FORMER UNIFORMS FOR INDUSTRY SITE

QUEENS, NEW YORK

Site Management Plan

NYSDEC Site Number: C-241103

Prepared for:

Union Jamaica LLC
15 Verbena Avenue, Suite #100
Floral Park, NY 11001-2711

Prepared by:

EBC
ENVIRONMENTAL BUSINESS CONSULTANTS
1808 Middle Country Road
Ridge, NY 11961

Revisions to Final Approved Site Management Plan:

Revision #	Submitted Date	Summary of Revision	DEC Approval Date
1	11-21-12	Editorial changes, further clarification SSDS notification for down time.	
2	12-20-12	Minor editorial changes.	

SEPTEMBER 2012

TABLE OF CONTENTS
SITE MANAGE MENT PLAN
FORMER UNIFORMS FOR INDUSTRY SITE

TABLE OF CONTENTS
SITE MANAGE MENT PLAN
FORMER UNIFORMS FOR INDUSTRY SITE

TABLE OF CONTENTS
SITE MANAGE MENT PLAN
FORMER UNIFORMS FOR INDUSTRY SITE

TABLES

FIGURES

ATTACHMENTS

SITE MANAGE MENT PLAN
FORMER UNIFORMS FOR INDUSTRY SITE

LIST OF ACRONYMS

Acronym	Definition
AMC	AMC Engineering
AWQS	Ambient Water Quality Standards
BCA	Brownfield Cleanup Agreement
BCP	Brownfield Cleanup Program
BTEX	Benzene, Toluene, Ethylbenzene and Xylene
CQMP	Construction Quality Management Plan
DUSR	Data Usability Statement Report
EBC	Environmental Business Consultants
FER	Final Engineering Report
HDPE	High Density Polyethylene
IRM	Interim Remedial Measure
NYC	New York City
NYCDEP	New York City Department of Environmental Protection
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
PS	Public School
PVC	Polyvinyl Chloride
RAO	Remedial Action Objectives
RAWP	Remedial Action Work Plan
RI	Remedial Investigation
RSCOs	Recommended Site Cleanup Objectives
SCG	Standards, Criteria, and Guidelines
SMMP	Soil/Materials Management Plan
SSDS	Sub-slab Depressurization System
SWPPP	Stormwater Pollution Prevention Plan
SVOCs	Semi-Volatile Organic Compounds
USEPA	United States Environmental Protection Agency
UST	Underground Storage Tank
VOCs	Volatile Organic Compounds

SITE MANAGEMENT PLAN

1.0 INTRODUCTION AND DESCRIPTION OF REMEDIAL PROGRAM

1.1 INTRODUCTION

This document is required as an element of the remedial program at the Uniforms for Industry Site (hereinafter referred to as the "Site") under the New York State (NYS) Brownfield Cleanup Program (BCP) administered by New York State Department of Environmental Conservation (NYSDEC). The site was remediated in accordance with Brownfield Cleanup Agreement (BCA) Index # A2-0585-0307, which was executed on June 13, 2007 and last amended on January 24, 2011.

1.1.1 General

Union Jamaica LLC entered into a BCA with the NYSDEC to remediate a 1.72 acre property located in Richmond Hill, Queens, New York. This BCA required the Remedial Party, Union Jamaica LLC to investigate and remediate contaminated media at the site. A figure showing the site location and boundaries of this 1.72-acre "site" is provided in **Figure 1**. The boundaries of the site are more fully described in the metes and bounds site description that is part of the Environmental Easement.

After completion of the remedial work described in the Remedial Action Work Plan, some contamination was left in the subsurface at this site, which is hereafter referred to as 'remaining contamination." This Site Management Plan (SMP) was prepared to manage remaining contamination at the site until the Environmental Easement is extinguished in accordance with ECL Article 71, Title 36. All reports associated with the site can be viewed by contacting the NYSDEC or its successor agency managing environmental issues in New York State.

This SMP was prepared by Environmental Business Consultants, on behalf of Union Jamaica LLC, in accordance with the requirements in NYSDEC DER-10 Technical Guidance for Site Investigation and Remediation, dated May 2010, and the guidelines provided by NYSDEC. This SMP addresses the means for implementing the Institutional Controls (ICs) and Engineering Controls (ECs) that are required by the Environmental Easement for the site.

EBC
ENVIRONMENTAL BUSINESS CONSULTANTS
1808 MIDDLE COUNTRY ROAD RIDGE, NY 11961 | PHONE 631.504.6000 FAX 631.924.2870

1.1.2 Purpose

The site contains contamination left after completion of the remedial action. Engineering Controls have been incorporated into the site remedy to control exposure to remaining contamination during the use of the site to ensure protection of public health and the environment. An Environmental Easement granted to the NYSDEC, and recorded with the Queens County Clerk, will require compliance with this SMP and all ECs and ICs placed on the site. The ICs place restrictions on site use, and mandate operation, maintenance, monitoring and reporting measures for all ECs and ICs. This SMP specifies the methods necessary ensure compliance with all ECs and ICs required by the Environmental Easement for contamination that remains at the site. This plan has been approved by the NYSDEC, and compliance with this plan is required by the grantor of the Environmental Easement and the grantor's successors and assigns. This SMP may only be revised with the approval of the NYSDEC.

This SMP provides a detailed description of all procedures required to manage remaining contamination at the site after completion of the Remedial Action, including: (1) implementation and management of all Engineering and Institutional Controls; (2) media monitoring; (3) operation and maintenance of all treatment, collection, containment, or recovery systems; (4) performance of periodic inspections, certification of results, and submittal of Periodic Review Reports; and (5) defining criteria for termination of treatment system operations.

To address these needs, this SMP includes three plans: (1) an Engineering and Institutional Control Plan for implementation and management of EC/ICs; (2) a Monitoring Plan for implementation of Site Monitoring; (3) an Operation and Maintenance Plan for implementation of remedial collection, containment, treatment, and recovery systems (including, where appropriate, preparation of an Operation and Maintenance Manual for complex systems).

This plan also includes a description of Periodic Review Reports for the periodic submittal of data, information, recommendations, and certifications to NYSDEC.
It is important to note that:

- This SMP details the site-specific implementation procedures that are required by the Environmental Easement. Failure to properly implement the SMP is a violation of the

environmental easement, which is grounds for revocation of the Certificate of Completion (COC);

- Failure to comply with this SMP is also a violation of Environmental Conservation Law, 6NYCRR Part 375 and the BCA Site # C-241103 for the site, and thereby subject to applicable penalties.

1.1.3 Revisions

Revisions to this plan will be proposed in writing to the NYSDEC's project manager. In accordance with the Environmental Easement for the site, the NYSDEC will provide a notice of any approved changes to the SMP, and append these notices to the SMP that is retained in its files.

1.2 SITE BACKGROUND

1.2.1 Site Location and Description

The Site is located in the County of the Queens, New York, and is identified as Block 9281, and Lot 44 on the Queens Borough Tax Map (see **Figure 1** - Location Map). The Site is situated on an approximate 75,230 square foot (1.72-acre) area bounded by residential properties and 127th Street to the west, a residential lot to the north, Jamaica Avenue to the south and the Long Island Railroad-Ronkonkoma Line to the east (**Figure 2**).

1.2.2 Site History

Sanborn Maps dating back to 1901 show the property to be developed with a 2-story residential building in the south-central portion of the site. By 1911, three 1-story commercial buildings are shown in the western area of the property and are labeled as stores. The 1925 map shows the addition of two 1-story and one 2-story residential buildings in the southeastern portion of the site. In 1929, the main building was constructed in the central portion of the site and operated as a commercial laundry. By 1942, only the 2-story residence remains. A small 1-story building labeled as a store is now present east of the residence and a larger 1-story building labeled "auto collision" is shown north of the residences. Four gasoline tanks are shown near the store in the southeast corner of the property.

According to the Phase I prepared by GCE (10/04), UFI has occupied the Site since at least 1957. By 1963, the 2-story residential building is being utilized as a filling station. By 1981, the filling station

EBC
ENVIRONMENTAL BUSINESS CONSULTANTS
1808 MIDDLE COUNTRY ROAD | PHONE 631.504.6000
RIDGE, NY 11961 | FAX 631.924.2870

building is labeled as an office building. The auto collision building, 2-story office building, and the commercial laundry building remain unchanged through 1988. In the 1990 map the auto collision building and office building are gone and a large addition is added to the laundry building in the southeast area of the site. According to the GCE Phase I, UFI ceased operations at the Site in 2002.

Previous environmental reports indicate that fuel oil, mop oil, mineral spirits, Stoddard solvent, and Varsol solvent have been historically stored on the Site. According to the Remedial Investigation Report prepared by Environmental Liability Management, LLC (12/09), UFI used tetrachloroethene (PCE) in a dry cleaning machine from 1992 and 1997.

According to the NYSDEC Spills Database, two spill numbers are associated with the Site. Spill No. 91-01477 (reported on May 6, 1991), was related to the tank test failure of a 3,000 gallon underground storage tank. The database indicates that the spill was closed on March 7, 2003, as a result of no new information. The spill file references a second spill, No. 02-08119. The second spill is related to a tank test failure of a 6,000 gallon fuel oil underground storage tank. Contaminated soil was later discovered around the fill lines of a mineral oil underground storage tank and a diesel underground storage tank. This spill remains open.

1.2.3 Geologic Conditions

Based upon the results of previous investigations conducted at the site and upon recent soil borings advanced at the site for geotechnical analysis and during the Supplemental Investigation, subsurface materials at the site are as follows:

Historic fill materials in the upper 6 inches to 2 feet of the soil column. Historic fill contains fragments of asphalt, brick and wood, with some ash materials in a silty-sand matrix.

Non-native backfill materials to a depth of 15 feet within the former UST area in the western parking area and to a depth of 20 feet within the former UST area in the east central part of the Site. Non-native backfill consists of poorly sorted sand and silt with fine gravel and small to large cobbles. Native soils are present directly beneath the historic fill layer. Native soils are composed of fine to coarse sand with varying amounts of fine to coarse gravel and cobbles. According to the RIR, cobbles and boulders appear to be more commonly encountered between 19 and 25 feet below the surface.

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The RIR also describes soils below approximately 42 to 45 feet as fine to coarse sand, with small amounts of fine gravel present to approximately 50 feet. These sands generally become finer and better sorted with depth, and extend to a depth of approximately 115 feet. The RIR reports a clay layer from 115 to at least 120 feet.

Groundwater at the Site is present at a depth of 38 to 40 feet below the surface and generally flows in a southwesterly direction. A geologic section is shown in **Figure 3**. A groundwater flow figure is shown in **Figure 4**.

1.3 SUMMARY OF REMEDIAL INVESTIGATION FINDINGS

A Remedial Investigation (RI) was performed to characterize the nature and extent of contamination at the site. The results of the RI are described in detail in the following reports:

The Remedial Investigation (RI) of the Site was performed by Environmental Liability Management, LLC (ELM) on behalf of the former property owner, UFI. The field work portion of the RI was performed from November 2008 through February, 2009. ELM documented the results of the RI in a Remedial Investigation Report (RIR) dated April 16, 2010 (revised August 13, 2010). The RIR was accepted and approved by the NYSDEC in a letter dated August 30, 2010.

The purpose of RI was to gather additional data to evaluate the presence and extent of chlorinated hydrocarbons, (identified as the primary compounds of concern in the subsurface), delineate the vertical and horizontal extent of petroleum constituents in soil and groundwater (identified as secondary compounds of concern), and assess the exposure risk of contaminants released into the environment. The RI performed by ELM, and as described in the RIR, was "designed to characterize the nature and extent of on-site and off-site related impacts to media of concern and support an analysis of remedial alternatives and selection of a remedy in conjunction with a construction specific remedial objective."

The RI performed by ELM included the following tasks:

- Performance of a geophysical survey to identify subsurface structures such as drainage pools and phantom USTs, identify drainage and utility lines and to identify previously excavated (disturbed) areas of the Site;

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- Sampling of all existing monitoring wells and analysis of groundwater samples for VOCs;
- The installation and sampling of 12 soil vapor probes to evaluate soil gas concentrations of VOCs;
- The installation of seven soil borings ranging in total depth from 64 to 119 feet;
- The collection of groundwater samples from multiple levels within the soil borings;
- The installation and sampling of three additional permanent monitoring wells;
- The analysis of soil and groundwater samples using a field portable gas chromatograph and a fixed base laboratory.

1.3.1 Soil

The soil boring program did not identify primary (PCE and TCE) compounds of concern (COCs) in vadose zone or saturated zone soils above Part 375 Restricted Residential Soil Cleanup Objectives (RRSCOs) during the investigation. Primary COCs were detected in vadose zone above unrestricted objectives in a single boring (B13) at a depth of 18 feet below surface. Primary COCs were not detected in saturated soils during the investigation.

Secondary (petroleum-VOC) Petroleum VOCs were detected above Restricted Residential SCOs in saturated zone soils in the former north-central UST area and in the northeastern portions of the site. The VOCs detected above RRSCOs were limited to 1,2,4-Trimethylbenzene in three borings (B13, B15, B19) within the former UST area and 1,2,4-Trimethylbenzene and 1,3,5-Trimethylbenzene in one boring (B16) in the vicinity of the former DW4 drywell in the northern part of the Site. Summary tables of soil results from the Remedial Investigation are provided in **Attachment A**.

1.3.2 Groundwater

The sampling of existing monitoring wells identified groundwater VOC concentrations in both on-site and off-site wells above NYSDEC Technical and Operational Guidance Series Ambient Water Quality Standards for groundwater (AWQS). Two of the on-site wells, MW8 and MW11, contained liquid phase hydrocarbons (LPH) at the time of the sampling event and, as such, groundwater samples were not obtained from these locations. Primary COCs were detected above standards in all 10 of the wells sampled. Total primary COC concentrations ranged from 9 µg/L in MW7 in the northern corner of the site to 1,474 µg/L in MW1 within the former central UST area. Secondary COCs were reported above

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standards in 7 of the 10 wells sampled with total concentrations ranging from 12 µg/L in MW4 near the southwest property line to 2,381 µg/L in MW1.

Secondary COCs above standards were also reported in the temporary vertical profile borings at a depth of 67 feet in the northeastern area of the site, with concentrations dropping vertically with depth, yet still exceeding standards at a depth of 78 feet. Summary tables of groundwater results from the Remedial Investigation are provided in **Attachment A**.

1.3.3 Soil Vapor

The soil vapor sampling program included the collection of 4 sub-slab samples within the building and 8 soil gas samples collected around the building exterior within the east and west parking areas and near the north loading dock area. Sub-slab samples were collected directly beneath the slab while exterior soil gas samples were collected from implants installed to a depth of 5 feet below the surface. Chlorinated VOCs (CVOCs) were detected in all 4 subslab samples and in all 8 soil gas samples. Petroleum VOCs (PVOCs) were not detected in any of the samples. CVOC concentrations ranged from 115.9 in the southwest corner of the property to a high of 5,290,000 in the vicinity of the former central area USTs. Elevated CVOC concentrations were also reported in the vicinity of the drainage structures in the eastern parking area, beneath the building slab in the southeastern corner of the building, and in the northern corner of the site.

ELM concluded that the elevated soil vapor concentrations underneath the southern portion of the building and in the northern corner of the property appear to mainly be the artifacts of former incidental releases and site operations over the extended operating history of the facility. Summary tables of soil vapor results from the Remedial Investigation are provided in **Attachment A**.

1.3.4 Underground Storage Tanks

The property is identified in the NYSDEC Petroleum Bulk Storage database as Facility Site No. 2-248541. The facility status is listed as unregulated. The database lists thirteen tanks registered for the Uniforms for Industry facility. The tanks listed include: two 6,300 gallon underground storage tank (UST) (one fuel oil, one "other"), one 7,500 gallon UST (fuel oil), three 2,000 gallon UST ("other"), three 3,000 gallon USTs (2 "other", 1 "invalid material"), one 6,000 gallon UST ("empty") and three

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1,500 gallon USTs ("empty"). Eleven of the thirteen tanks are listed as closed - removed. Two of the 3,000 gallon tanks are listed as "closed prior to 3/1991".

1.4 SUMMARY OF REMEDIAL ACTIONS

The Site was remediated in accordance with the remedy selected by the NYSDEC in the RAWP dated December 2010 and RAWP amendment dated January 26, 2011.

The factors considered during the selection of the remedy are those listed in 6NYCRR 375-1.8. The following are the components of the selected remedy:

1. Excavation of the upper 15 to 20 ft of soil exceeding Restricted Residential SCOs in three identified CVOC hot-spot areas.
2. Additional horizontal excavation of the three identified CVOC hot-spot areas to remove all PVOC/CVOC impacted soil above Restricted Residential SCOs in the upper 15 ft of the soil column. Additional excavation of CVOC impacted soil below Restricted Residential SCOs to reduce CVOC's in soil gas. Segregation and classification for off-Site disposal of residual petroleum, PVOC or CVOC affected soil encountered during excavation of the basement areas.
3. Additional excavation if post-excavation soil sampling demonstrates that Restricted Residential SCOs have not been met.
4. Excavation and off-Site disposal of historic fill materials above Restricted Residential SCOs within the top 2 feet of soil, if removed during construction excavation/site grading or if present in planned landscaped/exposed soil areas.
5. Screening for indications of contamination (by visual means, odor, and monitoring with PID) of all excavated soil during all intrusive Site work.
6. Site Monitoring of airborne VOCs and particulates in accordance with a NYSDEC and NYSDOH approved CAMP and HASP during all intrusive and soil handling activities.
7. Implementation of proper dust and odor suppression techniques during all intrusive and soil handling activities. Appropriate off-Site disposal of all material removed from the Site in accordance with all Federal, State and local rules and regulations for handling, transport, and disposal.

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8. Import of materials to be used for backfill and cover in compliance with: (1) the Sub-part 375-6.7(d), (2) all Federal, State and local rules and regulations for handling and transport of material.
9. Collection and analysis of confirmation soil samples to evaluate the performance of the remedy with respect to attainment of Restricted Residential SCOs (**Table 1**).
10. Investigation and removal of drainage structures, surface drains and related piping and proper closure in accordance with the USEPA UIC regulations.
11. The injection of a chemical oxidant solution to remediate the contaminated groundwater beneath the Site. Chemical oxidants will be injected through pvc injection points installed into the water table. Oxidant injection wells to be registered with the USEPA.
12. The collection and analysis of additional information as needed to finalize the design of the chemical oxidant injection program.
13. Installation of a vapor barrier and SSDS beneath all basement areas which will not be required to have continuous mechanical ventilation.
14. Post-remediation groundwater monitoring for a minimum of two years.
15. Post-remediation evaluation of potential soil vapor intrusion concerns.
16. Recording of an Environmental Easement, including Institutional Controls, to prevent future exposure to any residual contamination remaining at the Site.
17. Publication of a Site Management Plan for long term management of residual contamination as required by the Environmental Easement, including plans for: (1) Institutional and Engineering Controls, (2) monitoring, (3) operation and maintenance and (4) reporting.
18. All responsibilities associated with the Remedial Action, including permitting requirements and pretreatment requirements, will be addressed in accordance with all applicable Federal, State and local rules and regulations.
19. Remedial activities will be performed at the Site in accordance with the NYSDEC-approved RAWP.

Remedial activities including the excavation and removal of drainage structures, underground storage tanks, hot-spot areas and historic fill were completed at the site in October 2011. Installation of the vapor barrier and venting system was completed in November 2012. Installation of the monitoring network and chemical oxidant injection points were completed in December 2012. Oxidant injections and groundwater monitoring are expected to continue for a two year period.

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1.4.1 Leaching Pool Remediation and Removal

EBC submitted a Class V Drywell Closure Plan to the USEPA Region 2 office for approval prior to commencement of leaching pool remediation and removal activities. The USEPA approved the work plan by letter dated February 23, 2011. Leaching pool remediation and removal was performed by American Environmental Assessment Corp., (a remediation contractor) in accordance with the USEPA approved Class V Drywell Closure Plan.

Work commenced by removing the pre-cast concrete slab covering each leaching pool. The storm water contained within each of the leaching pools was then removed with a vacuum tanker truck. The laboratory results of the liquid samples collected from the leaching pools as part of the Supplemental Investigation performed to prepare the Remedial Action Work Plan (EBC, December 2011) indicated the storm water was suitable for disposal at a municipal waste water treatment plant. A total of approximately 14,000 gallons of storm water was removed and transported to a wastewater treatment plant (WWTP) for proper disposal by A&L Cesspool Service.

Soil/sediment was then removed from the base of each of the leaching pools by American Environmental Assessment, Corp. utilizing both a Guzzler truck and backhoe. Soil/sediment was removed from the base of each of the leaching pools until visibly clean soil was encountered. A total of approximately 243.1 tons of sludge/sediment was removed from the base of the leaching pools and transported to the 110 Sand Company landfill located on Bethpage-Spagnoli Road in Melville, New York.

Each of the pre-cast concrete rings and any lids, footings or bases (if present) were removed from the ground and broken into pieces small enough to load into 10-wheel dump trucks. The concrete was later transported along with concrete and brick remnants of the former onsite buildings to to T.M. Maintenance, Inc. of 451 Spencer Street, Staten Island, NY. T.M. Maintenance, Inc. is a NYSDEC Registered Active Construction and Demolition Debris Processing Facility permitted to accept uncontaminated concrete, brick and soil.

A total of approximately 359 tons of virgin mined sand was imported to the site from 110 Sand Company to backfill the excavations left by removing the leaching pools on the east side of the site. The leaching pool excavations on the west side of the site were not backfilled because the area required

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1808 MIDDLE COUNTRY ROAD RIDGE, NY 11961 | PHONE 631.504.6000 FAX 631.924.2870

excavation for installation of the new building and would require re-excavation at a later date. Prior to import of the virgin mined sand to the site, a letter was obtained from 110 Sand Company that certified the material as a virgin material that at no time came in contact with other materials that may not meet the definition of virgin material.

1.4.2 Underground Storage Tank Removal

On May 12, 2011, during site excavation for the installation of shoring along the southern property line, four 550-gallon underground storage tanks (USTs) were found in Grid Section G7. Each of the four 550-gallon USTs were found to contain only water, but a slight gasoline odor was observed. The four 550-gallon USTs are believed to be the same four gasoline tanks noted on the 1951 Sanborn map. One additional 275-gallon UST was found on May 13, 2011, in Grid Section D5 while excavating for the new building. The 275-gallon UST contained no liquid, but was partially filled with No. 2 fuel oil sludge.

On May 17, 2011, American Environmental Assessment Corp. was onsite to cut, clean and remove each of the USTs. American Environmental Assessment Corp. utilized a pump truck to remove the water from the four 550-gallon USTs. A total of 1,867 gallons of water was removed from the four 550-gallon USTs and transported to Clean Water of New York, of 3249 Richmond Terrace, Staten Island, NY, 10303, for proper offsite disposal. All 5 USTs were then removed from the ground, cut open, cleaned and loaded into a 10-wheel dump truck for disposal. One 55-gallon drum steel drum of tank sludge, speedy dry and oil absorbent pads was generated by cleaning the interior of the USTs. The 55-gallon drum was transported to Chemical Pollution Control of 120 South 4th Street, Bayshore, NY, 11706 for proper offsite disposal.

EBC field screened the soil beneath each of the four 550-gallon USTs for evidence of contamination. No soil staining, odor or PID values above background concentrations were observed. EBC collected one endpoint soil sample from immediately below each of the four 550-gallon USTs. In addition, EBC collected 6 soil samples from the sidewalls of the excavation. No VOCs or SVOCs were detected above unrestricted Soil Cleanup Objectives (SCOs) in any of the endpoint soil samples.

Evidence of petroleum contaminated soil was noted around the 275-gallon UST removed from Grid Section D5. The soil contamination appeared to be limited to approximately 4 or 5 feet below the

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1808 MIDDLE COUNTRY ROAD RIDGE, NY 11961 | PHONE 631.504.6000 FAX 631.924.2870

bottom of the tank and was excavated removed. EBC collected two endpoint soil samples following excavation of the area for the basement foundation walls. Since the area to the north, south and east were already excavated to 15 feet below grade, EBC collected one endpoint soil sample from the base of the excavation and one sidewall soil sample. No VOCs or SVOCs were detected above their corresponding unrestricted SCOs in any of the endpoint soil samples.

The five USTs removed by American Environmental Assessment Corp. were not registered for the Uniforms for Industry, Inc. site (NYSDEC PBS Number 2-248541). Therefore, all five USTs were registered and deregistered under the same PBS number, by filing a NYSDEC PBS Application and noting "Closed-Removed" for the tank status for each tank. In accordance with New York City regulations, American Environmental Assessment Corp. filed a tank removal affidavit with the New York City Fire Department (NYCFD).

1.4.3 Removal of Contaminated Materials from the Site

Hot Spot PCE and Petroleum Contaminated Soil Excavation and Disposal

Three CVOC "Hot-Spot" areas were identified at the Site. The three areas included two adjacent areas along a subsurface drainage pipe located in the east parking area. The first "Hot-Spot" was identified below a repair in the subsurface drainage line which ran from a distribution box to leaching pool DW1. The second "Hot-Spot" was identified as the distribution box, which connected leaching pool DW1, roof drains from the rear of the building and the building converge. The third was located adjacent to the central tank area and extended under the former building.

During the course of excavation for the foundation of the new building, EBC identified a fourth and fifth "Hot-Spot". The fourth "Hot-Spot" was identified after removing stockpiled material along the east side of the property and the fifth hot spot area was identified while excavating for the east foundation footings.

The concentrations of tetrachloroethylene (PCE), trichloroethene (TCE), and cis-1,2-dichloroethene within the waste characterization soil samples collected from each of the hotspot locations were below the soil "contained in" action level and the Land Disposal Restriction concentration. The NYSDEC issued Contained-In Determination letters for this material stating that it did not have to be managed as

hazardous waste and could be transported off-site to the New Jersey Middlesex County Utilities Authority Subtitle "D" Landfill (MCUA Landfill) at 53 Edgeboro Road, East Brunswick, NJ 08816.

As previously noted, each of the four separate soil piles generated by excavating Hot-Spot 1, Hot-Spot 2, and Hot-Spot 3, as well as the soil piles generated by excavating Hot-Spots 4 and 5 were issued a "Contained-In" Determination by the NYSDEC, permitting transport of the soil to the MCUA Landfill. The laboratory results of each of the soil piles were forwarded to Soil Safe, Inc. to obtain soil disposal approval at the MCUA Landfill. The total quantity of soil transported to the MCUA Landfill from Hot-Spot 1, Hot-Spot 2, Hot-Spot 3 and Hot-Spot 4 was approximately 4,654.87 tons. Due to elevated levels of TPH DRO, the MCUA Landfill could not accept soil from Hot Spot 5 at the facility. Approximately 241.5 tons of non-hazardous soil from Hot-Spot 5 was therefore shipped to the Clean Earth of North Jersey facility in Kearny, NJ.

Historic Fill Excavation and Disposal

Soil characterized by EBC personnel as Historic Fill during excavation of the site for construction of the new building was found throughout the site from varying depths, ranging from slightly below grade to fifteen feet below grade. EBC personnel characterized historic hill as soil that contained materials such as brick, concrete, glass or ceramics, cinder, etc. In addition, all soil that exhibited evidence of petroleum impact (staining, odor, elevated PID values), whether encountered within the historic fill layer or within the native soil layer, was characterized as historic fill. As soil was excavated, EBC assigned a classification to the soil (historic fill or clean native soil), and the excavation contractor (Maxx Construction), stockpiled the soil according to the classification in soil piles approximately 800 cubic yards. Each historic fill pile was stockpiled on poly sheeting to await waste characterization soil sampling and soil disposal approval.

Historic fill soil was characterized as non-hazardous and disposed of at the Clean Earth of Carteret facility in Carteret, NJ. A total of 13,808.72 tons of non-hazardous soil from the historic fill piles was transported to the Clean Earth of Carteret facility for proper offsite disposal.

Due to the presence of a slightly elevated PCE concentration (2,700 µg/kg) within one of the Stockpiles (No. 11), the soil was deemed unsuitable for soil recycling and transport to the Clean Earth of Carteret facility. The NYSDEC issued a "Contained-In" Determination for stockpile No. 11 this

material was transported to the MCUA Landfill located at 53 Edgeboro Road, East Brunswick, NJ 08816.

A list of the soil cleanup objectives (SCOs) for the primary contaminants of concern (COCs) and applicable land use for this site is provided in **Table 1**. A figure showing areas where excavation was performed is shown in **Figure 5**.

Clean Native Soil Removal

Clean native soil was evaluated by EBC personnel based upon field screening results, which included visual and olfactory inspection, and the collection of multiple PID readings. Clean native soil was encountered throughout the site beneath the layer of soil characterized as Historic Fill at depths as low as 3 below grade, and extended to the final excavation depth required for each area. As soil was excavated, EBC assigned a classification to the soil (historic fill or clean native soil), and the excavation contractor (Maxx Construction), stockpiled the soil according to the classification in soil piles approximately 800 cubic yards. Each Clean Native Soil Pile was stockpiled on poly sheeting to await waste characterization soil sampling and soil disposal or onsite reuse approval.

A total of 359 loads of clean native soil and concrete were transported to T.M. Maintenance, Inc. and All City Recycling.

1.4.4 Import of Backfill

Approximately 735 cubic yards of recycled concrete aggregate (RCA) was imported to the Site for backfill and underlayment. This material was obtained from South Island Industries located on Rason Road in Inwood, NY. South Island Industries is a C&D processing facility registered with the NYSDEC.

In addition, approximately 950 cubic yards of virgin mined sand and 300 cy of certified clean topsoil was imparted to the Site for green areas. The virgin mined sand was obtained from Roanoke industries on Patchogue-Mid Island Road in Middle Island, NY. Top soil was obtained from Demo Busters located on Mill Road in Yaphank, NY.

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1.4.5 Site-Related Treatment Systems

In-situ Chemical Oxidant Injection Program

The remedial plan for the Site includes the injection of a chemical oxidant solution to address affected groundwater and residual petroleum VOC contamination in soil at the water table. Chemical oxidant injection is intended to significantly reduce the CVOCs and PVOCs in the high concentration areas, and thereby accelerate improvements in groundwater quality.The area of injection is within, and upgradient of, the former central UST area which was the primary source of PVOC contamination at the Site. Injections at this location will deliver oxidant through residual soil contamination in this area, allowing it to flow southwest with groundwater treating both the CVOC and PVOC plume. A second injection area is located approximately 150 ft southwest of the central tank area and is designed to treat the downgradient portion of the plume. Both injection areas are located outside of the new buildings allowing injections to proceed during and after building construction as necessary.

Twenty-two injection points installed upgradient of the primary source areas and in the downgradient plume area as shown on **Figure 6** Injection points were constructed of 2 inch pvc with a 10 ft 0.050-inch slot screened section installed 8 ft below the water table, and 2 ft above the water table. A No. 2 morie gravel back was placed around the screen to a depth of approximately 1 ft above the screen followed by a 1 ft hydrated bentonite pellet seal. The injection wells were then finished at grade with an 8-inch bolt down manhole to protect the wells. Injection wells were registered with the USEPA by filing form 7520-6 with the USEPA Region 2 office.

The oxidant selected for this project is high pH-activated sodium persulfate. Sodium persulfate is a robust oxidant which has a long residence time (anion lifetime) in the subsurface. Persulfate activation through high pH provides fast contaminant reaction kinetics capable of destroying a wide range of organics including the PVOCs and CVOCs present at the Site.

Sodium persulfate will be delivered to the site as a dry powder which will be mixed with water on-site to provide a 20% solution. Sodium hydroxide (NaOH) will be delivered to the site as a 25% solution and added to the persulfate solution at a rate of 0.4 gallons of 25% NaOH solution per gallon of 20% persulfate solution.

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The initial injection consisted of approximately 100 gallons of activated persulfate solution per injection point. The need for subsequent injections and the number and location of injection points to be utilized for subsequent injections will be determined following the collection and analysis of performance monitoring samples.

Chemical oxidant treatment will continue as needed to achieve further significant reduction of VOCs in groundwater at the site. The decision to perform subsequent oxidant applications will be based on performance sampling results and will be made in concurrence with the NYSDEC project manager.

1.4.6 Remaining Contamination

This Section describes remaining contamination at the Site beneath the impervious cover and/or the demarcation barrier in pervious areas, to serve as a guide to environmental conditions that may be encountered during potential future excavation activities at the Site.

The results of the RI and end point soil samples collected after the removal of hot-spot soils, confirms that that no contamination remains in soil beneath the property to a depth of 15 feet below the surface and that all soil above 15 meet meets restricted residential SCOs.

The remaining contamination at the Site above restricted residential SCOs consists of 1,2,4 and 1,3,5-trimethylbenzene within the former central UST area and in the rear area of the property at depths of 35 to 52 feet below the surface. Additional petroleum VOCs were also reported in both areas above unrestricted criteria.

PCE above restricted residential SCOs also remains within hot spot 5 at a depth of 18 feet below the surface. **Table 2** and **Figure 7** summarizes RI and endpoint soil sample analytical results which represent remaining soil exceeding unrestricted and restricted residential SCOs following the excavation. All soil at the site which remains above unrestricted SCOs is either capped with the concrete building slab, concrete sidewalks, asphalt roadway / parking areas or two feet of certified clean fill / topsoil.

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2.0 ENGINEERING AND INSTITUTIONAL CONTROL PLAN

2.1 INTRODUCTION

2.1.1 General

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

A summary of the remedial strategies and EC/ICs implemented at the Site are as follows:

- Excavation of soils exceeding Track 2 Restricted Residential SCOs within the top 15 feet of soil at the site;
- Installation of an engineered cap / cover system consisting of concrete building slabs and sidewalks, asphalt paving of roadways and parking areas and 24 inches of certified clean fill / topsoil with the exposed soil areas (landscaped areas, recreation areas) of the Site.
- Treatment of groundwater with chemical oxidant injections;
- Installation of a vapor barrier and operation of a sub-slab depressurization system beneath the Phase I building;
- Implementation of a Site Management Plan; and
- Registration of an Environmental Easement, including Institutional Controls, to prevent future exposure to any contamination remaining at the Site

2.1.2 Purpose

This plan provides:

- A description of all EC/ICs on the site;
- The basic implementation and intended role of each EC/IC;
- A description of the key components of the ICs set forth in the Environmental Easement;

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- A description of the features to be evaluated during each required inspection and periodic review;
- A description of plans and procedures to be followed for implementation of EC/ICs, such as the implementation of the Excavation Work Plan for the proper handling of remaining contamination that may be disturbed during maintenance or redevelopment work on the site; and
- Any other provisions necessary to identify or establish methods for implementing the EC/ICs required by the site remedy, as determined by the NYSDEC.

2.2 ENGINEERING CONTROLS

2.2.1 Engineering Control Systems

2.2.1.1 Soil Cover / Cap

Exposure to remaining contamination in soil/fill at the site is prevented by a soil cover system placed over the site. This cover system is comprised of a minimum of 24 inches of clean soil and demarcation barrier within the exposed soil areas of the Site, asphalt pavement, concrete-covered sidewalks, and concrete building slabs (see **Figure 8**). The Excavation Work Plan that appears in **Attachment B** outlines the procedures required to be implemented in the event the cover system is breached, penetrated or temporarily removed, and any underlying remaining contamination is disturbed. Procedures for the inspection and maintenance of this cover are provided in the Monitoring Plan included in Section 4 of this SMP.

2.2.1.2 Sub-slab Depressurization System

An SSDS and vapor barrier were designed and incorporated into the new building plans for the Phase I building. This building has full basement level which extends under the entire footprint of the building. The basement level houses the mechanical room, and tenant's storage rooms and will not be used for residential apartments.

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An SSDS is not required beneath the Phase II building since the basement level of this building will be used as a parking garage which must be ventilated to remove vehicle fumes in accordance with the NYC Mechanical Code.

The SSDS beneath the Phase I basement level consists of three separate venting zones. Each zone provides coverage of between 3,600 to 4,000 sf of slab area. The horizontal vent line is constructed of a continuous loop of perforated 4-inch HDPE pipe. In each zone the horizontal pipe extends to an adjacent utility chase-way where it is piped individually to the roof via a 6-inch schedule 40 pvc line. Fill material around the horizontal vent piping is virgin-mined, ½ inch to ¾ inch gravel.

A high density polyethylene vapor barrier liner (HPDE) was installed beneath both buildings prior to pouring the concrete slab. The vapor barrier consists of a 20 mil HDPE geomembrane liner manufactured by GSE Lining Technologies of North America. The vapor barrier extends throughout the area occupied by the footprint of each of the new buildings. In addition, a minimum of 15 mil liquid membrane consisting of Procor 75 as supplied by Grace Waterproofing Products was installed on all vertical foundation walls with the exception of the foundation wall along Jamaica Avenue in which a 15 mil HDPE membrane was installed. All seams and perforations in the vapor barrier were sealed using tape as supplied by the manufacturer and a liquid membrane sealer.

Procedures for operating and maintaining the SSD system are documented in the Operation and Maintenance Plan (Section 4 of this SMP). Procedures for monitoring the system are included in the Monitoring Plan (Section 3 of this SMP). The Monitoring Plan also addresses severe condition inspections in the event that a severe condition, which may affect controls at the site, occurs.

Detailed specifications of the SSD system are provided **Attachment C**.

2.2.2 Criteria for Completion of Remediation/Termination of Remedial Systems

Generally, remedial processes are considered completed when effectiveness monitoring indicates that the remedy has achieved the remedial action objectives identified by the decision document. The framework for determining when remedial processes are complete is provided in Section 6.6 of NYSDEC DER-10.

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2.2.2.1 Composite Cover System

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

2.2.2.2 Sub-slab Depressurization System (SSDS)]

The active SSD system will not be discontinued unless prior written approval is granted by the NYSDEC. In the event that monitoring data indicates that the SSD system is no longer required, a proposal to discontinue the SSD system will be submitted by the property owner to the NYSDEC and NYSDOH.

2.3 Institutional Controls

A series of Institutional Controls is required by the RAWP to: (1) implement, maintain and monitor Engineering Control systems; (2) prevent future exposure to remaining contamination by controlling disturbances of the subsurface contamination; and, (3) limit the use and development of the site to restricted residential uses only. Adherence to these Institutional Controls on the site is required by the Environmental Easement and will be implemented under this Site Management Plan. These Institutional Controls are:

- Compliance with the Environmental Easement by the Grantor and the Grantor's successors and assigns with all elements of this SMP;
- All Engineering Controls must be operated and maintained as specified in this SMP;
- A composite cover system consisting of asphalt covered roads, concrete covered sidewalks, and concrete building slabs must be inspected, certified and maintained as required in this SMP;
- A soil vapor mitigation system consisting of a sub-slab depressurization system / vapor barrier under the occupied area of the building must be inspected, certified, operated and maintained as required in this SMP;
- All Engineering Controls on the Controlled Property must be inspected and certified at a frequency and in a manner defied in the SMP.
- Groundwater, soil vapor, and other environmental or public health monitoring must be performed as defined in this SMP;
- Data and information pertinent to Site Management for the Controlled Property must be

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reported at the frequency and in a manner defined in this SMP;

- On-Site environmental monitoring devices, including but not limited to, groundwater monitor wells and soil vapor probes, must be protected and replaced as necessary to ensure the devices function in the manner specified in this SMP.
- Engineering Controls may not be discontinued without an amendment or the extinguishment of this Environmental Easement.

Institutional Controls identified in the Environmental Easement may not be discontinued without an amendment to or extinguishment of the Environmental Easement.

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

- The property may only be used for restricted residential use provided that the long-term Engineering and Institutional Controls included in this SMP are employed.
- The property may not be used for a higher level of use, such as unrestricted use without additional remediation and amendment of the Environmental Easement, as approved by the NYSDEC;
- All future activities on the property that will disturb remaining contaminated material must be conducted in accordance with this SMP;
- The use of the groundwater underlying the property is prohibited without treatment rendering it suitable for intended use;
- Vegetable gardens and farming on the property are prohibited;
- The site owner or remedial party will submit to NYSDEC a written statement that certifies, under penalty of perjury, that: (1) controls employed at the Controlled Property are unchanged from the previous certification or that any changes to the controls were approved by the NYSDEC; and, (2) nothing has occurred that impairs the ability of the controls to protect public health and environment or that constitute a violation or failure to comply with the SMP. NYSDEC retains the right to access such Controlled Property at any time in order to evaluate the continued maintenance of any and all controls. This

certification shall be submitted annually, or an alternate period of time that NYSDEC may allow and will be made by an expert that the NYSDEC finds acceptable.

2.3.1 Excavation Work Plan

The site has been remediated for restricted residential use. Any future intrusive work that will penetrate the soil cover or cap, or encounter or disturb the remaining contamination, including any modifications or repairs to the existing cover system will be performed in compliance with the Excavation Work Plan (EWP) that is attached as **Attachment B** to this SMP. Any work conducted pursuant to the EWP must also be conducted in accordance with the procedures defined in a Health and Safety Plan (HASP) and Community Air Monitoring Plan (CAMP) prepared for the site. A sample HASP is attached as **Attachment D** to this SMP that is in current compliance with DER-10, and 29 CFR 1910, 29 CFR 1926, and all other applicable Federal, State and local regulations. Based on future changes to State and federal health and safety requirements, and specific methods employed by future contractors, the HASP and CAMP will be updated and re-submitted with the notification provided in Section A-1 of the EWP. Any intrusive construction work will be performed in compliance with the EWP, HASP and CAMP, and will be included in the periodic inspection and certification reports submitted under the Site Management Reporting Plan (See Section 5).

The site owner and associated parties preparing the remedial documents submitted to the State, and parties performing this work, are completely responsible for the safe performance of all intrusive work, the structural integrity of excavations, proper disposal of excavation de-water, control of runoff from open excavations into remaining contamination, and for structures that may be affected by excavations (such as building foundations and bridge footings). The site owner will ensure that site development activities will not interfere with, or otherwise impair or compromise, the engineering controls described in this SMP.

2.4 INSPECTIONS AND NOTIFICATIONS

2.4.1 Inspections

Inspections of all remedial components installed at the site will be conducted at the frequency specified in the SMP Monitoring Plan schedule. A comprehensive site-wide inspection will be conducted

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Ridge, NY 11961
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Fax 631.924.2870

annually, regardless of the frequency of the Periodic Review Report. The inspections will determine and document the following:

- Whether Engineering Controls continue to perform as designed;
- If these controls continue to be protective of human health and the environment;
- Compliance with requirements of this SMP and the Environmental Easement;
- Achievement of remedial performance criteria;
- Sampling and analysis of appropriate media during monitoring events;
- If site records are complete and up to date; and
- Changes, or needed changes, to the remedial or monitoring system;

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

If an emergency, such as a natural disaster or an unforeseen failure of any of the ECs occurs, an inspection of the site will be conducted within 5 days of the event to verify the effectiveness of the EC/ICs implemented at the site by a qualified environmental professional as determined by NYSDEC.

2.4.2 Notifications

Notifications will be submitted by the property owner to the NYSDEC as needed for the following reasons:

- 60-day advance notice of any proposed changes in site use that are required under the terms of the Brownfield Cleanup Agreement (BCA),.
- 7-day advance notice of any proposed ground-intrusive activities pursuant to the Excavation Work Plan.
- Notice within 48-hours of any damage or defect to the foundations structures that reduces or has the potential to reduce the effectiveness of other Engineering Controls and likewise any action to be taken to mitigate the damage or defect.
- Verbal notice by noon of the following day of any emergency, such as a fire, flood, or earthquake that reduces or has the potential to reduce the effectiveness of Engineering Controls

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in place at the site, with written confirmation within 7 days that includes a summary of actions taken, or to be taken, and the potential impact to the environment and the public.

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

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

- At least 60 days prior to the change, the NYSDEC will be notified in writing of the proposed change. This will include a certification that the prospective purchaser has been provided with a copy of the Brownfield Cleanup Agreement (BCA), and all approved work plans and reports, including this SMP
- Within 15 days after the transfer of all or part of the site, the new owner's name, contact representative, and contact information will be confirmed in writing.

2.5 CONTINGENCY PLAN

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

2.5.1 Emergency Telephone Numbers

In the event of any environmentally related situation or unplanned occurrence requiring assistance the Owner or Owner's representative(s) should contact the appropriate party from the contact list below. For emergencies, appropriate emergency response personnel should be contacted. Prompt contact should also be made to a qualified environmental professional. These emergency contact lists must be maintained in an easily accessible location at the site.

Emergency Contact Numbers

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

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Site Contact Numbers

Building Superintendant: To be Determined	(516) 313-8400
Owner Contact: Alex Arker	(516) 313-8400
Environmental Consultant: EBC	(631) 504-6000

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

2.5.2 Map and Directions to Nearest Health Facility

Site Location: 129-09 Jamaica Avenue, Richmond Hill, NY

Nearest Hospital Name: Jamaica Hospital Medical Center

Hospital Location: 8900 Van Wyck Expressway, Jamaica (Queens), New York 11418

Hospital Telephone: (718) 206-6000

Directions to the Hospital:

1. Head east on Jamaica Avenue for approximately 0.3 miles
2. Turn right heading south on the Van Wyck Expressway
3. Continue on Van Wyck Expressway 0.1 miles, hospital is on the right.

TOTAL DISTANCE: 0.4 MILES, ABOUT 5 MINUTES

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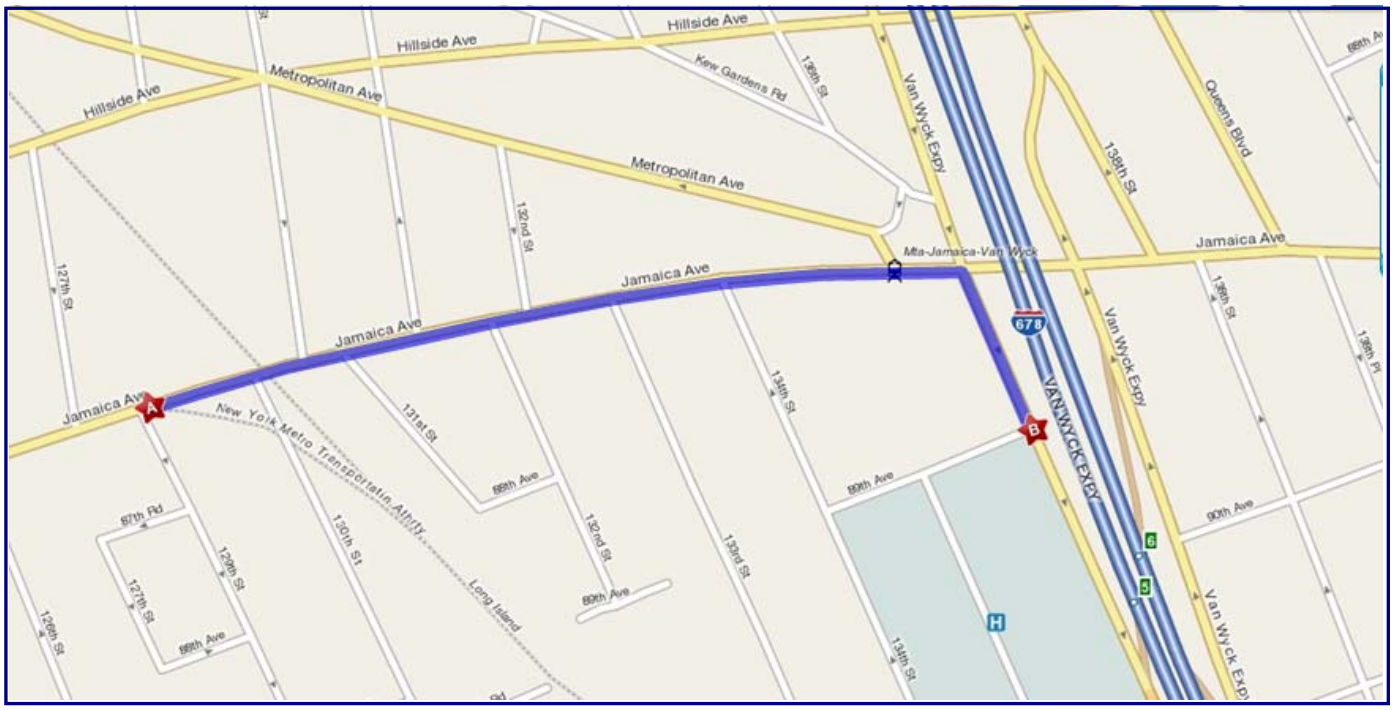
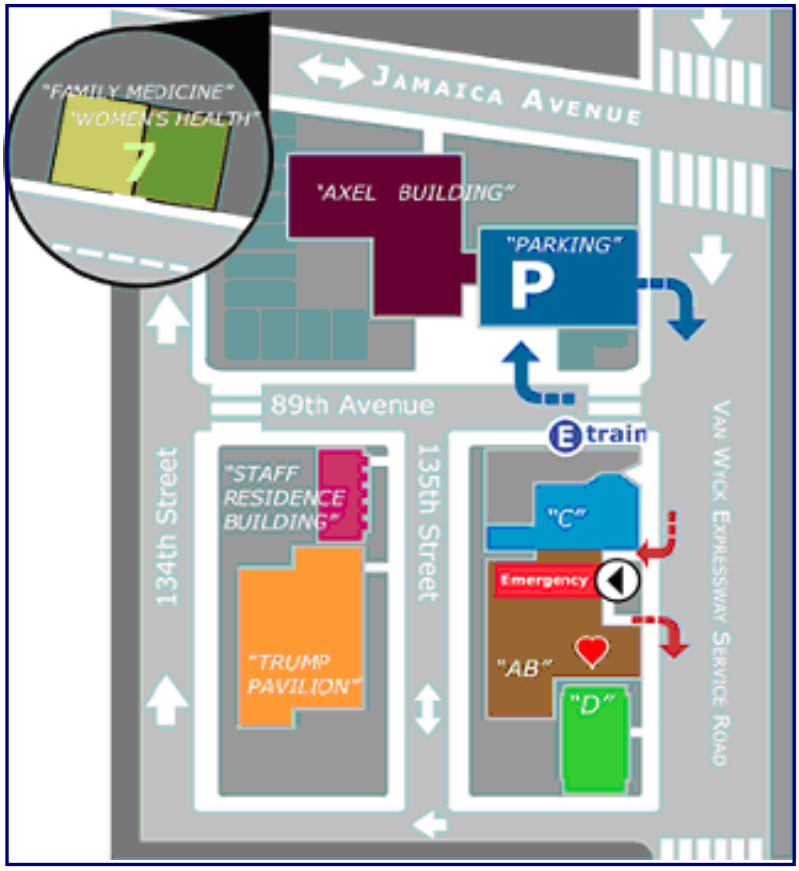
MAP SHOWING ROUTE FROM THE SITE TO THE HOSPITAL:





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2.5.3 Response Procedures

As appropriate, the fire department and other emergency response group will be notified immediately by telephone of the emergency. The emergency telephone number list is found at the beginning of this Contingency Plan. The list will also posted prominently at the site and made readily available to all personnel at all times.

All environmental releases shall be contained as close to the source as possible. Whenever possible, the MSDS will be consulted to assist in determining the best means of containment and cleanup. For small spills, sorbent materials such as sand, sawdust or commercial sorbents should be placed directly on the substance to contain the spill and aid recovery. Any acid spills should be diluted or neutralized carefully prior to attempting recovery. Berms of earthen or sorbent materials can be used to contain the leading edge of the spills. Drains or drainage areas should be blocked. All spill containment materials will be properly disposed. An exclusion zone of 50 to 100 feet around the spill area should be established depending on the size of the spill. The following steps should be taken by the Emergency Coordinator:

- Determine the nature, identity and amounts of major spill components;
- If a flammable liquid, gas or vapor is involved, remove all ignition sources and use nonsparking and/or explosive proof equipment to contain or clean up the spill (diesel only vehicles, air operated pumps, etc.);
- Make sure all unnecessary persons are removed from the spill area;
- Take action to stop or minimize the spill; such as shutting down equipment,
- Notify appropriate response teams and authorities;
- Use proper PPE in handling of the spill;
- If possible, try to stop the leak with appropriate material; and,
- Remove all surrounding materials that can react or compound with the spill.
- Ensure spilled material, containment material and PPE are contained for proper disposal.

In order to mobilize the manpower resources and equipment necessary to cope with a fire or other emergency, a clear chain of authority should be established. The local fire department will take charge of all emergency response activities and dictate the procedures that will be followed for the duration of

the emergency. The fire department will report immediately to the scene of the emergency, assess the seriousness of the situation, and direct whatever efforts are necessary until the emergency response units arrive. All project personnel will be instructed on proper emergency response procedures and locations of emergency telephone numbers. If an emergency occurs, including but not limited to fire, explosion or significant release of fuel, all heavy equipment will be shut down and all personnel will evacuate the work areas and assemble at an evacuation meeting point.

The emergency responders will give directions for implementing whatever actions are necessary. If traffic control is necessary, as in the event of a fire or explosion, a project team member, who has been trained in these procedures and designated at the Site safety meeting, will take over these duties until local police and fire fighters arrive. Any future amendments to the Contingency Plan will be included in this section.

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3.0 MONITORING PLAN

3.1 INTRODUCTION

3.1.1 General

The Monitoring Plan describes the measures for evaluating the performance and effectiveness of the remedy to reduce or mitigate contamination at the site, the soil cover system, and all affected site media identified below. Monitoring of other Engineering Controls is described in Chapter 4, Operation, Monitoring and Maintenance Plan. This Monitoring Plan may only be revised with the approval of NYSDEC.

3.1.2 Purpose and Schedule

This Monitoring Plan describes the methods to be used for:

- Sampling and analysis of all appropriate media (e.g., groundwater, indoor air, soil vapor, soils);
- Assessing compliance with applicable NYSDEC standards, criteria and guidance, particularly ambient groundwater standards and Part 375 SCOs for soil;
- Assessing achievement of the remedial performance criteria.
- Evaluating site information periodically to confirm that the remedy continues to be effective in protecting public health and the environment; and
- Preparing the necessary reports for the various monitoring activities.

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

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

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Quarterly monitoring of the performance of the chemical oxidant treatment program through groundwater sampling will be conducted while chemical oxidant treatment continues and for up to eight additional quarters after the treatment program has been completed. The frequency thereafter will be determined by NYSDEC. Trends in contaminant levels in air, soil, and/or groundwater in the affected areas, will be evaluated to determine if the remedy continues to be effective in achieving remedial goals. Monitoring programs are summarized in below and outlined in detail in Sections 3.2 and 3.3 below.

Monitoring/Inspection Schedule

Monitoring Program	**Frequency***	**Matrix**	**Analysis**
SSDS	at system start-up and system re-start	air	pressure/vacuum readings
SSDS	Annual	air	Inspection of system components and test alarm function
Composite Cover	Annual	Soil	Visual Inspection of concrete, asphalt caps and soil cover
Groundwater Performance Monitoring	Quarterly	Groundwater	VOCs (EPA Method 8260), persulfate & pH
Monitoring Well Condition	Quarterly	Groundwater	Visual Inspection

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

3.2 SOIL COVER SYSTEM MONITORING

The composite cover system, including the concrete building slab and sidewalks, asphalt roadway / parking area and certified clean soil cap in green areas will be monitored to document existing conditions and ensure that no penetrations or damage has occurred which will affect cap / cover system integrity. The cover system is in place to prevent human exposure to remaining soil/fill above unrestricted objectives at Site. The cover system consists of impervious surfaces such as the concrete building slab and walkways and asphalt paved roadway and parking area. It also includes a soil cap within the landscaped / green areas which consist of a demarcation layer (orange plastic construction fencing) below a minimum of two feet of certified clean soil /fill.

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The cover system will be inspected at a minimum, once a year. The status, including the existing condition and evidence of breaching will be observed and recorded. The location of the various types of cover systems is illustrated in **Figure 8**.

3.3 MEDIA MONITORING PROGRAM

3.3.1 Groundwater Monitoring

Groundwater monitoring will be performed on a periodic basis to assess the performance of the remedy. The network of monitoring wells has been installed to monitor both up-gradient and down-gradient groundwater conditions at the site. The network of on-site wells has been designed based on the following criteria:

- The pattern of groundwater flow from the northeast area of the site to the southwest. (See **Figure 4**);
- Provide downgradient coverage of the chemical injection well network;
- Provide downgradient coverage of the former location of identified source areas (i.e. central USY and hotspot areas);
- The concentration distribution of VOCs in groundwater across the site (**Figure 9**); and
- To provide coverage of upgradient areas, downgradient areas and former source areas as previously defined.

The monitoring well network consists of nine wells including three upgradient wells located along the northeast property line, four interior area wells downgradient of the source area to monitor the performance of the chemical injections and two wells located at the downgradient property line along Jamaica avenue and 129th Street.

All monitoring wells were constructed of 2-inch pvc with a 15-foot 0.010 screened section set with approximately 5 feet above and 10 feet below the water table. A No. 00 morie gravel pack was placed around the screen to a depth of approximately 1 foot above the screen followed by a 1 foot hydrated bentonite pellet seal. The wells are completed at the surface with a locking compression-style cap and an 8-inch bolt down manhole cover.

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The locations of the monitoring wells are shown in **Figure 10**. Well construction logs are included in **Attachment E**.

Groundwater samples will be collected from the nine monitoring wells on a quarterly basis. Changes in the sampling frequency or number and location of wells included in the program will not be made without written approval from NYSDEC. The SMP will be modified to reflect changes in sampling plans approved by NYSDEC. Deliverables for the groundwater-monitoring program are specified in Section 3.6 below.

The sampling frequency may be modified with the approval NYSDEC. The SMP will be modified to reflect changes in sampling plans approved by NYSDEC. Deliverables for the groundwater monitoring program are specified in Section 3.6 below.

3.3.1.1 Sampling Protocol

All well sampling activities will be recorded in a field book and a groundwater-sampling log presented in **Attachment F**. Other observations (e.g., well integrity, etc.) will be noted on the well sampling log. The well sampling log will serve as the inspection form for the groundwater monitoring well network. This should include a description of:

- Well gauging;
- Well purging;
- Sampling methodology;
- Analytical methodology:
    - Lab certification;
    - Analytical methods;
    - Analytes.

Groundwater samples will be collected using a peristaltic pump or check valve and oscillation method and dedicated polyethylene tubing in accordance with the following:

- Record pump make & model on sampling form.

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- Wear appropriate health and safety equipment as outlined in the Health and Safety Plan
- Inspect each well for any damage or evidence of tampering and note condition in field logbook.
- Remove the well cap.
- Lay out plastic sheeting and place the monitoring, purging and sampling equipment on the sheeting.
- To avoid cross-contamination, do not let any downhole equipment touch the ground.
- Measure well headspace with a PID or FID and record the reading in the field logbook.
- A synoptic water level measurement round should be performed (in the shortest possible time) before any purging and sampling activities begin. Measure and record the depth to water using a water level meter or interface probe to the nearest 0.01 ft. Record the measurement in the field logbook. Do not measure the depth to the bottom of the well at this time (to avoid disturbing any sediment that may have accumulated). Obtain depth to bottom information from installation information in the field logbook or soil boring logs.
- Collect samples in order from wells with lowest contaminant concentration to highest concentration.
- Fit the polyethylene tubing with a check valve, connect the tubing to the peristaltic pump and lower the tubing into the well to approximately the middle of the screen. Tubing should be a minimum of 2 feet above the bottom of the well as this may cause mobilization of any sediment present in the bottom of the well.
- Start the pump at its lowest speed setting and slowly increase the speed until discharge occurs. Check water level. Adjust pump speed until there is little or no water level drawdown (less than 0.3 feet). If the minimal drawdown that can be achieved exceeds 0.3 feet but remains stable, continue purging until indicator field parameters stabilize.
- There should be at least 1 foot of water over the end of the tubing so there is no risk of entrapment of air in the sample. Pumping rates should, if needed, and reduced to the minimum capabilities of the pump to avoid purging the well dry. However, if the recharge rate of the well is very low and the well is purged dry, then wait until the well has recharged to a sufficient level and collect the appropriate volume of sample. During well purging, monitor indicator field parameters (turbidity, temperature and pH) every three to five minutes until the parameters stabilize.
- VOC samples should be collected first and directly into pre-preserved sample containers. Fill all

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Phone 631.504.6000
Fax 631.924.2870

sample containers by allowing the pump discharge to flow gently down the inside of the container with minimal turbulence.

- Use pre-preserved 40 ml glass vials and non-acidified 100 ml nalgene bottles as provided by the contract laboratory. Fill the VOA vials first, and then fill the remaining containers for persulfate and ferrous iron analysis. Fill each container with sample to just overflowing so that no air bubbles are entrapped inside. Fill all sample bottles by allowing the pump discharge to flow gently down the inside of the bottle with minimal turbulence. Cap each bottle as it is filled.
- Label the samples, and record them on the chain of custody form. Place immediately into a cooler for shipment and maintain at 4^{o}C.
- Remove the tubing from the well. The polyethylene tubing must either be dedicated to each well or discarded. If dedicated the tubing should be placed in a large plastic garbage bag, sealed, and labeled with the appropriate well identification number.
- Close and lock the well.
- Decontaminate pump either by changing the surgical pump tubing between wells or as follows:
    - Flush the equipment/pump with potable water.
    - Flush with non-phosphate detergent solution. If the solution is recycled, the solution must be changed periodically.
    - Flush with potable or distilled/deionized water to remove all of the detergent solution. If the water is recycled, the water must be changed periodically.
    - Flush with isopropyl alcohol (pesticide grade). If equipment blank data from the previous sampling event show that the level of contaminants is insignificant, then this step may be skipped.
    - Flush with distilled/deionized water. The final water rinse must not be recycled.

Samples will be collected in pre-cleaned laboratory supplied glassware, stored in a cooler with ice and submitted to Phoenix Environmental Laboratories, Inc., a New York State ELAP certified environmental laboratory (NY Lab ID # 11.01). All purging and sampling data will be recorded on dedicated well sampling forms.

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3.3.1.2 Monitoring Well Repairs, Replacement and Decommissioning

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

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

The NYSDEC will be notified prior to any repair or decommissioning of monitoring wells for the purpose of replacement, and the repair or decommissioning and replacement process will be documented in the subsequent periodic report. Well decommissioning without replacement will be done only with the prior approval of NYSDEC. Well abandonment will be performed in accordance with NYSDEC's "Groundwater Monitoring Well Decommissioning Procedures." Monitoring wells that are decommissioned because they have been rendered unusable will be reinstalled in the nearest available location, unless otherwise approved by the NYSDEC.

3.4 SITE-WIDE INSPECTION

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

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

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3.5 Monitoring Quality Assurance/Quality Control

All sampling and analyses will be performed in accordance with the requirements of the Quality Assurance Project Plan (QAPP) prepared for the site (**Attachment H**). Main Components of the QAPP include:

- QA/QC Objectives for Data Measurement;
- Sampling Program:
  - Sample containers will be properly washed, decontaminated, and appropriate preservative will be added (if applicable) prior to their use by the analytical laboratory. Containers with preservative will be tagged as such.
  - Sample holding times will be in accordance with the NYSDEC ASP requirements.
  - Field QC samples (e.g., trip blanks, coded field duplicates, and matrix spike/matrix spike duplicates) will be collected as necessary.
- Sample Tracking and Custody;
- Calibration Procedures:
  - All field analytical equipment will be calibrated immediately prior to each day's use. Calibration procedures will conform to manufacturer's standard instructions.
  - The laboratory will follow all calibration procedures and schedules as specified in USEPA SW-846 and subsequent updates that apply to the instruments used for the analytical methods.
- Analytical Procedures;
- Preparation of a Data Usability Summary Report (DUSR), which will present the results of data validation, including a summary assessment of laboratory data packages, sample preservation and chain of custody procedures, and a summary assessment of precision, accuracy, representativeness, comparability, and completeness for each analytical method.
- Internal QC and Checks;
- QA Performance and System Audits;
- Preventative Maintenance Procedures and Schedules;
- Corrective Action Measures.

Collected samples will be appropriately packaged, placed in coolers and shipped via overnight courier or delivered directly to the analytical laboratory by field personnel. Samples will be containerized in

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appropriate laboratory provided glassware and shipped in plastic coolers. Samples will be preserved through the use of ice or "cold-paks" to maintain a temperature of 4oC.

Dedicated disposable sampling materials will be used for both soil and groundwater samples, eliminating the need to prepare field equipment (rinsate) blanks. However, if non-disposable equipment is used, (stainless steel scoop, etc.) field rinsate blanks will be prepared at the rate of 1 for every eight samples collected.

Decontamination of non-dedicated sampling equipment will consist of the following:

- Flush the equipment/pump with potable water.
- Flush with non-phosphate detergent solution. If the solution is recycled, the solution must be changed periodically.
- Flush with potable or distilled/deionized water to remove all of the detergent solution. If the water is recycled, the water must be changed periodically.
- Flush with isopropyl alcohol (pesticide grade). If equipment blank data from the previous sampling event show that the level of contaminants is insignificant, then this step may be skipped.
- Flush with distilled/deionized water. The final water rinse must not be recycled.

Field blanks, if used, will be prepared by poring distilled or deionized water over decontaminated equipment and collecting the water in laboratory provided containers. Trip blanks will accompany samples each time they are transported to the laboratory. Matrix spike and matrix spike duplicates (MS/MSD) will be collected at the rate of one per 20 samples submitted to the laboratory. Laboratory reports will be upgradeable to ASP category B deliverables for use in the preparation of a data usability report (DUSR). In accordance with DER-10, the final round of confirmatory (post remediation) samples will include Category B laboratory data deliverables and a Data Usability Summary Report will be prepared by a party independent from the laboratory performing the analysis.

3.6 Monitoring Reporting Requirements

Forms and any other information generated during regular monitoring events and inspections will be kept on file on-site. All forms, and other relevant reporting formats used during the

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monitoring/inspection events, will be (1) subject to approval by NYSDEC and (2) submitted at the time of the Periodic Review Report, as specified in the Reporting Plan of this SMP.

All monitoring results will be reported to NYSDEC on a periodic basis in the Periodic Review Report. A letter report will also be prepared subsequent to each quarterly groundwater sampling sampling event.

The report (or letter) will include, at a minimum:

- Date of event;
- Personnel conducting sampling;
- Description of the activities performed;
- Type of samples collected (e.g., sub-slab vapor, indoor air, outdoor air, etc);
- Copies of all field forms completed (e.g., well sampling logs, chain-of-custody documentation, etc.);
- Sampling results in comparison to appropriate standards/criteria;
- A figure illustrating sample type and sampling locations;
- Copies of all laboratory data sheets and the required laboratory data deliverables required for all points sampled (o be submitted electronically in the NYSDEC-identified format);
- Any observations, conclusions, or recommendations; and
- A determination as to whether groundwater conditions have changed since the last reporting event.

Data will be reported in hard copy or digital format as determined by NYSDEC. A summary of the monitoring program deliverables are summarized below.

Schedule of Monitoring/Inspection Reports

Task	Reporting Frequency*
SSDS Inspection	Annual
Cover System Inspection	Annual
Groundwater Sampling	Quarterly

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

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4.0 OPERATION AND MAINTENANCE PLAN

4.1 INTRODUCTION

This Operation and Maintenance Plan describes the measures necessary to operate, monitor and maintain the mechanical components of the remedy selected for the site. This Operation and Maintenance Plan:

- Includes the steps necessary to allow individuals unfamiliar with the site to operate and maintain the SSD system;
- Includes an operation and maintenance contingency plan; and,
- Will be updated periodically to reflect changes in site conditions or the manner in which the SSD systems are operated and maintained.

Information on non-mechanical Engineering Controls (i.e. soil cover system) is provided in Section 3 - Engineering and Institutional Control Plan. A copy of this Operation and Maintenance Plan, along with the complete SMP, will be kept at the site. This Operation and Maintenance Plan is not to be used as a stand-alone document, but as a component document of the SMP.

4.2 ENGINEERING CONTROL SYSTEM OPERATION AND MAINTENANCE

4.2.1 SSD System Scope

The SSD systems at the site will operate 24/7 with no maintenance requirements. Periodic annual inspections will be performed to assure that the system is continuing to operate properly. Each fan will be fitted with a pressure switch which will activate a visual and audible alarm if the fan stops operating.

4.2.2 SSD System Start-Up and Testing

The start-up test procedure will first consist of a visual inspection to make sure all of the system components are installed properly. Following this, each system will be started individually and checked for leaks and adequate pressure at the discharge stack. Power to each blower will then be cut in sequence to verify that each warning alarm is functioning properly. Negative pressure readings will be taken at several locations within the center of the slab with a digital manometer. The system testing

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described above will be conducted if, in the course of the SSD system lifetime, significant changes are made to the system, and the system restarted. The results of the start-up testing will be submitted to the NYDEC and documented in the Periodic Review Report.

4.2.3 SSD System Operation: Non-Routine Equipment Maintenance

The SSD systems are maintenance free. The fans should only stop operating in the event of a power outage or a severe blockage. The visual / audible alarm is triggered when negative pressure is not maintained in the vertical vent system piping. In the event that one of the system alarms trips, the owner, owner's representative or Environmental Business Consultants should be contacted for repairs. If the system cannot be returned to immediate operation or if the system has or will remain off for more than 48 hours, the DEC project manager will be notified to determine if further actions are necessary to evaluate impacts to indoor air. Details regarding the extent of repairs, system downtime and subsequent testing will be submitted to the NYDEC and documented in the Periodic Review Report.

4.3 ENGINEERING CONTROL SYSTEM PERFORMANCE MONITORING

An SSD system has been installed to mitigate possible soil vapor intrusion into occupied areas of the new building. System designs are described in the Engineering and Institutional Control Plan, and as-built drawings are located in **Attachment C**

4.3.1 SSDS Monitoring Schedule

The components of the SSDS system will be inspected by a qualified environmental professional on a annual basis to assure that the system is functioning properly.

Inspection frequency is subject to change by NYSDEC and NYSDOH. Unscheduled inspections and/or sampling may take place when a suspected failure of the SSD system has been reported or an emergency occurs that is deemed likely to affect the operation of the system. Monitoring deliverables for the SSD system are specified later in this Plan.

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4.3.2 SSDS General Equipment Monitoring

A visual inspection of the complete system will be conducted during the monitoring event. SSD system components to be monitored include, but are not limited to, the following:

- Vacuum blower; and,
- General system piping.
- Vacuum gauges.
- Control switches and system alarms.

A complete list of components to be checked is provided in the Inspection Checklist, presented in **Attachment G**. If any equipment readings are not within their typical range, any equipment is observed to be malfunctioning, or the system is not performing within specifications, maintenance and repair as per the Operation and Maintenance Plan are required immediately, and the SSD system restarted.

4.3.3 SSDS System Monitoring Devices and Alarms

The SSD system has a warning device to indicate that the system is not operating properly. This device will be located in the electric panel control room within the retail area of the building or other utility room frequented by the building superintendent. In the event that the warning device is activated, applicable maintenance and repairs will be conducted, as specified in the Operation and Maintenance Plan, and the SSD system restarted. Operational problems will be noted in the quarterly monitoring report and in the annual Site Management Report.

4.3.4 SSDS Sampling Event Protocol

Sub-slab vacuum readings will be collected from at least 3 locations (SS1-SS3 shown on **Figure 11**) upon system start up (or re-start) in accordance with USEPA and NYSDOH guidance.

Vacuum sampling locations can be as simple as a hole drilled through the slab to allow access to a 1/4 to 3/8 inch sampling tube which is sealed to the slab. The tube is then connected to a digital manometer to demonstrate negative pressure. Once the reading is taken, sampling ports should be permanently sealed to prevent preferential pathway for vapor intrusion. If the system defaults and is required to be re-started, the sampling ports will be re-installed, sampled and sealed in the same manner.

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4.4 MAINTENANCE AND PERFORMANCE MONITORING REPORTING REQUIREMENTS

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

4.4.1 Routine Maintenance Reports

Checklists or forms (see **Attachment G**) will be completed during each routine maintenance event. Checklists/forms will include, but not be limited to the following information:

- Date;
- Name, company, and position of person(s) conducting maintenance activities;
- Maintenance activities conducted;
- Any modifications to the system;
- Where appropriate, color photographs or sketches showing the approximate location of any problems or incidents noted (included either on the checklist/form or on an attached sheet); and,
- Other documentation such as copies of invoices for maintenance work, receipts for replacement equipment, etc., (attached to the checklist/form).

4.4.2 Non-Routine Maintenance Reports

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

- Date;
- Name, company, and position of person(s) conducting non-routine maintenance/repair activities;
- Presence of leaks;
- Date of leak repair;
- Other repairs or adjustments made to the system;

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- Where appropriate, color photographs or sketches showing the approximate location of any problems or incidents (included either on the form or on an attached sheet); and,
- Other documentation such as copies of invoices for repair work, receipts for replacement equipment, etc. (attached to the checklist/form).

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5.0 INSPECTIONS, REPORTING AND CERTIFICATIONS

5.1 SITE INSPECTIONS

5.1.1 Inspection Frequency

All inspections will be conducted at the frequency specified in the schedules provided in Section 3 Monitoring Plan and Section 4 Operation and Maintenance Plan of this SMP. At a minimum, a site-wide inspection will be conducted annually. Inspections of remedial components will also be conducted when a breakdown of any treatment system component has occurred or whenever a severe condition has taken place, such as an erosion or flooding event that may affect the ECs.

5.1.2 Inspection Forms, Sampling Data, and Maintenance Reports

All inspections and monitoring events will be recorded on the appropriate forms which are contained in **Attachment G**. Additionally, a general site-wide inspection form will be completed during the site-wide inspection (see **Attachment G**). These forms are subject to NYSDEC revision.

All applicable inspection forms and other records, including all media sampling data and system maintenance reports, generated for the site during the reporting period will be provided in electronic format in the Periodic Review Report.

5.1.3 Evaluation of Records and Reporting

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

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

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5.2 CERTIFICATION OF ENGINEERING AND INSTITUTIONAL CONTROLS

After the last inspection of the reporting period, a qualified environmental professional or Professional Engineer licensed to practice in New York State (depending on the need to evaluate engineering systems) will prepare the following certification:

- For each institutional or engineering control identified for the site, I certify that all of the following statements are true:
- The inspection of the site to confirm the effectiveness of the institutional and engineering controls required by the remedial program was performed under my direction;
- The institutional control and/or engineering control employed at this site is unchanged from the date the control was put in place, or last approved by the Department;
- Nothing has occurred that would impair the ability of the control to protect the public health and environment;
- Nothing has occurred that would constitute a violation or failure to comply with any site management plan for this control;
- Access to the site will continue to be provided to the Department to evaluate the remedy, including access to evaluate the continued maintenance of this control;
- If a financial assurance mechanism is required under the oversight document for the site, the mechanism remains valid and sufficient for the intended purpose under the document;
- Use of the site is compliant with the environmental easement;
- The engineering control systems are performing as designed and are effective;
- To the best of my knowledge and belief, the work and conclusions described in this certification are in accordance with the requirements of the site remedial program; and The information presented in this report is accurate and complete.
- I certify that all information and statements in this certification form are true. I understand that a false statement made herein is punishable as a Class “A” misdemeanor, pursuant to Section 210.45 of the Penal Law.

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I, [name], of [business address], am certifying as [Owner or Owner's Designated Site Representative] (and if the site consists of multiple properties): [I have been authorized and designated by all site owners to sign this certification] for the site. The signed certification will be included in the Periodic Review Report described below.

For each institutional identified for the site, I certify that all of the following statements are true:

- The institutional control employed at this site is unchanged from the date the control was put in place, or last approved by the Department;
- Nothing has occurred that would impair the ability of the control to protect the public health and environment;
- Nothing has occurred that would constitute a violation or failure to comply with any site management plan for this control;
- Access to the site will continue to be provided to the Department to evaluate the remedy, including access to evaluate the continued maintenance of this control;
- If a financial assurance mechanism is required under the oversight document for the site, the mechanism remains valid and sufficient for the intended purpose under the document;
- Use of the site is compliant with the environmental easement.
- The information presented in this report is accurate and complete.
- I certify that all information and statements in this certification form are true. I understand that a false statement made herein is punishable as a Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law. I, [name], of [business address], am certifying as [Owner or Owner's Designated Site Representative] (and if the site consists of multiple properties): [and I have been authorized and designated by all site owners to sign this certification] for the site.
- No new information has come to my attention, including groundwater monitoring data from wells located at the site boundary, if any, to indicate that the assumptions made in the qualitative exposure assessment of off-site contamination are no longer valid; and

Every five years the following certification will be added:

- The assumptions made in the qualitative exposure assessment remain valid.

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

5.3 PERIODIC REVIEW REPORT

A Periodic Review Report will be submitted to the Department every year, beginning eighteen months after the Certificate of Completion is issued. In the event that the site is subdivided into separate parcels with different ownership, a single Periodic Review Report will be prepared that addresses the site described in **Attachment I** (Metes and Bounds). The report will be prepared in accordance with NYSDEC DER-10 and submitted within 45 days of the end of each certification period. Media sampling results will also incorporated into the Periodic Review Report. The report will include:

- Identification, assessment and certification of all ECs/ICs required by the remedy for the site; Results of the required annual site inspections and severe condition inspections, if applicable;
- All applicable inspection forms and other records generated for the site during the reporting period in electronic format;
- A summary of any discharge monitoring data and/or information generated during the reporting period with comments and conclusions;
- Data summary tables and graphical representations of contaminants of concern by media (groundwater, soil vapor), which include a listing of all compounds analyzed, along with the applicable standards, with all exceedances highlighted. These will include a presentation of past data as part of an evaluation of contaminant concentration trends;
- Results of all analyses, copies of all laboratory data sheets, and the required laboratory data deliverables for all samples collected during the reporting period will be submitted electronically in a NYSDEC-approved format;
- A site evaluation, which includes the following:
    - The compliance of the remedy with the requirements of the site-specific RAWP, ROD or Decision Document;
    - The operation and the effectiveness of all treatment units, etc., including identification of any needed repairs or modifications;

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- Any new conclusions or observations regarding site contamination based on inspections or data generated by the Monitoring Plan for the media being monitored;
- Recommendations regarding any necessary changes to the remedy and/or Monitoring Plan; and
- The overall performance and effectiveness of the remedy.

- A performance summary for oxidant injections performed at the site during the calendar year, including information such as:
  - The dates and amounts of oxidant added
  - Comments, conclusions, and recommendations based on data evaluation.

The Periodic Review Report will be submitted, in hard-copy format, to the NYSDEC Central Office and Regional Office in which the site is located, and in electronic format to NYSDEC Central Office, Regional Office and the NYSDOH Bureau of Environmental Exposure Investigation.

5.4 CORRECTIVE MEASURES PLAN

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

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Ridge, NY 11961
Phone 631.504.6000
Fax 631.924.2870

TABLES

TABLE 1
Soil Cleanup Objectives

Contaminant	CAS Number	Protection of Public Health				Protection of Ecological Resources	Protection of Ground-water
		Residential	Restricted-Residential	Commercial	Industrial		
METALS							
Arsenic	7440-38 -2	16[f]	16[f]	16[f]	16[f]	13[f]	16[f]
Barium	7440-39 -3	350[f]	400	400	10,000 [d]	433	820
Beryllium	7440-41 -7	14	72	590	2,700	10	47
Cadmium	7440-43 -9	2.5[f]	4.3	9.3	60	4	7.5
Chromium, hexavalent [h]	18540-29-9	22	110	400	800	1[e]	19
Chromium, trivalent[h]	16065-83-1	36	180	1,500	6,800	41	NS
Copper	7440-50 -8	270	270	270	10,000 [d]	50	1,720
Total Cyanide [h]		27	27	27	10,000 [d]	NS	40
Lead	7439-92 -1	400	400	1,000	3,900	63[f]	450
Manganese	7439-96 -5	2,000[f]	2,000[f]	10,000 [d]	10,000 [d]	1600[f]	2,000[f]
Total Mercury		0.81[j]	0.81[j]	2.8[j]	5.7[j]	0.18[f]	0.73
Nickel	7440-02 -0	140	310	310	10,000 [d]	30	130
Selenium	7782-49 -2	36	180	1,500	6,800	3.9[f]	4[f]
Silver	7440-22 -4	36	180	1,500	6,800	2	8.3
Zinc	7440-66 -6	2200	10,000 [d]	10,000 [d]	10,000 [d]	109[f]	2,480
PESTICIDES / PCBs							
2,4,5-TP Acid (Silvex)	93-72-1	58	100[a]	500[b]	1,000[c]	NS	3.8
4,4'-DDE	72-55-9	1.8	8.9	62	120	0.0033 [e]	17
4,4'-DDT	50-29-3	1.7	7.9	47	94	0.0033 [e]	136
4,4'-DDD	72-54-8	2.6	13	92	180	0.0033 [e]	14
Aldrin	309-00-2	0.019	0.097	0.68	1.4	0.14	0.19
alpha-BHC	319-84-6	0.097	0.48	3.4	6.8	0.04[g]	0.02
beta-BHC	319-85-7	0.072	0.36	3	14	0.6	0.09
Chlordane (alpha)	5103-71 -9	0.91	4.2	24	47	1.3	2.9
delta-BHC	319-86-8	100[a]	100[a]	500[b]	1,000[c]	0.04[g]	0.25
Dibenzofuran	132-64-9	14	59	350	1,000[c]	NS	210
Dieldrin	60-57-1	0.039	0.2	1.4	2.8	0.006	0.1
Endosulfan I	959-98-8	4.8[i]	24[i]	200[i]	920[i]	NS	102
Endosulfan II	33213-65-9	4.8[i]	24[i]	200[i]	920[i]	NS	102
Endosulfan sulfate	1031-07 -8	4.8[i]	24[i]	200[i]	920[i]	NS	1,000[c]
Endrin	72-20-8	2.2	11	89	410	0.014	0.06
Heptachlor	76-44-8	0.42	2.1	15	29	0.14	0.38
Lindane	58-89-9	0.28	1.3	9.2	23	6	0.1
Polychlorinated biphenyls	1336-36 -3	1	1	1	25	1	3.2
SEMI-VOLATILES							
Acenaphthene	83-32-9	100[a]	100[a]	500[b]	1,000[c]	20	98
Acenapthylene	208-96-8	100[a]	100[a]	500[b]	1,000[c]	NS	107
Anthracene	120-12-7	100[a]	100[a]	500[b]	1,000[c]	NS	1,000[c]
Benz(a)anthracene	56-55-3	1[f]	1[f]	5.6	11	NS	1[f]
Benzo(a)pyrene	50-32-8	1[f]	1[f]	1[f]	1.1	2.6	22
Benzo(b) fluoranthene	205-99-2	1[f]	1[f]	5.6	11	NS	1.7
Benzo(g,h,i) perylene	191-24-2	100[a]	100[a]	500[b]	1,000[c]	NS	1,000[c]
Benzo(k) fluoranthene	207-08-9	1	3.9	56	110	NS	1.7
Chrysene	218-01-9	1[f]	3.9	56	110	NS	1[f]
Dibenz(a,h) anthracene	53-70-3	0.33[e]	0.33[e]	0.56	1.1	NS	1,000[c]
Fluoranthene	206-44-0	100[a]	100[a]	500[b]	1,000[c]	NS	1,000[c]
Fluorene	86-73-7	100[a]	100[a]	500[b]	1,000[c]	30	386
Indeno(1,2,3-cd) pyrene	193-39-5	0.5[f]	0.5[f]	5.6	11	NS	8.2
m-Cresol	108-39-4	100[a]	100[a]	500[b]	1,000[c]	NS	0.33[e]
Naphthalene	91-20-3	100[a]	100[a]	500[b]	1,000[c]	NS	12
o-Cresol	95-48-7	100[a]	100[a]	500[b]	1,000[c]	NS	0.33[e]
p-Cresol	106-44-5	34	100[a]	500[b]	1,000[c]	NS	0.33[e]
Pentachlorophenol	87-86-5	2.4	6.7	6.7	55	0.8[e]	0.8[e]
Phenanthrene	85-01-8	100[a]	100[a]	500[b]	1,000[c]	NS	1,000[c]
Phenol	108-95-2	100[a]	100[a]	500[b]	1,000[c]	30	0.33[e]
Pyrene	129-00-0	100[a]	100[a]	500[b]	1,000[c]	NS	1,000[c]

TABLE 1
Soil Cleanup Objectives

Contaminant	CAS Number	Protection of Public Health				Protection of Ecological Resources	Protection of Ground-water
		Residential	Restricted-Residential	Commercial	Industrial		
VOLATILES							
1,1,1-Trichloroethane	71-55-6	100[a]	100[a]	500[b]	1,000[c]	NS	0.68
1,1-Dichloroethane	75-34-3	19	26	240	480	NS	0.27
1,1-Dichloroethene	75-35-4	100[a]	100[a]	500[b]	1,000[c]	NS	0.33
1,2-Dichlorobenzene	95-50-1	100[a]	100[a]	500[b]	1,000[c]	NS	1.1
1,2-Dichloroethane	107-06-2	2.3	3.1	30	60	10	0.02[f]
cis-1,2-Dichloroethene	156-59-2	59	100[a]	500[b]	1,000[c]	NS	0.25
trans-1,2-Dichloroethene	156-60-5	100[a]	100[a]	500[b]	1,000[c]	NS	0.19
1,3-Dichlorobenzene	541-73-1	17	49	280	560	NS	2.4
1,4-Dichlorobenzene	106-46-7	9.8	13	130	250	20	1.8
1,4-Dioxane	123-91-1	9.8	13	130	250	0.1[e]	0.1[e]
Acetone	67-64-1	100[a]	100[b]	500[b]	1,000[c]	2.2	0.05
Benzene	71-43-2	2.9	4.8	44	89	70	0.06
Butylbenzene	104-51-8	100[a]	100[a]	500[b]	1,000[c]	NS	12
Carbon tetrachloride	56-23-5	1.4	2.4	22	44	NS	0.76
Chlorobenzene	108-90-7	100[a]	100[a]	500[b]	1,000[c]	40	1.1
Chloroform	67-66-3	10	49	350	700	12	0.37
Ethylbenzene	100-41-4	30	41	390	780	NS	1
Hexachlorobenzene	118-74-1	0.33[e]	1.2	6	12	NS	3.2
Methyl ethyl ketone	78-93-3	100[a]	100[a]	500[b]	1,000[c]	100[a]	0.12
Methyl tert-butyl ether	1634-04 -4	62	100[a]	500[b]	1,000[c]	NS	0.93
Methylene chloride	75-09-2	51	100[a]	500[b]	1,000[c]	12	0.05
n-Propylbenzene	103-65-1	100[a]	100[a]	500[b]	1,000[c]	NS	3.9
sec-Butylbenzene	135-98-8	100[a]	100[a]	500[b]	1,000[c]	NS	11
tert-Butylbenzene	98-06-6	100[a]	100[a]	500[b]	1,000[c]	NS	5.9
Tetrachloroethene	127-18-4	5.5	19	150	300	2	1.3
Toluene	108-88-3	100[a]	100[a]	500[b]	1,000[c]	36	0.7
Trichloroethene	79-01-6	10	21	200	400	2	0.47
1,2,4-Trimethylbenzene	95-63-6	47	52	190	380	NS	3.6
1,3,5-Trimethylbenzene	108-67-8	47	52	190	380	NS	8.4
Vinyl chloride	75-01-4	0.21	0.9	13	27	NS	0.02
Xylene (mixed)	1330-20 -7	100[a]	100[a]	500[b]	1,000[c]	0.26	1.6

All soil cleanup objectives (SCOs) are in parts per million (ppm). NS=Not specified. See Technical Support Document (TSD). Footnotes

a The SCOs for residential, restricted-residential and ecological resources use were capped at a maximum value of 100 ppm. See TSD section 9.3.

b The SCOs for commercial use were capped at a maximum value of 500 ppm. See TSD section 9.3.

c The SCOs for industrial use and the protection of groundwater were capped at a maximum value of 1000 ppm. See TSD section 9.3.

d The SCOs for metals were capped at a maximum value of 10,000 ppm. See TSD section 9.3.

e For constituents where the calculated SCO was lower than the contract required quantitation limit (CRQL), the CRQL is used as the SCO value.

TABLE 2
Former Uniforms For Industry Site
129-09 Jamaica Avenue, Richmond Hill, NY
Contamination Remaining in Soil Above Unrestricted / Restricted Residential Soil Cleanup Objectives

Vertex and GCE Samples

COMPOUND	Track 1 Unrestricted Cleanup Objectives	Restricted Residential Cleanup Objectives	Mop Oil Room (30-32FT)	Filter Room (32-34FT)	MW1 (30-31.5FT)	MW1 (45FT)	B1 (30 32FT)	B2 (35 37FT)
Sample Results in µg/kg	*ug/kg*	*ug/kg*	*ug/kg*	*ug/kg*	*ug/kg*	*ug/kg*	*ug/kg*	*ug/kg*
1,2,4-trimethylbenzene	3,600	52,000	ND	ND	**10,000**	**2,600**	**4,800**	**83,000**
1,3,5-trimethylbenzene	8,400	52,000	ND	ND	ND	ND	ND	**21,000**
Acetone	50	100,000	ND	ND	**460**	**470**	**290**	**7,600**
Cis-DCE	250	59,000	ND	ND	ND	ND	ND	ND
Ethylbenzene	1,000	41,000	**1,460**	**1,560**	ND	ND	ND	**3,600**
m/p-Xylenes	260	100,000	**2,750**	**9,190**	ND	ND	**470**	**11,000**
Napthalene	12,000	NS	ND	ND	ND	ND	ND	ND
n-butylbenzene	3,900	100,000	ND	**8,010**	ND	ND	ND	**14,000**
n-propylbenzene	12,000	100,000	ND	ND	ND	ND	ND	ND
o-Xylene	260	100,000	**2,270**	ND	ND	ND	**310**	**8,300**
sec-butylbenzene	11,000	100,000	ND	ND	ND	ND	ND	ND
Tetrachloroethylene (PCE)	1,300	19,000	ND	ND	ND	ND	ND	ND
Toluene	700	100,000	ND	ND	ND	ND	ND	ND
4,4-DDD	3.3	13,000.0	ND	ND	ND	ND	ND	ND

BOLD Exceedence of Track 1 Unrestricted Residential Cleanup Objective
BOLD Exceedence of Restricted Residential Cleanup Objective

ELM Samples

COMPOUND	Track 1 Unrestricted Cleanup Objectives	Restricted Residential Cleanup Objectives	B13 (18 ft)	B13 (42 ft)	B13 (63 ft)	B15 (38 ft)	B15 (52.5 ft)	B15 (67.5 ft)	B16 (52.5 ft)	B19 (44 ft)	B19 (64.5 ft)	B19 (74 ft)
Sample Results in µg/kg	*ug/kg*	*ug/kg*	*ug/kg*	*ug/kg*	*ug/kg*	*ug/kg*	*ug/kg*	*ug/kg*	*ug/kg*	*ug/kg*	*ug/kg*	*ug/kg*
1,2,4-trimethylbenzene	3,600	52,000	**4,600**	**140,000**	**52,000**	**8,900**	**140,000**	**26,000**	**170,000**	**110,000**	**7,500**	ND
1,3,5-trimethylbenzene	8,400	52,000	ND	**53,000**	ND	ND	**46,000**	ND	**56,000**	**34,000**	ND	ND
Acetone	50	100,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cis-DCE	250	59,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	1,000	41,000	ND	ND	ND	ND	ND	ND	ND	**13,000**	**6,700**	**2,000**
m/p-Xylenes	260	100,000	ND	**13,000**	**1,200**	ND	**2,100**	ND	ND	**20,000**	ND	ND
Napthalene	12,000	NS	ND	**17,000**		ND	**1,300**	ND	ND	**48,000**	**19,000**	**19,000**
n-butylbenzene	3,900	100,000	ND	**28,000**	**22,000**	ND	**41,000**	**11,000**	**54,000**	**27,000**	**11,000**	**5,600**
n-propylbenzene	12,000	100,000	ND	**17,000**	ND	ND	**19,000**	ND	**25,000**	ND	ND	ND
o-Xylene	260	100,000	ND	ND	ND	ND	ND	ND	ND	**8,700**	ND	ND
sec-butylbenzene	11,000	100,000	ND	**13,000**	**11,000**	ND	**19,000**	ND	**29,000**	**24,000**	ND	ND
Tetrachloroethylene (PCE)	1,300	19,000	**6,300**	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	700	100,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4,4-DDD	3.3	13,000.0	ND	ND	**4.9**	**17**	**7.5**	ND	ND	ND	ND	ND

BOLD Exceedence of Track 1 Unrestricted Residential Cleanup Objective
BOLD Exceedence of Restricted Residential Cleanup Objective

EBC Samples Supplemental Investigation 9/2010 and Endpoint Samples 9/20:

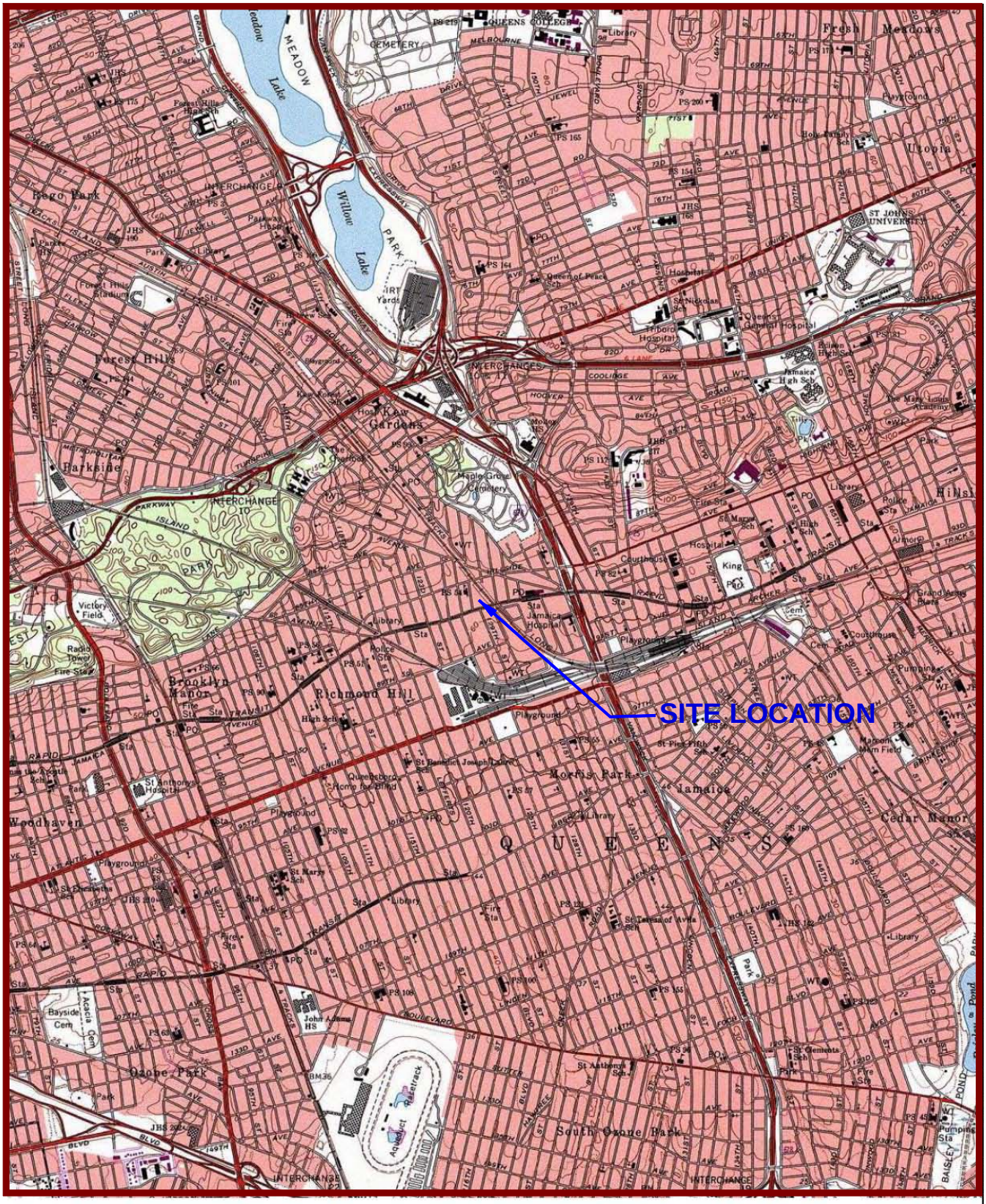
COMPOUND	Track 1 Unrestricted Cleanup Objectives	Restricted Residential Cleanup Objectives	10B-02 (15-20 ft)	10B-03 (15-20 ft)	Hotspot 5 Bottom Endpoint (18 ft)
Sample Results in µg/kg	*ug/kg*	*ug/kg*	*ug/kg*	*ug/kg*	*ug/kg*
1,2,4-trimethylbenzene	3,600	52,000	**7,600**	**8,200**	ND
1,3,5-trimethylbenzene	8,400	52,000	ND	ND	ND
Acetone	50	100,000	ND	ND	ND
Cis-DCE	250	59,000	ND	ND	ND
Ethylbenzene	1,000	41,000	ND	ND	ND
m/p-Xylenes	260	100,000	**430**	**330**	ND
Napthalene	12,000	NS	ND	ND	ND
n-butylbenzene	3,900	100,000	ND	ND	ND
n-propylbenzene	12,000	100,000	ND	ND	ND
o-Xylene	260	100,000	**460**	**370**	ND
sec-butylbenzene	11,000	100,000	ND	ND	ND
Tetrachloroethylene (PCE)	1,300	19,000	ND	ND	**25,000**
Toluene	700	100,000	ND	ND	ND
Trichloroethene (TCE)	470	21,000	ND	ND	ND
4,4-DDD	3.3	13,000	ND	ND	ND

BOLD Exceedence of Track 1 Unrestricted Residential Cleanup Objective
BOLD Exceedence of Restricted Residential Cleanup Objective

TABLE 3
Former Uniforms for Industry Site
129-09 Jamaica Avenue, Richmond Hill, NY
Groundwater Contamination Above Standards

Parameter	NYSDEC Ambient Water Quality Standards	MW1	MW1	MW3	MW4	MW4	MW5	MW6
ug/L	*ug/L*	9/20/2010	11/30/2010	9/20/2010	9/20/2010	11/30/2010	9/20/2010	9/20/2010
1,2,4-trimethylbenzene	5	1900	1900				5.1	
1,3,5-trimethylbenzene	5	530	530					
1-1 Dichloroethene	5							
2-Butanone	50							
2-Hexanone	50							
4-Isopropyltoluene	-							
4-Methyl 2-Pentanone								
Acetone	50							
Benzene	1							
Chloroethane	5							
Cis 1-2 DCE	5	1400	93		140	93	210	76
Ethylbenzene	5	62						
Isopropylbenzene	5	64						
m/p - xylene	5							
Methylene Chloride	5	6.1	5.3			5.3		
MTBE	10							
Napthalene	5	250						
n-butylbenzene	5	120						
n-propylbenzene	5	140						
o-xylenes	5							
p-diethylbenzene								
p-ethyltoluene								
p-isopropyltoluene		90	7.7					
sec-butylbenzene		74			7.4	7.7		
tert-butylbenzene			11					
tetrachloroethene	5			6.4	19	11	32	100
toluene	5	45						
Trans 1-2 DCE	5							
trichloroethene	5		21		5.7		24	7.6
vinyl chloride	2	74	74		7.6	21	12	11
Xylenes (total)		410	410					

FIGURES



USGS Jamaica Quadrangle 1994, Contour Interval = 10 feet

0 .5 1 MILES

1000 0 1000 2000 3000 4000 5000 FEET

1 .5 0 KILOMETERS 1

1000 0 1000 METERS

MN 13° 10/19/10

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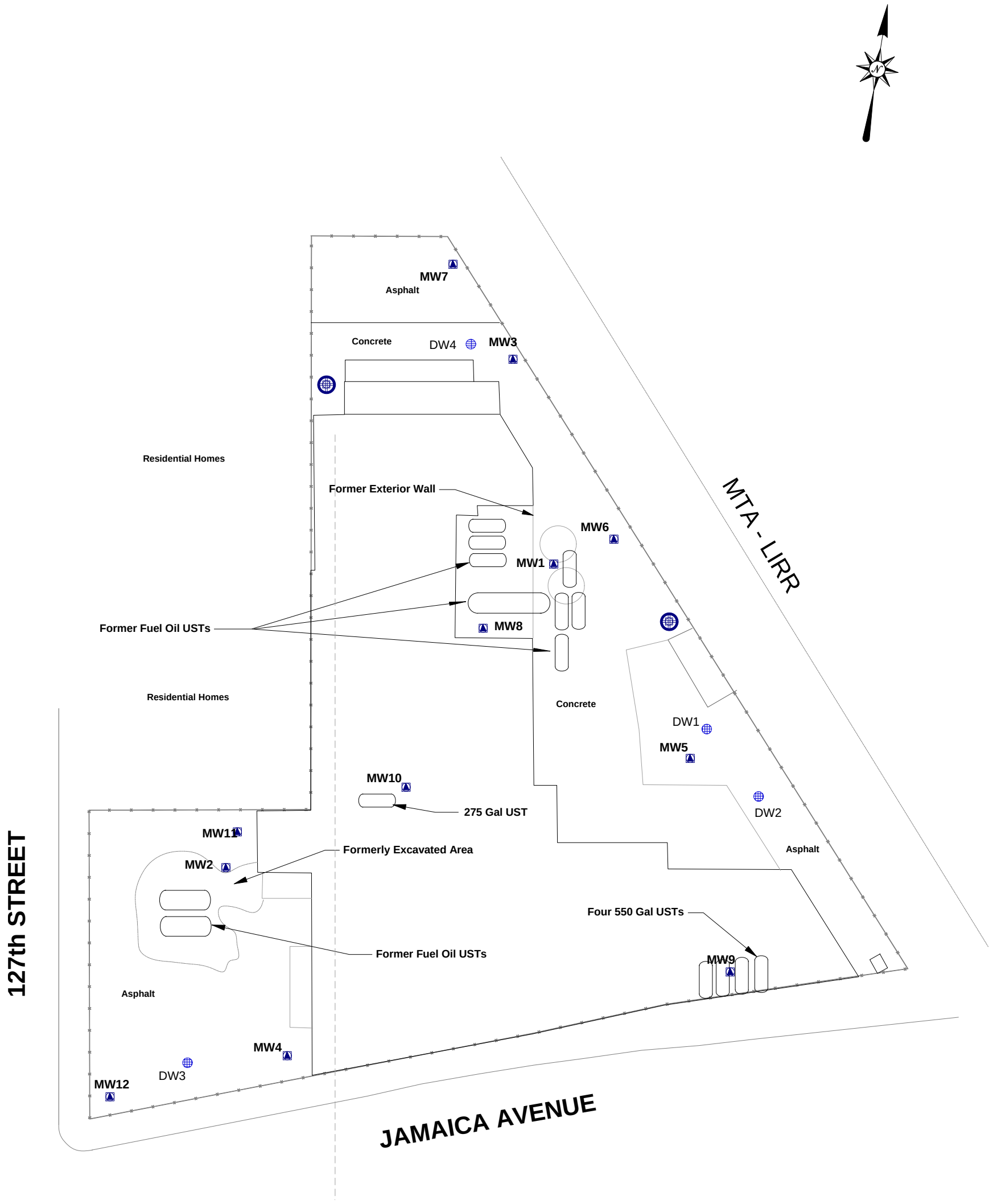
FORMER UNIFORMS FOR INDUSTRY SITE

129-09 JAMAICA AVENUE, RICHMOND HILL, NY

FIGURE 1 SITE LOCATION MAP



KEY:

MWX Monitoring Well

Surface Drain Drywell

Water Supply Well

0 25 50 100

1 Inch = 50 feet

Notes:

The locations of DW4, MW6, MW9 and MW10 not field verified

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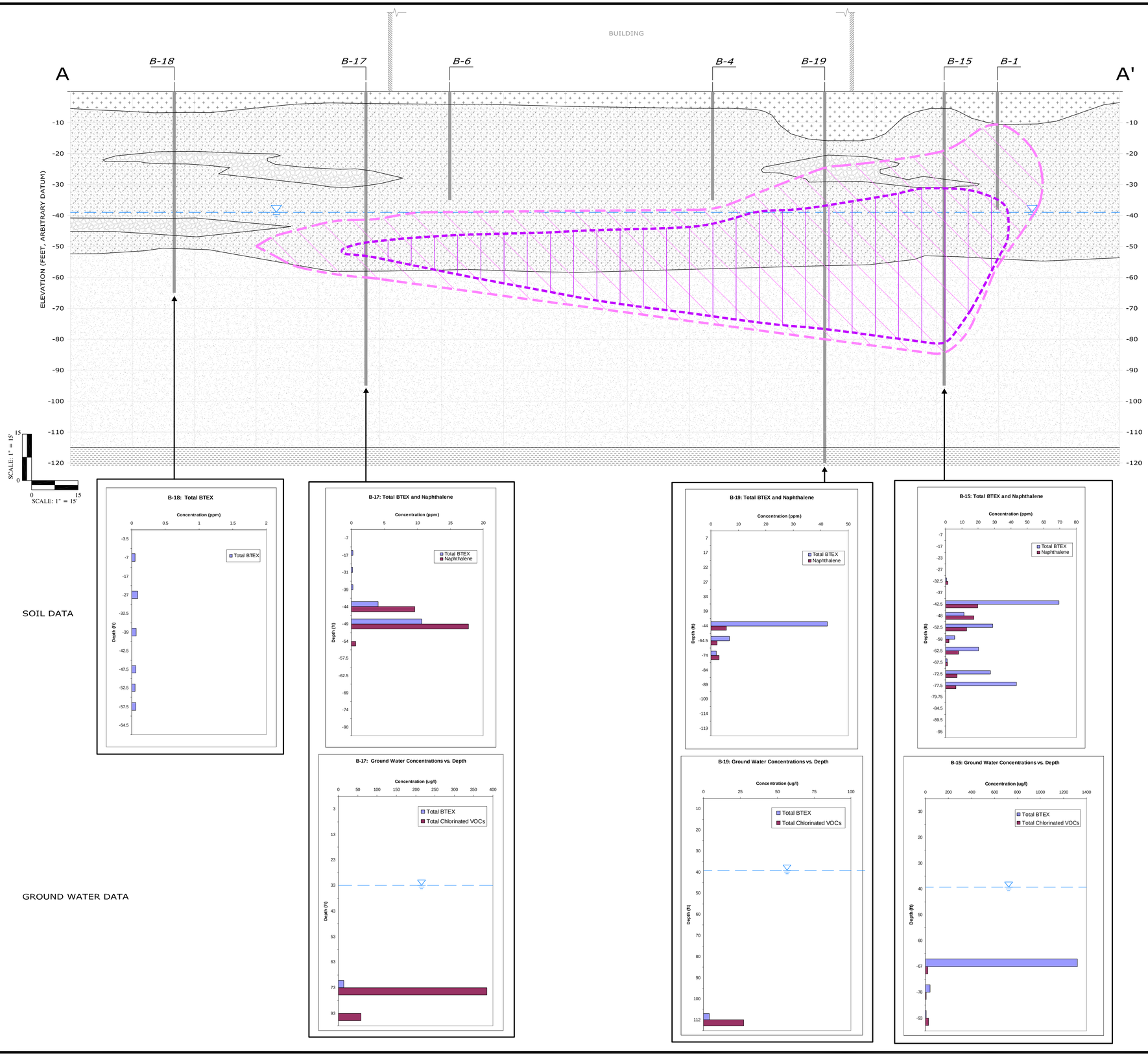
Fax 631. 924 .2870

Figure No. **2**

Site Name: FORMER UNIFORMS FOR INDUSTRY SITE

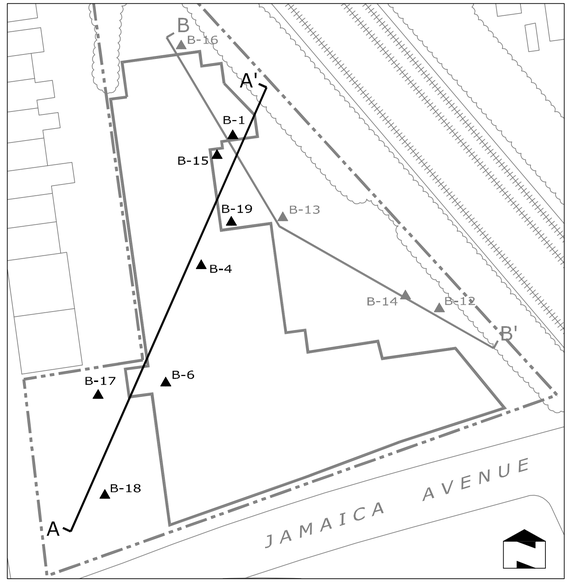
Site Address: 129-09 JAMAICA AVENUE, RICHMOND HILL, NY

Drawing Title: SITE PLAN



SOIL DATA

GROUND WATER DATA



KEY MAP
SCALE: 1"=50'

LEGEND

- PROPERTY LINE (APPROX.)
- B-18 SOIL BORING LOCATION AND ID
- RAILROAD
- A A' CROSS-SECTION LOCATION
- SOIL BORING LOCATION
- GROUND WATER ELEVATION
- FILL MATERIAL
- SAND AND GRAVEL
- GRAVEL/COBBLE LAYER
- SAND
- CLAY
- MINOR PETROLEUM-IMPACTED ZONE (PID RESULT <200 ppm)
- SIGNIFICANT PETROLEUM-IMPACTED ZONE (PID RESULTS ≥ 200 ppm)

FIGURE 3A

NOTES:
1. SOIL DATA DERIVED FROM MOBILE GC/MS SAMPLES, EXCEPT AT THOSE INTERVALS WHERE FIXED LAB SAMPLES WERE ALSO COLLECTED. AT THESES INTERVALS, FIXED LAB RESULTS ARE SHOWN.
2. IMPACTED ZONE EXTENTS BASED ON ANALYTICAL DATA AND PID READINGS.

SOURCE:
1. VERTEX ENGINEERING SERVICES, INC., SOIL BORING AND PROCESS WATER WELL LOCATION PLAN, 8/22/03, PROJECT NO. 5062.00.
2. AERIAL PHOTO, GOOGLE EARTH.

TITLE: PLATE 1
CROSS SECTION A-A'

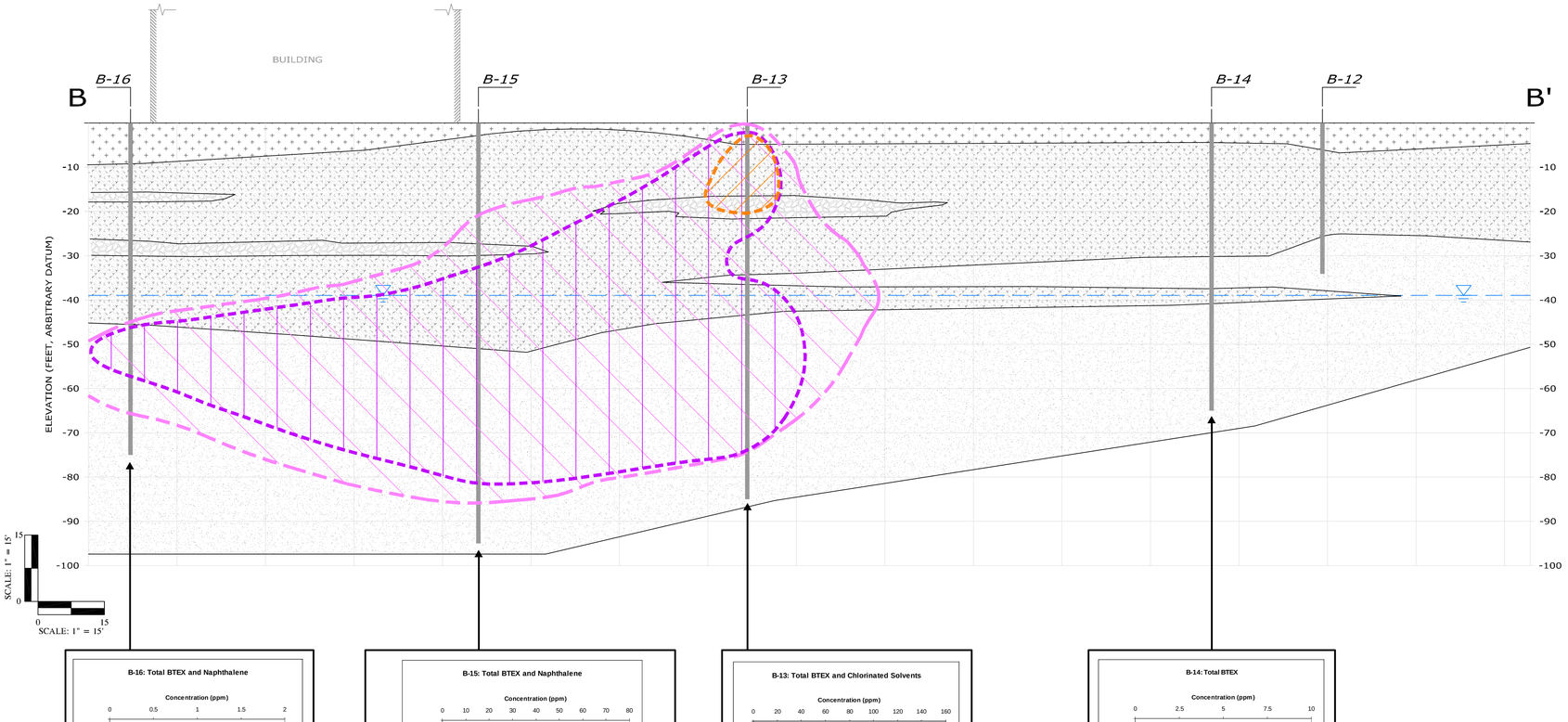
LOCATION: 129-09 JAMAICA AVENUE, RICHMOND HILL, NEW YORK

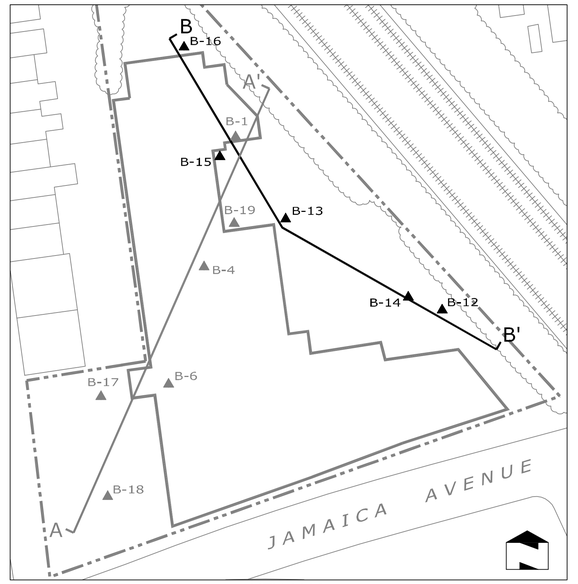
DATE: 5/1/09

FILENAME: 207078_CROSS SECTIONS

LAYOUT: X-SECTION A

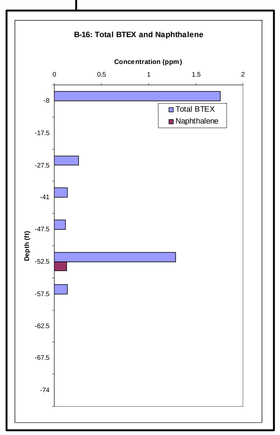
ENVIRONMENTAL LIABILITY MANAGEMENT, INC.
218 WALL STREET, PRINCETON, NEW JERSEY 08540
4920 YORK ROAD, SUITE 250, HOLICONG, PENNSYLVANIA 18928
612 MAIN STREET, BOONTON, NEW JERSEY 07005
267 BROADWAY, FIFTH FLOOR, NEW YORK, NEW YORK 10007
2475 BAGLYOS CIRCLE, BETHLEHEM, PENNSYLVANIA 18020
WWW.ELMINC.COM

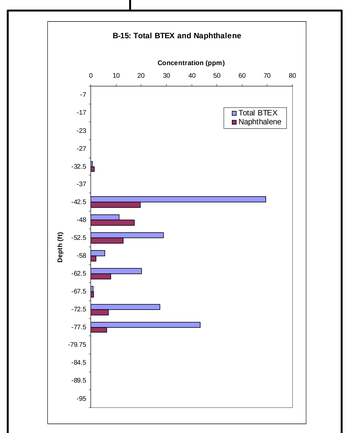


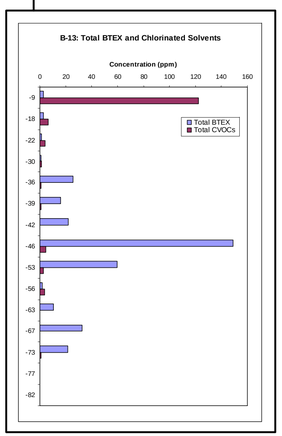


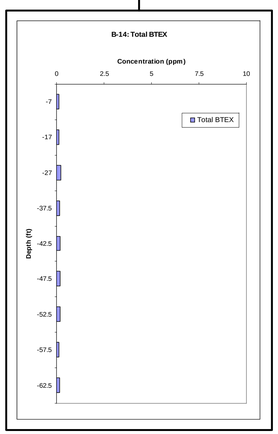
KEY MAP
SCALE: 1"=50'

SOIL DATA

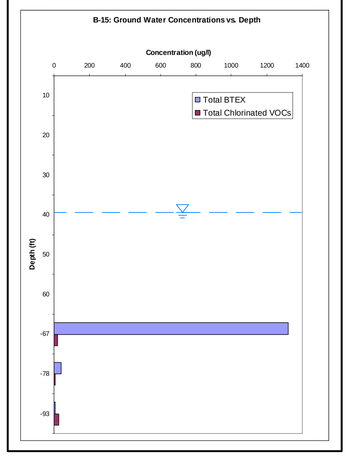








GROUND WATER DATA



LEGEND

- PROPERTY LINE (APPROX.)
- B-18 SOIL BORING LOCATION AND ID
- RAILROAD
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- SOIL BORING LOCATION
- GROUND WATER ELEVATION
- FILL MATERIAL
- SAND AND GRAVEL
- GRAVEL/COBBLE LAYER
- SAND
- CLAY
- MINOR PETROLEUM-IMPACTED ZONE (PID RESULT <200 ppm)
- SIGNIFICANT PETROLEUM-IMPACTED ZONE (PID RESULTS ≥ 200 ppm)
- CHLORINATED VOCs-IMPACTED ZONE

FIGURE 3B

NOTES:
1. SOIL DATA DERIVED FROM MOBILE GC/MS SAMPLES, EXCEPT AT THOSE INTERVALS WHERE FIXED LAB SAMPLES WERE ALSO COLLECTED. AT THESES INTERVALS, FIXED LAB RESULTS ARE SHOWN.
2. IMPACTED ZONE EXTENTS BASED ON ANALYTICAL DATA AND PID READINGS.

SOURCE:
1. VERTEX ENGINEERING SERVICES, INC., SOIL BORING AND PROCESS WATER WELL LOCATION PLAN, 8/22/03, PROJECT NO. 5062.00.
2. AERIAL PHOTO, GOOGLE EARTH.

TITLE:
PLATE 2
CROSS SECTION B-B'

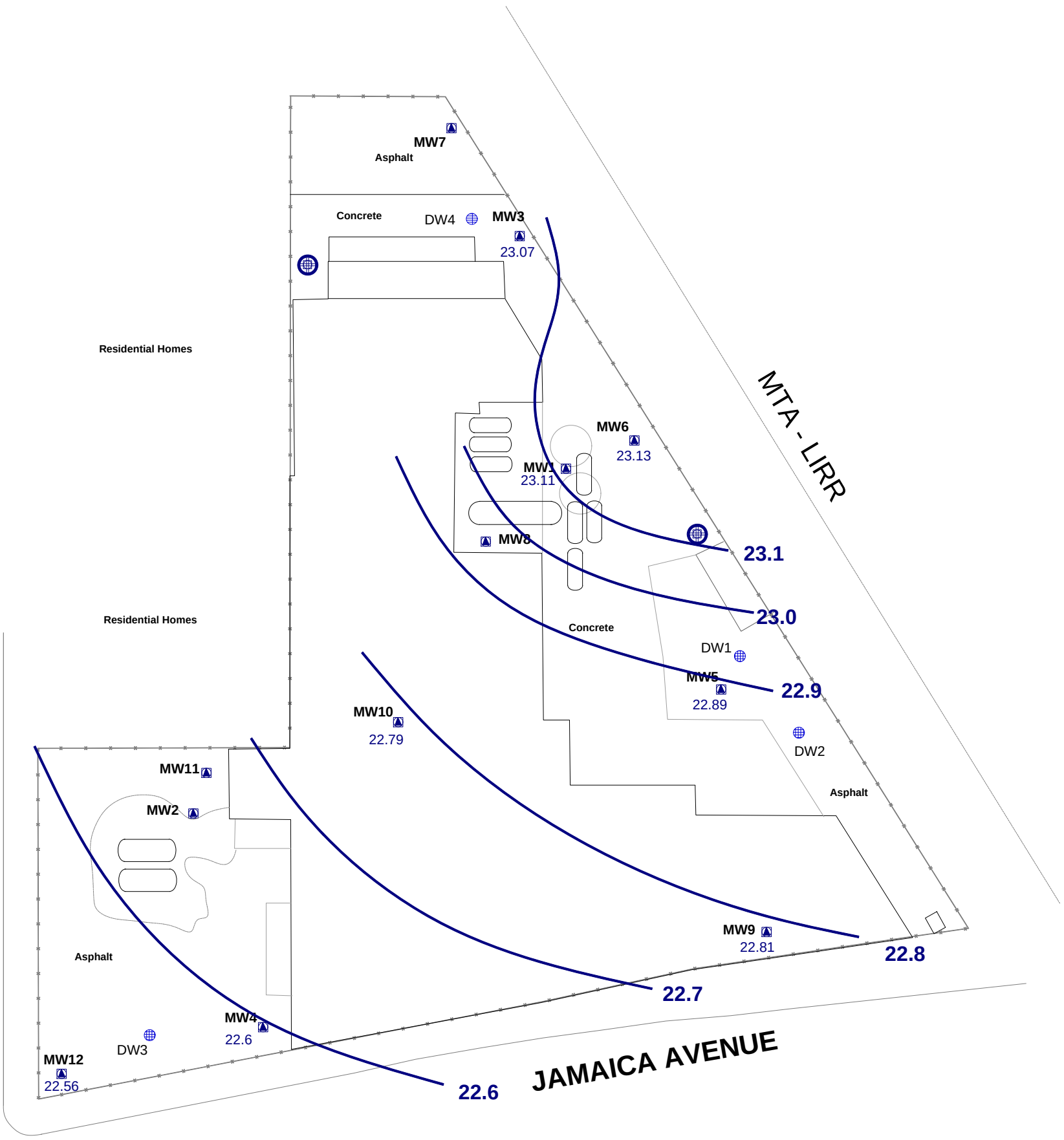
LOCATION:
129-09 JAMAICA AVENUE,
RICHMOND HILL, NEW YORK

DATE: 5/1/09

FILENAME: 207078_CROSS SECTIONS

LAYOUT: X-SECTION B

ENVIRONMENTAL LIABILITY MANAGEMENT, INC.
216 WALL STREET, PRINCETON, NEW JERSEY 08540
4920 YORK ROAD, SUITE 290, HOLICONG, PENNSYLVANIA 18928
632 MAIN STREET, BOONTON, NEW JERSEY 07005
267 BROADWAY, FIFTH FLOOR, NEW YORK, NEW YORK 10007
2475 BAGLYOS CIRCLE, BETHLEHEM, PENNSYLVANIA 18020
WWW.ELMINC.COM



KEY:

MWX Monitoring Well

Surface Drain Drywell

Water Supply Well

0 25 50 100

1 Inch = 50 feet

Notes:

The locations of DW4, MW6, MW9 and MW10 not field verified

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Figure No. **4**

Site Name: FORMER UNIFORMS FOR INDUSTRY SITE

Site Address: 129-09 JAMAICA AVENUE, RICHMOND HILL, NY

Drawing Title: GROUNDWATER ELEVATION (5/21/09)

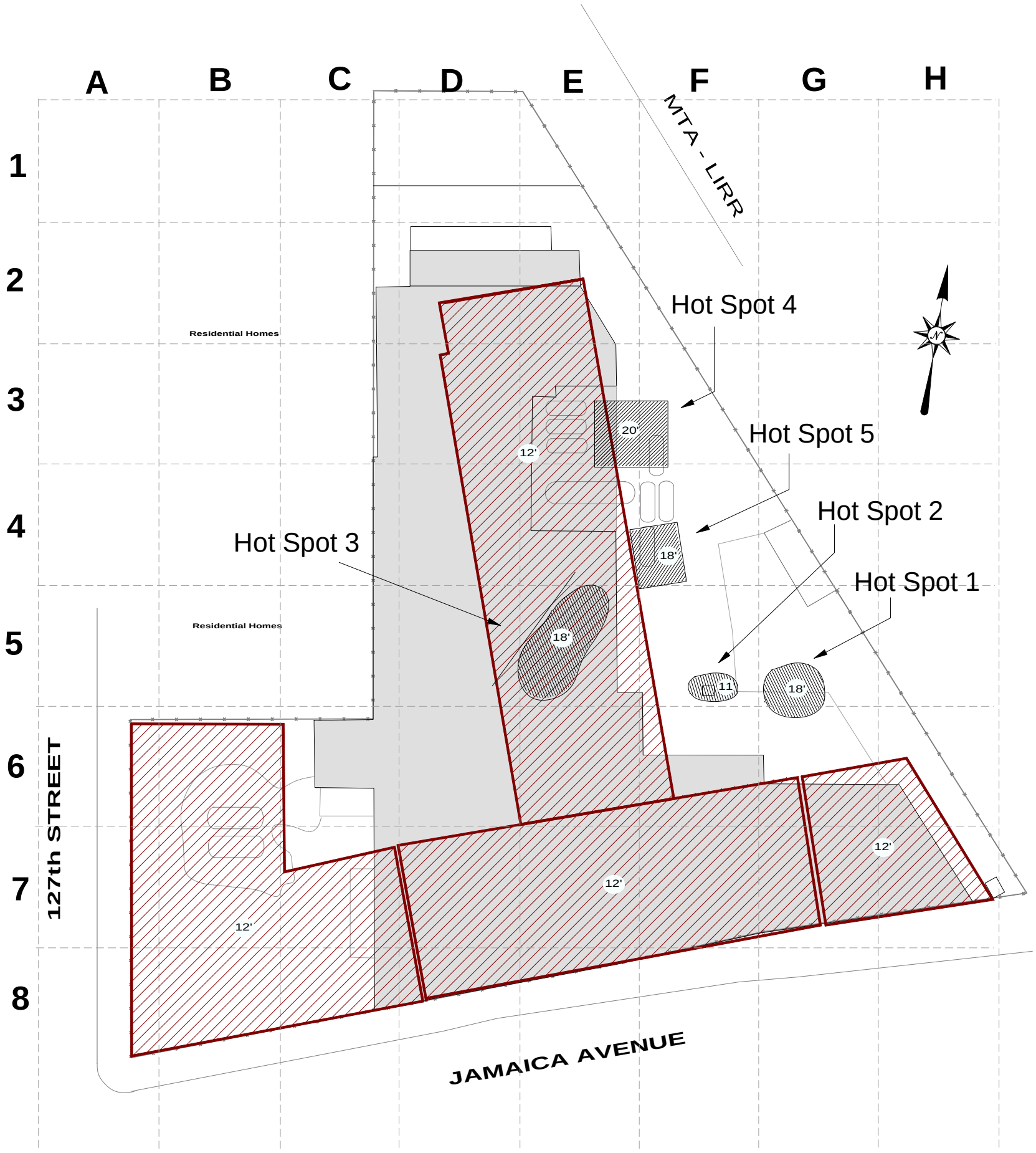

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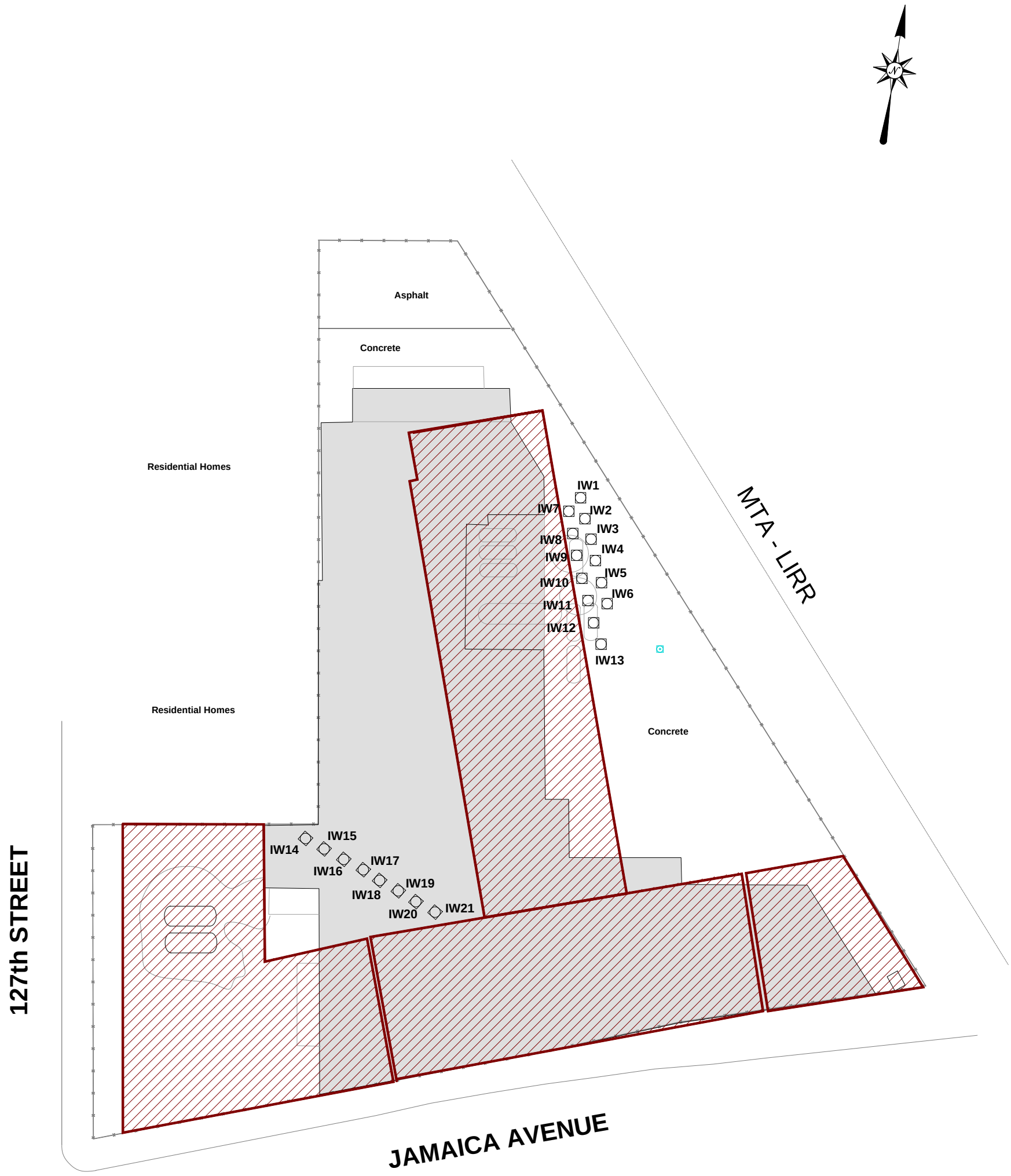
Figure No.
5

Site Name: FORMER UNIFORMS FOR INDUSTRY SITE

Site Address: 129-09 JAMAICA AVENUE, RICHMOND HILL, NY

Drawing Title: SOIL EXCAVATION & HOT SPOT LOCATIONS



KEY:

IWx ○ Chemical Oxidant Injection Well

0 25 50 100

1 Inch = 50 feet

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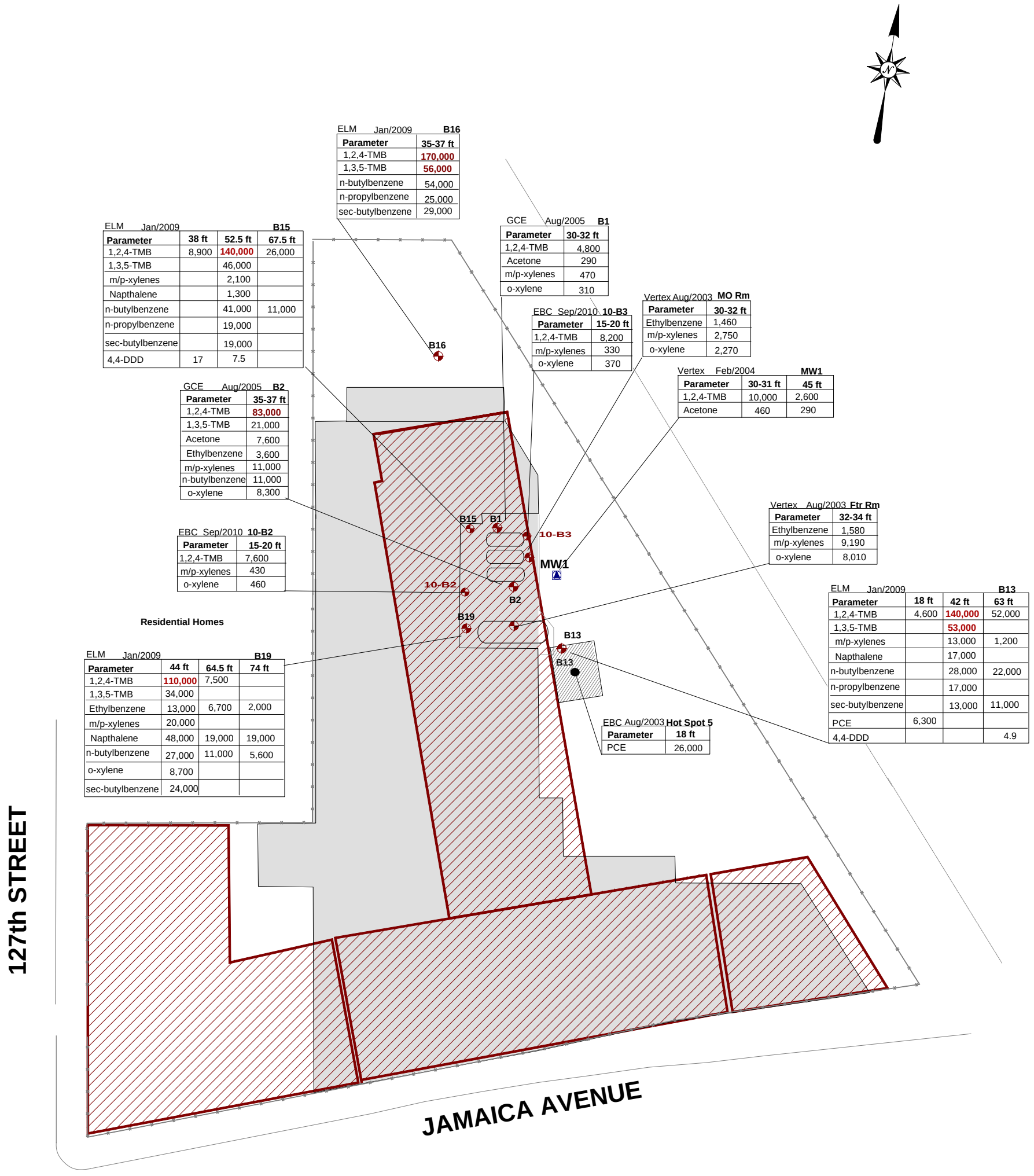
Figure No. **6**

Site Name: FORMER UNIFORMS FOR INDUSTRY SITE

Site Address: 129-09 JAMAICA AVENUE, RICHMOND HILL, NY

Drawing Title: CHEMICAL OXIDANT INJECTION WELL LOCATIONS



Parameter	35-37 ft
1,2,4-TMB	83,000
1,3,5-TMB	21,000
Acetone	7,600
Ethylbenzene	3,600
m/p-xylenes	11,000
n-butylbenzene	11,000
o-xylene	8,300

KEY:

MWx — Monitoring Well

Bx — Soil Boring

New Building

Former Building

0 25 50 100

1 Inch = 50 feet

Notes:

All results in ug/kg

All Values indicate exceedance in Unrestricted SCOs

Values in Red indicate exceedance in Restricted Residential SCOs

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Figure No. 7

Site Name: Former Uniforms For Industry Site

Site Address: 129-09 Jamaica Avenue, Richmond Hill, NY

Drawing Title: Remaining Soil Above f Track 1 & Track 4 SCOs

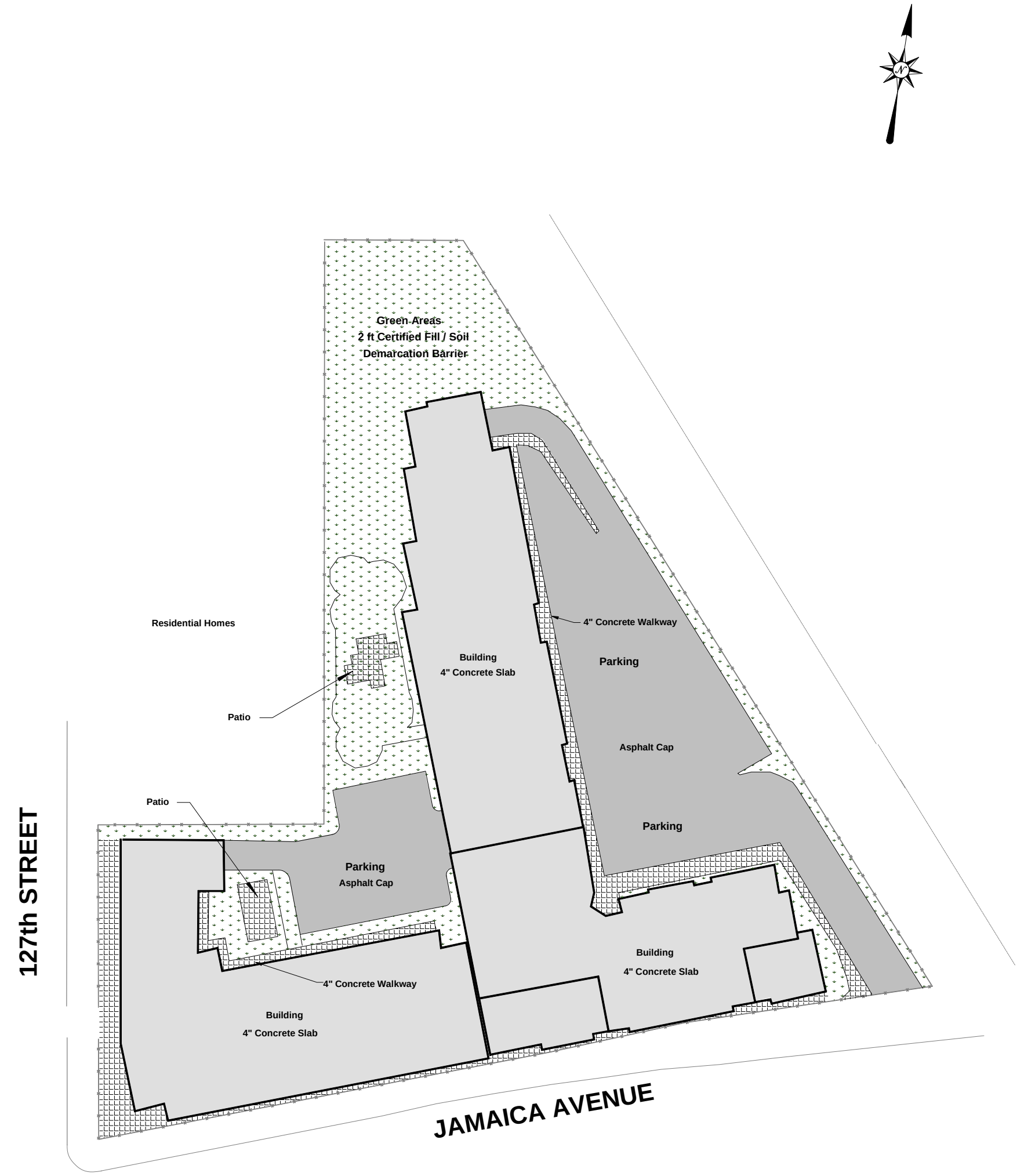

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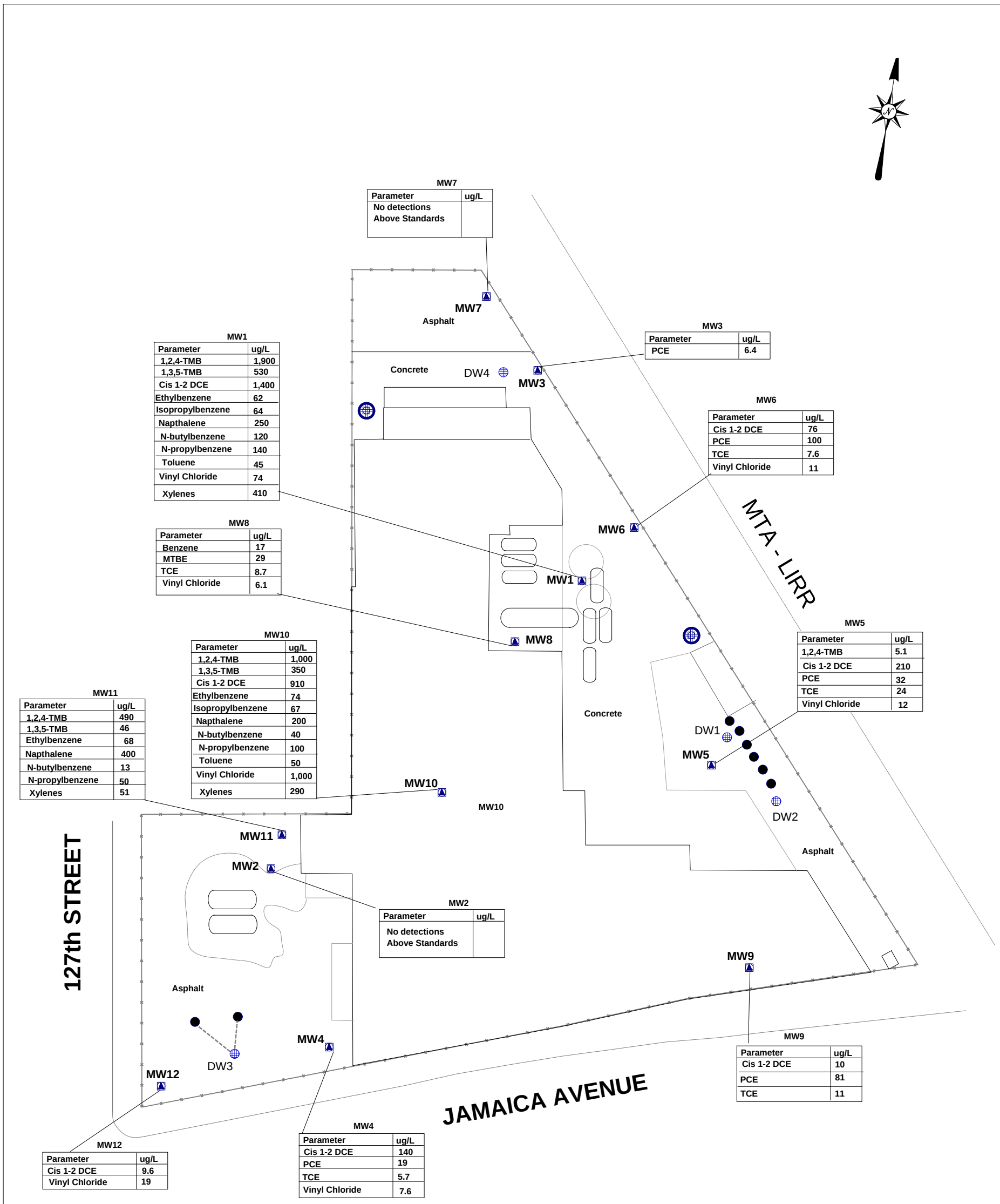
Figure No. 8

Site Name: FORMER UNIFORMS FOR INDUSTRY SITE

Site Address: 129-09 JAMAICA AVENUE, RICHMOND HILL, NY

Drawing Title: LOCATION OF COVER SYSTEM TYPES



Notes:

* Samples not analyzed for full suite of petroleum VOCs during this round

All results in ug/L

Retardation relative to 0.30 porosity and FoC = 0.0005 as follows:

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Figure No. 9

Site Name: Former Uniforms For Industry Site

Site Address: 129-09 Jamaica Avenue, Richmond Hill, NY

Drawing Title: Groundwater Contamination Above Standards

KEY:

MW12xx
Monitoring Well Locations

0 25 50 100

1 Inch = 50 feet

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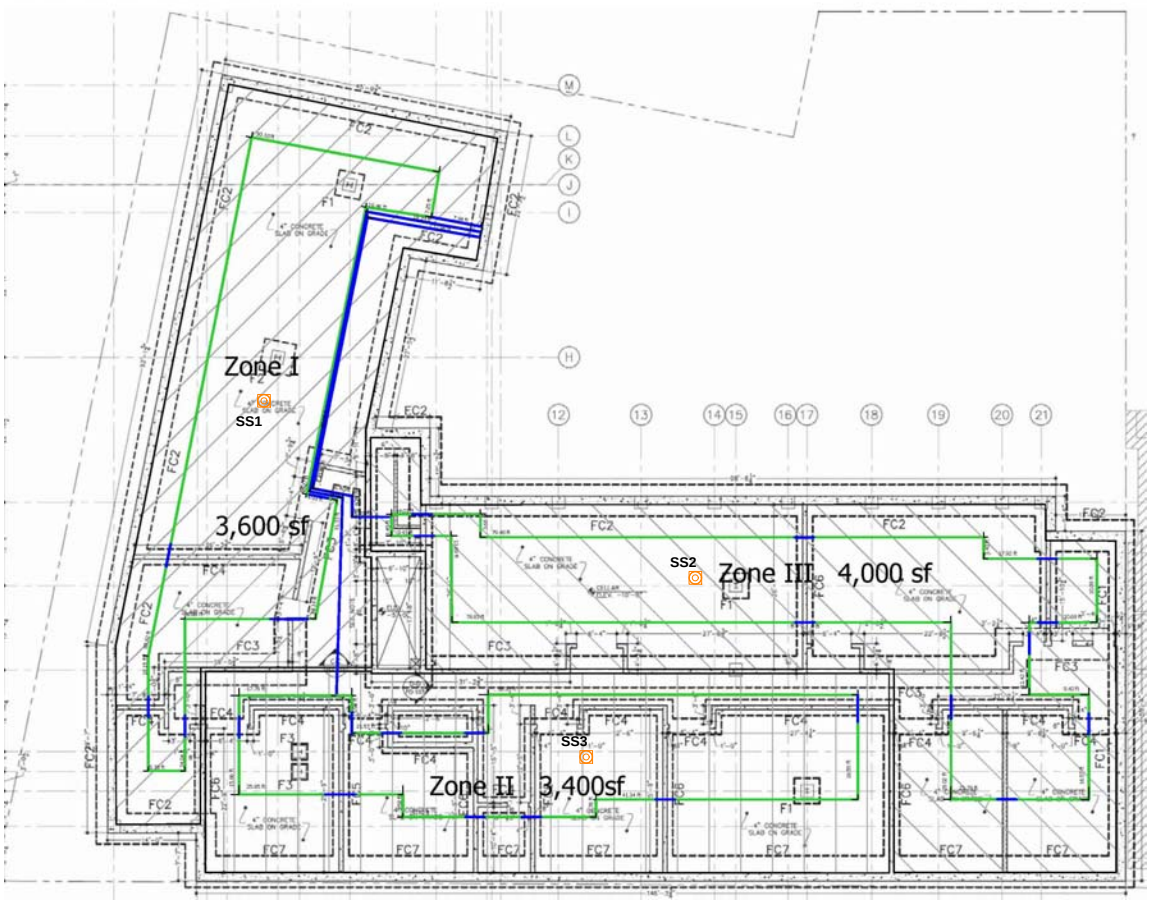
Figure No.
10

Site Name: FORMER UNIFORMS FOR INDUSTRY SITE
Site Address: 129-09 JAMAICA AVENUE, RICHMOND HILL, NY
Drawing Title: ROUNDWATER MONITORING WELL NETWORK



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1808 Middle Country Road. Ridge. NY 11961
Phone: 631.504.6000
Fax: 631.924.2780

Former Uniforms for Industry Site
129-09 Jamaica Avenue, Richmond Hill, NY

FIGURE 11 Subslab Vacuum Testing Locations

ATTACHMENT A
Remedial Investigation Summary Tables

Table 1
Complete Soil Vapor Sampling Results
129-09 Jamaica Avenue
Richmond Hill, NY

SAMPLE NAME	SAMPLE DATE	ANALYTE	CAS NUMBER	RESULTS ppbv	REPORTING LIMIT ppbv
SV-1	11/11/2008	1,1,1,2-Tetrachloroethane	630-20-6	ND	0.72
SV-1	11/11/2008	1,1,1-Trichloroethane	71-55-6	ND	0.91
SV-1	11/11/2008	1,1,2,2-Tetrachloroethane	79-34-5	ND	0.72
SV-1	11/11/2008	1,1,2-Trichloroethane	79-00-5	ND	0.91
SV-1	11/11/2008	1,1,2-Trichlorotrifluoroethane	76-13-1	ND	1.3
SV-1	11/11/2008	1,1-Dichloroethane	75-34-3	ND	1.2
SV-1	11/11/2008	1,1-Dichloroethene	75-35-4	ND	1.2
SV-1	11/11/2008	1,2,4-Trichlorobenzene	120-82-1	ND	1.3
SV-1	11/11/2008	1,2,4-Trimethylbenzene	95-63-6	ND	1.0
SV-1	11/11/2008	1,2-Dibromoethane (EDB)	106-93-4	ND	0.64
SV-1	11/11/2008	1,2-Dichlorobenzene	95-50-1	ND	1.6
SV-1	11/11/2008	1,2-Dichloroethane	107-06-2	ND	1.2
SV-1	11/11/2008	1,2-Dichloroethane-d4	17060-07-0	28.2	2.3
SV-1	11/11/2008	1,2-Dichloropropane	78-87-5	ND	1.1
SV-1	11/11/2008	1,3,5-Trimethylbenzene	108-67-8	ND	1.0
SV-1	11/11/2008	1,3-Butadiene	106-99-0	ND	2.2
SV-1	11/11/2008	1,3-Dichlorobenzene	541-73-1	ND	1.6
SV-1	11/11/2008	1,4-Dichlorobenzene	106-46-7	ND	1.6
SV-1	11/11/2008	1,4-Dioxane	123-91-1	ND	1.4
SV-1	11/11/2008	2-Butanone	78-93-3	ND	1.7
SV-1	11/11/2008	2-Hexanone	591-78-6	ND	2.4
SV-1	11/11/2008	4-Bromofluorobenzene	460-00-4	23.1	1.4
SV-1	11/11/2008	4-Ethyltoluene	622-96-8	ND	1.0
SV-1	11/11/2008	4-Methyl-2-pentanone	108-10-1	ND	1.2
SV-1	11/11/2008	Acetone	67-64-1	9.9	8.3
SV-1	11/11/2008	Benzene	71-43-2	ND	1.5
SV-1	11/11/2008	Benzyl chloride	100-44-7	ND	0.96
SV-1	11/11/2008	Bromodichloromethane	75-27-4	ND	0.74
SV-1	11/11/2008	Bromoform	75-25-2	ND	1.9
SV-1	11/11/2008	Bromomethane	74-83-9	ND	1.3
SV-1	11/11/2008	Carbon disulfide	75-15-0	ND	1.6
SV-1	11/11/2008	Carbon tetrachloride	56-23-5	ND	0.78
SV-1	11/11/2008	Chlorobenzene	108-90-7	ND	1.1
SV-1	11/11/2008	Chloroethane	75-00-3	ND	1.9
SV-1	11/11/2008	Chloroform	67-66-3	ND	1.0
SV-1	11/11/2008	Chloromethane	74-87-3	ND	2.4
SV-1	11/11/2008	cis-1,2-Dichloroethene	156-59-2	ND	1.2
SV-1	11/11/2008	cis-1,3-Dichloropropene	10061-01-5	ND	1.1
SV-1	11/11/2008	Cyclohexane	110-82-7	ND	2.9
SV-1	11/11/2008	Dibromochloromethane	124-48-1	ND	0.58
SV-1	11/11/2008	Dichlorodifluoromethane	75-71-8	ND	2.0
SV-1	11/11/2008	Dichlorotetrafluoroethane	76-14-2	ND	1.4
SV-1	11/11/2008	Ethyl acetate	141-78-6	ND	1.4
SV-1	11/11/2008	Ethylbenzene	100-41-4	ND	1.1
SV-1	11/11/2008	Hexachlorobutadiene	87-68-3	ND	0.92
SV-1	11/11/2008	m,p-Xylene	136777-61-2	ND	1.1
SV-1	11/11/2008	Methyl tert-butyl ether	1634-04-4	ND	1.4
SV-1	11/11/2008	Methylene chloride	75-09-2	ND	2.8
SV-1	11/11/2008	n-Heptane	142-82-5	ND	1.2
SV-1	11/11/2008	n-Hexane	110-54-3	ND	1.4
SV-1	11/11/2008	o-Xylene	95-47-6	ND	1.1
SV-1	11/11/2008	Propene	115-07-1	6.9	5.7
SV-1	11/11/2008	Styrene	100-42-5	ND	1.2
SV-1	11/11/2008	Tetrachloroethene	127-18-4	23	0.73
SV-1	11/11/2008	Tetrahydrofuran	109-99-9	ND	1.7
SV-1	11/11/2008	Toluene	108-88-3	2.5	1.3
SV-1	11/11/2008	Toluene-d8	2037-26-5	22.8	2.4
SV-1	11/11/2008	trans-1,2-Dichloroethene	156-60-5	ND	1.2
SV-1	11/11/2008	trans-1,3-Dichloropropene	10061-02-6	ND	1.1
SV-1	11/11/2008	Trichloroethene	79-01-6	ND	0.92
SV-1	11/11/2008	Trichlorofluoromethane	75-69-4	ND	0.88
SV-1	11/11/2008	Vinyl acetate	108-05-4	ND	2.8
SV-1	11/11/2008	Vinyl chloride	75-01-4	ND	1.9

Table 1
Complete Soil Vapor Sampling Results
129-09 Jamaica Avenue
Richmond Hill, NY

SAMPLE NAME	SAMPLE DATE	ANALYTE	CAS NUMBER	RESULTS ppbv	REPORTING LIMIT ppbv
SV-2	11/11/2008	1,1,1,2-Tetrachloroethane	630-20-6	ND	0.72
SV-2	11/11/2008	1,1,1-Trichloroethane	71-55-6	ND	0.91
SV-2	11/11/2008	1,1,2,2-Tetrachloroethane	79-34-5	ND	0.72
SV-2	11/11/2008	1,1,2-Trichloroethane	79-00-5	ND	0.91
SV-2	11/11/2008	1,1,2-Trichlorotrifluoroethane	76-13-1	ND	1.3
SV-2	11/11/2008	1,1-Dichloroethane	75-34-3	ND	1.2
SV-2	11/11/2008	1,1-Dichloroethene	75-35-4	ND	1.2
SV-2	11/11/2008	1,2,4-Trichlorobenzene	120-82-1	ND	1.3
SV-2	11/11/2008	1,2,4-Trimethylbenzene	95-63-6	ND	1.0
SV-2	11/11/2008	1,2-Dibromoethane (EDB)	106-93-4	ND	0.64
SV-2	11/11/2008	1,2-Dichlorobenzene	95-50-1	ND	1.6
SV-2	11/11/2008	1,2-Dichloroethane	107-06-2	ND	1.2
SV-2	11/11/2008	1,2-Dichloroethane-d4	17060-07-0	22.6	2.3
SV-2	11/11/2008	1,2-Dichloropropane	78-87-5	ND	1.1
SV-2	11/11/2008	1,3,5-Trimethylbenzene	108-67-8	ND	1.0
SV-2	11/11/2008	1,3-Butadiene	106-99-0	ND	2.2
SV-2	11/11/2008	1,3-Dichlorobenzene	541-73-1	ND	1.6
SV-2	11/11/2008	1,4-Dichlorobenzene	106-46-7	ND	1.6
SV-2	11/11/2008	1,4-Dioxane	123-91-1	ND	1.4
SV-2	11/11/2008	2-Butanone	78-93-3	2.2	1.7
SV-2	11/11/2008	2-Hexanone	591-78-6	ND	2.4
SV-2	11/11/2008	4-Bromofluorobenzene	460-00-4	23.2	1.4
SV-2	11/11/2008	4-Ethyltoluene	622-96-8	ND	1.0
SV-2	11/11/2008	4-Methyl-2-pentanone	108-10-1	ND	1.2
SV-2	11/11/2008	Acetone	67-64-1	15	8.3
SV-2	11/11/2008	Benzene	71-43-2	ND	1.5
SV-2	11/11/2008	Benzyl chloride	100-44-7	ND	0.96
SV-2	11/11/2008	Bromodichloromethane	75-27-4	ND	0.74
SV-2	11/11/2008	Bromoform	75-25-2	ND	1.9
SV-2	11/11/2008	Bromomethane	74-83-9	ND	1.3
SV-2	11/11/2008	Carbon disulfide	75-15-0	ND	1.6
SV-2	11/11/2008	Carbon tetrachloride	56-23-5	ND	0.78
SV-2	11/11/2008	Chlorobenzene	108-90-7	ND	1.1
SV-2	11/11/2008	Chloroethane	75-00-3	ND	1.9
SV-2	11/11/2008	Chloroform	67-66-3	ND	1.0
SV-2	11/11/2008	Chloromethane	74-87-3	ND	2.4
SV-2	11/11/2008	cis-1,2-Dichloroethene	156-59-2	1.5	1.2
SV-2	11/11/2008	cis-1,3-Dichloropropene	10061-01-5	ND	1.1
SV-2	11/11/2008	Cyclohexane	110-82-7	ND	2.9
SV-2	11/11/2008	Dibromochloromethane	124-48-1	ND	0.58
SV-2	11/11/2008	Dichlorodifluoromethane	75-71-8	ND	2.0
SV-2	11/11/2008	Dichlorotetrafluoroethane	76-14-2	ND	1.4
SV-2	11/11/2008	Ethyl acetate	141-78-6	ND	1.4
SV-2	11/11/2008	Ethylbenzene	100-41-4	ND	1.1
SV-2	11/11/2008	Hexachlorobutadiene	87-68-3	ND	0.92
SV-2	11/11/2008	m,p-Xylene	136777-61-2	1.6	1.1
SV-2	11/11/2008	Methyl tert-butyl ether	1634-04-4	ND	1.4
SV-2	11/11/2008	Methylene chloride	75-09-2	ND	2.8
SV-2	11/11/2008	n-Heptane	142-82-5	ND	1.2
SV-2	11/11/2008	n-Hexane	110-54-3	ND	1.4
SV-2	11/11/2008	o-Xylene	95-47-6	ND	1.1
SV-2	11/11/2008	Propene	115-07-1	24	5.7
SV-2	11/11/2008	Styrene	100-42-5	ND	1.2
SV-2	11/11/2008	Tetrachloroethene	127-18-4	16	0.73
SV-2	11/11/2008	Tetrahydrofuran	109-99-9	ND	1.7
SV-2	11/11/2008	Toluene	108-88-3	4.6	1.3
SV-2	11/11/2008	Toluene-d8	2037-26-5	23.5	2.4
SV-2	11/11/2008	trans-1,2-Dichloroethene	156-60-5	ND	1.2
SV-2	11/11/2008	trans-1,3-Dichloropropene	10061-02-6	ND	1.1
SV-2	11/11/2008	Trichloroethene	79-01-6	ND	0.92
SV-2	11/11/2008	Trichlorofluoromethane	75-69-4	ND	0.88
SV-2	11/11/2008	Vinyl acetate	108-05-4	ND	2.8
SV-2	11/11/2008	Vinyl chloride	75-01-4	ND	1.9

Table 1
Complete Soil Vapor Sampling Results
129-09 Jamaica Avenue
Richmond Hill, NY

SAMPLE NAME	SAMPLE DATE	ANALYTE	CAS NUMBER	RESULTS ppbv	REPORTING LIMIT ppbv
SV-3	11/11/2008	1,1,1,2-Tetrachloroethane	630-20-6	ND	0.72
SV-3	11/11/2008	1,1,1-Trichloroethane	71-55-6	ND	0.91
SV-3	11/11/2008	1,1,2,2-Tetrachloroethane	79-34-5	ND	0.72
SV-3	11/11/2008	1,1,2-Trichloroethane	79-00-5	ND	0.91
SV-3	11/11/2008	1,1,2-Trichlorotrifluoroethane	76-13-1	ND	1.3
SV-3	11/11/2008	1,1-Dichloroethane	75-34-3	ND	1.2
SV-3	11/11/2008	1,1-Dichloroethene	75-35-4	ND	1.2
SV-3	11/11/2008	1,2,4-Trichlorobenzene	120-82-1	ND	1.3
SV-3	11/11/2008	1,2,4-Trimethylbenzene	95-63-6	ND	1.0
SV-3	11/11/2008	1,2-Dibromoethane (EDB)	106-93-4	ND	0.64
SV-3	11/11/2008	1,2-Dichlorobenzene	95-50-1	ND	1.6
SV-3	11/11/2008	1,2-Dichloroethane	107-06-2	ND	1.2
SV-3	11/11/2008	1,2-Dichloroethane-d4	17060-07-0	28.5	2.3
SV-3	11/11/2008	1,2-Dichloropropane	78-87-5	ND	1.1
SV-3	11/11/2008	1,3,5-Trimethylbenzene	108-67-8	ND	1.0
SV-3	11/11/2008	1,3-Butadiene	106-99-0	ND	2.2
SV-3	11/11/2008	1,3-Dichlorobenzene	541-73-1	ND	1.6
SV-3	11/11/2008	1,4-Dichlorobenzene	106-46-7	ND	1.6
SV-3	11/11/2008	1,4-Dioxane	123-91-1	ND	1.4
SV-3	11/11/2008	2-Butanone	78-93-3	ND	1.7
SV-3	11/11/2008	2-Hexanone	591-78-6	ND	2.4
SV-3	11/11/2008	4-Bromofluorobenzene	460-00-4	23.8	1.4
SV-3	11/11/2008	4-Ethyltoluene	622-96-8	ND	1.0
SV-3	11/11/2008	4-Methyl-2-pentanone	108-10-1	ND	1.2
SV-3	11/11/2008	Acetone	67-64-1	11	8.3
SV-3	11/11/2008	Benzene	71-43-2	1.8	1.5
SV-3	11/11/2008	Benzyl chloride	100-44-7	ND	0.96
SV-3	11/11/2008	Bromodichloromethane	75-27-4	ND	0.74
SV-3	11/11/2008	Bromoform	75-25-2	ND	1.9
SV-3	11/11/2008	Bromomethane	74-83-9	ND	1.3
SV-3	11/11/2008	Carbon disulfide	75-15-0	2.5	1.6
SV-3	11/11/2008	Carbon tetrachloride	56-23-5	ND	0.78
SV-3	11/11/2008	Chlorobenzene	108-90-7	ND	1.1
SV-3	11/11/2008	Chloroethane	75-00-3	ND	1.9
SV-3	11/11/2008	Chloroform	67-66-3	170	1.0
SV-3	11/11/2008	Chloromethane	74-87-3	ND	2.4
SV-3	11/11/2008	cis-1,2-Dichloroethene	156-59-2	ND	1.2
SV-3	11/11/2008	cis-1,3-Dichloropropene	10061-01-5	ND	1.1
SV-3	11/11/2008	Cyclohexane	110-82-7	ND	2.9
SV-3	11/11/2008	Dibromochloromethane	124-48-1	ND	0.58
SV-3	11/11/2008	Dichlorodifluoromethane	75-71-8	ND	2.0
SV-3	11/11/2008	Dichlorotetrafluoroethane	76-14-2	ND	1.4
SV-3	11/11/2008	Ethyl acetate	141-78-6	ND	1.4
SV-3	11/11/2008	Ethylbenzene	100-41-4	ND	1.1
SV-3	11/11/2008	Hexachlorobutadiene	87-68-3	ND	0.92
SV-3	11/11/2008	m,p-Xylene	136777-61-2	1.7	1.1
SV-3	11/11/2008	Methyl tert-butyl ether	1634-04-4	ND	1.4
SV-3	11/11/2008	Methylene chloride	75-09-2	ND	2.8
SV-3	11/11/2008	n-Heptane	142-82-5	ND	1.2
SV-3	11/11/2008	n-Hexane	110-54-3	ND	1.4
SV-3	11/11/2008	o-Xylene	95-47-6	ND	1.1
SV-3	11/11/2008	Propene	115-07-1	87	5.7
SV-3	11/11/2008	Styrene	100-42-5	ND	1.2
SV-3	11/11/2008	Tetrachloroethene	127-18-4	110	0.73
SV-3	11/11/2008	Tetrahydrofuran	109-99-9	ND	1.7
SV-3	11/11/2008	Toluene	108-88-3	3.8	1.3
SV-3	11/11/2008	Toluene-d8	2037-26-5	23.2	2.4
SV-3	11/11/2008	trans-1,2-Dichloroethene	156-60-5	ND	1.2
SV-3	11/11/2008	trans-1,3-Dichloropropene	10061-02-6	ND	1.1
SV-3	11/11/2008	Trichloroethene	79-01-6	2.3	0.92
SV-3	11/11/2008	Trichlorofluoromethane	75-69-4	0.92	0.88
SV-3	11/11/2008	Vinyl acetate	108-05-4	ND	2.8
SV-3	11/11/2008	Vinyl chloride	75-01-4	ND	1.9

Table 1
Complete Soil Vapor Sampling Results
129-09 Jamaica Avenue
Richmond Hill, NY

SAMPLE NAME	SAMPLE DATE	ANALYTE	CAS NUMBER	RESULTS ppbv	REPORTING LIMIT ppbv
SV-4	11/11/2008	1,1,1,2-Tetrachloroethane	630-20-6	ND	720
SV-4	11/11/2008	1,1,1-Trichloroethane	71-55-6	ND	910
SV-4	11/11/2008	1,1,2,2-Tetrachloroethane	79-34-5	ND	720
SV-4	11/11/2008	1,1,2-Trichloroethane	79-00-5	ND	910
SV-4	11/11/2008	1,1,2-Trichlorotrifluoroethane	76-13-1	ND	1300
SV-4	11/11/2008	1,1-Dichloroethane	75-34-3	ND	1200
SV-4	11/11/2008	1,1-Dichloroethene	75-35-4	ND	1200
SV-4	11/11/2008	1,2,4-Trichlorobenzene	120-82-1	ND	1300
SV-4	11/11/2008	1,2,4-Trimethylbenzene	95-63-6	ND	1000
SV-4	11/11/2008	1,2-Dibromoethane (EDB)	106-93-4	ND	640
SV-4	11/11/2008	1,2-Dichlorobenzene	95-50-1	ND	1600
SV-4	11/11/2008	1,2-Dichloroethane	107-06-2	ND	1200
SV-4	11/11/2008	1,2-Dichloroethane-d4	17060-07-0	21.0	2.3
SV-4	11/11/2008	1,2-Dichloropropane	78-87-5	ND	1100
SV-4	11/11/2008	1,3,5-Trimethylbenzene	108-67-8	ND	1000
SV-4	11/11/2008	1,3-Butadiene	106-99-0	ND	2200
SV-4	11/11/2008	1,3-Dichlorobenzene	541-73-1	ND	1600
SV-4	11/11/2008	1,4-Dichlorobenzene	106-46-7	ND	1600
SV-4	11/11/2008	1,4-Dioxane	123-91-1	ND	1400
SV-4	11/11/2008	2-Butanone	78-93-3	ND	1700
SV-4	11/11/2008	2-Hexanone	591-78-6	ND	2400
SV-4	11/11/2008	4-Bromofluorobenzene	460-00-4	22.7	1.4
SV-4	11/11/2008	4-Ethyltoluene	622-96-8	ND	1000
SV-4	11/11/2008	4-Methyl-2-pentanone	108-10-1	ND	1200
SV-4	11/11/2008	Acetone	67-64-1	ND	8300
SV-4	11/11/2008	Benzene	71-43-2	ND	1500
SV-4	11/11/2008	Benzyl chloride	100-44-7	ND	960
SV-4	11/11/2008	Bromodichloromethane	75-27-4	ND	740
SV-4	11/11/2008	Bromoform	75-25-2	ND	1900
SV-4	11/11/2008	Bromomethane	74-83-9	ND	1300
SV-4	11/11/2008	Carbon disulfide	75-15-0	ND	1600
SV-4	11/11/2008	Carbon tetrachloride	56-23-5	ND	780
SV-4	11/11/2008	Chlorobenzene	108-90-7	ND	1100
SV-4	11/11/2008	Chloroethane	75-00-3	ND	1900
SV-4	11/11/2008	Chloroform	67-66-3	ND	1000
SV-4	11/11/2008	Chloromethane	74-87-3	ND	2400
SV-4	11/11/2008	cis-1,2-Dichloroethene	156-59-2	55000	1200
SV-4	11/11/2008	cis-1,3-Dichloropropene	10061-01-5	ND	1100
SV-4	11/11/2008	Cyclohexane	110-82-7	ND	2900
SV-4	11/11/2008	Dibromochloromethane	124-48-1	ND	580
SV-4	11/11/2008	Dichlorodifluoromethane	75-71-8	ND	2000
SV-4	11/11/2008	Dichlorotetrafluoroethane	76-14-2	ND	1400
SV-4	11/11/2008	Ethyl acetate	141-78-6	ND	1400
SV-4	11/11/2008	Ethylbenzene	100-41-4	ND	1100
SV-4	11/11/2008	Hexachlorobutadiene	87-68-3	ND	920
SV-4	11/11/2008	m,p-Xylene	136777-61-2	ND	1100
SV-4	11/11/2008	Methyl tert-butyl ether	1634-04-4	ND	1400
SV-4	11/11/2008	Methylene chloride	75-09-2	ND	2800
SV-4	11/11/2008	n-Heptane	142-82-5	ND	1200
SV-4	11/11/2008	n-Hexane	110-54-3	ND	1400
SV-4	11/11/2008	o-Xylene	95-47-6	ND	1100
SV-4	11/11/2008	Propene	115-07-1	ND	5700
SV-4	11/11/2008	Styrene	100-42-5	ND	1200
SV-4	11/11/2008	Tetrachloroethene	127-18-4	130000	730
SV-4	11/11/2008	Tetrahydrofuran	109-99-9	ND	1700
SV-4	11/11/2008	Toluene	108-88-3	ND	1300
SV-4	11/11/2008	Toluene-d8	2037-26-5	24.9	2.4
SV-4	11/11/2008	trans-1,2-Dichloroethene	156-60-5	ND	1200
SV-4	11/11/2008	trans-1,3-Dichloropropene	10061-02-6	ND	1100
SV-4	11/11/2008	Trichloroethene	79-01-6	16000	920
SV-4	11/11/2008	Trichlorofluoromethane	75-69-4	ND	880
SV-4	11/11/2008	Vinyl acetate	108-05-4	ND	2800
SV-4	11/11/2008	Vinyl chloride	75-01-4	ND	1900

Table 1
Complete Soil Vapor Sampling Results
129-09 Jamaica Avenue
Richmond Hill, NY

SAMPLE NAME	SAMPLE DATE	ANALYTE	CAS NUMBER	RESULTS ppbv	REPORTING LIMIT ppbv
SV-5	11/11/2008	1,1,1,2-Tetrachloroethane	630-20-6	ND	1800
SV-5	11/11/2008	1,1,1-Trichloroethane	71-55-6	ND	2300
SV-5	11/11/2008	1,1,2,2-Tetrachloroethane	79-34-5	ND	1800
SV-5	11/11/2008	1,1,2-Trichloroethane	79-00-5	ND	2300
SV-5	11/11/2008	1,1,2-Trichlorotrifluoroethane	76-13-1	ND	3200
SV-5	11/11/2008	1,1-Dichloroethane	75-34-3	ND	3000
SV-5	11/11/2008	1,1-Dichloroethene	75-35-4	ND	3100
SV-5	11/11/2008	1,2,4-Trichlorobenzene	120-82-1	ND	3300
SV-5	11/11/2008	1,2,4-Trimethylbenzene	95-63-6	ND	2500
SV-5	11/11/2008	1,2-Dibromoethane (EDB)	106-93-4	ND	1600
SV-5	11/11/2008	1,2-Dichlorobenzene	95-50-1	ND	4100
SV-5	11/11/2008	1,2-Dichloroethane	107-06-2	ND	3000
SV-5	11/11/2008	1,2-Dichloroethane-d4	17060-07-0	20.5	2.3
SV-5	11/11/2008	1,2-Dichloropropane	78-87-5	ND	2700
SV-5	11/11/2008	1,3,5-Trimethylbenzene	108-67-8	ND	2500
SV-5	11/11/2008	1,3-Butadiene	106-99-0	ND	5600
SV-5	11/11/2008	1,3-Dichlorobenzene	541-73-1	ND	4100
SV-5	11/11/2008	1,4-Dichlorobenzene	106-46-7	ND	4100
SV-5	11/11/2008	1,4-Dioxane	123-91-1	ND	3400
SV-5	11/11/2008	2-Butanone	78-93-3	ND	4200
SV-5	11/11/2008	2-Hexanone	591-78-6	ND	6000
SV-5	11/11/2008	4-Bromofluorobenzene	460-00-4	22.4	1.4
SV-5	11/11/2008	4-Ethyltoluene	622-96-8	ND	2500
SV-5	11/11/2008	4-Methyl-2-pentanone	108-10-1	ND	3000
SV-5	11/11/2008	Acetone	67-64-1	ND	21000
SV-5	11/11/2008	Benzene	71-43-2	ND	3900
SV-5	11/11/2008	Benzyl chloride	100-44-7	ND	2400
SV-5	11/11/2008	Bromodichloromethane	75-27-4	ND	1800
SV-5	11/11/2008	Bromoform	75-25-2	ND	4800
SV-5	11/11/2008	Bromomethane	74-83-9	ND	3200
SV-5	11/11/2008	Carbon disulfide	75-15-0	ND	4000
SV-5	11/11/2008	Carbon tetrachloride	56-23-5	ND	2000
SV-5	11/11/2008	Chlorobenzene	108-90-7	ND	2700
SV-5	11/11/2008	Chloroethane	75-00-3	ND	4700
SV-5	11/11/2008	Chloroform	67-66-3	ND	2500
SV-5	11/11/2008	Chloromethane	74-87-3	ND	6000
SV-5	11/11/2008	cis-1,2-Dichloroethene	156-59-2	220000	3100
SV-5	11/11/2008	cis-1,3-Dichloropropene	10061-01-5	ND	2700
SV-5	11/11/2008	Cyclohexane	110-82-7	ND	7200
SV-5	11/11/2008	Dibromochloromethane	124-48-1	ND	1400
SV-5	11/11/2008	Dichlorodifluoromethane	75-71-8	ND	5000
SV-5	11/11/2008	Dichlorotetrafluoroethane	76-14-2	ND	3500
SV-5	11/11/2008	Ethyl acetate	141-78-6	ND	3400
SV-5	11/11/2008	Ethylbenzene	100-41-4	ND	2800
SV-5	11/11/2008	Hexachlorobutadiene	87-68-3	ND	2300
SV-5	11/11/2008	m,p-Xylene	136777-61-2	ND	2800
SV-5	11/11/2008	Methyl tert-butyl ether	1634-04-4	ND	3400
SV-5	11/11/2008	Methylene chloride	75-09-2	ND	7100
SV-5	11/11/2008	n-Heptane	142-82-5	ND	3000
SV-5	11/11/2008	n-Hexane	110-54-3	ND	3500
SV-5	11/11/2008	o-Xylene	95-47-6	ND	2800
SV-5	11/11/2008	Propene	115-07-1	ND	14000
SV-5	11/11/2008	Styrene	100-42-5	ND	2900
SV-5	11/11/2008	Tetrachloroethene	127-18-4	620000	1800
SV-5	11/11/2008	Tetrahydrofuran	109-99-9	ND	4200
SV-5	11/11/2008	Toluene	108-88-3	ND	3300
SV-5	11/11/2008	Toluene-d8	2037-26-5	26.0	2.4
SV-5	11/11/2008	trans-1,2-Dichloroethene	156-60-5	ND	3100
SV-5	11/11/2008	trans-1,3-Dichloropropene	10061-02-6	ND	2700
SV-5	11/11/2008	Trichloroethene	79-01-6	41000	2300
SV-5	11/11/2008	Trichlorofluoromethane	75-69-4	ND	2200
SV-5	11/11/2008	Vinyl acetate	108-05-4	ND	7000
SV-5	11/11/2008	Vinyl chloride	75-01-4	ND	4900

Table 1
Complete Soil Vapor Sampling Results
129-09 Jamaica Avenue
Richmond Hill, NY

SAMPLE NAME	SAMPLE DATE	ANALYTE	CAS NUMBER	RESULTS ppbv	REPORTING LIMIT ppbv
SV-5 DUP	11/11/2008	1,1,1,2-Tetrachloroethane	630-20-6	ND	1800
SV-5 DUP	11/11/2008	1,1,1-Trichloroethane	71-55-6	ND	2300
SV-5 DUP	11/11/2008	1,1,2,2-Tetrachloroethane	79-34-5	ND	1800
SV-5 DUP	11/11/2008	1,1,2-Trichloroethane	79-00-5	ND	2300
SV-5 DUP	11/11/2008	1,1,2-Trichlorotrifluoroethane	76-13-1	ND	3200
SV-5 DUP	11/11/2008	1,1-Dichloroethane	75-34-3	ND	3000
SV-5 DUP	11/11/2008	1,1-Dichloroethene	75-35-4	ND	3100
SV-5 DUP	11/11/2008	1,2,4-Trichlorobenzene	120-82-1	ND	3300
SV-5 DUP	11/11/2008	1,2,4-Trimethylbenzene	95-63-6	ND	2500
SV-5 DUP	11/11/2008	1,2-Dibromoethane (EDB)	106-93-4	ND	1600
SV-5 DUP	11/11/2008	1,2-Dichlorobenzene	95-50-1	ND	4100
SV-5 DUP	11/11/2008	1,2-Dichloroethane	107-06-2	ND	3000
SV-5 DUP	11/11/2008	1,2-Dichloroethane-d4	17060-07-0	19.5	2.3
SV-5 DUP	11/11/2008	1,2-Dichloropropane	78-87-5	ND	2700
SV-5 DUP	11/11/2008	1,3,5-Trimethylbenzene	108-67-8	ND	2500
SV-5 DUP	11/11/2008	1,3-Butadiene	106-99-0	ND	5600
SV-5 DUP	11/11/2008	1,3-Dichlorobenzene	541-73-1	ND	4100
SV-5 DUP	11/11/2008	1,4-Dichlorobenzene	106-46-7	ND	4100
SV-5 DUP	11/11/2008	1,4-Dioxane	123-91-1	ND	3400
SV-5 DUP	11/11/2008	2-Butanone	78-93-3	ND	4200
SV-5 DUP	11/11/2008	2-Hexanone	591-78-6	ND	6000
SV-5 DUP	11/11/2008	4-Bromofluorobenzene	460-00-4	21.6	1.4
SV-5 DUP	11/11/2008	4-Ethyltoluene	622-96-8	ND	2500
SV-5 DUP	11/11/2008	4-Methyl-2-pentanone	108-10-1	ND	3000
SV-5 DUP	11/11/2008	Acetone	67-64-1	ND	21000
SV-5 DUP	11/11/2008	Benzene	71-43-2	ND	3900
SV-5 DUP	11/11/2008	Benzyl chloride	100-44-7	ND	2400
SV-5 DUP	11/11/2008	Bromodichloromethane	75-27-4	ND	1800
SV-5 DUP	11/11/2008	Bromoform	75-25-2	ND	4800
SV-5 DUP	11/11/2008	Bromomethane	74-83-9	ND	3200
SV-5 DUP	11/11/2008	Carbon disulfide	75-15-0	ND	4000
SV-5 DUP	11/11/2008	Carbon tetrachloride	56-23-5	ND	2000
SV-5 DUP	11/11/2008	Chlorobenzene	108-90-7	ND	2700
SV-5 DUP	11/11/2008	Chloroethane	75-00-3	ND	4700
SV-5 DUP	11/11/2008	Chloroform	67-66-3	ND	2500
SV-5 DUP	11/11/2008	Chloromethane	74-87-3	ND	6000
SV-5 DUP	11/11/2008	cis-1,2-Dichloroethene	156-59-2	230000	3100
SV-5 DUP	11/11/2008	cis-1,3-Dichloropropene	10061-01-5	ND	2700
SV-5 DUP	11/11/2008	Cyclohexane	110-82-7	ND	7200
SV-5 DUP	11/11/2008	Dibromochloromethane	124-48-1	ND	1400
SV-5 DUP	11/11/2008	Dichlorodifluoromethane	75-71-8	ND	5000
SV-5 DUP	11/11/2008	Dichlorotetrafluoroethane	76-14-2	ND	3500
SV-5 DUP	11/11/2008	Ethyl acetate	141-78-6	ND	3400
SV-5 DUP	11/11/2008	Ethylbenzene	100-41-4	ND	2800
SV-5 DUP	11/11/2008	Hexachlorobutadiene	87-68-3	ND	2300
SV-5 DUP	11/11/2008	m,p-Xylene	136777-61-2	ND	2800
SV-5 DUP	11/11/2008	Methyl tert-butyl ether	1634-04-4	ND	3400
SV-5 DUP	11/11/2008	Methylene chloride	75-09-2	ND	7100
SV-5 DUP	11/11/2008	n-Heptane	142-82-5	ND	3000
SV-5 DUP	11/11/2008	n-Hexane	110-54-3	ND	3500
SV-5 DUP	11/11/2008	o-Xylene	95-47-6	ND	2800
SV-5 DUP	11/11/2008	Propene	115-07-1	ND	14000
SV-5 DUP	11/11/2008	Styrene	100-42-5	ND	2900
SV-5 DUP	11/11/2008	Tetrachloroethene	127-18-4	780000	1800
SV-5 DUP	11/11/2008	Tetrahydrofuran	109-99-9	ND	4200
SV-5 DUP	11/11/2008	Toluene	108-88-3	ND	3300
SV-5 DUP	11/11/2008	Toluene-d8	2037-26-5	26.1	2.4
SV-5 DUP	11/11/2008	trans-1,2-Dichloroethene	156-60-5	ND	3100
SV-5 DUP	11/11/2008	trans-1,3-Dichloropropene	10061-02-6	ND	2700
SV-5 DUP	11/11/2008	Trichloroethene	79-01-6	46000	2300
SV-5 DUP	11/11/2008	Trichlorofluoromethane	75-69-4	ND	2200
SV-5 DUP	11/11/2008	Vinyl acetate	108-05-4	ND	7000
SV-5 DUP	11/11/2008	Vinyl chloride	75-01-4	ND	4900

Table 1
Complete Soil Vapor Sampling Results
129-09 Jamaica Avenue
Richmond Hill, NY

SAMPLE NAME	SAMPLE DATE	ANALYTE	CAS NUMBER	RESULTS ppbv	REPORTING LIMIT ppbv
SV-6	11/11/2008	1,1,1,2-Tetrachloroethane	630-20-6	ND	14
SV-6	11/11/2008	1,1,1-Trichloroethane	71-55-6	ND	18
SV-6	11/11/2008	1,1,2,2-Tetrachloroethane	79-34-5	ND	14
SV-6	11/11/2008	1,1,2-Trichloroethane	79-00-5	ND	18
SV-6	11/11/2008	1,1,2-Trichlorotrifluoroethane	76-13-1	ND	26
SV-6	11/11/2008	1,1-Dichloroethane	75-34-3	ND	24
SV-6	11/11/2008	1,1-Dichloroethene	75-35-4	ND	25
SV-6	11/11/2008	1,2,4-Trichlorobenzene	120-82-1	ND	27
SV-6	11/11/2008	1,2,4-Trimethylbenzene	95-63-6	ND	20
SV-6	11/11/2008	1,2-Dibromoethane (EDB)	106-93-4	ND	13
SV-6	11/11/2008	1,2-Dichlorobenzene	95-50-1	ND	33
SV-6	11/11/2008	1,2-Dichloroethane	107-06-2	ND	24
SV-6	11/11/2008	1,2-Dichloroethane-d4	17060-07-0	19.5	2.3
SV-6	11/11/2008	1,2-Dichloropropane	78-87-5	ND	21
SV-6	11/11/2008	1,3,5-Trimethylbenzene	108-67-8	ND	20
SV-6	11/11/2008	1,3-Butadiene	106-99-0	ND	45
SV-6	11/11/2008	1,3-Dichlorobenzene	541-73-1	ND	33
SV-6	11/11/2008	1,4-Dichlorobenzene	106-46-7	ND	33
SV-6	11/11/2008	1,4-Dioxane	123-91-1	ND	27
SV-6	11/11/2008	2-Butanone	78-93-3	ND	33
SV-6	11/11/2008	2-Hexanone	591-78-6	ND	48
SV-6	11/11/2008	4-Bromofluorobenzene	460-00-4	23.7	1.4
SV-6	11/11/2008	4-Ethyltoluene	622-96-8	ND	20
SV-6	11/11/2008	4-Methyl-2-pentanone	108-10-1	ND	24
SV-6	11/11/2008	Acetone	67-64-1	ND	170
SV-6	11/11/2008	Benzene	71-43-2	ND	31
SV-6	11/11/2008	Benzyl chloride	100-44-7	ND	19
SV-6	11/11/2008	Bromodichloromethane	75-27-4	ND	15
SV-6	11/11/2008	Bromoform	75-25-2	ND	38
SV-6	11/11/2008	Bromomethane	74-83-9	ND	25
SV-6	11/11/2008	Carbon disulfide	75-15-0	ND	32
SV-6	11/11/2008	Carbon tetrachloride	56-23-5	ND	16
SV-6	11/11/2008	Chlorobenzene	108-90-7	ND	21
SV-6	11/11/2008	Chloroethane	75-00-3	ND	37
SV-6	11/11/2008	Chloroform	67-66-3	ND	20
SV-6	11/11/2008	Chloromethane	74-87-3	ND	48
SV-6	11/11/2008	cis-1,2-Dichloroethene	156-59-2	ND	25
SV-6	11/11/2008	cis-1,3-Dichloropropene	10061-01-5	ND	22
SV-6	11/11/2008	Cyclohexane	110-82-7	ND	57
SV-6	11/11/2008	Dibromochloromethane	124-48-1	ND	12
SV-6	11/11/2008	Dichlorodifluoromethane	75-71-8	ND	40
SV-6	11/11/2008	Dichlorotetrafluoroethane	76-14-2	ND	28
SV-6	11/11/2008	Ethyl acetate	141-78-6	ND	27
SV-6	11/11/2008	Ethylbenzene	100-41-4	ND	23
SV-6	11/11/2008	Hexachlorobutadiene	87-68-3	ND	18
SV-6	11/11/2008	m,p-Xylene	136777-61-2	ND	23
SV-6	11/11/2008	Methyl tert-butyl ether	1634-04-4	ND	27
SV-6	11/11/2008	Methylene chloride	75-09-2	ND	57
SV-6	11/11/2008	n-Heptane	142-82-5	ND	24
SV-6	11/11/2008	n-Hexane	110-54-3	ND	28
SV-6	11/11/2008	o-Xylene	95-47-6	ND	23
SV-6	11/11/2008	Propene	115-07-1	ND	110
SV-6	11/11/2008	Styrene	100-42-5	ND	23
SV-6	11/11/2008	Tetrachloroethene	127-18-4	350	15
SV-6	11/11/2008	Tetrahydrofuran	109-99-9	ND	33
SV-6	11/11/2008	Toluene	108-88-3	ND	26
SV-6	11/11/2008	Toluene-d8	2037-26-5	27.1	2.4
SV-6	11/11/2008	trans-1,2-Dichloroethene	156-60-5	ND	25
SV-6	11/11/2008	trans-1,3-Dichloropropene	10061-02-6	ND	22
SV-6	11/11/2008	Trichloroethene	79-01-6	ND	18
SV-6	11/11/2008	Vinyl acetate	108-05-4	ND	56
SV-6	11/11/2008	Vinyl chloride	75-01-4	ND	39

Table 1
Complete Soil Vapor Sampling Results
129-09 Jamaica Avenue
Richmond Hill, NY

SAMPLE NAME	SAMPLE DATE	ANALYTE	CAS NUMBER	RESULTS ppbv	REPORTING LIMIT ppbv
SV-7	11/11/2008	1,1,1,2-Tetrachloroethane	630-20-6	ND	36
SV-7	11/11/2008	1,1,1-Trichloroethane	71-55-6	ND	45
SV-7	11/11/2008	1,1,2,2-Tetrachloroethane	79-34-5	ND	36
SV-7	11/11/2008	1,1,2-Trichloroethane	79-00-5	ND	45
SV-7	11/11/2008	1,1,2-Trichlorotrifluoroethane	76-13-1	ND	65
SV-7	11/11/2008	1,1-Dichloroethane	75-34-3	ND	61
SV-7	11/11/2008	1,1-Dichloroethene	75-35-4	ND	62
SV-7	11/11/2008	1,2,4-Trichlorobenzene	120-82-1	ND	66
SV-7	11/11/2008	1,2,4-Trimethylbenzene	95-63-6	ND	50
SV-7	11/11/2008	1,2-Dibromoethane (EDB)	106-93-4	ND	32
SV-7	11/11/2008	1,2-Dichlorobenzene	95-50-1	ND	82
SV-7	11/11/2008	1,2-Dichloroethane	107-06-2	ND	61
SV-7	11/11/2008	1,2-Dichloroethane-d4	17060-07-0	25.1	2.3
SV-7	11/11/2008	1,2-Dichloropropane	78-87-5	ND	53
SV-7	11/11/2008	1,3,5-Trimethylbenzene	108-67-8	ND	50
SV-7	11/11/2008	1,3-Butadiene	106-99-0	ND	110
SV-7	11/11/2008	1,3-Dichlorobenzene	541-73-1	ND	82
SV-7	11/11/2008	1,4-Dichlorobenzene	106-46-7	ND	82
SV-7	11/11/2008	1,4-Dioxane	123-91-1	ND	68
SV-7	11/11/2008	2-Butanone	78-93-3	ND	84
SV-7	11/11/2008	2-Hexanone	591-78-6	ND	120
SV-7	11/11/2008	4-Bromofluorobenzene	460-00-4	20.6	1.4
SV-7	11/11/2008	4-Ethyltoluene	622-96-8	ND	50
SV-7	11/11/2008	4-Methyl-2-pentanone	108-10-1	ND	60
SV-7	11/11/2008	Acetone	67-64-1	ND	420
SV-7	11/11/2008	Benzene	71-43-2	ND	77
SV-7	11/11/2008	Benzyl chloride	100-44-7	ND	48
SV-7	11/11/2008	Bromodichloromethane	75-27-4	ND	37
SV-7	11/11/2008	Bromoform	75-25-2	ND	95
SV-7	11/11/2008	Bromomethane	74-83-9	ND	64
SV-7	11/11/2008	Carbon disulfide	75-15-0	ND	79
SV-7	11/11/2008	Carbon tetrachloride	56-23-5	ND	39
SV-7	11/11/2008	Chlorobenzene	108-90-7	ND	54
SV-7	11/11/2008	Chloroethane	75-00-3	ND	93
SV-7	11/11/2008	Chloroform	67-66-3	ND	50
SV-7	11/11/2008	Chloromethane	74-87-3	ND	120
SV-7	11/11/2008	cis-1,2-Dichloroethene	156-59-2	4500	62
SV-7	11/11/2008	cis-1,3-Dichloropropene	10061-01-5	ND	54
SV-7	11/11/2008	Cyclohexane	110-82-7	ND	140
SV-7	11/11/2008	Dibromochloromethane	124-48-1	ND	29
SV-7	11/11/2008	Dichlorodifluoromethane	75-71-8	ND	100
SV-7	11/11/2008	Dichlorotetrafluoroethane	76-14-2	ND	71
SV-7	11/11/2008	Ethyl acetate	141-78-6	ND	68
SV-7	11/11/2008	Ethylbenzene	100-41-4	ND	57
SV-7	11/11/2008	Hexachlorobutadiene	87-68-3	ND	46
SV-7	11/11/2008	m,p-Xylene	136777-61-2	ND	57
SV-7	11/11/2008	Methyl tert-butyl ether	1634-04-4	ND	68
SV-7	11/11/2008	Methylene chloride	75-09-2	ND	140
SV-7	11/11/2008	n-Heptane	142-82-5	ND	60
SV-7	11/11/2008	n-Hexane	110-54-3	ND	70
SV-7	11/11/2008	o-Xylene	95-47-6	ND	57
SV-7	11/11/2008	Propene	115-07-1	ND	290
SV-7	11/11/2008	Styrene	100-42-5	ND	58
SV-7	11/11/2008	Tetrachloroethene	127-18-4	6000	360
SV-7	11/11/2008	Tetrahydrofuran	109-99-9	ND	84
SV-7	11/11/2008	Toluene	108-88-3	ND	65
SV-7	11/11/2008	Toluene-d8	2037-26-5	24.4	2.4
SV-7	11/11/2008	trans-1,2-Dichloroethene	156-60-5	ND	62
SV-7	11/11/2008	trans-1,3-Dichloropropene	10061-02-6	ND	54
SV-7	11/11/2008	Trichloroethene	79-01-6	1500	46
SV-7	11/11/2008	Trichlorofluoromethane	75-69-4	ND	44
SV-7	11/11/2008	Vinyl acetate	108-05-4	ND	140
SV-7	11/11/2008	Vinyl chloride	75-01-4	ND	97

Table 1
Complete Soil Vapor Sampling Results
129-09 Jamaica Avenue
Richmond Hill, NY

SAMPLE NAME	SAMPLE DATE	ANALYTE	CAS NUMBER	RESULTS ppbv	REPORTING LIMIT ppbv
SV-8	11/11/2008	1,1,1,2-Tetrachloroethane	630-20-6	ND	1.4
SV-8	11/11/2008	1,1,1-Trichloroethane	71-55-6	ND	1.8
SV-8	11/11/2008	1,1,2,2-Tetrachloroethane	79-34-5	ND	1.4
SV-8	11/11/2008	1,1,2-Trichloroethane	79-00-5	ND	1.8
SV-8	11/11/2008	1,1,2-Trichlorotrifluoroethane	76-13-1	ND	2.6
SV-8	11/11/2008	1,1-Dichloroethane	75-34-3	ND	2.4
SV-8	11/11/2008	1,1-Dichloroethene	75-35-4	ND	2.5
SV-8	11/11/2008	1,2,4-Trichlorobenzene	120-82-1	ND	2.7
SV-8	11/11/2008	1,2,4-Trimethylbenzene	95-63-6	ND	2.0
SV-8	11/11/2008	1,2-Dibromoethane (EDB)	106-93-4	ND	1.3
SV-8	11/11/2008	1,2-Dichlorobenzene	95-50-1	ND	3.3
SV-8	11/11/2008	1,2-Dichloroethane	107-06-2	ND	2.4
SV-8	11/11/2008	1,2-Dichloroethane-d4	17060-07-0	20.6	2.3
SV-8	11/11/2008	1,2-Dichloropropane	78-87-5	ND	2.1
SV-8	11/11/2008	1,3,5-Trimethylbenzene	108-67-8	ND	2.0
SV-8	11/11/2008	1,3-Butadiene	106-99-0	ND	4.5
SV-8	11/11/2008	1,3-Dichlorobenzene	541-73-1	ND	3.3
SV-8	11/11/2008	1,4-Dichlorobenzene	106-46-7	ND	3.3
SV-8	11/11/2008	1,4-Dioxane	123-91-1	ND	2.7
SV-8	11/11/2008	2-Butanone	78-93-3	ND	3.3
SV-8	11/11/2008	2-Hexanone	591-78-6	ND	4.8
SV-8	11/11/2008	4-Bromofluorobenzene	460-00-4	24.4	1.4
SV-8	11/11/2008	4-Ethyltoluene	622-96-8	ND	2.0
SV-8	11/11/2008	4-Methyl-2-pentanone	108-10-1	ND	2.4
SV-8	11/11/2008	Acetone	67-64-1	ND	17
SV-8	11/11/2008	Benzene	71-43-2	ND	3.1
SV-8	11/11/2008	Benzyl chloride	100-44-7	ND	1.9
SV-8	11/11/2008	Bromodichloromethane	75-27-4	ND	1.5
SV-8	11/11/2008	Bromoform	75-25-2	ND	3.8
SV-8	11/11/2008	Bromomethane	74-83-9	ND	2.5
SV-8	11/11/2008	Carbon disulfide	75-15-0	ND	3.2
SV-8	11/11/2008	Carbon tetrachloride	56-23-5	ND	1.6
SV-8	11/11/2008	Chlorobenzene	108-90-7	ND	2.1
SV-8	11/11/2008	Chloroethane	75-00-3	ND	3.7
SV-8	11/11/2008	Chloroform	67-66-3	ND	2.0
SV-8	11/11/2008	Chloromethane	74-87-3	ND	4.8
SV-8	11/11/2008	cis-1,2-Dichloroethene	156-59-2	3.1	2.5
SV-8	11/11/2008	cis-1,3-Dichloropropene	10061-01-5	ND	2.2
SV-8	11/11/2008	Cyclohexane	110-82-7	ND	5.7
SV-8	11/11/2008	Dibromochloromethane	124-48-1	ND	1.2
SV-8	11/11/2008	Dichlorodifluoromethane	75-71-8	ND	4.0
SV-8	11/11/2008	Dichlorotetrafluoroethane	76-14-2	ND	2.8
SV-8	11/11/2008	Ethyl acetate	141-78-6	ND	2.7
SV-8	11/11/2008	Ethylbenzene	100-41-4	ND	2.3
SV-8	11/11/2008	Hexachlorobutadiene	87-68-3	ND	1.8
SV-8	11/11/2008	m,p-Xylene	136777-61-2	ND	2.3
SV-8	11/11/2008	Methyl tert-butyl ether	1634-04-4	ND	2.7
SV-8	11/11/2008	Methylene chloride	75-09-2	ND	5.7
SV-8	11/11/2008	n-Heptane	142-82-5	ND	2.4
SV-8	11/11/2008	n-Hexane	110-54-3	ND	2.8
SV-8	11/11/2008	o-Xylene	95-47-6	ND	2.3
SV-8	11/11/2008	Propene	115-07-1	ND	11
SV-8	11/11/2008	Styrene	100-42-5	ND	2.3
SV-8	11/11/2008	Tetrachloroethene	127-18-4	45	1.5
SV-8	11/11/2008	Tetrahydrofuran	109-99-9	ND	3.3
SV-8	11/11/2008	Toluene	108-88-3	2.9	2.6
SV-8	11/11/2008	Toluene-d8	2037-26-5	25.8	2.4
SV-8	11/11/2008	trans-1,2-Dichloroethene	156-60-5	ND	2.5
SV-8	11/11/2008	trans-1,3-Dichloropropene	10061-02-6	ND	2.2
SV-8	11/11/2008	Trichloroethene	79-01-6	ND	1.8
SV-8	11/11/2008	Trichlorofluoromethane	75-69-4	ND	1.8
SV-8	11/11/2008	Vinyl acetate	108-05-4	ND	5.6
SV-8	11/11/2008	Vinyl chloride	75-01-4	ND	3.9

Table 1
Complete Soil Vapor Sampling Results
129-09 Jamaica Avenue
Richmond Hill, NY

SAMPLE NAME	SAMPLE DATE	ANALYTE	CAS NUMBER	RESULTS ppbv	REPORTING LIMIT ppbv
SV-9	11/11/2008	1,1,1,2-Tetrachloroethane	630-20-6	ND	36
SV-9	11/11/2008	1,1,1-Trichloroethane	71-55-6	ND	45
SV-9	11/11/2008	1,1,2,2-Tetrachloroethane	79-34-5	ND	36
SV-9	11/11/2008	1,1,2-Trichloroethane	79-00-5	ND	45
SV-9	11/11/2008	1,1,2-Trichlorotrifluoroethane	76-13-1	ND	65
SV-9	11/11/2008	1,1-Dichloroethane	75-34-3	ND	61
SV-9	11/11/2008	1,1-Dichloroethene	75-35-4	ND	62
SV-9	11/11/2008	1,2,4-Trichlorobenzene	120-82-1	ND	66
SV-9	11/11/2008	1,2,4-Trimethylbenzene	95-63-6	ND	50
SV-9	11/11/2008	1,2-Dibromoethane (EDB)	106-93-4	ND	32
SV-9	11/11/2008	1,2-Dichlorobenzene	95-50-1	ND	82
SV-9	11/11/2008	1,2-Dichloroethane	107-06-2	ND	61
SV-9	11/11/2008	1,2-Dichloroethane-d4	17060-07-0	20.2	2.3
SV-9	11/11/2008	1,2-Dichloropropane	78-87-5	ND	53
SV-9	11/11/2008	1,3,5-Trimethylbenzene	108-67-8	ND	50
SV-9	11/11/2008	1,3-Butadiene	106-99-0	ND	110
SV-9	11/11/2008	1,3-Dichlorobenzene	541-73-1	ND	82
SV-9	11/11/2008	1,4-Dichlorobenzene	106-46-7	ND	82
SV-9	11/11/2008	1,4-Dioxane	123-91-1	ND	68
SV-9	11/11/2008	2-Butanone	78-93-3	ND	84
SV-9	11/11/2008	2-Hexanone	591-78-6	ND	120
SV-9	11/11/2008	4-Bromofluorobenzene	460-00-4	21.8	1.4
SV-9	11/11/2008	4-Ethyltoluene	622-96-8	ND	50
SV-9	11/11/2008	4-Methyl-2-pentanone	108-10-1	ND	60
SV-9	11/11/2008	Acetone	67-64-1	ND	420
SV-9	11/11/2008	Benzene	71-43-2	ND	77
SV-9	11/11/2008	Benzyl chloride	100-44-7	ND	48
SV-9	11/11/2008	Bromodichloromethane	75-27-4	ND	37
SV-9	11/11/2008	Bromoform	75-25-2	ND	95
SV-9	11/11/2008	Bromomethane	74-83-9	ND	64
SV-9	11/11/2008	Carbon disulfide	75-15-0	ND	79
SV-9	11/11/2008	Carbon tetrachloride	56-23-5	ND	39
SV-9	11/11/2008	Chlorobenzene	108-90-7	ND	54
SV-9	11/11/2008	Chloroethane	75-00-3	ND	93
SV-9	11/11/2008	Chloroform	67-66-3	ND	50
SV-9	11/11/2008	Chloromethane	74-87-3	ND	120
SV-9	11/11/2008	cis-1,2-Dichloroethene	156-59-2	2900	62
SV-9	11/11/2008	cis-1,3-Dichloropropene	10061-01-5	ND	54
SV-9	11/11/2008	Cyclohexane	110-82-7	ND	140
SV-9	11/11/2008	Dibromochloromethane	124-48-1	ND	29
SV-9	11/11/2008	Dichlorodifluoromethane	75-71-8	ND	100
SV-9	11/11/2008	Dichlorotetrafluoroethane	76-14-2	ND	71
SV-9	11/11/2008	Ethyl acetate	141-78-6	ND	68
SV-9	11/11/2008	Ethylbenzene	100-41-4	ND	57
SV-9	11/11/2008	Hexachlorobutadiene	87-68-3	ND	46
SV-9	11/11/2008	m,p-Xylene	136777-61-2	ND	57
SV-9	11/11/2008	Methyl tert-butyl ether	1634-04-4	ND	68
SV-9	11/11/2008	Methylene chloride	75-09-2	ND	140
SV-9	11/11/2008	n-Heptane	142-82-5	ND	60
SV-9	11/11/2008	n-Hexane	110-54-3	ND	70
SV-9	11/11/2008	o-Xylene	95-47-6	ND	57
SV-9	11/11/2008	Propene	115-07-1	ND	290
SV-9	11/11/2008	Styrene	100-42-5	ND	58
SV-9	11/11/2008	Tetrachloroethene	127-18-4	9900	730
SV-9	11/11/2008	Tetrahydrofuran	109-99-9	ND	84
SV-9	11/11/2008	Toluene	108-88-3	ND	65
SV-9	11/11/2008	Toluene-d8	2037-26-5	23.9	2.4
SV-9	11/11/2008	trans-1,2-Dichloroethene	156-60-5	ND	62
SV-9	11/11/2008	trans-1,3-Dichloropropene	10061-02-6	ND	54
SV-9	11/11/2008	Trichloroethene	79-01-6	980	46
SV-9	11/11/2008	Trichlorofluoromethane	75-69-4	ND	44
SV-9	11/11/2008	Vinyl acetate	108-05-4	ND	140
SV-9	11/11/2008	Vinyl chloride	75-01-4	ND	97

Table 1
Complete Soil Vapor Sampling Results
129-09 Jamaica Avenue
Richmond Hill, NY

SAMPLE NAME	SAMPLE DATE	ANALYTE	CAS NUMBER	RESULTS ppbv	REPORTING LIMIT ppbv
SV-10	11/11/2008	1,1,1,2-Tetrachloroethane	630-20-6	ND	7.2
SV-10	11/11/2008	1,1,1-Trichloroethane	71-55-6	ND	9.1
SV-10	11/11/2008	1,1,2,2-Tetrachloroethane	79-34-5	ND	7.2
SV-10	11/11/2008	1,1,2-Trichloroethane	79-00-5	ND	9.1
SV-10	11/11/2008	1,1,2-Trichlorotrifluoroethane	76-13-1	ND	13
SV-10	11/11/2008	1,1-Dichloroethane	75-34-3	ND	12
SV-10	11/11/2008	1,1-Dichloroethene	75-35-4	ND	12
SV-10	11/11/2008	1,2,4-Trichlorobenzene	120-82-1	ND	13
SV-10	11/11/2008	1,2,4-Trimethylbenzene	95-63-6	ND	10
SV-10	11/11/2008	1,2-Dibromoethane (EDB)	106-93-4	ND	6.4
SV-10	11/11/2008	1,2-Dichlorobenzene	95-50-1	ND	16
SV-10	11/11/2008	1,2-Dichloroethane	107-06-2	ND	12
SV-10	11/11/2008	1,2-Dichloroethane-d4	17060-07-0	28.2	2.3
SV-10	11/11/2008	1,2-Dichloropropane	78-87-5	ND	11
SV-10	11/11/2008	1,3,5-Trimethylbenzene	108-67-8	ND	10
SV-10	11/11/2008	1,3-Butadiene	106-99-0	ND	22
SV-10	11/11/2008	1,3-Dichlorobenzene	541-73-1	ND	16
SV-10	11/11/2008	1,4-Dichlorobenzene	106-46-7	ND	16
SV-10	11/11/2008	1,4-Dioxane	123-91-1	ND	14
SV-10	11/11/2008	2-Butanone	78-93-3	ND	17
SV-10	11/11/2008	2-Hexanone	591-78-6	ND	24
SV-10	11/11/2008	4-Bromofluorobenzene	460-00-4	22.1	1.4
SV-10	11/11/2008	4-Ethyltoluene	622-96-8	ND	10
SV-10	11/11/2008	4-Methyl-2-pentanone	108-10-1	ND	12
SV-10	11/11/2008	Acetone	67-64-1	ND	83
SV-10	11/11/2008	Benzene	71-43-2	ND	15
SV-10	11/11/2008	Benzyl chloride	100-44-7	ND	9.6
SV-10	11/11/2008	Bromodichloromethane	75-27-4	ND	7.4
SV-10	11/11/2008	Bromoform	75-25-2	ND	19
SV-10	11/11/2008	Bromomethane	74-83-9	ND	13
SV-10	11/11/2008	Carbon disulfide	75-15-0	ND	16
SV-10	11/11/2008	Carbon tetrachloride	56-23-5	ND	7.8
SV-10	11/11/2008	Chlorobenzene	108-90-7	ND	11
SV-10	11/11/2008	Chloroethane	75-00-3	ND	19
SV-10	11/11/2008	Chloroform	67-66-3	ND	10
SV-10	11/11/2008	Chloromethane	74-87-3	ND	24
SV-10	11/11/2008	cis-1,2-Dichloroethene	156-59-2	69	12
SV-10	11/11/2008	cis-1,3-Dichloropropene	10061-01-5	ND	11
SV-10	11/11/2008	Cyclohexane	110-82-7	ND	29
SV-10	11/11/2008	Dibromochloromethane	124-48-1	ND	5.8
SV-10	11/11/2008	Dichlorodifluoromethane	75-71-8	ND	20
SV-10	11/11/2008	Dichlorotetrafluoroethane	76-14-2	ND	14
SV-10	11/11/2008	Ethyl acetate	141-78-6	ND	14
SV-10	11/11/2008	Ethylbenzene	100-41-4	ND	11
SV-10	11/11/2008	Hexachlorobutadiene	87-68-3	ND	9.2
SV-10	11/11/2008	m,p-Xylene	136777-61-2	ND	11
SV-10	11/11/2008	Methyl tert-butyl ether	1634-04-4	ND	14
SV-10	11/11/2008	Methylene chloride	75-09-2	ND	28
SV-10	11/11/2008	n-Heptane	142-82-5	ND	12
SV-10	11/11/2008	n-Hexane	110-54-3	ND	14
SV-10	11/11/2008	o-Xylene	95-47-6	ND	11
SV-10	11/11/2008	Propene	115-07-1	ND	57
SV-10	11/11/2008	Styrene	100-42-5	ND	12
SV-10	11/11/2008	Tetrachloroethene	127-18-4	2600	7.3
SV-10	11/11/2008	Tetrahydrofuran	109-99-9	ND	17
SV-10	11/11/2008	Toluene	108-88-3	ND	13
SV-10	11/11/2008	Toluene-d8	2037-26-5	24.3	2.4
SV-10	11/11/2008	trans-1,2-Dichloroethene	156-60-5	ND	12
SV-10	11/11/2008	trans-1,3-Dichloropropene	10061-02-6	ND	11
SV-10	11/11/2008	Trichloroethene	79-01-6	110	9.2
SV-10	11/11/2008	Trichlorofluoromethane	75-69-4	ND	8.8
SV-10	11/11/2008	Vinyl acetate	108-05-4	ND	28
SV-10	11/11/2008	Vinyl chloride	75-01-4	ND	19

Table 1
Complete Soil Vapor Sampling Results
129-09 Jamaica Avenue
Richmond Hill, NY

SAMPLE NAME	SAMPLE DATE	ANALYTE	CAS NUMBER	RESULTS ppbv	REPORTING LIMIT ppbv
SV-11	11/11/2008	1,1,1,2-Tetrachloroethane	630-20-6	ND	0.72
SV-11	11/11/2008	1,1,1-Trichloroethane	71-55-6	ND	0.91
SV-11	11/11/2008	1,1,2,2-Tetrachloroethane	79-34-5	ND	0.72
SV-11	11/11/2008	1,1,2-Trichloroethane	79-00-5	ND	0.91
SV-11	11/11/2008	1,1,2-Trichlorotrifluoroethane	76-13-1	ND	1.3
SV-11	11/11/2008	1,1-Dichloroethane	75-34-3	ND	1.2
SV-11	11/11/2008	1,1-Dichloroethene	75-35-4	ND	1.2
SV-11	11/11/2008	1,2,4-Trichlorobenzene	120-82-1	ND	1.3
SV-11	11/11/2008	1,2,4-Trimethylbenzene	95-63-6	1.2	1.0
SV-11	11/11/2008	1,2-Dibromoethane (EDB)	106-93-4	ND	0.64
SV-11	11/11/2008	1,2-Dichlorobenzene	95-50-1	ND	1.6
SV-11	11/11/2008	1,2-Dichloroethane	107-06-2	ND	1.2
SV-11	11/11/2008	1,2-Dichloroethane-d4	17060-07-0	27.4	2.3
SV-11	11/11/2008	1,2-Dichloropropane	78-87-5	ND	1.1
SV-11	11/11/2008	1,3,5-Trimethylbenzene	108-67-8	ND	1.0
SV-11	11/11/2008	1,3-Butadiene	106-99-0	ND	2.2
SV-11	11/11/2008	1,3-Dichlorobenzene	541-73-1	ND	1.6
SV-11	11/11/2008	1,4-Dichlorobenzene	106-46-7	ND	1.6
SV-11	11/11/2008	1,4-Dioxane	123-91-1	ND	1.4
SV-11	11/11/2008	2-Butanone	78-93-3	ND	1.7
SV-11	11/11/2008	2-Hexanone	591-78-6	ND	2.4
SV-11	11/11/2008	4-Bromofluorobenzene	460-00-4	24.1	1.4
SV-11	11/11/2008	4-Ethyltoluene	622-96-8	ND	1.0
SV-11	11/11/2008	4-Methyl-2-pentanone	108-10-1	ND	1.2
SV-11	11/11/2008	Acetone	67-64-1	13	8.3
SV-11	11/11/2008	Benzene	71-43-2	ND	1.5
SV-11	11/11/2008	Benzyl chloride	100-44-7	ND	0.96
SV-11	11/11/2008	Bromodichloromethane	75-27-4	ND	0.74
SV-11	11/11/2008	Bromoform	75-25-2	ND	1.9
SV-11	11/11/2008	Bromomethane	74-83-9	ND	1.3
SV-11	11/11/2008	Carbon disulfide	75-15-0	2.7	1.6
SV-11	11/11/2008	Carbon tetrachloride	56-23-5	1.2	0.78
SV-11	11/11/2008	Chlorobenzene	108-90-7	ND	1.1
SV-11	11/11/2008	Chloroethane	75-00-3	ND	1.9
SV-11	11/11/2008	Chloroform	67-66-3	79	1.0
SV-11	11/11/2008	Chloromethane	74-87-3	ND	2.4
SV-11	11/11/2008	cis-1,2-Dichloroethene	156-59-2	2.0	1.2
SV-11	11/11/2008	cis-1,3-Dichloropropene	10061-01-5	ND	1.1
SV-11	11/11/2008	Cyclohexane	110-82-7	ND	2.9
SV-11	11/11/2008	Dibromochloromethane	124-48-1	ND	0.58
SV-11	11/11/2008	Dichlorodifluoromethane	75-71-8	ND	2.0
SV-11	11/11/2008	Dichlorotetrafluoroethane	76-14-2	ND	1.4
SV-11	11/11/2008	Ethyl acetate	141-78-6	ND	1.4
SV-11	11/11/2008	Ethylbenzene	100-41-4	ND	1.1
SV-11	11/11/2008	Hexachlorobutadiene	87-68-3	ND	0.92
SV-11	11/11/2008	m,p-Xylene	136777-61-2	1.9	1.1
SV-11	11/11/2008	Methyl tert-butyl ether	1634-04-4	ND	1.4
SV-11	11/11/2008	Methylene chloride	75-09-2	ND	2.8
SV-11	11/11/2008	n-Heptane	142-82-5	ND	1.2
SV-11	11/11/2008	n-Hexane	110-54-3	ND	1.4
SV-11	11/11/2008	o-Xylene	95-47-6	ND	1.1
SV-11	11/11/2008	Propene	115-07-1	ND	5.7
SV-11	11/11/2008	Styrene	100-42-5	ND	1.2
SV-11	11/11/2008	Tetrachloroethene	127-18-4	130	0.73
SV-11	11/11/2008	Tetrahydrofuran	109-99-9	ND	1.7
SV-11	11/11/2008	Toluene	108-88-3	5.3	1.3
SV-11	11/11/2008	Toluene-d8	2037-26-5	25.7	2.4
SV-11	11/11/2008	trans-1,2-Dichloroethene	156-60-5	ND	1.2
SV-11	11/11/2008	trans-1,3-Dichloropropene	10061-02-6	ND	1.1
SV-11	11/11/2008	Trichloroethene	79-01-6	11	0.92
SV-11	11/11/2008	Trichlorofluoromethane	75-69-4	ND	0.88
SV-11	11/11/2008	Vinyl acetate	108-05-4	ND	2.8
SV-11	11/11/2008	Vinyl chloride	75-01-4	ND	1.9

Table 1
Complete Soil Vapor Sampling Results
129-09 Jamaica Avenue
Richmond Hill, NY

SAMPLE NAME	SAMPLE DATE	ANALYTE	CAS NUMBER	RESULTS ppbv	REPORTING LIMIT ppbv
SV-12	11/11/2008	1,1,1,2-Tetrachloroethane	630-20-6	ND	0.72
SV-12	11/11/2008	1,1,1-Trichloroethane	71-55-6	ND	0.91
SV-12	11/11/2008	1,1,2,2-Tetrachloroethane	79-34-5	ND	0.72
SV-12	11/11/2008	1,1,2-Trichloroethane	79-00-5	ND	0.91
SV-12	11/11/2008	1,1,2-Trichlorotrifluoroethane	76-13-1	ND	1.3
SV-12	11/11/2008	1,1-Dichloroethane	75-34-3	ND	1.2
SV-12	11/11/2008	1,1-Dichloroethene	75-35-4	ND	1.2
SV-12	11/11/2008	1,2,4-Trichlorobenzene	120-82-1	ND	1.3
SV-12	11/11/2008	1,2,4-Trimethylbenzene	95-63-6	ND	1.0
SV-12	11/11/2008	1,2-Dibromoethane (EDB)	106-93-4	ND	0.64
SV-12	11/11/2008	1,2-Dichlorobenzene	95-50-1	ND	1.6
SV-12	11/11/2008	1,2-Dichloroethane	107-06-2	ND	1.2
SV-12	11/11/2008	1,2-Dichloroethane-d4	17060-07-0	23.2	2.3
SV-12	11/11/2008	1,2-Dichloropropane	78-87-5	ND	1.1
SV-12	11/11/2008	1,3,5-Trimethylbenzene	108-67-8	ND	1.0
SV-12	11/11/2008	1,3-Butadiene	106-99-0	ND	2.2
SV-12	11/11/2008	1,3-Dichlorobenzene	541-73-1	ND	1.6
SV-12	11/11/2008	1,4-Dichlorobenzene	106-46-7	ND	1.6
SV-12	11/11/2008	1,4-Dioxane	123-91-1	ND	1.4
SV-12	11/11/2008	2-Butanone	78-93-3	5.6	1.7
SV-12	11/11/2008	2-Hexanone	591-78-6	ND	2.4
SV-12	11/11/2008	4-Bromofluorobenzene	460-00-4	25.5	1.4
SV-12	11/11/2008	4-Ethyltoluene	622-96-8	ND	1.0
SV-12	11/11/2008	4-Methyl-2-pentanone	108-10-1	ND	1.2
SV-12	11/11/2008	Acetone	67-64-1	44	8.3
SV-12	11/11/2008	Benzene	71-43-2	ND	1.5
SV-12	11/11/2008	Benzyl chloride	100-44-7	ND	0.96
SV-12	11/11/2008	Bromodichloromethane	75-27-4	ND	0.74
SV-12	11/11/2008	Bromoform	75-25-2	ND	1.9
SV-12	11/11/2008	Bromomethane	74-83-9	ND	1.3
SV-12	11/11/2008	Carbon disulfide	75-15-0	1.9	1.6
SV-12	11/11/2008	Carbon tetrachloride	56-23-5	ND	0.78
SV-12	11/11/2008	Chlorobenzene	108-90-7	ND	1.1
SV-12	11/11/2008	Chloroethane	75-00-3	ND	1.9
SV-12	11/11/2008	Chloroform	67-66-3	ND	1.0
SV-12	11/11/2008	Chloromethane	74-87-3	ND	2.4
SV-12	11/11/2008	cis-1,2-Dichloroethene	156-59-2	1.8	1.2
SV-12	11/11/2008	cis-1,3-Dichloropropene	10061-01-5	ND	1.1
SV-12	11/11/2008	Cyclohexane	110-82-7	ND	2.9
SV-12	11/11/2008	Dibromochloromethane	124-48-1	ND	0.58
SV-12	11/11/2008	Dichlorodifluoromethane	75-71-8	ND	2.0
SV-12	11/11/2008	Dichlorotetrafluoroethane	76-14-2	ND	1.4
SV-12	11/11/2008	Ethyl acetate	141-78-6	ND	1.4
SV-12	11/11/2008	Ethylbenzene	100-41-4	ND	1.1
SV-12	11/11/2008	Hexachlorobutadiene	87-68-3	ND	0.92
SV-12	11/11/2008	m,p-Xylene	136777-61-2	1.2	1.1
SV-12	11/11/2008	Methyl tert-butyl ether	1634-04-4	ND	1.4
SV-12	11/11/2008	Methylene chloride	75-09-2	ND	2.8
SV-12	11/11/2008	n-Heptane	142-82-5	ND	1.2
SV-12	11/11/2008	n-Hexane	110-54-3	ND	1.4
SV-12	11/11/2008	o-Xylene	95-47-6	ND	1.1
SV-12	11/11/2008	Propene	115-07-1	ND	5.7
SV-12	11/11/2008	Styrene	100-42-5	ND	1.2
SV-12	11/11/2008	Tetrachloroethene	127-18-4	17	0.73
SV-12	11/11/2008	Tetrahydrofuran	109-99-9	ND	1.7
SV-12	11/11/2008	Toluene	108-88-3	3.4	1.3
SV-12	11/11/2008	Toluene-d8	2037-26-5	22.8	2.4
SV-12	11/11/2008	trans-1,2-Dichloroethene	156-60-5	ND	1.2
SV-12	11/11/2008	trans-1,3-Dichloropropene	10061-02-6	ND	1.1
SV-12	11/11/2008	Trichloroethene	79-01-6	1.1	0.92
SV-12	11/11/2008	Trichlorofluoromethane	75-69-4	ND	0.88
SV-12	11/11/2008	Vinyl acetate	108-05-4	ND	2.8
SV-12	11/11/2008	Vinyl chloride	75-01-4	ND	1.9

Table 2
Historical Groundwater Data Summary
129-09 Jamaica Avenue, Queens, NY

Sampling Date	Well ID	Total BTEX	Total Chl-VOCs	Benzene	Toluene	Ethylbenzene	Total Xylenes	Tetrachloroethene (PCE)	Trichloroethene (TCE)	cis-1,2-Dichloroethene (DCE)	Vinyl Chloride (VC)	Naphthalene
	Units	ug/IL	ug/IL	ug/IL	ug/IL	ug/IL	ug/IL	ug/IL	ug/IL	ug/IL	ug/IL	ug/L
Aug-05	MW-1	911	6760	0	0	91	720	0	0	6600	160	160
Jan-07	MW-1	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Nov-08	MW-1	716	1268	0	77	89	550	7	1	1000	260	52
Aug-05	MW-2	238.8	286	15	21	96	106.8	0	0	6	280	430
Jan-07	MW-2	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Nov-08	MW-2	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Aug-05	MW-3	9.3	4160	0	1.4	0	7.9	190	38	3900	32	9.9
Jan-07	MW-3	0	46.8	0	0	0	0	28	3.8	15	0	NS
Nov-08	MW-3	0	504	0	0	0	0	74	15	390	25	0
Aug-05	MW-4	0.84	1264	0	0	0	0.84	81	23	970	190	0
Jan-07	MW-4	0	1387	0	0	0	0	82	15	550	740	NS
Nov-08	MW-4	2.5	716	0	0	0	2.5	11	5	230	470	470
Aug-05	MW-5	0	777.6	0	0	0	0	160	110	500	7.6	2.4
Jan-07	MW-5	0	606	0	0	0	0	72	60	460	14	NS
Nov-08	MW-5	8.9	90.7	0	0	2	6.9	15	9.3	65	1.4	0
Aug-05	MW-6	119	3712.5	0	11	21	87	36	6.5	3500	170	17
Jan-07	MW-6	110	8340	0	0	110	0	0	0	7800	540	NS
Nov-08	MW-6	9.3	278	0	1.1	1.1	7.1	62	4	190	22	0
Aug-05	MW-7	0	164	0	0	0	0	71	13	80	0	0
Jan-07	MW-7	0	25.4	0	0	0	0	14	2.5	8.9	0	NS
Nov-08	MW-7	0	10.9	0	0	0	0	7.5	1.7	1.7	0	0
Aug-05	MW-8	66600	10000	0	4600	27000	35000	0	0	0	10000	28000
Jan-07	MW-8	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Nov-08	MW-8	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Aug-05	MW-9	0	164	0	0	0	0	120	16	28	0	0
Jan-07	MW-9	0	259	0	0	0	0	220	20	19	0	NS
Nov-08	MW-9	19.6	101	0	2	3.6	14	81	10	10	0	0
Aug-05	MW-10	453.6	71.3	3.6	23	57	370	2.3	18	33	18	240
Jan-07	MW-10	421	184.4	11	30	0	380	0	4.4	20	160	NS
Nov-08	MW-10	530.5	103.9	7.5	53	100	370	1.2	0	4.7	98	40
Aug-05	MW-11	0	0	0	0	0	0	0	0	0	0	0
Jan-07	MW-11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Nov-08	MW-11	134.1	18	3.1		42	89	0	0	0	18	54
Aug-05	MW-12	0	11	0	0	0	0	0	0	1	10	0
Jan-07	MW-12	0	44.7	0	0	0	0	0	0	6.7	38	NS
Nov-08	MW-12	0	109.4	0	0	0	0	1.4	0	45	63	0
Aug-05	OSW-1	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Jan-07	OSW-1	0	44.2	0	0	0	0	33	3.6	7.6	0	NS
Nov-08	OSW-1	0	48.8	0	0	0	0	40	4.7	4.1	0	0
Aug-05	OSW-2	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Jan-07	OSW-2	0	0	0	0	0	0	0	0	0	0	NS
Nov-08	OSW-2	0	9	0	0	0	0	6.4	1.3	1.3	0	0
Aug-05	OSW-3	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Jan-07	OSW-3	0	0	0	0	0	0	0	0	0	0	NS
Nov-08	OSW-3	0	5.1	0	0	0	0	3.8	1.3	0	0	0
Aug-05	OSW-4	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
Jan-07	OSW-4	0	0	0	0	0	0	0	0	0	0	NS
Nov-08	OSW-4	0	2.8	0	0	0	0	2.8	0	0	0	0

Table 3
Groundwater Geochemical Summary
129-09 Jamaica Avenue, Queens, NY

Date	Field ID	ID	Depth (ft) (BGS)	Temp (deg C)	SpCond (mS/cm)	TDS (g/L)	Salinity (ppt)	DO (%)	DO Conc (mg/L)	pH	ORP (mV)	Turbidity (NTU)
02/02/09	MW-J-10_6-35_67'	GW-B-14	-67	11.35	0.67	0.44	0.33	3.20	0.35	6.59	-594.57	31.96
02/03/09	MW-G-25_4-35_92'	GW-B-15	-92	11.11	0.74	0.48	0.36	2.50	0.27	7.28	-502.71	34.81
02/11/09	MW-E-45_8-5_93'	GW-B-17	-93	14.79	0.42	0.27	0.20	19.14	1.94	7.74	-443.40	23.97

Table 4
Rapid Assessment Soil Data Summary
129-09 Jamaica Avenue, Queens, NY

Sample Name	Boring ID	Depth	Total BTEX (Mobile)	Total BTEX (Fixed)	Total Chl-VOCs (Mobile)	Total Chl-VOCs (Fixed)	Benzene (Mobile)	Benzene (Fixed)	Toluene (Mobile)	Toluene (Fixed)	Ethylbenzene (Mobile)	Ethylbenzene (Fixed)	Total Xylenes (Mobile)	Total Xylenes (Fixed)	Tetrachloroethene (PCE) (Mobile)	Tetrachloroethene (PCE) (Fixed)	Trichloroethene (TCE) (Mobile)	Trichloroethene (TCE) (Fixed)	cis-1,2-Dichloroethene (DCE) (Mobile)	cis-1,2-Dichloroethene (DCE) (Fixed)	Vinyl Chloride (VC) (Mobile)	Vinyl Chloride (VC) (Fixed)	Naphthalene (Mobile)	Naphthalene (Fixed)
		(ft)	(ug/Kg)	(ug/Kg)	(ug/Kg)	(ug/Kg)	(ug/Kg)	(ug/Kg)	(ug/Kg)	(ug/Kg)	(ug/Kg)	(ug/Kg)	(ug/Kg)	(ug/Kg)	(ug/Kg)	(ug/Kg)	(ug/Kg)	(ug/Kg)	(ug/Kg)	(ug/Kg)	(ug/Kg)	(ug/Kg)	(ug/Kg)	(ug/Kg)	(ug/Kg)
NYSDEC Part 375 Restricted Residential							4800	4800	100000	100000	41000	41000	100000	100000	19000	19000	21000	21000	100000	100000	900	900	100000	100000
NYSDEC Part 375 Unresidential SCO's							60	60	700	700	1000	1000	260	260	1300	1300	470	470	250	250	20	20	12000	12000
H-25-5-30/9'	B-13	-9	2611.62		122424.99		113.11 J		1344.47		182.05 J		971.99		118392.55		2897.89		1134.55		200.00 U		12769.01	
H-25-5-30/18'	B-13	-18	2593.20	5.50 J	73390.48	6309.60	200.00 U	6.80 U	1097.08	6.80 U	283.99	1.50 J	1212.13	4.00 J	64245.96	6300.00	3253.73	5.00 J	5890.79	4.60 J	200.00 U	6.80 U	200.00 U	250.00 J
H-25-5-30/22'	B-13	-22	1598.82		4249.79		200.00 U		782.57		153.04 J		663.21		852.18		2045.80		1351.81		200.00 U		200.00 U	
H-25-5-30/30'	B-13	-30	1052.80		1382.65		200.00 U		398.08		68.16 J		586.56		275.93		976.07		130.65 J		200.00 U		200.00 U	
H-25-5-30/36'	B-13	-36	25863.21		1077.29		200.00 U		903.71		3659.91		21299.59		90.59 J		986.70		200.00 U		200.00 U		17304.75	
H-25-5-30/39'	B-13	-39	16197.63		963.89		200.00 U		494.58		2969.49		12733.56		200.00 U		963.89		200.00 U		200.00 U		13002.21	
H-25-5-30/42'	B-13	-42	21820.01	15903.20	1334.64	21.00	200.00 U	12.00 U	263.29	3.20 J	2497.34	2900.00 J	19059.38	13000.00	200.00 U	21.00	981.98	12.00 U	352.66	12.00 U	200.00 U	12.00 U	14144.53	17000.00 U
H-25-5-30/46'	B-13	-46	148880.32		4745.60		200.00 U		967.11		12544.10		135369.11		2012.60		200.00 U		2733.00		200.00 U		44254.78	
H-25-5-30/53'	B-13	-53	59458.27		2966.88		200.00 U		483.96		7430.45		51543.86		406.50		2018.89		541.49		200.00 U		28731.59	
H-25-5-30/56'	B-13	-56	1860.93		3805.14		200.00 U		584.09		325.29		951.55		1917.62		1887.52		200.00 U		200.00 U		13104.92	
H-25-5-30/63'	B-13	-63	10363.37	4100.00	243.75	290.00 U	200.00 U	290.00 U	579.82	290.00 U	5199.38	2900.00	4584.17	1200.00	243.75	290.00 U	200.00 U	290.00 U	200.00 U	290.00 U	200.00 U	290.00 U	17140.67	3000.00
H-25-5-30/67'	B-13	-67	32452.92		436.39		200.00 U		396.61		22866.98		9189.33		436.39		200.00 U		200.00 U		200.00 U		16424.35	
H-25-5-30/73'	B-13	-73	21404.90		997.88		200.00 U		344.66		20006.48		1053.76		62.03 J		935.85		200.00 U		200.00 U		13451.12	
H-25-5-30/77'	B-13	-77	169.74 J	5.80 U	200.00 U	5.80 U	200.00 U	5.80 U	45.05 J	5.80 U	17.80 J	5.80 U	106.89 J	5.80 U	200.00 U	5.80 U	200.00 U	5.80 U	200.00 U	5.80 U	200.00 U	5.80 U	129.46 J	5.80 U
H-25-5-30/82'	B-13	-82	177.94 J	4.90 U	200.00 U	4.90 U	200.00 U	4.90 U	48.07 J	4.90 U	17.56 J	4.90 U	112.31 J	4.90 U	200.00 U	4.90 U	200.00 U	4.90 U	200.00 U	4.90 U	200.00 U	4.90 U	127.54 J	4.90 U
J-10_6-35/7'	B-14	-7	134.97 J	5.20 U	59.23 J	1.10 J	200.00 U	5.20 U	41.91 J	5.20 U	11.08 J	5.20 U	81.98 J	5.20 U	40.16 J	1.10 J	19.07 J	5.20 U	200.00 U	5.20 U	200.00 U	5.20 U	127.95 J	5.20 U
J-10_6-35/17'	B-14	-17	128.20 J		56.00 J		200.00 U		35.84 J		10.50 J		81.86 J		37.07 J		18.93 J		200.00 U		200.00 U		200.00 U	
J-10_6-35/27'	B-14	-27	214.43 J		34.97 J		200.00 U		58.49 J		17.60 J		138.34 J		13.65 J		21.32 J		200.00 U		200.00 U		2.36 J	
J-10_6-35/37.5'	B-14	-37.5	169.95 J		19.80 J		200.00 U		45.39 J		13.89 J		110.67 J		200.00 U		19.80 J		200.00 U		200.00 U		200.00 U	
J-10_6-35/42.5'	B-14	-42.5	191.08 J	5.00 U	20.16 J	5.00 U	200.00 U	5.00 U	50.91 J	5.00 U	15.55 J	5.00 U	124.62 J	5.00 U	200.00 U	5.00 U	20.16 J	5.00 U	200.00 U	5.00 U	200.00 U	5.00 U	200.00 U	5.00 U
J-10_6-35/47.5'	B-14	-47.5	200.75 J		18.78 J		200.00 U		54.58 J		16.61 J		129.56 J		200.00 U		18.78 J		200.00 U		200.00 U		2.50 J	
J-10_6-35/52.5'	B-14	-52.5	190.55 J	6.10 U	19.69 J	6.10 U	200.00 U	6.10 U	49.51 J	6.10 U	15.30 J	6.10 U	125.74 J	6.10 U	200.00 U	6.10 U	19.69 J	6.10 U	200.00 U	6.10 U	200.00 U	6.10 U	2.37 J	6.10 U
J-10_6-35/57.5'	B-14	-57.5	141.56 J		19.65 J		200.00 U		37.92 J		12.61 J		91.03 J		200.00 U		19.65 J		200.00 U		200.00 U		2.15 J	
J-10_6-35/62.5'	B-14	-62.5	155.84 J	5.70 U	19.72 J	5.70 U	200.00 U	5.70 U	43.02 J	5.70 U	13.53 J	5.70 U	99.29 J	5.70 U	200.00 U	5.70 U	19.72 J	5.70 U	200.00 U	5.70 U	200.00 U	5.70 U	200.00 U	1.30 J
G25-4-35/7'	B-15	-7	219.34 J		21.46 J		200.00 U		61.95 J		18.67 J		138.72 J		21.46 J		200.00 U		200.00 U		200.00 U		200.00 U	
G25-4-35/17'	B-15	-17	74.28 J		200.00 U		200.00 U		28.89 J		200.00 U		45.39 J		200.00 U		200.00 U		200.00 U		200.00 U		1.99 J	
G25-4-35/23'	B-15	-23	208.90 J		200.00 U		200.00 U		62.07 J		200.00 U		146.83 J		200.00 U		200.00 U		200.00 U		200.00 U		200.00 U	
G25-4-35/27'	B-15	-27	119.19 J		200.00 U		200.00 U		63.50 J		200.00 U		55.69 J		200.00 U		200.00 U		200.00 U		200.00 U		200.00 U	
G25-4-35/32.5'	B-15	-32.5	623.02		200.00 U		200.00 U		74.27 J		78.72 J		470.03		200.00 U		200.00 U		200.00 U		200.00 U		1312.55	
G25-4-35/37'	B-15	-37	2468.74	71.00	200.46	5.10 U	200.00 U	5.10 U	92.17 J	5.10 U	631.64	18.00	1744.93	53.00	200.00 U	5.10 U	200.46	5.10 U	200.00 U	5.10 U	200.00 U	5.10 U	4271.19	120.00
G25-4-35/42.5'	B-15	-42.5	69404.94		386.57 J		200.00 U		64.34 J		6533.76		62806.84		200.00 U		193.80 J		192.77 J		200.00 U		19747.97	
G25-4-35/48'	B-15	-48	11309.75		218.34		200.00 U		407.13		3082.06		7820.56		200.00 U		218.34		200.00 U		200.00 U		17458.45	
G25-4-35/52.5'	B-15	-52.5	40505.06	28900.00	198.05 J	3200.00 U	200.00 U	3200.00 U	200.00 U	3200.00 U	6797.29	7900.00	33707.77	21000.00	200.00 U	3200.00 U	198.05 J	3200.00 U	200.00 U	3200.00 U	200.00 U	3200.00 U	10671.45	13000.00
G25-4-35/58'	B-15	-58	5613.84		200.00 U		200.00 U		67.64 J		1770.30		3775.90		200.00 U		200.00 U		200.00 U		200.00 U		2112.53	
G25-4-35/62.5'	B-15	-62.5	20138.87		200.00 U		200.00 U		67.50 J		9500.03		10571.34		200.00 U		200.00 U		200.00 U		200.00 U		7875.58	
G25-4-35/67.5'	B-15	-67.5	20890.10	1000.00	200.00 U	228.00	200.00 U	57.00 U	13237.00	57.00 U	2187.56	390.00	5465.54	610.00	200.00 U	57.00 U	200.00 U	57.00 U	200.00 U	57.00 U	200.00 U	57.00 U	1994.50	1200.00
G25-4-35/72.5'	B-15	-72.5	27423.42		40.15 J		200.00 U		262.05		7663.08		19498.29		40.15 J		200.00 U		200.00 U		200.00 U		6926.36	
G25-4-35/77.5'	B-15	-77.5	43353.80		200.00 U		200.00 U		95.48 J		10294.32		32964.00		200.00 U		200.00 U		200.00 U		200.00 U		6255.44	
G25-4-35/79.75'	B-15	-79.75	346.85 J		200.00 U		200.00 U		59.00 J		89.46 J		198.39 J		200.00 U		200.00 U		200.00 U		200.00 U		94.21 J	
G25-4-35/84.5'	B-15	-84.5	156.08 J		200.00 U		200.00 U		200.00 U		18.00 J		138.08 J		200.00 U		200.00 U		200.00 U		200.00 U		200.00 U	
G25-4-35/89.5'	B-15	-89.5	230.23 J	5.90 U	200.00 U	23.60	200.00 U	5.90 U	54.10 J	5.90 U	21.63 J	5.90 U	154.50 J	5.90 U	200.00 U	5.90 U	200.00 U	5.90 U	200.00 U	5.90 U	200.00 U	5.90 U	200.00 U	5.90 U
G25-4-35/95'	B-15	-95	189.51 J	6.20 U	15.12 J	24.90	200.00 U	6.30	49.48 J	6.20 U	16.56 J	6.20 U	123.47 J	6.20 U	200.00 U	6.20 U	15.12 J	6.30	200.00 U	6.20 U	200.00 U	6.20 U	200.00 U	6.20 U
G-5_3-13/8'	B-16	-8	1758.51		868.11		200.00 U		618.07		145.66 J		994.78		868.11		200.00 U		200.00 U		200.00 U		200.00 U	
G-5_3-13/17.5'	B-16	-17.5	131.62 J	5.30 U	7.88 J	5.30 U	200.00 U	5.30 U	46.69 J	5.30 U	200.00 U	5.30 U	84.93 J	5.30 U	7.88 J	5.30 U	200.00 U	5.30 U	200.00 U	5.30 U	200.00 U	5.30 U	200.00 U	1.70 J
G-5_3-13/27.5'	B-16	-27.5	255.99 J		8.46 J		200.00 U		71.93 J		21.10 J		162.96 J		8.46 J		200.00 U		200.00 U		200.00 U		200.00 U	
G-5_3-13/41'	B-16	-41	139.03 J		200.00 U		200.00 U		37.23 J		200.00 U		101.80 J		200.00 U		200.00 U		200.00 U		200.00 U		200.00 U	
G-5_3-13/47.5'	B-16	-47.5	120.32 J		219.51		200.00 U		49.81 J		200.00 U		70.51 J		219.51		200.00 U		200.00 U		200.00 U		200.00 U	
G-5_3-13/52.5'	B-16	-52.5	3255.74	1290.00	200.00 U	57.00 U	200.00 U	57.00 U	71.86 J	57.00 U	770.96	470.00	2412.92	820.00	200.00 U	57.00 U	200.00 U	57.00 U	200.00 U	57.00 U	200.00 U	57.00 U	5022.86	130.00
G-5_3-13/57.5'	B-16	-57.5	139.08 J		130.89 J		200.00 U		139.08 J		200.00 U		200.00 U		130.89 J		200.00 U		200.00 U		200.00 U		200.00 U	
G-5_3-13/62.5'	B-16	-62.5	200.00 U		200.00 U		200.00 U		200.00 U		200.00 U		200.00 U		200.00 U		200.00 U		200.00 U		200.00 U		200.00 U	
G-5_3-13/67.5'	B-16	-67.5	237.77 J	5.70 U	200.00 U	5.70 U	200.00 U	5.70 U	60.49 J	5.70 U	200.00 U	5.70 U	177.28 J	5.70 U	200.00 U	5.70 U	200.00 U	5.70 U	200.00 U	5.70 U	200.00 U	5.70 U	200.00 U	5.70 U
G-5_3-13/74'	B-16	-74	215.39 J	6.40 U	200.00 U	6.40 U	200.00 U	6.40 U	63.62 J	6.40 U	18.41 J	6.40 U	133.36 J	6.40 U	200.00 U	6.40 U	200.00 U	6.40 U	200.00 U	6.40 U	200.00 U	6.40 U	200.00 U	6.40 U
E-45_8-5/7'	B-17	-7	171.25 J	5.40 U	200.00 U	5.40 U	200.00 U	5.40 U	37.56 J	5.40 U	15.05 J	5.40 U	118.64 J	5.40 U	200.00 U	5.40 U	200.00 U	5.40 U	200.00 U	5.40 U	200.00 U	5.40 U	200.00 U	5.40 U
E-45_8-5/17'	B-17	-17	217.96 J		200.00 U		200.00 U		59.80 J		16.96 J		141.20 J		200.00 U		200.00 U		200.00 U		200.00 U		200.00 U	
E-45_8-5/31'	B-17	-31	166.41 J		200.00 U		200.00 U		51.45 J		14.02 J		100.94 J		200.00 U		200.00 U		200.00 U		200.00 U		200.00 U	
E-45_8-5/39'	B-17	-39	221.45 J		200.00 U		200.00 U		87.33 J		200.00 U		134.12 J		200.00 U		200.00 U		200.00 U		200.00 U		200.00 U	
E-45_8-5/44'	B-17	-44	4020.99		200.00 U		200.00 U		52.30 J		703.67		3265.02		200.00 U		200.00 U		200.00 U		200.00 U		9606.93	
E-45_8-5/49'	B-17	-49	10694.85		200.00 U		200.00 U		120.83 J		2961.60		7612.42		200.00 U		200.00 U		200.00 U		200.00 U		17756.07	
E-45_8-5/54'	B-17	-54	200.00 U		200.00 U		200.00 U		200.00 U		200.00 U		200.00 U		200.00 U		200.00 U		200.00 U		200.00 U		665.66	
E-45_8-5/57.5'	B-17	-57.5	49.76 J		48.04 J		200.00 U		49.76 J		200.00 U		200.00 U		200.00 U		200.00 U		48.04 J		200.00 U		200.00 U	
E-45_8-5/62.5'	B-17	-62.5	57.07 J		200.00 U		200.00 U		57.07 J		200.00 U		200.00 U		200.00 U		200.00 U		200.00 U		200.00 U		200.00 U	
E-45_8-5/69'	B-17	-69	51.10 J	6.00 U	32.78 J	6.00 U	200.00 U	6.00 U	51.10 J	6.00 U	200.00 U	6.00 U	200.00 U	6.00 U	200.00 U	6.00 U	200.00 U	6.00 U	32.78 J	6.00 U	200.00 U	6.00 U	200.00 U	6.00 U
E-45_8-5/74'	B-17	-74	62.83 J	5.70 U	200.00 U	5.70 U	200.00 U	5.70 U	200.00 U	5.70 U	200.00 U	5.70 U	62.83 J	5.70 U	200.00 U	5.70 U	200.00 U	5.70 U	200.00 U	5.70 U	200.00 U	5.70 U	200.00 U	5.70 U
FixedE-45_8-5/90'	B-17	-90		5.40 U		5.40 U		5.40 U		5.40 U		5.40 U		5.40 U		5.40 U		5.40 U		5.40 U		5.40 U		1.30 J
F-0_9-25/3.5'	B-18	-3.5	70.38 J	5.00 U	54.01 J	5.00 U	200.00 U	5.00 U	70.38 J	5.00 U	200.00 U	5.00 U	200.00 U	5.00 U	54.01 J	5.00 U	200.00 U	5.00 U	200.00 U	5.00 U	200.00 U	5.00 U	200.00 U	5.00 U
F-0_9-25/7'	B-18	-7	52.85 J		200.00 U		200.00 U		52.85 J		200.00 U		200.00 U		200.00 U		200.00 U		200.00 U		200.00 U		200.00 U	
F-0_9-25/17'	B-18	-17	200.00 U		200.00 U		200.00 U		200.00 U		200.00 U		200.00 U		200.00 U		200.00 U		200.00 U		200.00 U		200.00 U	
F-0_9-25/27'	B-18	-27	89.04 J		53.88 J		200.00 U		89.04 J		200.00 U		200.00 U		53.88 J		200.00 U		200.00 U		200.00 U		200.00 U	
F-0_9-25/32.5'	B-18	-32.5	200.00 U		200.00 U		200.00 U		200.00 U		200.00 U		200.00 U		200.00 U		200.00 U		200.00 U		200.00 U		200.00 U	
F-0_9-25/39'	B-18	-39	69.30 J		200.00 U		200.00 U		200.00 U		200.00 U		69.30 J		200.00 U		200.00 U		200.00 U		200.00 U		200.00 U	
F-0_9-25/42.5'	B-18	-42.5	117.49 J	5.00 U	200.00 U	5.00 U	200.00 U	5.00 U	60.47 J	5.00 U	200.00 U	5.00 U	57.02 J	5.00 U	200.00 U	5.00 U	200.00 U	5.00 U	200.00 U	5.00 U	200.00 U	5.00 U	200.00 U	5.00 U
F-0_9-25/47.5'	B-18	-47.5	64.59 J		200.00 U		200.00 U		64.59 J		200.00 U		200.00 U		200.00 U		200.00 U		200.00 U		200.00 U		200.00 U	
F-0_9-25/52.5'	B-18	-52.5	53.88 J		200.00 U		200.00 U		200.00 U		200.00 U		53.88 J		200.00 U		200.00 U		200.00 U		200.00 U		200.00 U	
F-0_9-25/57.5'	B-18	-57.5	60.24 J		200.00 U		200.00 U		200.00 U		200.00 U		60.24 J		200.00 U		200.00 U		200.00 U		200.00 U		200.00 U	
F-0_9-25/64.5'	B-18	-64.5	69.10 J	5.90 U	50.79 J	5.90 U	200.00 U	5.90 U	69.10 J	5.90 U	200.00 U	5.90 U	200.00 U	5.90 U	50.79 J	5.90 U	200.00 U	5.90 U	200.00 U	5.90 U	200.00 U	5.90 U	200.00 U	5.90 U
FixedG-40_5-35/44'	B-19	-44		42460.00		270.00 U		270.00 U		460.00		13000.00		29000.00		270.00 U		270.00 U		270.00 U		270.00 U		5700.00
FixedG-40_5-35/64.5'	B-19	-64.5		6700.00		300.00 U		300.00 U		300.00 U		6700.00		300.00 U		300.00 U		300.00 U		300.00 U		300.00 U		2300.00
FixedG-40_5-35/74'	B-19	-74		2000.00		320.00 U		320.00 U		320.00 U		2000.00		320.00 U		320.00 U		320.00 U		320.00 U		320.00 U		3000.00
FixedG-40_5-35/84'	B-19	-84		5.70 U		5.70 U		5.70 U		5.70 U		5.70 U		5.70 U		5.70 U		5.70 U		5.70 U		5.70 U		5.70 U
FixedG-40_5-35/89'	B-19	-89		5.50 U		5.50 U		5.50 U		5.50 U		5.50 U		5.50 U		5.50 U		5.50 U		5.50 U		5.50 U		5.50 U
FixedG-40_5-35/109'	B-19	-109		5.60 U		5.60 U		5.60 U		5.60 U		5.60 U		5.60 U		5.60 U		5.60 U		5.60 U		5.60 U		5.60 U
FixedG-40_5-35/114'	B-19	-114		5.70 U		5.70 U		5.70 U		5.70 U		5.70 U		5.70 U		5.70 U		5.70 U		5.70 U		5.70 U		5.70 U
FixedG-40_5-35/119'	B-19	-119		6.30 U		6.30 U		6.30 U		6.30 U		6.30 U		6.30 U		6.30 U		6.30 U		6.30 U		6.30 U		6.30 U

Notes:

U- Not detected above indicated level
J- Indicates estimated value

Table 5
Rapid Assessment Groundwater Summary
129-09 Jamaica Avenue, Queens, NY

Field ID/Sample Name	Boring ID	Depth	Total BTEX(Mobile)	Total BTEX(Fixed)	Total Chl-VOCs(Mobile)	Total Chl-VOCs(Fixed)	Benzene (Mobile)	Benzene (Fixed)	Toluene (Mobile)	Toluene (Fixed)	Ethylbenzene (Mobile)	Ethylbenzene (Fixed)	Total Xylenes (Mobile)	Total Xylenes (Fixed)	Tetrachloroethene (PCE) (Mobile)	Tetrachloroethene (PCE) (Fixed)	Trichloroethene (TCE) (Mobile)	Trichloroethene (TCE) (Fixed)	cis-1,2-Dichloroethene (DCE) (Mobile)	cis-1,2-Dichloroethene (DCE) (Fixed)	Vinyl Chloride (VC) (Mobile)	Vinyl Chloride (VC) (Fixed)	Naphthalene (Mobile)	Naphthalene (Fixed)	MTBE (Mobile)	MTBE (Fixed)
		(ft)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)
J-10_6-35/67'	GW-B-14	67	6.79	5.00 U	4.38	5.00 U	1.00 U	5.00 U	3.29	5.00 U	1.00 U	5.00 U	3.50	5.00 U	4.38	5.00 U	1.00 U	5.00 U	1.00 U	5.00 U	1.00 U	5.00 U	10.00 U	5.00 U	1.00 U	5.00 U
G-25_4-35/67'	GW-B-15	67	1969.51	1321.20	15.22	20.00	1.00 U	5.00 U	11.33	1.20 J	661.63	620.00	1296.55	700.00	15.22	5.00 U	1.00 U	5.00 U	1.00 U	5.00 U	1.00 U	5.00 U	233.16	130.00	9.84	4.00 J
G-25_4-35/78'	GW-B-15	78	88.14	39.80	1.00 U	5.00 U	1.00 U	5.00 U	1.00 U	5.00 U	38.56	30.00	49.58	9.80	1.00 U	5.00 U	1.00 U	5.00 U	1.00 U	5.00 U	1.00 U	5.00 U	10.00 U	10.00	1.00 U	5.00 U
G-25_4-35/93'	GW-B-15	93	16.20	7.60 J	13.32	26.20	1.00 U	5.00 U	1.00 U	5.00 U	3.83	3.70 J	7.70	3.90 J	1.00 U	5.00 U	13.32	15.00	1.00 U	5.00 U	1.00 U	1.20 J	10.00 U	5.40 J	68.65	69.00
G-5_3-13/73'	GW-B-16	73	17.54	5.00 U	1.00 U	5.00 U	1.00 U	5.00 U	4.77	5.00 U	1.95	5.00 U	10.82	5.00 U	1.00 U	5.00 U	1.00 U	5.00 U	1.00 U	5.00 U	1.00 U	5.00 U	10.00 U	5.00 U	1.00 U	5.00 U
E-45_8-05/73'	GW-B-17	73	7.43	13.70	259.61	384.00	1.56	2.50 J	1.74	3.10 J	1.00 U	1.10 J	4.13	7.00	1.00 U	5.00 U	1.00 U	5.00 U	230.02	320.00	29.59	64.00	5.44	8.60	1.00 U	5.00 U
FixedE-45_8-05/93'	GW-B-17	93		5.00 U		58.40		5.00 U		5.00 U		5.00 U		5.00 U		1.40 J		57.00		5.00 U		5.00 U		2.20 J		1.70 J
F-0_9-25/73'	GW-B-18	73	2.00 U	5.00 U	3.10	13.10	1.00 U	5.00 U	1.00 U	5.00 U	1.00 U	5.00 U	2.00 U	5.00 U	1.00 U	5.00 U	1.94	5.00 U	1.05	1.60 J	1.00 U	1.50 J	10.00 U	5.00 U	1.00 U	0.82 J
FixedG-40_5-35/112'	GW-B-19	112		4.00 J		27.20		5.00 U		5.00 U		4.00 J		5.00 U		5.20		22.00		5.00 U		5.00 U		3.40 J		44.00

Notes:

U- Not detected above indicated level
J- Indicates estimated value

Table 6
Summary of Soil Sampling Results for VOC Analysis
129-09 Jamaica Avenue, Queens, NY

Field Sample ID	NYSDEC	NYSDEC	H-25-5-30-18	H-25-5-30-42	H-25-5-30-77	H-25-5-30-82	J-10-6-35-7	J-10-6-35-42.5	J-10-6-35-52.5	J-10-6-35-62.5	G-25-4-35-38	G-25-4-35-67.5	G-25-4-35-90	G-25-4-35-95	G-5-3-13-17.5	G-5-3-13-52.5	G-5-3-13-67.5	G-5-3-13-74	H-25-5-30-18	H-25-5-30-42	H-25-5-30-63	H-25-5-30-63DL	G-25-4-35-38	G-25-4-35-52.5	G-25-4-35-52.5	G-25-4-35-67.5	G-5-3-13-52.5
Boring ID	Table 375	Table 375	B-13	B-13	B-13	B-13	B-14	B-14	B-14	B-14	B-15	B-15	B-15	B-15	B-16	B-16	B-16	B-16	B-13	B-13	B-13	B-13	B-15	B-15	B-15	B-15	B-16
Lab Sample Number	Restricted	Unrestricted	H0144-01B	H0144-02B	H0144-04B	H0144-05B	H0144-06B	H0144-07B	H0144-08B	H0144-09B	H0144-11B	H0144-13B	H0144-14B	H0144-15B	H0144-16B	H0144-17B	H0144-18B	H0144-19B	H0144-01B	H0144-02B	H0144-03B	H0144-03BDL	H0144-11B	H0144-12B	H0144-12BDL	H0144-13B	H0144-17B
Sampling Date	Residential	SCO's	01/26/2009	01/26/2009	01/27/2009	01/27/2009	01/28/2009	01/28/2009	01/28/2009	01/28/2009	01/29/2009	01/29/2009	01/30/2009	01/30/2009	02/01/2009	02/01/2009	02/03/2009	02/03/2009	01/26/2009	01/26/2009	01/27/2009	01/27/2009	01/29/2009	01/29/2009	01/29/2009	01/29/2009	02/01/2009
Sample Depth (feet)			18	42	77	82	7	42.5	52.5	62.5	38	67.5	90	95	17.5	52.5	67.5	74	18	42	63	63	38	52.5	52.5	67.5	52.5
Percent Solids			92	92	85	87	96	94	81	88	93	88	85	79	90	87	85	78	92	92	91	91	93	88	88	88	87
Dilution Factor			1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	12	1	5	1	10	20	4	20
Matrix			Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid
Units	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Volatile Organic Compounds																											
1,1,1,2-Tetrachloroethane	100000	50	6.8 U	12 U	5.8 U	4.9 U	5.2 U	5.0 U	6.1 U	5.7 U	5.1 U	57 U	5.9 U	6.2 U	5.3 U	57 U	5.7 U	6.4 U	290 U	3400 U	290 U	1500 U	290 U	6400 U	6400 U	1300 U	6500 U
1,1,1-Trichloroethane	100000	680	6.8 U	12 U	5.8 U	4.9 U	5.2 U	5.0 U	6.1 U	5.7 U	5.1 U	57 U	5.9 U	6.2 U	5.3 U	57 U	5.7 U	6.4 U	290 U	3400 U	290 U	1500 U	290 U	6400 U	6400 U	1300 U	6500 U
1,1,2,2-Tetrachloroethane	NS	NS	6.8 U	12 U	5.8 U	4.9 U	5.2 U	5.0 U	6.1 U	5.7 U	5.1 U	57 U	5.9 U	6.2 U	5.3 U	57 U	5.7 U	6.4 U	290 U	3400 U	290 U	1500 U	290 U	6400 U	6400 U	1300 U	6500 U
1,1,2-Trichloroethane	NS	NS	6.8 U	12 U	5.8 U	4.9 U	5.2 U	5.0 U	6.1 U	5.7 U	5.1 U	57 U	5.9 U	6.2 U	5.3 U	57 U	5.7 U	6.4 U	290 U	3400 U	290 U	1500 U	290 U	6400 U	6400 U	1300 U	6500 U
1,1-Dichloroethane	26000	270	6.8 U	12 U	5.8 U	4.9 U	5.2 U	5.0 U	6.1 U	5.7 U	5.1 U	57 U	5.9 U	6.2 U	5.3 U	57 U	5.7 U	6.4 U	290 U	3400 U	290 U	1500 U	290 U	6400 U	6400 U	1300 U	6500 U
1,1-Dichloroethene	100000	330	6.8 U	12 U	5.8 U	4.9 U	5.2 U	5.0 U	6.1 U	5.7 U	5.1 U	57 U	5.9 U	6.2 U	5.3 U	57 U	5.7 U	6.4 U	290 U	3400 U	290 U	1500 U	290 U	6400 U	6400 U	1300 U	6500 U
1,1-Dichloropropene	NS	NS	6.8 U	12 U	5.8 U	4.9 U	5.2 U	5.0 U	6.1 U	5.7 U	5.1 U	57 U	5.9 U	6.2 U	5.3 U	57 U	5.7 U	6.4 U	290 U	3400 U	290 U	1500 U	290 U	6400 U	6400 U	1300 U	6500 U
1,2,3-Trichlorobenzene	NS	NS	6.8 U	12 U	5.8 U	4.9 U	5.2 U	5.0 U	6.1 U	5.7 U	5.1 U	57 U	5.9 U	6.2 U	5.3 U	57 U	5.7 U	6.4 U	290 U	3400 U	290 U	1500 U	290 U	6400 U	6400 U	1300 U	6500 U
1,2,3-Trichloropropane	NS	NS	6.8 U	12 U	5.8 U	4.9 U	5.2 U	5.0 U	6.1 U	5.7 U	5.1 U	57 U	5.9 U	6.2 U	5.3 U	57 U	5.7 U	6.4 U	290 U	3400 U	290 U	1500 U	290 U	6400 U	6400 U	1300 U	6500 U
1,2,4-Trichlorobenzene	NS	NS	6.8 U	12 U	5.8 U	4.9 U	5.2 U	5.0 U	6.1 U	5.7 U	5.1 U	57 U	5.9 U	6.2 U	5.3 U	57 U	5.7 U	6.4 U	290 U	3400 U	290 U	1500 U	290 U	6400 U	6400 U	1300 U	6500 U
1,2,4-Trimethylbenzene	52000	3600	360 E	10000 E	5.8 U	4.9 U	5.2 U	5.0 U	6.1 U	5.7 U	1800 E	9100 EB	4.9 J	4.4 J	1.6 BJ	33000 EB	5.7 U	6.4 U	4600	140000	32000 E	52000 D	8900	140000	140000	26000	170000
1,2-Dibromo-3-chloropropane	NS	NS	6.8 U	12 U	5.8 U	4.9 U	5.2 U	5.0 U	6.1 U	5.7 U	5.1 U	57 U	5.9 U	6.2 U	5.3 U	57 U	5.7 U	6.4 U	290 U	3400 U	290 U	1500 U	290 U	6400 U	6400 U	1300 U	6500 U
1,2-Dibromoethane	NS	NS	6.8 U	12 U	5.8 U	4.9 U	5.2 U	5.0 U	6.1 U	5.7 U	5.1 U	57 U	5.9 U	6.2 U	5.3 U	57 U	5.7 U	6.4 U	290 U	3400 U	290 U	1500 U	290 U	6400 U	6400 U	1300 U	6500 U
1,2-Dichlorobenzene	100000	1100	6.8 U	12 U	5.8 U	4.9 U	5.2 U	5.0 U	6.1 U	5.7 U	5.1 U	57 U	5.9 U	6.2 U	5.3 U	57 U	5.7 U	6.4 U	290 U	3400 U	290 U	1500 U	290 U	6400 U	6400 U	1300 U	6500 U
1,2-Dichloroethane	3100	20	6.8 U	12 U	5.8 U	4.9 U	5.2 U	5.0 U	6.1 U	5.7 U	5.1 U	57 U	5.9 U	6.2 U	5.3 U	57 U	5.7 U	6.4 U	290 U	3400 U	290 U	1500 U	290 U	6400 U	6400 U	1300 U	6500 U
1,2-Dichloropropane	26000	270	6.8 U	12 U	5.8 U	4.9 U	5.2 U	5.0 U	6.1 U	5.7 U	5.1 U	57 U	5.9 U	6.2 U	5.3 U	57 U	5.7 U	6.4 U	290 U	3400 U	290 U	1500 U	290 U	6400 U	6400 U	1300 U	6500 U
1,3,5-Trimethylbenzene	52000	8400	6.8 U	6400 E	5.8 U	4.9 U	5.2 U	5.0 U	6.1 U	5.7 U	490 E	3400 E	1.4 J	6.2 U	5.3 U	17000 E	5.7 U	6.4 U	290 U	53000	5000	4600 D	1900	46000	46000	7900	56000
1,3-Dichlorobenzene	49000	2400	6.8 U	12 U	5.8 U	4.9 U	5.2 U	5.0 U	6.1 U	5.7 U	5.1 U	57 U	5.9 U	6.2 U	5.3 U	57 U	5.7 U	6.4 U	290 U	3400 U	290 U	1500 U	290 U	6400 U	6400 U	1300 U	6500 U
1,3-Dichloropropane	NS	NS	6.8 U	12 U	5.8 U	4.9 U	5.2 U	5.0 U	6.1 U	5.7 U	5.1 U	57 U	5.9 U	6.2 U	5.3 U	57 U	5.7 U	6.4 U	290 U	3400 U	290 U	1500 U	290 U	6400 U	6400 U	1300 U	6500 U
1,4-Dichlorobenzene	13000	1800	6.8 U	12 U	5.8 U	4.9 U	5.2 U	5.0 U	6.1 U	5.7 U	5.1 U	57 U	5.9 U	6.2 U	5.3 U	57 U	5.7 U	6.4 U	290 U	3400 U	290 U	1500 U	290 U	6400 U	6400 U	1300 U	6500 U
2,2-Dichloropropane	NS	NS	6.8 U	12 U	5.8 U	4.9 U	5.2 U	5.0 U	6.1 U	5.7 U	5.1 U	57 U	5.9 U	6.2 U	5.3 U	57 U	5.7 U	6.4 U	290 U	3400 U	290 U	1500 U	290 U	6400 U	6400 U	1300 U	6500 U
2-Butanone	41000	1000	7.5	12 U	5.8 U	4.9 U	5.2 U	5.0 U	6.1 U	5.7 U	5.1 U	57 U	5.9 U	6.2 U	5.3 U	57 U	5.7 U	6.4 U	290 U	3400 U	290 U	1500 U	290 U	6400 U	6400 U	1300 U	6500 U
2-Chlorotoluene	NS	NS	6.8 U	12 U	5.8 U	4.9 U	5.2 U	5.0 U	6.1 U	5.7 U	5.1 U	57 U	5.9 U	6.2 U	5.3 U	57 U	5.7 U	6.4 U	290 U	3400 U	290 U	1500 U	290 U	6400 U	6400 U	1300 U	6500 U
2-Hexanone	NS	NS	6.8 U	12 U	5.8 U	4.9 U	5.2 U	5.0 U	6.1 U	5.7 U	5.1 U	57 U	5.9 U	6.2 U	5.3 U	57 U	5.7 U	6.4 U	290 U	3400 U	290 U	1500 U	290 U	6400 U	6400 U	1300 U	6500 U
4-Chlorotoluene	NS	NS	6.8 U	12 U	5.8 U	4.9 U	5.2 U	5.0 U	6.1 U	5.7 U	5.1 U	57 U	5.9 U	6.2 U	5.3 U	57 U	5.7 U	6.4 U	290 U	3400 U	290 U	1500 U	290 U	6400 U	6400 U	1300 U	6500 U
4-Isopropyltoluene	NS	NS	13	1400 E	5.8 U	4.9 U	5.2 U	5.0 U	6.1 U	5.7 U	450 E	2000	5.9 U	6.2 U	5.3 U	8600 E	5.7 U	6.4 U	290 U	12000	1700	11000 D	2000	20000	20000	4200	31000
4-Methyl-2-pentanone	19000	1300	6.8 U	12 U	5.8 U	4.9 U	5.2 U	5.0 U	6.1 U	5.7 U	5.1 U	57 U	5.9 U	6.2 U	5.3 U	57 U	5.7 U	6.4 U	290 U	3400 U	290 U	1500 U	290 U	6400 U	6400 U	1300 U	6500 U
Acetone	100000	50	58	59	34	29	11	36	38	24	14	57 U	6.0	6.2 U	5.3 U	57 U	5.7 U	6.4 U	290 U	3400 U	290 U	1500 U	290 U	6400 U	6400 U	1300 U	6500 U
Benzene	4800	60	6.8 U	12 U	5.8 U	4.9 U	5.2 U	5.0 U	6.1 U	5.7 U	5.1 U	57 U	5.9 U	6.2 U	5.3 U	57 U	5.7 U	6.4 U	290 U	3400 U	290 U	1500 U	290 U	6400 U	6400 U	1300 U	6500 U
Bromobenzene	NS	NS	6.8 U	12 U	5.8 U	4.9 U	5.2 U	5.0 U	6.1 U	5.7 U	5.1 U	57 U	5.9 U	6.2 U	5.3 U	57 U	5.7 U	6.4 U	290 U	3400 U	290 U	1500 U	290 U	6400 U	6400 U	1300 U	6500 U
Bromochloromethane	NS	NS	6.8 U	12 U	5.8 U	4.9 U	5.2 U	5.0 U	6.1 U	5.7 U	5.1 U	57 U	5.9 U	6.2 U	5.3 U	57 U	5.7 U	6.4 U	290 U	3400 U	290 U	1500 U	290 U	6400 U	6400 U	1300 U	6500 U
Bromodichloromethane	21000	470	6.8 U	12 U	5.8 U	4.9 U	5.2 U	5.0 U	6.1 U	5.7 U	5.1 U	57 U	5.9 U	6.2 U	5.3 U	57 U	5.7 U	6.4 U	290 U	3400 U	290 U	1500 U	290 U	6400 U	6400 U	1300 U	6500 U
Bromoform	900	20	6.8 U	12 U	5.8 U	4.9 U	5.2 U	5.0 U	6.1 U	5.7 U	5.1 U	57 U	5.9 U	6.2 U	5.3 U	57 U	5.7 U	6.4 U	290 U	3400 U	290 U	1500 U	290 U	6400 U	6400 U	1300 U	6500 U
Bromomethane	100000	260	6.8 U	12 U	5.8 U	4.9 U	5.2 U	5.0 U	6.1 U	5.7 U	5.1 U	57 U	5.9 U	6.2 U	5.3 U	57 U	5.7 U	6.4 U	290 U	3400 U	290 U	1500 U	290 U	6400 U	6400 U	1300 U	6500 U
Carbon disulfide	100000	50	6.8 U	12 U	5.8 U	4.9 U	5.2 U	5.0 U	6.1 U	5.7 U	5.1 U	57 U	5.9 U	6.2 U	5.3 U	57 U	5.7 U	6.4 U	290 U	3400 U	290 U	1500 U	290 U	6400 U	6400 U	1300 U	6500 U
Carbon tetrachloride	2400	760	6.8 U	12 U	5.8 U	4.9 U	5.2 U	5.0 U	6.1 U	5.7 U	5.1 U	57 U	5.9 U	6.2 U	5.3 U	57 U	5.7 U	6.4 U	290 U	3400 U	290 U	1500 U	290 U	6400 U	6400 U	1300 U	6500 U
Chlorobenzene	100000	1100	6.8 U	12 U	5.8 U	4.9 U	5.2 U	5.0 U	6.1 U	5.7 U	5.1 U	57 U	5.9 U	6.2 U	5.3 U	57 U	5.7 U	6.4 U	290 U	3400 U	290 U	1500 U	290 U	6400 U	6400 U	1300 U	6500 U
Chloroethane	NS	NS	6.8 U	12 U	5.8 U	4.9 U	5.2 U	5.0 U	6.1 U	5.7 U	5.1 U	57 U	5.9 U	6.2 U	5.3 U	57 U	5.7 U	6.4 U	290 U	3400 U	290 U	1500 U	290 U	6400 U	6400 U	1300 U	6500 U
Chloroform	49000	370	6.8 U	12 U	5.8 U	4.9 U	5.2 U	5.0 U	6.1 U	5.7 U	5.1 U	57 U	5.9 U	6.2 U	5.3 U	57 U	5.7 U	6.4 U	290 U	3400 U	290 U	1500 U	290 U	6400 U	6400 U	1300 U	6500 U
Chloromethane	NS	120	6.8 U	12 U	5.8 U	4.9 U	5.2 U	5.0 U	6.1 U	5.7 U	5.1 U	57 U	5.9 U	6.2 U	5.3 U	57 U	5.7 U	6.4 U	290 U	3400 U	290 U	1500 U	290 U	6400 U	6400 U	1300 U	6500 U
cis-1,2-Dichloroethene	100000	250	4.6 J	12 U	5.8 U	4.9 U	5.2 U	5.0 U	6.1 U	5.7 U	5.1 U	57 U	5.9 U	6.2 U	5.3 U	57 U	5.7 U	6.4 U	290 U	3400 U	290 U	1500 U	290 U	6400 U	6400 U	1300 U	6500 U
cis-1,3-Dichloropropene	2400	2400	6.8 U	12 U	5.8 U	4.9 U	5.2 U	5.0 U	6.1 U	5.7 U	5.1 U	57 U	5.9 U	6.2 U	5.3 U	57 U	5.7 U	6.4 U	290 U	3400 U	290 U	1500 U	290 U	6400 U	6400 U	1300 U	6500 U
Dibromochloromethane	100000	1100	6.8 U	12 U	5.8 U	4.9 U	5.2 U	5.0 U	6.1 U	5.7 U	5.1 U	57 U	5.9 U	6.2 U	5.3 U	57 U	5.7 U	6.4 U	290 U	3400 U	290 U	1500 U	290 U	6400 U	6400 U	1300 U	6500 U
Dibromomethane	NS	NS	6.8 U	12 U	5.8 U	4.9 U	5.2 U	5.0 U	6.1 U	5.7 U	5.1 U	57 U	5.9 U	6.2 U	5.3 U	57 U	5.7 U	6.4 U	290 U	3400 U	290 U	1500 U	290 U	6400 U	6400 U	1300 U	6500 U
Dichlorodifluoromethane	NS	NS	6.8 U	12 U	5.8 U	4.9 U	5.2 U	5.0 U	6.1 U	5.7 U	5.1 U	57 U	5.9 U	6.2 U	5.3 U	57 U	5.7 U	6.4 U	290 U	3400 U	290 U	1500 U	290 U	6400 U	6400 U	1300 U	6500 U
Ethylbenzene	41000	1000	1.5 J	1100 E	5.8 U	4.9 U	5.2 U	5.0 U	6.1 U	5.7 U	18	390	5.9 U	6.2 U	5.3 U	470	5.7 U	6.4 U	290 U	2900 J	2900	2400 D	290 U	7900	7900	1300 U	6500 U
Hexachlorobutadiene	NS	330	6.8 U	12 U	5.8 U	4.9 U	5.2 U	5.0 U	6.1 U	5.7 U	5.1 U	57 U	5.9 U	6.2 U	5.3 U	57 U	5.7 U	6.4 U	290 U	3400 U	290 U	1500 U	290 U	6400 U	6400 U	1300 U	6500 U
Iodomethane	NS	NS	6.8 U	12 U	5.8 U	4.9 U	5.2 U	5.0 U	6.1 U	5.7 U	5.1 U	57 U	5.9 U	6.2 U	5.3 U	57 U	5.7 U	6.4 U	290 U	3400 U	290 U	1500 U	290 U	6400 U	6400 U	1300 U	6500 U
Isopropylbenzene	NS	NS	11	1600 E	5.8 U	4.9 U	5.2 U	5.0 U	6.1 U	5.7 U	150	650	5.9 U	6.2 U	5.3 U	5900 E	5.7 U	6.4 U	110 J	8800	6000	5400 D	420	10000	10000	1000 J	11000
m,p-Xylene	100000	260	2.2 J	3600 E	5.8 U	4.9 U	5.2 U	5.0 U	6.1 U	5.7 U	23	610	5.9 U	6.2 U	5.3 U	610	5.7 U	6.4 U	290 U	13000	1200	1000 DJ	290 U	21000	21000	760 J	6500 U
Methyl tert-butyl ether	100000	930	6.8 U	12 U	5.8 U	4.9 U	5.2 U	5.0 U	6.1 U	5.7 U	5.1 U	57 U	5.9 U	6.2 U	5.3 U	57 U	5.7 U	6.4 U	290 U	3400 U	290 U	1500 U	290 U	6400 U	6400 U	1300 U	6500 U
Methylene chloride	100000	50	13	14	6.2	15	1.2 J	6.3	25	5.7 U	5.1 U	57 U	5.9 U	1.8 J	5.3 U	57 U	5.7 U	6.4 U	290 U	3400 U	290 U	1500 U	290 U	6400 U	6400 U	1300 U	6500 U
Naphthalene	NS	12000	25 B	330 B	5.8 U	4.9 U	5.2 U	5.0 U	6.1 U	1.3 BJ	120	1200	5.9 U	6.2 U	1.7 J	130	5.7 U	6.4 U	250 J	17000	3000	3200 D	1200	13000	13000	1800	3100 J
n-Butylbenzene	100000	3900	63	2100 E	5.8 U	4.9 U	5.2 U	5.0 U	6.1 U	5.7 U	660 E	4800 E	1.2 J	6.2 U	5.3 U	9500 E	5.7 U	6.4 U	1500	28000	16000 E	22000 D	3800	41000	41000	11000	54000
n-Propylbenzene	100000	12000	29	4800 E	5.8 U	4.9 U	5.2 U	5.0 U	6.1 U	5.7 U	360 E	1400	5.9 U	6.2 U	5.3 U	16000 E	5.7 U	6.4 U	310	17000	13000 E	11000 D	860	19000	19000	2600	25000
o-Xylene	100000	260	1.8 J	21	5.8 U	4.9 U	5.2 U	5.0 U	6.1 U	5.7 U	31	57 U	5.9 U	6.2 U	5.3 U	210	5.7 U	6.4 U	290 U	3400 U	290 U	1500 U	290 U	6400 U	6400 U	1300 U	6500 U
sec-Butylbenzene	100000	11000	51	1600 E	5.8 U	4.9 U	5.2 U	5.0 U	6.1 U	5.7 U	320 E	1500	5.9 U	6.2 U	5.3 U	8200 E	5.7 U	6.4 U	1000	13000	11000	12000 D	1500	19000	19000	3600	29000
Styrene	NS	NS	6.8 U	12 U	5.8 U	4.9 U	5.2 U	5.0 U	6.1 U	5.7 U	5.1 U	57 U	5.9 U	6.2 U	5.3 U	57 U	5.7 U	6.4 U	290 U	3400 U	290 U	1500 U	290 U	6400 U	6400 U	1300 U	6500 U
tert-Butylbenzene	100000	5900	6.8 U	12 U	5.8 U	4.9 U	5.2 U	5.0 U	6.1 U	5.7 U	30	67	5.9 U	6.2 U	5.3 U	480	5.7 U	6.4 U	110 J	3400 U	490	1500 U	290 U	6400 U	6400 U	1300 U	6500 U
Tetrachloroethene	19000	1300	1300 E	21	5.8 U	4.9 U	1.1 J	5.0 U	6.1 U	5.7 U	5.1 U	57 U	5.9 U	6.2 U	5.3 U	57 U	5.7 U	6.4 U	6300	3400 U	290 U	1500 U	290 U	6400 U	6400 U	1300 U	6500 U
Toluene	100000	700	6.8 U	3.2 J	5.8 U	4.9 U	5.2 U	5.0 U	6.1 U	5.7 U	5.1 U	57 U	5.9 U	6.2 U	5.3 U	57 U	5.7 U	6.4 U	290 U	3400 U	290 U	1500 U	290 U	6400 U	6400 U	1300 U	6500 U
trans-1,2-Dichloroethene	100000	190	6.8 U	12 U	5.8 U	4.9 U	5.2 U	5.0 U	6.1 U	5.7 U	5.1 U	57 U	5.9 U	6.2 U	5.3 U	57 U	5.7 U	6.4 U	290 U	3400 U	290 U	1500 U	290 U	6400 U	6400 U	1300 U	6500 U
trans-1,3-Dichloropropene	NS	NS	6.8 U	12 U	5.8 U	4.9 U	5.2 U	5.0 U	6.1 U	5.7 U	5.1 U	57 U	5.9 U	6.2 U	5.3 U	57 U	5.7 U	6.4 U	290 U	3400 U	290 U	1500 U	290 U	6400 U	6400 U	1300 U	6500 U
Trichloroethene	21000	470	5.0 J	12 U	5.8 U	4.9 U	5.2 U	5.0 U	6.1 U	5.7 U	5.1 U	57 U	5.9 U	6.3	5.3 U	57 U	5.7 U	6.4 U	290 U	3400 U	290 U	1500 U	290 U	6400 U	6400 U	1300 U	6500 U
Trichlorofluoromethane	NS	NS	6.8 U	12 U	5.8 U	4.9 U	5.2 U	5.0 U	6.1 U	5.7 U	5.1 U	57 U	5.9 U	6.2 U	5.3 U	57 U	5.7 U	6.4 U	290 U	3400 U	290 U	1500 U	290 U	6400 U	6400 U	1300 U	6500 U
Vinyl acetate	NS	NS	6.8 U	12 U	5.8 U	4.9 U	5.2 U	5.0 U	6.1 U	5.7 U	5.1 U	57 U	5.9 U	6.2 U	5.3 U	57 U	5.7 U	6.4 U	290 U	3400 U	290 U	1500 U	290 U	6400 U	6400 U	1300 U	6500 U
Vinyl chloride	900	20	6.8 U	12 U	5.8 U	4.9 U	5.2 U	5.0 U	6.1 U	5.7 U	5.1 U	57 U	5.9 U	6.2 U	5.3 U	57 U	5.7 U	6.4 U	290 U	3400 U	290 U	1500 U	290 U	6400 U	6400 U	1300 U	6500 U
Xylene (Total)	10000 0	260	4.0 J	3600 E	5.8 U	4.9 U	5.2 U	5.0 U	6.1 U	5.7 U	53	610	5.9 U	6.2 U	5.3 U	820	5.7 U	6.4 U	290 U	13000	1200	1000 DJ	290 U	21000	21000	760 J	6500 U

Notes:
U-Not detected above indicated level
J-indicates estimated value
B-indicates detected in lab blank
D-compound concentration was obtained from a diluted analysis
E-compound concentration exceeded calibration range

Table 6
Summary of Soil Sampling Results for VOC Analysis
129-09 Jamaica Avenue, Queens, NY

Field Sample ID	NYSDEC	NYSDEC	E-45-8-5-7	E-45-8-5-69	E-45-8-5-74	F-0-9-25-42.5	F-0-9-25-64	E45-8-5(90)	F-0-9-25-3.5	G-40-5-35-84	G-40-5-35-89	G-40-5-35-109	G-40-5-35-114	G-40-5-35-119RE	G-40-5-35-119	G-40-5-35-44DL	G-40-5-35-44	G-40-5-35-64.5D	G-40-5-35-64.5	G-40-5-35-74D	G-40-5-35-74
Boring ID	Table 375	Table 375	B-17	B-17	B-17	B-18	B-18	B-17	B-18	B-19	B-19	B-19	B-19	B-19	B-19	B-19	B-19	B-19	B-19	B-19	B-19
Lab Sample Number	Restricted	Unrestricted	H0176-01B	H0176-03B	H0176-04B	H0176-05B	H0176-07B	H0176-11B	H0176-12B	H0176-16B	H0176-17B	H0176-18B	H0176-19B	H0176-20BRE	H0176-20B	H0176-13BDL	H0176-13B	H0176-14BDL	H0176-14B	H0176-15BDL	H0176-15B
Sampling Date	Residential	SCO's	02/03/2009	02/04/2009	02/04/2009	02/05/2009	02/05/2009	02/09/2009	02/09/2009	02/10/2009	02/10/2009	02/11/2009	02/11/2009	02/11/2009	02/11/2009	02/10/2009	02/10/2009	02/10/2009	02/10/2009	02/10/2009	02/10/2009
Sample Depth (feet)			7	69	74	42.5	64	90	3.5	84	89	109	114	119	119	44	44	64.5	64.5	74	74
Percent Solids			93	82	87	95	83	88	89	81	83	82	81	74	74	92	92	89	89	85	85
Dilution Factor			1	1	1	1	1	1	1	1	1	1	1	1	1	16	1	5	1	5	1
Matrix			Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid	Solid
Units	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Volatile Organic Compounds																					
1,1,1,2-Tetrachloroethane	100000	50	5.4 U	6.0 U	5.7 U	5.0 U	5.9 U	5.4 U	5.0 U	5.7 U	5.5 U	5.6 U	5.7 U	6.4 U	6.3 U	4400 U	270 U	1500 U	300 U	1600 U	320 U
1,1,1-Trichloroethane	100000	680	5.4 U	6.0 U	5.7 U	5.0 U	5.9 U	5.4 U	5.0 U	5.7 U	5.5 U	5.6 U	5.7 U	6.4 U	6.3 U	4400 U	270 U	1500 U	300 U	1600 U	320 U
1,1,2,2-Tetrachloroethane	NS	NS	5.4 U	6.0 U	5.7 U	5.0 U	5.9 U	5.4 U	5.0 U	5.7 U	5.5 U	5.6 U	5.7 U	6.4 U	6.3 U	4400 U	270 U	1500 U	300 U	1600 U	320 U
1,1,2-Trichloroethane	NS	NS	5.4 U	6.0 U	5.7 U	5.0 U	5.9 U	5.4 U	5.0 U	5.7 U	5.5 U	5.6 U	5.7 U	6.4 U	6.3 U	4400 U	270 U	1500 U	300 U	1600 U	320 U
1,1-Dichloroethane	26000	270	5.4 U	6.0 U	5.7 U	5.0 U	5.9 U	5.4 U	5.0 U	5.7 U	5.5 U	5.6 U	5.7 U	6.4 U	6.3 U	4400 U	270 U	1500 U	300 U	1600 U	320 U
1,1-Dichloroethene	100000	330	5.4 U	6.0 U	5.7 U	5.0 U	5.9 U	5.4 U	5.0 U	5.7 U	5.5 U	5.6 U	5.7 U	6.4 U	6.3 U	4400 U	270 U	1500 U	300 U	1600 U	320 U
1,1-Dichloropropene	NS	NS	5.4 U	6.0 U	5.7 U	5.0 U	5.9 U	5.4 U	5.0 U	5.7 U	5.5 U	5.6 U	5.7 U	6.4 U	6.3 U	4400 U	270 U	1500 U	300 U	1600 U	320 U
1,2,3-Trichlorobenzene	NS	NS	5.4 U	6.0 U	5.7 U	5.0 U	5.9 U	5.4 U	5.0 U	5.7 U	5.5 U	5.6 U	5.7 U	6.4 U	6.3 U	4400 U	270 U	1500 U	300 U	1600 U	320 U
1,2,3-Trichloropropane	NS	NS	5.4 U	6.0 U	5.7 U	5.0 U	5.9 U	5.4 U	5.0 U	5.7 U	5.5 U	5.6 U	5.7 U	6.4 U	6.3 U	4400 U	270 U	1500 U	300 U	1600 U	320 U
1,2,4-Trichlorobenzene	NS	NS	5.4 U	6.0 U	5.7 U	5.0 U	5.9 U	5.4 U	5.0 U	5.7 U	5.5 U	5.6 U	5.7 U	6.4 U	6.3 U	4400 U	270 U	1500 U	300 U	1600 U	320 U
1,2,4-Trimethylbenzene	52000	3600	5.4 U	6.0 U	5.7 U	5.0 U	5.9 U	5.4 U	2.1 J	5.7 U	5.5 U	5.6 U	5.7 U	6.4 U	6.3 U	110000 D	37000 E	8400 D	7500	2500 D	3500
1,2-Dibromo-3-chloropropane	NS	NS	5.4 U	6.0 U	5.7 U	5.0 U	5.9 U	5.4 U	5.0 U	5.7 U	5.5 U	5.6 U	5.7 U	6.4 U	6.3 U	4400 U	270 U	1500 U	300 U	1600 U	320 U
1,2-Dibromoethane	NS	NS	5.4 U	6.0 U	5.7 U	5.0 U	5.9 U	5.4 U	5.0 U	5.7 U	5.5 U	5.6 U	5.7 U	6.4 U	6.3 U	4400 U	270 U	1500 U	300 U	1600 U	320 U
1,2-Dichlorobenzene	100000	1100	5.4 U	6.0 U	5.7 U	5.0 U	5.9 U	5.4 U	5.0 U	5.7 U	5.5 U	5.6 U	5.7 U	6.4 U	6.3 U	4400 U	270 U	1500 U	300 U	1600 U	320 U
1,2-Dichloroethane	3100	20	5.4 U	6.0 U	5.7 U	5.0 U	5.9 U	5.4 U	5.0 U	5.7 U	5.5 U	5.6 U	5.7 U	6.4 U	6.3 U	4400 U	270 U	1500 U	300 U	1600 U	320 U
1,2-Dichloropropane	26000	270	5.4 U	6.0 U	5.7 U	5.0 U	5.9 U	5.4 U	5.0 U	5.7 U	5.5 U	5.6 U	5.7 U	6.4 U	6.3 U	4400 U	270 U	1500 U	300 U	1600 U	320 U
1,3,5-Trimethylbenzene	52000	8400	5.4 U	6.0 U	5.7 U	5.0 U	5.9 U	5.4 U	5.0 U	5.7 U	5.5 U	5.6 U	5.7 U	6.4 U	6.3 U	34000 D	25000 E	1500 U	6200	1600 U	220 J
1,3-Dichlorobenzene	49000	2400	5.4 U	6.0 U	5.7 U	5.0 U	5.9 U	5.4 U	5.0 U	5.7 U	5.5 U	5.6 U	5.7 U	6.4 U	6.3 U	4400 U	270 U	1500 U	300 U	1600 U	320 U
1,3-Dichloropropane	NS	NS	5.4 U	6.0 U	5.7 U	5.0 U	5.9 U	5.4 U	5.0 U	5.7 U	5.5 U	5.6 U	5.7 U	6.4 U	6.3 U	4400 U	270 U	1500 U	300 U	1600 U	320 U
1,4-Dichlorobenzene	13000	1800	5.4 U	6.0 U	5.7 U	5.0 U	5.9 U	5.4 U	5.0 U	5.7 U	5.5 U	5.6 U	5.7 U	6.4 U	6.3 U	4400 U	270 U	1500 U	300 U	1600 U	320 U
2,2-Dichloropropane	NS	NS	5.4 U	6.0 U	5.7 U	5.0 U	5.9 U	5.4 U	5.0 U	5.7 U	5.5 U	5.6 U	5.7 U	6.4 U	6.3 U	4400 U	270 U	1500 U	300 U	1600 U	320 U
2-Butanone	41000	1000	5.4 U	6.0 U	5.7 U	5.0 U	5.9 U	5.4 U	5.0 U	5.7 U	5.5 U	5.6 U	5.7 U	7.6	6.3 U	4400 U	270 U	1500 U	300 U	1600 U	320 U
2-Chlorotoluene	NS	NS	5.4 U	6.0 U	5.7 U	5.0 U	5.9 U	5.4 U	5.0 U	5.7 U	5.5 U	5.6 U	5.7 U	6.4 U	6.3 U	4400 U	270 U	1500 U	300 U	1600 U	320 U
2-Hexanone	NS	NS	5.4 U	6.0 U	5.7 U	5.0 U	5.9 U	5.4 U	5.0 U	5.7 U	5.5 U	5.6 U	5.7 U	6.4 U	6.3 U	4400 U	270 U	1500 U	300 U	1600 U	320 U
4-Chlorotoluene	NS	NS	5.4 U	6.0 U	5.7 U	5.0 U	5.9 U	5.4 U	5.0 U	5.7 U	5.5 U	5.6 U	5.7 U	6.4 U	6.3 U	4400 U	270 U	1500 U	300 U	1600 U	320 U
4-Isopropyltoluene	NS	NS	5.4 U	6.0 U	5.7 U	5.0 U	5.9 U	5.4 U	5.0 U	5.7 U	5.5 U	5.6 U	5.7 U	6.4 U	6.3 U	15000 D	270 U	14000 D	13000 E	1600 U	2300
4-Methyl-2-pentanone	19000	1300	5.4 U	6.0 U	5.7 U	5.0 U	5.9 U	5.4 U	5.0 U	5.7 U	5.5 U	5.6 U	5.7 U	6.4 U	6.3 U	4400 U	270 U	1500 U	300 U	1600 U	320 U
Acetone	100000	50	5.6	11	12	6.2	6.5	5.4 U	5.0 U	5.7 U	5.5 U	5.6 U	5.7 U	46	39	4400 U	270 U	1500 U	300 U	1600 U	320 U
Benzene	4800	60	5.4 U	6.0 U	5.7 U	5.0 U	5.9 U	5.4 U	5.0 U	5.7 U	5.5 U	5.6 U	5.7 U	6.4 U	6.3 U	4400 U	270 U	1500 U	300 U	1600 U	320 U
Bromobenzene	NS	NS	5.4 U	6.0 U	5.7 U	5.0 U	5.9 U	5.4 U	5.0 U	5.7 U	5.5 U	5.6 U	5.7 U	6.4 U	6.3 U	4400 U	270 U	1500 U	300 U	1600 U	320 U
Bromochloromethane	NS	NS	5.4 U	6.0 U	5.7 U	5.0 U	5.9 U	5.4 U	5.0 U	5.7 U	5.5 U	5.6 U	5.7 U	6.4 U	6.3 U	4400 U	270 U	1500 U	300 U	1600 U	320 U
Bromodichloromethane	21000	470	5.4 U	6.0 U	5.7 U	5.0 U	5.9 U	5.4 U	5.0 U	5.7 U	5.5 U	5.6 U	5.7 U	6.4 U	6.3 U	4400 U	270 U	1500 U	300 U	1600 U	320 U
Bromoform	900	20	5.4 U	6.0 U	5.7 U	5.0 U	5.9 U	5.4 U	5.0 U	5.7 U	5.5 U	5.6 U	5.7 U	6.4 U	6.3 U	4400 U	270 U	1500 U	300 U	1600 U	320 U
Bromomethane	100000	260	5.4 U	6.0 U	5.7 U	5.0 U	5.9 U	5.4 U	5.0 U	5.7 U	5.5 U	5.6 U	5.7 U	6.4 U	6.3 U	4400 U	270 U	1500 U	300 U	1600 U	320 U
Carbon disulfide	100000	50	5.4 U	6.0 U	5.7 U	5.0 U	5.9 U	5.4 U	5.0 U	5.7 U	5.5 U	5.6 U	5.7 U	6.4 U	6.3 U	4400 U	270 U	1500 U	300 U	1600 U	320 U
Carbon tetrachloride	2400	760	5.4 U	6.0 U	5.7 U	5.0 U	5.9 U	5.4 U	5.0 U	5.7 U	5.5 U	5.6 U	5.7 U	6.4 U	6.3 U	4400 U	270 U	1500 U	300 U	1600 U	320 U
Chlorobenzene	100000	1100	5.4 U	6.0 U	5.7 U	5.0 U	5.9 U	5.4 U	5.0 U	5.7 U	5.5 U	5.6 U	5.7 U	6.4 U	6.3 U	4400 U	270 U	1500 U	300 U	1600 U	320 U
Chloroethane	NS	NS	5.4 U	6.0 U	5.7 U	5.0 U	5.9 U	5.4 U	5.0 U	5.7 U	5.5 U	5.6 U	5.7 U	6.4 U	6.3 U	4400 U	270 U	1500 U	300 U	1600 U	320 U
Chloroform	49000	370	5.4 U	6.0 U	5.7 U	5.0 U	5.9 U	5.4 U	5.0 U	5.7 U	5.5 U	5.6 U	5.7 U	6.4 U	6.3 U	4400 U	270 U	1500 U	300 U	1600 U	320 U
Chloromethane	NS	120	5.4 U	6.0 U	5.7 U	5.0 U	5.9 U	5.4 U	5.0 U	5.7 U	5.5 U	5.6 U	5.7 U	6.4 U	6.3 U	4400 U	270 U	1500 U	300 U	1600 U	320 U
cis-1,2-Dichloroethene	100000	250	5.4 U	6.0 U	5.7 U	5.0 U	5.9 U	5.4 U	5.0 U	5.7 U	5.5 U	5.6 U	5.7 U	6.4 U	6.3 U	4400 U	270 U	1500 U	300 U	1600 U	320 U
cis-1,3-Dichloropropene	2400	2400	5.4 U	6.0 U	5.7 U	5.0 U	5.9 U	5.4 U	5.0 U	5.7 U	5.5 U	5.6 U	5.7 U	6.4 U	6.3 U	4400 U	270 U	1500 U	300 U	1600 U	320 U
Dibromochloromethane	100000	1100	5.4 U	6.0 U	5.7 U	5.0 U	5.9 U	5.4 U	5.0 U	5.7 U	5.5 U	5.6 U	5.7 U	6.4 U	6.3 U	4400 U	270 U	1500 U	300 U	1600 U	320 U
Dibromomethane	NS	NS	5.4 U	6.0 U	5.7 U	5.0 U	5.9 U	5.4 U	5.0 U	5.7 U	5.5 U	5.6 U	5.7 U	6.4 U	6.3 U	4400 U	270 U	1500 U	300 U	1600 U	320 U
Dichlorodifluoromethane	NS	NS	5.4 U	6.0 U	5.7 U	5.0 U	5.9 U	5.4 U	5.0 U	5.7 U	5.5 U	5.6 U	5.7 U	6.4 U	6.3 U	4400 U	270 U	1500 U	300 U	1600 U	320 U
Ethylbenzene	41000	1000	5.4 U	6.0 U	5.7 U	5.0 U	5.9 U	5.4 U	5.0 U	5.7 U	5.5 U	5.6 U	5.7 U	6.4 U	6.3 U	13000 D	18000 E	6200 D	6700	1300 DJ	2000
Hexachlorobutadiene	NS	330	5.4 U	6.0 U	5.7 U	5.0 U	5.9 U	5.4 U	5.0 U	5.7 U	5.5 U	5.6 U	5.7 U	6.4 U	6.3 U	4400 U	270 U	1500 U	300 U	1600 U	320 U
Iodomethane	NS	NS	5.4 U	6.0 U	5.7 U	5.0 U	5.9 U	5.4 U	5.0 U	5.7 U	5.5 U	5.6 U	5.7 U	6.4 U	6.3 U	4400 U	270 U	1500 U	300 U	1600 U	320 U
Isopropylbenzene	NS	NS	5.4 U	6.0 U	5.7 U	5.0 U	5.9 U	5.4 U	5.0 U	5.7 U	5.5 U	5.6 U	5.7 U	6.4 U	6.3 U	21000 D	28000 E	8300 D	9100	2400 D	3800
m,p-Xylene	100000	260	5.4 U	6.0 U	5.7 U	5.0 U	5.9 U	5.4 U	5.0 U	5.7 U	5.5 U	5.6 U	5.7 U	6.4 U	6.3 U	13000 D	20000	1500 U	300 U	1600 U	320 U
Methyl tert-butyl ether	100000	930	5.4 U	6.0 U	5.7 U	5.0 U	5.9 U	5.4 U	5.0 U	5.7 U	5.5 U	5.6 U	5.7 U	6.4 U	6.3 U	4400 U	270 U	1500 U	300 U	1600 U	320 U
Methylene chloride	100000	50	5.4 U	6.0 U	5.7 U	5.0 U	2.1 J	5.4 U	5.0 U	5.7 U	5.5 U	5.6 U	5.7 U	11	14	4400 U	270 U	1500 U	300 U	1600 U	320 U
Naphthalene	NS	12000	5.4 U	6.0 U	5.7 U	5.0 U	5.9 U	5.4 U	5.0 U	5.7 U	5.5 U	5.6 U	5.7 U	6.4 U	6.3 U	48000 D	19000 E	38000 D	18000 E	19000 D	26000 E
n-Butylbenzene	100000	3900	5.4 U	6.0 U	5.7 U	5.0 U	5.9 U	5.4 U	5.0 U	5.7 U	5.5 U	5.6 U	5.7 U	6.4 U	6.3 U	27000 D	28000 E	13000 D	11000	4800 D	5600
n-Propylbenzene	100000	12000	5.4 U	6.0 U	5.7 U	5.0 U	5.9 U	1.3 J	5.0 U	5.7 U	5.5 U	5.6 U	5.7 U	6.4 U	6.3 U	17000 D	5700	4500 D	2300	3100 D	3000
o-Xylene	100000	260	5.4 U	6.0 U	5.7 U	5.0 U	5.9 U	5.4 U	5.0 U	5.7 U	5.5 U	5.6 U	5.7 U	6.4 U	6.3 U	6500 D	8700	1500 U	300 U	1600 U	320 U
sec-Butylbenzene	100000	11000	5.4 U	6.0 U	5.7 U	5.0 U	5.9 U	5.4 U	5.0 U	5.7 U	5.5 U	5.6 U	5.7 U	6.4 U	6.3 U	24000 D	19000 E	15000 D	13000 E	7200 D	11000
Styrene	NS	NS	5.4 U	6.0 U	5.7 U	5.0 U	5.9 U	5.4 U	5.0 U	5.7 U	5.5 U	5.6 U	5.7 U	6.4 U	6.3 U	4400 U	270 U	1500 U	300 U	1600 U	320 U
tert-Butylbenzene	100000	5900	5.4 U	6.0 U	5.7 U	5.0 U	5.9 U	5.4 U	5.0 U	5.7 U	5.5 U	5.6 U	5.7 U	6.4 U	6.3 U	4400 U	270 U	1500 U	480	1600 U	320 U
Tetrachloroethene	19000	1300	5.4 U	6.0 U	5.7 U	5.0 U	5.9 U	5.4 U	5.0 U	5.7 U	5.5 U	5.6 U	5.7 U	6.4 U	6.3 U	4400 U	270 U	1500 U	300 U	1600 U	320 U
Toluene	100000	700	5.4 U	6.0 U	5.7 U	5.0 U	5.9 U	5.4 U	5.0 U	5.7 U	5.5 U	5.6 U	5.7 U	6.4 U	6.3 U	4400 U	460	1500 U	300 U	1600 U	320 U
trans-1,2-Dichloroethene	100000	190	5.4 U	6.0 U	5.7 U	5.0 U	5.9 U	5.4 U	5.0 U	5.7 U	5.5 U	5.6 U	5.7 U	6.4 U	6.3 U	4400 U	270 U	1500 U	300 U	1600 U	320 U
trans-1,3-Dichloropropene	NS	NS	5.4 U	6.0 U	5.7 U	5.0 U	5.9 U	5.4 U	5.0 U	5.7 U	5.5 U	5.6 U	5.7 U	6.4 U	6.3 U	4400 U	270 U	1500 U	300 U	1600 U	320 U
Trichloroethene	21000	470	5.4 U	6.0 U	5.7 U	5.0 U	5.9 U	5.4 U	5.0 U	5.7 U	5.5 U	5.6 U	5.7 U	6.4 U	6.3 U	4400 U	270 U	1500 U	300 U	1600 U	320 U
Trichlorofluoromethane	NS	NS	5.4 U	6.0 U	5.7 U	5.0 U	5.9 U	5.4 U	5.0 U	5.7 U	5.5 U	5.6 U	5.7 U	6.4 U	6.3 U	4400 U	270 U	1500 U	300 U	1600 U	320 U
Vinyl acetate	NS	NS	5.4 U	6.0 U	5.7 U	5.0 U	5.9 U	5.4 U	5.0 U	5.7 U	5.5 U	5.6 U	5.7 U	6.4 U	6.3 U	4400 U	270 U	1500 U	300 U	1600 U	320 U
Vinyl chloride	900	20	5.4 U	6.0 U	5.7 U	5.0 U	5.9 U	5.4 U	5.0 U	5.7 U	5.5 U	5.6 U	5.7 U	6.4 U	6.3 U	4400 U	270 U	1500 U	300 U	1600 U	320 U
Xylene (Total)	100000	260	5.4 U	6.0 U	5.7 U	5.0 U	5.9 U	5.4 U	5.0 U	5.7 U	5.5 U	5.6 U	5.7 U	6.4 U	6.3 U	19000 D	29000	1500 U	300 U	1600 U	320 U

Notes:
U-Not detected above indicated level
J-indicates estimated value
B-indicates detected in lab blank
D-compound concentration was obtained from a diluted analysis
E-compound concentration exceeded calibration range

Table 7
Summary of Ground Water Sampling Results for VOC Analysis
129-09 Jamaica Avenue, Queens, NY

Field Sample ID	NYSDEC	MW-J-10-6-35		G-25-4-35-67		G-25-4-35-67DL		G-25-4-35-78		G-25-4-35-93		G-5-3-13		TRIP BLANK		MW-E-45-8-5-73DL		MW-E-45-8-5-73		MW-F-0-9-25-73		TB020509		E-45-8-5-93		G-40-5-35-112		TB021109	
Boring ID	**TOGS**	GW-B-14		GW-B-15		GW-B-15		GW-B-15		GW-B-15		GW-B-16				GW-B-17		GW-B-17		GW-B-18				GW-B-17		GW-B-19			
Depth (-Ft)		67		67		67		78		93		73				73		73		73				93		112			
Lab Sample Number		H0144-10C		H0144-20C		H0144-20ADL		H0144-21C		H0144-22C		H0144-23C		H0144-24A		H0176-08ADL		H0176-08C		H0176-09C		H0176-10A		H0176-21B		H0176-22C		H0176-23A	
Sampling Date		01/29/2009		01/30/2009		01/30/2009		01/30/2009		02/03/2009		02/03/2009		02/03/2009		02/04/2009		02/04/2009		02/05/2009		02/05/2009		02/11/2009		02/11/2009		02/11/2009	
Dilution		1		1		16		1		1		1		1		4		1		1		1		1		1		1	
Matrix		Liquid		Liquid		Liquid		Liquid		Liquid		Liquid		Liquid		Liquid		Liquid		Liquid		Liquid		Liquid		Liquid		Liquid	
Units	**ug/L**	ug/L		ug/L		ug/L		ug/L		ug/L		ug/L		ug/L		**ug/L**		**ug/L**		**ug/L**		**ug/L**		**ug/L**		**ug/L**		**ug/L**	
Volatile Organic Compounds																													
1,1,1,2-Tetrachloroethane	5	5.0	U	5.0	U	80	U	5.0	U	5.0	U	5.0	U	5.0	U	20	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
1,1,1-Trichloroethane	5	5.0	U	5.0	U	80	U	5.0	U	5.0	U	5.0	U	5.0	U	20	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
1,1,2,2-Tetrachloroethane	5	5.0	U	5.0	U	80	U	5.0	U	5.0	U	5.0	U	5.0	U	20	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
1,1,2-Trichloroethane	NS	5.0	U	5.0	U	80	U	5.0	U	5.0	U	5.0	U	5.0	U	20	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
1,1-Dichloroethane	5	5.0	U	5.0	U	80	U	5.0	U	5.0	U	5.0	U	5.0	U	20	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
1,1-Dichloroethene	NS	5.0	U	5.0	U	80	U	5.0	U	5.0	U	5.0	U	5.0	U	20	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
1,1-Dichloropropene	5	5.0	U	5.0	U	80	U	5.0	U	5.0	U	5.0	U	5.0	U	20	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
1,2,3-Trichlorobenzene	5	5.0	U	5.0	U	80	U	5.0	U	5.0	U	5.0	U	5.0	U	20	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
1,2,3-Trichloropropane	0.04	5.0	U	5.0	U	80	U	5.0	U	5.0	U	5.0	U	5.0	U	20	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
1,2,4-Trichlorobenzene	5	5.0	U	5.0	U	80	U	5.0	U	5.0	U	5.0	U	5.0	U	20	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
1,2,4-Trimethylbenzene	5	5.0	U	**820**	E	**1900**	D	**52**		**43**		1.3	J	5.0	U	20	DJ	**27**		5.0	U	5.0	U	5.0	U	**9.2**		5.0	U
1,2-Dibromo-3-chloropropane	0.04	5.0	U	5.0	U	80	U	5.0	U	5.0	U	5.0	U	5.0	U	20	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
1,2-Dibromoethane		5.0	U	5.0	U	80	U	5.0	U	5.0	U	5.0	U	5.0	U	20	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
1,2-Dichlorobenzene	3	5.0	U	5.0	U	80	U	5.0	U	5.0	U	5.0	U	5.0	U	20	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
1,2-Dichloroethane	5	5.0	U	5.0	U	80	U	5.0	U	5.0	U	5.0	U	5.0	U	20	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
1,2-Dichloropropane	NS	5.0	U	5.0	U	80	U	5.0	U	5.0	U	5.0	U	5.0	U	20	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
1,3,5-Trimethylbenzene	5	5.0	U	**380**	E	**540**	D	**14**		**11**		5.0	U	5.0	U	20	U	0.81	J	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
1,3-Dichlorobenzene	3	5.0	U	5.0	U	80	U	5.0	U	5.0	U	5.0	U	5.0	U	20	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
1,3-Dichloropropane	5	5.0	U	5.0	U	80	U	5.0	U	5.0	U	5.0	U	5.0	U	20	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
1,4-Dichlorobenzene	3	5.0	U	5.0	U	80	U	5.0	U	5.0	U	5.0	U	5.0	U	20	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
2,2-Dichloropropane	5	5.0	U	5.0	U	80	U	5.0	U	5.0	U	5.0	U	5.0	U	20	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
2-Butanone	50	5.0	U	5.0	U	80	U	5.0	U	5.0	U	5.0	U	5.0	U	20	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
2-Chlorotoluene	5	5.0	U	5.0	U	80	U	5.0	U	5.0	U	5.0	U	5.0	U	20	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
2-Hexanone	NS	5.0	U	5.0	U	80	U	5.0	U	5.0	U	5.0	U	5.0	U	20	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
4-Chlorotoluene	5	5.0	U	5.0	U	80	U	5.0	U	5.0	U	5.0	U	5.0	U	20	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
4-Isopropyltoluene	5	5.0	U	**88**		**74**	DJ	**42**		4.5	J	5.0	U	5.0	U	20	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
4-Methyl-2-pentanone		5.0	U	5.0	U	80	U	5.0	U	5.0	U	5.0	U	5.0	U	20	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
Acetone	50	5.0	U	6.6		80	U	12		5.0	U	5.0	U	5.0	U	20	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
Benzene	0.7	5.0	U	5.0	U	80	U	5.0	U	5.0	U	5.0	U	5.0	U	20	U	2.5	J	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
Bromobenzene	5	5.0	U	5.0	U	80	U	5.0	U	5.0	U	5.0	U	5.0	U	20	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
Bromochloromethane	5	5.0	U	5.0	U	80	U	5.0	U	5.0	U	5.0	U	5.0	U	20	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
Bromodichloromethane	50	5.0	U	1.6	J	80	U	3.9	J	5.0	U	2.1	J	5.0	U	20	U	5.0	U	1.3	J	5.0	U	5.0	U	5.0	U	5.0	U
Bromoform	50	5.0	U	5.0	U	80	U	5.0	U	5.0	U	5.0	U	5.0	U	20	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
Bromomethane	5	5.0	U	5.0	U	80	U	5.0	U	5.0	U	5.0	U	5.0	U	20	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
Carbon disulfide	60	5.0	U	5.0	U	80	U	5.0	U	5.0	U	5.0	U	5.0	U	20	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
Carbon tetrachloride	5	5.0	U	5.0	U	80	U	5.0	U	5.0	U	5.0	U	5.0	U	20	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
Chlorobenzene	5	5.0	U	5.0	U	80	U	5.0	U	5.0	U	5.0	U	5.0	U	20	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
Chloroethane	5	5.0	U	**5.9**		80	U	3.8	J	5.0	U	5.0	U	5.0	U	20	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
Chloroform	7	**28**		**21**		**24**	DJ	**27**		4.9	J	**17**		5.0	U	**13**	DJ	**17**		**20**		5.0	U	**21**		**24**		5.0	U
Chloromethane	NS	5.0	U	1.7	J	80	U	5.0	U	5.0	U	5.0	U	5.0	U	20	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
cis-1,2-Dichloroethene	5	5.0	U	5.0	U	80	U	5.0	U	5.0	U	5.0	U	5.0	U	320	D	410	E	1.6	J	5.0	U	5.0	U	5.0	U	5.0	U
cis-1,3-Dichloropropene	NS	5.0	U	5.0	U	80	U	5.0	U	5.0	U	5.0	U	5.0	U	20	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
Dibromochloromethane	50	5.0	U	5.0	U	80	U	5.0	U	5.0	U	5.0	U	5.0	U	20	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
Dibromomethane	5	5.0	U	5.0	U	80	U	5.0	U	5.0	U	5.0	U	5.0	U	20	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
Dichlorodifluoromethane	5	5.0	U	5.0	U	80	U	5.0	U	5.0	U	5.0	U	5.0	U	20	U	5.0	U	5.0	U	5.0	U	5.0	U	1.6	J	5.0	U
Ethylbenzene	5	5.0	U	**570**	E	**620**	D	**30**		3.7	J	5.0	U	5.0	U	20	U	1.1	J	5.0	U	5.0	U	5.0	U	4.0	J	5.0	U
Hexachlorobutadiene	0.5	5.0	U	5.0	U	80	U	5.0	U	5.0	U	5.0	U	5.0	U	20	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
Iodomethane		5.0	U	5.0	U	80	U	5.0	U	5.0	U	5.0	U	5.0	U	20	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
Isopropylbenzene	5	5.0	U	**180**		**130**	D	**40**		3.5	J	5.0	U	5.0	U	**15**	DJ	**32**		5.0	U	5.0	U	5.0	U	1.9	J	5.0	U
m,p-Xylene	5	5.0	U	**590**	E	**700**	D	**9.8**		3.9	J	5.0	U	5.0	U	20	U	1.0	J	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
Methyl tert-butyl ether	10	5.0	U	4.0	J	80	U	5.0	U	69		5.0	U	5.0	U	20	U	5.0	U	0.82	J	5.0	U	1.7	J	44		5.0	U
Methylene chloride	5	5.0	U	5.0	U	**20**	DJ	5.0	U	5.0	U	5.0	U	5.0	U	20	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
Naphthalene	10	5.0	U	**150**		**130**	D	10		5.4		5.0	U	5.0	U	20	U	8.6		5.0	U	5.0	U	2.2	J	3.4	J	5.0	U
n-Butylbenzene	5	5.0	U	**140**		**170**	D	**98**		**8.8**		5.0	U	5.0	U	20	U	3.9	J	5.0	U	5.0	U	5.0	U	2.6	J	5.0	U
n-Propylbenzene	5	5.0	U	**250**	E	**210**	D	**68**		**5.8**		5.0	U	5.0	U	20	U	3.1	J	5.0	U	5.0	U	5.0	U	3.2	J	5.0	U
o-Xylene	5	5.0	U	5.0	U	80	U	5.0	U	5.0	U	5.0	U	5.0	U	20	U	5.9		5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
sec-Butylbenzene	5	5.0	U	**82**		**71**	DJ	**59**		**6.9**		5.0	U	5.0	U	**6.6**	DJ	**11**		1.1	J	5.0	U	5.0	U	1.7	J	5.0	U
Styrene	5	5.0	U	5.0	U	80	U	5.0	U	5.0	U	5.0	U	5.0	U	20	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
tert-Butylbenzene	5	5.0	U	5.0	U	80	U	3.7	J	5.0	U	5.0	U	5.0	U	20	U	1.0	J	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
Tetrachloroethene	5	5.0	U	5.0	U	80	U	5.0	U	5.0	U	5.0	U	5.0	U	20	U	5.0	U	5.0	U	5.0	U	1.4	J	**5.2**		5.0	U
Toluene	5	5.0	U	1.2	J	80	U	5.0	U	5.0	U	5.0	U	5.0	U	20	U	3.1	J	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
trans-1,2-Dichloroethene	5	5.0	U	5.0	U	80	U	5.0	U	5.0	U	5.0	U	5.0	U	20	U	1.1	J	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
trans-1,3-Dichloropropene	0.4	5.0	U	5.0	U	80	U	5.0	U	5.0	U	5.0	U	5.0	U	20	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
Trichloroethene	5	5.0	U	5.0	U	80	U	5.0	U	**15**		5.0	U	5.0	U	20	U	5.0	U	5.0	U	5.0	U	**57**		**22**		5.0	U
Trichlorofluoromethane	5	5.0	U	5.0	U	80	U	5.0	U	5.0	U	5.0	U	5.0	U	20	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
Vinyl acetate		5.0	U	5.0	U	80	U	5.0	U	5.0	U	5.0	U	5.0	U	20	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
Vinyl chloride	2	5.0	U	5.0	U	80	U	5.0	U	1.2	J	5.0	U	5.0	U	44	D	64		1.5	J	5.0	U	5.0	U	5.0	U	5.0	U
Xylene (Total)	5	5.0	U	**590**		**700**	D	**9.8**		3.9	J	5.0	U	5.0	U	20	U	**7.0**		5.0	U	5.0	U	5.0	U	5.0	U	5.0	U

Notes:
U-Not detected above indicated level
J-indicates estimated value
B-indicates detected in lab blank
D-compound concentration was obtained from a diluted analysis
E-compound concentration exceeded calibration range

ATTACHMENT B
Excavation Work Plan

EXCAVATION WORK PLAN

A-1 NOTIFICATION

At least 15 days prior to the start of any activity that is anticipated to encounter remaining contamination (excavation 15 or more below the surface), the site owner or their representative will notify the Department. Currently, this notification will be made to:

Jane O'Connell NYSDEC Region 2

47-40 21st Street

Long Island City, NY 11101

This notification will include:

- A detailed description of the work to be performed, including the location and areal extent, plans for site re-grading, intrusive elements or utilities to be installed below the soil cover, estimated volumes of contaminated soil to be excavated and any work that may impact an engineering control,
- A summary of environmental conditions anticipated in the work areas, including the nature and concentration levels of contaminants of concern, potential presence of grossly contaminated media, and plans for any pre-construction sampling;
- A schedule for the work, detailing the start and completion of all intrusive work,
- A summary of the applicable components of this EWP,
- A statement that the work will be performed in compliance with this EWP and 29 CFR 1910.120,
- A copy of the contractor's health and safety plan, in electronic format, if it differs from the HASP provided in Appendix D of this document,
- Identification of disposal facilities for potential waste streams,
- Identification of sources of any anticipated backfill, along with all required chemical testing results.

A-2 SOIL SCREENING METHODS

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

Soils will be segregated based on previous environmental data and screening results into material that requires off-site disposal, material that requires testing, material that can be returned to the subsurface, and material that can be used as cover soil.

A-3 STOCKPILE METHODS

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

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

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

A-4 MATERIALS EXCAVATION AND LOAD OUT

A qualified environmental professional or person under their supervision will oversee all invasive work and the excavation and load-out of all excavated material.

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

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

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

The qualified environmental professional will be responsible for ensuring that all outbound trucks will be cleaned as needed before leaving the site until the activities performed under this section are complete. Locations where vehicles enter or exit the site shall be inspected daily for evidence of off-site soil tracking.

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

A-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.

Material transported by trucks exiting the site will be secured with covers. If loads contain wet material capable of producing free liquid, truck liners will be used. All trucks will be inspected prior to leaving the site. Trucks will be dry brushed when possible to remove collected soil.

Truck transport routes are as follows: Head east on Jamaica Avenue to the Van Wyck Expressway. All trucks loaded with site materials will exit the vicinity of the site using only these approved truck routes. This is the most appropriate route and takes into account: (a) limiting transport through residential areas and past sensitive sites; (b) use of city mapped truck routes; (c) prohibiting off-site

queuing of trucks entering the facility; (d) limiting total distance to major highways; (e) promoting safety in access to highways; and (f) overall safety in transport; [(g) community input [where necessary]]

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

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

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

A-6 MATERIALS DISPOSAL OFF-SITE

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

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

Non-hazardous historic fill and contaminated soils taken off-site will be handled, at minimum, as a Municipal Solid Waste per 6NYCRR Part 360-1.2. Material that does not meet Track 1 unrestricted SCOs is prohibited from being taken to a New York State recycling facility (6NYCRR Part 360-16 Registration Facility).

A-7 MATERIALS REUSE ON-SITE

Chemical criteria for on-site reuse of material have been approved by NYSDEC and are listed in Table 1. The qualified environmental professional will ensure that procedures defined for materials reuse in this SMP are followed and that unacceptable material does not remain on-site. Contaminated on-site material, including historic fill and contaminated soil, that is acceptable for re-use on-site will be placed below the demarcation layer or impervious surface, and will not be reused within a cover soil layer, within landscaping berms, or as backfill for subsurface utility lines.

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

A-8 FLUIDS MANAGEMENT

All liquids to be removed from the site, including excavation dewatering and groundwater monitoring well purge and development waters, will be handled, transported and disposed in accordance with applicable local, State, and Federal regulations. Dewatering, purge and development fluids will not be recharged back to the land surface or subsurface of the site, but will be managed off-site.

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

A-9 COVER SYSTEM RESTORATION

After the completion of soil removal and any other invasive activities the cover system will be restored in a manner that complies with the RAWP. The demarcation layer, consisting of orange snow fencing material or equivalent material will be replaced to provide a visual reference to the top of the 'Remaining Contamination Zone', the zone that requires adherence to special conditions for disturbance of remaining contaminated soils defined in this Site Management Plan. If the type of cover system changes from that which exists prior to the excavation (i.e., a soil cover is replaced by asphalt), as shown on Figure 8, this will constitute a modification of the cover element of the remedy and the

upper surface of the 'Remaining Contamination. A figure showing the modified surface will be included in the subsequent Periodic Review Report and in any updates to the Site Management Plan.

A-10 BACKFILL FROM OFF-SITE SOURCES

All materials proposed for import onto the site will be approved by the qualified environmental professional and will be in compliance with provisions in this SMP prior to receipt at the site.

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

All imported soils will meet the backfill and cover soil quality standards established in 6NYCRR 375-6.7(d). Based on an evaluation of the land use, protection of groundwater and protection of ecological resources criteria, the resulting soil quality standards are listed in Table 1. Soils that meet 'exempt' fill requirements under 6 NYCRR Part 360, but do not meet backfill or cover soil objectives for this site, will not be imported onto the site without prior approval by NYSDEC. Solid waste will not be imported onto the site.

Fill and stone materials which can be certified as virgin mined material will not require testing assuming adequate documentation is obtained and submitted to the NYSDEC for approval. Under no circumstances will fill materials be imported to the site without prior approval from the NYSDEC Project Manager. If sufficient documentation is not obtained, fill materials will be tested at the in accordance with NYSDEC CP51 recommended frequency. Sample analysis will include TCL VOCs, TCL SVOCs, PCBs, Pesticides and TAL metals. 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.

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

A-11 STORMWATER POLLUTION PREVENTION

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

Accumulated sediments will be removed as required to keep the barrier and hay bale check functional. All undercutting or erosion of the silt fence toe anchor shall be repaired immediately with appropriate backfill materials.

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

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

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

A-12 CONTINGENCY PLAN

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

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

Identification of unknown or unexpected contaminated media identified by screening during invasive site work will be promptly communicated by phone to NYSDEC's Project Manager. Reportable quantities of petroleum product will also be reported to the NYSDEC spills hotline. These findings will be also included in the periodic reports prepared pursuant to Section 5 of the SMP.

A-13 COMMUNITY AIR MONITORING PLAN

The CAMP provides measures for protection for the downwind community (i.e., off-site receptors including residences, businesses, and on-site workers not directly involved in the remedial work) from potential airborne contaminant releases resulting from remedial activities at construction sites.

The action levels specified herein require increased monitoring, corrective actions to abate emissions, and/or work shutdown. Additionally, the CAMP helps to confirm that the remedial work did not spread contamination off-site through the air. The primary concerns for this site are nuisance odors and dust particulates.

Exceedances observed in the CAMP will be reported to NYSDEC and NYSDOH Project Managers and included in the Daily Report. The complete CAMP developed for this site is included in **Attachment D** of the project RAWP.

A-14 ODOR CONTROL PLAN

This odor control plan is capable of controlling emissions of nuisance odors off-site and on-site. If nuisance odors are identified at the site boundary, or if odor complaints are received, 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 any other complaints about the project. Implementation of all odor controls, including the halt of work, is the responsibility of the property owner's Remediation Engineer, and any measures that are implemented will be discussed in the Periodic Review Report.

All necessary means will be employed to prevent on- and off-site nuisances. At a minimum, these measures will include: (a) limiting the area of open excavations and size of soil stockpiles; (b) shrouding open excavations with tarps and other covers; and (c) using foams to cover exposed odorous

soils. If odors develop and cannot be otherwise controlled, additional means to eliminate odor nuisances will include: (d) direct load-out of soils to trucks for off-site disposal; (e) use of chemical odorants in spray or misting systems; and, (f) use of staff to monitor odors in surrounding neighborhoods.

If nuisance odors develop during intrusive work that cannot be corrected, or where the control of nuisance odors cannot otherwise be achieved due to on-site conditions or close proximity to sensitive receptors, odor control will be achieved by sheltering the excavation and handling areas in a temporary containment structure equipped with appropriate air venting/filtering systems.

A-15 DUST CONTROL PLAN

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

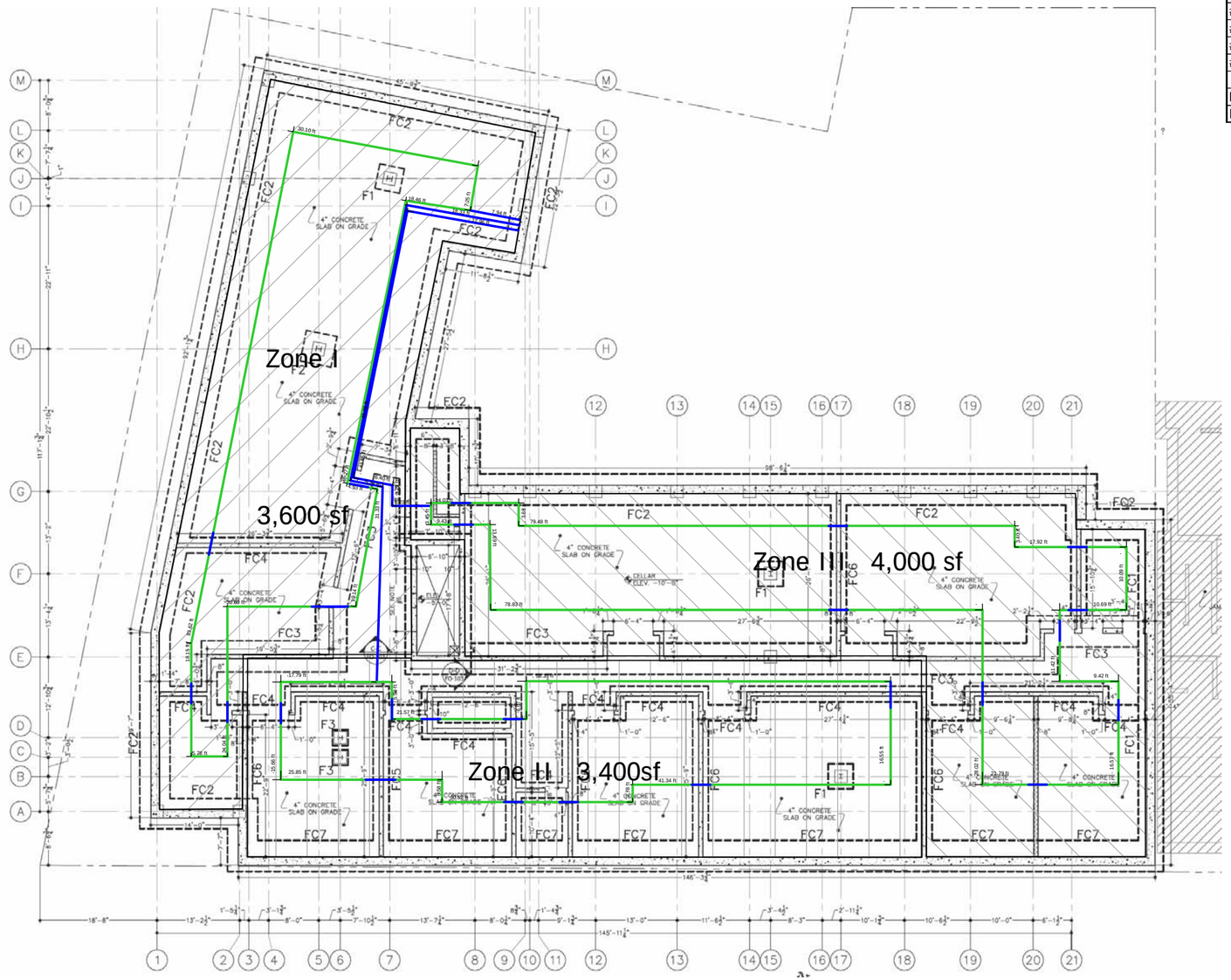
- Dust suppression will be achieved though the use of a dedicated on-site water truck for road wetting. The truck will be equipped with a water cannon capable of spraying water directly onto off-road areas including excavations and stockpiles.
- Clearing and grubbing of larger sites will be done in stages to limit the area of exposed, unvegetated soils vulnerable to dust production.
- Gravel will be used on roadways to provide a clean and dust-free road surface.
- On-site roads will be limited in total area to minimize the area required for water truck sprinkling.

A-16 OTHER NUISANCES

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

A plan will be developed and utilized by the contractor for all remedial work to ensure compliance with local noise control ordinances.

ATTACHMENT C
SSD System Details



	Zone I	Zone II	Zone III
4"HDPE Corrugated Pipe	270	246	332
4" Cast Iron (ft)	8	100	78
Riser (ft) 6" cast iron (ft)	34	34	34
# elbows 90 -4" sweep	10	13	17
#elbow 22.5 (4")	2		
# Reducer 4-6	1	1	1
# Tees 4"	1	1	1
Fan Selected			
RadonAway	RP265	RP265	RP265

Foundation plan obtained from FO-001 from Hugo Subotovsky, AIA.

4" HDPE CORRUGATED PIPE

4" Cast Iron (6" Riser)

SSDS Zone

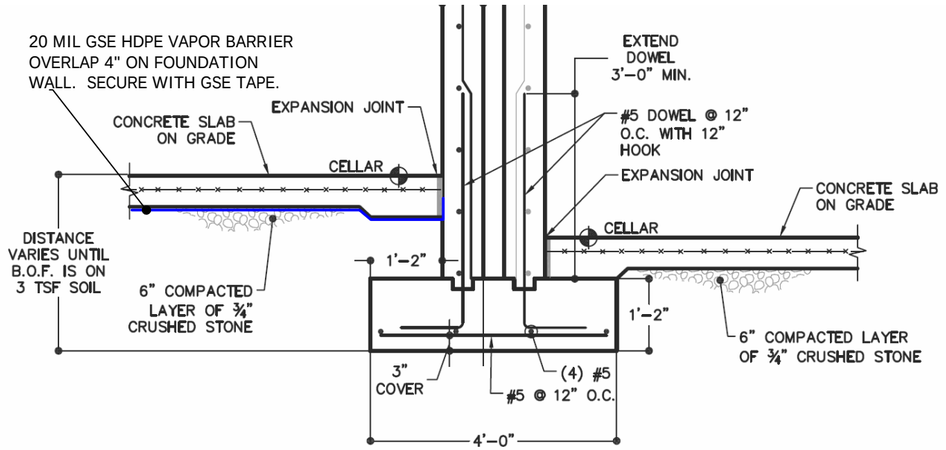
No	Revision/Issue	Date

AMC ENGINEERING PLLC
P.O. Box 43
Albertson, NY 11507-0043
516 987-1662

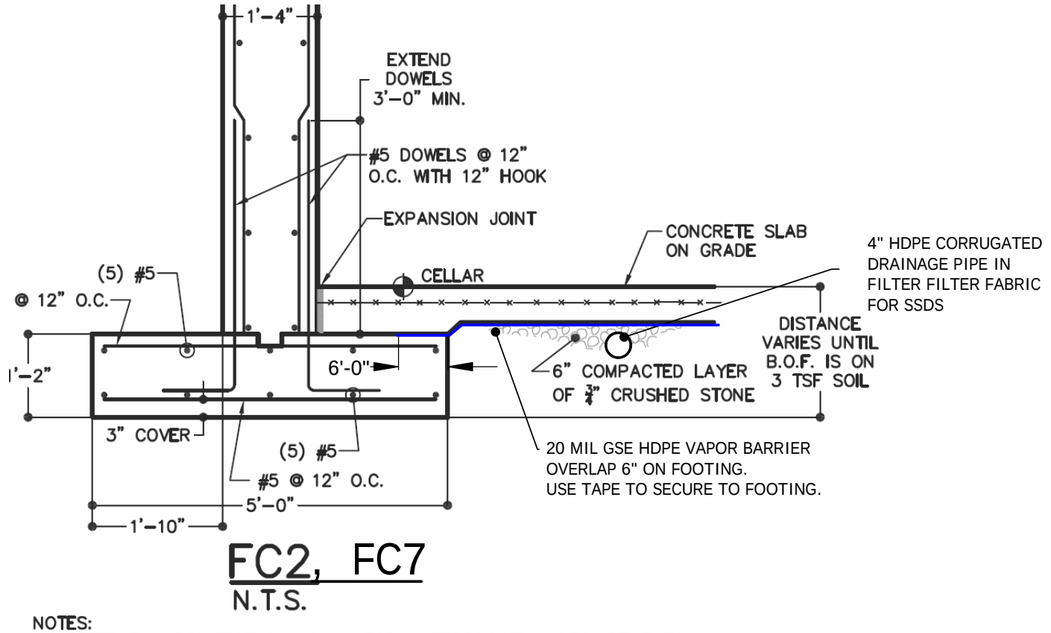
PROJECT
RICHMOD HILL SENIOR LIVING RESIDENCE
129-01 Jamaica Ave@ 127 St
QUEENS, NY
B 9821 L 44

TITLE:
SUBSLAB DEPRESSURIZATION SYSTEM DESIGN

DATE: 10/20/10
PROJECT No:
DRAWING BY: AC
CHK BY:
DWG No:
ENV-001
CADO FILE No:



FC1
N.T.S.



FC2, FC7
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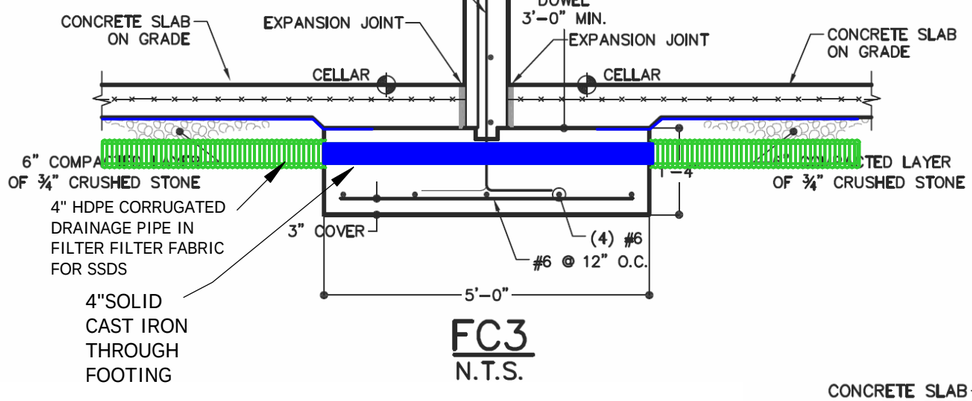

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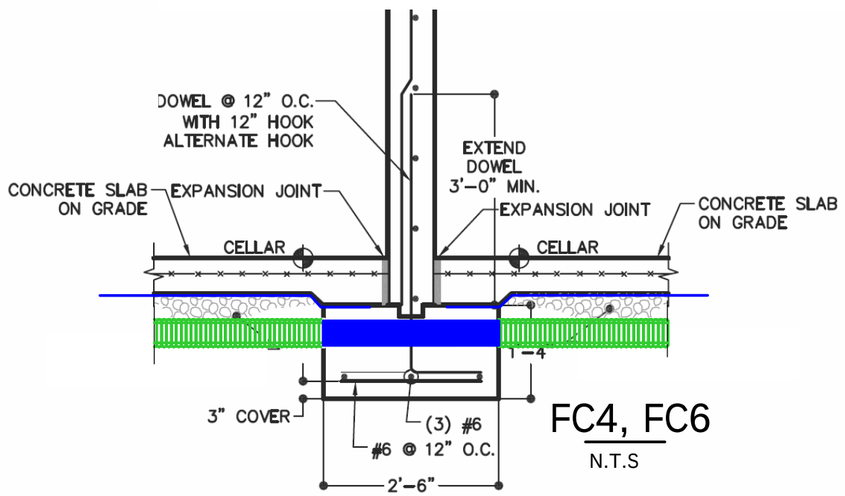


FC4, FC6
N.T.S

NOTES:
1. REFER TO ARCHITECTURAL PLAN FOR WATERPROOFING REQUIREMENTS.
2. FOUNDATION WALL BELOW CELLAR SLAB ELEVATION MAY BE REQUIRED IF 3TSF SOIL IS NOT ENCOUNTERED IMMEDIATELY BENEATH BOTTOM OF FOOTING.
3. REFER TO FO-001 FOR BOTTOM OF FOOTING ELEVATIONS.

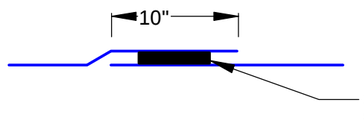
No	Revision/Issue	Date

AMC ENGINEERING PLLC
P.O. Box 43
Albertson, NY 11507-0043
516 987-1662

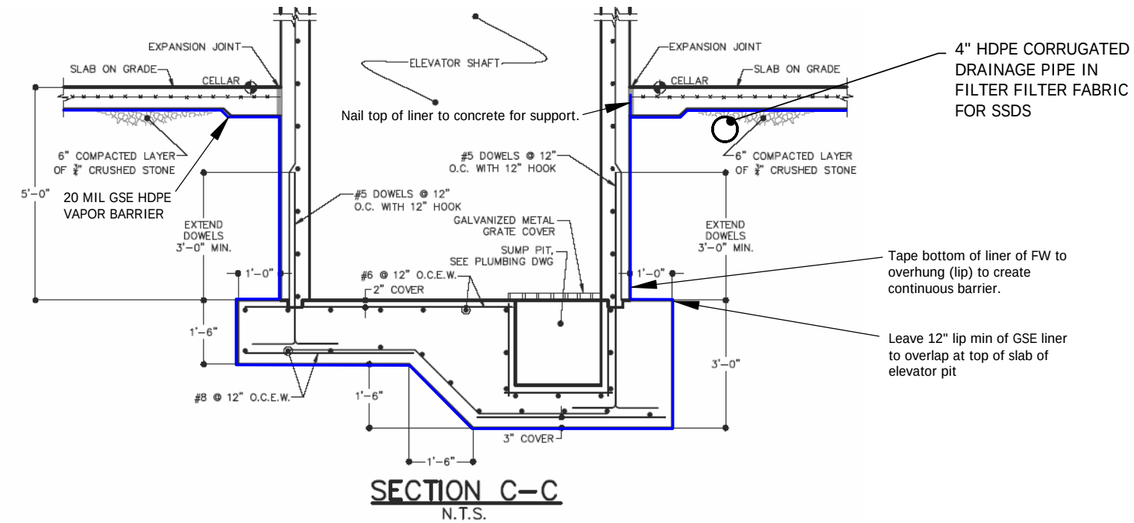
PROJECT
RICHMOD HILL SENIOR
LIVING RESIDENCE
129-01 Jamaica Ave@ 127 St
QUEENS, NY
B 9821 L 44

TITLE:
SUBSLAB DEPRESSURIZATION
SYSTEM DESIGN

DATE: 10/20/10
PROJECT No:
DRAWING BY: AC
CHK BY:
DWG No:
ENV-002
CADO FILE No:
1 of 4

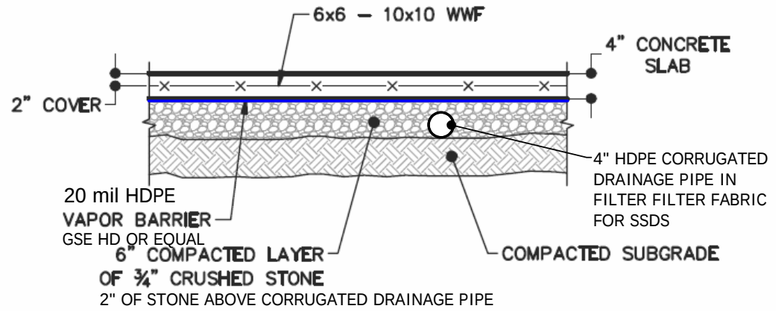


20 mil HDPE liner Overlap Detail



SECTION C–C
N.T.S.

EVEVATOR PIT DETAIL



4" CONCRETE SLAB ON GRADE
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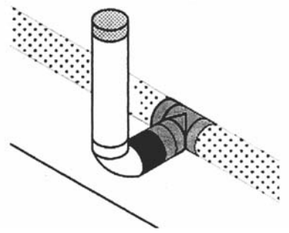


OFFSET VERTICAL SUCTION POINT-TRANSITION TO 6" CAST IRON.

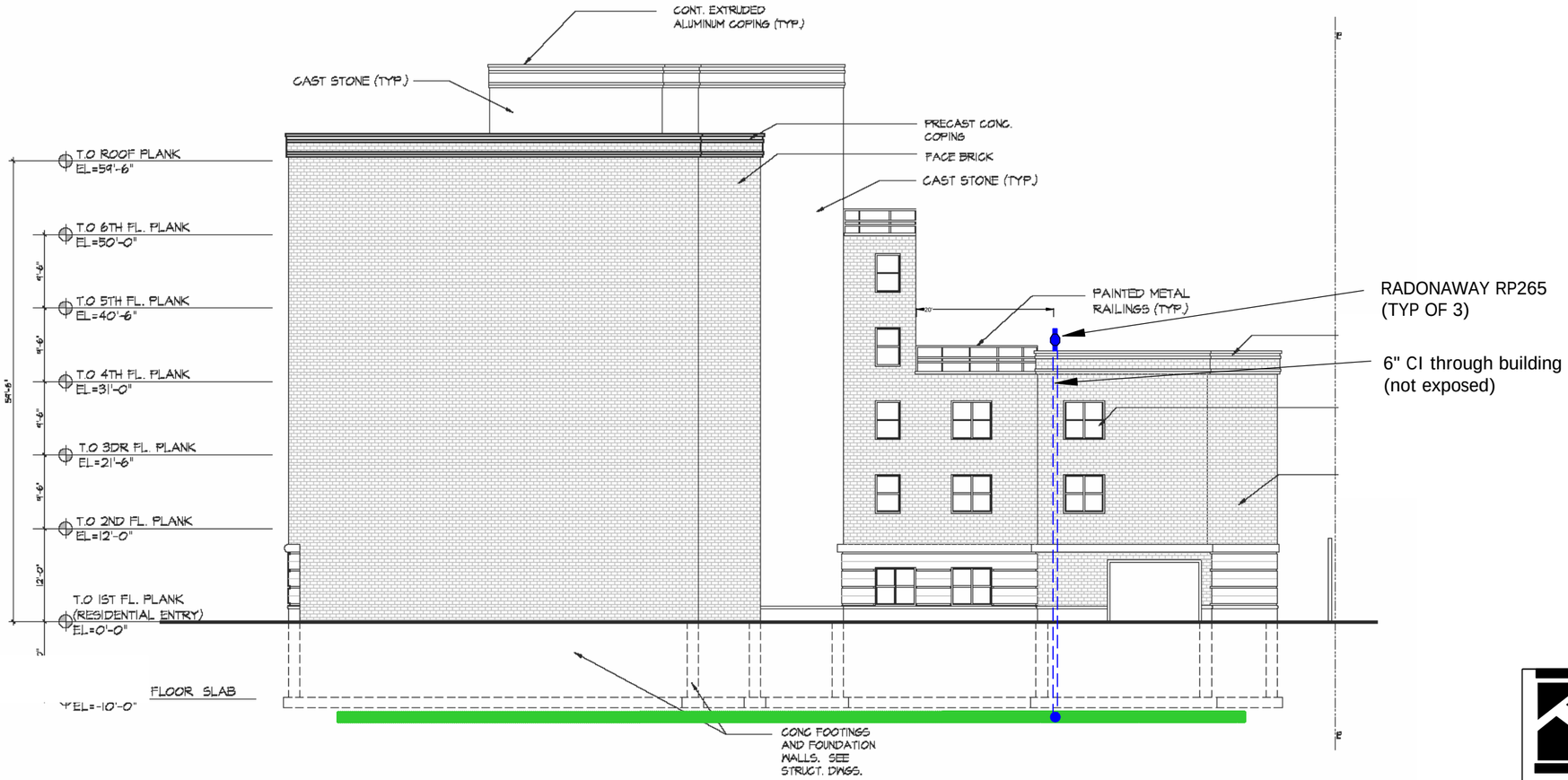
No	Revision/Issue	Date

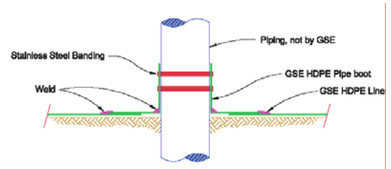
AMC ENGINEERING PLLC
P.O. Box 43
Albertson, NY 11507-0043
516 987-1662

PROJECT
RICHMOD HILL SENIOR LIVING RESIDENCE
129-01 Jamaica Ave@ 127 St
QUEENS, NY
B 9821 L 44

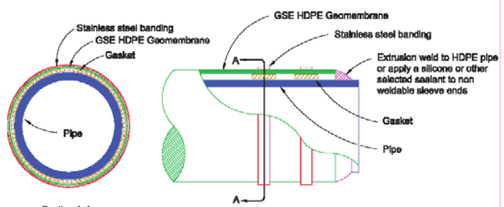
TITLE:
SUBSLAB DEPRESSURIZATION SYSTEM DESIGN

DATE: 10/20/10
PROJECT No:
DRAWING BY: AC
CHK BY:
DWG No:
ENV-003
CADO FILE No:





Typical Vertical Pipe Penetration
Not to Scale



Pipe Penetration Seal
(Vertical or horizontal)
Not to scale

No	Revision/Issue	Date

AMC ENGINEERING PLLC
P.O. Box 43
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516 987-1662

PROJECT
RICHMOD HILL SENIOR LIVING RESIDENCE
129-01 Jamaica Ave@ 127 St
QUEENS, NY
B 9821 L 44

TITLE:
SUBSLAB DEPRESSURIZATION SYSTEM DESIGN

DATE: 10/20/10
PROJECT No:
DRAWING BY: AC
CHK BY:
DWG No:
ENV-004
CADO FILE No:
1 of 4

ATTACHMENT D
Health and Safety Plan

FORMER UNIFORMS FOR INDUSTRY SITE

129-09 JAMAICA AVENUE
RICHMOND HILL, NEW YORK
Block 1948 Lots 30 and 35
Site No. C-241103

HEALTH AND SAFETY PLAN

New York State Department of Environmental Conservation
Division of Environmental Remediation
Remedial Bureau B-12thFloor
625Broadway
Albany, New York 12233

October 2010

Program Volunteer:
Union Jamaica LLC
15 Verbena Avenue
Suite #100
Floral Park, NY 11001-2711

Prepared By:

ENVIRONMENTAL BUSINESS CONSULTANTS
1808 Middle Country Road
Ridge, NY 11961

HEALTH AND SAFETY PLAN

Site:	**Former Uniforms for Industry Site**
Location:	**129-09 Jamaica Avenue, Richmond Hill, New York**
Prepared By:	**ENVIRONMENTAL BUSINESS CONSULTANTS**
Date Prepared:	**OCTOBER - 2010**
Version:	**1**
Revision:	**0**
Project Description:	**REMEDIAL ACTION WORK PLAN**
Waste types:	Solid, Liquid
Characteristics:	Volatile Organic Compounds – Gasoline related hydrocarbons Volatile Organic Compounds – Chlorinated Hydrocarbons Semi-Volatile Organic Compounds – Varsol, mineral spirits Metals – Lead
Overall Hazard:	Low to Moderate

ENVIRONMENTAL BUSINESS CONSULTANTS (EBC) AND EBC'S SUBCONTRACTORS DO NOT GUARANTEE THE HEALTH OR SAFETY OF ANY PERSON ENTERING THIS SITE. DUE TO THE NATURE OF THIS SITE AND THE ACTIVITY OCCURRING THEREON, IT IS NOT POSSIBLE TO DISCOVER, EVALUATE, AND PROVIDE PROTECTION FOR ALL POSSIBLE HAZARDS WHICH MAY BE ENCOUNTERED. STRICT ADHERENCE TO THE HEALTH AND SAFETY GUIDELINES SET FORTH HEREIN WILL REDUCE, BUT NOT ELIMINATE, THE POTENTIAL FOR INJURY AT THIS SITE. THE HEALTH AND SAFETY GUIDELINES IN THIS PLAN WERE PREPARED SPECIFICALLY FOR THIS SITE AND SHOULD NOT BE USED ON ANY OTHER SITE WITHOUT PRIOR RESEARCH AND EVALUATION.

HEALTH AND SAFETY PLAN
Table of Contents

EBC
Environmental Business Consultants
1808 Middle Country Road
Ridge, NY11961
Phone 631.604.4000
Fax 631.924.2870

Table of Contents (Continued)

FIGURES

APPENDICES

EBC
ENVIRONMENTAL BUSINESS CONSULTANTS
1808 MIDDLE COUNTRY ROAD
RIDGE, NY11961
PHONE 631.604.4000
FAX 631.924.2870

STATEMENT OF COMMITMENT

This Health and Safety Plan (HASP) has been prepared to ensure that workers are not exposed to risks from hazardous materials during the Remedial Action planned for 129-09 Jamaica Avenue, Richmond Hill, New York.

This HASP, which applies to persons present at the site actually or potentially exposed to hazardous materials, describes emergency response procedures for actual and potential chemical hazards. This HASP is also intended to inform and guide personnel entering the work area or exclusion zone. Persons are to acknowledge that they understand the potential hazards and the contents of this Health and Safety policy by signing off on receipt of their individual copy of the document. Contractors and suppliers are retained as independent contractors and are responsible for ensuring the health and safety of their own employees.

1.0 INTRODUCTION

This document describes the health and safety guidelines developed by Environmental Business Consultants (EBC) for implementation of Remedial Action at the site located 129-09 Jamaica Avenue, Richmond Hill, NY, to protect on-site personnel, visitors, and the public from physical harm and exposure to hazardous materials or wastes during subsurface investigation activities. In accordance with the Occupational Safety and Health Administration (OSHA) 29 CFR Part 1910.120 Hazardous Waste Operations and Emergency Response Final rule, this HASP, including the attachments, addresses safety and health hazards related to subsurface sample collection activities and is based on the best information available. The HASP may be revised by EBC at the request of The Arker Companies, ("the owner") and/or the New York State Department of Environmental Conservation (NYSDEC) or New York State Department of Health (NYSDOH) upon receipt of new information regarding site conditions. Changes will be documented by written amendments signed by EBC's project manager, site safety officer and/or the EBC health and safety consultant.

1.1 Scope

This HASP addresses the potential hazards related to the site Remedial Action (RA). The RA activities include three distinct stages as described below:

1) Site mobilization of Demolition Subcontractor (DS);
   a) Demolition, removal and disposal of former Uniforms for Industry buildings
   b) Site demobilization of DS

2) Site mobilization of 40HR HAZWOPER trained Environmental Remediation Subcontractor (EnvRS).
   a) Excavate, load and transport for disposal, soil contaminated with chlorinated hydrocarbons by EnvRS. Areas that require handling by ERS only, and requires excavation and disposal prior to site access by general site workers are fully described within Remedial Action Plan.
   b) Expose, remove and remediate onsite drywells and overflow pools.
   c) Demobilization of EnvRS

3) Site mobilization of General Subcontractor for excavation of non-chlorinated hydrocarbon impacted soil for construction of buildings' foundations.

4) Application of liquid sodium persulfate solution.

1.2 Application

The HASP applies to all personnel involved in the above tasks who wish to gain access to active work areas, including but not limited to:

- EBC employees and subcontractors;
- Client representatives; and
- Federal, state or local representatives.

1.3 Site Safety Plan Acceptance, Acknowledgment and Amendments

The project superintendent and the site safety officer are responsible for informing personnel

EBC
Environmental Business Consultants
1808 Middle Country Road
Ridge, NY 11961
Phone 631.504.6000
Fax 631.924.2870

(EBC employees and/or owner or owners representatives) entering the work area of the contents of this plan and ensuring that each person signs the safety plan acknowledging the on-site hazards and procedures required to minimize exposure to adverse effects of these hazards. A copy of the Acknowledgement Form is included in **Appendix A**.

Site conditions may warrant an amendment to the HASP. Amendments to the HASP are acknowledged by completing forms included in **Appendix B**.

1.4 Key Personnel - Roles and Responsibilities

Personnel responsible for implementing this Construction Health and Safety Plan are:

Name	Title	Address	Contact Numbers
Mr. Charles B. Sosik	EBC Principal	1808 Middle Country Road Ridge, NY 11961	(631) 504-6000 Cell (631) 357-4927
Mr. Richard Powers	The Arker Companies Construction Supervisor	930 Broadway Woodmere, NY 11598	(516) 374-3336 Cell (516) 250-5343
Mr. Kevin Brussee	EBC Project Manager	1808 Middle Country Road Ridge, NY 11961	(631) 504-6000 Cell (631) 338-1749
Mr. Kevin Waters	EBC Site Safety Officer	1808 Middle Country Road Ridge, NY 11961	(631) 504-6000

The project manager is responsible for overall project administration and, with guidance from the site safety officer, for supervising the implementation of this HASP. The site safety officer will conduct daily (tail gate or tool box) safety meetings at the project site and oversee daily safety issues. Each subcontractor and supplier (defined as an OSHA employer) is also responsible for the health and safety of its employees. If there is any dispute about health and safety or project activities, on-site personnel will attempt to resolve the issue. If the issue cannot be resolved at the site, then the project manager will be consulted.

The site safety officer is also responsible for coordinating health and safety activities related to hazardous material exposure on-site. The site safety officer is responsible for the following:

1. Educating personnel about information in this HASP and other safety requirements to be observed during site operations, including, but not limited to, decontamination procedures, designation of work zones and levels of protection, air monitoring, fit testing, and emergency procedures dealing with fire and first aid.

2. Coordinating site safety decisions with the project manager.

3. Designating exclusion, decontamination and support zones on a daily basis.

4. Monitoring the condition and status of known on-site hazards and maintaining and implementing the air quality monitoring program specified in this HASP.

5. Maintaining the work zone entry/exit log and site entry/exit log.

6. Maintaining records of safety problems, corrective measures and documentation of chemical exposures or physical injuries (the site safety officer will document these conditions in a bound notebook and maintain a copy of the notebook on-site).

The person who observes safety concerns and potential hazards that have not been addressed in the daily safety meetings should immediately report their observations/concerns to the site safety officer or appropriate key personnel.

EBC
Environmental Business Consultants
1808 Middle Country Road
Ridge, NY 11961
Phone 631.504.6000
Fax 631.924.2870

2.0 SITE BACKGROUND AND SCOPE OF WORK

The Site is located in the County of the Queens, New York and is identified as Block 9281, and Lot 44 on the Queens Borough Tax Map. The Site is situated on an approximately 73,038 square foot (1.68-acre) area bounded by residential properties and 127th Street to the west, a residential lot to the north, Jamaica Avenue to the south and the Long Island Railroad-Ronkonkoma Line to the east. The Site is improved with a one story masonry building constructed in 1929 with a large 2 story masonry addition constructed in the 1990's. The combined area of the building and addition totals 55,626 sq. ft. The buildings have been vacant since November 2002 when Uniforms for Industry (UFI), a commercial laundry operation, vacated the premises. UFI has owned the property and operated its commercial laundry at the Site since the 1950's. Prior to UFI's occupancy, the Ideal Vortex Laundry Company operated a commercial laundry on the property from the 1929 to 1957.

Previous environmental reports indicate that fuel oil, mop oil, mineral spirits, Stoddard solvent, and Varsol solvent have been historically stored on the Site. According to the Remedial Investigation Report prepared by Environmental Liability Management, LLC (12/09) UFI used tetrachloroethene (PCE) in a dry cleaning machine from 1992 and 1997.

According to the NYSDEC Spills Database, two spill numbers are associated with the Site. Spill No. 91-01477, which was reported on May 6, 1991, was related to the tank test failure of a 3,000 gallon underground storage tank. The database indicates that the spill was closed on March 7, 2003 as a result of no new information. The spill file references a second spill, No. 02-08119. The second spill is related to a tank test failure of a 6,000 gallon fuel oil tank. Upon further investigation under this spill no. contaminated soil was discovered around the fill lines of a mineral oil tank and a diesel tank. This spill remains open.

The property is identified in the NYSDEC Petroleum Bulk Storage database as Facility Site No. 2-248541. The facility status is listed as unregulated. The database lists thirteen tanks registered under Uniforms for Industry. The tanks listed include: two 6,300 gallon underground storage tank (UST) (one fuel oil, one "other"), one 7,500 gallon UST (fuel oil), three 2,000 gallon UST ("other"), three 3,000 gallon USTs (2 "other", 1 "invalid material"), one 6,000 gallon UST ("empty") and three 1,500 gallon USTs ("empty"). Eleven of the thirteen tanks are listed as closed removed. Two of the 3,000 gallon tanks are listed as "closed prior to 3/1991".

2.1 Redevelopment Plans

A residential use is proposed for the property. The Site will be redeveloped through the construction of two new apartment buildings which are identified in the Architectural Plans as Phase I and Phase II. The Phase I component is a 6-story, 65 unit senior housing building which will be built in the western portion of the site at the intersection of Jamaica Avenue and 127th Street. The entire 12,090 sq. ft area (footprint) of this building will have a full depth (10ft) cellar level. The cellar will be used for tenant storage cubicles, bicycle storage, a laundry room a trash compactor room and mechanical/meter rooms. The exterior grounds will feature a surface parking lot, recreation area and landscaped area.

The Phase II component includes a 7-story building with 117 units set aside for low-income housing. A full depth (10 ft) cellar level will extend beneath the entire 21,302 sq. ft area

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Fax 631.924.2870

(footprint) of the building. The cellar level will be used for parking (35 spaces), bicycle storage and mechanical/meter rooms. The exterior grounds around the Phase II building will include parking for 35 cars, access ramps for the cellar level parking garage and landscaped areas.

2.2 Description of Remedial Action

Site activities included within the Remedial Action that are included within the scope of this HASP include the following:

1. Excavation of the upper 15 to 20 feet of soil in three identified CVOC hot Spot areas with additional excavation as required for the building's basement level.
2. Excavate any additional petroleum VOC or CVOC impacted soil encountered in the hot spot areas above restricted residential criteria in the upper 15 feet of the soil column. Petroleum VOC or CVOC affected soil encountered during excavation of the basement areas will be segregated and classified for off-site disposal.
3. Excavation and off-site disposal of historic fill materials removed during construction / site grading or if present in planned landscaped/exposed soil areas.
4. Screening for indications of contamination (by visual means, odor, and monitoring with PID) of all excavated soil during all intrusive Site work.
5. Site Monitoring of airborne VOCs and particulates in accordance with a NYSDEC and NYSDOH approved Community Air Monitoring Plan (CAMP) and Health and Safety Plan during all intrusive and soil handling activities.
6. Implementation of proper dust and odor suppression techniques during all intrusive and soil handling activities.
7. Import of materials to be used for backfill and cover.
8. Collection of end-point soil samples.
9. Investigation and removal of drainage structures, surface drains and related piping.
10. The injection of a chemical oxidant solution to remediate the contaminated groundwater beneath the site. Chemical oxidants will be injected through pvc injection points installed into the water table.
11. Installation of a vapor barrier and sub-slab depressurization system beneath all basement areas which will not be required to have continuous mechanical ventilation.

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Ridge, NY 11961
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Fax 631.924.2870

3.0 HAZARD ASSESSMENT

This section identifies the hazards associated with the proposed scope of work, general physical hazards that can be expected at most sites; and presents a summary of documented or potential chemical hazards at the site. Every effort must be made to reduce or eliminate these hazards. Those that cannot be eliminated must be guarded against using engineering controls and/or personal protective equipment.

3.1 Physical Hazards

3.1.1 Tripping Hazards

An area of risk associated with on-site activities are presented by uneven ground, concrete, curbstones or equipment which may be present at the site thereby creating a potential tripping hazard. During intrusive work, care should be taken to mark or remove any obstacles within the exclusion zone.

3.1.2 Climbing Hazards

During site activities, workers may have to work on excavating equipment by climbing. The excavating contractor will conform with any applicable NIOSH and OSHA requirements or climbing activities.

3.1.3 Cuts and Lacerations

Field activities that involve excavating activities usually involve contact with various types of machinery. A first aid kit approved by the American Red Cross will be available during all intrusive activities.

3.1.4 Lifting Hazards

Improper lifting by workers is one of the leading causes of industrial injuries. Field workers in the excavation program may be required to lift heavy objects. Therefore, all members of the field crew should be trained in the proper methods of lifting heavy objects. All workers should be cautioned against lifting objects too heavy for one person.

3.1.5 Utility Hazards

Before conducting any excavation, the excavation contractor will be responsible for locating and verifying all existing utilities at each excavation.

3.1.6 Traffic Hazards

All traffic, vehicular and pedestrian, shall be maintained and protected at all times consistent with local, state and federal agency regulations regarding such traffic and in accordance with NYCDOT guidelines. The excavation contractor shall carry on his operations without undue interference or delays to traffic. The excavation contractor shall furnish all labor, materials, guards, barricades, signs, lights, and anything else necessary to maintain traffic and to protect his work and the public, during operations.

3.2 Work in Extreme Temperatures

Work under extremely hot or cold weather conditions requires special protocols to minimize the chance that employees will be affected by heat or cold stress.

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3.2.1 Heat Stress

The combination of high ambient temperature, high humidity, physical exertion, and personal protective apparel, which limits the dissipation of body heat and moisture, can cause heat stress.

The following prevention, recognition and treatment strategies will be implemented to protect personnel from heat stress. Personnel will be trained to recognize the symptoms of heat stress and to apply the appropriate treatment.

1. Prevention
    a. Provide plenty of fluids. Available in the support zone will be a 50% solution of fruit punch and water or plain water.
    b. Work in Pairs. Individuals should avoid undertaking any activity alone.
    c. Provide cooling devices. A spray hose and a source of water will be provided to reduce body temperature, cool protective clothing and/or act as a quick-drench shower in case of an exposure incident.
    d. Adjustment of the work schedule. As is practical, the most labor-intensive tasks should be carried out during the coolest part of the day.

2. Recognition and Treatment
    a Heat Rash (or prickly heat):
        Cause: Continuous exposure to hot and humid air, aggravated by chafing clothing.
        Symptoms: Eruption of red pimples around sweat ducts accompanied by intense itching and tingling.
        Treatment: Remove source or irritation and cool skin with water or wet cloths.

    b. Heat Cramps (or heat prostration)
        Cause: Profuse perspiration accompanied by inadequate replenishment of body water and electrolytes.
        Symptoms: Muscular weakness, staggering gait, nausea, dizziness, shallow breathing, pale and clammy skin, approximately normal body temperature.
        Treatment: Perform the following while making arrangement for transport to a medical facility. Remove the worker to a contamination reduction zone. Remove protective clothing. Lie worker down on back in a cool place and raise feet 6 to 12 inches. Keep warm, but loosen all clothing. If conscious, provide sips of salt-water solution, using one teaspoon of salt in 12 ounces of water. Transport to a medical facility.
    c. Heat Stroke
        Cause: Same as heat exhaustion. This is also an extremely serious condition.
        Symptoms: Dry hot skin, dry mouth, dizziness, nausea, headache, rapid pulse.
        Treatment: Cool worker immediately by immersing or spraying with cool water or sponge bare skin after removing protective clothing. Transport to hospital.

3.2.2 Cold Exposure

Exposure to cold weather, wet conditions and extreme wind-chill factors may result in excessive

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loss of body heat (hypothermia) and /or frostbite. To guard against cold exposure and to prevent cold injuries, appropriate warm clothing should be worn, warm shelter must be readily available, rest periods should be adjusted as needed, and the physical conditions of on-site field personnel should be closely monitored. Personnel and supervisors working on-site will be made aware of the signs and symptoms of frost bite and hypothermia such as shivering, reduced blood pressure, reduced coordination, drowsiness, impaired judgment, fatigue, pupils dilated but reactive to light and numbing of the toes and fingers.

3.3 Chemical Hazards

Soil, groundwater and soil gas samples collected from the site as part of several subsurface investigations performed at the site have revealed significant concentrations of volatile organic compounds associated with both petroleum volatile organic compounds (PVOCs) and chlorinated organic compounds (CVOCs), as well as elevated levels of semi-volatile organic compounds (SVOCs) and metals.

Volatile organic compounds reported to be present in soil, soil gas and/or groundwater include the following:

Benzene	Toluene	Ethylbenzene	Xylenes
1,2,4-Trimethylbenzene	Cis-Dichloroethylene	Isopropylbenzene	n-Butylbenzene
1,3,5-Trimethylbenzene	p-Isopropyltoluene	n-Propylbenzene	Acetone
cis-1,2-Dichloroethene	2,2-Dichloropropane	sec-Butylbenzene	Napthalene
Trichloroethene (TCE)	1,1,1-Trichloroethane	tert-Butylbenzene	Vinyl Chloride
Tetrachloroethylene (PCE)			

Semi-Volatile organic compounds reported to be present soil, soil gas and/or groundwater include the following:

Benzo(a)anthracene	Phenanthrene	Benzo(b)fluoranthene	Acenaphthylene
Benzo(g,h,i)perylene	Pyrene	Indeno(1,2,3-cd)pyrene	Benzo(a)pyrene
Benzo(k)fluoranthene	Chrysene	Dibenzo(a,h)anthracene	
Dibenzo(a,h)anthracene	Fluoranthene	Bis(2-ethylhexyl)phthalate	

Metals reported to be present soil, and/or groundwater include the following

Chromium	Copper	Lead	Nickel
Selenium	Zinc	Barium	Arsenic

The VOCs and SVOCs detected within the soil, soil gas and/or groundwater are associated with the former drycleaning operations conducted at the site. Chlorinated solvents such as PCE were utilized in the 1990's within a dry cleaning machine, and petroleum based VOCs and SVOCs were utilized in #2 and #6 heating oil, mop oil, and mineral spirits contained in underground storage tanks at the site.

Chlorinated hydrocarbon (PCE, TCE, DCE, vinyl chloride) contamination of groundwater has been determined to be site wide. However, very few of the soil samples collected from the site contained these chlorinated compounds. The areas of affected soil based upon previous studies are limited to several hotspot source areas that will be targeted for excavation. These hot spot areas are located near the former central UST area and at the east parking lot drainage system

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1808 Middle Country Road
Ridge, NY 11961
Phone 631.504.6000
Fax 631.924.2870

distribution box and line repair area.

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PVOC contamination of soil corresponds with several of the CVOC hotspot areas, but maybe encountered in additional areas as well. SVOC contaminated areas include the former underground storage tank farm area on the eastern side of the UFI building, as well as historic fill that may be encountered in shallow areas at the site (approximately 6" to 2 feet).

The primary routes of exposure to identified contaminants in soil, soil gas and groundwater to on-site investigation and remediation workers is through inhalation, ingestion and absorption.

Appendix C includes information sheets for the known and suspected chemicals that may be encountered at the site.

3.3.1 Respirable Dust

Dust may be generated from vehicular traffic and/or excavation activities. If visible observation detects elevated levels of dust, a program of wetting will be employed by the site safety officer. If elevated dust levels persist, the site safety office will employ dust monitoring using a particulate monitor (Miniram or equivalent). If monitoring detects concentrations greater than 150 µg/m3 over daily background, the site safety officer will take corrective actions as defined herein, including the use of water for dust suppression and if this is not effective, requiring workers to wear APRs with efficiency particulate air (HEPA) cartridges.

Absorption pathways for dust and direct contact with soils or groundwater will be mitigated with the implementation of latex gloves, hand washing and decontamination exercises when necessary.

3.3.2 Dust Control and Monitoring During Earthwork

Dust generated during excavation activities or other earthwork may contain contaminants identified in soils at the site. Dust will be controlled by wetting the working surface with water. Calcium chloride may be used if the problem cannot be controlled with water. Air monitoring and dust control techniques are specified in a site specific Dust Control Plan (if applicable). Site workers will not be required to wear APR's unless dust concentrations are consistently over 150 µg/m3 over site-specific background in the breathing zone as measured by a dust monitor unless the site safety officer directs workers to wear APRs. The site safety officer will use visible dust as an indicator to implement the dust control plan.

3.3.3 Organic Vapors

Elevated levels of VOCs were detected in both soil and groundwater samples collected during previous investigations at the site. Therefore, excavation activities may cause the release of organic vapors to the atmosphere. The site safety officer will periodically monitor organic vapors with a Photoionization Detector (PID) during excavation activities to determine whether organic vapor concentrations exceed action levels shown in Section 5 and/or the Community Air Monitoring Plan.

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Environmental Business Consultants
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Ridge, NY 11961
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Fax 631.924.2870

4.0 PERSONAL PROTECTIVE EQUIPMENT

Personal protective equipment (PPE) shall be selected in accordance with the site air monitoring program, OSHA 29 CFR 1910.120(c), (g), and 1910.132. Protective equipment shall be NIOSH approved and respiratory protection shall conform to OSHA 29 CFR Part 1910.133 and 1910.134 specifications; head protection shall conform to 1910.135; eye and face protection shall conform to 1910.133; and foot protection shall conform to 1910.136. The only true difference among the levels of protection from D thru B is the addition of the type of respiratory protection. **It is anticipated that work will be performed in Level D PPE.**

4.1 Level D

Level D PPE shall be donned when the atmosphere contains no known hazards and work functions preclude splashes, immersion, or the potential for inhalation of, or contact with, hazardous concentrations of harmful chemicals. Level D PPE consists of:

- standard work clothes, coveralls, or tyvek, as needed;
- steel toe and steel shank work boots;
- hard hat;
- gloves, as needed;
- safety glasses;
- hearing protection;
- equipment replacements are available as needed.

4.2 Level C

Level C PPE shall be donned when sustained concentrations of measured total organic vapors in the breathing zone exceed background concentrations (using a portable OVA, or equivalent), by more than 5 ppm. The specifications on the APR filters used must be appropriate for contaminants identified or expected to be encountered. Level C PPE shall be donned when the identified contaminants have adequate warning properties and criteria for using APR have been met. Level C PPE consists of:

- chemical resistant or coated tyvek coveralls;
- steel-toe and steel-shank workboots;
- chemical resistant overboots or disposable boot covers;
- disposable inner gloves (surgical gloves);
- disposable outer gloves;
- full face APR fitted with organic vapor/dust and mist filters or filters appropriate for the identified or expected contaminants;
- hard hat;
- splash shield, as needed; and,
- ankles/wrists taped with duct tape.

The site safety officer will verify if Level C is appropriate by checking organic vapor concentrations using compound and/or class-specific detector tubes.

The exact PPE ensemble is decided on a site-by-site basis by the Site Safety Officer with the intent to provide the most protective and efficient worker PPE.

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4.3 Activity-Specific Levels of Personal Protection

The required level of PPE is activity-specific and is based on air monitoring results (Section 4.0) and properties of identified or expected contaminants. **It is expected that site work will be performed in Level D.** If air monitoring results indicate the necessity to upgrade the level of protection, engineering controls (i.e. Facing equipment away from the wind and placing site personnel upwind of excavations, active venting, etc.) will be implemented before requiring the use of respiratory protection.

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1808 Middle Country Road
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5.0 AIR MONITORING AND ACTION LEVELS

29 CFR 1910.120(h) specifies that monitoring shall be performed where there may be a question of employee exposure to hazardous concentrations of hazardous substances in order to assure proper selection of engineering controls, work practices and personal protective equipment so that employees are not exposed to levels which exceed permissible exposure limits, or published exposure levels if there are no permissible exposure limits, for hazardous substances.

5.1 Air Monitoring Requirements

If excavation work is performed, air will be monitored for VOCs with a portable ION Science 3000EX photoionization detector, or the equivalent. If necessary, Lower Explosive Limit (LEL) and oxygen will be monitored with a Combustible Gas Indicator (CGI). If appropriate, fugitive dust will be monitored using a MiniRam Model PDM-3 aerosol monitor. Air will be monitored when any of the following conditions apply:

- initial site entry;
- during any work where a potential IDLH condition or flammable atmosphere could develop;
- excavation work begins on another portion of the site;
- contaminants, other than those previously identified, have been discovered;
- each time a different task or activity is initiated;
- during trenching and/or excavation work.

The designated site safety officer will record air monitoring data and ensure that air monitoring instruments are calibrated and maintained in accordance with manufacturer's specifications. Instruments will be zeroed daily and checked for accuracy. Monitoring results will be recorded in a field notebook and will be transferred to instrument reading logs.

5.2 Work Stoppage Responses

The following responses will be initiated whenever one or more of the action levels necessitating a work stoppage are exceeded:

1 The SSO will be consulted immediately
2 All personnel (except as necessary for continued monitoring and contaminant migration, if applicable) will be cleared from the work area (eg from the exclusion zone).
3 Monitoring will be continued until intrusive work resumes.

5.3 Action Levels During Excavation Activities

Instrument readings will be taken in the breathing zone above the excavation pit unless otherwise noted. Each action level is independent of all other action levels in determining responses.

Organic Vapors (PID)	LEL %	Responses
0-1 ppm above background	0%	• Continue excavating • Level D protection • Continue monitoring every 10 minutes
1-5 ppm Above Background, Sustained Reading	1-10%	• Continue excavating • Go to Level C protection or employ

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		engineering controls • Continue monitoring every 10 minutes
5-25 ppm Above Background, Sustaineed Reading	10-20%	• Discontinue excavating, unless PID is only action level exceeded. • Level C protection or employ engineering controls • Continue monitoring for organic vapors 200 ft downwind • Continuous monitoring for LEL at excavation pit
>25 ppm Above Background, Sustained Reading	>20%	• Discontinue excavating • Withdraw from area, shut off all engine ignition sources. • Allow pit to vent • Continuous monitoring for organic vapors 200 ft downwind.

Notes: Air monitoring will occur in the breathing zone 30 inches above the excavation pit. Readings may also be taken in the excavation pit but will not be used for action levels.

If action levels for any one of the monitoring parameters are exceeded, the appropriate responses listed in the right hand column should be taken. If instrument readings do not return to acceptable levels after the excavation pit has been vented for a period of greater than one-half hour, a decision will then be made whether or not to seal the pit with suppressant foam.

If, during excavation activities, downwind monitoring PID readings are greater than 5 ppm above background for more than one-half hour, excavation will stop until sustained levels are less then 5 ppm (see Community Air Monitoring Plan).

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Phone 631.504.6000
Fax 631.924.2870

6.0 SITE CONTROL

6.1 Work Zones

The primary purpose of site controls is to establish the perimeter of a hazardous area, to reduce the migration of contaminants into clean areas, and to prevent access or exposure to hazardous materials by unauthorized persons. When operations are to take place involving hazardous materials, the site safety officer will establish an exclusion zone, a decontamination zone, and a support zone. These zones "float" (move around the site) depending on the tasks being performed on any given day. The site safety officer will outline these locations before work begins and when zones change. The site safety officer records this information in the site log book.

It is expected that an exclusion zone, decontamination zone, and support zone will only be established during the remedial work required to excavate the CVOC hotspot areas. A licensed Environmental Contractor with relative hazardous material handling experience and training is required to perform any soil disturbing activities within the hotspots identified within the Remedial Action Work Plan. All onsite workers must provide evidence of OSHA 40-hour Hazardous Waste Operations and Emergency Response Operations training to conduct work within the exclusion zone established by the site safety officer. The exclusion zone is defined by the site safety officer but will typically be a 50-foot area around work activities. Gross decontamination (as determined by the site Health and Safety Officer) is conducted in the exclusion zone; all other decontamination is performed in the decontamination zone or trailer.

Protective equipment is removed in the decontamination zone. Disposable protective equipment is stored in receptacles staged in the decontamination zone, and non-disposable equipment is decontaminated. All personnel and equipment exit the exclusion zone through the decontamination zone. If a decontamination trailer is provided the first aid equipment, an eye wash unit, and drinking water are kept in the decontamination trailer.

The support zone is used for vehicle parking, daily safety meetings, and supply storage. Eating, drinking, and smoking are permitted only in the support zone. When a decontamination trailer is not provided, the eye wash unit, first aid equipment, and drinking water are kept at a central location designated by the site safety officer.

6.1 General Site Work

Upon completion of CVOC hotspot remedial activities by an Environmental Contractor, a general excavation contractor may continue with site excavation/grading as needed for basement excavation, shoring, other building requirements, or as necessary to excavate petroleum related VOC contaminated soil as deemed necessary by the Remedial Action Work Plan and/or Project Manager. All onsite employees must have obtained OSHA 24-hour Hazardous Waste Operations and Emergency Response Operations training prior to performing soil disturbing activities.

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7.0 CONTINGENCY PLAN/EMERGENCY RESPONSE PLAN

Site personnel must be prepared in the event of an emergency. Emergencies can take many forms: illnesses, injuries, chemical exposure, fires, explosions, spills, leaks, releases of harmful contaminants, or sudden changes in the weather.

Emergency telephone numbers and a map to the hospital will be posted in the command post. Site personnel should be familiar with the emergency procedures, and the locations of site safety, first aid, and communication equipment.

7.1 Emergency Equipment On-site

Private telephones:	Site personnel.
Two-way radios:	Site personnel where necessary.
Emergency Alarms:	On-site vehicle horns*.
First aid kits:	On-site, in vehicles or office.
Fire extinguisher:	On-site, in office or on equipment.

* Horns: Air horns will be supplied to personnel at the discretion of the project superintendent or site safety officer.

7.2 Emergency Telephone Numbers

General Emergencies	911
Suffolk County Police	911
NYC Fire Department	911
Jamaica Hospital Medical Center	(718) 206-6000
NYSDEC Spills Hotline	1-800-457-7362
NYSDEC Project Manager	(718) 482-4909
NYC Department of Health	(212) 676-2400
National Response Center	1-800-424-8802
Poison Control	1-800-222-1222
Project Manager	1-631-504-6000
Site Safety Officer	1-631-504-6000

7.3 Personnel Responsibilities During an Emergency

The project manager is primarily responsible for responding to and correcting any emergency situations. However, in the absence of the project manager, the site safety officer shall act as the project manager's on-site designee and perform the following tasks:

- Take appropriate measures to protect personnel including: withdrawal from the exclusion zone, evacuate and secure the site, or upgrade/downgrade the level of protective clothing and respiratory protection;

- Ensure that appropriate federal, state, and local agencies are informed and emergency response plans are coordinated. In the event of fire or explosion, the local fire department should be summoned immediately. If toxic materials are released to the air, the local authorities should be informed in order to assess the need for evacuation;

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- Ensure appropriate decontamination, treatment, or testing for exposed or injured personnel;

- Determine the cause of incidents and make recommendations to prevent recurrence; and,

- Ensure that all required reports have been prepared.

The following key personnel are planned for this project:

- Project Manager — Mr. Kevin Brussee (631) 504-6000
- Construction Superintendent — Mr. Richard Powers (516) 374-3336
- Site Safety Officer — Mr. Kevin Waters (631) 504-6000

7.4 Medical Emergencies

A person who becomes ill or injured in the exclusion zone will be decontaminated to the maximum extent possible. If the injury or illness is minor, full decontamination will be completed and first aid administered prior to transport. First aid will be administered while waiting for an ambulance or paramedics. A Field Accident Report (**Appendix D**) must be filled out for any injury.

A person transporting an injured/exposed person to a clinic or hospital for treatment will take the directions to the hospital (**Appendix D**).and information on the chemical(s) to which they may have been exposed (**Appendix C**).

7.5 Fire or Explosion

In the event of a fire or explosion, the local fire department will be summoned immediately. The site safety officer or his designated alternate will advise the fire commander of the location, nature and identification of the hazardous materials on-site. If it is safe to do so, site personnel may:

- use fire fighting equipment available on site; or,
- remove or isolate flammable or other hazardous materials that may contribute to the fire.

7.6 Evacuation Routes

Evacuation routes established by work area locations for each site will be reviewed prior to commencing site operations. As the work areas change, the evacuation routes will be altered accordingly, and the new route will be reviewed.

Under extreme emergency conditions, evacuation is to be immediate without regard for equipment. The evacuation signal will be a continuous blast of a vehicle horn, if possible, and/or by verbal/radio communication. When evacuating the site, personnel will follow these instructions:

- Keep upwind of smoke, vapors, or spill location.

- Exit through the decontamination corridor if possible.

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- If evacuation through the decontamination corridor is not possible, personnel should remove contaminated clothing once they are in a safe location and leave it near the exclusion zone or in a safe place.

- The site safety officer will conduct a head count to ensure that all personnel have been evacuated safely. The head count will be correlated to the site and/or exclusion zone entry/exit log.

- If emergency site evacuation is necessary, all personnel are to escape the emergency situation and decontaminate to the maximum extent practical.

7.7 Spill Control Procedures

Spills associated with site activities may be attributed to project equipment and include gasoline, diesel and hydraulic oil. In the event of a leak or a release, site personnel will inform their supervisor immediately, locate the source of spillage and stop the flow if it can be done safely. A spill containment kit including absorbent pads, booms and/or granulated speedy dry absorbent material will be available to site personnel to facilitate the immediate recovery of the spilled material. Daily inspections of site equipment components including hydraulic lines, fuel tanks, etc. will be performed by their respective operators as a preventative measure for equipment leaks and to ensure equipment soundness. In the event of a spill, site personnel will immediately notify the NYSDEC (1-800-457-7362), and a spill number will be generated.

7.8 Vapor Release Plan

If work zone organic vapor (excluding methane) exceeds 5 ppm, then a downwind reading will be made either 200 feet from the work zone or at the property line, whichever is closer. If readings at this location exceed 5 ppm over background, the work will be stopped.

If 5 ppm of VOCs are recorded over background on a PID at the property line, then an off-site reading will be taken within 20 feet of the nearest residential or commercial property, whichever is closer. If efforts to mitigate the emission source are unsuccessful for 30 minutes, then the designated site safety officer will:

- contact the local police;
- continue to monitor air every 30 minutes, 20 feet from the closest off-site property. If two successive readings are below 5 ppm (non-methane), off-site air monitoring will be halted.
- All property line and off site air monitoring locations and results associated with vapor releases will be recorded in the site safety log book.

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APPENDIX A

SITE SAFETY ACKNOWLEDGEMENT FORM

DAILY BREIFING SIGN-IN SHEET

Date:_____ Person Conducting Briefing:_____

Project Name and Location:_____

1. AWARENESS (topics discussed, special safety concerns, recent incidents, etc…):

_____

_____

_____

_____

2. OTHER ISSUES (HASP changes, attendee comments, etc…):

_____

_____

_____

3. ATTENDEES (Print Name):

1.	11.
2.	12.
3.	13.
4.	14.
5.	15.
6.	16.
7.	17.
8.	18.
9.	19.

APPENDIX B

SITE SAFETY PLAN AMENDMENTS

SITE SAFETY PLAN AMENDMENT FORM

Site Safety Plan Amendment #:_____

Site Name: _____

Reason for Amendment:_____

_____

_____

_____

Alternative Procedures:_____

_____

_____

_____

Required Changes in PPE:_____

_____

_____

_____

_____ _____

Project Superintendent (signature) Date

_____ _____

Health and Safety Consultant (signature) Date

APPENDIX C

CHEMICAL HAZARDS

CHEMICAL HAZARDS

The attached International Chemical Safety Cards are provided for contaminants of concern that have been identified in soils and/or groundwater at the site.

International Chemical Safety Cards

ACETONE

ICSC: 0087

2-Propanone
Dimethyl ketone
Methyl ketone
C_3H_6O / CH_3COCH_3
Molecular mass: 58.1

ICSC # 0087
CAS # 67-64-1
RTECS # AL3150000
UN # 1090
EC # 606-001-00-8
April 22, 1994 Validated
Fi, review at IHE: 10/09/89

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE	Highly flammable.	NO open flames, NO sparks, and NO smoking.	Powder, alcohol-resistant foam, water in large amounts, carbon dioxide.
EXPLOSION	Vapour/air mixtures are explosive.	Closed system, ventilation, explosion-proof electrical equipment and lighting. Do NOT use compressed air for filling, discharging, or handling.	In case of fire: keep drums, etc., cool by spraying with water.
EXPOSURE			
•INHALATION	Sore throat. Cough. Confusion. Headache. Dizziness. Drowsiness. Unconsciousness.	Ventilation, local exhaust, or breathing protection.	Fresh air, rest. Refer for medical attention.
•SKIN	Dry skin.	Protective gloves.	Remove contaminated clothes. Rinse skin with plenty of water or shower.
•EYES	Redness. Pain. Blurred vision. Possible corneal damage.	Safety spectacles or face shield . Contact lenses should not be worn.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
•INGESTION	Nausea. Vomiting. (Further see Inhalation).	Do not eat, drink, or smoke during work.	Rinse mouth. Refer for medical attention.

SPILLAGE DISPOSAL	STORAGE	PACKAGING & LABELLING
Personal protection: self-contained breathing apparatus. Ventilation. Collect leaking liquid in sealable containers. Absorb remaining liquid in sand or inert absorbent and remove to safe place. Do NOT wash away into sewer. Then wash away with plenty of water.	Fireproof. Separated from strong oxidants. Store in an area without drain or sewer access.	F symbol Xi symbol R: 11-36-66-67 S: 2-9-16-26 UN Hazard Class: 3 UN Packing Group: II

SEE IMPORTANT INFORMATION ON BACK

ICSC: 0087

International Chemical Safety Cards

ACETONE

ICSC: 0087

I M P O R T A N T D A T A

PHYSICAL STATE; APPEARANCE:
COLOURLESS LIQUID , WITH CHARACTERISTIC ODOUR.

PHYSICAL DANGERS:
The vapour is heavier than air and may travel along the ground; distant ignition possible.

CHEMICAL DANGERS:
The substance can form explosive peroxides on contact with strong oxidants such as acetic acid, nitric acid, hydrogen peroxide. Reacts with chloroform and bromoform under basic conditions, causing fire and explosion hazard. Attacks plastic.

OCCUPATIONAL EXPOSURE LIMITS:
TLV: 500 ppm as TWA, 750 ppm as STEL; A4 (not classifiable as a human carcinogen); BEI issued; (ACGIH 2004).
MAK: 500 ppm 1200 mg/m³
Peak limitation category: I(2); Pregnancy risk group: D; (DFG 2006).
OSHA PEL†: TWA 1000 ppm (2400 mg/m^3)
NIOSH REL: TWA 250 ppm (590 mg/m^3)
NIOSH IDLH: 2500 ppm 10%LEL See: 67641

ROUTES OF EXPOSURE:
The substance can be absorbed into the body by inhalation and through the skin.

INHALATION RISK:
A harmful contamination of the air can be reached rather quickly on evaporation of this substance at 20°C; on spraying or dispersing, however, much faster.

EFFECTS OF SHORT-TERM EXPOSURE:
The vapour irritates the eyes and the respiratory tract. The substance may cause effects on the central nervous system , liver , kidneys and gastrointestinal tract .

EFFECTS OF LONG-TERM OR REPEATED EXPOSURE:
Repeated or prolonged contact with skin may cause dermatitis. The substance may have effects on the blood and bone marrow .

PHYSICAL PROPERTIES

Boiling point: 56°C
Melting point: -95°C
Relative density (water = 1): 0.8
Solubility in water:
miscible
Vapour pressure, kPa at 20°C: 24

Relative vapour density (air = 1): 2.0
Relative density of the vapour/air-mixture at 20°C (air = 1): 1.2
Flash point: -18°C c.c.
Auto-ignition temperature: 465°C
Explosive limits, vol% in air: 2.2-13
Octanol/water partition coefficient as log Pow: -0.24

ENVIRONMENTAL DATA

N O T E S

Use of alcoholic beverages enhances the harmful effect.

Transport Emergency Card: TEC (R)-30S1090

NFPA Code: H 1; F 3; R 0;
Card has been partially updated in July 2007: see Occupational Exposure Limits.
Card has been partially updated in January 2008: see Storage.

ADDITIONAL INFORMATION

International Chemical Safety Cards

TETRACHLOROETHYLENE

ICSC: 0076

1,1,2,2-Tetrachloroethylene
Perchloroethylene
Tetrachloroethene
C_2Cl_4 / $Cl_2C=CCl_2$
Molecular mass: 165.8

ICSC # 0076
CAS # 127-18-4
RTECS # KX3850000
UN # 1897
EC # 602-028-00-4
April 13, 2000 Validated

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE	Not combustible. Gives off irritating or toxic fumes (or gases) in a fire.		In case of fire in the surroundings: use appropriate extinguishing media.
EXPLOSION			
EXPOSURE		STRICT HYGIENE! PREVENT GENERATION OF MISTS!	
•INHALATION	Dizziness. Drowsiness. Headache. Nausea. Weakness. Unconsciousness.	Ventilation, local exhaust, or breathing protection.	Fresh air, rest. Artificial respiration may be needed. Refer for medical attention.
•SKIN	Dry skin. Redness.	Protective gloves. Protective clothing.	Remove contaminated clothes. Rinse and then wash skin with water and soap.
•EYES	Redness. Pain.	Safety goggles , face shield .	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
•INGESTION	Abdominal pain. (Further see Inhalation).	Do not eat, drink, or smoke during work.	Rinse mouth. Do NOT induce vomiting. Give plenty of water to drink. Rest.

SPILLAGE DISPOSAL	STORAGE	PACKAGING & LABELLING
Ventilation. Collect leaking and spilled liquid in sealable containers as far as possible. Absorb remaining liquid in sand or inert absorbent and remove to safe place. Do NOT let this chemical enter the environment. Personal protection: filter respirator for organic gases and vapours.	Separated from metals ,(see Chemical Dangers), food and feedstuffs . Keep in the dark. Ventilation along the floor.	Do not transport with food and feedstuffs. Marine pollutant. Xn symbol N symbol R: 40-51/53 S: (2-)23-36/37-61 UN Hazard Class: 6.1 UN Packing Group: III

SEE IMPORTANT INFORMATION ON BACK

ICSC: 0076

Prepared in the context of cooperation between the International Programme on Chemical Safety & the Commission of the European Communities (C) IPCS CEC 1994. No modifications to the International version have been made except to add the OSHA PELs, NIOSH RELs and NIOSH IDLH values.

International Chemical Safety Cards

TETRACHLOROETHYLENE

ICSC: 0076

I M P O R T A N T D A T A

PHYSICAL STATE; APPEARANCE:
COLOURLESS LIQUID , WITH CHARACTERISTIC ODOUR.

PHYSICAL DANGERS:
The vapour is heavier than air.

CHEMICAL DANGERS:
On contact with hot surfaces or flames this substance decomposes forming toxic and corrosive fumes (hydrogen chloride, phosgene, chlorine). The substance decomposes slowly on contact with moisture producing trichloroacetic acid and hydrochloric acid. Reacts with metals such as aluminium, lithium, barium, beryllium.

OCCUPATIONAL EXPOSURE LIMITS:
TLV: 25 ppm as TWA, 100 ppm as STEL; A3 (confirmed animal carcinogen with unknown relevance to humans); BEI issued; (ACGIH 2004).
MAK: skin absorption (H);
Carcinogen category: 3B;
(DFG 2004).
OSHA PEL†: TWA 100 ppm C 200 ppm 300 ppm (5-minute maximum peak in any 3-hours)
NIOSH REL: Ca Minimize workplace exposure concentrations. See Appendix A
NIOSH IDLH: Ca 150 ppm See: 127184

ROUTES OF EXPOSURE:
The substance can be absorbed into the body by inhalation and by ingestion.

INHALATION RISK:
A harmful contamination of the air will be reached rather slowly on evaporation of this substance at 20°C.

EFFECTS OF SHORT-TERM EXPOSURE:
The substance is irritating to the eyes , the skin and the respiratory tract . If this liquid is swallowed, aspiration into the lungs may result in chemical pneumonitis. The substance may cause effects on the central nervous system. Exposure at high levels may result in unconsciousness.

EFFECTS OF LONG-TERM OR REPEATED EXPOSURE:
Repeated or prolonged contact with skin may cause dermatitis. The substance may have effects on the liver and kidneys. This substance is probably carcinogenic to humans.

PHYSICAL PROPERTIES

Boiling point: 121°C
Melting point: -22°C
Relative density (water = 1): 1.6
Solubility in water, g/100 ml at 20°C: 0.015

Vapour pressure, kPa at 20°C: 1.9
Relative vapour density (air = 1): 5.8
Relative density of the vapour/air-mixture at 20°C (air = 1): 1.09
Octanol/water partition coefficient as log Pow: 2.9

ENVIRONMENTAL DATA

The substance is toxic to aquatic organisms. The substance may cause long-term effects in the aquatic environment.

N O T E S

Depending on the degree of exposure, periodic medical examination is suggested. The odour warning when the exposure limit value is exceeded is insufficient. Do NOT use in the vicinity of a fire or a hot surface, or during welding. An added stabilizer or inhibitor can influence the toxicological properties of this substance, consult an expert. Card has been partly updated in April 2005. See section Occupational Exposure Limits.

Transport Emergency Card: TEC (R)-61S1897

NFPA Code: H2; F0; R0;

ADDITIONAL INFORMATION

International Chemical Safety Cards

1,2-DICHLOROETHYLENE

ICSC: 0436

1,2-Dichloroethene
Acetylene dichloride
symmetrical Dichloroethylene
$C_2H_2Cl_2$ / ClCH=CHCl
Molecular mass: 96.95

ICSC # 0436
CAS # 540-59-0
RTECS # KV9360000
UN # 1150
EC # 602-026-00-3
July 05, 2003 Validated

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE	Highly flammable. Gives off irritating or toxic fumes (or gases) in a fire.	NO open flames, NO sparks, and NO smoking.	Powder, water spray, foam, carbon dioxide.
EXPLOSION	Vapour/air mixtures are explosive.	Closed system, ventilation, explosion-proof electrical equipment and lighting. Do NOT use compressed air for filling, discharging, or handling.	In case of fire: keep drums, etc., cool by spraying with water.
EXPOSURE		STRICT HYGIENE!	
•INHALATION	Cough. Sore throat. Dizziness. Nausea. Drowsiness. Weakness. Unconsciousness. Vomiting.	Ventilation, local exhaust, or breathing protection.	Fresh air, rest. Refer for medical attention.
•SKIN	Dry skin.	Protective gloves.	Remove contaminated clothes. Rinse skin with plenty of water or shower.
•EYES	Redness. Pain.	Safety spectacles.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
•INGESTION	Abdominal pain. (Further see Inhalation).	Do not eat, drink, or smoke during work.	Rinse mouth. Give plenty of water to drink. Refer for medical attention.

SPILLAGE DISPOSAL	STORAGE	PACKAGING & LABELLING
Remove all ignition sources. Ventilation. Collect leaking and spilled liquid in sealable containers as far as possible. Absorb remaining liquid in dry sand or inert absorbent and remove to safe place. Do NOT wash away into sewer. (Extra personal protection: complete protective clothing including self-contained breathing apparatus.)	Fireproof. Well closed. See Chemical Dangers.	Note: C F symbol Xn symbol R: 11-20-52/53 S: 2-7-16-29-61 UN Hazard Class: 3 UN Packing Group: II

SEE IMPORTANT INFORMATION ON BACK

ICSC: 0436

International Chemical Safety Cards

1,2-DICHLOROETHYLENE

ICSC: 0436

I M P O R T A N T D A T A

PHYSICAL STATE; APPEARANCE:
COLOURLESS LIQUID , WITH CHARACTERISTIC ODOUR.

PHYSICAL DANGERS:
The vapour is heavier than air and may travel along the ground; distant ignition possible.

CHEMICAL DANGERS:
The substance decomposes on heating or under the influence of air , light and moisture producing toxic and corrosive fumes including hydrogen chloride . Reacts with strong oxidants. Reacts with copper or copper alloys, and bases to produce toxic chloroacetylene which is spontaneously flammable in contact with air. Attacks plastic.

OCCUPATIONAL EXPOSURE LIMITS:
TLV: 200 ppm as TWA; (ACGIH 2003).
MAK: 200 ppm, 800 mg/m³;
Peak limitation category: II(2);
(DFG 2002).
OSHA PEL: TWA 200 ppm (790 mg/m^3)
NIOSH REL: TWA 200 ppm (790 mg/m^3)
NIOSH IDLH: 1000 ppm See: 540590

ROUTES OF EXPOSURE:
The substance can be absorbed into the body by inhalation of its vapour and by ingestion.

INHALATION RISK:
A harmful contamination of the air will be reached quickly on evaporation of this substance at 20°C; on spraying or dispersing, however, much faster.

EFFECTS OF SHORT-TERM EXPOSURE:
The substance is irritating to the eyes and the respiratory tract . The substance may cause effects on the central nervous system at high levels , resulting in lowering of consciousness .

EFFECTS OF LONG-TERM OR REPEATED EXPOSURE:
The liquid defats the skin. The substance may have effects on the liver .

PHYSICAL PROPERTIES

Boiling point: 55°C
Relative density (water = 1): 1.28
Solubility in water: poor
Relative vapour density (air = 1): 3.34
Flash point: 2°C c.c.
Auto-ignition temperature: 460°C
Explosive limits, vol% in air: 9.7-12.8
Octanol/water partition coefficient as log Pow: 2

ENVIRONMENTAL DATA

N O T E S

This compound has two isomers, cis and trans.Data for the isomers: cis-isomer (CAS 156-59-2), trans isomer (CAS 156-60-5), other boiling point 60.3, melting point -81.5°C (cis), -49.4°C (trans); flash point c.c. 6°C (cis), 2-4°C (trans); relative density (water = 1) 1.28 (cis), 1.26 (trans); vapour pressure 24.0 kPa (cis), 35.3 kPa (trans) at 20°C; relative density of the vapour/air-mixture at 20°C (air = 1): 1.6 (cis), 1.8 (trans); octanol/water partition coefficient as log Pow: 1.86 (cis), 2.09 (trans). Depending on the degree of exposure, periodic medical examination is suggested.

Transport Emergency Card: TEC (R)-30GF1-I+II

NFPA Code: H2; F3; R2;

ADDITIONAL INFORMATION

International Chemical Safety Cards

TRICHLOROETHYLENE

ICSC: 0081

1,1,2-Trichloroethylene
Trichloroethene
Ethylene trichloride
Acetylene trichloride
C_2HCl_3 / $ClCH=CCl_2$
Molecular mass: 131.4

ICSC # 0081
CAS # 79-01-6
RTECS # KX4550000
UN # 1710
EC # 602-027-00-9
April 10, 2000 Validated

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE	Combustible under specific conditions. See Notes.		In case of fire in the surroundings: all extinguishing agents allowed.
EXPLOSION		Prevent build-up of electrostatic charges (e.g., by grounding).	In case of fire: keep drums, etc., cool by spraying with water.
EXPOSURE		PREVENT GENERATION OF MISTS! STRICT HYGIENE!	
•**INHALATION**	Dizziness. Drowsiness. Headache. Weakness. Nausea. Unconsciousness.	Ventilation, local exhaust, or breathing protection.	Fresh air, rest. Artificial respiration may be needed. Refer for medical attention.
•**SKIN**	Dry skin. Redness.	Protective gloves.	Remove contaminated clothes. Rinse and then wash skin with water and soap.
•**EYES**	Redness. Pain.	Safety spectacles, or eye protection in combination with breathing protection.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
•**INGESTION**	Abdominal pain. (Further see Inhalation).	Do not eat, drink, or smoke during work.	Rinse mouth. Do NOT induce vomiting. Give plenty of water to drink. Rest.

SPILLAGE DISPOSAL	STORAGE	PACKAGING & LABELLING
Ventilation. Collect leaking and spilled liquid in sealable containers as far as possible. Absorb remaining liquid in sand or inert absorbent and remove to safe place. Personal protection: filter respirator for organic gases and vapours. Do NOT let this chemical enter the environment.	Separated from metals (see Chemical Dangers), strong bases, food and feedstuffs . Dry. Keep in the dark. Ventilation along the floor.	Do not transport with food and feedstuffs. Marine pollutant. T symbol R: 45-36/38-52/53-67 S: 53-45-61 UN Hazard Class: 6.1 UN Packing Group: III

SEE IMPORTANT INFORMATION ON BACK

International Chemical Safety Cards

TRICHLOROETHYLENE

ICSC: 0081

I M P O R T A N T D A T A

PHYSICAL STATE; APPEARANCE:
COLOURLESS LIQUID , WITH CHARACTERISTIC ODOUR.

PHYSICAL DANGERS:
The vapour is heavier than air. As a result of flow, agitation, etc., electrostatic charges can be generated.

CHEMICAL DANGERS:
On contact with hot surfaces or flames this substance decomposes forming toxic and corrosive fumes (phosgene , hydrogen chloride). The substance decomposes on contact with strong alkali producing dichloroacetylene , which increases fire hazard. Reacts violently with metal powders such as magnesium, aluminium, titanium, and barium. Slowly decomposed by light in presence of moisture, with formation of corrosive hydrochloric acid.

OCCUPATIONAL EXPOSURE LIMITS:
TLV: 50 ppm as TWA; 100 ppm as STEL; A5; BEI issued; (ACGIH 2004).
MAK:
Carcinogen category: 1; Germ cell mutagen group: 3B; (DFG 2004).
OSHA PEL†: TWA 100 ppm C 200 ppm 300 ppm (5-minute maximum peak in any 2 hours)
NIOSH REL: Ca See Appendix A See Appendix C
NIOSH IDLH: Ca 1000 ppm See: 79016

ROUTES OF EXPOSURE:
The substance can be absorbed into the body by inhalation and by ingestion.

INHALATION RISK:
A harmful contamination of the air can be reached rather quickly on evaporation of this substance at 20°C.

EFFECTS OF SHORT-TERM EXPOSURE:
The substance is irritating to the eyes and the skin . Swallowing the liquid may cause aspiration into the lungs with the risk of chemical pneumonitis. The substance may cause effects on the central nervous system , resulting in respiratory failure . Exposure could cause lowering of consciousness.

EFFECTS OF LONG-TERM OR REPEATED EXPOSURE:
Repeated or prolonged contact with skin may cause dermatitis. The substance may have effects on the central nervous system , resulting in loss of memory. The substance may have effects on the liver and kidneys (see Notes). This substance is probably carcinogenic to humans.

PHYSICAL PROPERTIES

Boiling point: 87°C
Melting point: -73°C
Relative density (water = 1): 1.5
Solubility in water, g/100 ml at 20°C: 0.1
Vapour pressure, kPa at 20°C: 7.8
Relative vapour density (air = 1): 4.5
Relative density of the vapour/air-mixture at 20°C (air = 1): 1.3
Auto-ignition temperature: 410°C
Explosive limits, vol% in air: 8-10.5
Octanol/water partition coefficient as log Pow: 2.42
Electrical conductivity (NOT on card): 800pS/m

ENVIRONMENTAL DATA

The substance is harmful to aquatic organisms. The substance may cause long-term effects in the aquatic environment.

N O T E S

Combustible vapour/air mixtures difficult to ignite, may be developed under certain conditions. Use of alcoholic beverages enhances the harmful effect. Depending on the degree of exposure, periodic medical examination is suggested. The odour warning when the exposure limit value is exceeded is insufficient. Do NOT use in the vicinity of a fire or a hot surface, or during welding. An added stabilizer or inhibitor can influence the toxicological properties of this substance, consult an expert. Card has been partly updated in October 2004. See sections Occupational Exposure Limits, EU classification, Emergency Response.

Transport Emergency Card: TEC (R)-61S1710

NFPA Code: H2; F1; R0;

ADDITIONAL INFORMATION

ICSC: 0081 **TRICHLOROETHYLENE**

International Chemical Safety Cards

VINYL CHLORIDE

ICSC: 0082

Chloroethene
Chloroethylene
VCM
C_2H_3Cl / $H_2C=CHCl$
Molecular mass: 62.5
(cylinder)

ICSC # 0082
CAS # 75-01-4
RTECS # KU9625000
UN # 1086 (stabilized)
EC # 602-023-00-7
April 13, 2000 Validated

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE	Extremely flammable. Gives off irritating or toxic fumes (or gases) in a fire.	NO open flames, NO sparks, and NO smoking.	Shut off supply; if not possible and no risk to surroundings, let the fire burn itself out; in other cases extinguish with powder, carbon dioxide.
EXPLOSION	Gas/air mixtures are explosive.	Closed system, ventilation, explosion-proof electrical equipment and lighting. Use non-sparking handtools.	In case of fire: keep cylinder cool by spraying with water. Combat fire from a sheltered position.
EXPOSURE		AVOID ALL CONTACT!	IN ALL CASES CONSULT A DOCTOR!
•INHALATION	Dizziness. Drowsiness. Headache. Unconsciousness.	Ventilation, local exhaust, or breathing protection.	Fresh air, rest. Refer for medical attention.
•SKIN	ON CONTACT WITH LIQUID: FROSTBITE.	Protective gloves. Cold-insulating gloves. Protective clothing.	ON FROSTBITE: rinse with plenty of water, do NOT remove clothes.
•EYES	Redness. Pain.	Safety goggles or eye protection in combination with breathing protection.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
•INGESTION		Do not eat, drink, or smoke during work.	

SPILLAGE DISPOSAL	STORAGE	PACKAGING & LABELLING
Evacuate danger area! Consult an expert! Ventilation. Remove all ignition sources. Personal protection: complete protective clothing including self-contained breathing apparatus.	Fireproof. Separated from incompatible materials .(See Chemical Dangers.) Cool. Store only if stabilized.	Note: D F+ symbol T symbol R: 45-12 S: 53-45 UN Hazard Class: 2.1

SEE IMPORTANT INFORMATION ON BACK

ICSC: 0082

Prepared in the context of cooperation between the International Programme on Chemical Safety & the Commission of the European Communities (C) IPCS CEC 1994. No modifications to the International version have been made except to add the OSHA PELs, NIOSH RELs and NIOSH IDLH values.

International Chemical Safety Cards

VINYL CHLORIDE

ICSC: 0082

IMPORTANT DATA

PHYSICAL STATE; APPEARANCE:
COLOURLESS COMPRESSED LIQUEFIED GAS , WITH CHARACTERISTIC ODOUR.

PHYSICAL DANGERS:
The gas is heavier than air, and may travel along the ground; distant ignition possible. Vinyl chloride monomer vapours are uninhibited and may form polymers in vents or flame arresters of storage tanks, resulting in blockage of vents.

CHEMICAL DANGERS:
The substance can under specific circumstances form peroxides, initiating explosive polymerization. The substance will polymerize readily due to heating and under the influence of air, light and on contact with a catalyst, strong oxidizing agents and metals such as copper and aluminium, with fire or explosion hazard. The substance decomposes on burning producing toxic and corrosive fumes (hydrogen chloride , phosgene). Attacks iron and steel in the presence of moisture.

OCCUPATIONAL EXPOSURE LIMITS:
TLV: 1 ppm as TWA; A1 (confirmed human carcinogen); (ACGIH 2004).
MAK:
Carcinogen category: 1;
(DFG 2004).
OSHA PEL: 1910.1017 TWA 1 ppm C 5 ppm 15-minute
NIOSH REL: Ca See Appendix A
NIOSH IDLH: Ca N.D. See: IDLH INDEX

ROUTES OF EXPOSURE:
The substance can be absorbed into the body by inhalation.

INHALATION RISK:
A harmful concentration of this gas in the air will be reached very quickly on loss of containment.

EFFECTS OF SHORT-TERM EXPOSURE:
The substance is irritating to the eyes . The liquid may cause frostbite. The substance may cause effects on the central nervous system . Exposure could cause lowering of consciousness. Medical observation is indicated.

EFFECTS OF LONG-TERM OR REPEATED EXPOSURE:
The substance may have effects on the liver, spleen, blood andperipheral blood vessels, and tissue and bones of the fingers. This substance is carcinogenic to humans.

PHYSICAL PROPERTIES

Boiling point: -13°C
Melting point: -154°C
Relative density (water = 1): 0.9 (liquid)
Density: 8 (vapour) at 15°C
g/l
Solubility in water:
none

Relative vapour density (air = 1): 2.2
Flash point:
-78°C c.c.
Auto-ignition temperature: 472°C
Explosive limits, vol% in air: 3.6-33
Octanol/water partition coefficient as log Pow: 0.6

ENVIRONMENTAL DATA

This substance may be hazardous to the environment; special attention should be given to ground water contamination.

NOTES

Depending on the degree of exposure, periodic medical examination is suggested. The odour warning when the exposure limit value is exceeded is insufficient. Do NOT use in the vicinity of a fire or a hot surface, or during welding. An added stabilizer or inhibitor can influence the toxicological properties of this substance, consult an expert. Card has been partly updated in April 2005. See section Occupational Exposure Limits.

Transport Emergency Card: TEC (R)-20S1086

NFPA Code: H 2; F 4; R 2;

ADDITIONAL INFORMATION

International Chemical Safety Cards

1,2,4-TRIMETHYLBENZENE

ICSC: 1433

Pseudocumene

C_9H_{12}

Molecular mass: 120,2

ICSC # 1433
CAS # 95-63-6
RTECS # DC3325000
UN # 1993
EC # 601-043-00-3
March 06, 2002 Peer reviewed

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE	Flammable.	NO open flames, NO sparks, and NO smoking.	Alcohol-resistant foam, dry powder, carbon dioxide.
EXPLOSION	Above 44°C explosive vapour/air mixtures may be formed.	Above 44°C use a closed system, ventilation, and explosion-proof electrical equipment. Prevent build-up of electrostatic charges (e.g., by grounding).	In case of fire: keep drums, etc., cool by spraying with water.
EXPOSURE		PREVENT GENERATION OF MISTS!	
•INHALATION	Confusion. Cough. Dizziness. Drowsiness. Headache. Sore throat. Vomiting.	Ventilation, local exhaust, or breathing protection.	Fresh air, rest. Refer for medical attention.
•SKIN	Redness. Dry skin.	Protective gloves.	Rinse skin with plenty of water or shower.
•EYES	Redness. Pain.	Safety spectacles.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
•INGESTION	(See Inhalation).	Do not eat, drink, or smoke during work.	Rinse mouth. Do NOT induce vomiting. Refer for medical attention.

SPILLAGE DISPOSAL	STORAGE	PACKAGING & LABELLING
Collect leaking and spilled liquid in sealable containers as far as possible. Absorb remaining liquid in sand or inert absorbent and remove to safe place. Do NOT wash away into sewer. Do NOT let this chemical enter the environment. Personal protection: filter respirator for organic gases and vapours.	Fireproof. Separated from strong oxidants. Well closed. Keep in a well-ventilated room.	Xn symbol N symbol R: 10-20-36/37/38-51/53 S: 2-26-61 UN Hazard Class: 3 UN Packing Group: III

SEE IMPORTANT INFORMATION ON BACK

ICSC: 1433

International Chemical Safety Cards

1,2,4-TRIMETHYLBENZENE

ICSC: 1433

IMPORTANT DATA	**PHYSICAL STATE; APPEARANCE:** COLOURLESS LIQUID , WITH CHARACTERISTIC ODOUR. **PHYSICAL DANGERS:** **CHEMICAL DANGERS:** The substance decomposes on burning producing toxic and irritating fumes Reacts violently with strong oxidants causing fire and explosion hazard. **OCCUPATIONAL EXPOSURE LIMITS:** TLV: (as mixed isomers) 25 ppm as TWA (ACGIH 2004). MAK: (as mixed isomers) 20 ppm 100 mg/m³ Peak limitation category: II(2) Pregnancy risk group: C (DFG 2004). OSHA PEL†: none NIOSH REL: TWA 25 ppm (125 mg/m^3) NIOSH IDLH: N.D. See: IDLH INDEX	**ROUTES OF EXPOSURE:** The substance can be absorbed into the body by inhalation. **INHALATION RISK:** A harmful contamination of the air will be reached rather slowly on evaporation of this substance at 20°C; on spraying or dispersing, however, much faster. **EFFECTS OF SHORT-TERM EXPOSURE:** The substance is irritating to the eyes the skin and the respiratory tract If this liquid is swallowed, aspiration into the lungs may result in chemical pneumonitis. The substance may cause effects on the central nervous system **EFFECTS OF LONG-TERM OR REPEATED EXPOSURE:** The liquid defats the skin. Lungs may be affected by repeated or prolonged exposure , resulting in chronic bronchitis The substance may have effects on the central nervous system blood See Notes.
PHYSICAL PROPERTIES	Boiling point: 169°C Melting point: -44°C Relative density (water = 1): 0.88 Solubility in water: very poor Relative vapour density (air = 1): 4.1	Relative density of the vapour/air-mixture at 20°C (air = 1): 1.01 Flash point: 44°C c.c. Auto-ignition temperature: 500°C Explosive limits, vol% in air: 0.9-6.4 Octanol/water partition coefficient as log Pow: 3.8
ENVIRONMENTAL DATA	The substance is toxic to aquatic organisms. Bioaccumulation of this chemical may occur in fish. 	

N O T E S

Use of alcoholic beverages enhances the harmful effect. Depending on the degree of exposure, periodic medical examination is suggested. See also ICSC 1155 1,3,5-Trimethylbenzene (Mesitylene), ICSC 1362 1,2,3-Trimethylbenzene (Hemimellitene), ICSC 1389 Trimethyl benzene (mixed isomers). 1,3,5-Trimethylbenzene (Mesitylene) is classified as a marine pollutant.

Transport Emergency Card: TEC (R)-30GF1-III
NFPA Code: H0; F2; R0;

ADDITIONAL INFORMATION

International Chemical Safety Cards

1,3,5-TRIMETHYLBENZENE

ICSC: 1155

Mesitylene
C_9H_{12}
Molecular mass: 120.2

ICSC # 1155
CAS # 108-67-8
RTECS # OX6825000
UN # 2325
EC # 601-025-00-5
March 06, 2002 Peer reviewed

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE	Flammable.	NO open flames, NO sparks, and NO smoking.	Alcohol-resistant foam, dry powder, carbon dioxide.
EXPLOSION	Above 50°C explosive vapour/air mixtures may be formed.	Above 50°C use a closed system, ventilation, and explosion-proof electrical equipment. Prevent build-up of electrostatic charges (e.g., by grounding).	In case of fire: keep drums, etc., cool by spraying with water.
EXPOSURE		PREVENT GENERATION OF MISTS!	
•INHALATION	Confusion. Cough. Dizziness. Drowsiness. Headache. Sore throat. Vomiting.	Ventilation, local exhaust, or breathing protection.	Fresh air, rest. Refer for medical attention.
•SKIN	Redness. Dry skin.	Protective gloves.	Remove contaminated clothes. Rinse skin with plenty of water or shower.
•EYES	Redness. Pain.	Safety spectacles.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
•INGESTION	(See Inhalation).	Do not eat, drink, or smoke during work.	Rinse mouth. Do NOT induce vomiting. Refer for medical attention.

SPILLAGE DISPOSAL	STORAGE	PACKAGING & LABELLING
Collect leaking and spilled liquid in sealable containers as far as possible. Absorb remaining liquid in sand or inert absorbent and remove to safe place. Do NOT wash away into sewer. Do NOT let this chemical enter the environment. (Extra personal protection: filter respirator for organic gases and vapours.)	Fireproof. Separated from strong oxidants. Well closed. Keep in a well-ventilated room.	Marine pollutant. Xi symbol N symbol R: 10-37-51/53 S: 2-61 UN Hazard Class: 3 UN Packing Group: III

SEE IMPORTANT INFORMATION ON BACK

International Chemical Safety Cards

1,3,5-TRIMETHYLBENZENE

ICSC: 1155

IMPORTANT DATA	**PHYSICAL STATE; APPEARANCE:** COLOURLESS LIQUID , WITH CHARACTERISTIC ODOUR. **PHYSICAL DANGERS:** **CHEMICAL DANGERS:** The substance decomposes on burning producing toxic and irritating fumes. Reacts violently with strong oxidants causing fire and explosion hazard. **OCCUPATIONAL EXPOSURE LIMITS:** TLV (as mixed isomers): 25 ppm; (ACGIH 2001). MAK (all isomers): 20 ppm; 100 mg/m^3; class II 1 © (2001) OSHA PEL†: none NIOSH REL: TWA 25 ppm (125 mg/m^3) NIOSH IDLH: N.D. See: IDLH INDEX	**ROUTES OF EXPOSURE:** The substance can be absorbed into the body by inhalation. **INHALATION RISK:** A harmful contamination of the air will be reached rather slowly on evaporation of this substance at 20°C; on spraying or dispersing, however, much faster. **EFFECTS OF SHORT-TERM EXPOSURE:** The substance is irritating to the eyes the skin and the respiratory tract If this liquid is swallowed, aspiration into the lungs may result in chemical pneumonitis. The substance may cause effects on the central nervous system. **EFFECTS OF LONG-TERM OR REPEATED EXPOSURE:** The liquid defats the skin. Lungs may be affected by repeated or prolonged exposure, resulting in chronic bronchitis. The substance may have effects on the central nervous system blood See Notes.
PHYSICAL PROPERTIES	Boiling point: 165°C Melting point: -45°C Relative density (water = 1): 0.86 Solubility in water: very poor Vapour pressure, kPa at 20°C: 0.25	Relative vapour density (air = 1): 4.1 Relative density of the vapour/air-mixture at 20°C (air = 1): 1.01 Flash point: 50°C (c.c.) Auto-ignition temperature: 550°C Octanol/water partition coefficient as log Pow: 3.42
ENVIRONMENTAL DATA	The substance is harmful to aquatic organisms. Bioaccumulation of this chemical may occur in fish. 	

N O T E S

Use of alcoholic beverages enhances the harmful effect. Depending on the degree of exposure, periodic medical examination is indicated. See ICSC 1433 1,2,4-Trimethylbenzene (Pseudocumene), ICSC 1362 1,2,3-Trimethylbenzene (Hemimellitene), ICSC 1389 Trimethyl benzene (mixed isomers).

Transport Emergency Card: TEC (R)-30S2325
NFPA Code: H0; F2; R0

ADDITIONAL INFORMATION

International Chemical Safety Cards

ETHYLBENZENE

ICSC: 0268

Ethylbenzol
Phenylethane
EB
C_8H_{10} / $C_6H_5C_2H_5$
Molecular mass: 106.2

ICSC # 0268
CAS # 100-41-4
RTECS # DA0700000
UN # 1175
EC # 601-023-00-4
March 13, 1995 Validated

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE	Highly flammable.	NO open flames, NO sparks, and NO smoking.	Powder, AFFF, foam, carbon dioxide.
EXPLOSION	Vapour/air mixtures are explosive.	Closed system, ventilation, explosion-proof electrical equipment and lighting. Do NOT use compressed air for filling, discharging, or handling.	In case of fire: keep drums, etc., cool by spraying with water.
EXPOSURE		PREVENT GENERATION OF MISTS!	
•**INHALATION**	Cough. Dizziness. Drowsiness. Headache.	Ventilation, local exhaust, or breathing protection.	Fresh air, rest. Refer for medical attention.
•**SKIN**	Dry skin. Redness.	Protective gloves.	Remove contaminated clothes. Rinse and then wash skin with water and soap.
•**EYES**	Redness. Pain. Blurred vision.	Face shield or eye protection in combination with breathing protection.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
•**INGESTION**	(Further see Inhalation).	Do not eat, drink, or smoke during work.	Rinse mouth. Give a slurry of activated charcoal in water to drink. Refer for medical attention.

SPILLAGE DISPOSAL	STORAGE	PACKAGING & LABELLING
Ventilation. Collect leaking liquid in covered containers. Absorb remaining liquid in sand or inert absorbent and remove to safe place. Do NOT wash away into sewer. Personal protection: A filter respirator for organic gases and vapours.	Fireproof. Separated from strong oxidants.	F symbol Xn symbol R: 11-20 S: 2-16-24/25-29 UN Hazard Class: 3 UN Packing Group: II

SEE IMPORTANT INFORMATION ON BACK

ICSC: 0268

International Chemical Safety Cards

ETHYLBENZENE

ICSC: 0268

IMPORTANT DATA	**PHYSICAL STATE; APPEARANCE:** COLOURLESS LIQUID , WITH AROMATIC ODOUR. **PHYSICAL DANGERS:** The vapour mixes well with air, explosive mixtures are easily formed. **CHEMICAL DANGERS:** Reacts with strong oxidants. Attacks plastic and rubber. **OCCUPATIONAL EXPOSURE LIMITS:** TLV: 100 ppm as TWA 125 ppm as STEL A3 (confirmed animal carcinogen with unknown relevance to humans); BEI issued (ACGIH 2005). MAK: skin absorption (H); Carcinogen category: 3A; (DFG 2004). OSHA PEL†: TWA 100 ppm (435 mg/m^3) NIOSH REL: TWA 100 ppm (435 mg/m^3) ST 125 ppm (545 mg/m^3) NIOSH IDLH: 800 ppm 10%LEL See: 100414	**ROUTES OF EXPOSURE:** The substance can be absorbed into the body by inhalation of its vapour, through the skin and by ingestion. **INHALATION RISK:** A harmful contamination of the air will be reached rather slowly on evaporation of this substance at 20°C. **EFFECTS OF SHORT-TERM EXPOSURE:** The substance is irritating to the eyes the skin and the respiratory tract Swallowing the liquid may cause aspiration into the lungs with the risk of chemical pneumonitis. The substance may cause effects on the central nervous system Exposure far above the OEL could cause lowering of consciousness. **EFFECTS OF LONG-TERM OR REPEATED EXPOSURE:** Repeated or prolonged contact with skin may cause dermatitis.
PHYSICAL PROPERTIES	Boiling point: 136°C Melting point: -95°C Relative density (water = 1): 0.9 Solubility in water, g/100 ml at 20°C: 0.015 Vapour pressure, kPa at 20°C: 0.9 Relative vapour density (air = 1): 3.7	Relative density of the vapour/air-mixture at 20°C (air = 1): 1.02 Flash point: 18°C c.c. Auto-ignition temperature: 432°C Explosive limits, vol% in air: 1.0-6.7 Octanol/water partition coefficient as log Pow: 3.2
ENVIRONMENTAL DATA	The substance is harmful to aquatic organisms. 	

N O T E S

The odour warning when the exposure limit value is exceeded is insufficient.

Transport Emergency Card: TEC (R)-30S1175 or 30GF1-I+II
NFPA Code: H2; F3; R0

ADDITIONAL INFORMATION

IMPORTANT LEGAL NOTICE:	Neither NIOSH, the CEC or the IPCS nor any person acting on behalf of NIOSH, the CEC or the IPCS is responsible for the use which might be made of this information. This card contains the collective views of the IPCS Peer Review Committee and may not reflect in all cases all the detailed requirements included in national legislation on the subject. The user should verify compliance of the cards with the relevant legislation in the country of use. The only modifications made to produce the U.S. version is inclusion of the OSHA PELs, NIOSH RELs and NIOSH IDLH values.

International Chemical Safety Cards

m-XYLENE

ICSC: 0085

meta-Xylene
1,3-Dimethylbenzene
m-Xylol
$C_6H_4(CH_3)_2$ / C_8H_{10}
Molecular mass: 106.2

ICSC # 0085
CAS # 108-38-3
RTECS # ZE2275000
UN # 1307
EC # 601-022-00-9
August 03, 2002 Validated

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE	Flammable.	NO open flames, NO sparks, and NO smoking.	Powder, water spray, foam, carbon dioxide.
EXPLOSION	Above 27°C explosive vapour/air mixtures may be formed.	Above 27°C use a closed system, ventilation, and explosion-proof electrical equipment. Prevent build-up of electrostatic charges (e.g., by grounding).	In case of fire: keep drums, etc., cool by spraying with water.
EXPOSURE		STRICT HYGIENE!	
•INHALATION	Dizziness. Drowsiness. Headache. Nausea.	Ventilation, local exhaust, or breathing protection.	Fresh air, rest. Refer for medical attention.
•SKIN	Dry skin. Redness.	Protective gloves.	Remove contaminated clothes. Rinse and then wash skin with water and soap.
•EYES	Redness. Pain.	Safety spectacles.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
•INGESTION	Burning sensation. Abdominal pain. (Further see Inhalation).	Do not eat, drink, or smoke during work.	Rinse mouth. Do NOT induce vomiting. Refer for medical attention.

SPILLAGE DISPOSAL	STORAGE	PACKAGING & LABELLING
Ventilation. Remove all ignition sources. Collect leaking and spilled liquid in sealable containers as far as possible. Absorb remaining liquid in sand or inert absorbent and remove to safe place. Do NOT let this chemical enter the environment. (Extra personal protection: filter respirator for organic gases and vapours.)	Fireproof. Separated from strong oxidants strong acids	Note: C Xn symbol R: 10-20/21-38 S: 2-25 UN Hazard Class: 3 UN Packing Group: III

SEE IMPORTANT INFORMATION ON BACK

ICSC: 0085

Prepared in the context of cooperation between the International Programme on Chemical Safety & the Commission of the European Communities (C) IPCS CEC 1994. No modifications to the International version have been made except to add the OSHA PELs, NIOSH RELs and NIOSH IDLH values.

International Chemical Safety Cards

TOLUENE

ICSC: 0078

Methylbenzene
Toluol
Phenylmethane
$C_6H_5CH_3$ / C_7H_8
Molecular mass: 92.1

ICSC # 0078
CAS # 108-88-3
RTECS # XS5250000
UN # 1294
EC # 601-021-00-3
October 10, 2002 Peer reviewed

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE	Highly flammable.	NO open flames, NO sparks, and NO smoking.	Powder, AFFF, foam, carbon dioxide.
EXPLOSION	Vapour/air mixtures are explosive.	Closed system, ventilation, explosion-proof electrical equipment and lighting. Prevent build-up of electrostatic charges (e.g., by grounding). Do NOT use compressed air for filling, discharging, or handling. Use non-sparking handtools.	In case of fire: keep drums, etc., cool by spraying with water.
EXPOSURE		STRICT HYGIENE! AVOID EXPOSURE OF (PREGNANT) WOMEN!	
•**INHALATION**	Cough. Sore throat. Dizziness. Drowsiness. Headache. Nausea. Unconsciousness.	Ventilation, local exhaust, or breathing protection.	Fresh air, rest. Refer for medical attention.
•**SKIN**	Dry skin. Redness.	Protective gloves.	Remove contaminated clothes. Rinse and then wash skin with water and soap. Refer for medical attention.
•**EYES**	Redness. Pain.	Safety goggles.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
•**INGESTION**	Burning sensation. Abdominal pain. (Further see Inhalation).	Do not eat, drink, or smoke during work.	Rinse mouth. Do NOT induce vomiting. Refer for medical attention.

SPILLAGE DISPOSAL	STORAGE	PACKAGING & LABELLING
Evacuate danger area in large spill! Consult an expert in large spill! Remove all ignition sources. Ventilation. Collect leaking liquid in sealable containers. Absorb remaining liquid in sand or inert absorbent and remove to safe place. Do NOT wash away into sewer. Do NOT let this chemical enter the environment. Personal protection: self-contained breathing apparatus	Fireproof. Separated from strong oxidants.	F symbol Xn symbol R: 11-38-48/20-63-65-67 S: 2-36/37-46-62 UN Hazard Class: 3 UN Packing Group: II

ICSC: 0078

Prepared in the context of cooperation between the International Programme on Chemical Safety & the Commission of the European Communities (C) IPCS CEC 1994. No modifications to the International version have been made except to add the OSHA PELs, NIOSH RELs and NIOSH IDLH values.

International Chemical Safety Cards

TOLUENE

ICSC: 0078

IMPORTANT DATA

PHYSICAL STATE; APPEARANCE:
COLOURLESS LIQUID , WITH CHARACTERISTIC ODOUR.

PHYSICAL DANGERS:
The vapour mixes well with air, explosive mixtures are formed easily. As a result of flow, agitation, etc., electrostatic charges can be generated.

CHEMICAL DANGERS:
Reacts violently with strong oxidants causing fire and explosion hazard.

OCCUPATIONAL EXPOSURE LIMITS:
TLV: 50 ppm as TWA (skin) A4 BEI issued (ACGIH 2004).
MAK: 50 ppm 190 mg/m³ H
Peak limitation category: II(4) Pregnancy risk group: C (DFG 2004).
OSHA PEL†: TWA 200 ppm C 300 ppm 500 ppm (10-minute maximum peak)
NIOSH REL: TWA 100 ppm (375 mg/m^3) ST 150 ppm (560 mg/m^3)
NIOSH IDLH: 500 ppm See: 108883

ROUTES OF EXPOSURE:
The substance can be absorbed into the body by inhalation, through the skin and by ingestion.

INHALATION RISK:
A harmful contamination of the air can be reached rather quickly on evaporation of this substance at 20°C.

EFFECTS OF SHORT-TERM EXPOSURE:
The substance is irritating to the eyes and the respiratory tract The substance may cause effects on the central nervous system If this liquid is swallowed, aspiration into the lungs may result in chemical pneumonitis. Exposure at high levels may result in cardiac dysrhythmiaandunconsciousness.

EFFECTS OF LONG-TERM OR REPEATED EXPOSURE:
The liquid defats the skin. The substance may have effects on the central nervous system Exposure to the substance may enhance hearing damage caused by exposure to noise. Animal tests show that this substance possibly causes toxicity to human reproduction or development.

PHYSICAL PROPERTIES

Boiling point: 111°C
Melting point: -95°C
Relative density (water = 1): 0.87
Solubility in water: none
Vapour pressure, kPa at 25°C: 3.8
Relative vapour density (air = 1): 3.1
Relative density of the vapour/air-mixture at 20°C (air = 1): 1.01
Flash point: 4°C c.c.
Auto-ignition temperature: 480°C
Explosive limits, vol% in air: 1.1-7.1
Octanol/water partition coefficient as log Pow: 2.69

ENVIRONMENTAL DATA

The substance is toxic to aquatic organisms.

N O T E S

Depending on the degree of exposure, periodic medical examination is suggested. Use of alcoholic beverages enhances the harmful effect.

Transport Emergency Card: TEC (R)-30S1294
NFPA Code: H 2; F 3; R 0;

ADDITIONAL INFORMATION

International Chemical Safety Cards

m-XYLENE

ICSC: 0085

I M P O R T A N T D A T A

PHYSICAL STATE; APPEARANCE:
COLOURLESS LIQUID , WITH CHARACTERISTIC ODOUR.

PHYSICAL DANGERS:
As a result of flow, agitation, etc., electrostatic charges can be generated.

CHEMICAL DANGERS:
Reacts with strong acids strong oxidants

OCCUPATIONAL EXPOSURE LIMITS:
TLV: 100 ppm as TWA 150 ppm as STEL A4 (ACGIH 2001). BEI (ACGIH 2001).
MAK: 100 ppm 440 mg/m³
Peak limitation category: II(2)
skin absorption (H);
Pregnancy risk group: D
(DFG 2005).
EU OEL: 50 ppm as TWA 100 ppm as STEL (skin) (EU 2000).
OSHA PEL†: TWA 100 ppm (435 mg/m^3)
NIOSH REL: TWA 100 ppm (435 mg/m^3) ST 150 ppm (655 mg/m^3)
NIOSH IDLH: 900 ppm See: 95476

ROUTES OF EXPOSURE:
The substance can be absorbed into the body by inhalation, through the skin and by ingestion.

INHALATION RISK:
A harmful contamination of the air will be reached rather slowly on evaporation of this substance at 20°C.

EFFECTS OF SHORT-TERM EXPOSURE:
The substance is irritating to the eyes and the skin The substance may cause effects on the central nervous system If this liquid is swallowed, aspiration into the lungs may result in chemical pneumonitis.

EFFECTS OF LONG-TERM OR REPEATED EXPOSURE:
The liquid defats the skin. The substance may have effects on the central nervous system Animal tests show that this substance possibly causes toxicity to human reproduction or development.

PHYSICAL PROPERTIES

Boiling point: 139°C
Melting point: -48°C
Relative density (water = 1): 0.86
Solubility in water:
none
Vapour pressure, kPa at 20°C: 0.8

Relative vapour density (air = 1): 3.7
Relative density of the vapour/air-mixture at 20°C (air = 1): 1.02
Flash point: 27°C c.c.
Auto-ignition temperature: 527°C
Explosive limits, vol% in air: 1.1-7.0
Octanol/water partition coefficient as log Pow: 3.20

ENVIRONMENTAL DATA

The substance is toxic to aquatic organisms.

N O T E S

Depending on the degree of exposure, periodic medical examination is indicated. The recommendations on this Card also apply to technical xylene. See ICSC 0084 o-Xylene and 0086 p-Xylene.

NFPA Code: H 2; F 3; R 0;
Transport Emergency Card: TEC (R)-30S1307-III

ADDITIONAL INFORMATION

ICSC: 0085 **m-XYLENE**

International Chemical Safety Cards

BENZ(a)ANTHRACENE

ICSC: 0385

1,2-Benzoanthracene
Benzo(a)anthracene
2,3-Benzphenanthrene
Naphthanthracene
$C_{18}H_{12}$
Molecular mass: 228.3

ICSC # 0385
CAS # 56-55-3
RTECS # CV9275000
EC # 601-033-00-9
October 23, 1995 Validated

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE	Combustible.		Water spray, powder. In case of fire in the surroundings: use appropriate extinguishing media.
EXPLOSION	Finely dispersed particles form explosive mixtures in air.	Prevent deposition of dust; closed system, dust explosion-proof electrical equipment and lighting.	
EXPOSURE		AVOID ALL CONTACT!	
•INHALATION		Local exhaust or breathing protection.	Fresh air, rest.
•SKIN		Protective gloves. Protective clothing.	Remove contaminated clothes. Rinse and then wash skin with water and soap.
•EYES		Safety goggles face shield or eye protection in combination with breathing protection.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
•INGESTION		Do not eat, drink, or smoke during work. Wash hands before eating.	Rinse mouth.

SPILLAGE DISPOSAL	STORAGE	PACKAGING & LABELLING
Sweep spilled substance into sealable containers; if appropriate, moisten first to prevent dusting. Carefully collect remainder, then remove to safe place. Personal protection: complete protective clothing including self-contained breathing apparatus.	Well closed.	T symbol N symbol R: 45-50/53 S: 53-45-60-61

SEE IMPORTANT INFORMATION ON BACK

ICSC: 0385

Prepared in the context of cooperation between the International Programme on Chemical Safety & the Commission of the European Communities (C) IPCS CEC 1994. No modifications to the International version have been made except to add the OSHA PELs, NIOSH RELs and NIOSH IDLH values.

International Chemical Safety Cards

ICSC: 0385

BENZ(a)ANTHRACENE

I M P O R T A N T D A T A

PHYSICAL STATE; APPEARANCE:
COLOURLESS TO YELLOW BROWN FLUORESCENT FLAKES OR POWDER.

PHYSICAL DANGERS:
Dust explosion possible if in powder or granular form, mixed with air.

CHEMICAL DANGERS:

OCCUPATIONAL EXPOSURE LIMITS:
TLV: A2 (suspected human carcinogen); (ACGIH 2004).
MAK:
Carcinogen category: 2 (as pyrolysis product of organic materials)
(DFG 2005).

ROUTES OF EXPOSURE:
The substance can be absorbed into the body by inhalation, through the skin and by ingestion.

INHALATION RISK:
Evaporation at 20°C is negligible; a harmful concentration of airborne particles can, however, be reached quickly.

EFFECTS OF SHORT-TERM EXPOSURE:

EFFECTS OF LONG-TERM OR REPEATED EXPOSURE:
This substance is probably carcinogenic to humans.

PHYSICAL PROPERTIES

Sublimation point: 435°C
Melting point: 162°C
Relative density (water = 1): 1.274
Solubility in water:
none

Vapour pressure, Pa at 20°C: 292
Octanol/water partition coefficient as log Pow: 5.61

ENVIRONMENTAL DATA

Bioaccumulation of this chemical may occur in seafood.

N O T E S

This substance is one of many polycyclic aromatic hydrocarbons - standards are usually established for them as mixtures, e.g., coal tar pitch volatiles. However, it may be encountered as a laboratory chemical in its pure form. Insufficient data are available on the effect of this substance on human health, therefore utmost care must be taken. Do NOT take working clothes home. Tetraphene is a common name. Card has been partly updated in October 2005 and August 2006: see sections Occupational Exposure Limits, EU classification.

ADDITIONAL INFORMATION

ICSC: 0385 **BENZ(a)ANTHRACENE**

International Chemical Safety Cards

BENZO(g,h,i)FLUORANTHENE

ICSC: 0527

2,13-Benzofluoranthene
Benzo(mno)fluoranthene
$C_{18}H_{10}$
Molecular mass: 226.3

ICSC # 0527
CAS # 203-12-3
RTECS # DF6140000
March 25, 1998 Peer reviewed

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE	Combustible.	NO open flames.	Water spray, powder.
EXPLOSION			
EXPOSURE		PREVENT DISPERSION OF DUST!	
•INHALATION		Local exhaust or breathing protection.	
•SKIN	MAY BE ABSORBED!	Protective gloves. Protective clothing.	Remove contaminated clothes. Rinse and then wash skin with water and soap. Refer for medical attention. Wear protective gloves when administering first aid.
•EYES		Safety goggles, face shield, or eye protection in combination with breathing protection if powder.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
•INGESTION		Do not eat, drink, or smoke during work.	

SPILLAGE DISPOSAL	STORAGE	PACKAGING & LABELLING
Sweep spilled substance into containers; if appropriate, moisten first to prevent dusting. Carefully collect remainder, then remove to safe place. Do NOT let this chemical enter the environment.	Well closed.	R: S:

SEE IMPORTANT INFORMATION ON BACK

ICSC: 0527

Prepared in the context of cooperation between the International Programme on Chemical Safety & the Commission of the European Communities (C) IPCS CEC 1994. No modifications to the International version have been made except to add the OSHA PELs, NIOSH RELs and NIOSH IDLH values.

International Chemical Safety Cards

BENZO(g,h,i)FLUORANTHENE

ICSC: 0527

I **M** **P**	**PHYSICAL STATE; APPEARANCE:** YELLOW CRYSTALS **PHYSICAL DANGERS:**	**ROUTES OF EXPOSURE:** The substance can be absorbed into the body by inhalation of its aerosol and through the skin.

O R T A N T D A T A	**CHEMICAL DANGERS:** The substance decomposes on heating producing toxic fumes. **OCCUPATIONAL EXPOSURE LIMITS:** TLV not established.	**INHALATION RISK:** **EFFECTS OF SHORT-TERM EXPOSURE:** **EFFECTS OF LONG-TERM OR REPEATED EXPOSURE:** See Notes.
PHYSICAL PROPERTIES	Melting point: 149°C Solubility in water: none Vapour pressure, Pa at 20°C: <10	Relative vapour density (air = 1): 7.8 Relative density of the vapour/air-mixture at 20°C (air = 1): 1.0 Octanol/water partition coefficient as log Pow: 7.23
ENVIRONMENTAL DATA	This substance may be hazardous to the environment; special attention should be given to the total environment. In the food chain important to humans, bioaccumulation takes place, specifically in oils and fats. 	

N O T E S

Insufficient data are available on the effect of this substance on human health, therefore utmost care must be taken. Also consult ICSC #0720 and 0721.

ADDITIONAL INFORMATION

ICSC: 0527 **BENZO(g,h,i)FLUORANTHENE**

International Chemical Safety Cards

BENZO(k)FLUORANTHENE

ICSC: 0721

Dibenzo(b,jk)fluorene
8,9-Benzofluoranthene
11,12-Benzofluoranthene
$C_{20}H_{12}$
Molecular mass: 252.3

ICSC # 0721
CAS # 207-08-9
RTECS # DF6350000
EC # 601-036-00-5
March 25, 1999 Peer reviewed

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE			In case of fire in the surroundings: use appropriate extinguishing media.
EXPLOSION			
EXPOSURE		AVOID ALL CONTACT!	
•INHALATION		Local exhaust or breathing protection.	Fresh air, rest.
•SKIN		Protective gloves. Protective clothing.	Remove contaminated clothes. Rinse and then wash skin with water and soap.
•EYES		Safety spectacles or eye protection in combination with breathing protection if powder.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
•INGESTION		Do not eat, drink, or smoke during work.	Rinse mouth. Refer for medical attention.

SPILLAGE DISPOSAL	STORAGE	PACKAGING & LABELLING
Sweep spilled substance into covered containers; if appropriate, moisten first to prevent dusting. Carefully collect remainder, then remove to safe place. Do NOT let this chemical enter the environment.	Provision to contain effluent from fire extinguishing. Well closed.	T symbol N symbol R: 45-50/53 S: 53-45-60-61

SEE IMPORTANT INFORMATION ON BACK

ICSC: 0721

Prepared in the context of cooperation between the International Programme on Chemical Safety & the Commission of the European Communities (C) IPCS CEC 1994. No modifications to the International version have been made except to add the OSHA PELs, NIOSH RELs and NIOSH IDLH values.

International Chemical Safety Cards

BENZO(k)FLUORANTHENE

ICSC: 0721

I **M**	**PHYSICAL STATE; APPEARANCE:** YELLOW CRYSTALS	**ROUTES OF EXPOSURE:** The substance can be absorbed into the body by inhalation of its aerosol and through the skin.

P O R T A N T D A T A	**PHYSICAL DANGERS:** **CHEMICAL DANGERS:** Upon heating, toxic fumes are formed. **OCCUPATIONAL EXPOSURE LIMITS:** TLV not established. MAK: Carcinogen category: 2; (DFG 2004). **INHALATION RISK:** Evaporation at 20°C is negligible; a harmful concentration of airborne particles can, however, be reached quickly. **EFFECTS OF SHORT-TERM EXPOSURE:** **EFFECTS OF LONG-TERM OR REPEATED EXPOSURE:** This substance is possibly carcinogenic to humans.
PHYSICAL PROPERTIES	Boiling point: 480°C Melting point: 217°C Solubility in water: none Octanol/water partition coefficient as log Pow: 6.84
ENVIRONMENTAL DATA	This substance may be hazardous to the environment; special attention should be given to air quality and water quality. Bioaccumulation of this chemical may occur in crustacea and in fish. 

N O T E S

Benzo(k)fluoranthene is present as a component of polycyclic aromatic hydrocarbons (PAH) content in the environment usually resulting from the incomplete combustion or pyrolysis of organic matters, especially fossil fuels and tobacco.ACGIH recommends environment containing benzo(k)fluoranthene should be evaluated in terms of the TLV-TWA for coal tar pitch volatile, as benzene soluble 0.2 mg/m^3. Insufficient data are available on the effect of this substance on human health, therefore utmost care must be taken.

ADDITIONAL INFORMATION

ICSC: 0721 **BENZO(k)FLUORANTHENE**

International Chemical Safety Cards

DIBENZO(a,h)ANTHRACENE

ICSC: 0431

1,25,6-Dibenzanthracene
$C_{22}H_{14}$
Molecular mass: 278.4

ICSC # 0431
CAS # 53-70-3
RTECS # HN2625000
EC # 601-041-00-2
October 23, 1995 Peer reviewed

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE	Combustible.	NO open flames.	Water spray, powder.
EXPLOSION			
EXPOSURE		AVOID ALL CONTACT!	
•INHALATION		Local exhaust or breathing protection.	Fresh air, rest.
•SKIN	Redness. Swelling. Itching.	Protective gloves. Protective clothing.	Remove contaminated clothes. Rinse and then wash skin with water and soap.
•EYES	Redness.	Face shield or eye protection in combination with breathing protection.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
•INGESTION		Do not eat, drink, or smoke during work. Wash hands before eating.	Rinse mouth.

SPILLAGE DISPOSAL	STORAGE	PACKAGING & LABELLING
Sweep spilled substance into sealable containers; if appropriate, moisten first to prevent dusting. Carefully collect remainder, then remove to safe place. Personal protection: P3 filter respirator for toxic particles.	Well closed.	T symbol N symbol R: 45-50/53 S: 53-45-60-61

SEE IMPORTANT INFORMATION ON BACK

ICSC: 0431

Prepared in the context of cooperation between the International Programme on Chemical Safety & the Commission of the European Communities (C) IPCS CEC 1994. No modifications to the International version have been made except to add the OSHA PELs, NIOSH RELs and NIOSH IDLH values.

International Chemical Safety Cards

DIBENZO(a,h)ANTHRACENE

ICSC: 0431

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PHYSICAL STATE; APPEARANCE:
COLOURLESS CRYSTALLINE POWDER.

PHYSICAL DANGERS:

ROUTES OF EXPOSURE:
The substance can be absorbed into the body by inhalation, through the skin and by ingestion.

INHALATION RISK:
Evaporation at 20°C is negligible; a harmful concentration

R T A N T D A T A	**CHEMICAL DANGERS:** **OCCUPATIONAL EXPOSURE LIMITS:** TLV not established.	of airborne particles can, however, be reached quickly. **EFFECTS OF SHORT-TERM EXPOSURE:** **EFFECTS OF LONG-TERM OR REPEATED EXPOSURE:** The substance may have effects on the skin , resulting in photosensitization. This substance is probably carcinogenic to humans.
PHYSICAL PROPERTIES	Boiling point: 524°C Melting point: 267°C Relative density (water = 1): 1.28	Solubility in water: none Octanol/water partition coefficient as log Pow: 6.5
ENVIRONMENTAL DATA	Bioaccumulation of this chemical may occur in seafood. 	

N O T E S

This is one of many polycyclic aromatic hydrocarbons - standards are usually established for them as mixtures, e.g., coal tar pitch volatiles. However, it may be encountered as a laboratory chemical in its pure form. Insufficient data are available on the effect of this substance on human health, therefore utmost care must be taken. Do NOT take working clothes home. DBA is a commonly used name. This substance is one of many polycyclic aromatic hydrocarbons (PAH).

ADDITIONAL INFORMATION

ICSC: 0431 **DIBENZO(a,h)ANTHRACENE**

International Chemical Safety Cards

COAL-TAR PITCH

ICSC: 1415

Pitch

ICSC # 1415
CAS # 65996-93-2
RTECS # GF8655000
EC # 648-055-00-5
March 07, 2002 Peer reviewed

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE	Combustible.	NO open flames.	Foam, dry powder, carbon dioxide.
EXPLOSION			
EXPOSURE		AVOID ALL CONTACT! PREVENT DISPERSION OF DUST!	
•INHALATION	Sneezing. Cough. See EFFECTS OF LONG-TERM OR REPEATED EXPOSURE.	Closed system and ventilation.	Fresh air, rest.
•SKIN	MAY BE ABSORBED! Redness. Burning sensation.	Protective gloves. Protective clothing.	Rinse and then wash skin with water and soap.
•EYES	Redness. Pain.	Safety goggles, or eye protection in combination with breathing protection.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
•INGESTION	See EFFECTS OF LONG-TERM OR REPEATED EXPOSURE.	Do not eat, drink, or smoke during work. Wash hands before eating.	Give plenty of water to drink. Refer for medical attention.

SPILLAGE DISPOSAL	STORAGE	PACKAGING & LABELLING
Sweep spilled substance into sealable containers. Carefully collect remainder, then remove to safe place. Do NOT let this chemical enter the environment. (Extra personal protection: A/P2 filter respirator for organic vapour and harmful dust.)	Separated from strong oxidants. Separated from food and feedstuffs	Do not transport with food and feedstuffs. Note: H T symbol R: 45 S: 53-45

SEE IMPORTANT INFORMATION ON BACK

ICSC: 1415

Prepared in the context of cooperation between the International Programme on Chemical Safety & the Commission of the European Communities (C) IPCS CEC 1994. No modifications to the International version have been made except to add the OSHA PELs, NIOSH RELs and NIOSH IDLH values.

International Chemical Safety Cards

COAL-TAR PITCH

ICSC: 1415

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PHYSICAL STATE; APPEARANCE:
BLACK TO BROWN PASTE

PHYSICAL DANGERS:

ROUTES OF EXPOSURE:
The substance can be absorbed into the body by inhalation and through the skin and by ingestion.

INHALATION RISK:
Evaporation at 20°C is negligible; a harmful concentration

O R T A N T D A T A	**CHEMICAL DANGERS:** The substance decomposes on heating above 400°C producing toxic fumes Reacts with strong oxidants **OCCUPATIONAL EXPOSURE LIMITS:** TLV: (as benzene soluble aerosol for coal tar pitch volatiles) 0.2 mg/m³ as TWA A1 (ACGIH 2001). OSHA PEL: TWA 0.2 mg/m^3 (benzene-soluble fraction) 1910.1002 See Appendix C NIOSH REL: Ca TWA 0.1 mg/m^3 (cyclohexane-extractable fraction) See Appendix A See Appendix C NIOSH IDLH: Ca 80 mg/m^3 See: 65996932 of airborne particles can, however, be reached quickly when dispersed and when heated. **EFFECTS OF SHORT-TERM EXPOSURE:** The substance is irritating to the eyes the skin and the respiratory tract **EFFECTS OF LONG-TERM OR REPEATED EXPOSURE:** Repeated or prolonged contact with skin may cause dermatitis and hyperpigmentation of skin. This substance is carcinogenic to humans.
PHYSICAL PROPERTIES	Boiling point: >250°C Melting point: 30-180°C Density: >1 g/cm3 Solubility in water: at 20°C none Vapour pressure, kPa at 20°C: <0.01 Flash point: >200°C o.c. Auto-ignition temperature: >500°C Octanol/water partition coefficient as log Pow: 6.04
ENVIRONMENTAL DATA	This substance may be hazardous to the environment; special attention should be given to soil contamination and aquatic organisms. The substance may cause long-term effects in the aquatic environment. 

N O T E S

Depending on the degree of exposure, periodic medical examination is suggested.

NFPA Code: H0; F1; R0;

ADDITIONAL INFORMATION

ICSC: 1415 **COAL-TAR PITCH**

International Chemical Safety Cards

COAL-TAR PITCH

ICSC: 1415

Pitch

ICSC # 1415
CAS # 65996-93-2
RTECS # GF8655000
EC # 648-055-00-5
March 07, 2002 Peer reviewed

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE	Combustible.	NO open flames.	Foam, dry powder, carbon dioxide.
EXPLOSION			
EXPOSURE		AVOID ALL CONTACT! PREVENT DISPERSION OF DUST!	
•INHALATION	Sneezing. Cough. See EFFECTS OF LONG-TERM OR REPEATED EXPOSURE.	Closed system and ventilation.	Fresh air, rest.
•SKIN	MAY BE ABSORBED! Redness. Burning sensation.	Protective gloves. Protective clothing.	Rinse and then wash skin with water and soap.
•EYES	Redness. Pain.	Safety goggles, or eye protection in combination with breathing protection.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
•INGESTION	See EFFECTS OF LONG-TERM OR REPEATED EXPOSURE.	Do not eat, drink, or smoke during work. Wash hands before eating.	Give plenty of water to drink. Refer for medical attention.

SPILLAGE DISPOSAL	STORAGE	PACKAGING & LABELLING
Sweep spilled substance into sealable containers. Carefully collect remainder, then remove to safe place. Do NOT let this chemical enter the environment. (Extra personal protection: A/P2 filter respirator for organic vapour and harmful dust.)	Separated from strong oxidants. Separated from food and feedstuffs	Do not transport with food and feedstuffs. Note: H T symbol R: 45 S: 53-45

SEE IMPORTANT INFORMATION ON BACK

ICSC: 1415

Prepared in the context of cooperation between the International Programme on Chemical Safety & the Commission of the European Communities (C) IPCS CEC 1994. No modifications to the International version have been made except to add the OSHA PELs, NIOSH RELs and NIOSH IDLH values.

International Chemical Safety Cards

COAL-TAR PITCH

ICSC: 1415

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M

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PHYSICAL STATE; APPEARANCE:
BLACK TO BROWN PASTE

PHYSICAL DANGERS:

ROUTES OF EXPOSURE:
The substance can be absorbed into the body by inhalation and through the skin and by ingestion.

INHALATION RISK:
Evaporation at 20°C is negligible; a harmful concentration

O R T A N T D A T A	**CHEMICAL DANGERS:** The substance decomposes on heating above 400°C producing toxic fumes Reacts with strong oxidants **OCCUPATIONAL EXPOSURE LIMITS:** TLV: (as benzene soluble aerosol for coal tar pitch volatiles) 0.2 mg/m³ as TWA A1 (ACGIH 2001). OSHA PEL: TWA 0.2 mg/m^3 (benzene-soluble fraction) 1910.1002 See Appendix C NIOSH REL: Ca TWA 0.1 mg/m^3 (cyclohexane-extractable fraction) See Appendix A See Appendix C NIOSH IDLH: Ca 80 mg/m^3 See: 65996932 of airborne particles can, however, be reached quickly when dispersed and when heated. **EFFECTS OF SHORT-TERM EXPOSURE:** The substance is irritating to the eyes the skin and the respiratory tract **EFFECTS OF LONG-TERM OR REPEATED EXPOSURE:** Repeated or prolonged contact with skin may cause dermatitis and hyperpigmentation of skin. This substance is carcinogenic to humans.
PHYSICAL PROPERTIES	Boiling point: >250°C Melting point: 30-180°C Density: >1 g/cm3 Solubility in water: at 20°C none Vapour pressure, kPa at 20°C: <0.01 Flash point: >200°C o.c. Auto-ignition temperature: >500°C Octanol/water partition coefficient as log Pow: 6.04
ENVIRONMENTAL DATA	This substance may be hazardous to the environment; special attention should be given to soil contamination and aquatic organisms. The substance may cause long-term effects in the aquatic environment. 

N O T E S

Depending on the degree of exposure, periodic medical examination is suggested.

NFPA Code: H0; F1; R0;

ADDITIONAL INFORMATION

ICSC: 1415 **COAL-TAR PITCH**

International Chemical Safety Cards

CHRYSENE

ICSC: 1672

Benzoaphenanthrene
1,2-Benzophenanthrene
1,2,5,6-Dibenzonaphthalene
$C_{18}H_{12}$
Molecular mass: 228.3

ICSC # 1672
CAS # 218-01-9
RTECS # GC0700000
UN # 3077
EC # 601-048-00-0
October 12, 2006 Validated

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE	Combustible.	NO open flames.	Water spray. Dry powder. Foam. Carbon dioxide.
EXPLOSION	Finely dispersed particles form explosive mixtures in air.	Prevent deposition of dust; closed system, dust explosion-proof electrical equipment and lighting.	
EXPOSURE	See EFFECTS OF LONG-TERM OR REPEATED EXPOSURE.	AVOID ALL CONTACT!	
•INHALATION		Local exhaust or breathing protection.	Fresh air, rest.
•SKIN		Protective gloves. Protective clothing.	Remove contaminated clothes. Rinse and then wash skin with water and soap.
•EYES		Safety goggles	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
•INGESTION		Do not eat, drink, or smoke during work.	Rinse mouth.

SPILLAGE DISPOSAL	STORAGE	PACKAGING & LABELLING
Personal protection: P3 filter respirator for toxic particles. Do NOT let this chemical enter the environment. Sweep spilled substance into sealable containers; if appropriate, moisten first to prevent dusting. Carefully collect remainder, then remove to safe place.	Separated from strong oxidants, Provision to contain effluent from fire extinguishing. Store in an area without drain or sewer access.	T symbol N symbol R: 45-68-50/53 S: 53-45-60-61 UN Hazard Class: 9 UN Packing Group: III Signal: Warning Aqua-Cancer Suspected of causing cancer Very toxic to aquatic life with long lasting effects Very toxic to aquatic life

SEE IMPORTANT INFORMATION ON BACK

Prepared in the context of cooperation between the International Programme on Chemical Safety & the Commission of the European

International Chemical Safety Cards

CHRYSENE

ICSC: 1672

IMPORTANT DATA

PHYSICAL STATE; APPEARANCE:
COLOURLESS TO BEIGE CRYSTALS OR POWDER

PHYSICAL DANGERS:
Dust explosion possible if in powder or granular form, mixed with air.

CHEMICAL DANGERS:
The substance decomposes on burning producing toxic fumes Reacts violently with strong oxidants

OCCUPATIONAL EXPOSURE LIMITS:
TLV: A3 (confirmed animal carcinogen with unknown relevance to humans); (ACGIH 2006).
MAK not established.

ROUTES OF EXPOSURE:
The substance can be absorbed into the body by inhalation of its aerosol, through the skin and by ingestion.

INHALATION RISK:
A harmful concentration of airborne particles can be reached quickly when dispersed

EFFECTS OF SHORT-TERM EXPOSURE:

EFFECTS OF LONG-TERM OR REPEATED EXPOSURE:
This substance is possibly carcinogenic to humans.

PHYSICAL PROPERTIES

Boiling point: 448°C
Melting point: 254 - 256°C
Density: 1.3 g/cm³

Solubility in water:
very poor
Octanol/water partition coefficient as log Pow: 5.9

ENVIRONMENTAL DATA

The substance is very toxic to aquatic organisms. Bioaccumulation of this chemical may occur in seafood. It is strongly advised that this substance does not enter the environment.

NOTES

Depending on the degree of exposure, periodic medical examination is suggested. Do NOT take working clothes home. This substance does not usually occur as a pure substance but as a component of polyaromatic hydrocarbon (PAH) mixtures. Human population studies have associated PAH's exposure with cancer and cardiovascular diseases.

Transport Emergency Card: TEC (R)-90GM7-III

ADDITIONAL INFORMATION

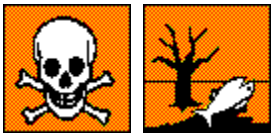
International Chemical Safety Cards

BENZO(b)FLUORANTHENE

ICSC: 0720

Benz(e)acephenanthrylene
2,3-Benzofluoroanthene
Benzo(e)fluoranthene
3,4-Benzofluoranthene
$C_{20}H_{12}$
Molecular mass: 252.3

ICSC # 0720
CAS # 205-99-2
RTECS # CU1400000
EC # 601-034-00-4
March 25, 1999 Peer reviewed



TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE			In case of fire in the surroundings: use appropriate extinguishing media.
EXPLOSION			
EXPOSURE		AVOID ALL CONTACT!	
•INHALATION		Local exhaust or breathing protection.	Fresh air, rest.
•SKIN		Protective gloves. Protective clothing.	Remove contaminated clothes. Rinse and then wash skin with water and soap.
•EYES		Safety spectacles or eye protection in combination with breathing protection.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
•INGESTION		Do not eat, drink, or smoke during work.	Rinse mouth. Refer for medical attention.

SPILLAGE DISPOSAL	STORAGE	PACKAGING & LABELLING
Sweep spilled substance into covered containers; if appropriate, moisten first to prevent dusting. Carefully collect remainder, then remove to safe place. Do NOT let this chemical enter the environment.	Provision to contain effluent from fire extinguishing. Well closed.	T symbol N symbol R: 45-50/53 S: 53-45-60-61

SEE IMPORTANT INFORMATION ON BACK

ICSC: 0720

Prepared in the context of cooperation between the International Programme on Chemical Safety & the Commission of the European Communities (C) IPCS CEC 1994. No modifications to the International version have been made except to add the OSHA PELs, NIOSH RELs and NIOSH IDLH values.

International Chemical Safety Cards

BENZO(b)FLUORANTHENE

ICSC: 0720

I	**PHYSICAL STATE; APPEARANCE:** COLOURLESS CRYSTALS	**ROUTES OF EXPOSURE:** The substance can be absorbed into the body by inhalation

IMPORTANT DATA	**PHYSICAL DANGERS:** **CHEMICAL DANGERS:** Upon heating, toxic fumes are formed. **OCCUPATIONAL EXPOSURE LIMITS:** TLV: A2 (suspected human carcinogen); (ACGIH 2004). MAK: Carcinogen category: 2; (DFG 2004).	of its aerosol and through the skin. **INHALATION RISK:** Evaporation at 20°C is negligible; a harmful concentration of airborne particles can, however, be reached quickly. **EFFECTS OF SHORT-TERM EXPOSURE:** **EFFECTS OF LONG-TERM OR REPEATED EXPOSURE:** This substance is possibly carcinogenic to humans. May cause genetic damage in humans.
PHYSICAL PROPERTIES	Boiling point: 481°C Melting point: 168°C Solubility in water: none	Octanol/water partition coefficient as log Pow: 6.12
ENVIRONMENTAL DATA	This substance may be hazardous to the environment; special attention should be given to air quality and water quality.	

N O T E S

Benzo(b)fluoranthene is present as a component of polycyclic aromatic hydrocarbons (PAH) content in the environment usually resulting from the incomplete combustion or pyrolysis of organic matters, especially fossil fuels and tobacco.ACGIH recommends environment containing benzo(b)fluoranthene should be evaluated in terms of the TLV-TWA for coal tar pitch volatile, as benzene soluble 0.2 mg/m^3. Insufficient data are available on the effect of this substance on human health, therefore utmost care must be taken.

ADDITIONAL INFORMATION

ICSC: 0720 **BENZO(b)FLUORANTHENE**

International Chemical Safety Cards

INDENO(1,2,3-cd)PYRENE

ICSC: 0730

o-Phenylenepyrene
2,3-Phenylenepyrene
$C_{22}H_{12}$
Molecular mass: 276.3

ICSC # 0730
CAS # 193-39-5
RTECS # NK9300000
March 25, 1999 Peer reviewed

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE			In case of fire in the surroundings: use appropriate extinguishing media.
EXPLOSION			
EXPOSURE		AVOID ALL CONTACT!	
•INHALATION		Local exhaust or breathing protection.	Fresh air, rest.
•SKIN		Protective gloves. Protective clothing.	Remove contaminated clothes. Rinse and then wash skin with water and soap.
•EYES		Safety spectacles or eye protection in combination with breathing protection.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
•INGESTION		Do not eat, drink, or smoke during work.	Rinse mouth. Refer for medical attention.

SPILLAGE DISPOSAL	STORAGE	PACKAGING & LABELLING
Sweep spilled substance into covered containers; if appropriate, moisten first to prevent dusting. Carefully collect remainder, then remove to safe place. Do NOT let this chemical enter the environment.	Provision to contain effluent from fire extinguishing. Well closed.	R: S:

SEE IMPORTANT INFORMATION ON BACK

ICSC: 0730

Prepared in the context of cooperation between the International Programme on Chemical Safety & the Commission of the European Communities (C) IPCS CEC 1994. No modifications to the International version have been made except to add the OSHA PELs, NIOSH RELs and NIOSH IDLH values.

International Chemical Safety Cards

INDENO(1,2,3-cd)PYRENE

ICSC: 0730

I **M** **P**	**PHYSICAL STATE; APPEARANCE:** YELLOW CRYSTALS **PHYSICAL DANGERS:**	**ROUTES OF EXPOSURE:** The substance can be absorbed into the body by inhalation of its aerosol and through the skin. **INHALATION RISK:**

O R T A N T D A T A	**CHEMICAL DANGERS:** Upon heating, toxic fumes are formed. **OCCUPATIONAL EXPOSURE LIMITS:** TLV not established. MAK: Carcinogen category: 2; (DFG 2004).	Evaporation at 20°C is negligible; a harmful concentration of airborne particles can, however, be reached quickly. **EFFECTS OF SHORT-TERM EXPOSURE:** **EFFECTS OF LONG-TERM OR REPEATED EXPOSURE:** This substance is possibly carcinogenic to humans.
PHYSICAL PROPERTIES	Boiling point: 536°C Melting point: 164°C Solubility in water: none	Octanol/water partition coefficient as log Pow: 6.58
ENVIRONMENTAL DATA	This substance may be hazardous to the environment; special attention should be given to air quality and water quality. Bioaccumulation of this chemical may occur in fish. 	

N O T E S

Indeno(1,2,3-cd)pyrene is present as a component of polycyclic aromatic hydrocarbons (PAH) content in the environment usually resulting from the incomplete combustion or pyrolysis of organic matters, especially fossil fuels and tobacco.ACGIH recommends environment containing Indeno(1,2,3-c,d)pyrene should be evaluated in terms of the TLV-TWA for coal tar pitch volatile, as benzene soluble 0.2 mg/m^3. Insufficient data are available on the effect of this substance on human health, therefore utmost care must be taken.

ADDITIONAL INFORMATION

ICSC: 0730 **INDENO(1,2,3-cd)PYRENE**

International Chemical Safety Cards

DIBENZO(a,h)ANTHRACENE

ICSC: 0431

1,25,6-Dibenzanthracene
$C_{22}H_{14}$
Molecular mass: 278.4

ICSC # 0431
CAS # 53-70-3
RTECS # HN2625000
EC # 601-041-00-2
October 23, 1995 Peer reviewed

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE	Combustible.	NO open flames.	Water spray, powder.
EXPLOSION			
EXPOSURE		AVOID ALL CONTACT!	
•INHALATION		Local exhaust or breathing protection.	Fresh air, rest.
•SKIN	Redness. Swelling. Itching.	Protective gloves. Protective clothing.	Remove contaminated clothes. Rinse and then wash skin with water and soap.
•EYES	Redness.	Face shield or eye protection in combination with breathing protection.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
•INGESTION		Do not eat, drink, or smoke during work. Wash hands before eating.	Rinse mouth.

SPILLAGE DISPOSAL	STORAGE	PACKAGING & LABELLING
Sweep spilled substance into sealable containers; if appropriate, moisten first to prevent dusting. Carefully collect remainder, then remove to safe place. Personal protection: P3 filter respirator for toxic particles.	Well closed.	T symbol N symbol R: 45-50/53 S: 53-45-60-61

SEE IMPORTANT INFORMATION ON BACK

ICSC: 0431

Prepared in the context of cooperation between the International Programme on Chemical Safety & the Commission of the European Communities (C) IPCS CEC 1994. No modifications to the International version have been made except to add the OSHA PELs, NIOSH RELs and NIOSH IDLH values.

International Chemical Safety Cards

DIBENZO(a,h)ANTHRACENE

ICSC: 0431

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PHYSICAL STATE; APPEARANCE:
COLOURLESS CRYSTALLINE POWDER.

PHYSICAL DANGERS:

ROUTES OF EXPOSURE:
The substance can be absorbed into the body by inhalation, through the skin and by ingestion.

INHALATION RISK:
Evaporation at 20°C is negligible; a harmful concentration

R T A N T D A T A	**CHEMICAL DANGERS:** **OCCUPATIONAL EXPOSURE LIMITS:** TLV not established.	of airborne particles can, however, be reached quickly. **EFFECTS OF SHORT-TERM EXPOSURE:** **EFFECTS OF LONG-TERM OR REPEATED EXPOSURE:** The substance may have effects on the skin , resulting in photosensitization. This substance is probably carcinogenic to humans.
PHYSICAL PROPERTIES	Boiling point: 524°C Melting point: 267°C Relative density (water = 1): 1.28	Solubility in water: none Octanol/water partition coefficient as log Pow: 6.5
ENVIRONMENTAL DATA	Bioaccumulation of this chemical may occur in seafood. 	

N O T E S

This is one of many polycyclic aromatic hydrocarbons - standards are usually established for them as mixtures, e.g., coal tar pitch volatiles. However, it may be encountered as a laboratory chemical in its pure form. Insufficient data are available on the effect of this substance on human health, therefore utmost care must be taken. Do NOT take working clothes home. DBA is a commonly used name. This substance is one of many polycyclic aromatic hydrocarbons (PAH).

ADDITIONAL INFORMATION

ICSC: 0431 **DIBENZO(a,h)ANTHRACENE**

International Chemical Safety Cards

NAPHTHALENE

ICSC: 0667

Naphthene
$C_{10}H_8$
Molecular mass: 128.18

ICSC # 0667
CAS # 91-20-3
RTECS # QJ0525000
UN # 1334 (solid); 2304 (molten)
EC # 601-052-00-2
April 21, 2005 Peer reviewed

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE	Combustible.	NO open flames.	Powder, water spray, foam, carbon dioxide.
EXPLOSION	Above 80°C explosive vapour/air mixtures may be formed. Finely dispersed particles form explosive mixtures in air.	Prevent deposition of dust; closed system, dust explosion-proof electrical equipment and lighting.	
EXPOSURE		PREVENT DISPERSION OF DUST!	
•INHALATION	Headache. Weakness. Nausea. Vomiting. Sweating. Confusion. Jaundice. Dark urine.	Ventilation (not if powder), local exhaust, or breathing protection.	Fresh air, rest. Refer for medical attention.
•SKIN	MAY BE ABSORBED! (Further see Inhalation).	Protective gloves.	Rinse skin with plenty of water or shower.
•EYES		Safety spectacles.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
•INGESTION	Abdominal pain. Diarrhoea. Convulsions. Unconsciousness. (Further see Inhalation).	Do not eat, drink, or smoke during work. Wash hands before eating.	Rest. Refer for medical attention.

SPILLAGE DISPOSAL	STORAGE	PACKAGING & LABELLING
Personal protection: filter respirator for organic gases and vapours. Do NOT let this chemical enter the environment. Sweep spilled substance into covered containers; if appropriate, moisten first to prevent dusting. Carefully collect remainder, then remove to safe place.	Separated from strong oxidants, food and feedstuffs Store in an area without drain or sewer access.	Do not transport with food and feedstuffs. Marine pollutant. Xn symbol N symbol R: 22-40-50/53 S: 2-36/37-46-60-61 UN Hazard Class: 4.1 UN Packing Group: III

SEE IMPORTANT INFORMATION ON BACK

ICSC: 0667

International Chemical Safety Cards

NAPHTHALENE

ICSC: 0667

I M P O R T A N T D A T A

PHYSICAL STATE; APPEARANCE:
WHITE SOLID IN VARIOUS FORMS , WITH CHARACTERISTIC ODOUR.

PHYSICAL DANGERS:
Dust explosion possible if in powder or granular form, mixed with air.

CHEMICAL DANGERS:
On combustion, forms irritating and toxic gases. Reacts with strong oxidants

OCCUPATIONAL EXPOSURE LIMITS:
TLV: 10 ppm as TWA 15 ppm as STEL (skin) A4 (not classifiable as a human carcinogen); (ACGIH 2005).
MAK: skin absorption (H);
Carcinogen category: 2; Germ cell mutagen group: 3B; (DFG 2004).
OSHA PEL†: TWA 10 ppm (50 mg/m^3)
NIOSH REL: TWA 10 ppm (50 mg/m^3) ST 15 ppm (75 mg/m^3)
NIOSH IDLH: 250 ppm See: 91203

ROUTES OF EXPOSURE:
The substance can be absorbed into the body by inhalation, through the skin and by ingestion.

INHALATION RISK:
A harmful contamination of the air will be reached rather slowly on evaporation of this substance at 20°C. See Notes.

EFFECTS OF SHORT-TERM EXPOSURE:
The substance may cause effects on the blood , resulting in lesions of blood cells (haemolysis) See Notes. The effects may be delayed. Exposure by ingestion may result in death. Medical observation is indicated.

EFFECTS OF LONG-TERM OR REPEATED EXPOSURE:
The substance may have effects on the blood , resulting in chronic haemolytic anaemia. The substance may have effects on the eyes , resulting in the development of cataract. This substance is possibly carcinogenic to humans.

PHYSICAL PROPERTIES

Boiling point: 218°C
Sublimation slowly at room temperature
Melting point: 80°C
Density: 1.16
g/cm3
Solubility in water, g/100 ml at 25°C:
none

Vapour pressure, Pa at 25°C: 11
Relative vapour density (air = 1): 4.42
Flash point:
80°C c.c.
Auto-ignition temperature: 540°C
Explosive limits, vol% in air: 0.9-5.9
Octanol/water partition coefficient as log Pow: 3.3

ENVIRONMENTAL DATA

The substance is very toxic to aquatic organisms. The substance may cause long-term effects in the aquatic environment.

N O T E S

Some individuals may be more sensitive to the effect of naphthalene on blood cells.

Transport Emergency Card: TEC (R)-41S1334 (solid); 41GF1-II+III (solid); 41S2304 (molten)
NFPA Code: H2; F2; R0;

ADDITIONAL INFORMATION

IMPORTANT LEGAL NOTICE:

International Chemical Safety Cards

BENZO(a)PYRENE

ICSC: 0104

Benz(a)pyrene
3,4-Benzopyrene
Benzo(d,e,f)chrysene
$C_{20}H_{12}$
Molecular mass: 252.3

ICSC # 0104
CAS # 50-32-8
RTECS # DJ3675000
EC # 601-032-00-3
October 17, 2005 Peer reviewed

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE	Combustible.	NO open flames.	Water spray, foam, powder, carbon dioxide.
EXPLOSION			
EXPOSURE	See EFFECTS OF LONG-TERM OR REPEATED EXPOSURE.	AVOID ALL CONTACT! AVOID EXPOSURE OF (PREGNANT) WOMEN!	
•INHALATION		Local exhaust or breathing protection.	Fresh air, rest.
•SKIN	MAY BE ABSORBED!	Protective gloves. Protective clothing.	Remove contaminated clothes. Rinse and then wash skin with water and soap.
•EYES		Safety goggles or eye protection in combination with breathing protection.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
•INGESTION		Do not eat, drink, or smoke during work.	Induce vomiting (ONLY IN CONSCIOUS PERSONS!). Refer for medical attention.

SPILLAGE DISPOSAL	STORAGE	PACKAGING & LABELLING
Evacuate danger area! Personal protection: complete protective clothing including self-contained breathing apparatus. Do NOT let this chemical enter the environment. Sweep spilled substance into sealable containers; if appropriate, moisten first to prevent dusting. Carefully collect remainder, then remove to safe place.	Separated from strong oxidants.	T symbol N symbol R: 45-46-60-61-43-50/53 S: 53-45-60-61

SEE IMPORTANT INFORMATION ON BACK

ICSC: 0104

Prepared in the context of cooperation between the International Programme on Chemical Safety & the Commission of the European Communities (C) IPCS CEC 1994. No modifications to the International version have been made except to add the OSHA PELs, NIOSH RELs and NIOSH IDLH values.

International Chemical Safety Cards

BENZO(a)PYRENE

ICSC: 0104

IMPORTANT DATA

PHYSICAL STATE; APPEARANCE:
PALE-YELLOW CRYSTALS

PHYSICAL DANGERS:

CHEMICAL DANGERS:
Reacts with strong oxidants causing fire and explosion hazard.

OCCUPATIONAL EXPOSURE LIMITS:
TLV: Exposure by all routes should be carefully controlled to levels as low as possible A2 (suspected human carcinogen); (ACGIH 2005).
MAK:
Carcinogen category: 2; Germ cell mutagen group: 2; (DFG 2005).

ROUTES OF EXPOSURE:
The substance can be absorbed into the body by inhalation of its aerosol, through the skin and by ingestion.

INHALATION RISK:
Evaporation at 20°C is negligible; a harmful concentration of airborne particles can, however, be reached quickly when dispersed.

EFFECTS OF SHORT-TERM EXPOSURE:

EFFECTS OF LONG-TERM OR REPEATED EXPOSURE:
This substance is carcinogenic to humans. May cause heritable genetic damage to human germ cells. Animal tests show that this substance possibly causes toxicity to human reproduction or development.

PHYSICAL PROPERTIES

Boiling point: 496°C
Melting point: 178.1°C
Density: 1.4
g/cm³

Solubility in water: none (<0.1 g/100 ml)
Vapour pressure :
negligible
Octanol/water partition coefficient as log Pow: 6.04

ENVIRONMENTAL DATA

The substance is very toxic to aquatic organisms. Bioaccumulation of this chemical may occur in fish, in plants and in molluscs. The substance may cause long-term effects in the aquatic environment.

NOTES

Do NOT take working clothes home. Benzo(a)pyrene is present as a component of polycyclic aromatic hydrocarbons (PAHs) in the environment, usually resulting from the incomplete combustion or pyrolysis of organic matters, especially fossil fuels and tobacco.

ADDITIONAL INFORMATION

International Chemical Safety Cards

BARIUM SULFATE

ICSC: 0827

Barium sulphate
Blanc fixe
Artificial barite
$BaSO_4$
Molecular mass: 233.43

ICSC # 0827
CAS # 7727-43-7
RTECS # CR0600000
October 20, 1999 Peer reviewed

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE	Not combustible. Gives off irritating or toxic fumes (or gases) in a fire.		In case of fire in the surroundings: use appropriate extinguishing media.
EXPLOSION			
EXPOSURE		PREVENT DISPERSION OF DUST!	
•INHALATION		Local exhaust or breathing protection.	Fresh air, rest.
•SKIN		Protective gloves.	Remove contaminated clothes. Rinse skin with plenty of water or shower.
•EYES		Safety spectacles.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
•INGESTION		Do not eat, drink, or smoke during work.	Rinse mouth.

SPILLAGE DISPOSAL	STORAGE	PACKAGING & LABELLING
Sweep spilled substance into containers; if appropriate, moisten first to prevent dusting. Personal protection: P1 filter respirator for inert particles.		R: S:

SEE IMPORTANT INFORMATION ON BACK

ICSC: 0827

Prepared in the context of cooperation between the International Programme on Chemical Safety & the Commission of the European Communities (C) IPCS CEC 1994. No modifications to the International version have been made except to add the OSHA PELs, NIOSH RELs and NIOSH IDLH values.

International Chemical Safety Cards

BARIUM SULFATE

ICSC: 0827

IMPORTANT DATA	**PHYSICAL STATE; APPEARANCE:** ODOURLESS TASTELESS, WHITE OR YELLOWISH CRYSTALS OR POWDER. **PHYSICAL DANGERS:** **CHEMICAL DANGERS:** Reacts violently with aluminium powder. **OCCUPATIONAL EXPOSURE LIMITS:** TLV: 10 mg/m³ as TWA; (ACGIH 2004). MAK: (Inhalable fraction) 4 mg/m³; (Respirable fraction) 1.5 mg/m³; (DFG 2004). OSHA PEL†: TWA 15 mg/m^3 (total) TWA 5 mg/m^3 (resp) NIOSH REL: TWA 10 mg/m^3 (total) TWA 5 mg/m^3 (resp) NIOSH IDLH: N.D. See: IDLH INDEX **ROUTES OF EXPOSURE:** The substance can be absorbed into the body by inhalation of its aerosol. **INHALATION RISK:** Evaporation at 20°C is negligible; a nuisance-causing concentration of airborne particles can, however, be reached quickly. **EFFECTS OF SHORT-TERM EXPOSURE:** **EFFECTS OF LONG-TERM OR REPEATED EXPOSURE:** Lungs may be affected by repeated or prolonged exposure to dust particles , resulting in baritosis (a form of benign pneumoconiosis).
PHYSICAL PROPERTIES	Melting point (decomposes): 1600°C Density: 4.5 g/cm³ Solubility in water: none
ENVIRONMENTAL DATA	

NOTES

Occurs in nature as the mineral barite; also as barytes, heavy spar. Card has been partly updated in October 2005. See section Occupational Exposure Limits.

ADDITIONAL INFORMATION

IMPORTANT LEGAL NOTICE:	Neither NIOSH, the CEC or the IPCS nor any person acting on behalf of NIOSH, the CEC or the IPCS is responsible for the use which might be made of this information. This card contains the collective views of the IPCS Peer Review Committee and may not reflect in all cases all the detailed requirements included in national legislation on the subject. The user should verify compliance of the cards with the relevant legislation in the country of use. The only modifications made to produce the U.S. version is inclusion of the OSHA PELs, NIOSH RELs and NIOSH IDLH values.

International Chemical Safety Cards

COPPER

ICSC: 0240

Cu
(powder)

ICSC # 0240
CAS # 7440-50-8
RTECS # GL5325000
September 24, 1993 Validated

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE	Combustible.	NO open flames.	Special powder, dry sand, NO other agents.
EXPLOSION			
EXPOSURE		PREVENT DISPERSION OF DUST!	
•INHALATION	Cough. Headache. Shortness of breath. Sore throat.	Local exhaust or breathing protection.	Fresh air, rest. Refer for medical attention.
•SKIN	Redness.	Protective gloves.	Remove contaminated clothes. Rinse and then wash skin with water and soap.
•EYES	Redness. Pain.	Safety goggles.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
•INGESTION	Abdominal pain. Nausea. Vomiting.	Do not eat, drink, or smoke during work.	Rinse mouth. Refer for medical attention.

SPILLAGE DISPOSAL	STORAGE	PACKAGING & LABELLING
Sweep spilled substance into containers. Carefully collect remainder. Then remove to safe place. (Extra personal protection: P2 filter respirator for harmful particles).	Separated from - See Chemical Dangers.	R: S:

SEE IMPORTANT INFORMATION ON BACK

ICSC: 0240

International Chemical Safety Cards

COPPER

ICSC: 0240

I

M

P

PHYSICAL STATE; APPEARANCE:
RED POWDER, TURNS GREEN ON EXPOSURE TO MOIST AIR.

PHYSICAL DANGERS:

CHEMICAL DANGERS:

ROUTES OF EXPOSURE:
The substance can be absorbed into the body by inhalation and by ingestion.

INHALATION RISK:
Evaporation at 20°C is negligible; a harmful concentration of airborne particles can, however, be reached quickly when dispersed.

O **R** **T** **A** **N** **T** **D** **A** **T** **A**	Shock-sensitive compounds are formed with acetylenic compounds, ethylene oxides and azides. Reacts with strong oxidants like chlorates, bromates and iodates, causing explosion hazard. **OCCUPATIONAL EXPOSURE LIMITS:** TLV: 0.2 mg/m³ fume (ACGIH 1992-1993). TLV (as Cu, dusts & mists): 1 mg/m³ (ACGIH 1992-1993). Intended change 0.1 mg/m³ Inhal., A4 (not classifiable as a human carcinogen); MAK: 0.1 mg/m³ (Inhalable fraction) Peak limitation category: II(2) Pregnancy risk group: D (DFG 2005). OSHA PEL*: TWA 1 mg/m^3 *Note: The PEL also applies to other copper compounds (as Cu) except copper fume. NIOSH REL*: TWA 1 mg/m^3 *Note: The REL also applies to other copper compounds (as Cu) except Copper fume. NIOSH IDLH: 100 mg/m^3 (as Cu) See: 7440508	**EFFECTS OF SHORT-TERM EXPOSURE:** Inhalation of fumes may cause metal fume fever. See Notes. **EFFECTS OF LONG-TERM OR REPEATED EXPOSURE:** Repeated or prolonged contact may cause skin sensitization.

PHYSICAL PROPERTIES	Boiling point: 2595°C Melting point: 1083°C Relative density (water = 1): 8.9	Solubility in water: none
ENVIRONMENTAL DATA		

N O T E S

The symptoms of metal fume fever do not become manifest until several hours.

ADDITIONAL INFORMATION

ICSC: 0240 **COPPER**

IMPORTANT LEGAL NOTICE:	Neither NIOSH, the CEC or the IPCS nor any person acting on behalf of NIOSH, the CEC or the IPCS is responsible for the use which might be made of this information. This card contains the collective views of the IPCS Peer Review Committee and may not reflect in all cases all the detailed requirements included in national legislation on the subject. The user should verify compliance of the cards with the relevant legislation in the country of use. The only modifications made to produce the U.S. version is inclusion of the OSHA PELs, NIOSH RELs and NIOSH IDLH values.

International Chemical Safety Cards

LEAD

ICSC: 0052

Lead metal
Plumbum
Pb
Atomic mass: 207.2
(powder)

ICSC # 0052
CAS # 7439-92-1
RTECS # OF7525000
October 08, 2002 Peer reviewed

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE	Not combustible. Gives off irritating or toxic fumes (or gases) in a fire.		In case of fire in the surroundings: use appropriate extinguishing media.
EXPLOSION	Finely dispersed particles form explosive mixtures in air.	Prevent deposition of dust; closed system, dust explosion-proof electrical equipment and lighting.	
EXPOSURE	See EFFECTS OF LONG-TERM OR REPEATED EXPOSURE.	PREVENT DISPERSION OF DUST! AVOID EXPOSURE OF (PREGNANT) WOMEN!	
•INHALATION		Local exhaust or breathing protection.	Fresh air, rest.
•SKIN		Protective gloves.	Remove contaminated clothes. Rinse and then wash skin with water and soap.
•EYES		Safety spectacles.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
•INGESTION	Abdominal pain. Nausea. Vomiting.	Do not eat, drink, or smoke during work. Wash hands before eating.	Rinse mouth. Give plenty of water to drink. Refer for medical attention.

SPILLAGE DISPOSAL	STORAGE	PACKAGING & LABELLING
Sweep spilled substance into containers; if appropriate, moisten first to prevent dusting. Carefully collect remainder, then remove to safe place. Do NOT let this chemical enter the environment. Personal protection: P3 filter respirator for toxic particles.	Separated from food and feedstuffs incompatible materials See Chemical Dangers.	R: S:

SEE IMPORTANT INFORMATION ON BACK

ICSC: 0052

Prepared in the context of cooperation between the International Programme on Chemical Safety & the Commission of the European Communities (C) IPCS CEC 1994. No modifications to the International version have been made except to add the OSHA PELs, NIOSH RELs and NIOSH IDLH values.

International Chemical Safety Cards

LEAD

ICSC: 0052

I M P O R T A N T D A T A

PHYSICAL STATE; APPEARANCE:
BLUISH-WHITE OR SILVERY-GREY SOLID IN VARIOUS FORMS. TURNS TARNISHED ON EXPOSURE TO AIR.

PHYSICAL DANGERS:
Dust explosion possible if in powder or granular form, mixed with air.

CHEMICAL DANGERS:
On heating, toxic fumes are formed. Reacts with oxidants. Reacts with hot concentrated nitric acid, boiling concentrated hydrochloric acid and sulfuric acid. Attacked by pure water and by weak organic acids in the presence of oxygen.

OCCUPATIONAL EXPOSURE LIMITS:
TLV: 0.05 mg/m³ A3 (confirmed animal carcinogen with unknown relevance to humans); BEI issued (ACGIH 2004).
MAK:
Carcinogen category: 3B; Germ cell mutagen group: 3A; (DFG 2004).
EU OEL: as TWA 0.15 mg/m³ (EU 2002).
OSHA PEL*: 1910.1025 TWA 0.050 mg/m^3 See Appendix C *Note: The PEL also applies to other lead compounds (as Pb) -- see Appendix C.
NIOSH REL*: TWA 0.050 mg/m^3 See Appendix C *Note: The REL also applies to other lead compounds (as Pb) -- see Appendix C.
NIOSH IDLH: 100 mg/m^3 (as Pb) See: 7439921

ROUTES OF EXPOSURE:
The substance can be absorbed into the body by inhalation and by ingestion.

INHALATION RISK:
A harmful concentration of airborne particles can be reached quickly when dispersed, especially if powdered.

EFFECTS OF SHORT-TERM EXPOSURE:

EFFECTS OF LONG-TERM OR REPEATED EXPOSURE:
The substance may have effects on the blood bone marrow central nervous system peripheral nervous system kidneys , resulting in anaemia, encephalopathy (e.g., convulsions), peripheral nerve disease, abdominal cramps and kidney impairment. Causes toxicity to human reproduction or development.

PHYSICAL PROPERTIES		
	Boiling point: 1740°C	Density: 11.34 g/cm3
	Melting point: 327.5°C	Solubility in water: none

ENVIRONMENTAL DATA	
	Bioaccumulation of this chemical may occur in plants and in mammals. It is strongly advised that this substance does not enter the environment. 

N O T E S

Depending on the degree of exposure, periodic medical examination is suggested. Do NOT take working clothes home.

Transport Emergency Card: TEC (R)-51S1872

ADDITIONAL INFORMATION

ICSC: 0052 **LEAD**

International Chemical Safety Cards

ZINC POWDER

ICSC: 1205

Blue powder
Merrillite
Zn
Atomic mass: 65.4
(powder)

ICSC # 1205
CAS # 7440-66-6
RTECS # ZG8600000
UN # 1436 (zinc powder or dust)
EC # 030-001-00-1
October 24, 1994 Peer reviewed

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE	Highly flammable. Many reactions may cause fire or explosion. Gives off irritating or toxic fumes (or gases) in a fire.	NO open flames, NO sparks, and NO smoking. NO contact with acid(s), base (s) and incompatible substances (see Chemical Dangers).	Special powder, dry sand, NO other agents. NO water.
EXPLOSION	Risk of fire and explosion on contact with acid(s), base(s), water and incompatible substances.	Closed system, ventilation, explosion-proof electrical equipment and lighting. Prevent build-up of electrostatic charges (e.g., by grounding). Prevent deposition of dust.	In case of fire: cool drums, etc., by spraying with water but avoid contact of the substance with water.
EXPOSURE		PREVENT DISPERSION OF DUST! STRICT HYGIENE!	
•**INHALATION**	Metallic taste and metal fume fever. Symptoms may be delayed (see Notes).	Local exhaust.	Fresh air, rest. Refer for medical attention.
•**SKIN**	Dry skin.	Protective gloves.	Rinse and then wash skin with water and soap.
•**EYES**		Safety spectacles.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
•**INGESTION**	Abdominal pain. Nausea. Vomiting.	Do not eat, drink, or smoke during work. Wash hands before eating.	Rinse mouth. Refer for medical attention.

SPILLAGE DISPOSAL	STORAGE	PACKAGING & LABELLING
Extinguish or remove all ignition sources. Do NOT wash away into sewer. Sweep spilled substance into containers. then remove to safe place. Personal protection: self-contained breathing apparatus.	Fireproof. Separated from acids, bases oxidants Dry.	Airtight. F symbol N symbol R: 15-17-50/53 S: 2-7/8-43-46-60-61 UN Hazard Class: 4.3 UN Subsidiary Risks: 4.2

SEE IMPORTANT INFORMATION ON BACK

International Chemical Safety Cards

ZINC POWDER

ICSC: 1205

I M P O R T A N T D A T A

PHYSICAL STATE; APPEARANCE:
ODOURLESS GREY TO BLUE POWDER.

PHYSICAL DANGERS:
Dust explosion possible if in powder or granular form, mixed with air. If dry, it can be charged electrostatically by swirling, pneumatic transport, pouring, etc.

CHEMICAL DANGERS:
Upon heating, toxic fumes are formed. The substance is a strong reducing agent and reacts violently with oxidants. Reacts with water and reacts violently with acids and bases forming flammable/explosive gas (hydrogen - see ICSC0001) Reacts violently with sulfur, halogenated hydrocarbons and many other substances causing fire and explosion hazard.

OCCUPATIONAL EXPOSURE LIMITS:
TLV not established.

ROUTES OF EXPOSURE:
The substance can be absorbed into the body by inhalation and by ingestion.

INHALATION RISK:
Evaporation at 20°C is negligible; a harmful concentration of airborne particles can, however, be reached quickly when dispersed.

EFFECTS OF SHORT-TERM EXPOSURE:
Inhalation of fumes may cause metal fume fever. The effects may be delayed.

EFFECTS OF LONG-TERM OR REPEATED EXPOSURE:
Repeated or prolonged contact with skin may cause dermatitis.

PHYSICAL PROPERTIES

Boiling point: 907°C
Melting point: 419°C
Relative density (water = 1): 7.14
Solubility in water: reaction
Vapour pressure, kPa at 487°C: 0.1
Auto-ignition temperature: 460°C

ENVIRONMENTAL DATA

N O T E S

Zinc may contain trace amounts of arsenic, when forming hydrogen, may also form toxic gas arsine (see ICSC 0001 and ICSC 0222). Reacts violently with fire extinguishing agents such as water, halons, foam and carbon dioxide. The symptoms of metal fume fever do not become manifest until several hours later. Rinse contaminated clothes (fire hazard) with plenty of water.

Transport Emergency Card: TEC (R)-43GWS-II+III
NFPA Code: H0; F1; R1;

ADDITIONAL INFORMATION

ICSC: 1205 **ZINC POWDER**

APPENDIX D

HOSPITAL INFORMATION AND MAP

FIELD ACCIDENT REPORT

FIELD ACCIDENT REPORT

This report is to be filled out by the designated Site Safety Officer after EVERY accident.

PROJECT NAME _____ PROJECT. NO._____

Date of Accident _____ Time _____ Report By _____

Type of Accident (Check One):

( ) Vehicular ( ) Personal ( ) Property

Name of Injured _____ DOB or Age _____

How Long Employed _____

Names of Witnesses _____

_____

Description of Accident _____

_____

_____

Action Taken _____

_____

_____

Did the Injured Lose Any Time? _____ How Much (Days/Hrs.)? _____

Was Safety Equipment in Use at the Time of the Accident (Hard Hat, Safety Glasses, Gloves, Safety Shoes, etc.)? _____

_____

(If not, it is the EMPLOYEE'S sole responsibility to process his/her claim through his/her Health and Welfare Fund.)

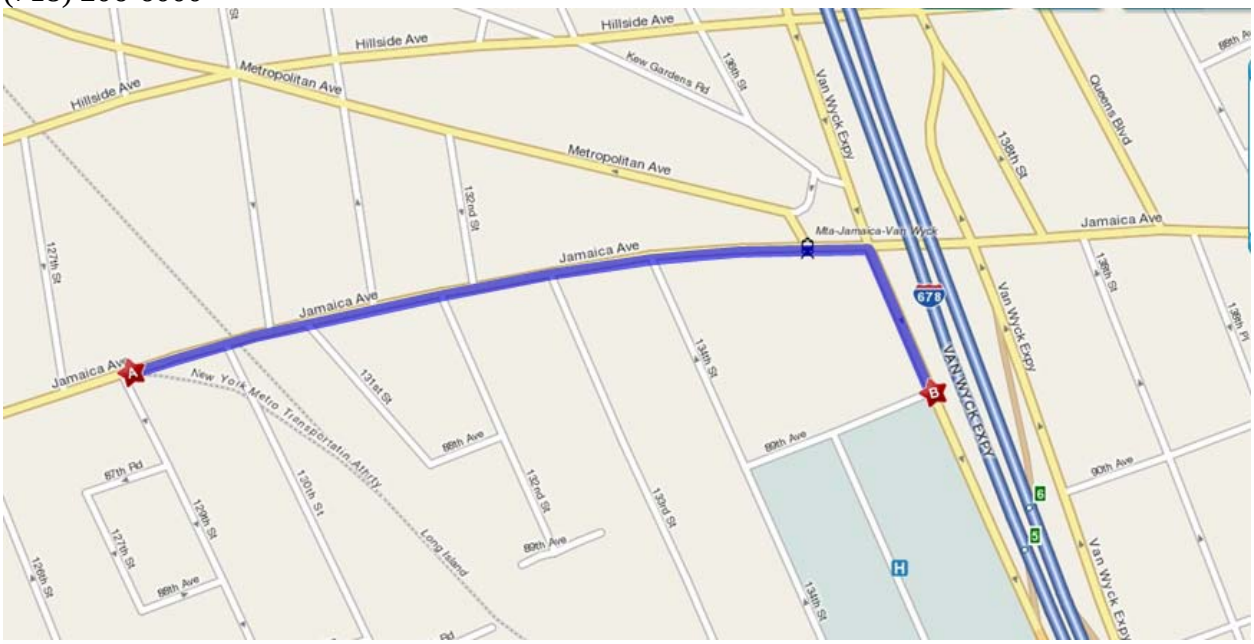
INDICATE STREET NAMES, DESCRIPTION OF VEHICLES, AND NORTH ARROW

HOSPITAL INFORMATION AND MAP

The hospital nearest the site is:

Distance: 0.4 miles **Approximate Travel Time:** 2 min

Jamaica Hospital Medical Center
8900 Van Wyck Expressway
Jamaica (Queens), New York 11418
(718) 206-6000



START	1. Start out going EAST on JAMAICA AVE toward 130TH ST.	0.3 mi
	2. Turn RIGHT onto VAN WYCK EXPY.	0.1 mi
END	3. 8900 VAN WYCK EXPY.	

ATTACHMENT E
Well Construction Logs

TO BE ADDED

ATTACHMENT F
Groundwater Sampling Logs

GROUNDWATER PURGE / SAMPLE LOGS

EBC

ENVIRONMENTAL BUSINESS CONSULTANTS

Well I.D.: _____ Date: _____

Well Depth (from TOC): _____ Equipment: _____

Static Water Level (from TOC): _____

Height of Water in Well: 0

Gallons of Water per Well Volume: 0

Flow Rate: 400ml/min.

Time	Pump Rate	Gal. Removed	pH	Cond. (mS/cm)	Temp. (deg. C)	DO (mg/L)	Comments

Note 400 ml = 0.11 gallons

ATTACHMENT G
Site Inspection Checklist and Inspection Forms

SITE INSPECTION CHECKLIST

Site Inspection Checklist - Subslab Depressurization System
129-09 Jamaica Avenue
Richmond Hill, NY

Date: _____ Time: _____

Inspector Name/Organization: _____

Physical Inspection of Fans

Fan 1 :	**yes**	**no**	Fan Model No. Manufacturer:
Operational?			
Observed Leaks at Seals?			
Air Flow at Exhaust Stack?			Other Comments / Observations
Alarm Sound W/power off?			
Alarm Flash W/power off?			
Vacuum Reading:			

Fan 2 :	**yes**	**no**	Fan Model No. Manufacturer:
Operational?			
Observed Leaks at Seals?			
Air Flow at Exhaust Stack?			Other Comments / Observations
Alarm Sound W/power off?			
Alarm Flash W/power off?			
Vacuum Reading:			

Fan 3 :	**yes**	**no**	Fan Model No. Manufacturer:
Operational?			
Observed Leaks at Seals?			
Air Flow at Exhaust Stack?			Other Comments / Observations
Alarm Sound W/power off?			
Alarm Flash W/power off?			
Vacuum Reading:			

Repairs Needed and / or Maintenance at this time?

_____

_____

_____

_____

Signature: _____ Date: _____

SITE INSPECTION CHECKLIST

Site Inspection Checklist - Cover System
129-09 Jamaica Avenue
Richmond Hill, NY

Date: _____ Time: _____

Inspector Name/Organization: _____

Visual Inspection of Concrete Slabs

Building 1 Inspect concrete slab for cracks, perforations and patching

Describe General Condition of Slab _____

_____

Describe any Cracks or New Penetrations _____

_____

Describe any Patching _____

_____

Building 2 Inspect for cracks, perforations and patching

Describe General Condition of Slab _____

_____

Describe any Cracks or New Penetrations _____

_____

Describe any Patching _____

_____

Exterior Impervious Cap Areas (Driveway, Parking areas and Walkways) Inspect for cracks, perforations and patching

Describe General Condition of Impervious Cap _____

_____

Describe any Cracks or New Penetrations _____

_____

Describe any Patching _____

_____

Exterior Green Areas Inspect for signs of disturbance

Describe General Condition of Soil Cover _____

_____

Describe any Indications of Recent Disturbance _____

_____

Repairs Needed and / or Maintenance at this time?

_____

_____

_____

_____

Signature: _____ Date: _____

ATTACHMENT H
Quality Assurance Project Plan

QUALITY ASSURANCE PROJECT PLAN
Former Uniforms for Industry Site
129-09 Jamaica Avenue, Richmond Hill NY

Prepared on behalf of:

UNION JAMAICA LLC
15 Verbena Avenue, Suite #100
Floral Park, NY 11001-2711

Prepared by:

ENVIRONMENTAL BUSINESS CONSULTANTS
1808 Middle Country Road
Ridge, NY 11961

TABLE OF CONTENTS

QUALITY ASSURANCE PROJECT PLAN
Former Uniforms for Industry Site
129-09 Jamaica Avenue, Richmond Hill NY

TABLES

1.0 INTRODUCTION

To ensure the successful completion of the project. each individual responsible for a given component of the project must be aware of the quality assurance objectives of his / her particular work and of the overall project. The EBC Project Director, Charles Sosik will be directly responsible to the client for the overall project conduct and quality assurance/quality control (QAIQC) for the project. The project manager will be responsible for overseeing all technical and administrative aspects of the project and for directing QA/QC activities.

Reporting directly to the project manager will be the Field Operations Officer, Kevin Brussee; who will also serve as the laboratory coordinator and Health & Safety Officer (HSO). The HSO will be responsible for overseeing all health and safety aspects of the project.

1.1 Organization

Project QA will be maintained under the direction of the Project Manager, in accordance with this QAPP. QC for specific tasks will be the responsibility of the individuals and organizations listed below, under the direction and coordination of the Project Manager

.

GENERAL RESPONSIBILITY	SCOPE OF WORK	RESPONSIBILITY OF QUALITY CONTROL
Field Operations	Supervision of Field Crew, end-point verification sampling	Kevin Brussee
Laboratory Analysis	Analysis of soil samples by NYSDEC ASP methods Laboratory	NYSDOH-Certified Laboratory
Data review	Review for completeness and compliance	3rd party validation

EBC
ENVIRONMENTAL BUSINESS CONSULTANTS
1808 MIDDLE COUNTRY ROAD
RIDGE, NY 11961
PHONE 631.504.6000
FAX 631.924.2870

2.0 QUALITY ASSURANCE PROJECT PLAN OBJECTIVES

2.1 Overview

Overall project goals are defined through the development of Data Quality Objectives (DQOs), which are qualitative and quantitative Statements that specify the quality of the data required to support decisions; DQOs, as described in this section, are based on the end uses of the data as described in the work plan.

In this plan, Quality Assurance and Quality Control are defined as follows:

- Quality Assurance - The overall integrated program for assuring reliability of monitoring and measurement data.

- Quality Control - The routine application of procedures for obtaining prescribed standards of performance in the monitoring and measurement process.

2.2 QA / QC Requirements For Analytical Laboratory

Samples will be analyzed by a New York State Department of Health (NYSDOH) certified laboratory. Data generated from the laboratory will be used primarily to evaluate off-site contaminant levels of PCE and known break-down products. The QA requirements for all subcontracted analytical laboratory work performed on this project are described below. QA elements to be evaluated include accuracy, precision, sensitivity, representativeness, and completeness. The data generated by the analytical laboratory for this project are required to be sensitive enough to achieve detection levels low enough to meet required quantification limits as specified in NYSDEC Analytical Services Protocol (NYSDEC ASP, 06/2000. The analytical results meeting the required quantification limits will provide data sensitive enough to meet the data quality objectives of this remedial program as described in the work plan. Reporting of the data must be clear, concise, and comprehensive. The QC elements that are important to this project are completeness of field data, sample custody, sample holding times, sample preservation, sample storage, instrument calibration and blank contamination.

2.2.1 Instrument Calibration

Calibration curves will be developed for each of the compounds to be analyzed. Standard concentrations and a blank will be used to produce the initial curves. The development of calibration curves and initial calibration response factors must be consistent with method requirements presented in the most recent version of NYSDEC ASP (06/2000).

2.2.2 Continuing Instrument Calibration

The initial calibration curve will be verified every 12 hrs by analyzing one calibration standard. The standard concentration will be the midpoint concentration of the initial calibration curve. The calibration check compound must come within 25% relative percent difference (RPD) of the average response factor obtained during initial calibration. If the RPD is greater than 25%, then corrective action must be taken as provided in the specific methodology.

2.2.3 Method Blanks

Method blank or preparation blank is prepared from an analyte·free matrix which includes the same reagents, internal standards and surrogate standards as me related samples. II is carried through the entire sample preparation and analytical procedure. A method blank analysis will be performed once

EBC
Environmental Business Consultants
1808 Middle Country Road
Ridge, NY 11961
Phone 631.504.6000
Fax 631.924.2870

for each 12 hr period during the analysis of samples for volatiles. An acceptable method blank will contain less than five (5) times the CRQL of methylene chloride, acetone and 2-butanone. For all other target compounds, the method blank must contain less than or equal to the CRQL of any single target compound. For non-target peaks in the method blank, the peak area must be less than 10 percent of the nearest internal standard. The method blank will be used to demonstrate the level of laboratory background and reagent contamination that might result from the analytical process itself.

2.2.4 Trip Blanks.
Trip blanks consist of a single set of sample containers filled at the laboratory with deionized. laboratory-grade water. The water used will be from the same source as that used for the laboratory method blank. The containers will be carried into the field and handled and transported in the same way as the samples collected that day. Analysis of the trip blank for VOCs is used to identify contamination from the air, shipping containers, or from other items coming in contact with the sample bottles. (The bottles holding the trip blanks will be not opened during this procedure.) A complete set of trip blanks will be provided with each shipment of samples to the certified laboratory.

2.2.5 Surrogate Spike Analysis
For organic analyses, all samples and blanks will be spiked with surrogate compounds before purging or extraction in order to monitor preparation and analyses of samples. Surrogate spike recoveries shall fall within the advisory limits in accordance with the NY5DEC ASP protocols for samples falling within the quantification limits without dilution.

2.2.6 Matrix Spike / Matrix Spike Duplicate / Matrix Spike Blank (MS/MSDIMSB) Analysis
MS, MSD and MSB analyses will be performed to evaluate the matrix effect of the sample upon the analytical methodology along with the precision of the instrument by measuring recoveries. The MS / MSD / MSB samples will be analyzed for each group of samples of a similar matrix at a rate of one for every 20 field samples. The RPD will be calculated from the difference between the MS and MSD. Matrix spike blank analysis will be performed to indicate the appropriateness of the spiking solution(s) used for the MS/MSD.

2.3 Accuracy

Accuracy is defined as the nearness of a real or the mean (x) of a set of results to the true value. Accuracy is assessed by means of reference samples and percent recoveries. Accuracy includes both precision and recovery and is expressed as percent recovery (% REC). The MS sample is used to determine the percent recovery. The matrix spike percent recovery (% REC) is calculated by the following equation:

$$\%REC = \frac{SSR - SR}{SA} \times 100$$

Where:
SSR = spike sample results
SR = sample results
SA = spike added from spiking mix

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Environmental Business Consultants
1808 Middle Country Road
Ridge, NY 11961
Phone 631.504.6000
Fax 631.924.2870

2.4 Precision

Precision is defined as the measurement of agreement of a set of replicate results among themselves without a Precision is defined as the measurement of agreement of a set of replicate results among themselves without assumption of any prior information as to the true result. Precision is assessed by means of duplicate/replicate sample analyses.

Analytical precision is expressed in terms of RPD. The RPD is calculated using the following formula:

$$RPD = \frac{D^1 - D^2}{(D^1 - D^2)/2} \times 100$$

Where:
RPD = relative percent difference
D^1 = first sample value
D^2 = second sample value (duplicate)

2.5 Sensitivity

The sensitivity objectives for this plan require that data generated by the analytical laboratory achieve quantification levels low enough to meet the required detection limits specified by NYSDEC ASP and to meet all site-specific standards, criteria and guidance values (SGCs) established for this project.

2.6 Representativeness

Representativeness is a measure of the relationship of an individual sample taken from a particular site to the remainder of that site and the relationship of a small aliquot of the sample (i.e., the one used in the actual analysis) to the sample remaining on site. The representativeness of samples is assured by adherence to sampling procedures described in the Investigative Work Plan.

2.7 Completeness

Completeness is a measure of the quantity of data obtained from a measurement system as compared to the amount of data expected from the measurement system. Completeness is defined as the percentage of all results that are not affected by failing QC qualifiers, and should be between 70 and 100% of all analyses performed. The objective of completeness in laboratory reporting is to provide a thorough data support package. The laboratory data package provides documentation of sample analysis and results in the form of summaries, QC data, and raw analytical data. The laboratory will be required to submit data packages that follow NYSDEC ASP reporting format which, at a minimum, will include the following components:

1. All sample chain-of-custody forms.
2. The case narrative(s) presenting a discussion of any problems and/or procedural changes required during analyses. Also presented in the case narrative are sample summary forms.
3. Documentation demonstrating the laboratory's ability to attain the contract specified detection limits for all target analytes in all required matrices.
4. Tabulated target compound results and tentatively identified compounds.
5. Surrogate spike analysis results (organics).
6. Matrix spike/matrix spike duplicate/matrix spike blank results.
7. QC check sample and standard recovery results
8. Blank results (field, trip, and method).
9. Internal standard area and RT summary.

EBC
Environmental Business Consultants
1808 Middle Country Road
Ridge, NY 11961
Phone 631.504.6000
Fax 631.924.2870

2.8 Laboratory Custody Procedures

The following elements are important for maintaining the field custody of samples:

- Sample identification
- Sample labels
- Custody records
- Shipping records
- Packaging procedures

Sample labels will be attached to all sampling bottles before field activities begin; each label will contain an identifying number. Each number will have a suffix that identifies the site and where the sample was taken. Approximate sampling locations will be marked on a map with a description of the sample location. The number, type of sample, and sample identification will be entered into the field logbook. A chain-of-custody form, initiated at the analytical laboratory will accompany the sample bottles from the laboratory into the field. Upon receipt of the bottles and cooler, the sampler will sign and date the first received blank space. After each sample is collected and appropriately identified, entries will be made on the chain-of-custody form that will include:

- Site name and address
- Samplers' names and signatures

EBC
Environmental Business Consultants
1808 Middle Country Road
Ridge, NY 11961
Phone 631.504.6000
Fax 631.924.2870

3.0 ANALYTICAL PROCEDURES

3.1 Laboratory Analysis

Samples will be analyzed by the NYSDEC ASP laboratory for one or more of the following parameters: VOCs in soil by USEPA Method 8260, SVOCs in soil by USEPA Method 8270BN, Target Analyte Metals in soil, pesticides and PCBs by USEPA Method 8081/8082 and VOCs in air by USEPA Method TO15. If any modifications or additions to the standard procedures are anticipated. and if any nonstandard sample preparation or analytical protocol is to be used, the modifications and the nonstandard protocol will be explicitly defined and documented. Prior approval by EBC's PM will be necessary for any nonstandard analytical or sample preparation protocol used by the laboratory, i.e., dilution of samples or extracts by greater than a factor of five (5).

EBC
ENVIRONMENTAL BUSINESS CONSULTANTS
1808 MIDDLE COUNTRY ROAD
RIDGE, NY 11961
PHONE 631.504.6000
FAX 631.924.2870

4.0 DATA REDUCTION, REVIEW, AND REPORTING

4.1 Overview

The process of data reduction, review, and reporting ensures the assessments or a conclusion based on the final data accurately reflects actual site conditions. This plan presents the specific procedures, methods, and format that will be employed for data reduction, review and reporting of each measurement parameter determined in the laboratory and field. Also described in this section is the process by which all data, reports, and work plans are proofed and checked for technical and numerical errors prior to final submission.

4.2 Data Reduction

Standard methods and references will be used as guidelines for data handling, reduction, validation, and reporting. All data for the project will be compiled and summarized with an independent verification at each step in the process to prevent transcription/typographical errors. Any computerized entry of data will also undergo verification review.

All data generated by the off-site laboratory will be reported in a specified format containing all required elements to perform data validation. Analytical results shall be presented on standard NYSDEC ASP-B forms or equivalents, and include the dates the samples were received and analyzed, and the actual methodology used. Laboratory QA/QC information required by the method protocols will be compiled, including the application of data QA/QC qualifiers as appropriate. In addition, laboratory worksheets, laboratory notebooks, chains-of-custody, instrument logs, standards records, calibration records, and maintenance records, as applicable, will be provided in the laboratory data packages to determine the validity of data. Specifics on internal laboratory data reduction protocols are identified in the laboratory's SOPs.

Following receipt of the laboratory analytical results by EBC, the data results will be compiled and presented in an appropriate tabular form. Where appropriate, the impacts of QA/QC qualifiers resulting from laboratory or external validation reviews will be assessed in terms of data usability.

4.3 Laboratory Data Reporting

All sample data packages submitted by the analytical laboratory will be required to be reported in conformance to the NYSDEC ASP (6/2000), Category B data deliverable requirements as applicable to the method utilized.

EBC
Environmental Business Consultants
1808 Middle Country Road
Ridge, NY 11961
Phone 631.504.6000
Fax 631.924.2870

5.0 CORRECTIVE ACTION

Review and implementation of systems and procedures may result in recommendations for corrective action. Any deviations from the specified procedures within approved project plans due to unexpected site-specific conditions shall warrant corrective action. All errors, deficiencies, or other problems shall be brought to the immediate attention of the EBC PM, who in turn shall contact the Quality Assurance/Data Quality Manager or his designee (if applicable).

Procedures have been established to ensure that conditions adverse to data quality are promptly investigated, evaluated and corrected. These procedures for review and implementation of a change are as follows:

- Define the problem.
- Investigate the cause of the problem.
- Develop a corrective action to eliminate the problem, in consultation with the personnel who defined the problem and who will implement the change.
- Complete the required form describing the change and its rationale (see below for form requirements).
- Obtain all required written approvals.
- Implement the corrective action.
- Verify that the change has eliminated the problem.

During the field investigation, all changes to the sampling program will be documented in field logs/sheets and the EBC PM advised.

If any problems occur with the laboratory or analyses, the laboratory must immediately notify the PM, who will consult with other project staff. All approved corrective actions shall be controlled and documented.

All corrective action documentation shall include an explanation of the problem and a proposed solution which will be maintained in the project file or associated logs. Each report must be approved by the necessary personnel (e.g., the PM) before implementation of the change occurs. The PM shall be responsible for controlling, tracking, implementing and distributing identified changes.

EBC
ENVIRONMENTAL BUSINESS CONSULTANTS
1808 MIDDLE COUNTRY ROAD
RIDGE, NY 11961
PHONE 631.504.6000
FAX 631.924.2870

TABLE 1
SUMMARY OF
SAMPLING PROGRAM RATIONALE AND ANALYSIS

Matrix	Location	Approximate Number of Samples	Frequency	Rationale for Sampling	Laboratory Analysis	Duplicates	Matrix Spikes	Spike Duplicates	Trip Blanks
Soil	Excavation Sidewalls	13	1 per 30 linear feet	Endpoint verification	VOCs by 8260	1 per day	1 per 20 samples	1 per 20 samples	0
Soil	Excavation Bottom	3	1 per 900 square feet	Endpoint verification	VOCs by 8260	1 per day	1 per 20 samples	1 per 20 samples	0
Soil	Hot Spot Stockpiles	1	1 per 1,000 cy	Waste Characterization	VOCs EPA Method 8260B, pesticides and PCBs by EPA 8081/8082, other	0	0	0	0
Soil	Historic Fill	2	1 per 1,000 cy	Waste Characterization	VOCs EPA Method 8260B, pesticides and PCBs by EPA 8081/8082, other	0	0	0	0
Soil	Clean Native Soil	38	1 per 500 cy	Verify Clean	VOCs EPA Method 8260B, pesticides and PCBs by EPA 8081/8082, other	0	0	0	0

TABLE 2
SAMPLE COLLECTION AND ANALYSIS PROTOCOLS

Sample Type	Matrix	Sampling Device	Parameter	Sample Container	Sample Preservation	Analytical Method#	CRQL / MDLH	Holding Time
Soil	Soil	Scoop Direct into Jar	VOCs	(1) 2 oz Jar	Cool to 4^{o} C	EPA Method 8260	Compound specific (1-5 ug/kg)	14 days
			SVOCs	(1) 8 oz jar	Cool to 4^{o} C	EPA Method 8260 BN	Compound specific (1-5 ug/kg)	14 day ext/40 days
			Pest/PCBs	from 8oz jar above	Cool to 4^{o} C	EPA Method 8081/8082	Compound specific (1-5 ug/kg)	14 day ext/40 days
			Metals	from above	Cool to 4^{o} C	TAL Metals	Compound specific (01-1 mg/kg)	6 months

Notes:
All holding times listed are from Verified Time of Sample Receipt (VTSR) unless noted otherwise. * Holding time listed is from time of sample collection.
The number in parentheses in the "Sample Container" column denotes the number of containers needed.
Triple volume required when collected MS/MSD samples
The number of trip blanks are estimated.
CRQL / MDL = Contract Required Quantitation Limit / Method Detection Limit.
MCAWW = Methods for Chemical Analysis of Water and Wastes.
NA = Not available or not applicable.

ATTACHMENT I
Metes and Bounds Description

EXHIBIT A

All that piece or parcel of property situate in the Borough and County of Queens, City and State of New York, shown as Block 9281, Lot 44 on the New York City Tax Map and being more particularly described as follows:

Beginning at a point 177.98 feet easterly from the corner formed by the intersection of the northerly line of Jamaica Avenue with the easterly line of 127th Street, formerly Wickes Street;

Thence northerly along a line forming an interior angle of 90° 20' 36" with northerly line of Jamaica Avenue a distance of 135.37 feet to a point;

Thence westerly at right angles to the previously described course a distance of 48.93 feet to a point on the centerline of the block between Wickes Street and Gould Street as shown on a certain map entitled "Map of Lots in Richmond Hill" filed in the Queens County Clerk's office, now Registrars Office on August 18, 1906 as Map Number 1133;

Thence northerly along said centerline of the block and parallel with the easterly line of 127th Street forming an interior angle of 78° 38' 54" with the last described course a distance of 243.08 feet to a point on the southerly line of Lot Number 25 on the aforementioned map;

Thence easterly along the southerly line of Lot Number 25 and at right angles to the last described course a distance of 61.33 feet to a point on the westerly line of land of The Long island Railroad;

Thence southeasterly along the westerly line of land of The Long Island Railroad, forming an interior angle of 122° 55' 45" with the last described course, a distance of 394.97 feet to a point on the northerly line of Jamaica Avenue;

Thence the following three (3) courses and distances along the northerly line of Jamaica Avenue:

1) Westerly, forming an interior angle of 65° 07' 25" with the last described course, a distance of 117.10 feet to a point,

2) Westerly, forming an interior angle of 184° 26' 18" with the last described course, a distance of 61.46 feet to a point, and

3) Westerly, forming an interior angle of 178° 31' 01.7" with the last described course, a distance of 25.95 feet to the point or place of beginning

Said parcel containing 53,756 square feet or 1.2341 acres more or less