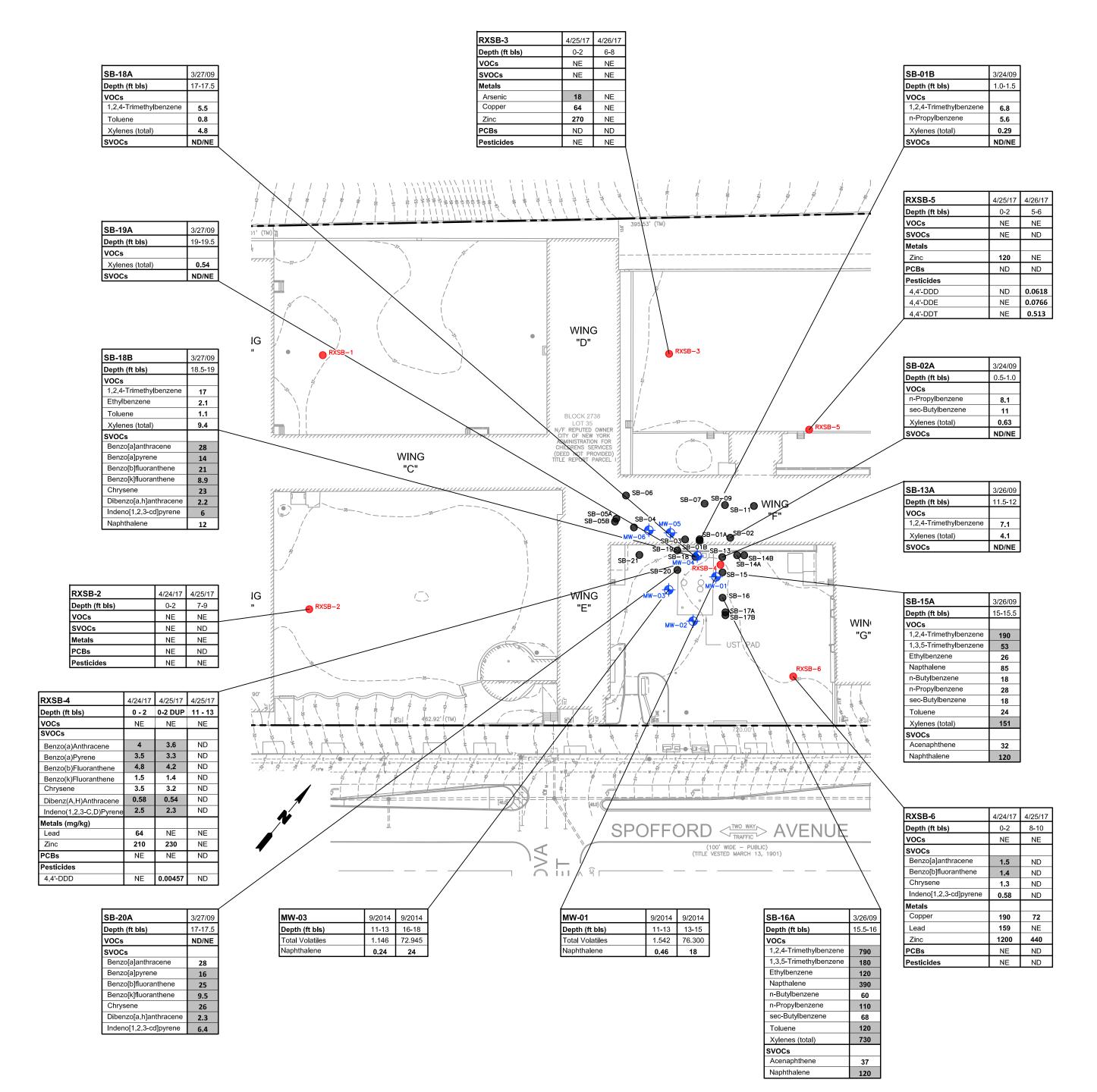


# Interim Remedial Measure Work Plan 1221 Spofford Avenue, Bronx, New York

#### **PLATES**

Soil Exceedances

2611.0002Y108/CVRS ROUX



LEGEND

— — — SITE BOUNDARY

SB-06 ●

SOIL BORING LOCATION FROM LOUIS BERGER AND ASSOC., P.C., 2009 INVESTIGATION



MONITORING WELL LOCATION INSTALLED BY URS



APPROXIMATE SOIL BORING LOCATION FROM ROUX ASSOCIATES 2017 INVESTIGATION

Parameter	UUSCOs* mg/kg (ppm)	RRSCOs** mg/kg (ppm)
VOCs		
1,2,4-Trimethylbenzene	3.6	52
1,3,5-Trimethylbenzene	8.4	52
Ethylbenzene	1	41
Napthalene	12	100
n-Butylbenzene	12	100
n-Propylbenzene	3.9	100
sec-Butylbenzene	11	100
tert-Butylbenzene	5.9	100
Toluene	0.7	100
Xylenes (total)	0.26	100
SVOCs		
Acenaphthene	20	100
Benzo[a]anthracene	1	1
Benzo[a]pyrene	1	1
Benzo[b]fluoranthene	1	1
Benzo[k]fluoranthene	0.8	3.9
Chrysene	1	3.9
Dibenzo[a,h]anthracene	0.33	0.33
Fluoranthene	100	100
Indeno[1,2,3-cd]pyrene	0.5	0.5
Naphthalene	12	100
Metals	1	
Arsenic	13	16
Copper	50	270
Lead	63	400
Zinc	109	10000
Pesticides		
4,4'-DDD	0.0033	13
4,4'-DDE	0.0033	8.9
4,4'-DDT	0.0033	7.9

CONCENTRATIONS IN mg/kg

mg/kg - MILOGRAMS PER KILOGRAM

\* - NYSDEC PART 375 UNRESTRICTED USE SOIL

CLEANUP OBJECTIVES (UUSCOs)

\*\* - PART 375 RESTRICTED RESIDENTIAL SOIL CLEANUP

OBJECTIVES (RRSCOs)

NYSDEC - NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

VOCS - VOLATILE ORGANIC COMPOUNDS
SVOCS - SEMIVOLATILE ORGANIC COMPOUNDS

NE - NO EXCEEDANCES

ND - NO DETECTION

FT BLS - FEET BELOW LAND SURFACE

 RESULTS SHOWN IN BLACK TYPE EXCEED NYSDEC PART 375 UNRESTRICTED USE SOIL CLEANUP OBJECTIVES

 RESULTS WITH GRAY BACKGROUND EXCEED NYSDEC PART 375 RESTRICTED RESIDENTIAL SOIL CLEANUP OBJECTIVES

NOTE

ONLY TOTAL VOLATILES SUMMARY AND NAPHTHALENE DATA RESULTS PROVIDED IN URS REPORT.

SOURCE:

LOUIS BERGER & ASSOC., P.C. REMEDIAL ACTION PLAN, 2010 URS, GROUNDWATER MONITORING AND REMEDIATION REPORT FOR THE FOURTH QUARTER 2016.



Title:

# SOIL EXCEEDANCES

1221 SPOFFORD AVENUE BRONX, NEW YORK

Prepared For:

THE PENINSULA JV, LLC



Compiled by: D.H. Date: 30MAY18 PLATE

Prepared by: G.M. Scale: AS SHOWN

Project Mgr: D.H. Project: 2611.0002Y000

File: 2611.0002Y108R.02.DWG