FORMER
GETTY SERVICE STATION #00564
BCP Site No. 224176

1103-1107 DEKALB AVENUE
BROOKLYN NEW YORK
Block 1600 Lots 1 and 28

REMEDIAL ACTION WORK PLAN

AUGUST 2014

Prepared for:
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CERTIFICATIONS

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

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

076508	02/04/2015	
NYS Professional Engineer #	Date	Signature

It is a violation of Article 145 of New York State Education Law for any person to alter this document in any way without the express written verification of adoption by any New York State licensed engineer in accordance with Section 7209(2), Article 145, New York State Education Law.

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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
SMP	Site 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

EXECUTIVE SUMMARY

Site Description/Physical Setting/Site History

This Remedial Action Work Plan (RAWP) was prepared on behalf of 1107D LLC for the property located at 1103-1107 DeKalb Avenue in the Bedford-Stuyvesant section of Brooklyn (**Figure 1**). The Site, which is known as the Former Getty Service Station #00564 (the Site), was formally accepted into the New York State Brownfield Cleanup Program (BCP) May 21, 2013. The Brownfield Cleanup Agreement was executed by the NYSDEC on May 30, 2014 and assigned Site No. C224176. 1107D LLC was accepted into the program as a Volunteer.

The Site is located on the northeast corner of DeKalb Avenue and Malcolm X Boulevard, Brooklyn, New York, and is designated as Block 1600 Lots 1 and 28 by the New York City Department of Assessment. The lot has 75 feet of frontage on DeKalb Avenue and 150 feet of frontage on Malcolm X Boulevard for a total area of 9,498 square feet (0.218 acres). The subject Site is currently developed with a one-story vacant service station. The remainder of the lot consists of a paved parking area, formerly used to store both derelict and functioning vehicles awaiting sale or repair (**see Figure** 2).

The property has an elevation of approximately 58 feet above the National Geodetic Vertical Datum (NGVD) feet. The depth to groundwater beneath the site, as determined from field measurements, is approximately 46 feet below grade. Based on groundwater contour maps, groundwater flow is westerly.

The environmental history of the subject lot was previously reported by Tyree Environmental Corp, in a series of quarterly monitoring reports prepared on behalf of Getty Properties Inc. with respect to NYSDEC Spill No. 98-10224 as outlined below. The property was previously occupied by auto retail and gasoline retail stations for a period of approximately 80 years from 1931 to the present.

On November 13, 1998 spill number 98-10224 was issued following the discovery of petroleum impacted soil during the removal of fourteen (14) underground storage tanks (USTs); twelve (12) 550-gallon gasoline USTs, one (1) 550-gallon #2 fuel oil UST, and one (1) 550-gallon waste oil UST. Two (2) 4,000-gallon gasoline USTs were installed in the area of the twelve removed 550-

gallon USTs in December 1998. These 4,000-gallon USTs were subsequently abandoned in-place on January 1, 2002 and remain on the property along with the above-ground waste oil and fuel oil tanks (ASTs).

A quarterly monitoring and reporting program was started in 2002. Monitoring wells MW-4 through MW-8 were installed to further define groundwater quality onsite in October 2003. Analytical results for soil samples collected during the well installation indicate elevated hydrocarbon concentrations in the soil at the MW-4 location and the MW-8 location, both of which are near the removed 550-gallon gasoline UST excavation. Laboratory analytical results for groundwater samples collected from four of the five monitoring wells installed in October 2003 (MW-4, MW-5, MW-6 and MW-8) identified elevated hydrocarbon concentrations.

In December 2006, monitoring wells MW-11 through MW-13 were installed further downgradient of MW-9 and MW-10. After a review of the soil analytical data collected from the off-site monitoring well locations, NYSDEC spill number 06-12492 was issued for the gasoline station where the wells were installed. Laboratory analytical data revealed elevated concentrations of semi-volatile organic compounds (SVOCs) exceeding NYSDEC guidance values existing in soil samples collected between 30 and 32 feet below grade and 40 and 42 feet below grade during the installation of MW-13. The data indicated that a release to the subsurface had occurred on the property and the impacts detected at these well locations were not associated with a release at the former Getty service station.

Summary of the Remedial Investigation

A Phase II Environmental Site Assessment was initially conducted by EBC on February 12, 2013. Based on the results of the initial investigation the project was referred to the NYSDEC and accepted into the BCP. A supplemental RI was completed from March 31 through April 7, 2014 in accordance with the protocols and methods as established in the NYSDEC approved Remedial Investigation Work Plan (EBC 12/13) The goals of the Remedial Investigation were to define the nature and extent of contamination in soil, groundwater and any other impacted media; to identify the source(s) of the contamination; to assess the impact of the contamination on public health and/or the environment; and to provide information to support the development and evaluation of remedial alternatives to address the contamination.

Activities completed under the RI were:

- Soil sampling and analysis for volatile and semi-volatile organic compounds (VOCs, SVOCs) in soil samples from soil boring locations;
- The installation of temporary groundwater monitoring wells;
- The collection and analysis of groundwater samples for volatile and semi-volatile organic compounds;
- Sampling for non-petroleum contaminants such as pesticides, PCBs and metals in soil and groundwater including the analysis of soil and groundwater samples; and,
- The collection of analysis of soil vapor samples for VOCs.

The field work portion of the RI was conducted by Environmental Business Consultants (EBC) on February 12, 2013 during the Phase II investigation and March 31 though April 7, 2014, in accordance with the protocols and methods as established in the approved Remedial Investigation Work Plan.

Subsurface soils at the site include a silty non-native fill, fine to coarse sand and sandy silt to a depth of approximately 10 feet below grade followed by sandy-clay to a depth of approximately 15 feet below grade followed by medium/coarse grained gravelly sands to a depth of at least 50 feet below grade.

Groundwater at the Site is present at a depth of approximately 46 feet below surface grade within the native sand and flows in a westerly direction.

The results of the RI identified petroleum contamination present in the vicinity of the existing tank field west of the station building. The release scenario is unknown but was related to the twelve 550 gallon tanks which were removed in 1998 and replaced with two 4,000 gallon tanks. The spill was likely related to small continuous leaks in the tank / dispenser fittings over the years prior to the system upgrade in 1998. The volume of the release was sufficient enough to extend to the water table approximately 46 feet below the surface. Petroleum VOCs were transferred to the groundwater either through direct contact with impacted soil in the vicinity of the UST area or through transport water migrating through voids and cracks in the surface. In

either case significant source depletion occurred as the petroleum concentrations are moderate and have been decreasing over time.

Petroleum VOCs which transferred to the dissolved phase have been migrating with groundwater flow to the southwest. Off-gassing of VOCs is not significant due to the age of the release and the absence of the more volatile components of the fuel, with the exception of the soil gas sample collected adjacent to the current tank field.

Trichloroethene was reported above groundwater standards in all groundwater samples collected across the Site in April. Based on the site-wide distribution in groundwater including upgradient positions and the absence of CVOCs reported in soil, with the exception of low concentrations detected in one shallow upgradient sample, it is likely related to an off-site source.

Off-gassing is occurring adjacent to the current tank field, as is evidenced by concentrations detected in soil gas sample SG2. No significant off-gassing is occurring on site from any other source area as is evident by the perimeter and interior soil vapor sampling results.

Qualitative Human Health Exposure Assessment

The qualitative exposure assessment identified potential completed routes of exposure to VOCs, SVOCs and heavy metals to construction workers and remediation workers through inhalation, ingestion and dermal contact during excavation activities.

Based on the low levels of petroleum VOCs and chlorinated VOCs in soil vapor, there is a low potential for exposure to residents, commercial workers and visitors within the proposed buildings under a future development scenario.

With the low/moderate levels of VOCs reported in soil, groundwater and soil gas at the Site, there is a low potential for off-site exposure via vapor intrusion as a result of on-site contamination.

Based upon the concentrations of contaminants currently in groundwater beneath the Site and the distance and position of the Site relative to Wallabout Channel, there are no expected impacts to surface water environments from contaminants migrating beneath the Site.

Summary of the Remedy

The remedy selected for the site is a Track 2 alternative (Alternative 2) which consists of the removal of the soils to restricted residential criteria to a depth of 15 feet below grade. This will be achieved through removal of the current USTs and excavation of petroleum contaminated soil present beneath the tanks to a depth of 15 feet below grade. Excavation will be completed to a depth of 11 feet below grade for the majority of the Site for redevelopment. Additional "hotspot" excavation for VOCs and metals will be completed at three separate locations, B1306, B1310, and B1314, to a depth of 15 feet below grade. Residual soil contamination that is located below 15 feet below grade and contaminant concentrations that exceed the Protection of Groundwater SCOs will be treated through soil vapor extraction. The Track 2 alternative also includes remediation of groundwater through chemical oxidant injection following completion of redevelopment activities. Over-excavated areas will be backfilled with either virgin mined materials, recycled materials or certified fill which meets the requirements of 6 NYCRR Part 375 -6.7(d)(1)(ii)(b). Although it is not a required element of the remedy, a vapor barrier will be installed beneath the building foundation as part of the building construction. The remedy will include the following items:

1. Removal of underground storage tanks
2. Excavation of soil/fill exceeding Track 2 restricted residential and/or the applicable protection of groundwater SCOs as listed in Table 1 to a depth as great as 15 feet below grade;
3. Treatment of residual groundwater contamination via injection of chemical oxidants;
4. Treatment of residual soil contamination in the former tank field area as well as hot spot areas via Soil Vapor Extraction;
5. Screening for indications of contamination (by visual means, odor, and monitoring with PID) of all excavated soil during any intrusive Site work;
6. Collection and analysis of end-point soil samples and post-remedial groundwater samples to evaluate the performance of the remedy with respect to attainment of unrestricted SCOs and groundwater standards;
7. 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;

8. Import of materials to be used for backfill and cover in compliance with 6NYCRR Part 375-6.7(d)(1): (1) chemical limits and other specifications included in **Table 1**, (2) all Federal, State and local rules and regulations for handling and transport of material.
9. Installation of a site cover system consisting of the concrete building slab and paved outdoor recreation area.
10. Implementation of a Site Management Plan (SMP) for long term maintenance of the Engineering Controls.
11. An Environmental Easement will be filed against the Site to ensure implementation of the SMP.

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.

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

REMEDIAL ACTION WORK PLAN

1.0 INTRODUCTION

In March 2013 1107D LLC submitted an application to the New York State Department of Environmental Conservation (NYSDEC) to investigate and remediate a 0.218-acre property located at 1103-1107 DeKalb Avenue in Brooklyn, New York as a Volunteer in the New York State Brownfield Cleanup Program (BCP). Mixed use is proposed for the property. When completed, the Site will be redeveloped with an 8-story mixed use building with partial cellar. The first floor will be utilized for retail/commercial space as floors 2 through 8 will contain residential apartments.

This Remedial Action Work Plan (RAWP) summarizes the nature and extent of contamination as determined from data gathered during the Remedial Investigation (RI), performed on February 12, 2013 and from March 31 through April 7, 2014. It provides an evaluation of a Track 2 cleanup and other applicable Remedial Action alternatives, their associated costs, and the recommended and preferred remedy. The remedy described in this document is consistent with the procedures defined in DER-10 and complies with all applicable standards, criteria and guidance. The remedy described in this document also complies with all applicable Federal, State and local laws, regulations and requirements. The NYSDEC and New York State Department of Health (NYSDOH) have not yet determined whether this Site poses a significant threat to human health and the environment. The RI for this Site did not identify fish and wildlife resources.

1.1 SITE LOCATION AND DESCRIPTION

The Site is located on the northwest corner of DeKalb Avenue and Malcolm X Boulevard, Brooklyn, New York, and is designated as Block 1600 Lot 28 by the New York City Department of Assessment. The lot has 75 feet of frontage on DeKalb Avenue and 150 feet of frontage on Malcolm X Boulevard for a total area of 9,498 square feet (0.218 acres) (**see Figure** 2). The subject Site is currently developed with a one-story vacant service station. The remainder of the lot consists of a paved parking area, formerly used to store both derelict and functioning vehicles awaiting sale or repair.

A boundary map is provided as **Figure 2** and the 0.218-acre property is fully described in **Attachment A – Metes and Bounds.**

1.2 CONTEMPLATED REDEVELOPMENT PLAN

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

The Site will be redeveloped through the construction of a new 8-story multi-use building. The building will have 7,627 sq. ft. cellar which will be utilized for storage, mechanical rooms, and retail/commercial space. The cellar will have both stair and elevator access, and will require excavation of 80% of the property to a depth of approximately 11 feet below grade. The first floor will contain retail/commercial space as well as the residential lobby and floors 2 through 8 will contain residential apartments. The remaining portions of the property will be capped and utilized for outdoor recreation.

1.3 DESCRIPTION OF SURROUNDING PROPERTY

The area surrounding the property is highly urbanized and predominantly consists of multi-family residential buildings with mixed-use buildings (residential w/ first floor retail) along main artery corridors such as Broadway located just 500 feet to the northeast. Commercial / industrial properties, equipment yards and warehouses are interspersed throughout the residential as are institutions such as parks, schools, churches and playgrounds within a quarter mile of the Site in all directions (see **Figure 3**).

2.0 DESCRIPTION OF REMEDIAL INVESTIGATION FINDINGS

The field work portion of the RI was conducted by EBC during several mobilizations to the site: the initial mobilization in February 2013 as part of a Phase II Subsurface Investigation and a supplemental mobilization concluding April 7, 2014. The field investigation consisted of environmental sampling, field observations and measurements to determine:

- Local geologic/hydrogeologic conditions
- Definition of source areas
- Potential migration of contaminants from the site to surrounding areas
- Overall characterization of site-related contamination in all media

The field effort included the collection and analysis of soil, groundwater and soil gas samples. Drilling services were provided by Eastern Environmental Services (Eastern) of Manorville, NY. Laboratory services were provided by Phoenix Environmental Laboratories of Manchester, CT (NYSDOH 11301). A sample matrix showing the number, type and analysis of samples collected during the Remedial Investigation is provided as **Table 2**. Results of the various phases of investigation are documented in the Remedial Investigation Report dated October 2014, prepared by EBC.

2.1 SUMMARY OF REMEDIAL INVESTIGATIONS PERFORMED

2.1.1 Borings

A total of 4 borings were advanced during the initial site mobilization in February 2013. An additional 8 borings were installed on March 31 and April 1, 2014.

At each soil boring location soil samples were collected continuously in 5-foot intervals using a Geoprobe™ model 6620DT, probe drilling machine. The Geoprobe™ system uses a direct push hydraulic percussion system to drive and retrieve core samplers.

Each soil sample recovered from the soil borings was characterized by an experienced Environmental Scientist and field screened for the presence of VOCs using a photo-ionization detector (PID). Field observations and PID readings were recorded for each boring in a soil boring log.

At each boring location, soil cores were collected continuously from grade to depths ranging from 15 feet to 47 feet below grade, approximately 5 feet below the water table surface. Soil samples were retrieved using a 1.5-inch diameter, 5-foot long dual tube sampling system with disposable acetate liners.

Soil recovered from the borings was field screened for the presence of VOCs with a photo-ionization detector (PID) and visually inspected for evidence of contamination. PID readings ranged from non-detect to 1,061 parts per million in soil boring SB1302 at the 10 to 15ft interval. The location of soil borings are shown on **Figure 4**.

2.1.2 Monitoring Wells

Four groundwater monitoring wells (MW1309 and MW1312) were installed in March/April 2014 to establish general groundwater quality at the site. All monitoring wells were installed to a depth of 55 feet below grade with 15 feet of 0.010 PVC well screen and 40 feet of PVC riser.

At each well a No. 00 morie filter sand was placed in the borehole to within 2 feet above the top of the screen. A 1-foot hydrated bentonite seal was then placed on top of the filter sand and the remainder of the borehole was backfilled to grade. Monitoring well locations are shown in **Figure 5**.

2.1.3 Samples Collected

A summary of the sampling performed during the RI is provided in **Table 2**.

2.1.3.1 Soil Samples

Soil samples were collected continuously in 5-foot intervals from grade to depths ranging from 15 feet to 47 feet below existing grade using a Geoprobe™ 6620DT, probe drilling machine. The Geoprobe™ system uses a direct push hydraulic percussion system to drive and retrieve core samplers. Soil samples were retrieved using a 1.5-inch diameter, 5-foot long dual-tube sampler with disposable acetate liners. PID readings ranged from non-detect to 1,061 parts per million (ppm) in boring B1302 at the 10 to 15ft interval.

One soil sample was retained from each boring completed in February 2013. Retained samples were collected from the interval exhibiting the highest PID reading or, if PID readings were non-detect, the deepest interval. Two soil samples were retained from each boring location during the March/April investigation. Retained samples were collected from the 0 to 2 foot and 13 to 15 foot intervals. A third soil sample was retained from boring B1308 from the 45-47 foot interval, representing the groundwater interface. All samples were submitted for laboratory analysis of one or more of the following analyses: volatile organic compounds (VOCs) by EPA Method 8260, semi-volatile organic compounds (SVOCs) by EPA Method 8270, TAL Metals, pesticides and PCBs by EPA Method 8081/8082.

2.1.3.2 Groundwater Samples

Six groundwater samples were collected from three boring locations (B1302, B1304, and B1306) and three existing monitoring wells (MW 2 through MW4) in February 2013 and four groundwater monitoring wells (MW1309 through MW1312) were installed in March/April 2014.

Samples were collected in accordance with the procedures outlined in Section 2.3 of the approved RIWP. Polyethylene sampling tubing fitted with a stainless steel check valve was used to purge and collect samples from each well location. Sample tubing and the silicone pump tubing were replaced between each sample location. Samples were collected directly into pre-cleaned laboratory supplied glassware, stored in a cooler with ice and submitted to Phoenix Environmental Laboratories of Manchester, CT, a New York State ELAP certified environmental laboratory (ELAP Certification No. 11301).

All groundwater samples were analyzed for VOCs / SVOCs by EPA method 8260/ 8270, target analyte list (TAL) metals (total and dissolved) by Method 6010C and pesticides/PCBs by Method 8081B/8082A.

2.1.3.3 Soil Gas Samples

To assess the presence of VOCs in soil vapor beneath the site, five soil vapor samples (SG1-SG5) and one sub-slab sample (SS-1) was collected from within the existing station building on April 7, 2014. In addition to these samples, one outdoor ambient air sample (OA1) was also collected at this time. Five soil vapor implants were installed during the RI, using Geoprobe™

equipment. All of the implants were installed utilizing the same technique to minimize possible discrepancies. The vapor implants (Geoprobe™ Model AT86 series), were constructed of a 6-inch length of double woven stainless steel wire. The vapor implants were installed to a depth of 12 feet below grade. One sub-slab vapor probe, SS1, was installed by drilling a 1/2 inch hole through the concrete slab with a handheld drill and inserting 1/4 inch polyethylene tubing to no more than 2 inches below the base of the slab. Soil vapor sampling locations are shown on **Figure 6**. All soil vapor samples were collected over a 2 hour sampling period.

Soil vapor samples were collected in accordance with the procedures as described in the *Guidance for Evaluating Soil Vapor Intrusion in the State of New York (NYSDOH 10/06).*

2.1.4 Chemical Analytical Work Performed

Each soil and groundwater sample was placed in pre-cleaned laboratory supplied glassware, and placed in a cooler packed with ice for transport to the laboratory. Sample analysis was provided by Phoenix Environmental Laboratories of Manchester, CT, a New York State ELAP certified environmental laboratory (ELAP Certification No. 11301).

Soil samples were analyzed for one or more of the following depending on location and depth: VOCs / SVOCs by EPA method 8260 / 8270, target analyte list (TAL) metals and pesticides/PCBs by Method 8081/8082. All groundwater samples from the temporary monitoring wells were analyzed for VOCs / SVOCs by EPA method 826C / 8270, target analyte list (TAL) metals (total, dissolved) and pesticides/PCBs by Method 8081/8082.

Soil gas samples were analyzed for VOCs by EPA method TO-15.

2.1.5 Documentation

Maps showing the locations of the soil borings, monitoring wells and soil gas sample collection points are provided in **Figures 4**, **5** and **6**. The results of soil, groundwater and soil gas samples collected during the RI are summarized in **Tables 3** through **14**. Below is a summary of RI findings.

The source areas onsite include the vicinity of the main UST area in front of the station building, the former dispenser area along Malcolm X Boulevard and the former location of a gasoline

underground storage tank near the corner of Malcolm X Boulevard and Dekalb Avenue. Impacts were not observed at suspect areas which included the former waste oil tank near the front of the service area and the former dispenser location along Dekalb Avenue.

Impacted soil in the vicinity of the main UST area, as determined from borings adjacent to the tank pad, was reported beginning at a depth of 13 feet below the surface and ending at a depth of approximately 20 ft below grade. Impacted soil was again encountered at the water table at a depth of approximately 45 ft. Impacted soil is likely present throughout the entire soil column directly beneath the tanks.

Petroleum contamination was also identified adjacent to the former UST and dispenser island area on the south western portion of the property to depths of 13-15 and 7-9 feet, respectively. No other source areas were identified during the RI.

Petroleum related VOCs were detected in six of the ten groundwater samples collected onsite. Petroleum related VOC concentrations ranged from non-detect to 6,693 µg/L in B1302 during the February 2013 sampling event and non-detect to 269.15 µg/L in MW1312 during the April sampling event. No benzene was detected in any of the samples obtained during either the February or April sampling events. The highest concentrations of petroleum related VOCs were detected upgradient of the current tankfield but within the impacted soil zone, at location GW1202.

Three chlorinated VOCs, tetrachloroethene (PCE), trichloroethene (TCE) and cis-1,2-Dichloroethene, detected above its groundwater standard in one or more of the samples obtained in February 2013. Only one CVOC, TCE, was reported above standards in all four wells during the April 2014 sampling event.

Multiple VOCs were detected above the laboratory method detection limit in each of the soil gas samples collected as well as the ambient outdoor air sample. Total petroleum related volatile organic compounds were generally low to moderate throughout the Site, with the exception of SG2 located adjacent to the current tank field. Petroleum related VOC concentrations ranged from 333.98 µg/m^3 in SG1 located along the northern property line to 34,063.1 µg/m^3 in SG2 located along the southern property line, and 14.37 µg/m^3 in the ambient outdoor sample.

Chlorinated VOCs (CVOCs) were reported in five of the six soil gas samples collected as well as the ambient outdoor air sample. CVOC concentrations ranged from 1.317 µg/m^3 in SG3 located on the central portion of the property to 6.869 µg/m^3 in SS1 located within the service station building, and 3.59 µg/m^3 in the ambient outdoor air sample. Tetrachloroethene (PCE) was reported in five of the six soil gas samples and ranged from 1 µg/m^3 in SG3 to 5.56 µg/m^3 in SS1. Trichloroethene (TCE) and carbon tetrachloride were reported in two of the six soil gas samples at concentrations of 1.88 µg/m^3 in SG5 and 0.806 µg/m^3 in SS1, and 0.314 µg/m^3 in SG3 and 0.503 µg/m^3 in SS1, respectively. No CVOCs were detected above NYSDOH guidance values. 1,1,1-Trichloroethane was not detected in any of the samples collected from the Site.

2.2 SIGNIFICANT THREAT

The NYSDEC and NYSDOH are currently evaluating the RI and will make a determination as to whether or not the Site poses a significant threat to human health and the environment. Notice of this determination will be provided during the 45 day public comment period and in the Proposed Decision Document.

2.3 SITE HISTORY

2.3.1 Past Uses and Ownership

Previous owners and operators of the property are shown in Tables 1 and 2 below. Information regarding ownership of the property was obtained from online property records maintained by the NYC Department of Finance Office of the City Register under its Automated City Register Information System (ACRIS). Information regarding past operators was obtained from lease agreements, corporate knowledge by the seller and from an internet search of the property address. The property is under contract for purchase by the requestor in an agreement dated January 2012.

Leemilt's Petroleum owned the property from 1990 through 2014 when it was purchased by 1107D LLC. The property is currently vacant but was most recently occupied by Morillo Auto Repair which ran an automotive repair shop out of the service station building and stores vehicles on the lot. Getty operated a service station (#564) on the property from at least 1990 to 2001 when the 4,000 gallon USTs were closed. It is not known if Getty leased the property

before purchasing it in 1990. Tulla Service / James Mannix, collectively owned the property from 1966 to 1990. Jamar Realty owned the property prior to 1966 and signed a 15 year lease agreement with Shell Oil in 1965. The lease with Shell was renewed with new owners Tulla / Mannix in 1967 and ran through January 1982. It is not known if Shell continued its tenancy from 1982 to 1990 when Getty purchased it, or if Getty or a third party leased it from 1982 to 1990.

Previous Owners

Dates	Name	Comments	Contact Info
prior to 10/18/65	Jamar Realty Corp.	Deed	185 Montague Street, Brooklyn, NY
From 10/10/66 to 12/15/69	Tulla Service Inc.	Deed	35 Prospect Park West, Brooklyn NY
From 12/15/69 to 9/11/90	James J. Mannix	Deed	35 Prospect Park West, Brooklyn NY
From 9/11/90 to 3/20/14	Leemilt's Petroleum Inc.	Deed	125 Jericho Turnpike Suite 103 Jericho, NY 11753
3/20/2014 to present	1107D LLC	Deed	45 North Station Plaza, Suite 315 Great Neck, NY 11021

Previous Operators

Dates	Name	Comments	Contact Info
From 10/18/65 to at least 1/9/82	Shell Oil Company	Lease	41-70 Main Street, Flushing, NY 700 White Plains Road, Scarsdale, NY
From at least 1990 to 2001	Getty S/S No. 564		125 Jericho Turnpike Suite 103 Jericho, NY 11753
Sometime after 2001 to 2014	Morillo Auto Repair		1107 DeKalb Avenue Brooklyn, NY 11221

The following resources were employed in obtaining historical information with respect to ownership:

- NYC ACRIS Database
- Interviews with Current Owners

The following resources were employed in obtaining historical information with respect to operators:

- Interviews with Current / Previous Operators / Owners
- Certificate of Occupancy Records as Maintained by the Department of Buildings
- Internet Address Search

2.3.2 Summary of Previous Investigations

Investigations performed at the Site include the following:

- Quarterly Monitoring Report, Former Getty S/S #00524, Tyree Environmental Corp. July 2011- September 2011.
- Limited Phase II Subsurface Investigation, Environmental Business Consultants, February 2013.

2.3.2.1 July 2011 - September 2011 - Quarterly Monitoring Report (Tyree)

This report documents and summarizes the results of on-going monitoring at the Site which began in July 2000. According to the report there were six monitoring wells within the property boundaries and two monitoring wells in the adjacent sidewalk along Malcolm X Boulevard during the reporting period. The wells were sampled for STARs list volatile organic compounds (VOCs) by EPA method 8260. VOCs were reported above standards in 4 of the 7 wells with total VOCs ranging from 828 µg/L to 3,812 µg/L.

2.3.2.2 February 2013 - Limited Phase II Subsurface Investigation (EBC)

On February 12, 2013, a limited Phase II investigation began at the subject site as part of the due diligence to complete the purchase of the property. Although eight borings and groundwater samples were planned, only four borings were installed due to accessibility issues, weather conditions and scheduling constraints. A total of four soil samples and six groundwater samples including three from the borings and three from existing monitoring wells were collected. Soil samples were submitted for analysis of VOCs, PCBs and metals. Groundwater samples were submitted for analysis of VOCs only.

The results of this limited investigation showed elevated petroleum VOC levels in two of the four soil samples with total VOCs ranging from 184,000 µg/kg to 705,600 µg/kg. Xylenes, naphthalene, and n-propylbenzene were reported above unrestricted soil cleanup objectives (SCOs) while 1,2,4-trimthylbenzene, 1,3,5-trimethylbenzene and ethylbenzene were all reported above restricted residential SCOs. In addition to the VOCs, chromium was also reported in two soil samples above unrestricted SCOs.

Petroleum VOCs were reported above standards in four of six groundwater samples ranging from 605 µg/L to 7,993 µg/L. Chlorinated VOCs were reported above standards in five of the six samples and ranged from 22 µg/L to 34 µg/L.

2.4 GEOLOGICAL CONDITIONS

The geologic setting of Long Island is well documented and consists of crystalline bedrock overlain by layers of unconsolidated deposits. According to geologic maps of the area created by the United States Geologic Survey (USGS), the bedrock in this area of Brooklyn is an igneous intrusive classified as the Ravenswood grano-diorite of middle Ordovician to middle Cambrian age. The depth to bedrock is greater than 100 feet below the surface. Unconsolidated sediments overlie the bedrock and consist of Pleistocene aged sand, gravel and silty clays, deposited by glacial-fluvial activity. Non-native fill materials consisting of dredge spoils, rubble and / or other materials have been historically used to reinforce and extend shoreline areas and to raise and improve the drainage of low lying areas.

Subsurface soils at the site include a silty non-native fill, fine to coarse sand and sandy silt to a depth of approximately 10 feet below grade followed by sandy-clay to a depth of approximately 15 feet below grade followed by medium/coarse grained gravelly sands to a depth of at least 50 feet below grade.

Groundwater at the Site is present at a depth of approximately 46 feet below the surface and generally flows in a southwesterly direction (**Figure 7**). According to the USGS topographic map for the area (Central Park Quadrangle), the elevation of the property 58 feet above the National Geodetic Vertical Datum (NGVD).

2.5 CONTAMINATION CONDITIONS

2.5.1 Conceptual Model of Site Contamination

Petroleum contamination is present in the vicinity of the existing tank field west of the station building, the former dispenser island along Malcolm X Boulevard and the former tank location in the southeast corner of the property. The release dates and details regarding the release scenarios are unknown. However, the contamination within the existing tank field predates the existing tanks and was related to the twelve 550 gallon tanks which were removed in 1998 and replaced with two 4,000 gallon tanks. The volume of the spill in this location was sufficient to allow vertical migration through a 30-35 foot soil column to the water table at a depth of 45 feet below grade. Upon reaching the water table the free phase gasoline spread out forming a lens of

residually impacted soil. This zone of impacted soil acted as a source of contamination to the groundwater passing through it, forming a plume of contaminated water which migrated in the direction of groundwater flow.

Gasoline releases also occurred at the south dispenser and adjacent underground tank. Releases in these areas were likely small and likely occurred prior to the system upgrade in 1998. The volume of the release in these areas was insufficient to extend beyond a depth of 20 feet. Based on the distribution of petroleum VOCs in groundwater, contaminants were likely transferred to the groundwater in these areas through transport water entering through voids and cracks in the surface and migrating vertically through the contaminated zone.

The residual sources have undergone significant weathering over time as the lighter, more volatile and mobile contaminants have left the source area and biological processes have degraded individual components. In both cases significant source depletion has occurred as the petroleum concentrations in groundwater are moderate and have been decreasing over time.

Petroleum VOCs which transferred to the dissolved phase have been migrating with groundwater flow to the southwest. Off-gassing of VOCs is not significant due to the age of the release and the absence of the more volatile components of the fuel, with the exception of the soil gas sample collected adjacent to the current tank field. Off-gassing is occurring adjacent to the current tank field, as is evidenced by concentrations detected in soil gas sample SG2. No significant off-gassing is occurring on site from any other source area as is evident by the perimeter and interior soil vapor sampling results.

Trichloroethene was reported above groundwater standards in all groundwater samples collected across the Site in April. Based on the site-wide distribution in groundwater including upgradient positions and the absence of CVOCs reported in soil, with the exception of low concentrations detected in one shallow upgradient sample, the CVOCs are likely related to an off-site source

2.5.2 Description of Areas of Concern

The source areas onsite include the vicinity of the main UST area in front of the station building, the former dispenser area along Malcolm X Boulevard and the former location of a gasoline

underground storage tank near the corner of Malcolm X Boulevard and DeKalb Avenue. Impacts were not observed at suspect areas which included the former waste oil tank near the front of the service area and the former dispenser location along DeKalb Avenue. No other source areas were identified during the RI.

2.5.3 Soil/Fill Contamination

Impacted soil in the vicinity of the main UST area, as determined from borings adjacent to the tank pad, was reported beginning at a depth of 13 feet below the surface and ending at a depth of approximately 20 ft below grade. Impacted soil was again encountered at the water table at a depth of approximately 45 ft.

Petroleum contamination was also identified adjacent to the former UST and dispenser island area on the south western portion of the property to depths of 13-15 and 7-9 feet, respectively.

Fill materials are present throughout the site at depths to 10 ft below grade. SVOCs including benz(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthrancene, indeno(1,2,3-cd)pyrene, and naphthalene as well as the metals arsenic, chromium, copper, lead, mercury, zinc were reported above unrestricted use soil cleanup objectives (SCOs) in several of the shallow soil samples collected .

2.5.3.1 Summary of Soil/Fill Data

Soil sample results from the RI are summarized in **Tables 3-7**. Further information on soil sample collection, handling and analysis can be found in the RI Report (EBC 6/14).

2.5.3.2 Comparison of Soil/Fill with SCGs

Table 7 shows soil sample results above Track 1 Unrestricted SCOs for all overburden soil at the Site. Sample results above Track 1 Unrestricted SCOs for all overburden soil are posted on **Figure 8**.

2.5.4 On-Site Groundwater Contamination

Petroleum related VOCs were detected in six of the ten groundwater samples collected onsite. Petroleum related VOC concentrations ranged from non-detect to 6,693 µg/L in B1302 during

the February 2013 sampling event and non-detect to 269.15 µg/L in MW1312 during the April sampling event. No benzene was detected in any of the samples obtained during either the February or April sampling events. The highest concentrations of petroleum related VOCs were detected upgradient of the current tankfield but within the impacted soil zone, at location GW1202.

Three chlorinated VOCs, tetrachloroethene (PCE), trichloroethene (TCE) and cis-1,2-Dichloroethene, detected above its groundwater standard in one or more of the samples obtained in February 2013. Only one CVOC, TCE, was reported above standards in all four wells during the April 2014 sampling event.

SVOC and metal parameters were detected throughout the Site, with the highest concentrations located along the eastern, upgradient, portion of the property.

2.5.4.1 Summary of Groundwater Data

The results of groundwater samples collected during the RI are summarized in **Tables 8-13**. Further information on groundwater sample collection, handling and analysis can be found in the RI Report (EBC 6/14).

2.5.4.2 Comparison of Groundwater with SCGs

Sample results above GA groundwater standards in monitor wells prior to the remedy are shown in **Table 13**. A spider map which shows groundwater sampling locations and summarizes results above GA groundwater standards prior to the remedy are shown in **Figure 9**.

2.5.5 On-Site Soil Vapor Contamination

Multiple VOCs were detected above the laboratory method detection limit in each of the soil gas samples collected as well as the ambient outdoor air sample. Total petroleum related volatile organic compounds were generally low to moderate throughout the Site, with the exception of SG2 located adjacent to the current tank field. Petroleum related VOC concentrations ranged from 333.98 µg/m^3 in SG1 located along the northern property line to 34,063.1 µg/m^3 in SG2 located along the southern property line, and 14.37 µg/m^3 in the ambient outdoor sample.

Chlorinated VOCs (CVOCs) were reported in five of the six soil gas samples collected as well as the ambient outdoor air sample. CVOC concentrations ranged from 1.317 µg/m^3 in SG3 located on the central portion of the property to 6.869 µg/m^3 in SS1 located within the service station building, and 3.59 µg/m^3 in the ambient outdoor air sample. Tetrachloroethene (PCE) was reported in five of the six soil gas samples and ranged from 1 µg/m^3 in SG3 to 5.56 µg/m^3 in SS1. Trichloroethene (TCE) and carbon tetrachloride were reported in two of the six soil gas samples at concentrations of 1.88 µg/m^3 in SG5 and 0.806 µg/m^3 in SS1, and 0.314 µg/m^3 in SG3 and 0.503 µg/m^3 in SS1, respectively. No CVOCs were detected above NYSDOH guidance values. 1,1,1-Trichloroethane was not detected in any of the samples collected from the Site.

Figure 10 shows posted soil gas results from the RI.

2.5.5.1 Summary of Soil Vapor Data

A table of soil vapor data collected prior to the remedy is shown in **Table 14**. Further information on soil gas sample collection, handling and analysis can be found in the RI Report (EBC 6/14).

2.6 ENVIRONMENTAL AND PUBLIC HEALTH ASSESSMENTS

2.6.1 Qualitative Human Health Exposure Assessment

The objective of the qualitative exposure assessment under the BCP is to identify potential receptors to the contaminants of concern (COC) that are present at, or migrating from, the site. The identification of exposure pathways describes the route that the COC takes to travel from the source to the receptor. An identified pathway indicates that the potential for exposure exists; it does not imply that exposures actually occur. An exposure pathway has five elements; a contaminant source, release and transport mechanisms, point of exposure, route of exposure and a receptor population.

The potential exposure pathways identified below, represent both current and future exposure scenarios.

Contaminant Source

The source of petroleum related VOCs is limited to the current and former USTs areas and former dispenser island located on the western portion of the property in which groundwater has also been affected.

Elevated levels of SVOCs and metals are also present in fill materials throughout the Site to depths of up to 10 feet below grade.

Contaminant Release and Transport Mechanism

Petroleum contamination is present in soil below / adjacent to the current UST field and the former UST / dispenser island as well as at the groundwater interface in the vicinity of the current tankfield. Impacted groundwater is present and migrating southwest of the source areas at relatively low concentrations.

Overall, there does not appear to be any migration of petroleum of chlorinated VOCs in soil gas either on the property or migrating from the property, with the exception of sampling location SG2. Off-gassing of petroleum VOCs is occurring at one location onsite, adjacent to the current tank field, from impacted soil beneath and adjacent to the USTs.

Point of Exposure, Route of Exposure and Potentially Exposed Populations

Potential On-Site Exposures: Remediation workers and construction workers engaged in the excavation of impacted and non-impacted soil at the site may be exposed to SVOCs, VOCs and heavy metals through several routes. Workers excavating impacted soil may be exposed to SVOCs, VOCs and heavy metals through inhalation, ingestion and dermal contact. Workers excavating non-impacted soil may be exposed to low levels of VOCs in soil gas through inhalation. A site specific Health and Safety Plan has been developed to identify and minimize the potential hazards to on-site workers.

Based on the low background levels of petroleum VOCs in soil vapor there is minimal potential for exposure to residents, commercial workers and visitors within the proposed building under a future development scenario.

Potential Off-Site Exposures: The entire area is serviced by the New York City Water System which distributes water from the Croton Reservoir system. Since there are no public or private potable supply wells in the area, exposure from contact with tap water is not a concern. Off-site exposure is therefore limited to vapor intrusion from off-gassing from impacted soil on site or from impacted groundwater migrating beneath the Site. The potentially exposed population in this case would include residents and commercial workers in adjacent buildings.

Potential Off-Site Environmental Impacts: Since impacted groundwater is migrating beneath the site in a southwesterly direction, the groundwater to surface water discharge pathway was evaluated. Wallabout Channel is located approximately 2.05 miles north. Based upon the concentrations of VOC contaminants currently in groundwater beneath the Site and the distance and position of the Site relative to Wallabout Channel, there are no expected impacts to surface water environments from contaminants migrating beneath the Site.

2.6.2 Fish & Wildlife Remedial Impact Analysis

Since impacted groundwater may be migrating beneath the Site at low concentrations in a southwesterly direction, the groundwater to surface water discharge pathway was evaluated. Wallabout Channel is located approximately 2.05 miles north of the Site. Based upon the concentrations of contaminants currently in groundwater beneath the Site and the distance and position of the Site relative to Wallabout Channel, there are no expected impacts to surface water environments from contaminants migrating beneath the Site. In addition, as the Site is located in a densely populated urban area there are no expected impacts to terrestrial wildlife.

2.7 REMEDIAL ACTION OBJECTIVES

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

2.7.1 Groundwater

RAOs for Public Health Protection

- Prevent ingestion of groundwater containing contaminant levels exceeding drinking water standards.
- Prevent contact with, or inhalation of volatiles, from contaminated groundwater.

RAOs for Environmental Protection

- Restore ground water aquifer to pre-disposal/pre-release conditions, to the extent practicable.
- Remove the source of ground or surface water contamination.

2.7.2 Soil

RAOs for Public Health Protection

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

RAOs for Environmental Protection

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

2.7.3 Soil Vapor

- Mitigate impacts to public health resulting from existing, or the potential for, soil vapor intrusion into buildings at the Site.

3.0 DESCRIPTION OF REMEDIAL ACTION PLAN

3.1 EVALUATION OF REMEDIAL ALTERNATIVES

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

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

The first two criteria are threshold criteria and must be satisfied in order for an alternative to be considered for selection. The remaining seven criteria are balancing criteria which are used to compare the positive and negative aspects of each of the remedial alternatives, provided the alternative satisfies the threshold criteria.

3.2 STANDARDS, CRITERIA AND GUIDANCE (SCG)

A criterion for remedy selection is evaluation for conformance with SCGs that are applicable, relevant and appropriate. Principal SCGs that are applicable, relevant and appropriate for evaluating the alternatives for remediation of this BCP site include the following:

- 29 CFR Part 1910.120 - Hazardous Waste Operations and Emergency Response

- 10 NYCRR Part 67 – Lead
- 6 NYCRR Part 371 - Identification and Listing of Hazardous Wastes (November 1998)
- 6 NYCRR Part 372 - Hazardous Waste Manifest System and Related Standards for Generators, Transporters and Facilities (November 1998)
- 6 NYCRR Subpart 374-1 - Standards for the Management of Specific Hazardous Wastes and Specific Types of Hazardous Waste Management Facilities (November 1998)
- 6 NYCRR Part 375 - 6 NYCRR Part 375 Environmental Remediation Programs Subparts 375-1, 375-3 and 375-6 (December 2006)
- 6 NYCRR Part 376 - Land Disposal Restrictions
- 6 NYCRR Part 608 - Use and Protection of Waters
- 6 NYCRR Parts 700-706 - Water Quality Standards (June 1998)
- 6 NYCRR Part 750 through 758 - Implementation of NPDES Program in NYS ("SPDES Regulations")
- 6 NYCRR Part 375-6 Soil Cleanup Objectives
- New York State Groundwater Quality Standards – 6 NYCRR Part 703;
- NYSDEC Ambient Water Quality Standards and Guidance Values – TOGS 1.1.1;
- NYSDEC DER-10 Technical Guidance for Site Investigation and Remediation - May 2010;
- NYSDEC Draft Brownfield Cleanup Program Guide – May 2004;
- New York State Department of Health (NYSDOH) Generic Community Air Monitoring Plan
- NYS Waste Transporter Permits – 6 NYCRR Part 364;
- NYS Solid Waste Management Requirements – 6 NYCRR Part 360 and Part 364.
- TAGM 4059 - Making Changes To Selected Remedies (May 1998)
- STARS #1 - Petroleum-Contaminated Soil Guidance Policy
- TAGM 3028 - "Contained In" Criteria for Environmental Media: Soil Action Levels (August 1997)
- DER-10, Technical Guidance for Site Investigation and Remediation, May 2010
- DER-23 / Citizen Participation Handbook for Remedial Programs, January 2010

- OSWER Directive 9200.4-17 - Use of Monitored Natural Attenuation at Superfund, RCRA Corrective Action, and Underground Storage Tank Sites (November 1997)

Additional regulations and guidance are applicable, relevant, and appropriate to the remedial alternatives and will be complied with in connection with implementation of the remedial program; however, the list above is intended to represent the principal SCGs which should be considered in evaluating the remedial alternatives for the BCP site.

Conformance with the appropriate standards for remediation of contaminated soil is an important criterion in evaluating the remedial alternatives for the BCP site. In New York State 6 NYCRR Part 375 establishes the primary SCGs associated with remediation of contaminated soil at sites which are in the BCP. If proposing remediation pursuant to a Track other than Track 1 (Unrestricted Use), 6 NYCRR Part 375 requires evaluation of at least one remedial alternative pursuant to Track 1 (Unrestricted Use) and one other alternative developed by the applicant for the proposed use of the BCP site. The remedial alternatives presented in the following sections have been prepared in conformance with this requirement.

3.3 ALTERNATIVES ANALYSIS

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

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

- Cost effectiveness;
- Community Acceptance; and
- Land use.

The following is a detailed description of the alternatives analysis and remedy selection to address impacted media at the Site. This analysis was prepared in accordance with 6 NYCRR Part 375-1.8(f) and Part 375-3.8(f) and Section 4.3(c) of NYSDEC DER-10. As required, a minimum of two remedial alternatives (including a Track 1 scenario) are evaluated, as follows:

- Alternative 1 - Track 1 remediation of all soils above bedrock to unrestricted use criteria. This alternative would require removal of the current USTs and excavation of any/all contaminated soil present beneath the tankfield, extending to and beyond the water table at a depth of approximately 47 feet below grade. Excavation would also be required within three petroleum "hotspot" areas to depths of approximately 20 feet below grade. The remainder of the Site will be excavated to a depth of 11 feet below grade to meet unrestricted SCOs for non-petroleum related parameters including metals and SVOCs in fill materials. Contamination in groundwater would require additional remediation through chemical oxidant injections. This alternative does not allow for the use of long-term institutional/engineering controls to address residual impacted media or prevent exposures for future site occupants.

- Alternative 2 - Track 2, remediation of all soils to restricted residential criteria to a depth of 15 feet below grade. This alternative would require many of the same elements as the Track 1 alternative including removal of the current USTs and excavation of petroleum contaminated soil. However the excavations would be limited to 15 ft. The additional "hotspot" excavation for VOCs and metals will also be completed at three separate locations, B1306, B1310 and B1314, but limited to a depth of 15 feet below grade. Alternative 2 includes remediation of groundwater through chemical oxidant injection following completion of redevelopment activities as well as remediation of residual soil contamination via Soil Vapor Extraction. This alternative does not allow the use of long-term institutional/engineering controls to meet soil cleanup objectives. Long-term institutional / engineering controls are allowed to address or prevent exposures from other

impacted media however, such as soil gas. This alternative will require an environmental easement and a Site Management Plan.

- Alternative 3 - Track 4, would include removal of the current USTs and excavation to the depth required to construct the basement level foundation of the new building. This would require excavation of the majority of the site to a depth of 11 feet below grade. The remainder of the property (approx. 1,870 square feet) along the northern portion of the property will be excavated to a total depth of approximately 2 feet below grade for construction of an outdoor recreation area. The Track 4 alternative would allow the use of site specific SCOs for remaining fill materials to avoid over-excavation and the excavation of soils from the portion of the lot not covered by the building footprint. This will result in some VOCs, SVOCs and metals above restricted residential SCOs remaining in soil. Alternative 4 would include an engineered cap consisting of the building basement slab or a surface concrete cap for those areas not covered by the building. This alternative also includes the installation of a vapor barrier beneath the foundation of the new building.

3.4 REMEDIAL ALTERNATIVE 1

The following sections provide an evaluation of Alternative 1 based on the nine evaluation criteria as previously discussed.

3.4.1 Overall Protection of Human Health and the Environment

Alternative 1 will be protective of human health and the environment by eliminating petroleum concentrations present in all subsurface affected soils at the site and by eliminating constituents in soil related to historic fill and "hot spot" areas. The potential for human and environmental exposure to these constituents on-site will be eliminated by excavation of all soils and hot spot areas with parameters in excess of unrestricted criteria, disposing of excavated materials off-site and backfilling as needed with reused clean soil meeting UUSCOs, certified clean fill, virgin mined materials or recycled concrete materials from a NYSDEC permitted recycling facility (beneath foundations only). The treatment of any residuals with oxidants will improve

groundwater quality further and reduce potential post-remediation exposures to on-site and off-site residents from vapors.

During remedial and construction activity workers and area residents may be exposed to impacted soil and vapors. Worker exposure to soil and vapors will be minimized through implementation of a Health and Safety Plan. Exposures to area residents from dust and/or vapors will be minimized through the use of engineering controls and through implementation of a Community Air Monitoring Plan (CAMP).

3.4.2 Compliance with Remedial Goals, SCGs and RAOs

Alternative 1 will achieve compliance with the remedial goals, SCGs and RAOs for soil through removal to Track 1 unrestricted cleanup levels. Removal of petroleum impacted soil and chemical oxidation treatment of groundwater will result in significant improvement of groundwater quality with respect to SCGs.

3.4.3 Long-Term Effectiveness and Permanence

Alternative 1 achieves long term effectiveness and permanence by permanently removing and/or remediating all soils affected by Site contaminants or historic fill materials. Under this Alternative, risk from soil impacts is eliminated and risk from groundwater impacts significantly reduced. Alternative 1 will continue to meet RAOs for soil and groundwater in the future, providing a permanent long-term solution for the Site.

3.4.4 Reduction in Toxicity, Mobility or Volume

Alternative 1 will permanently eliminate the toxicity, mobility, and volume of contaminants from on-site soil by removing the source area of contamination and meeting unrestricted objectives. The removal/remediation of on-site soil and groundwater will also reduce the toxicity, mobility, and volume of contaminants in soil vapor.

3.4.5 Short-Term Effectiveness

There is the potential for short-term adverse impacts and risks to workers, the community, and the environment during the implementation of Alternative 1.

Short-term exposure to on-site workers during excavation and loading activities will be addressed with a HASP and mitigated through the use of personal protective equipment, monitoring and engineering controls. Potential short-term exposure to the surrounding community will be addressed through the use of odor and dust-suppression techniques and through the implementation of a CAMP which will require air monitoring activities during all excavation and soil disturbance activities.

Other potential impacts to the community such as construction-related noise, vibrations and traffic, will be controlled and regulated under the terms of the NYS Department of Buildings permit which can place a Stop Work Order on the property for unsafe conditions, community impacts or violation of the terms and conditions of the permit. Decontamination procedures of equipment, including trucks transporting soil to off-site disposal facilities, will minimize the potential for impacted soil to be dispersed beyond the Site boundary. A truck traffic plan has also been prepared to minimize disturbance to the local roads and community.

3.4.6 Implementability

The techniques, materials and equipment to implement Alternative 1 are readily available and have been proven effective in remediating the contaminants associated with the Site. Excavation for the remediation of soils is both a "low tech" and reliable method which has a long and proven track record on the remediation of hazardous waste and petroleum spill sites. However, excavation to a minimum of 47 feet within the UST area would be impractical requiring specialized equipment and extensive shoring.

3.4.7 Cost

Costs associated with Alternative 1 are estimated at approximately $1,313,694. This cost estimate includes the following elements and assumptions:

- Removal of current underground storage tanks;
- Excavate to 11 ftbg for the entire Site and then backfill 2,000 sf for the outdoor recreation area;
- Over-excavate to a depth of 55 feet in the vicinity of the USTs, and 20 feet in each of the three hotspot areas to remove petroleum impacted soil and metals;

- Additional shoring costs to accommodate the tank area excavation;
- Chemical Oxidant injection and post treatment groundwater sampling;
- Disposal of approximately 2,863 cy of petroleum contaminated soil;
- Disposal of approximately 3,220 cy of historic fill;
- Import of approximately 1,439 cy of clean fill to backfill over-excavated areas;
- Waste characterization and endpoint verification sampling and analysis;
- HASP and CAMP monitoring for the duration of the remedial activities; and
- Preparation of a Final Engineering Report and BCP program fees.

3.4.8 Compatibility with Land Use

The proposed redevelopment of the Site is compatible with its current zoning. Following remediation, the Site will meet unrestricted use objectives which will exceed the objectives for its planned mixed residential and commerical use.

3.4.9 Community Acceptance

No questions regarding the Site have been raised regarding remedial options to date. This RAWP will be subject to a 45-day public comment period to determine if the community has comments on the presented remedial alternatives and selected remedy. If no comments are received regarding Alternative 1, it will be considered to be acceptable to the community.

3.5 REMEDIAL ALTERNATIVE 2

The following sections provide an evaluation of Alternative 2 based on the nine evaluation criteria as previously discussed.

3.5.1 Overall Protection of Human Health and the Environment

Alternative 2 will be protective of human health and the environment by eliminating petroleum concentrations and constituents in soil related to historic fill above restricted residential criteria to a depth of 15 feet. The potential for human and environmental exposure to these constituents on-site will be eliminated by excavation of all soils with parameters in excess of restricted residential criteria to a depth of 15 feet, off-site disposal of excavated materials and backfilling as needed with certified clean fill, virgin mined materials or recycled concrete materials from a

NYSDEC permitted recycling facility. Groundwater use will be restricted at the Site until groundwater quality recovers.

During remedial and construction activity, workers and area residents may be exposed to impacted soil and vapors. Worker exposure to soil and vapors will be minimized through implementation of a HASP. Exposures to area residents from dust and or vapors will be minimized through the use of engineering controls and through implementation of a CAMP.

3.5.2 Compliance with Remedial Goals, SCGs and RAOs

Alternative 2 will achieve compliance with the remedial goals, SCGs and RAOs for soil through source removal to restricted residential cleanup SCOs. Groundwater quality will continue to improve over time with respect to SCGs. Compliance with SCGs for soil vapor is expected following completion of the remedial action.

3.5.3 Long-term Effectiveness and Permanence

Alternative 2 achieves long term effectiveness and permanence by permanently removing and/or remediating all soils affected by Site contaminants above restricted residential objectives to a depth of 15 feet. Under this Alternative risk from soil impacts is eliminated for on-site residents. Alternative 2 will continue to meet RAOs for soil in the future, providing a permanent long-term solution for the Site.

3.5.4 Reduction in Toxicity, Mobility or Volume through Treatment

Alternative 2 will reduce the toxicity, mobility, and volume of contaminants from on-site soil by meeting restricted residential objectives for the upper 15 feet. The removal/remediation of on-site soil will also reduce the toxicity, mobility, and volume of contaminants within on-site groundwater and soil vapor.

3.5.5 Short-term Effectiveness

The potential for short-term adverse impacts and risks to the workers, the community, and the environment during the implementation of Alternative 2 is minimal. Short-term exposure to on-site workers during excavation and loading activities will be addressed with a HASP and

mitigated through the use of personal protective equipment, monitoring and engineering controls. Potential short-term exposure to the surrounding community will be addressed through the use of odor and dust-suppression techniques and through the implementation of a CAMP which will require air monitoring activities during all excavation and soil disturbance activities.

Other potential impacts to the community such as construction-related noise, vibrations and traffic will be controlled and regulated under the terms of the NYS Department of Buildings permit which can place a Stop Work Order on the property for unsafe conditions, community impacts or violation of the terms and conditions of the permit. Decontamination procedures of equipment, including trucks transporting soil to off-site disposal facilities will minimize the potential for impacted soil to be dispersed beyond the Site boundary. A truck traffic plan will also be prepared to minimize disturbance to the local roads and community.

3.5.6 Implementability

The techniques, materials and equipment to implement Alternative 2 are readily available and have been proven effective in remediating the contaminants associated with the Site. Excavation for the remediation of soils is both a "low tech" and reliable method which has a long and proven track record on the remediation of hazardous waste and petroleum spill sites. Excavation to 15 feet will not require any additional shoring / dewatering beyond that needed for construction purposes.

3.5.7 Cost

Costs associated with Alternative 2 are estimated at approximately $816,939. This cost estimate includes the following elements and assumptions:

- Removal of current underground storage tanks;
- Excavate to 11 ftbg for the majority of the Site with the remainder of the property excavated to a depth of 2 feet below grade for the outdoor recreation area;
- Over-excavate to a depth of 15 feet in the UST area and each of the three hotspot areas to remove petroleum impacted soil and metals;
- Chemical Oxidant injection and post treatment groundwater sampling;
- Soil Vapor Extraction remediation;

- Disposal of approximately 914 cy of petroleum contaminated soil
- Disposal of approximately 2,706 cy of historic fill;
- Waste characterization and endpoint verification sampling and analysis;
- HASP and CAMP monitoring for the duration of the remedial activities; and
- Preparation of a Final Engineering Report and BCP program fees.
- Preparation of a Site Management Plan;
- Recording of an Environmental Easement; and,
- Long term groundwater monitoring and reporting.

3.5.8 Compatibility with Land Use

The proposed redevelopment of the Site is compatible with its current zoning. Following remediation the Site will meet restricted residential use objectives which is appropriate for its planned mixed residential and commercial use. A groundwater use restriction will be required to prevent future exposure to affected groundwater.

3.5.9 Community Acceptance

No questions regarding the Site have been raised regarding remedial options to date. This RAWP will be subject to a 45-day public comment period to determine if the community has any comments on the presented remedial alternatives and selected remedy. If no comments are received, it will be considered to be acceptable to the community.

3.6 REMEDIAL ALTERNATIVE 3

The following sections provide an evaluation of Alternative 3 based on the nine evaluation criteria as previously discussed.

3.6.1 Overall Protection of Human Health and the Environment

Alternative 3 will be protective of human health and the environment by eliminating petroleum contaminants present in subsurface soils above restricted residential criteria by excavation in accordance with the planned construction of the Site and by capping the remainder of the Site. The potential for human and environmental exposure to these constituents on-site will be eliminated by the excavation and / or capping of all soils with parameters above restricted

residential criteria. Residual fill with parameters above restricted residential criteria which remain following construction excavation, will be effectively capped with the concrete foundation slab of the new building and the paved recreation area.

Potential post-remediation exposures to on-site residents from soil vapors would be addressed through the use of a vapor barrier beneath the building foundation. Groundwater use will be restricted at the Site until groundwater quality recovers.

During remedial and construction activity, workers and area residents may be exposed to impacted soil and vapors. Worker exposure to soil and vapors will be minimized through implementation of a HASP. Exposures to area residents from dust and or vapors will be minimized through the use of engineering controls and through implementation of a CAMP.

3.6.2 Compliance with Remedial Goals, SCGs and RAOs

Alternative 3 will achieve compliance with the remedial goals, SCGs and RAOs for soil through source removal to restricted residential cleanup SCOs. Groundwater quality will continue to improve over time with respect to SCGs. Compliance with SCGs for soil vapor is expected following completion of the remedial action.

3.6.3 Long-term Effectiveness and Permanence

Alternative 3 achieves long term effectiveness and permanence by permanently removing and/or remediating all soils affected by Site contaminants above restricted residential objectives to a depth required for redevelopment. Under this Alternative risk from soil impacts is eliminated for on-site residents. Alternative 3 will continue to meet RAOs for soil in the future, providing a permanent long-term solution for the Site.

3.6.4 Reduction in Toxicity, Mobility or Volume

Alternative 3 will reduce the toxicity, mobility, and volume of contaminants from on-site soil by meeting restricted residential objectives to a depth required for redevelopment. The removal/remediation of on-site soil will also reduce the toxicity, mobility, and volume of contaminants within on-site groundwater and soil vapor.

3.6.5 Short-term Effectiveness

The potential for short-term adverse impacts and risks to the workers, the community, and the environment during the implementation of Alternative 3 is minimal. Short-term exposure to on-site workers during excavation and loading activities will be addressed with a HASP and mitigated through the use of personal protective equipment, monitoring and engineering controls. Potential short-term exposure to the surrounding community will be addressed through the use of odor and dust-suppression techniques and through the implementation of a CAMP which will require air monitoring activities during all excavation and soil disturbance activities.

Other potential impacts to the community such as construction-related noise, vibrations and traffic will be controlled and regulated under the terms of the NYS Department of Buildings permit which can place a Stop Work Order on the property for unsafe conditions, community impacts or violation of the terms and conditions of the permit. Decontamination procedures of equipment, including trucks transporting soil to off-site disposal facilities will minimize the potential for impacted soil to be dispersed beyond the Site boundary. A truck traffic plan will also be prepared to minimize disturbance to the local roads and community.

3.6.6 Implementability

The techniques, materials and equipment to implement Alternative 3 are readily available and have been proven effective in remediating the contaminants associated with the Site. Excavation for the remediation of soils is both a "low tech" and reliable method which has a long and proven track record on the remediation of hazardous waste and petroleum spill sites. Excavation will not require any additional shoring / dewatering beyond that needed for construction purposes.

3.6.7 Cost

Costs associated with Alternative 3 are estimated at approximately $760,081. This cost estimate includes the following elements and assumptions:

- Removal of current underground storage tanks;
- Excavate to 11ftbg for the planned excavation depth of the new construction;
- Chemical Oxidant injection and post treatment groundwater sampling;
- Disposal of approximately 675 cy of petroleum contaminated soil;

- Disposal of approximately 2,706 cy of historic fill;
- Waste characterization and endpoint verification sampling and analysis;
- HASP and CAMP monitoring for the duration of the remedial activities; and
- Preparation of a Final Engineering Report and BCP program fees.
- Preparation of a Site Management Plan;
- Recording of an Environmental Easement; and,
- Long term groundwater monitoring and reporting.

3.6.8 Compatibility with Land Use

The proposed redevelopment of the Site is compatible with its current zoning. Following remediation the Site will meet restricted residential use objectives which is appropriate for its planned mixed residential and commercial use. A groundwater use restriction will be required to prevent future exposure to affected groundwater.

3.6.9 Community Acceptance

No questions regarding the Site have been raised regarding remedial options to date. This RAWP will be subject to a 45-day public comment period to determine if the community has any comments on the presented remedial alternatives and selected remedy. If no comments are received, it will be considered to be acceptable to the community

3.7 SELECTION OF THE PREFERRED REMEDY

The remedy recommended for the site is a Track 2 alternative (Alternative 2) which consists of the removal of the soils to restricted residential criteria to a depth of 15 feet below grade. This will be achieved through removal of the current USTs and excavation of petroleum contaminated soil present beneath the tanks to a depth of 15 feet below grade. Excavation will then be completed to a depth of 11 feet below grade for the majority of the site for redevelopment. Additional "hotspot" excavation for VOCs and metals will be completed at three separate locations, B1306, B1310, and B1314, to a depth of 15 feet below grade. The Track 2 alternative also includes remediation of groundwater through chemical oxidant injection following completion of redevelopment activities. Over-excavated areas will be backfilled with either

virgin mined materials, recycled materials or certified fill which meets restricted residential SCOs.

3.7.1 Preferred Remedy Land Use Factor Evaluation

As required by Article 27, Title 14 of the Environmental Conservation Law 27-1415, the following land use factor evaluation examines whether the preferred alternative is acceptable based on the 14criteria presented in the following subsections.

Zoning

The proposed redevelopment project, which includes the construction of a new mixed use, is in compliance with current C4-4L zoning. Therefore, the project will be constructed as-of-right regardless of the remedy implemented. The preferred remedy will comply with current zoning.

Applicable Comprehensive Community Master Plans or Land Use Plans

The proposed redevelopment project and selected remedy are consistent with comprehensive master and land use plans, specifically the Bedford Stuyvesant North rezoning action. This area-wide comprehensive re-zoning, completed by the New York City Department of City Planning and adopted by the City Council in November 2012. The preferred remedy will comply with applicable land use plans.

Surrounding Property Uses

The surrounding land use includes underutilized commercial properties to the north, multi-family residential buildings to the northeast, mixed-use residential buildings to the northwest and south and a gas station to the west.

Citizen Participation

Citizen participation for implementation of the preferred alternative will be performed in accordance with DER 23 and NYCRR Part 375-1.10 and Part 375-3.10. A Citizen Participation Plan has been prepared and is available for public review at the identified document repositories (NYSDEC Region 2 Office, DeKalb Brooklyn Public Library, DeKalb Branch). This Remedial Action Work Plan was made available for review by the public as required by the BCP.

Environmental Justice Concerns

The Site is located within a potential environmental justice area. The NYSDEC defines a potential environmental justice area as a "minority or low-income community that may bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of federal, state, local, and tribal programs and policies".

Environmental justice means the fair treatment and meaningful involvement of all people regardless of race, color, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Fair treatment means that no group of people, including a racial, ethnic, or socioeconomic group, should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of federal, state, local, and tribal programs and policies.
Since the goal of the remedy will achieve the highest level of cleanup (unrestricted use) and will remove contaminated materials from the community, the remedy poses no environmental justice concerns.

Land use designations

The proposed remedy is consistent with land-use designations.

Population growth patterns

Population growth patterns support the proposed use for the Site. The preferred remedy will not negatively affect population growth patterns.

Accessibility to existing infrastructure

The Site is accessible to existing infrastructure. The Site is also accessible to mass transit and is within walking distance to bus and subway stops on Malcolm X Boulevard and Broadway. The preferred remedy will not alter accessibility to existing infrastructure.

Proximity to cultural resources

The proposed remedy will not negatively impact cultural resources

Proximity to natural resources

The proposed remedy will improve the local environment and will not negatively impact natural resources.

Off-Site groundwater impacts

The proposed remedy will improve off-site groundwater impacts by removing a source of groundwater contamination at the site.

Proximity to floodplains

No portion of the Site is located within a designated flood zone area. The nearest moderate risk and high risk flood zone areas are located 1 miles to the north of the Site.

Geography and geology of the Site

The selected remedy will excavate soil from the Site to a maximum depth of 15 feet below existing grade. The selected alternative and development of the site have considered the geography and geology of the Site.

Current Institutional Controls

The Site was assigned an E-designation for hazardous materials as part of the rezoning action completed by the City. The compliance with the E-designation for hazardous materials will require the approval of the NYC Office of Environmental Remediation (NYCOER) of this RAWP. NYCOER must approve this RAWP in the form of a Notice to Proceed (NTP) letter before building permits will be issued by the NYC Department of Buildings (DOB). Documentation in the form of a Final Engineering Report (FER) for site remediation must be approved by NYCOER in the form of a Notice of Satisfaction (NOS) before the NYCDOB will issue permanent Certificates of Occupancy for the new buildings.

3.8 SUMMARY OF SELECTED REMEDIAL ACTIONS

The remedy recommended for the site is a Track 2 alternative (Alternative 2) which consists of the removal of the soils to restricted residential SCO and/or the applicable protection of groundwater SCO, to a depth of 15 feet below grade. This will be achieved through removal of

the current USTs and excavation of petroleum contaminated soil present beneath the tanks to a depth of 15 feet below grade. Excavation will be completed to a depth of 11 feet below grade for the majority of the Site for redevelopment. Additional "hotspot" excavation for VOCs and metals will be completed at three separate locations, B1306, B1310, and B1314, to a depth of 15 feet below grade. The Track 2 alternative also includes remediation of groundwater through chemical oxidant injection following completion of redevelopment activities. Over-excavated areas will be backfilled with either virgin mined materials, recycled materials or certified fill which meets the requirements of 6 NYCRR Part 375 -6.7(d)(1)(ii)(b). Although it is not a required element of the remedy, a vapor barrier will be installed beneath the building foundation as part of the building construction. The remedy will include the following items:

1. Removal of underground storage tanks
2. Excavation of soil/fill exceeding Track 2 restricted residential and/or the applicable protection of groundwater SCOs as listed in Table 1 to a depth as great as 15 feet below grade;
3. Treatment of residual groundwater contamination via injection of chemical oxidants;
4. Treatment of residual soil contamination in the former tank field area as well as hot spot areas via Soil Vapor Extraction;
5. Screening for indications of contamination (by visual means, odor, and monitoring with PID) of all excavated soil during any intrusive Site work;
6. Collection and analysis of end-point soil samples and post-remedial groundwater samples to evaluate the performance of the remedy with respect to attainment of unrestricted SCOs and groundwater standards;
7. 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;
8. Import of materials to be used for backfill and cover in compliance with: (1) chemical limits and other specifications included in **Table 1**, (2) all Federal, State and local rules and regulations for handling and transport of material.
9. Installation of a site cover system consisting of the concrete building slab and paved outdoor recreation area.

10. Implementation of a Site Management Plan (SMP) for long term maintenance of the Engineering Controls.
11. An Environmental Easement will be filed against the Site to ensure implementation of the SMP.

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.

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

4.0 REMEDIAL ACTION PROGRAM

The objective of this section of the Remedial Action Work Plan, is to present a scope of work which will be approved by NYSDEC and when completely implemented will ready the BCP site for development under the Contemplated Use consistent with the requirements of the Brownfield Cleanup Program.

4.1 GOVERNING DOCUMENTS

Governing documents and procedures included in the Remedial Work Plan include a Site-specific Health and Safety Plan (HASP), a Community Air Monitoring Plan (CAMP), a Citizen Participation Plan, a Soil Management Plan (SoMP), a Quality Assurance Project Plan (QAPP), fluid management procedures, and contractors' site operations and quality control procedures. Highlights of these documents and procedures are provided in the following sections.

4.1.1 Health & Safety Plan (HASP)

Contractors and subcontractors will have the option of adopting this HASP or developing their own site-specific document. If a contractor or subcontractor chooses to prepare their own HASP, the Remedial Engineer will insure that it meets the minimum requirements as detailed in the site-specific HASP prepared by EBC.

Activities performed under the HASP will comply with applicable parts of OSHA Regulations, primarily 29 CFR Parts 1910 and 1926. Modifications to the HASP may be made with the approval of the Remedial Engineer (RE), Site Safety Manager (SSM) and/or Project Manager (PM).

All remedial work performed under this plan will be in full compliance with governmental requirements, including Site and worker safety requirements mandated by Federal OSHA.

The Volunteer and associated parties preparing the remedial documents submitted to the State and those performing the construction work, are completely responsible for the preparation of an

appropriate Health and Safety Plan and for the appropriate performance of work according to that plan and applicable laws.

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

The Site Safety Coordinator will be Ms. Chawinie Miller. Her resume is provided in **Attachment F**. Confined space entry will comply with all OSHA requirements to address the potential risk posed by combustible and toxic gasses. A copy of the Site Specific Health and Safety Plan is provided in **Attachment B.**

4.1.2 Quality Assurance Project Plan (QAPP)

The fundamental QA objective with respect to accuracy, precision, and sensitivity of analysis for laboratory analytical data is to achieve the QC acceptance of the analytical protocol. The accuracy, precision and completeness requirements will be addressed by the laboratory for all data generated.

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 appropriate laboratory provided glassware and shipped in plastic coolers. Samples will be preserved through the use of ice or a cold-pak(s) to maintain a temperature of $4^{o}C$.

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:

- Gently tap or scrape to remove adhered soil
- Rinse with tap water

- Wash with alconox® detergent solution and scrub
- Rinse with tap water
- Rinse with distilled or deionized water

Prepare field blanks by pouring 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). The QAPP for the Site is provided in **Attachment C**.

4.1.3 Construction Quality Assurance Plan (CQAP)

All construction work related to the remedy (i.e., soil excavation) will be monitored by EBC field personnel under the direct supervision of the Remedial Engineer. Monitoring during soil excavation will be performed to protect the health of site workers and the surrounding community. A Health and Safety Plan (HASP) and Community Air Monitoring Plan (CAMP) have been specifically developed for this project. These plans specify the monitoring procedures, action levels, and contingency measures that are required to protect public health.

All intrusive and soil disturbance activities will be monitored by a qualified environmental professional (QEP) under the direct supervision of the Remedial Engineer who will record observations in the site field book and complete a photographic log of the daily activities. The QEP will provide daily updates to the Project Manager and Remedial Engineer who will both make periodic visits to the site as needed to assure construction quality.

4.1.4 Soil/Materials Management Plan (SoMP)

An SMP has been prepared for excavation, handling, storage, transport and disposal of all soils/materials that are disturbed/excavated at the Site. The SMP includes all of the controls that will be applied to these efforts to assure effective, nuisance-free performance in compliance with all applicable Federal, State and local laws and regulations. The SoMP is presented in **Section 5.4**.

4.1.5 Erosion and Sediment Control Plan (ESCP)

Erosion and sediment controls will be performed in conformance with requirements presented in the New York State Guidelines for Urban Erosion and Sediment Control. Typical measures that will be utilized at various stages of the project to limit the potential for erosion and migration of soil include the use of hay bales, temporary stabilized construction entrances/exits, placement of silt fencing and/or hay bales around soil stockpiles, and dust control measures.

4.1.6 Community Air Monitoring Plan (CAMP)

The CAMP provides measures for protection for on-site workers and 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.

The action levels specified 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 vapors, nuisance odors and dust particulates. A CAMP was previously prepared for implementation of the RAWP and is provided in **Attachment D**.

4.1.7 Contractors Site Operations Plan (SOP)

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

4.1.8 Citizen Participation Plan (CPP)

A certification of mailing will be sent by the Volunteer to the NYSDEC project manager following the distribution of all Fact Sheets and notices that includes: (1) certification that the

Fact Sheets were mailed, (2) the date they were mailed; (3) a copy of the Fact Sheet, (4) a list of recipients (contact list); and (5) a statement that the repository was inspected on (specific date) and that it contained all of applicable project documents.

No changes will be made to approved Fact Sheets authorized for release by NYSDEC without written consent of the NYSDEC. No other information, such as brochures and flyers, will be included with the Fact Sheet mailing. The approved Citizen Participation Plan for this project is provided in **Attachment E**.

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

Brooklyn Public Library
DeKalb Branch
790 Bushwick Avenue
Brooklyn, NY 11221
(718) 455-3898

Hours:

Mon 10:00 AM - 6:00 PM
Tue 10:00 AM - 6:00 PM
Wed 1:00 PM - 8:00 PM
Thu 10:00 AM - 6:00 PM
Fri 10:00 AM - 6:00 PM
Sat 10:00AM - 5:00PM
Sun closed

4.2 GENERAL REMEDIAL ACTION INFORMATION

4.2.1 Project Organization

The Project Manager for the remedial activity will be Ms. Kimberly Somers. Overall responsibility for the BCP project will be Mr. Charles B. Sosik, P.G., P.HG. The Remedial Engineer for this project is Mr. Ariel Czemerinski, P.E. Mr. Kevin Brussee will serve as the Quality Assurance Officer. Resumes of key personnel involved in the Remedial Action are included in **Attachment F**.

4.2.2 Remedial Engineer

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

The Remedial Engineer will review all pre-remedial plans submitted by contractors and subcontractors involved in all aspects of remedial construction, including soil excavation, stockpiling, characterization, removal and disposal, air monitoring, emergency spill response services, import of back fill material, and management of waste transport and disposal, and will certify compliance in the Final Remediation Report. The Remedial Engineer will provide the certifications listed in Section 10.1 in the Final Engineering Report.

4.2.3 Remedial Action Schedule

The remedial action will begin with mobilization of equipment and material to the Site, which will begin approximately 2 weeks following RAWP approval and issuance of the building permit, and within 10 days of the distribution of the remedial construction Fact Sheet. A pre-construction meeting will be held among NYSDEC, the Remedial Engineer, and the selected remedial contractor prior to site mobilization. Mobilization will be followed by soil removal and disposal and confirmation sampling. The work is expected to take 8 weeks as part of the construction excavation and foundation installation.

4.2.4 Work Hours

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

4.2.5 Site Security

A construction fence will be erected along the front of the property as required by the NYC Department of Buildings. The fence will be maintained as required and secured at the end of each work day.

4.2.6 Traffic Control

The Volunteer's construction management personnel will direct the arrival or departure of construction vehicles, and provide flag services as needed to maintain safe travel exiting and entering the Site from DeKalb Avenue. Traffic related to on-going remedial activity will require the staging of 10-wheel dump trucks along DeKalb Avenue on a daily basis during soil excavation activity. The soil disposal transport route will be as follows:

- ENTERING SITE - from the Brooklyn Queens Expressway take the Flushing Avenue exit and head east on Flushing Avenue to Broadway. Turn right, heading south on Broadway to DeKalb Avenue. Turn right on Dekalb Avenue to Site entrance on the right.
- EXITING SITE – Turn right onto Malcolm X Boulevard and make a right on Pulaski St heading east to Broadway. Make a left on Broadway on continue north to Flushing Avenue. Turn left on Flushing Avenue and continue to Brooklyn Queens Expressway.

A map showing the truck routes is included as **Figure 11**.

4.2.7 Worker Training and Monitoring

An excavation contractor will remove historic fill, and uncontaminated soil. The excavation contractor's on-site personnel will have a minimum of 24 hour Hazardous Waste Operations and Emergency Response Operations (HAZWOPER) training. The excavation and loading of contaminated soil and the application of chemical oxidants will be performed by personnel with a minimum of 40 hour HAZWOPER.

All field personnel involved in remedial activities will participate in training, if required, under 29 CFR 1910.120, including 24 and 40-hour hazardous waste operator training and annual 8-hour refresher training. The Site Safety Officer will be responsible for maintaining workers training records.

Personnel entering any exclusion zone will be trained in the provisions of the HASP and be required to sign a HASP acknowledgment.

All on-site personnel engaged in remedial or sampling activities must receive adequate site-specific training in the form of an on-site Health and Safety briefing prior to participating in field work with emphasis on the following:

- Protection of the adjacent community from hazardous vapors and / or dust which may be released during intrusive activities.
- Identification of chemicals known or suspected to be present on-site and the health effects and hazards of those substances.
- The need for vigilance in personnel protection, and the importance of attention to proper use, fit and care of personnel protective equipment.
- Decontamination procedures.
- Site control including work zones, access and security.
- Hazards and protection against heat or cold.
- The proper observance of daily health and safety practices, such as entry and exit of work zones and site. Proper hygiene during lunch, break, etc.
- Emergency procedures to be followed in case of fire, explosion and sudden release of hazardous gases.

4.2.8 Agency Approvals

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

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

A complete list of all local, regional and national governmental permits, certificates or other approvals or authorizations required to perform the remedial and development work is attached

in **Table 15**. This list includes a citation of the law, statute or code to be complied with, the originating agency, and a contact name and phone number in that agency. This list will be updated in the Final Engineering Report.

4.2.9 NYSDEC BCP Signage

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

4.2.10 Pre-Construction Meeting with NYSDEC

A pre-construction meeting with the Project Manager, Remedial Engineer, Construction Manager, Owner's Representative and the NYSDEC will take place prior to site mobilization.

4.2.11 Emergency Contact Information

An emergency contact sheet with names and phone numbers is included in **Table 16**. That document defines the specific project contacts for use by NYSDEC and NYSDOH in the case of a day or night emergency.

4.2.12 Remedial Action Costs

The total estimated cost of the Remedial Action is $1,403,935. An itemized and detailed summary of estimated costs for all remedial activity is attached as **Attachment H**. This will be revised based on actual costs and submitted as an Appendix to the Final Engineering Report.

4.3 SITE PREPARATION

4.3.1 Mobilization

Mobilization will include the delivery of construction equipment and materials to the site. All construction personnel will receive site orientation and training in accordance with the site specific HASP, CAMP and established policies and procedures to be followed during the implementation of the RAWP. The remediation contractor, construction manager and all

associated subcontractors will each receive a copy of the RAWP and the site specific HASP and will be briefed on their contents.

4.3.2 Erosion and Sedimentation Controls

Soil erosion and sediment control measures for management of storm water will be installed in accordance with the New York Guidelines for Urban Erosion and Sediment Control. Haybales and/or silt fence will be placed by the remedial contractor at locations surrounding excavation areas and within the perimeter fencing as needed, to control stormwater runoff and surface water from exiting the excavation. These control measures will be installed prior to initiating the soil excavation.

4.3.3 Stabilized Construction Entrance(s)

Stabilized construction entrances will be installed at all points of vehicle ingress and egress to the Site. The stabilized entrances will be constructed of a 4 to 6-inch bed of crushed stone or recycled concrete aggregate (RCA) from a NYSDEC-registered facility, which will be sloped back toward the interior of the Site. The stabilized entrances will be inspected by the Remedial Engineer or his designee on a daily basis during soil loading activities and reinforced as needed with additional stone/RCA to prevent the accumulation of ruts, mud or soil.

4.3.4 Utility Marker and Easements Layout

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

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

4.3.5 Sheeting and Shoring

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

4.3.6 Equipment and Material Staging

All equipment and work materials will be staged on-Site in areas as designated by the General Contractor, and / or Construction Site Superintendent.

4.3.7 Decontamination Area

A temporary truck decontamination pad will be constructed to decontaminate trucks and other vehicles/equipment leaving the Site. The pad will be constructed by placing a stone aggregate such as crushed rock or RCA. The pad will be bermed at the sides and sloped back to the interior of the Site. The truck pad will be sized to accommodate the largest construction vehicle used and located in line with the stabilized construction entrance.

4.3.8 Site Fencing

An 8-foot high temporary construction fence will be installed along Malcolm X Boulevard and DeKalb Avenue with entrance/egress gates located on each. This fence will be properly secured at the end of the day and supplemented, as needed, by installing orange safety fencing around open excavations to ensure on-site worker safety.

4.3.9 Demobilization

Demobilization will consist of the restoration of material staging areas and the disposal of materials and/or general refuse in accordance with acceptable rules and regulations. Materials used in remedial activities will be removed and disposed properly. All equipment will be decontaminated prior to leaving the Site.

4.4 REPORTING

All daily and monthly reports will be included in the Final Engineering Report.

4.4.1 Daily Reports

Daily reports will be submitted to NYSDEC and NYSDOH Project Managers by the end of each day in which remedial activity takes place. Daily reports will include:

- An update of progress made during the reporting day;
- A summary of any and all complaints with relevant details (names, phone numbers);
- A summary of CAMP finding, including excursions;
- An explanation of notable Site conditions;
- Identification of planned activities for the following day.

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

These reports will include a summary of air sampling results, odor and dust problems and corrective actions, and all complaints received from the public.

4.4.2 Monthly Reports

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

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

4.4.3 Other Reporting

Photographs will be taken of all remedial activities and submitted to NYSDEC in digital (JPEG) format. Photos will illustrate all remedial program elements and will be of acceptable quality. Representative photos of the Site prior to any Remedial Actions will be provided. Representative photos will be provided of each contaminant source, source area and Site structures before, during and after remediation. Photos will be included in the daily reports as needed, and a comprehensive collection of photos will be included in the Final Engineering Report.

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

4.4.4 Complaint Management Plan

Complaints from the public regarding nuisance or other Site conditions including noise, odor, truck traffic etc., will be recorded in the Site field book and reported to the NYSDEC via email on the same day as the complaint is received.

4.4.5 Deviations from the Remedial Action Work Plan

Minor deviations from the RAWP will be identified in the daily update report and will be noted in the Final Engineering Report. When deviations are reported a brief discussion will be provided which will state the following:

- Reasons for deviating from the approved RAWP;
- Effect of the deviations on overall remedy.

Major changes to the scope of work must be discussed with the NYSDEC and the NYSDOH prior to implementation. If the changes are considered to be significant enough, an addendum to the RAWP Work Plan will be prepared and submitted to NYSDEC / NYSDOH for review.

5.0 REMEDIAL ACTION: MATERIAL REMOVAL FROM SITE

Excavation work includes the removal of the current USTs and excavation of petroleum contaminated soil present beneath the tanks and all soil exceeding restricted residential SCOs to a depth of 15 feet below grade. Additional "hotspot" excavation for VOCs and metals will be completed at three separate locations, B1306, B1310, and B1314, to a depth of 15 feet below grade. Soil excavation will be performed using conventional equipment such as track-mounted excavators, backhoes and loaders.

All excavation work will be performed in accordance with the Site-specific HASP and CAMP. Removal of the underground tanks will be performed by a licensed tank removal contractor with appropriately trained personnel (40HR OSHA HAZWOPER). Excavation of the petroleum impacted soil and historic fill material will be performed by the excavation contractor for the construction project using appropriately trained personnel (24 to 40HR OSHA HAZWOPER). If any additional underground storage tanks (UST) are discovered during excavation the NYSDEC Project Manager will be immediately notified and the UST removed and closed in accordance with DER-10, NYSDEC PBS regulations and NYC Fire Department regulations.

The selected remedial action includes removal of the current underground storage tanks and excavation of all soil exceeding restricted residential criteria to a depth of 15 feet below grade. Excavation will be completed to a depth of 11 feet below grade for the majority of the Site for redevelopment. The remainder of the property (approximately 1,870 square feet) along the northern portion of the property will be excavated to a total depth of approximately 2 feet below grade for construction of an outdoor recreation area. Three "hotspot" areas will be excavated to a depth of 15 feet to address VOC and metal exceedances. **Figure 12** shows the planned excavation depths to accommodate the new building's foundation. An excavation plan showing the excavation depths to achieve the Track 2 remedy is provided as **Figure 13**.

Due to the presence of groundwater at approximately 46 feet below grade, dewatering is not anticipated to be necessary for excavation activities.

5.1 UST REMOVAL METHODS

Two underground storage tanks (USTs) are present onsite, two 4,000 gallon gasoline tanks. The USTs will be removed in accordance with the procedures described under the NYSDEC Memorandum for the Permanent Abandonment of Petroleum Storage Tanks and Section 5.5 of Draft DER-10 as follows:

- Remove all product to its lowest draw-off point
- Drain and flush piping into the tank
- Vacuum out the tank bottom consisting of water product and sludge
- Dig down to the top of the tank and expose the upper half of the tank
- Remove the fill tube and disconnect the fill, gauge, product and vent lines and pumps. Cap and plug open ends of lines
- Temporarily plug all tank openings, complete the excavation, remove the tank and place it in a secure location
- Render the tank safe and check the tank atmosphere to ensure that petroleum vapors have been satisfactorily purged from the tank
- Clean tank or remove to a storage yard for cleaning
- If the tank is to be moved it must be transported by licensed waste transported. Plug and cap all holes prior to transport leaving a 1/8 inch vent hole located at the top of the tank during transport
- After cleaning the tank must be made acceptable for disposal at a scrap yard cleaning the tank interior with a high pressure rinse and cutting the tank in several pieces.

During the tank and pipe line removal the following field observations should be made and recorded:

- A description and photographic documentation of the tank and pipe line condition (pitting, holes, staining, leak points, evidence of repairs, etc.)
- Examination of the excavation floor and sidewalls for physical evidence of contamination (odor, staining, sheen, etc.)
- Periodic field screening (through bucket return) of the floor and sidewalls of the excavation with a calibrated photoionization detector (PID).

5.2 SOIL CLEANUP OBJECTIVES

The Soil Cleanup Objectives for this Site are listed in **Table 1**. **Table 7** summarizes all soil samples that exceed the SCOs proposed for this Remedial Action. A spider map that shows all soil samples that exceed the SCOs proposed for this Remedial Action are shown in **Figure 8**.

5.3 REMEDIAL PERFORMANCE EVALUATION (POST EXCAVATION END-POINT SAMPLING)

Post excavation soil samples will be collected from the site to verify that remedial goals have been achieved. Soil samples will be taken following the completion of all remedial and construction-related excavation. All remedial performance soil samples will be analyzed for only those parameters found to be present above Restricted Residential SCOs during the Remedial Investigation (i.e., TCL VOCs, SVOCs (PAHs), Lead) to demonstrate achievement of restricted residential SCOs. See **Figure 14** for endpoint sampling locations.

5.3.1 End-Point Sampling Frequency

Endpoint sampling frequency will be in accordance with DER-10 section 5.4, which recommends the collection of one bottom sample per 900 sf of bottom area and one sidewall sample per 30 linear feet. Sidewall samples will not be collected where sheeting or shoring is present. Sheeting will be located outside the bounds of the property line, therefore soil up to and just beyond the property line will be removed.

5.3.2 Methodology

Collected samples will be placed in glass jars supplied by the analytical laboratory and stored in a cooler with ice to maintain a temperature of 4 degrees C. Samples will either be picked up at the Site by a laboratory-dispatched courier at the end of the day, or transported back to the EBC office where they will be picked up the following day by the laboratory courier. All samples will be analyzed by a NYSDOH ELAP certified environmental laboratory certified in the appropriate categories.

All samples will be analyzed for VOCs and SVOCs according to EPA method 8260C/8270D, pesticides/PCBs by EPA method 8081B/8082A and TAL metals Method 6010C.

5.3.3 Reporting of Results

Sample analysis will be provided by a New York State certified environmental laboratory, certified in appropriate categories. Laboratory reports will include NYSDEC Analytical Services Protocol (ASP) category B data deliverables for use in the preparation of a data usability summary report (DUSR). All results will be provided in accordance with the NYSDEC Environmental Information Management System (EIMS) electronic data deliverable (EDD) format.

5.3.4 QA/QC

The fundamental QA objective with respect to accuracy, precision, and sensitivity of analysis for laboratory analytical data is to achieve the QC acceptance of the analytical protocol. The accuracy, precision and completeness requirements will be addressed by the laboratory for all data generated.

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 appropriate laboratory provided glassware and shipped in plastic coolers. Samples will be preserved through the use of ice or cold-pak(s) to maintain a temperature of $4^{o}C$, +/- $2\ ^{o}C$.

Dedicated disposable sampling materials will be used for both soil 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. Field blanks will be prepared by pouring distilled or deionized water over decontaminated equipment and collecting the water in laboratory provided containers.

Trip blanks, as prepared and provided by the NYS certified laboratory, 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.

5.3.5 DUSR

The DUSR provides a thorough evaluation of analytical data with full third party data validation. The primary objective of a DUSR is to determine whether or not the data, as presented, meets the site/project specific criteria for data quality and data use. Verification and/or performance monitoring samples collected under this RAWP will be reviewed and evaluated in accordance with the Guidance for the Development of Data Usability Summary Reports as presented in Appendix 2B of DER-10. The completed DUSR for verification/performance samples collected during implementation of this RAWP will be included in the final Engineering Report.

5.3.6 Reporting of End-Point Data in FER

All endpoint data collected as part of this remedial action will be summarized and presented in the Final Engineering Report. The summary tables will include comparison of results to Unrestricted Use SCOs to verify attainment of Track 1. Laboratory reports and the DUSR will be included as an appendix in the FER.

5.4 ESTIMATED MATERIAL REMOVAL QUANTITIES

Historic fill materials were documented throughout the site to depths as great as 10 feet below grade. It is expected that approximately 3,626 cubic yards (5,439 tons) of non-hazardous historic fill and petroleum contaminated soil will be excavated from the site for off-site disposal.

Additional excavation of clean native soil from 10 to 11 feet below grade will be required to accommodate the planed building foundation. This will generate approximately 260 cy of clean soil. Assuming all of the clean soil excavated for the building foundations meets restricted residential SCOs, then approximately 189 cy may be reused on site to backfill the over excavated hotspot areas as well as the recreation area. This assumes, however, that there is adequate space on site to store the clean soil planned for reuse. Requests to reuse material on-site will be submitted to NYSDEC with accompanying analytical data.

5.5 SOIL/MATERIALS MANAGEMENT PLAN

5.5.1 Excavation of Hot Spots

VOC impacted soil has been documented in the vicinity of the main UST area to a depth of 20 feet below grade and also at the water table interface, at a depth of 45 feet below grade.

VOCs, SVOCs and /or metals exceeding restricted residential SCOs are present to a depth of 15 feet below grade at three locations, B1306, B1310, and B1314.

Excavated soil will be secured and temporarily stored on-site until arrangements can be made for off-site disposal. As an alternative, pre-characterization samples may be collected to allow the soil to be loaded directly on to trucks for transport to the disposal facility.

The final determination on classification will be based on the results of waste characterization analysis and the NYSDEC.

Soil excavation will be performed in accordance with the procedures described under Section 5 of DER-10 as follows:

- A description and photographic documentation of the excavation.
- Examination of the excavation floor and sidewalls for physical evidence of contamination (odor, staining, sheen, etc.).
- Periodic field screening (through bucket return) of the floor and sidewalls of the excavation with a calibrated photoionization detector (PID).

Final excavation depth, length, and width will be determined by the Remedial Engineer or his designee, and will depend on the horizontal and vertical extent of contaminated soils as identified through physical examination (PID response, odor, staining, etc.). Expansion of the excavation beyond the planned hotspot area is anticipated and can easily be accommodated.

The following procedure will be used for the excavation of impacted soil (as necessary and appropriate):

- Wear appropriate health and safety equipment as outlined in the HASP;

- Prior to excavation, ensure that the area is clear of utility lines or other obstructions. Lay plastic sheeting on the ground next to the area to be excavated;

- Using a rubber-tired backhoe or track mounted excavator, remove overburden soils and stockpile or dispose of separate from the impacted soil;

- If USTs are discovered, the NYSDEC will be notified and the best course of action to remove the structure should be determined in the field. This may involve the continued removal of overburden to access the top of the structure or continued trenching around the perimeter to minimize its disturbance;

- If physically contaminated soil is present (e.g., staining, odors, sheen, PID response, etc), an attempt will be made to remove it to the extent not limited by the site boundaries. If possible, physically impacted soil will be removed using the backhoe or excavator, segregated from clean soils and overburden, and staged on separate dedicated plastic sheeting or live loaded into trucks from the disposal facility. Removal of the impacted soils will continue until visibly clean material is encountered and monitoring instruments indicate that no contaminants are present;

- Excavated soils which are temporarily stockpiled on-site will be covered with 6-mil polyethylene sheeting while disposal options are determined. Sheeting will be checked on a daily basis and replaced, repaired or adjusted as needed to provide full coverage. The sheeting will be shaped and secured in such a manner as to drain runoff and direct it toward the interior of the property;

- Once the Remedial Engineer is satisfied with the removal effort, verification or confirmatory samples will be collected from the excavation as described in **Section 6.3** of this document.

The excavation of VOC contaminated areas will be performed by an excavation contractor and appropriately trained personnel (24 - 40HR OSHA HAZWOPER).

5.5.2 Excavation of Historic Fill Materials

Historic fill has been identified throughout the property to depths as great at 10ft below grade. Historic fill will be segregated from non-contaminated native soils and disposed of off-site at a permitted disposal facility. Excavated historic fill materials will be secured and temporarily stored on-site until arrangements can be made for off-site disposal. As an alternative, pre-characterization samples may be collected to allow the soil to be loaded directly on to trucks for transport to the disposal facility. It is anticipated that historic fill materials will be classified as a non-hazardous material. It is anticipated that the excavation of historic fill materials will be performed by the excavation contractor for the construction project.

5.5.3 Excavation of Native Soils

Native soils are present directly below the fill materials and will require excavation for the construction of the new building's basement level. Based on the results of the RI, it is expected that native soils will not be contaminated. However, if contamination is identified beneath the existing buildings foundation following demolition, or during the excavation of the basement level, the contamination will be removed and segregated from clean native soils for proper disposal. Clean native soils will be stockpiled on-site and characterized for reuse on-site in areas over-excavated to remove hot spots. Any excess soil will be disposed of off-site as a beneficial re-use material upon approval by the NYSDEC. Clean native soils utilized on-site will be subject to a testing program to verify that they meet restricted residential SCOs prior to use.

It is anticipated that the excavation of native soil materials will be performed by the excavation contractor for the construction project. If contamination is identified in native soil, excavation of this material will be performed by appropriately trained personnel (24 - 40HR OSHA HAZWOPER).

5.5.4 Soil Screening Methods

Visual, olfactory and PID (10.6eV) soil screening and assessment will be performed by an experienced environmental professional under the direction of the Remedial Engineer during all

remedial and development excavations into known or potentially contaminated material. Soil screening will be performed regardless of when the invasive work is done and will include all excavation and invasive work performed during the remedy and during development phase, such as excavations for foundations and utility work, prior to issuance of the COC.

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

Screening will be performed by qualified environmental professionals or other experienced field personnel under the direction of the Remedial Engineer. Resumes are provided in **Attachment F** for all personnel responsible for field screening (i.e. those representing the Remedial Engineer) of invasive work for unknown contaminant sources during remediation and development work.

5.5.5 Stockpile Methods

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

Stockpiles will be kept covered at all times with appropriately anchored tarps. Stockpiles will be routinely inspected and damaged tarp covers will be promptly replaced. Hay bales will be used as needed near catch basins, surface waters and other discharge points. Water will be available on-site at suitable supply and pressure for use in dust control.

5.5.6 Materials Excavation and Load Out

The Remedial Engineer or a qualified environmental professional under his supervision will oversee all invasive work and the excavation and load-out of all excavated material. The Volunteer and its contractors are solely responsible for safe execution of all invasive and other work performed under this Plan.

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).

Where effective, the equipment will be "dry" decontaminated using a broom and/or brushes. If significant amounts of soil or other contaminants remain after the dry decontamination, the equipment will also be pressure washed before leaving the Site. The Remedial Engineer or his designee will be responsible for ensuring that all outbound trucks are dry-brushed or washed on the truck wash/equipment pad before leaving the Site until the remedial construction is complete. Locations where vehicles enter or exit the Site shall be inspected daily for evidence of off-Site sediment tracking. The Remedial Engineer will be responsible for ensuring that all egress points for truck and equipment transport from the Site will be clean of dirt and other materials derived from the Site during Site remediation and development. Cleaning of the adjacent streets will be performed as needed to maintain a clean condition with respect to Site derived materials.

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

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

Each hotspot and structure to be remediated will be removed and end-point remedial performance sampling completed before excavations related to Site development commence proximal to the hotspot or structure.

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

Mechanical processing of historical fill and contaminated soil on-Site is prohibited. All primary contaminant sources (including but not limited to tanks and hotspots) identified during Site Characterization, Remedial Investigation, and Remedial Action will be located and shown on maps to be reported in the Final Engineering Report.

5.5.7 Materials Transport Off-Site

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

The soil disposal transport route will be as follows:

- ENTERING SITE - from the Brooklyn Queens Expressway take the Flushing Avenue exit and head east on Flushing Avenue to Broadway. Turn right, heading south on Broadway to DeKalb Avenue. Turn right on Dekalb Avenue to Site entrance on the right.

- EXITING SITE – Turn right onto Malcolm X Boulevard and make a right on Pulaski St heading east to Broadway. Make a left on Broadway on continue north to Flushing Avenue. Turn left on Flushing Avenue and continue to Brooklyn Queens Expressway.

A map showing the truck routes is included as **Figure 11**. These are the most appropriate routes to and from the Site and take into account: (a) limiting transport through residential areas and past sensitive sites; (b) use of city mapped truck routes; (c) prohibiting off- Site queuing of trucks entering the facility; (d) limiting total distance to major highways; (e) promoting safety in access to highways; and (f) overall safety in transport.

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.

When possible, queuing of trucks will be performed on-Site in order to minimize off-Site disturbance.

Material transported by trucks exiting the Site will be secured with tight-fitting covers. If loads contain wet material capable of producing free liquid, truck liners will be used. All trucks will be inspected, dry-brushed and/or washed, as needed, before leaving the site. Truck wash waters will be collected and disposed of off-Site in an appropriate manner.

5.5.8 Materials Disposal Off-Site

Multiple disposal facility designations will be employed for the materials removed from the Site. Once final arrangements have been made the disposal location(s) will be reported to the NYSDEC Project Manager.

The total quantity of material expected to be disposed off-Site is 3,691 cubic yards including petroleum impacted soil (914 cy), historic fill (2,706 cy), and clean native soil (71 cy).

All petroleum contaminated and historic fill material excavated and removed from the Site will be treated as contaminated and regulated material and will be disposed in accordance with all local, State (including 6NYCRR Part 360) and Federal regulations. If disposal of soil/fill from this Site is proposed for unregulated disposal (i.e. clean soil removed for development purposes), a formal request with an associated plan will be made to NYSDEC's Project Manager. Unregulated off-Site management of materials from this Site is prohibited without formal NYSDEC approval.

It is anticipated that petroleum contaminated soils and historic fill will be disposed of as a non-hazardous material. Final classification of excavated materials will be dependant upon the results of waste characterization sampling. Waste characterization will be performed for off-Site disposal in a manner suitable to the receiving facility and in conformance with applicable permits. Sampling and analytical methods, sampling frequency, analytical results and QA/QC will be reported in the FER.

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 UUSCOs is prohibited from being taken to a New York State soil recycling facility (6NYCRR Part 360-16 Registration Facility).

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

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

Clean native soil removed from the site for development purposes (i.e. basement levels) will be handled as unregulated or beneficial use disposal. This soil will undergo a testing program to confirm that it meets restricted residential SCOs prior to unregulated disposal or reuse on-site. Confirmation testing of clean soils will be in accordance with DER-10 as follows:

Contaminant	**VOCs**	**SVOCs, Inorganics & PCBs/Pesticides**	
Soil Quantity (cubic yards)	**Discrete Samples**	**Composite**	**Discrete Samples/Composite**
0-50	1	1	Each composite sample for analysis is created from 3-5 discrete samples from representative locations in the fill.
50-100	2	1	
100-200	3	1	
200-300	4	1	
300-400	4	2	
400-500	5	2	
500-800	6	2	
800-1000	7	2	
1000	Add an additional 2 VOC and 1 composite for each additional 1000 Cubic yards or consult with DER		

Uncontaminated native soil confirmed by the above testing program and removed from the site will be disposed of as unregulated C&D material or sent to a beneficial re-use facility. The final destination of soils, whether classified as contaminated or uncontaminated, must be approved by the NYSDEC.

Concrete demolition material generated on the Site from building slabs, parking areas and other structures will be segregated, sized and shipped to a concrete recycling facility upon approval by NYSDEC. Concrete crushing or processing on-Site is prohibited. Asphalt removed from the Site will be sent to a separate recycling facility.

Additionally, it is common to encounter scrap metals and large boulders (greater than one foot in diameter) during excavation which may not be accepted by either the licensed disposal facility or the C&D facility. These materials will be segregated and subsequently recycled at local facilities. Uncontaminated metal objects will be taken to a local scrap metal facility.

Bricks and other C&D material are also not accepted by most soil disposal facilities if present at greater then 5% by volume. This material, if encountered, will be sent to a C&D landfill or other C&D processing facility if approved by NYSDEC. C&D material of this type is most often encountered on sites in which former basement structures have been filled in with material from demolishing a former building. There was no evidence of former basement areas identified during previous investigations performed at the Site.

The following documentation will be obtained and reported by the Remedial Engineer for each disposal location used in this project to fully demonstrate and document that the disposal of material derived from the Site conforms with all applicable laws: (1) a letter from the Remedial Engineer or BCP Volunteer to the receiving facility describing the material to be disposed and requesting formal written acceptance of the material. This letter will state that material to be disposed is contaminated material generated at an environmental remediation Site in New York State. The letter will provide the project identity and the name and phone number of the Remedial Engineer. The letter will include as an attachment a summary of all chemical data for the material being transported (including Site Characterization data); and (2) a letter from all

receiving facilities stating it is in receipt of the correspondence (above) and is approved to accept the material. These documents will be included in the FER.

Bill of Lading system or equivalent will be used for off-Site movement of non-hazardous wastes and contaminated soils. This information will be reported in the Final Engineering Report. Documentation for materials disposed of at recycling facilities (such as metal, concrete, asphalt) and as non-regulated C&D will include transport tickets for each load stating the origin of the material, the destination of the material and the quantity transported.

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

5.5.9 Materials Reuse On-Site

Approximately 189 cy of uncontaminated native soil excavated from the cellar level may be reused on-site to backfill the hotspot excavation areas as well as the outdoor recreation area. Re-use of on-Site clean native soil will only be approved by NYSDEC if the material is found to meet restricted residential SCOs through the verification testing program detailed in Section 5.5.8 above. The Remedial Engineer will ensure that procedures defined for materials reuse in this RAWP are followed and that unacceptable material will not remain on-Site.

Chemical criteria for on-Site reuse of material is the Track 2 Restricted Residential SCOs as presented in **Table 1**. The Remedial Engineer will ensure that procedures defined for materials reuse in this RAWP are followed and that unacceptable material will not remain on-Site.

Contaminated on-Site material will not be reused on-Site.

5.5.10 Fluids Management

As the depth to groundwater at the Site is approximately 46 feet below grade, dewatering operations will not be employed during construction. However, if dewatering from the

accumulation of precipitation or surface runoff becomes necessary, dewatering fluids will be handled, transported and disposed in accordance with applicable local, State, and Federal regulations. Liquids discharged into the New York City sewer system will be addressed through approval by NYCDEP.

Dewatered fluids will not be recharged back to the land surface or subsurface of the Site. Dewatering fluids will be managed off-Site. Discharge of water generated during remedial construction to surface waters (i.e. a local pond, stream or river) is prohibited without a SPDES permit.

5.5.11 Backfill from Off-Site Sources

Off-site fill material may be needed to construct the stabilized construction entrance - exit areas, for temporary driveways for loading trucks and as an underlayment to structural components of the new buildings including slabs and footings. Recycled Concrete Aggregate (RCA) derived from recognizable and uncontaminated concrete and supplied by facilities permitted by, and in full compliance with Part 360-16 and DSNY regulations, is an acceptable form of backfill material beneath building foundations. The Remedial Engineer is responsible for ensuring that the facility is compliant with the registration and permitting requirements of 6 NYCRR Part 360 and DSNY regulations at the time the RCA is acquired. RCA imported from compliant facilities does not require additional testing unless required by NYSDEC and DSNY under its terms of operations for the facility. Documentation of Part 360-16 and DSNY compliance must be provided to the Remedial Engineer before the RCA is transported to the Site. This information will be reported in the FER.

Fill material may also consist of virgin mined sand, gravel or stone products. Materials from a virgin mined source may be imported to the Site without testing provided that that the material meets the specifications of the geotechnical engineer, Remedial Engineer, and Redevelopment Construction Documents and that the source of the material is approved by the Remediation Engineer and the NYSDEC Project Manager.

The source approval process will require a review of the following information:

- The origin of the material;
- The address of the facility which mines/processes the material;
- A letter from the facility stating that the material to be delivered to the site is a virgin mined material and that it has not been co-mingled with other materials during processing or stockpiling.

All materials proposed for import onto the Site will be approved by the Remedial Engineer and will be in compliance with provisions in this RAWP prior to receipt at the Site. Material from industrial sites, spill sites, other environmental remediation sites or other potentially contaminated sites will not be imported to the Site.

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

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 a frequency consistent with that as specified in Table 5.4 of DER 10 and must comply with UUSCOs. 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.

5.5.12 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 RAWP shall be observed to ensure that they are operating correctly. Where discharge locations or points are accessible, they shall be inspected to ascertain whether erosion control measures are effective in preventing significant impacts to receiving waters. Silt fencing or hay bales will be installed around the entire perimeter of the remedial construction area.

5.5.13 Contingency Plan

If underground tanks or other previously unidentified contaminant sources are found during on-Site remedial excavation or development related construction, sampling will be performed on product, sediment and surrounding soils, etc. Chemical analytical work will be for full scan parameters (TAL metals; TCL volatiles and semi-volatiles, TCL pesticides and PCBs). These analyses will be limited to CP-51 parameters where tanks are identified without prior approval by NYSDEC. Analyses will not be otherwise limited without NYSDEC approval.

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

UST Removal Methods

USTs encountered during excavation activities at the Site will be removed in accordance with the procedures described under 6NYCRR Part 613.9 and Section 5.5 of DER-10 as follows:

- Remove all product to its lowest draw-off point
- Drain and flush piping into the tank
- Vacuum out the tank bottom consisting of water product and sludge
- Dig down to the top of the tank and expose the upper half of the tank
- Remove the fill tube and disconnect the fill, gauge, product and vent lines and pumps. Cap and plug open ends of lines
- Temporarily plug all tank openings, complete the excavation, remove the tank and place it in a secure location
- Render the tank safe and check the tank atmosphere to ensure that petroleum vapors have been satisfactorily purged from the tank
- Clean tank or remove to a storage yard for cleaning

- If the tank is to be moved it must be transported by licensed waste transporter. Plug and cap all holes prior to transport leaving a 1/8 inch vent hole located at the top of the tank during transport
- After cleaning the tank must be made acceptable for disposal at a scrap yard cleaning the tank interior with a high pressure rinse and cutting the tank in several pieces.

During the tank and pipe line removal the following field observations should be made and recorded:

- A description and photographic documentation of the tank and pipe line condition (pitting, holes, staining, leak points, evidence of repairs, etc.)
- Examination of the excavation floor and sidewalls for physical evidence of contamination (odor, staining, sheen, etc.)
- Periodic field screening (through bucket return) of the floor and sidewalls of the excavation with a calibrated photoionization detector (PID).
- Post-excavation soil sampling will be completed in conformance with DER-10 Section 5.5(c)(3)(iv).

5.5.14 Community Air Monitoring Plan

The Community Air Monitoring Plan (CAMP) provides measures for protection for on-site workers and 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 the Site.

The action levels specified in the CAMP 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 odors and respirable dust associated with soil excavation and loading.

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** or this Work Plan.

5.5.15 Odor, Dust and Nuisance Control Plan

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

5.5.15.1 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, work will be halted and the source of odors will be identified and corrected. Work will not resume until all nuisance odors have been abated. NYSDEC and NYSDOH will be notified of all odor events and of all other complaints about the project. Implementation of all odor controls, including the halt of work, will be the responsibility of the Volunteer's Remediation Engineer, who is responsible for certifying the Final Engineering Report.

All necessary means will be employed to prevent on- and off-Site nuisances. At a minimum, procedures will include: (a) limiting the area of open excavations; (b) shrouding open excavations with tarps and other covers; and (c) using foams to cover exposed odorous soils. If odors develop and cannot be otherwise controlled, additional means to eliminate odor nuisances will include: (d) 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.

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

5.5.15.2 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 spraying water directly onto off-road areas including excavations and stockpiles.
- 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 application.

5.5.15.3 Nuisance Control Plan

A plan for rodent control will be developed and utilized by the contractor prior to and during Site clearing and Site grubbing, and during all remedial work. A plan will be developed and utilized by the contractor for all remedial work and conforms, at a minimum, to NYCDEP noise control standards.

6.0 REMEDIAL ACTION: GROUNDWATER TREATMENT

6.1 CHEMICAL OXIDANT TREATMENT PLAN

To continue reductions in any remaining residual mass of solvents in groundwater, a chemical oxidant (sodium persulfate) will be injected within the UST field areas, following the removal of impacted soil (see **Figure 15** for approximate locations). Injection well points will be constructed of 1-inch diameter PVC well material with 10 feet of screen installed 8 feet below the water table.

Sodium persulfate and a chelated iron activator will be delivered to the site as a dry powder. The activator will be added at a ratio of 9 lbs of FeEDTA powder to each 55 lb bag of sodium persulfate. The initial application will consist of approximately 5,376 pounds of oxidant and activator. The need for subsequent injections will be determined following the collection and analysis of performance monitoring samples.

The overall oxidant demand, in pounds of activated persulfate, needed to complete the remediation of the Site, requires an estimate of contaminant mass in soil and groundwater. The estimate of contaminant mass for each parameter in groundwater prior was performed by assigning the highest concentration for each parameter reported in groundwater at the site during the RI. The total contaminant mass for each parameter was then calculated by multiplying the area of the zone by the depth of impact, porosity and stoichiometric demand. The total contaminant demand to remediate the VOCs in groundwater was calculated at 35 pounds of activated persulfate.

The contaminant demand for soil was calculated by multiplying the highest reported concentrations for each parameter within the identified source area, the volume of soil impacted with residual contamination and the soil density. The total contaminant demand to remediate the soil was calculated at 18,611 pounds of activated persulfate. Total combined contaminant demand for soil and groundwater at the site is estimated at 18,647 pounds of activated persulfate. This figure is an overestimate since it takes the highest concentrations reported for each media instead of an average. Chemical oxidant calculations are included in **Attachment I**.

6.2 REMEDIAL PERFORMANCE EVALUATION (POST TREATMENT SAMPLING)

Groundwater performance monitoring samples will be collected from three monitoring well locations, installed downgradient of the treatment area (see **Figure 15**). Sample analysis will include the following parameters:

- VOCs by Method 8260C
- ISCO parameters (persulfate, iron2, and pH.)

6.2.1 Methodology

Following oxidant application, one groundwater sample will be obtained from each monitoring well using dedicated polyethylene tubing and a peristaltic pump. The sample will be drawn directly into pre-cleaned laboratory supplied glassware, stored in a cooler with ice. Samples will either be picked up at the Site by a laboratory dispatched courier at the end of the day or transported back to the EBC office where they will be picked up the following day by the laboratory courier. All samples will be analyzed by a NYSDOH ELAP certified environmental laboratory certified in the appropriate category. Groundwater samples will be submitted for analysis of VOCs by EPA method 8260C.

6.2.2 Reporting of Results

Sample analysis will be provided by a New York State ELAP certified environmental laboratory. Laboratory reports will include Analytical Systems Protocol July 2005 (ASP) category B data deliverables for use in the preparation of a data usability summary report (DUSR). All results will be provided in accordance with the NYSDEC Environmental Information Management System (EIMS) electronic data deliverable (EDD) format.

6.2.3 QA/QC

The fundamental QA objective with respect to accuracy, precision, and sensitivity of analysis for laboratory analytical data is to achieve the QC acceptance of the analytical protocol. The accuracy, precision and completeness requirements will be addressed by the laboratory for all data generated.

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 stored in the field in a cooler containing ice or cold-pak(s) to maintain a temperature of 4 degrees C. Samples will be containerized in appropriate laboratory provided glassware and shipped in plastic coolers. Samples will be preserved through the use of ice or cold-pak(s) to maintain a temperature of 4^{o}C, +/- 2^{o}C.

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

6.2.4 DUSR

The DUSR provides a thorough evaluation of analytical data with full third party data validation. The primary objective of a DUSR is to determine whether or not the data, as presented, meets the site/project specific criteria for data quality and data use. Verification and/or performance monitoring samples collected under this RAWP will be reviewed and evaluated in accordance with the Guidance for the Development of Data Usability Summary Reports as presented in Appendix 2B of DER-10. The completed DUSR for verification/performance samples collected during implementation of this RAWP will be included in the Final Engineering Report.

6.2.5 Reporting of Performance Data in FER

Chemical labs used for all performance monitoring and final post-remedial sampling analysis will be NYSDOH ELAP laboratory certified in the appropriate categories. The FER will provide a tabular and map summary of all performance monitoring and post-remedial sample results and exceedances of water quality standards.

7.0 REMEDIAL ACTION: SOIL VAPOR EXTRACTION

7.1 SOIL VAPOR EXTRACTION SYSTEM

Soil and soil gas testing performed under the RI identified elevated concentrations of petroleum related VOCs in soil and soil gas adjacent to the current tank field. Since contaminated soil is expected to exist beneath the tank field area after the remedy is complete a Soil Vapor Extraction system will be installed to remediate soil from 15ft to 40ft below grade in this area.

Remediation of the petroleum related VOC impacted soil will be achieved through the installation of a Soil Vapor Extraction (SVE) system within the former tank field area, as well as hot spot areas, if necessary. SVE design details will be included in a formal Design Document to be submitted to and approved by the NYSDEC and NYSDOH.

An EBC field inspector under the direct supervision of the Remedial Engineer will inspect and photograph the installation of the SVE system at several critical stages before during and after the installation is complete, to assure compliance with design specifications.

8.0 RESIDUAL CONTAMINATION TO REMAIN ON-SITE

Since contaminated soil is expected to exist beneath the Site after the remedy is complete, an Institutional Control (IC) is required to protect human health and the environment. The ICs, Environmental Easement and Site Management Plan, are described hereafter. Long-term management of the IC will be executed under a deed restriction recorded with the NYC Department of Finance, Office of the City Registry,

Environmental Controls (ECs) will be implemented to protect public health and the environment by appropriately managing residual contamination. The Controlled Property (the Site) will have the following EC systems:

1. An impervious cap consisting of the concrete building slab and concrete rear recreation area cap.
2. A soil Vapor Extraction system to treat residual VOC-contaminated soil above the water table.

The FER will report residual contamination on the Site in tabular and map form.

9.0 ENGINEERING CONTROLS

9.1 SITE COVER SYSTEM

A site cover will be required to allow for restricted residential or commercial use of the site. The cover will consist either of the structures such as buildings, pavement, sidewalks comprising the site development or a soil cover in areas where the upper one foot (for commercial use) or two feet (for restricted residential use) of exposed surface soil will exceed the applicable soil cleanup objectives (SCOs). Where the soil cover is required it will be a minimum of one foot (for commercial use) or two feet (for restricted residential use) of soil, meeting the SCOs for cover material as set forth in 6 NYCRR Part 375-6.7(d). The soil cover will be placed over a demarcation layer, with the upper six inches of the soil of sufficient quality to maintain a vegetation layer. Any fill material brought to the site will meet the requirements for the identified site use as set forth in 6 NYCRR Part 375-6.7(d).

A Soil Management Plan will be included in the Site Management Plan and will outline the procedures to be followed in the event that the soil cover system and underlying residual contamination are disturbed after the Remedial Action is complete. Maintenance of the soil cover system will be described in the Site Management Plan in the FER.

9.2 SOIL VAPOR EXTRACTION SYSTEM

Remediation of the petroleum related VOC impacted soil will be achieved through the installation of a Soil Vapor Extraction system within the former tank field area, as well as hot spot areas, if necessary. The system will be operated during building construction.

Long term operation and maintenance of the system (if required) including system start-up, periodic testing and system shut down will be specified in the Site Management Plan.

9.3 CONTINGENT GROUNDWATER TREATMENT

If additional groundwater treatment is required following the initial persulfate injections, the Site Management Plan will include provisions for future applications.

Volume and density application rates for the chemical oxidant will be based on the manufacturer's recommendations. A letter from the manufacturer stating recommended dosage rates will be provided to NYSDEC and will be included in the Final Engineering Report.

Design plans and a work schedule will be submitted to NYSDEC for injection and reinjection of the chemical oxidant.

All as-built drawings, diagrams, calculation and manufacturer documentation for treatment systems will be presented in the FER.

10.0 INSTITUTIONAL CONTROLS

After the remedy is complete, the Site will have residual contamination remaining in place. Engineering Controls (ECs) will be incorporated into the remedy to render the overall Site remedy protective of public health and the environment. Two elements have been designed to ensure continual and proper management of residual contamination in perpetuity: an Environmental Easement and a Site Management Plan (SMP).

A Site-Specific Environmental Easement will be recorded with Kings County to provide an enforceable means of ensuring the continual and proper management of residual contamination and protection of public health and the environment in perpetuity or until released in writing by NYSDEC. It requires that the grantor of the Environmental Easement and the grantor's successors and assigns adhere to all Engineering and Institutional Controls (ECs/ICs) placed on this Site by this NYSDEC-approved remedy. ICs provide restrictions on Site usage and mandate operation, maintenance, monitoring and reporting measures for all ECs and ICs.

The SMP describes appropriate methods and procedures to ensure compliance with all ECs and ICs that are required by the Environmental Easement. Once the SMP has been approved by the NYSDEC, compliance with the SMP is required by the grantor of the Environmental Easement and grantor's successors and assigns.

10.1 ENVIRONMENTAL EASEMENT

An Environmental Easement, as defined in Article 71 Title 36 of the Environmental Conservation Law, is required when residual contamination is left on-Site after the Remedial Action is complete. If the Site will have residual contamination after completion of all Remedial Actions than an Environmental Easement is required. If an Environmental Easement is needed following completion of the remedy an Environmental Easement (if needed) will be submitted as part of the Final Remediation Report.

The Environmental Easement renders the Site a Controlled Property. The Environmental Easement must be recorded with the City of New York before the Certificate of Completion can be issued by NYSDEC. These Institutional Controls are requirements or restrictions placed on the Site that are listed in, and required by, the Environmental Easement. Institutional Controls

can, generally, be subdivided between controls that support Engineering Controls, and those that place general restrictions on Site usage or other requirements. Institutional Controls in both of these groups are closely integrated with the SMP, which provides all of the methods and procedures to be followed to comply with this remedy.

The Institutional Controls which will be needed to support Engineering Controls are:

- Compliance with the Environmental Easement by the Grantee and the Grantee's successors and adherence of all elements of the SMP is required;
- All Engineering Controls must be operated and maintained as specified in this SMP;
- All Engineering Controls on the Controlled Property must be inspected and certified at a frequency and in a manner defined in the SMP;
- Groundwater, soil vapor, and other environmental or public health monitoring must be performed as defined in the SMP;
- Data and information pertinent to Site Management for the Controlled Property must be reported at the frequency and in a manner defined in the SMP;
- 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 proper functioning in the manner specified in the SMP;
- Engineering Controls may not be discontinued without an amendment or extinguishment of the Environmental Easement.

Adherence to these ICs for the Site is mandated by the Environmental Easement and will be implemented under the SMP. The Controlled Property (Site) may also have a series of ICs in the form of Site restrictions and requirements. The Site restrictions that may apply to the Controlled Property are:

- Use of groundwater underlying the Controlled Property is prohibited without treatment rendering it safe for intended purpose;

- The Controlled Property may be used for restricted residential use provided that the EC/ICs included in this SMP are employed.

- Grantor agrees to submit to NYSDEC a written statement that certifies, under penalty of perjury, that: (1) controls employed at the Controlled Property are unchanged from the previous certification or that any changes to the controls were approved by the NYSDEC; and, (2) nothing has occurred that impairs the ability of the controls to protect public health and environment or that constitute a violation or failure to comply with the SMP. NYSDEC retains the right to access such Controlled Property at any time in order to evaluate the continued maintenance of any and all controls. This certification shall be submitted annually, or an alternate period of time that NYSDEC may allow. This annual statement must be certified by an expert that the NYSDEC finds acceptable.

10.2 SITE MANAGEMENT PLAN

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

The SMP is intended to provide a detailed description of the procedures required to manage residual contamination left in place at the Site following completion of the Remedial Action in accordance with the BCA with the NYSDEC. This includes: (1) development, implementation, and management of all Engineering and Institutional Controls; (2) development and implementation of monitoring systems and a Monitoring Plan; (3) development of a plan to operate and maintain any treatment, collection, containment, or recovery systems (including, where appropriate, preparation of an Operation and Maintenance Manual); (4) submittal of Site

Management Reports, performance of inspections and certification of results, and demonstration of proper communication of Site information to NYSDEC; and (5) defining criteria for termination of treatment system operation.

Since the remedy may require continued groundwater treatment and/or monitoring the use of an active groundwater treatment that does not immediately allow for unrestricted use, a short-term Site Management Plan may be required, which would includes the following: (1) an Engineering and Institutional Control Plan for implementation and management of EC/ICs; (2) a Monitoring Plan for implementation of Site Monitoring; (3) an Operation and Maintenance Plan for implementation of remedial collection, containment, treatment, and recovery systems; and (4) a Site Management Reporting Plan for submittal of data, information, recommendations, and certifications to NYSDEC. The SMP will be prepared in accordance with the requirements in NYSDEC DER-10 Technical Guidance for Site Investigation and Remediation and the guidelines provided by NYSDEC.

Site management activities, reporting, and EC/IC certification will be scheduled on a certification period basis. The certification period will be annually. The IC/EC certifications will be due annually on or near the anniversary of the COC issuance.

The Site Management Plan in the Final Engineering Report will include a monitoring plan for groundwater at the down-gradient Site perimeter to evaluate Site-wide performance of the remedy. Appropriately placed groundwater monitor wells will also be installed immediately down-gradient of all volatile organic carbon remediation areas for the purpose of evaluation of the effectiveness of the remedy that is implemented.

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

11.0 FINAL ENGINEERING REPORT

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

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

The Final Engineering Report will include written and photographic documentation of all remedial work performed under this remedy. The FER will include an itemized tabular description of actual costs incurred during all aspects of the Remedial Action.

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

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

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

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

11.1 CERTIFICATIONS

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

I _____certify that I am currently a NYS registered professional engineer and that this Final Engineering Report was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10) and that all activities were performed in full accordance with the DER-approved work plan and any DER-approved modifications.

I certify that the data submitted to the Department with this Final Engineering Report demonstrates that the remediation requirements set forth in the Remedial Action Work Plan and in all applicable statutes and regulations have been or will be achieved in accordance with the time frames, if any, established for the remedy.

I certify that all documents generated in support of this report have been submitted in accordance with the DER's electronic submission protocols and have been accepted by the Department.

I certify that all data generated in support of this report have been submitted in accordance with the Department's electronic data deliverable and have been accepted by the Department.

The following certifications will be added as needed:

I certify that all use restrictions, Institutional Controls, Engineering Controls, and/or any operation and maintenance requirements applicable to the Site are contained in an environmental easement created and recorded pursuant ECL 71-3605 and that all affected local governments, as defined in ECL 71-3603, have been notified that such easement has been recorded.

I certify that a Site Management Plan has been submitted for the continual and proper operation, maintenance, and monitoring of all Engineering Controls employed at the Site, including the proper maintenance of all remaining monitoring wells, and that such plan has been approved by Department.

I certify that any financial assurance mechanisms required by the Department pursuant to Environmental Conservation Law have been executed.

12.0 SCHEDULE

The remedial action will begin with mobilization of equipment and material to the Site which will begin approximately 2 weeks following RAWP approval and within 10 days of the distribution of the Construction Fact Sheet. Mobilization will be followed by removal of the USTs followed by petroleum impact soil and historic fill material removal. Over-excavation of hotspot areas will be completed following removal of all petroleum impacted soil historic fill and native soils followed by confirmation sampling. The work is expected to take approximately 20 weeks as part of the construction excavation and foundation installation. The schedule of tasks completed under this RAWP is as follows:

Conduct pre-construction meeting with NYSDEC	Within 1 week of RAWP approval
Mobilize equipment to the site and construct truck pad and other designated areas	Within 1 week following the pre-construction meeting
Mobilize Excavation Contractor and equipment to the Site	Within 1 week following Site prep and truck pad construction
Begin UST removal	Immediately following mobilization
Complete excavation and disposal of historic fill soils, petroleum "hotspots" and native soil.	Within 20 weeks of mobilization
Perform endpoint verification of entire site	Performed in sequence as final depth of each excavated area is complete.
Prepare and submit draft Environmental Easement package	July 2015
Prepare and submit draft Site Management Plan	August 2015
Prepare and submit draft Final Engineering Report	September 2015
Obtain Certificate of Completion	December 31, 2015

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
SUMMARY OF
SAMPLING PROGRAM RATIONALE AND ANALYSIS

Matrix	Location	Approximate Number of Samples	Rationale for Sampling	Laboratory Analysis
Subsurface soil - March/April 2014 (0 to 50 feet bgs)	1 boring adjacent to Tank Pad	3	To supplement previous sampling and delineate VOC affected soil identified in source area.	VOCs EPA Method 8260B, SVOCs EPA Method 8270 BN, pesticide / PCBs EPA Method 8081/8082, TAL metals.
Subsurface soil - February 2013 (0 to 15 feet bgs)	4 borings throughout the Site.	4	To evaluate presence of VOCs and metals in onsite soil.	VOCs EPA Method 8260BSVOCs and TAL metals.
Subsurface soil - March/April 2014 (0 to 15 feet bgs)	7 borings throughout the Site.	14	To evaluate soil quality of VOCs, CVOCs, urban fill materials and native soil across the site.	VOCs EPA Method 8260B, SVOCs EPA Method 8270 BN, pesticide / PCBs EPA Method 8081/8082, TAL metals.
Total (Soils)		21		
Groundwater - February 2013 (water table)	From 3 boring locations and 3 existing monitoring wells.	6	To evaluate the presence of VOCs in groundwater.	VOCs EPA Method 8260B.
Groundwater - April 2014 (water table)	From 4 temporary monitoring wells.	4	To supplement previous sampling and delineate VOC affected groundwater.	VOCs EPA Method 8260B, SVOCs EPA Method 8270 BN, pesticide / PCBs EPA Method 8081/8082, TAL metals.
Total (Groundwater)		10		
Soil Gas	1 sub-slab soil gas implant within the existing station building, 5 soil gas implants to be installed across the Site and one ambient outdoor air sample.	7	Evaluate soil gas at perimeter and beneath the cellar slab of the Site.	VOCs EPA Method TO15
Total (Soil Gas)		7		
MS/MSD	Matrix spike and Matrix spike duplicates at the rate 5%	2	To meet requirements of QA / QC program	1 MS/MSD for VOCs EPA Method 8260B and 1 MS/MSD for SVOCs EPA Method 8270 BN, pesticide / PCBs EPA Method 8081/8082, TAL metals.
Trip Blanks	One laboratory prepared trip blank to accompany samples each time they are delivered to the laboratory.	2	To meet requirements of QA / QC program	VOCs EPA Method 8260B
Total (QA / QC Samples)		4		

TABLE 3
1103-1107 DeKalb Avenue Brooklyn, New York
Soil Analytical Results
Volatile Organic Compounds

COMPOUND	NYSDEC Part 375.6 Unrestricted Use Soil Cleanup Objectives	NYDEC Part 375.6 Restricted Residential Soil Cleanup Objectives*	2/12/2013								4/1/2014													
			B1302		B1304		B1305		B1306		B1307				B1308						B1309			
			(13-15') µg/Kg		(7-9') µg/Kg		(13-15') µg/Kg		(13-15') µg/Kg		(0-2') µg/Kg		(13-15') µg/Kg		(0-2') µg/Kg		(13-15') µg/Kg		(45-47') µg/Kg		(0-2') µg/Kg		(13-15') µg/Kg	
			Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL
1,1,1,2-Tetrachlorothane			ND	1500	ND	1200	ND	3.7	ND	4.2	< 4.0	4	< 4.6	4.6	< 5.8	5.8	< 120	120	< 270	270	< 1100	1,100	< 5.0	5
1,1,1-Trichloroethane	680	100,000	ND	1500	ND	1200	ND	3.7	ND	4.2	< 4.0	4	< 4.6	4.6	< 5.8	5.8	< 120	120	< 270	270	< 1100	1,100	< 5.0	5
1,1,2,2-Tetrachloroethane			ND	910	ND	740	ND	2.2	ND	2.5	< 4.0	4	< 4.6	4.6	< 5.8	5.8	< 120	120	< 270	270	< 1100	1,100	< 5.0	5
1,1,2-Trichloroethane			ND	1500	ND	1200	ND	3.7	ND	4.2	< 4.0	4	< 4.6	4.6	< 5.8	5.8	< 120	120	< 270	270	< 1100	1,100	< 5.0	5
1,1-Dichloroethane	270	26,000	ND	1500	ND	1200	ND	3.7	ND	4.2	< 4.0	4	< 4.6	4.6	< 5.8	5.8	< 120	120	< 270	270	< 1100	1,100	< 5.0	5
1,1-Dichloroethene	330	100,000	ND	1500	ND	1200	ND	3.7	ND	4.2	< 4.0	4	< 4.6	4.6	< 5.8	5.8	< 120	120	< 270	270	< 1100	1,100	< 5.0	5
1,1-Dichloropropene			ND	1500	ND	1200	ND	3.7	ND	4.2	< 4.0	4	< 4.6	4.6	< 5.8	5.8	< 120	120	< 270	270	< 1100	1,100	< 5.0	5
1,2,3-Trichlorobenzene			ND	1500	ND	1200	ND	3.7	ND	4.2	< 4.0	4	< 4.6	4.6	< 5.8	5.8	< 120	120	< 270	270	< 1100	1,100	< 5.0	5
1,2,3-Trichloropropane			ND	1500	ND	1200	ND	3.7	ND	4.2	< 4.0	4	< 4.6	4.6	< 5.8	5.8	< 120	120	< 270	270	< 1100	1,100	< 5.0	5
1,2,4-Trichlorobenzene			ND	1500	ND	1200	ND	3.7	ND	4.2	< 4.0	4	< 4.6	4.6	< 5.8	5.8	< 120	120	< 270	270	< 1100	1,100	< 5.0	5
1,2,4-Trimethylbenzene	3,600	52,000	**68,000**	13000	**250,000**	12000	ND	3.7	ND	4.2	**2.6**	4	< 4.6	4.6	**1,700**	300	**1,100**	120	**280,000**	9,500	**170,000**	11,000	**18**	5
1,2-Dibromo-3-chloropropane			ND	1500	ND	1200	ND	3.7	ND	4.2	< 4.0	4	< 4.6	4.6	< 5.8	5.8	< 120	120	< 270	270	< 1100	1,100	< 5.0	5
1,2-Dibromoethane			-		-		-		-		< 4.0	4	< 4.6	4.6	< 5.8	5.8	< 120	120	< 270	270	< 1100	1,100	< 5.0	5
1,2-Dichlorobenzene	1,100	100,000	ND	1500	ND	1200	ND	3.7	ND	4.2	< 4.0	4	< 4.6	4.6	< 5.8	5.8	< 120	120	< 270	270	< 1100	1,100	< 5.0	5
1,2-Dichloroethane	20	3,100	ND	1500	ND	1200	ND	3.7	ND	4.2	< 4.0	4	< 4.6	4.6	< 5.8	5.8	< 120	120	< 270	270	< 1100	1,100	< 5.0	5
1,2-Dichloropropane			ND	1500	ND	1200	ND	3.7	ND	4.2	< 4.0	4	< 4.6	4.6	< 5.8	5.8	< 120	120	< 270	270	< 1100	1,100	< 5.0	5
1,3,5-Trimethylbenzene	8,400	52,000	**5,000**	1500	**80,000**	12000	ND	3.7	ND	4.2	**0.6**	4	< 4.6	4.6	**420**	300	**320**	120	**76,000**	2,700	**46,000**	11,000	**4.1**	5
1,3-Dichlorobenzene	2,400	4,900	ND	1500	ND	1200	ND	3.7	ND	4.2	< 4.0	4	< 4.6	4.6	< 5.8	5.8	< 120	120	< 270	270	< 1100	1,100	< 5.0	5
1,3-Dichloropropane			ND	1500	ND	1200	ND	3.7	ND	4.2	< 4.0	4	< 4.6	4.6	< 5.8	5.8	< 120	120	< 270	270	< 1100	1,100	< 5.0	5
1,4-Dichlorobenzene	1,800	13,000	ND	1500	ND	1200	ND	3.7	ND	4.2	< 4.0	4	< 4.6	4.6	< 5.8	5.8	< 120	120	< 270	270	< 1100	1,100	< 5.0	5
2,2-Dichloropropane			ND	1500	ND	1200	ND	3.7	ND	4.2	< 4.0	4	< 4.6	4.6	< 5.8	5.8	< 120	120	< 270	270	< 1100	1,100	< 5.0	5
2-Chlorotoluene			ND	1500	ND	1200	ND	3.7	ND	4.2	< 4.0	4	< 4.6	4.6	< 5.8	5.8	< 120	120	< 270	270	< 1100	1,100	< 5.0	5
2-Hexanone (Methyl Butyl Ketone)			ND	7600	ND	6200	ND	19	ND	21	< 20	20	< 23	23	< 29	29	< 590	590	< 1300	1,300	< 5600	5,600	< 25	25
2-Isopropyltoluene			ND	1500	ND	1200	ND	3.7	ND	4.2	< 4.0	4	< 4.6	4.6	**1.1**	5.8	**50**	120	**990**	270	**770**	1,100	**5.1**	5
4-Chlorotoluene			ND	1500	ND	1200	ND	3.7	ND	4.2	< 4.0	4	< 4.6	4.6	< 5.8	5.8	< 120	120	< 270	270	< 1100	1,100	< 5.0	5
4-Methyl-2-Pentanone			ND	7600	ND	6200	ND	19	ND	21	< 20	20	< 23	23	< 29	29	< 590	590	< 1300	1,300	< 5600	5,600	< 25	25
Acetone	50	100,000	ND	30000	ND	25000	ND	75	ND	85	**5.6**	40	**6.2**	46	**11**	50	< 1200	1,200	< 2700	2,700	< 11000	11,000	**45**	50
Acrylonitrile			ND	1500	ND	1200	ND	3.7	ND	4.2	< 8.0	8	< 9.2	9.2	< 12	12	< 230	230	< 540	540	< 2200	2,200	< 10	10
Benzene	60	4,800	ND	1500	ND	1200	ND	3.7	ND	4.2	< 4.0	4	< 4.6	4.6	< 5.8	5.8	< 120	120	< 270	270	**1,300**	1,100	< 5.0	5
Bromobenzene			ND	1500	1,	1200	ND	3.7	ND	4.2	< 4.0	4	< 4.6	4.6	< 5.8	5.8	< 120	120	< 270	270	< 1100	1,100	< 5.0	5
Bromochloromethane			ND	1500	ND	1200	ND	3.7	ND	4.2	< 4.0	4	< 4.6	4.6	< 5.8	5.8	< 120	120	< 270	270	< 1100	1,100	< 5.0	5
Bromodichloromethane			ND	1500	ND	1200	ND	3.7	ND	4.2	< 4.0	4	< 4.6	4.6	< 5.8	5.8	< 120	120	< 270	270	< 1100	1,100	< 5.0	5
Bromoform			ND	1500	ND	1200	ND	3.7	ND	4.2	< 4.0	4	< 4.6	4.6	< 5.8	5.8	< 120	120	< 270	270	< 1100	1,100	< 5.0	5
Bromomethane			ND	1500	ND	1200	ND	3.7	ND	4.2	< 4.0	4	< 4.6	4.6	< 5.8	5.8	< 120	120	< 270	270	< 1100	1,100	< 5.0	5
Carbon Disulfide			ND	1500	ND	1200	ND	3.7	ND	4.2	< 4.0	4	< 4.6	4.6	< 5.8	5.8	< 120	120	< 270	270	< 1100	1,100	< 5.0	5
Carbon tetrachloride	760	2,400	ND	1500	ND	1200	ND	3.7	ND	4.2	< 4.0	4	< 4.6	4.6	< 5.8	5.8	< 120	120	< 270	270	< 1100	1,100	< 5.0	5
Chlorobenzene	1,100	100,000	ND	1500	ND	1200	ND	3.7	ND	4.2	< 4.0	4	< 4.6	4.6	< 5.8	5.8	< 120	120	< 270	270	< 1100	1,100	< 5.0	5
Chloroethane			ND	1500	ND	1200	ND	3.7	ND	4.2	< 4.0	4	< 4.6	4.6	< 5.8	5.8	< 120	120	< 270	270	< 1100	1,100	< 5.0	5
Chloroform	370	49,000	ND	1500	ND	1200	ND	3.7	ND	4.2	< 4.0	4	< 4.6	4.6	< 5.8	5.8	< 120	120	< 270	270	< 1100	1,100	< 5.0	5
Chloromethane			ND	1500	ND	1200	ND	3.7	ND	4.2	< 4.0	4	< 4.6	4.6	< 5.8	5.8	< 120	120	< 270	270	< 1100	1,100	< 5.0	5
cis-1,2-Dichloroethene	250	100,000	ND	1500	ND	1200	ND	3.7	ND	4.2	< 4.0	4	< 4.6	4.6	< 5.8	5.8	< 120	120	< 270	270	< 1100	1,100	< 5.0	5
cis-1,3-Dichloropropene			ND	1500	ND	1200	ND	3.7	ND	4.2	< 4.0	4	< 4.6	4.6	< 5.8	5.8	< 120	120	< 270	270	< 1100	1,100	< 5.0	5
Dibromochloromethane			ND	910	ND	740	ND	2.2	ND	2.5	< 4.0	4	< 4.6	4.6	< 5.8	5.8	< 120	120	< 270	270	< 1100	1,100	< 5.0	5
Dibromomethane			ND	1500	ND	1200	ND	3.7	ND	4.2	< 4.0	4	< 4.6	4.6	< 5.8	5.8	< 120	120	< 270	270	< 1100	1,100	< 5.0	5
Dichlorodifluoromethane			ND	1500	ND	1200	ND	3.7	ND	4.2	< 4.0	4	< 4.6	4.6	< 5.8	5.8	< 120	120	< 270	270	< 1100	1,100	< 5.0	5
Ethylbenzene	1,000	41,000	**25,000**	1500	**47,000**	1200	ND	3.7	ND	4.2	< 4.0	4	< 4.6	4.6	**410**	300	**260**	120	**41,000**	9,500	**65,000**	11,000	**10**	5
Hexachlorobutadiene			ND	1500	ND	1200	ND	3.7	ND	4.2	< 4.0	4	< 4.6	4.6	< 5.8	5.8	< 120	120	< 270	270	< 1100	1,100	< 5.0	5
Isopropylbenzene			**4,000**	1500	**11,000**	1200	ND	3.7	ND	4.2	< 4.0	4	< 4.6	4.6	**85**	300	**180**	120	**14,000**	1,400	**8,900**	1,100	**4.6**	5
m&p-Xylenes	260	100,000	**27,000**	1500	**83,000**	12000	ND	3.7	ND	4.2	< 4.0	4	< 4.6	4.6	**1,100**	300	**260**	120	**120,000**	2,700	**190,000**	11,000	**22**	5
Methyl Ethyl Ketone (2-Butanone)	120	100,000	ND	9100	ND	7400	ND	22	ND	25	< 24	24	< 28	28	< 35	35	< 700	700	< 1600	1,600	< 6700	6,700	< 30	30
Methyl t-butyl ether (MTBE)	930	100,000	ND	3000	ND	2500	ND	7.5	ND	8.5	< 8.0	8	< 9.2	9.2	< 12	12	< 230	230	< 540	540	< 2200	2,200	**2.1**	10
Methylene chloride	50	100,000	ND	1500	ND	1200	ND	3.7	ND	4.2	< 4.0	4	< 4.6	4.6	< 5.8	5.8	**45**	120	< 270	270	< 1100	1,100	< 5.0	5
Naphthalene	12,000	100,000	**9,600**	1500	**35,000**	12000	ND	3.7	ND	4.2	**1.4**	4	< 4.6	4.6	**550**	300	**300**	120	**39,000**	9,500	**24,000**	1,100	**17**	5
n-Butylbenzene	12,000	100,000	**4,500**	1500	**8,100**	1200	ND	3.7	ND	4.2	< 4.0	4	< 4.6	4.6	**8.9**	5.8	**340**	120	**17,000**	9,500	**9,700**	1,100	**29**	5
n-Propylbenzene	3,900	100,000	**13,000**	1500	**41,000**	12000	ND	3.7	ND	4.2	< 4.0	4	< 4.6	4.6	**260**	300	**690**	120	**47,000**	2,700	**30,000**	1,100	**5.7**	5
o-Xylene	260	100,000	ND	1500	**33,000**	1200	ND	3.7	ND	4.2	< 4.0	4	< 4.6	4.6	**180**	300	< 120	120	**15,000**	270	**67,000**	11,000	**5.8**	5
p-Isopropyltoluene			ND	1500	**1,500**	1200	ND	3.7	ND	4.2	< 4.0	4	< 4.6	4.6	**2.4**	5.8	**78**	120	**2,900**	270	**2,300**	1,100	**2**	5
sec-Butylbenzene	11,000	100,000	**1,600**	1500	ND	1200	ND	3.7	ND	4.2	< 4.0	4	< 4.6	4.6	**7.1**	5.8	**330**	120	**6,900**	270	**3,800**	1,100	**16**	5
Styrene			ND	1500	ND	1200	ND	3.7	ND	4.2	< 4.0	4	< 4.6	4.6	< 5.8	5.8	< 120	120	< 270	270	< 1100	1,100	< 5.0	5
tert-Butylbenzene	5,900	100,000	ND	1500	ND	1200	ND	3.7	ND	4.2	< 4.0	4	< 4.6	4.6	< 5.8	5.8	< 120	120	**150**	270	< 1100	1,100	< 5.0	5
Tetrachloroethene	1,300	19,000	ND	1500	ND	1200	ND	3.7	ND	4.2	< 4.0	4	< 4.6	4.6	< 5.8	5.8	< 120	120	< 270	270	< 1100	1,100	< 5.0	5
Tetrahydrofuran (THF)			ND	3000	ND	2500	ND	7.5	ND	8.5	< 8.0	8	< 9.2	9.2	< 12	12	< 230	230	< 540	540	< 2200	2,200	< 10	10
Toluene	700	100,000	ND	1500	ND	1200	ND	3.7	ND	4.2	< 4.0	4	< 4.6	4.6	**1.1**	5.8	< 120	120	< 270	270	48,000	11,000	**3.6**	5
trans-1,2-Dichloroethene	190	100000	ND	1500	ND	1200	ND	3.7	ND	4.2	< 4.0	4	< 4.6	4.6	< 5.8	5.8	< 120	120	< 270	270	< 1100	1,100	< 5.0	5
trans-1,3-Dichloropropene			ND	1500	ND	1200	ND	3.7	ND	4.2	< 4.0	4	< 4.6	4.6	< 5.8	5.8	< 120	120	< 270	270	< 1100	1,100	< 5.0	5
trabs-1,4-dichloro-2-butene			ND	3000	ND	2500	ND	7.5	ND	8.5	< 8.0	8	< 9.2	9.2	< 12	12	< 230	230	< 540	540	< 2200	2,200	< 10	10
Trichloroethene	470	21,000	ND	1500	ND	1200	ND	3.7	ND	4.2	< 4.0	4	< 4.6	4.6	< 5.8	5.8	< 120	120	< 270	270	< 1100	1,100	< 5.0	5
Trichlorofluoromethane			ND	1500	ND	1200	ND	3.7	ND	4.2	< 4.0	4	< 4.6	4.6	< 5.8	5.8	< 120	120	< 270	270	< 1100	1,100	< 5.0	5
Trichlorotrifluoroethane			ND	1500	ND	1200	ND	3.7	ND	4.2	< 4.0	4	< 4.6	4.6	< 5.8	5.8	< 120	120	< 270	270	< 1100	1,100	< 5.0	5
Vinyl Chloride	20	900	ND	1500	ND	1200	ND	3.7	ND	4.2	< 4.0	4	< 4.6	4.6	< 5.8	5.8	< 120	120	< 270	270	< 1100	1,100	< 5.0	5

Notes:

** - 6 NYCRR Part 375-6 Remedial Program Soil Cleanup Objectives

ND - Not-detected

RL - Reporting Limit

Bold/highlighted- Indicated exceedance of the NYSDEC UUSCO Guidance Value

Bold/highlighted- Indicated exceedance of the NYSDEC RRSCO Guidance Value

TABLE 3
1103-1107 DeKalb Avenue Brooklyn, New York
Soil Analytical Results
Volatile Organic Compounds

COMPOUND	NYSDEC Part 375.6 Unrestricted Use Soil Cleanup Objectives	NYDEC Part 375.6 Restricted Residential Soil Cleanup Objectives*	4/1/2014																			
			B1310				B1311				B1312				B1313				B1314				Duplicate	
			(0-2')		(13-15')		(0-2')		(13-15')		(0-2')		(13-15')		(0-2')		(13-15')		(0-2')		(13-15')			
			µg/Kg		µg/Kg		µg/Kg		µg/Kg		µg/Kg		µg/Kg		µg/Kg		µg/Kg		µg/Kg		µg/Kg		µg/Kg	
			Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL
1,1,1,2-Tetrachlorothane			< 5.6	5.6	< 6.6	6.6	< 5.5	5.5	< 5.6	5.6	< 6.2	6.2	< 6.2	6.2	< 4.0	4	< 3.8	3.8	< 3.7	3.7	< 4.9	4.9	< 5.4	5.4
1,1,1-Trichloroethane	680	100,000	< 5.6	5.6	< 6.6	6.6	< 5.5	5.5	< 5.6	5.6	< 6.2	6.2	< 6.2	6.2	< 4.0	4	< 3.8	3.8	< 3.7	3.7	< 4.9	4.9	< 5.4	5.4
1,1,2,2-Tetrachloroethane			< 5.6	5.6	< 6.6	6.6	< 5.5	5.5	< 5.6	5.6	< 6.2	6.2	< 6.2	6.2	< 4.0	4	< 3.8	3.8	< 3.7	3.7	< 4.9	4.9	< 5.4	5.4
1,1,2-Trichloroethane			< 5.6	5.6	< 6.6	6.6	< 5.5	5.5	< 5.6	5.6	< 6.2	6.2	< 6.2	6.2	< 4.0	4	< 3.8	3.8	< 3.7	3.7	< 4.9	4.9	< 5.4	5.4
1,1-Dichloroethane	270	26,000	< 5.6	5.6	< 6.6	6.6	< 5.5	5.5	< 5.6	5.6	< 6.2	6.2	< 6.2	6.2	< 4.0	4	< 3.8	3.8	< 3.7	3.7	< 4.9	4.9	< 5.4	5.4
1,1-Dichloroethene	330	100,000	< 5.6	5.6	< 6.6	6.6	< 5.5	5.5	< 5.6	5.6	< 6.2	6.2	< 6.2	6.2	< 4.0	4	< 3.8	3.8	< 3.7	3.7	< 4.9	4.9	< 5.4	5.4
1,1-Dichloropropene			< 5.6	5.6	< 6.6	6.6	< 5.5	5.5	< 5.6	5.6	< 6.2	6.2	< 6.2	6.2	< 4.0	4	< 3.8	3.8	< 3.7	3.7	< 4.9	4.9	< 5.4	5.4
1,2,3-Trichlorobenzene			< 5.6	5.6	< 6.6	6.6	< 280	280	< 5.6	5.6	< 6.2	6.2	< 6.2	6.2	< 4.0	4	< 3.8	3.8	< 3.7	3.7	< 4.9	4.9	< 5.4	5.4
1,2,3-Trichloropropane			< 5.6	5.6	< 6.6	6.6	< 280	280	< 5.6	5.6	< 6.2	6.2	< 6.2	6.2	< 4.0	4	< 3.8	3.8	< 3.7	3.7	< 4.9	4.9	< 5.4	5.4
1,2,4-Trichlorobenzene			< 5.6	5.6	< 6.6	6.6	< 280	280	< 5.6	5.6	< 6.2	6.2	< 6.2	6.2	< 4.0	4	< 3.8	3.8	< 3.7	3.7	< 4.9	4.9	< 5.4	5.4
1,2,4-Trimethylbenzene	3,600	52,000	**79**	270	**260**	290	< 280	280	**1.4**	5.6	< 6.2	6.2	< 6.2	6.2	< 4.0	4	< 3.8	3.8	**3.3**	3.7	**140**	290	< 5.4	5.4
1,2-Dibromo-3-chloropropane			< 5.6	5.6	< 6.6	6.6	< 280	280	< 5.6	5.6	< 6.2	6.2	< 6.2	6.2	< 4.0	4	< 3.8	3.8	< 3.7	3.7	< 4.9	4.9	< 5.4	5.4
1,2-Dibromoethane			< 5.6	5.6	< 6.6	6.6	< 5.5	5.5	< 5.6	5.6	< 6.2	6.2	< 6.2	6.2	< 4.0	4	< 3.8	3.8	< 3.7	3.7	< 4.9	4.9	< 5.4	5.4
1,2-Dichlorobenzene	1,100	100,000	< 5.6	5.6	< 6.6	6.6	< 280	280	< 5.6	5.6	< 6.2	6.2	< 6.2	6.2	< 4.0	4	< 3.8	3.8	< 3.7	3.7	< 4.9	4.9	< 5.4	5.4
1,2-Dichloroethane	20	3,100	< 5.6	5.6	< 6.6	6.6	< 5.5	5.5	< 5.6	5.6	< 6.2	6.2	< 6.2	6.2	< 4.0	4	< 3.8	3.8	< 3.7	3.7	< 4.9	4.9	< 5.4	5.4
1,2-Dichloropropane			< 5.6	5.6	< 6.6	6.6	< 5.5	5.5	< 5.6	5.6	< 6.2	6.2	< 6.2	6.2	< 4.0	4	< 3.8	3.8	< 3.7	3.7	< 4.9	4.9	< 5.4	5.4
1,3,5-Trimethylbenzene	8,400	52,000	**47**	5.6	**76**	290	< 280	280	< 5.6	5.6	< 6.2	6.2	< 6.2	6.2	< 4.0	4	< 3.8	3.8	**0.85**	3.7	**20**	4.9	< 5.4	5.4
1,3-Dichlorobenzene	2,400	4,900	< 5.6	5.6	< 6.6	6.6	< 280	280	< 5.6	5.6	< 6.2	6.2	< 6.2	6.2	< 4.0	4	< 3.8	3.8	< 3.7	3.7	< 4.9	4.9	< 5.4	5.4
1,3-Dichloropropane			< 5.6	5.6	< 6.6	6.6	< 5.5	5.5	< 5.6	5.6	< 6.2	6.2	< 6.2	6.2	< 4.0	4	< 3.8	3.8	< 3.7	3.7	< 4.9	4.9	< 5.4	5.4
1,4-Dichlorobenzene	1,800	13,000	< 5.6	5.6	< 6.6	6.6	< 280	280	< 5.6	5.6	< 6.2	6.2	< 6.2	6.2	< 4.0	4	< 3.8	3.8	< 3.7	3.7	< 4.9	4.9	< 5.4	5.4
2,2-Dichloropropane			< 5.6	5.6	< 6.6	6.6	< 5.5	5.5	< 5.6	5.6	< 6.2	6.2	< 6.2	6.2	< 4.0	4	< 3.8	3.8	< 3.7	3.7	< 4.9	4.9	< 5.4	5.4
2-Chlorotoluene			< 5.6	5.6	< 6.6	6.6	< 280	280	< 5.6	5.6	< 6.2	6.2	< 6.2	6.2	< 4.0	4	< 3.8	3.8	< 3.7	3.7	< 4.9	4.9	< 5.4	5.4
2-Hexanone (Methyl Butyl Ketone)			< 28	28	< 33	33	< 27	27	< 28	28	< 31	31	< 31	31	< 20	20	< 19	19	< 18	18	< 24	24	< 27	27
2-Isopropyltoluene			**0.87**	5.6	**92**	290	< 280	280	< 5.6	5.6	< 6.2	6.2	< 6.2	6.2	< 4.0	4	< 3.8	3.8	< 3.7	3.7	< 4.9	4.9	< 5.4	5.4
4-Chlorotoluene			< 5.6	5.6	< 6.6	6.6	< 280	280	< 5.6	5.6	< 6.2	6.2	< 6.2	6.2	< 4.0	4	< 3.8	3.8	< 3.7	3.7	< 4.9	4.9	< 5.4	5.4
4-Methyl-2-Pentanone			< 28	28	< 33	33	< 27	27	< 28	28	< 31	31	< 31	31	< 20	20	< 19	19	< 18	18	< 24	24	< 27	27
Acetone	50	100,000	**8.3**	50	< 50	50	**9.8**	50	< 50	50	**8.5**	62	< 62	62	< 40	40	**8.3**	38	**19**	37	**30**	49	< 50	50
Acrylonitrile			< 11	11	< 13	13	< 11	11	< 11	11	< 12	12	< 12	12	< 7.9	7.9	< 7.7	7.7	< 7.4	7.4	< 9.8	9.8	< 11	11
Benzene	60	4,800	< 5.6	5.6	< 6.6	6.6	< 5.5	5.5	< 5.6	5.6	< 6.2	6.2	< 6.2	6.2	< 4.0	4	< 3.8	3.8	< 3.7	3.7	< 4.9	4.9	< 5.4	5.4
Bromobenzene			< 5.6	5.6	< 6.6	6.6	< 280	280	< 5.6	5.6	< 6.2	6.2	< 6.2	6.2	< 4.0	4	< 3.8	3.8	< 3.7	3.7	< 4.9	4.9	< 5.4	5.4
Bromochloromethane			< 5.6	5.6	< 6.6	6.6	< 5.5	5.5	< 5.6	5.6	< 6.2	6.2	< 6.2	6.2	< 4.0	4	< 3.8	3.8	< 3.7	3.7	< 4.9	4.9	< 5.4	5.4
Bromodichloromethane			< 5.6	5.6	< 6.6	6.6	< 5.5	5.5	< 5.6	5.6	< 6.2	6.2	< 6.2	6.2	< 4.0	4	< 3.8	3.8	< 3.7	3.7	< 4.9	4.9	< 5.4	5.4
Bromoform			< 5.6	5.6	< 6.6	6.6	< 5.5	5.5	< 5.6	5.6	< 6.2	6.2	< 6.2	6.2	< 4.0	4	< 3.8	3.8	< 3.7	3.7	< 4.9	4.9	< 5.4	5.4
Bromomethane			< 5.6	5.6	< 6.6	6.6	< 5.5	5.5	< 5.6	5.6	< 6.2	6.2	< 6.2	6.2	< 4.0	4	< 3.8	3.8	< 3.7	3.7	< 4.9	4.9	< 5.4	5.4
Carbon Disulfide			< 5.6	5.6	< 6.6	6.6	< 5.5	5.5	< 5.6	5.6	< 6.2	6.2	< 6.2	6.2	< 4.0	4	< 3.8	3.8	< 3.7	3.7	< 4.9	4.9	< 5.4	5.4
Carbon tetrachloride	760	2,400	< 5.6	5.6	< 6.6	6.6	< 5.5	5.5	< 5.6	5.6	< 6.2	6.2	< 6.2	6.2	< 4.0	4	< 3.8	3.8	< 3.7	3.7	< 4.9	4.9	< 5.4	5.4
Chlorobenzene	1,100	100,000	< 5.6	5.6	< 6.6	6.6	< 5.5	5.5	< 5.6	5.6	< 6.2	6.2	< 6.2	6.2	< 4.0	4	< 3.8	3.8	< 3.7	3.7	< 4.9	4.9	< 5.4	5.4
Chloroethane			< 5.6	5.6	< 6.6	6.6	< 5.5	5.5	< 5.6	5.6	< 6.2	6.2	< 6.2	6.2	< 4.0	4	< 3.8	3.8	< 3.7	3.7	< 4.9	4.9	< 5.4	5.4
Chloroform	370	49,000	< 5.6	5.6	< 6.6	6.6	< 5.5	5.5	< 5.6	5.6	< 6.2	6.2	< 6.2	6.2	< 4.0	4	< 3.8	3.8	< 3.7	3.7	< 4.9	4.9	< 5.4	5.4
Chloromethane			< 5.6	5.6	< 6.6	6.6	< 5.5	5.5	< 5.6	5.6	< 6.2	6.2	< 6.2	6.2	< 4.0	4	< 3.8	3.8	< 3.7	3.7	< 4.9	4.9	< 5.4	5.4
cis-1,2-Dichloroethene	250	100,000	< 5.6	5.6	< 6.6	6.6	< 5.5	5.5	< 5.6	5.6	< 6.2	6.2	< 6.2	6.2	< 4.0	4	< 3.8	3.8	< 3.7	3.7	< 4.9	4.9	< 5.4	5.4
cis-1,3-Dichloropropene			< 5.6	5.6	< 6.6	6.6	< 5.5	5.5	< 5.6	5.6	< 6.2	6.2	< 6.2	6.2	< 4.0	4	< 3.8	3.8	< 3.7	3.7	< 4.9	4.9	< 5.4	5.4
Dibromochloromethane			< 5.6	5.6	< 6.6	6.6	< 5.5	5.5	< 5.6	5.6	< 6.2	6.2	< 6.2	6.2	< 4.0	4	< 3.8	3.8	< 3.7	3.7	< 4.9	4.9	< 5.4	5.4
Dibromomethane			< 5.6	5.6	< 6.6	6.6	< 5.5	5.5	< 5.6	5.6	< 6.2	6.2	< 6.2	6.2	< 4.0	4	< 3.8	3.8	< 3.7	3.7	< 4.9	4.9	< 5.4	5.4
Dichlorodifluoromethane			< 5.6	5.6	< 6.6	6.6	< 5.5	5.5	< 5.6	5.6	< 6.2	6.2	< 6.2	6.2	< 4.0	4	< 3.8	3.8	< 3.7	3.7	< 4.9	4.9	< 5.4	5.4
Ethylbenzene	1,000	41,000	**28**	5.6	**150**	290	**3.9**	5.5	< 5.6	5.6	< 6.2	6.2	< 6.2	6.2	< 4.0	4	< 3.8	3.8	**2.9**	3.7	**60**	290	< 5.4	5.4
Hexachlorobutadiene			< 5.6	5.6	< 6.6	6.6	< 280	280	< 5.6	5.6	< 6.2	6.2	< 6.2	6.2	< 4.0	4	< 3.8	3.8	< 3.7	3.7	< 4.9	4.9	< 5.4	5.4
Isopropylbenzene			**7.6**	5.6	**1,200**	290	< 280	280	< 5.6	5.6	< 6.2	6.2	< 6.2	6.2	< 4.0	4	< 3.8	3.8	< 3.7	3.7	**6.6**	4.9	< 5.4	5.4
m&p-Xylenes	260	100,000	**69**	5.6	**160**	290	**9.5**	5.5	< 5.6	5.6	< 6.2	6.2	< 6.2	6.2	< 4.0	4	< 3.8	3.8	**5.3**	3.7	**150**	290	< 5.4	5.4
Methyl Ethyl Ketone (2-Butanone)	120	100,000	< 33	33	< 40	40	< 33	33	< 33	33	< 37	37	< 37	37	< 24	24	< 23	23	**3.6**	22	**7.5**	29	< 32	32
Methyl t-butyl ether (MTBE)	930	100,000	< 11	11	< 13	13	< 11	11	< 11	11	< 12	12	< 12	12	< 7.9	7.9	< 7.7	7.7	< 7.4	7.4	< 9.8	9.8	< 11	11
Methylene chloride	50	100,000	**55**	270	< 6.6	6.6	**14**	5.5	**3.6**	5.6	< 6.2	6.2	< 6.2	6.2	< 4.0	4	< 3.8	3.8	< 3.7	3.7	< 4.9	4.9	**4.6**	5.4
Naphthalene	12,000	100,000	**36**	5.6	**5.7**	6.6	**87**	280	< 5.6	5.6	< 6.2	6.2	< 6.2	6.2	**2.9**	4	< 3.8	3.8	< 3.7	3.7	**14**	4.9	< 5.4	5.4
n-Butylbenzene	12,000	100,000	**4.5**	5.6	**1,600**	290	< 280	280	< 5.6	5.6	< 6.2	6.2	< 6.2	6.2	< 4.0	4	< 3.8	3.8	< 3.7	3.7	**1.7**	4.9	< 5.4	5.4
n-Propylbenzene	3,900	100,000	**22**	5.6	**4,000**	290	< 280	280	< 5.6	5.6	< 6.2	6.2	< 6.2	6.2	< 4.0	4	< 3.8	3.8	**0.73**	3.7	**13**	4.9	< 5.4	5.4
o-Xylene	260	100,000	**27**	5.6	**5.3**	6.6	< 5.5	5.5	< 5.6	5.6	< 6.2	6.2	< 6.2	6.2	< 4.0	4	< 3.8	3.8	< 3.7	3.7	**15**	4.9	< 5.4	5.4
p-Isopropyltoluene			**2.2**	5.6	**62**	290	< 280	280	< 5.6	5.6	< 6.2	6.2	< 6.2	6.2	< 4.0	4	< 3.8	3.8	< 3.7	3.7	< 4.9	4.9	< 5.4	5.4
sec-Butylbenzene	11,000	100,000	**2.8**	5.6	**820**	290	< 280	280	< 5.6	5.6	< 6.2	6.2	< 6.2	6.2	< 4.0	4	< 3.8	3.8	< 3.7	3.7	**1.4**	4.9	< 5.4	5.4
Styrene			< 5.6	5.6	< 6.6	6.6	< 5.5	5.5	< 5.6	5.6	< 6.2	6.2	< 6.2	6.2	< 4.0	4	< 3.8	3.8	< 3.7	3.7	< 4.9	4.9	< 5.4	5.4
tert-Butylbenzene	5,900	100,000	< 5.6	5.6	**9**	6.6	< 280	280	< 5.6	5.6	< 6.2	6.2	< 6.2	6.2	< 4.0	4	< 3.8	3.8	< 3.7	3.7	< 4.9	4.9	< 5.4	5.4
Tetrachloroethene	1,300	19,000	< 5.6	5.6	< 6.6	6.6	< 5.5	5.5	< 5.6	5.6	< 6.2	6.2	< 6.2	6.2	< 4.0	4	< 3.8	3.8	< 3.7	3.7	< 4.9	4.9	< 5.4	5.4
Tetrahydrofuran (THF)			< 11	11	< 13	13	< 11	11	< 11	11	< 12	12	< 12	12	< 7.9	7.9	< 7.7	7.7	< 7.4	7.4	< 9.8	9.8	< 11	11
Toluene	700	100,000	**6.6**	5.6	**2.2**	6.6	**1.3**	5.5	< 5.6	5.6	< 6.2	6.2	< 6.2	6.2	< 4.0	4	< 3.8	3.8	**1.3**	3.7	**0.84**	4.9	< 5.4	5.4
trans-1,2-Dichloroethene	190	100000	< 5.6	5.6	< 6.6	6.6	< 5.5	5.5	< 5.6	5.6	< 6.2	6.2	< 6.2	6.2	< 4.0	4	< 3.8	3.8	< 3.7	3.7	< 4.9	4.9	< 5.4	5.4
trans-1,3-Dichloropropene			< 5.6	5.6	< 6.6	6.6	< 5.5	5.5	< 5.6	5.6	< 6.2	6.2	< 6.2	6.2	< 4.0	4	< 3.8	3.8	< 3.7	3.7	< 4.9	4.9	< 5.4	5.4
trabs-1,4-dichloro-2-butene			< 11	11	< 13	13	< 550	550	< 11	11	< 12	12	< 12	12	< 7.9	7.9	< 7.7	7.7	< 7.4	7.4	< 9.8	9.8	< 11	11
Trichloroethene	470	21,000	< 5.6	5.6	< 6.6	6.6	**2.1**	5.5	< 5.6	5.6	< 6.2	6.2	< 6.2	6.2	< 4.0	4	< 3.8	3.8	< 3.7	3.7	< 4.9	4.9	< 5.4	5.4
Trichlorofluoromethane			< 5.6	5.6	< 6.6	6.6	< 5.5	5.5	< 5.6	5.6	< 6.2	6.2	< 6.2	6.2	< 4.0	4	< 3.8	3.8	< 3.7	3.7	< 4.9	4.9	< 5.4	5.4
Trichlorotrifluoroethane			< 5.6	5.6	< 6.6	6.6	< 5.5	5.5	< 5.6	5.6	< 6.2	6.2	< 6.2	6.2	< 4.0	4	< 3.8	3.8	< 3.7	3.7	< 4.9	4.9	< 5.4	5.4
Vinyl Chloride	20	900	< 5.6	5.6	< 6.6	6.6	< 5.5	5.5	< 5.6	5.6	< 6.2	6.2	< 6.2	6.2	< 4.0	4	< 3.8	3.8	< 3.7	3.7	< 4.9	4.9	< 5.4	5.4

Notes:

** - 6 NYCRR Part 375-6 Remedial Program Soil Cleanup Objectives
ND - Not-detected
RL - Reporting Limit
Bold/highlighted- Indicated exceedance of the NYSDEC UUSCO Guidance Value
Bold/highlighted- Indicated exceedance of the NYSDEC RRSCO Guidance Value

TABLE 4
1103-1107 DeKalb Avenue,
Brooklyn, New York
Soil Analytical Results
Semi-Volatile Organic Compounds

COMPOUND	NYSDEC Part 375.6 Unrestricted Use Soil Cleanup Objectives	NYDEC Part 375.6 Restricted Residential Soil Cleanup Objectives*	B1307				B1308						B1309				B1310			
			(0-2') µg/Kg		(13-15') µg/Kg		(0-2') µg/Kg		(13-15') µg/Kg		(45-47') µg/Kg		(0-2') µg/Kg		(13-15') µg/Kg		(0-2') µg/Kg		(13-15') µg/Kg	
			Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL
1,2,4,5-Tetrachlorobenzene			< 260	260	< 250	250	< 260	260	< 250	250	< 2500	2,500	< 2600	2,600	< 250	250	< 260	260	< 250	250
1,2,4-Trichlorobenzene			< 260	260	< 250	250	< 260	260	< 250	250	< 2500	2,500	< 2600	2,600	< 250	250	< 260	260	< 250	250
1,2-Dichlorobenzene			< 260	260	< 250	250	< 260	260	< 250	250	< 2500	2,500	< 2600	2,600	< 250	250	< 260	260	< 250	250
1,2-Diphenylhydrazine			< 260	260	< 250	250	< 260	260	< 250	250	< 2500	2,500	< 2600	2,600	< 250	250	< 260	260	< 250	250
1,3-Dichlorobenzene			< 260	260	< 250	250	< 260	260	< 250	250	< 2500	2,500	< 2600	2,600	< 250	250	< 260	260	< 250	250
1,4-Dichlorobenzene			< 260	260	< 250	250	< 260	260	< 250	250	< 2500	2,500	< 2600	2,600	< 250	250	< 260	260	< 250	250
2,4,5-Trichlorophenol			< 260	260	< 250	250	< 260	260	< 250	250	< 2500	2,500	< 2600	2,600	< 250	250	< 260	260	< 250	250
2,4,6-Trichlorophenol			< 260	260	< 250	250	< 260	260	< 250	250	< 2500	2,500	< 2600	2,600	< 250	250	< 260	260	< 250	250
2,4-Dichlorophenol			< 260	260	< 250	250	< 260	260	< 250	250	< 2500	2,500	< 2600	2,600	< 250	250	< 260	260	< 250	250
2,4-Dimethylphenol			< 260	260	< 250	250	< 260	260	< 250	250	< 2500	2,500	< 2600	2,600	< 250	250	< 260	260	< 250	250
2,4-Dinitrophenol			< 1900	1,900	< 1800	1,800	< 1900	1,900	< 1800	1,800	< 18000	18,000	< 18000	18,000	< 1800	1,800	< 1800	1,800	< 1800	1,800
2,4-Dinitrotoluene			< 260	260	< 250	250	< 260	260	< 250	250	< 2500	2,500	< 2600	2,600	< 250	250	< 260	260	< 250	250
2,6-Dinitrotoluene			< 260	260	< 250	250	< 260	260	< 250	250	< 2500	2,500	< 2600	2,600	< 250	250	< 260	260	< 250	250
2-Chloronaphthalene			< 260	260	< 250	250	< 260	260	< 250	250	< 2500	2,500	< 2600	2,600	< 250	250	< 260	260	< 250	250
2-Chlorophenol			< 260	260	< 250	250	< 260	260	< 250	250	< 2500	2,500	< 2600	2,600	< 250	250	< 260	260	< 250	250
2-Methylnaphthalene			**130**	260	< 250	250	**120**	260	**4,100**	250	**44,000**	2,500	**16,000**	2,600	**1,400**	250	**130**	260	**1,600**	250
2-Methylphenol (o-cresol)	330	100,000	< 260	260	< 250	250	< 260	260	< 250	250	< 2500	2,500	< 2600	2,600	< 250	250	< 260	260	< 250	250
2-Nitroaniline			< 1900	1,900	< 1800	1,800	< 1900	1,900	< 1800	1,800	< 18000	18,000	< 18000	18,000	< 1800	1,800	< 1800	1,800	< 1800	1,800
2-Nitrophenol			< 260	260	< 250	250	< 260	260	< 250	250	< 2500	2,500	< 2600	2,600	< 250	250	< 260	260	< 250	250
3&4-Methylphenol (m&p-cresol)			< 260	260	< 250	250	< 260	260	< 250	250	< 2500	2,500	< 2600	2,600	< 250	250	< 260	260	< 250	250
3,3'-Dichlorobenzidine			< 750	750	< 710	710	< 750	750	< 720	720	< 7100	7,100	< 7400	7,400	< 720	720	< 730	730	< 720	720
3-Nitroaniline			< 1900	1,900	< 1800	1,800	< 1900	1,900	< 1800	1,800	< 18000	18,000	< 18000	18,000	< 1800	1,800	< 1800	1,800	< 1800	1,800
4,6-Dinitro-2-methylphenol			< 1900	1,900	< 1800	1,800	< 1900	1,900	< 1800	1,800	< 18000	18,000	< 18000	18,000	< 1800	1,800	< 1800	1,800	< 1800	1,800
4-Bromophenyl phenyl ether			< 260	260	< 250	250	< 260	260	< 250	250	< 2500	2,500	< 2600	2,600	< 250	250	< 260	260	< 250	250
4-Chloro-3-methylphenol			< 260	260	< 250	250	< 260	260	< 250	250	< 2500	2,500	< 2600	2,600	< 250	250	< 260	260	< 250	250
4-Chloroaniline			< 750	750	< 710	710	< 750	750	< 720	720	< 7100	7,100	< 7400	7,400	< 720	720	< 730	730	< 720	720
4-Chlorophenyl phenyl ether			< 260	260	< 250	250	< 260	260	< 250	250	< 2500	2,500	< 2600	2,600	< 250	250	< 260	260	< 250	250
4-Nitroaniline			< 1900	1,900	< 1800	1,800	< 1900	1,900	< 1800	1,800	< 18000	18,000	< 18000	18,000	< 1800	1,800	< 1800	1,800	< 1800	1,800
4-Nitrophenol			< 1900	1,900	< 1800	1,800	< 1900	1,900	< 1800	1,800	< 18000	18,000	< 18000	18,000	< 1800	1,800	< 1800	1,800	< 1800	1,800
Acenaphthene	20,000	100,000	**330**	260	< 250	250	< 260	260	< 250	250	< 2500	2,500	< 2600	2,600	< 250	250	< 260	260	< 250	250
Acenaphthylene	100,000	100,000	**200**	260	< 250	250	< 260	260	< 250	250	< 2500	2,500	< 2600	2,600	< 250	250	**290**	260	< 250	250
Acetophenone			< 260	260	< 250	250	< 260	260	< 250	250	< 2500	2,500	< 2600	2,600	< 250	250	< 260	260	< 250	250
Aniline			< 1900	1,900	< 1800	1,800	< 1900	1,900	< 1800	1,800	< 18000	18,000	< 18000	18,000	< 1800	1,800	< 1800	1,800	< 1800	1,800
Anthracene	100,000	100,000	**850**	260	< 250	250	**190**	260	< 250	250	< 2500	2,500	< 2600	2,600	< 250	250	**390**	260	< 250	250
Benz(a)anthracene	1,000	1,000	**2,700**	260	< 250	250	**650**	260	< 250	250	< 2500	2,500	< 2600	2,600	< 250	250	**1,600**	260	< 250	250
Benzidine			< 750	750	< 710	710	< 750	750	< 720	720	< 7100	7,100	< 7400	7,400	< 720	720	< 730	730	< 720	720
Benzo(a)pyrene	1,000	1,000	**2,500**	260	< 250	250	**650**	260	< 250	250	< 2500	2,500	< 2600	2,600	< 250	250	**1,300**	260	< 250	250
Benzo(b)fluoranthene	1,000	1,000	**3,000**	260	< 250	250	**820**	260	< 250	250	< 2500	2,500	< 2600	2,600	< 250	250	**1,700**	260	< 250	250
Benzo(ghi)perylene	100,000	100,000	**1,900**	260	< 250	250	**430**	260	< 250	250	< 2500	2,500	< 2600	2,600	< 250	250	**990**	260	< 250	250
Benzo(k)fluoranthene	800	3,900	**1,100**	260	< 250	250	**260**	260	< 250	250	< 2500	2,500	< 2600	2,600	< 250	250	**670**	260	< 250	250
Benzoic acid			< 1900	1,900	< 1800	1,800	< 1900	1,900	< 1800	1,800	< 18000	18,000	< 18000	18,000	< 1800	1,800	< 1800	1,800	< 1800	1,800
Benzyl butyl phthalate			< 260	260	< 250	250	< 260	260	< 250	250	< 2500	2,500	< 2600	2,600	< 250	250	< 260	260	< 250	250
Bis(2-chloroethoxy)methane			< 260	260	< 250	250	< 260	260	< 250	250	< 2500	2,500	< 2600	2,600	< 250	250	< 260	260	< 250	250
Bis(2-chloroethyl)ether			< 260	260	< 250	250	< 260	260	< 250	250	< 2500	2,500	< 2600	2,600	< 250	250	< 260	260	< 250	250
Bis(2-chloroisopropyl)ether			< 260	260	< 250	250	< 260	260	< 250	250	< 2500	2,500	< 2600	2,600	< 250	250	< 260	260	< 250	250
Bis(2-ethylhexyl)phthalate			**440**	260	< 250	250	< 260	260	< 250	250	< 2500	2,500	< 2600	2,600	< 250	250	< 260	260	< 250	250
Carbazole			**380**	1,900	< 1800	1,800	< 1900	1,900	< 1800	1,800	< 18000	18,000	< 18000	18,000	< 1800	1,800	< 1800	1,800	< 1800	1,800
Chrysene	1,000	3,900	**2,700**	260	< 250	250	**750**	260	< 250	250	< 2500	2,500	< 2600	2,600	< 250	250	**1,500**	260	< 250	250
Dibenz(a,h)anthracene	330	330	**440**	260	< 250	250	< 260	260	< 250	250	< 2500	2,500	< 2600	2,600	< 250	250	< 260	260	< 250	250
Dibenzofuran	7,000	59,000	**210**	260	< 250	250	**160**	260	< 250	250	< 2500	2,500	< 2600	2,600	< 250	250	< 260	260	< 250	250
Diethyl phthalate			< 260	260	< 250	250	< 260	260	< 250	250	< 2500	2,500	< 2600	2,600	< 250	250	< 260	260	< 250	250
Dimethylphthalate			< 260	260	< 250	250	< 260	260	< 250	250	< 2500	2,500	< 2600	2,600	< 250	250	< 260	260	< 250	250
Di-n-butylphthalate			< 260	260	< 250	250	< 260	260	< 250	250	< 2500	2,500	< 2600	2,600	< 250	250	< 260	260	< 250	250
Di-n-octylphthalate			< 260	260	< 250	250	< 260	260	< 250	250	< 2500	2,500	< 2600	2,600	< 250	250	< 260	260	< 250	250
Fluoranthene	100,000	100,000	**4,500**	260	< 250	250	**1,200**	260	**140**	250	< 2500	2,500	< 2600	2,600	**150**	250	**4,100**	260	< 250	250
Fluorene	30,000	100,000	**310**	260	< 250	250	< 260	260	< 250	250	< 2500	2,500	< 2600	2,600	< 250	250	< 260	260	< 250	250
Hexachlorobenzene			< 260	260	< 250	250	< 260	260	< 250	250	< 2500	2,500	< 2600	2,600	< 250	250	< 260	260	< 250	250
Hexachlorobutadiene			< 260	260	< 250	250	< 260	260	< 250	250	< 2500	2,500	< 2600	2,600	< 250	250	< 260	260	< 250	250
Hexachlorocyclopentadiene			< 260	260	< 250	250	< 260	260	< 250	250	< 2500	2,500	< 2600	2,600	< 250	250	< 260	260	< 250	250
Hexachloroethane			< 260	260	< 250	250	< 260	260	< 250	250	< 2500	2,500	< 2600	2,600	< 250	250	< 260	260	< 250	250
Indeno(1,2,3-cd)pyrene	500	500	**1,600**	260	< 250	250	**380**	260	< 250	250	< 2500	2,500	< 2600	2,600	< 250	250	**880**	260	< 250	250
Isophorone			< 260	260	< 250	250	< 260	260	< 250	250	< 2500	2,500	< 2600	2,600	< 250	250	< 260	260	< 250	250
Naphthalene	12,000	100,000	**260**	260	< 250	250	**250**	260	**4,800**	250	**47,000**	2,500	**17,000**	2,600	**220**	250	**250**	260	**2,400**	250
Nitrobenzene			< 260	260	< 250	250	< 260	260	< 250	250	< 2500	2,500	< 2600	2,600	< 250	250	< 260	260	< 250	250
N-Nitrosodimethylamine			< 260	260	< 250	250	< 260	260	< 250	250	< 2500	2,500	< 2600	2,600	< 250	250	< 260	260	< 250	250
N-Nitrosodi-n-propylamine			< 260	260	< 250	250	< 260	260	< 250	250	< 2500	2,500	< 2600	2,600	< 250	250	< 260	260	< 250	250
N-Nitrosodiphenylamine			< 260	260	< 250	250	< 260	260	< 250	250	< 2500	2,500	< 2600	2,600	< 250	250	< 260	260	< 250	250
Pentachloronitrobenzene			< 260	260	< 250	250	< 260	260	< 250	250	< 2500	2,500	< 2600	2,600	< 250	250	< 260	260	< 250	250
Pentachlorophenol	800	6,700	< 260	260	< 250	250	< 260	260	< 250	250	< 2500	2,500	< 2600	2,600	< 250	250	< 260	260	< 250	250
Phenanthrene	100,000	100,000	**4,000**	260	< 250	250	**940**	260	**170**	250	< 2500	2,500	< 2600	2,600	**200**	250	**890**	260	< 250	250
Phenol	330	100,000	< 260	260	< 250	250	< 260	260	< 250	250	< 2500	2,500	< 2600	2,600	< 250	250	< 260	260	< 250	250
Pyrene	100,000	100,000	**3,900**	260	< 250	250	**1,300**	260	< 250	250	< 2500	2,500	< 2600	2,600	**130**	250	**3,600**	260	< 250	250
Pyridine			< 260	260	< 250	250	< 260	260	< 250	250	< 2500	2,500	< 2600	2,600	< 250	250	< 260	260	< 250	250

Notes:

** - 6 NYCRR Part 375-6 Remedial Program Soil Cleanup Objectives

ND - Not-detected

RL - Reporting Limit

Bold/highlighted- Indicated exceedance of the NYSDEC UUSCO Guidance Value

Bold/highlighted- Indicated exceedance of the NYSDEC RRSCO Guidance Value

TABLE 4
1103-1107 DeKalb Avenue,
Brooklyn, New York
Soil Analytical Results
Semi-Volatile Organic Compounds

COMPOUND	NYSDEC Part 375.6 Unrestricted Use Soil Cleanup Objectives	NYDEC Part 375.6 Restricted Residential Soil Cleanup Objectives*	B1311				B1312				B1313				B1314				Duplicate	
			(0-2') µg/Kg		(13-15') µg/Kg		(0-2') µg/Kg		(13-15') µg/Kg		(0-2') µg/Kg		(13-15') µg/Kg		(0-2') µg/Kg		(13-15') µg/Kg		µg/Kg	
			Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL
1,2,4,5-Tetrachlorobenzene			< 250	250	< 260	260	< 260	260	< 270	270	< 260	260	< 250	250	< 250	250	< 270	270	< 240	240
1,2,4-Trichlorobenzene			< 250	250	< 260	260	< 260	260	< 270	270	< 260	260	< 250	250	< 250	250	< 270	270	< 240	240
1,2-Dichlorobenzene			< 250	250	< 260	260	< 260	260	< 270	270	< 260	260	< 250	250	< 250	250	< 270	270	< 240	240
1,2-Diphenylhydrazine			< 250	250	< 260	260	< 260	260	< 270	270	< 260	260	< 250	250	< 250	250	< 270	270	< 240	240
1,3-Dichlorobenzene			< 250	250	< 260	260	< 260	260	< 270	270	< 260	260	< 250	250	< 250	250	< 270	270	< 240	240
1,4-Dichlorobenzene			< 250	250	< 260	260	< 260	260	< 270	270	< 260	260	< 250	250	< 250	250	< 270	270	< 240	240
2,4,5-Trichlorophenol			< 250	250	< 260	260	< 260	260	< 270	270	< 260	260	< 250	250	< 250	250	< 270	270	< 240	240
2,4,6-Trichlorophenol			< 250	250	< 260	260	< 260	260	< 270	270	< 260	260	< 250	250	< 250	250	< 270	270	< 240	240
2,4-Dichlorophenol			< 250	250	< 260	260	< 260	260	< 270	270	< 260	260	< 250	250	< 250	250	< 270	270	< 240	240
2,4-Dimethylphenol			< 250	250	< 260	260	< 260	260	< 270	270	< 260	260	< 250	250	< 250	250	< 270	270	< 240	240
2,4-Dinitrophenol			< 1800	1,800	< 1800	1,800	< 1800	1,800	< 1900	1,900	< 1900	1,900	< 1800	1,800	< 1800	1,800	< 1900	1,900	< 1700	1,700
2,4-Dinitrotoluene			< 250	250	< 260	260	< 260	260	< 270	270	< 260	260	< 250	250	< 250	250	< 270	270	< 240	240
2,6-Dinitrotoluene			< 250	250	< 260	260	< 260	260	< 270	270	< 260	260	< 250	250	< 250	250	< 270	270	< 240	240
2-Chloronaphthalene			< 250	250	< 260	260	< 260	260	< 270	270	< 260	260	< 250	250	< 250	250	< 270	270	< 240	240
2-Chlorophenol			< 250	250	< 260	260	< 260	260	< 270	270	< 260	260	< 250	250	< 250	250	< 270	270	< 240	240
2-Methylnaphthalene			**190**	250	< 260	260	< 260	260	< 270	270	**120**	260	< 250	250	< 250	250	< 270	270	< 240	240
2-Methylphenol (o-cresol)	330	100,000	< 250	250	< 260	260	< 260	260	< 270	270	< 260	260	< 250	250	< 250	250	< 270	270	< 240	240
2-Nitroaniline			< 1800	1,800	< 1800	1,800	< 1800	1,800	< 1900	1,900	< 1900	1,900	< 1800	1,800	< 1800	1,800	< 1900	1,900	< 1700	1,700
2-Nitrophenol			< 250	250	< 260	260	< 260	260	< 270	270	< 260	260	< 250	250	< 250	250	< 270	270	< 240	240
3&4-Methylphenol (m&p-cresol)			< 250	250	< 260	260	< 260	260	< 270	270	< 260	260	< 250	250	< 250	250	< 270	270	< 240	240
3,3'-Dichlorobenzidine			< 710	710	< 740	740	< 730	730	< 760	760	< 750	750	< 730	730	< 710	710	< 770	770	< 700	700
3-Nitroaniline			< 1800	1,800	< 1800	1,800	< 1800	1,800	< 1900	1,900	< 1900	1,900	< 1800	1,800	< 1800	1,800	< 1900	1,900	< 1700	1,700
4,6-Dinitro-2-methylphenol			< 1800	1,800	< 1800	1,800	< 1800	1,800	< 1900	1,900	< 1900	1,900	< 1800	1,800	< 1800	1,800	< 1900	1,900	< 1700	1,700
4-Bromophenyl phenyl ether			< 250	250	< 260	260	< 260	260	< 270	270	< 260	260	< 250	250	< 250	250	< 270	270	< 240	240
4-Chloro-3-methylphenol			< 250	250	< 260	260	< 260	260	< 270	270	< 260	260	< 250	250	< 250	250	< 270	270	< 240	240
4-Chloroaniline			< 710	710	< 740	740	< 730	730	< 760	760	< 750	750	< 730	730	< 710	710	< 770	770	< 700	700
4-Chlorophenyl phenyl ether			< 250	250	< 260	260	< 260	260	< 270	270	< 260	260	< 250	250	< 250	250	< 270	270	< 240	240
4-Nitroaniline			< 1800	1,800	< 1800	1,800	< 1800	1,800	< 1900	1,900	< 1900	1,900	< 1800	1,800	< 1800	1,800	< 1900	1,900	< 1700	1,700
4-Nitrophenol			< 1800	1,800	< 1800	1,800	< 1800	1,800	< 1900	1,900	< 1900	1,900	< 1800	1,800	< 1800	1,800	< 1900	1,900	< 1700	1,700
Acenaphthene	20,000	100,000	**300**	250	< 260	260	**120**	260	< 270	270	**430**	260	< 250	250	< 250	250	< 270	270	< 240	240
Acenaphthylene	100,000	100,000	**130**	250	< 260	260	**100**	260	< 270	270	**160**	260	< 250	250	< 250	250	< 270	270	< 240	240
Acetophenone			< 250	250	< 260	260	< 260	260	< 270	270	< 260	260	< 250	250	< 250	250	< 270	270	< 240	240
Aniline			< 1800	1,800	< 1800	1,800	< 1800	1,800	< 1900	1,900	< 1900	1,900	< 1800	1,800	< 1800	1,800	< 1900	1,900	< 1700	1,700
Anthracene	100,000	100,000	**860**	250	< 260	260	**350**	260	< 270	270	**1,000**	260	< 250	250	**200**	250	< 270	270	< 240	240
Benz(a)anthracene	1,000	1,000	**1,600**	250	< 260	260	**1,500**	260	< 270	270	**2,600**	260	**150**	250	**380**	250	< 270	270	< 240	240
Benzidine			< 710	710	< 740	740	< 730	730	< 760	760	< 750	750	< 730	730	< 710	710	< 770	770	< 700	700
Benzo(a)pyrene	1,000	1,000	**1,500**	250	< 260	260	**1,400**	260	< 270	270	**2,200**	260	**140**	250	**320**	250	< 270	270	< 240	240
Benzo(b)fluoranthene	1,000	1,000	**2,200**	250	< 260	260	**1,900**	260	< 270	270	**2,600**	260	**170**	250	**470**	250	< 270	270	< 240	240
Benzo(ghi)perylene	100,000	100,000	**490**	250	< 260	260	**1,100**	260	< 270	270	**1,600**	260	**120**	250	**160**	250	< 270	270	< 240	240
Benzo(k)fluoranthene	800	3,900	**770**	250	< 260	260	**430**	260	< 270	270	**960**	260	< 250	250	**170**	250	< 270	270	< 240	240
Benzoic acid			< 1800	1,800	< 1800	1,800	< 1800	1,800	< 1900	1,900	< 1900	1,900	< 1800	1,800	< 1800	1,800	< 1900	1,900	< 1700	1,700
Benzyl butyl phthalate			< 250	250	< 260	260	< 260	260	< 270	270	< 260	260	< 250	250	< 250	250	< 270	270	< 240	240
Bis(2-chloroethoxy)methane			< 250	250	< 260	260	< 260	260	< 270	270	< 260	260	< 250	250	< 250	250	< 270	270	< 240	240
Bis(2-chloroethyl)ether			< 250	250	< 260	260	< 260	260	< 270	270	< 260	260	< 250	250	< 250	250	< 270	270	< 240	240
Bis(2-chloroisopropyl)ether			< 250	250	< 260	260	< 260	260	< 270	270	< 260	260	< 250	250	< 250	250	< 270	270	< 240	240
Bis(2-ethylhexyl)phthalate			**140**	250	< 260	260	< 260	260	< 270	270	< 260	260	< 250	250	< 250	250	< 270	270	< 240	240
Carbazole			**330**	1,800	< 1800	1,800	< 1800	1,800	< 1900	1,900	**460**	1,900	< 1800	1,800	< 1800	1,800	< 1900	1,900	< 1700	1,700
Chrysene	1,000	3,900	**1,500**	250	< 260	260	**1,600**	260	< 270	270	**2,600**	260	**160**	250	**370**	250	< 270	270	< 240	240
Dibenz(a,h)anthracene	330	330	< 250	250	< 260	260	**280**	260	< 270	270	< 260	260	< 250	250	< 250	250	< 270	270	< 240	240
Dibenzofuran	7,000	59,000	**280**	250	< 260	260	< 260	260	< 270	270	**310**	260	< 250	250	< 250	250	< 270	270	< 240	240
Diethyl phthalate			< 250	250	< 260	260	< 260	260	< 270	270	< 260	260	< 250	250	< 250	250	< 270	270	< 240	240
Dimethylphthalate			< 250	250	< 260	260	< 260	260	< 270	270	< 260	260	< 250	250	< 250	250	< 270	270	< 240	240
Di-n-butylphthalate			< 250	250	< 260	260	< 260	260	< 270	270	< 260	260	< 250	250	< 250	250	< 270	270	< 240	240
Di-n-octylphthalate			< 250	250	< 260	260	< 260	260	< 270	270	< 260	260	< 250	250	< 250	250	< 270	270	< 240	240
Fluoranthene	100,000	100,000	**3,000**	250	< 260	260	**2,600**	260	< 270	270	**5,000**	260	**320**	250	**840**	250	< 270	270	< 240	240
Fluorene	30,000	100,000	**420**	250	< 260	260	< 260	260	< 270	270	**400**	260	< 250	250	< 250	250	< 270	270	< 240	240
Hexachlorobenzene			< 250	250	< 260	260	< 260	260	< 270	270	< 260	260	< 250	250	< 250	250	< 270	270	< 240	240
Hexachlorobutadiene			< 250	250	< 260	260	< 260	260	< 270	270	< 260	260	< 250	250	< 250	250	< 270	270	< 240	240
Hexachlorocyclopentadiene			< 250	250	< 260	260	< 260	260	< 270	270	< 260	260	< 250	250	< 250	250	< 270	270	< 240	240
Hexachloroethane			< 250	250	< 260	260	< 260	260	< 270	270	< 260	260	< 250	250	< 250	250	< 270	270	< 240	240
Indeno(1,2,3-cd)pyrene	500	500	**450**	250	< 260	260	**980**	260	< 270	270	**1,400**	260	< 250	250	**150**	250	< 270	270	< 240	240
Isophorone			< 250	250	< 260	260	< 260	260	< 270	270	< 260	260	< 250	250	< 250	250	< 270	270	< 240	240
Naphthalene	12,000	100,000	**310**	250	< 260	260	< 260	260	< 270	270	**240**	260	< 250	250	**110**	250	< 270	270	< 240	240
Nitrobenzene			< 250	250	< 260	260	< 260	260	< 270	270	< 260	260	< 250	250	< 250	250	< 270	270	< 240	240
N-Nitrosodimethylamine			< 250	250	< 260	260	< 260	260	< 270	270	< 260	260	< 250	250	< 250	250	< 270	270	< 240	240
N-Nitrosodi-n-propylamine			< 250	250	< 260	260	< 260	260	< 270	270	< 260	260	< 250	250	< 250	250	< 270	270	< 240	240
N-Nitrosodiphenylamine			< 250	250	< 260	260	< 260	260	< 270	270	< 260	260	< 250	250	< 250	250	< 270	270	< 240	240
Pentachloronitrobenzene			< 250	250	< 260	260	< 260	260	< 270	270	< 260	260	< 250	250	< 250	250	< 270	270	< 240	240
Pentachlorophenol	800	6,700	< 250	250	< 260	260	< 260	260	< 270	270	< 260	260	< 250	250	< 250	250	< 270	270	< 240	240
Phenanthrene	100,000	100,000	**3,200**	250	< 260	260	**1,600**	260	< 270	270	**4,700**	260	**300**	250	**550**	250	< 270	270	< 240	240
Phenol	330	100,000	< 250	250	< 260	260	< 260	260	< 270	270	< 260	260	< 250	250	< 250	250	< 270	270	< 240	240
Pyrene	100,000	100,000	**2,800**	250	< 260	260	**2,500**	260	< 270	270	**4,400**	260	**280**	250	**800**	250	< 270	270	< 240	240
Pyridine			< 250	250	< 260	260	< 260	260	< 270	270	< 260	260	< 250	250	< 250	250	< 270	270	< 240	240

Notes:

** - 6 NYCRR Part 375-6 Remedial Program Soil Cleanup Objectives

ND - Not-detected

RL - Reporting Limit

Bold/highlighted- Indicated exceedance of the NYSDEC UU

Bold/highlighted- Indicated exceedance of the NYSDEC RR

TABLE 5
1103-1107 DeKalb Avenue,
Brooklyn, New York
Soil Analytical Results
Pesticides PCBs

COMPOUND	NYSDEC Part 375.6 Unrestricted Use Soil Cleanup Objectives	NYDEC Part 375.6 Restricted Residential Soil Cleanup Objectives*	2/12/2013		4/1/2014																															
			B1306		B1307				B1308						B1309				B1310				B1311				B1312				B1313				B1314				Duplicate	
			(13-15') µg/Kg		(0-2') µg/Kg		(13-15') µg/Kg		(0-2') µg/Kg		(13-15') µg/Kg		(45-47') µg/Kg		(0-2') µg/Kg		(13-15') µg/Kg		(0-2') µg/Kg		(13-15') µg/Kg		(0-2') µg/Kg		(13-15') µg/Kg		(0-2') µg/Kg		(13-15') µg/Kg		(0-2') µg/Kg		(13-15') µg/Kg		(0-2') µg/Kg		(13-15') µg/Kg		µg/Kg	
			Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL
4,4' -DDD	3.3	13,000	-		< 2.7	2.7	< 2.6	2.6	< 2.6	2.6	< 2.6	2.6	< 2.6	2.6	< 2.6	2.6	< 2.6	2.6	< 2.6	2.6	< 2.6	2.6	< 2.6	2.6	< 2.6	2.6	< 2.6	2.6	< 2.8	2.8	< 2.7	2.7	< 2.6	2.6	< 2.6	2.6	< 2.7	2.7	< 2.5	2.5
4,4' -DDE	3.3	8,900	-		< 2.7	2.7	< 2.6	2.6	< 2.6	2.6	< 2.6	2.6	< 2.6	2.6	< 2.6	2.6	< 2.6	2.6	< 2.9	2.9	< 2.6	2.6	< 2.6	2.6	< 2.6	2.6	< 2.6	2.6	< 2.8	2.8	< 2.7	2.7	< 2.6	2.6	< 2.6	2.6	< 2.7	2.7	< 2.5	2.5
4,4' -DDT	3.3	7,900	-		< 2.7	2.7	< 2.6	2.6	< 2.6	2.6	< 2.6	2.6	< 2.6	2.6	< 2.6	2.6	< 2.6	2.6	< 2.6	2.6	< 2.6	2.6	< 2.6	2.6	< 2.6	2.6	< 2.6	2.6	< 2.8	2.8	< 2.7	2.7	< 2.6	2.6	< 2.6	2.6	< 2.7	2.7	< 2.5	2.5
a-BHC	20	480	-		< 1.9	1.9	< 1.8	1.8	< 1.8	1.8	< 1.8	1.8	< 1.8	1.8	< 1.8	1.8	< 1.8	1.8	< 1.8	1.8	< 1.8	1.8	< 1.8	1.8	< 1.8	1.8	< 1.8	1.8	< 1.9	1.9	< 1.9	1.9	< 1.8	1.8	< 1.8	1.8	< 1.9	1.9	< 1.8	1.8
Alachlor			-		< 3.8	3.8	< 3.6	3.6	< 3.6	3.6	< 3.6	3.6	< 3.6	3.6	< 3.6	3.6	< 3.6	3.6	< 3.6	3.6	< 3.6	3.6	< 3.6	3.6	< 3.6	3.6	< 3.6	3.6	< 3.9	3.9	< 3.8	3.8	< 3.6	3.6	< 3.6	3.6	< 3.8	3.8	< 3.5	3.5
Aldrin	5	97	-		< 1.9	1.9	< 1.8	1.8	< 1.8	1.8	< 1.8	1.8	< 1.8	1.8	< 1.8	1.8	< 1.8	1.8	< 1.8	1.8	< 1.8	1.8	< 1.8	1.8	< 1.8	1.8	< 1.8	1.8	< 1.9	1.9	< 1.9	1.9	< 1.8	1.8	< 1.8	1.8	< 1.9	1.9	< 1.8	1.8
b-BHC	36	360	-		< 1.9	1.9	< 1.8	1.8	< 1.8	1.8	< 1.8	1.8	< 1.8	1.8	< 1.8	1.8	< 1.8	1.8	< 1.8	1.8	< 1.8	1.8	< 1.8	1.8	< 1.8	1.8	< 1.8	1.8	< 1.9	1.9	< 1.9	1.9	< 1.8	1.8	< 1.8	1.8	< 1.9	1.9	< 1.8	1.8
Chlordane			-		< 22	22	< 22	22	< 22	22	< 22	22	< 21	21	< 22	22	< 22	22	< 22	22	< 22	22	< 22	22	< 22	22	< 22	22	< 23	23	< 23	23	< 22	22	< 22	22	< 23	23	< 21	21
d-BHC	40	100,000	-		< 1.9	1.9	< 1.8	1.8	< 1.8	1.8	< 1.8	1.8	< 1.8	1.8	< 1.8	1.8	< 1.8	1.8	< 1.8	1.8	< 1.8	1.8	< 1.8	1.8	< 1.8	1.8	< 1.8	1.8	< 1.9	1.9	< 1.9	1.9	< 1.8	1.8	< 1.8	1.8	< 1.9	1.9	< 1.8	1.8
Dieldrin	5	200	-		< 3.0	3	< 1.8	1.8	< 1.8	1.8	< 1.8	1.8	< 1.8	1.8	< 1.8	1.8	< 1.8	1.8	< 1.8	1.8	< 1.8	1.8	< 1.8	1.8	< 1.8	1.8	< 1.8	1.8	< 1.9	1.9	< 1.9	1.9	< 2.5	2.5	< 1.8	1.8	< 1.9	1.9	< 1.8	1.8
Endosulfan I	2,400	24,000	-		< 3.8	3.8	< 3.6	3.6	< 3.6	3.6	< 3.6	3.6	< 3.6	3.6	< 3.6	3.6	< 3.6	3.6	< 3.6	3.6	< 3.6	3.6	< 3.6	3.6	< 3.6	3.6	< 3.6	3.6	< 3.9	3.9	< 3.8	3.8	< 3.6	3.6	< 3.6	3.6	< 3.8	3.8	< 3.5	3.5
Endosulfan II	2,400	24,000	-		< 3.8	3.8	< 3.6	3.6	< 3.6	3.6	< 3.6	3.6	< 3.6	3.6	< 3.6	3.6	< 3.6	3.6	< 3.6	3.6	< 3.6	3.6	< 3.6	3.6	< 3.6	3.6	< 3.6	3.6	< 3.9	3.9	< 3.8	3.8	< 3.6	3.6	< 3.6	3.6	< 3.8	3.8	< 3.5	3.5
Endosulfan sulfate	2,400	24,000	-		< 3.8	3.8	< 3.6	3.6	< 3.6	3.6	< 3.6	3.6	< 3.6	3.6	< 3.6	3.6	< 3.6	3.6	< 3.6	3.6	< 3.6	3.6	< 3.6	3.6	< 3.6	3.6	< 3.6	3.6	< 3.9	3.9	< 3.8	3.8	< 3.6	3.6	< 3.6	3.6	< 3.8	3.8	< 3.5	3.5
Endrin	14	11,000	-		< 1.9	1.9	< 1.8	1.8	< 1.8	1.8	< 1.8	1.8	< 1.8	1.8	< 1.8	1.8	< 1.8	1.8	< 1.8	1.8	< 1.8	1.8	< 1.8	1.8	< 1.8	1.8	< 1.8	1.8	< 1.9	1.9	< 1.9	1.9	< 1.8	1.8	< 1.8	1.8	< 1.9	1.9	< 1.8	1.8
Endrin aldehyde			-		< 3.8	3.8	< 3.6	3.6	< 3.6	3.6	< 3.6	3.6	< 3.6	3.6	< 3.6	3.6	< 3.6	3.6	< 3.6	3.6	< 3.6	3.6	< 3.6	3.6	< 3.6	3.6	< 3.6	3.6	< 3.9	3.9	< 3.8	3.8	< 3.6	3.6	< 3.6	3.6	< 3.8	3.8	< 3.5	3.5
Endrin ketone			-		< 1.9	1.9	< 1.8	1.8	< 1.8	1.8	< 1.8	1.8	< 1.8	1.8	< 1.8	1.8	< 1.8	1.8	< 1.8	1.8	< 1.8	1.8	< 1.8	1.8	< 1.8	1.8	< 1.8	1.8	< 1.9	1.9	< 1.9	1.9	< 1.8	1.8	< 1.8	1.8	< 1.9	1.9	< 1.8	1.8
g-BHC	100	1,300	-		< 1.9	1.9	< 1.8	1.8	< 1.8	1.8	< 1.8	1.8	< 4.1	4.1	< 1.8	1.8	< 1.8	1.8	< 1.8	1.8	< 1.8	1.8	< 1.8	1.8	< 1.8	1.8	< 1.8	1.8	< 1.9	1.9	< 1.9	1.9	< 1.8	1.8	< 1.8	1.8	< 1.9	1.9	< 1.8	1.8
g-Chlordane			-		< 3.8	3.8	< 3.6	3.6	< 3.6	3.6	< 3.6	3.6	< 3.6	3.6	< 3.6	3.6	< 3.6	3.6	< 3.6	3.6	< 3.6	3.6	< 3.6	3.6	< 3.6	3.6	< 3.6	3.6	< 3.9	3.9	< 3.8	3.8	< 3.6	3.6	< 3.6	3.6	< 3.8	3.8	< 3.5	3.5
Heptachlor	42	2,100	-		< 1.9	1.9	< 1.8	1.8	< 1.8	1.8	< 1.8	1.8	< 1.8	1.8	< 1.8	1.8	< 1.8	1.8	< 1.8	1.8	< 1.8	1.8	< 1.8	1.8	< 1.8	1.8	< 1.8	1.8	< 1.9	1.9	< 1.9	1.9	< 1.8	1.8	< 1.8	1.8	< 1.9	1.9	< 1.8	1.8
Heptachlor epoxide			-		< 1.9	1.9	< 1.8	1.8	< 1.8	1.8	< 1.8	1.8	< 1.8	1.8	< 1.8	1.8	< 1.8	1.8	< 1.8	1.8	< 1.8	1.8	< 1.8	1.8	< 1.8	1.8	< 1.8	1.8	< 1.9	1.9	< 1.9	1.9	< 1.8	1.8	< 1.8	1.8	< 1.9	1.9	< 1.8	1.8
Methoxychlor			-		< 7.5	7.5	< 7.2	7.2	< 7.3	7.3	< 7.3	7.3	< 7.8	7.8	< 7.3	7.3	< 7.2	7.2	< 7.2	7.2	< 7.3	7.3	< 14	14	< 7.3	7.3	< 7.2	7.2	< 7.8	7.8	< 7.6	7.6	< 7.2	7.2	< 7.2	7.2	< 7.5	7.5	< 7.0	7
Toxaphene			-		< 190	190	< 180	180	< 180	180	< 180	180	< 180	180	< 180	180	< 180	180	< 180	180	< 180	180	< 180	180	< 180	180	< 180	180	< 190	190	< 190	190	< 180	180	< 180	180	< 190	190	< 180	180
PCB-1016	100	1,000	ND	380	< 94	94	< 90	90	< 36	36	< 36	36	< 36	36	< 36	36	< 36	36	< 36	36	< 36	36	< 36	36	< 36	36	< 90	90	< 97	97	< 95	95	< 90	90	**72**	36	< 38	38	< 35	35
PCB-1221	100	1,000	ND	380	< 94	94	< 90	90	< 36	36	< 36	36	< 36	36	< 36	36	< 36	36	< 36	36	< 36	36	< 36	36	< 36	36	< 90	90	< 97	97	< 95	95	< 90	90	< 36	36	< 38	38	< 35	35
PCB-1232	100	1,000	ND	380	< 94	94	< 90	90	< 36	36	< 36	36	< 36	36	< 36	36	< 36	36	< 36	36	< 36	36	< 36	36	< 36	36	< 90	90	< 97	97	< 95	95	< 90	90	< 36	36	< 38	38	< 35	35
PCB-1242	100	1,000	ND	380	< 94	94	< 90	90	< 36	36	< 36	36	< 36	36	< 36	36	< 36	36	< 36	36	< 36	36	< 36	36	< 36	36	< 90	90	< 97	97	< 95	95	< 90	90	< 36	36	< 38	38	< 35	35
PCB-1248	100	1,000	ND	380	< 94	94	< 90	90	< 36	36	< 36	36	< 36	36	< 36	36	< 36	36	< 36	36	< 36	36	< 36	36	< 36	36	< 90	90	< 97	97	< 95	95	< 90	90	< 36	36	< 38	38	< 35	35
PCB-1254	100	1,000	ND	380	< 94	94	< 90	90	< 36	36	< 36	36	< 36	36	< 36	36	< 36	36	< 36	36	< 36	36	< 36	36	< 36	36	< 90	90	< 97	97	< 95	95	< 90	90	< 36	36	< 38	38	< 35	35
PCB-1260	100	1,000	ND	380	< 94	94	< 90	90	< 36	36	< 36	36	< 36	36	< 36	36	< 36	36	< 36	36	< 36	36	< 36	36	< 36	36	< 90	90	< 97	97	< 95	95	< 90	90	< 36	36	< 38	38	< 35	35
PCB-1262	100	1,000	ND	380	< 94	94	< 90	90	< 36	36	< 36	36	< 36	36	< 36	36	< 36	36	< 36	36	< 36	36	< 36	36	< 36	36	< 90	90	< 97	97	< 95	95	< 90	90	< 36	36	< 38	38	< 35	35
PCB-1268	100	1,000	ND	380	< 94	94	< 90	90	< 36	36	< 36	36	< 36	36	< 36	36	< 36	36	< 36	36	< 36	36	< 36	36	< 36	36	< 90	90	< 97	97	< 95	95	< 90	90	< 36	36	< 38	38	< 35	35

Notes:

** - 6 NYCRR Part 375-6 Remedial Program Soil Cleanup Objectives

DASH - Not Analyzed

ND - Non-Detect

Bold/highlighted- Indicated exceedance of the NYSDEC UUSCO Guidance Value

Bold/highlighted- Indicated exceedance of the NYSDEC RRSCO Guidance Value

TABLE 6
1103-1107 DeKalb Avenue, Brooklyn, New York
Soil Analytical Results
Metals

COMPOUND	NYSDEC Part 375.6 Unrestricted Use Soil Cleanup Objectives	NYDEC Part 375.6 Restricted Residential Soil Cleanup Objectives*	2/12/2013						4/1/2014													
			B1302		B1305		B1306		B1307				B1308						B1309			
			(13-15') mg/Kg		(13-15') mg/Kg		(13-15') mg/Kg		(0-2') mg/Kg		(13-15') mg/Kg		(0-2') mg/Kg		(13-15') mg/Kg		(45-47') mg/Kg		(0-2') mg/Kg		(13-15') mg/Kg	
			Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL
Aluminum	NS	NS	-	-	-	-	-	-	11,400	34	8,740	33	9,380	39	5,700	35	3,310	34	6,720	36	6,340	37
Antimony	NS	NS	-	-	-	-	-	-	< 1.7	1.7	< 1.7	1.7	< 2.0	2	< 1.7	1.7	< 1.7	1.7	< 1.8	1.8	< 1.9	1.9
Arsenic	13	16	BRL	0.9	BRL	0.7	BRL	0.8	119	0.7	2.6	0.7	8.2	0.8	< 0.7	0.7	< 0.7	0.7	2.9	0.7	1	0.7
Barium	350	350	96.7	0.43	50.6	0.35	50.2	0.41	179	0.7	39.9	0.7	77.4	0.8	32.8	0.7	30	0.7	48.4	0.7	32.9	0.7
Beryllium	7.2	14	-	-	-	-	-	-	6.51	0.27	0.54	0.26	0.44	0.31	0.47	0.28	0.26	0.27	0.34	0.29	0.43	0.3
Cadmium	2.5	2.5	BRL	0.43	BRL	0.35	BRL	0.41	0.64	0.34	0.32	0.33	0.48	0.39	0.24	0.35	0.2	0.34	< 0.36	0.36	0.19	0.37
Calcium	NS	NS	-	-	-	-	-	-	7,880	3.4	585	3.3	5,330	3.9	427	3.5	1,200	3.4	8,600	3.6	439	3.7
Chromium	30	180	46.5	0.43	19.5	0.35	45.9	0.41	20	0.34	27.6	0.33	19.1	0.39	20.4	0.35	8.63	0.34	15.8	0.36	18.4	0.37
Cobalt	NS	NS	-	-	-	-	-	-	6.05	0.34	6.51	0.33	9.26	0.39	5.53	0.35	4.03	0.34	3.69	0.36	5.82	0.37
Copper	50	270	-	-	-	-	-	-	63.6	0.34	17.4	0.33	61.4	0.39	14.1	0.35	10	0.34	23.9	0.36	15	0.37
Iron	NS	NS	-	-	-	-	-	-	28,200	34	32,900	33	36,900	39	25,500	35	18,400	34	13,900	36	22,900	37
Lead	63	400	18	0.43	5.92	0.35	8.04	0.41	638	6.8	5.7	0.7	205	7.8	7.8	0.7	6.3	0.7	68	0.7	5.6	0.7
Magnesium	NS	NS	-	-	-	-	-	-	3,270	3.4	1,420	3.3	2,270	3.9	1,440	3.5	1,280	3.4	1,890	3.6	1,460	3.7
Manganese	1,600	2,000	-	-	-	-	-	-	524	3.4	550	3.3	458	3.9	406	3.5	832	3.4	238	3.6	418	3.7
Mercury	0.18	0.81	BRL	0.09	BRL	0.07	BRL	0.09	0.59	0.07	< 0.06	0.06	0.29	0.08	< 0.08	0.08	< 0.06	0.06	0.11	0.08	< 0.06	0.06
Nickel	30	140	-	-	-	-	-	-	16	0.34	11.7	0.33	26.2	0.39	10.2	0.35	9.66	0.34	9.79	0.36	10.6	0.37
Potassium	NS	NS	-	-	-	-	-	-	1,480	7	993	7	943	8	937	7	670	7	757	7	899	7
Selenium	3.9	36	BRL	1.7	BRL	1.4	BRL	1.6	< 1.4	1.4	< 1.3	1.3	< 1.6	1.6	< 1.4	1.4	< 1.4	1.4	< 1.5	1.5	< 1.5	1.5
Silver	2	36	BRL	0.43	BRL	0.35	BRL	0.41	< 0.34	0.34	< 0.33	0.33	< 0.39	0.39	< 0.35	0.35	< 0.34	0.34	< 0.36	0.36	< 0.37	0.37
Sodium	NS	NS	-	-	-	-	-	-	154	7	67	7	108	8	57	7	137	7	357	7	130	7
Thallium	NS	NS	-	-	-	-	-	-	< 1.4	1.4	< 1.3	1.3	< 1.6	1.6	< 1.4	1.4	< 1.4	1.4	< 1.5	1.5	< 1.5	1.5
Vanadium	NS	NS	-	-	-	-	-	-	34.3	0.3	37	0.3	23.1	0.4	30.4	0.3	18.1	0.3	19.5	0.4	32.1	0.4
Zinc	109	2,200	-	-	-	-	-	-	220	6.8	26.1	0.7	1,030	7.8	24	0.7	15.5	0.7	54.3	0.7	26.5	0.7

Notes:

** - 6 NYCRR Part 375-6 Remedial Program Soil Cleanup Objectives

BRL - Below Reporting Limit

Bold/highlighted- Indicated exceedance of the NYSDEC UUSCO Guidance Value

Bold/highlighted- Indicated exceedance of the NYSDEC RRSCO Guidance Value

TABLE 6
1103-1107 DeKalb Avenue, Brooklyn, New York
Soil Analytical Results
Metals

COMPOUND	NYSDEC Part 375.6 Unrestricted Use Soil Cleanup Objectives	NYDEC Part 375.6 Restricted Residential Soil Cleanup Objectives*	4/1/2014																			
			B1310				B1311				B1312				B1313				B1314				Duplicate	
			(0-2') mg/Kg		(13-15') mg/Kg		(0-2') mg/Kg		(13-15') mg/Kg		(0-2') mg/Kg		(13-15') mg/Kg		(0-2') mg/Kg		(13-15') mg/Kg		(0-2') mg/Kg		(13-15') mg/Kg		mg/Kg	
			Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL
Aluminum	NS	NS	7,920	37	6,590	36	10,200	36	7,170	34	11,300	38	7,550	41	9,850	34	11,500	33	9,520	36	13,000	40	6,710	35
Antimony	NS	NS	< 1.8	1.8	< 1.8	1.8	< 1.8	1.8	< 1.7	1.7	< 1.9	1.9	< 2.1	2.1	< 1.7	1.7	< 1.6	1.6	< 1.8	1.8	< 2.0	2	< 1.8	1.8
Arsenic	13	16	2.4	0.7	15	0.7	3.9	0.7	5.2	0.7	4.1	0.8	1.6	0.8	4.6	0.7	1.3	0.7	3.6	0.7	2.9	0.8	< 0.7	0.7
Barium	350	350	58.1	0.7	47.1	0.7	70.9	0.7	50	0.7	69.1	0.8	41.7	0.8	112	0.7	71.7	0.7	103	0.7	102	0.8	44.4	0.7
Beryllium	7.2	14	0.35	0.29	0.51	0.29	0.35	0.29	0.62	0.27	0.49	0.3	0.46	0.33	0.43	0.27	0.57	0.26	0.58	0.29	0.76	0.32	0.56	0.28
Cadmium	2.5	2.5	0.21	0.37	0.39	0.36	0.36	0.36	0.44	0.34	< 0.38	0.38	0.28	0.41	< 0.34	0.34	0.16	0.33	0.58	0.36	0.17	0.4	0.58	0.35
Calcium	NS	NS	8,520	3.7	504	3.6	24,300	36	590	3.4	4,240	3.8	436	4.1	10,500	34	5,720	3.3	3,410	3.6	1,990	4	1,420	3.5
Chromium	30	180	13.7	0.37	24.5	0.36	15.2	0.36	21.8	0.34	17.6	0.38	18.8	0.41	16.9	0.34	23.5	0.33	24.2	0.36	36	0.4	17.3	0.35
Cobalt	NS	NS	5.6	0.37	5.88	0.36	7.58	0.36	8.55	0.34	6.66	0.38	6.73	0.41	5.34	0.34	8.1	0.33	5.23	0.36	9.69	0.4	5.94	0.35
Copper	50	270	30	0.37	15.3	0.36	81.1	0.36	15.6	0.34	26.9	0.38	14.9	0.41	40.1	0.34	25.1	0.33	31.8	0.36	26.4	0.4	13.2	0.35
Iron	NS	NS	16,100	37	35,900	36	23,900	36	39,600	34	19,400	38	25,000	41	16,100	34	27,300	33	33,400	36	30,700	40	51,100	35
Lead	63	400	102	0.7	11.7	0.7	139	0.7	5.3	0.7	119	0.8	6	0.8	634	6.8	38.3	0.7	253	7.2	9.5	0.8	6.3	0.7
Magnesium	NS	NS	2,240	3.7	1,680	3.6	5,430	36	1,810	3.4	2,190	3.8	1,460	4.1	3,390	3.4	2,740	3.3	1,910	3.6	4,930	4	2,040	3.5
Manganese	1,600	2,000	292	3.7	339	3.6	301	3.6	1,140	3.4	388	3.8	686	4.1	334	3.4	1,040	3.3	313	3.6	515	4	1,670	35
Mercury	0.18	0.81	0.1	0.07	< 0.07	0.07	0.39	0.07	< 0.07	0.07	0.35	0.09	< 0.07	0.07	0.75	0.08	< 0.07	0.07	0.15	0.08	< 0.07	0.07	< 0.08	0.08
Nickel	30	140	10.6	0.37	12.5	0.36	13	0.36	14.4	0.34	13.4	0.38	12.5	0.41	10.4	0.34	19.7	0.33	14.4	0.36	22.2	0.4	11.7	0.35
Potassium	NS	NS	796	7	1,010	7	1,270	7	972	7	1,130	8	1,090	8	1,030	7	1,570	7	930	7	2,210	8	947	7
Selenium	3.9	36	< 1.5	1.5	< 1.4	1.4	< 1.4	1.4	< 1.4	1.4	< 1.5	1.5	< 1.7	1.7	< 1.4	1.4	< 1.3	1.3	< 1.4	1.4	< 1.6	1.6	< 1.4	1.4
Silver	2	36	< 0.37	0.37	< 0.36	0.36	< 0.36	0.36	< 0.34	0.34	< 0.38	0.38	< 0.41	0.41	< 0.34	0.34	< 0.33	0.33	< 0.36	0.36	< 0.40	0.4	< 0.35	0.35
Sodium	NS	NS	359	7	127	7	768	7	89	7	338	8	68	8	171	7	182	7	205	7	398	8	93	7
Thallium	NS	NS	< 1.5	1.5	< 1.4	1.4	< 1.4	1.4	< 1.4	1.4	< 1.5	1.5	< 1.7	1.7	< 1.4	1.4	< 1.3	1.3	< 1.4	1.4	< 1.6	1.6	< 1.4	1.4
Vanadium	NS	NS	27	0.4	31.4	0.4	47.2	0.4	34.2	0.3	28.4	0.4	31.6	0.4	25.1	0.3	35.5	0.3	34.3	0.4	43.7	0.4	26.1	0.4
Zinc	109	2,200	64.3	0.7	25.3	0.7	125	0.7	27.7	0.7	118	0.8	28.4	0.8	89.1	0.7	46.3	0.7	100	0.7	59	0.8	26.4	0.7

Notes:

** - 6 NYCRR Part 375-6 Remedial Program Soil Cleanup Objectives

BRL - Below Reporting Limit

Bold/highlighted- Indicated exceedance of the NYSDEC UUSCO Guidance Value

Bold/highlighted- Indicated exceedance of the NYSDEC RRSCO Guidance Value

TABLE 7
1103-1107 DeKalb Avenue, Brooklyn, NY
Parameters Detected Above Track 1 Soil Cleanup Objectives

COMPOUND	Range in Exceedances	Frequency of Detection	B1302	B1304	B1306	B1307		B1308			B1309		B1310		B1311		B1312		B1313		B1314	
			(13-15')	(7-9')	(1315')	(0-2')	(13-15')	(0-2')	(13-15')	(45-47')	(0-2')	(13-15')	(0-2')	(13-15')	(0-2')	(13-15')	(0-2')	(13-15')	(0-2')	(13-15')	(0-2')	(13-15')
Sample Results in µg/kg																						
1,2,4-Trimethylbenzene	68,000-280,000	4	68,000	250,000						280,000	170,000											
1,3,5-Trimethylbenzene	46,000-80,000	3		80,000						76,000	46,000											
Benzene	1,300	1									1,300											
Ethylbenzene	25,000-65,000	4	25,000	47,000						41,000	65,000											
m&p-Xylenes	1,100-120,000	5	27,000	83,000				1,100		120,000	190,000											
Methylene Chloride	55	1											55									
Naphthalene	24,000-39,000	3		35,000						39,000	24,000											
n-Butylbenzene	17,000	1								17,000												
n-Propylbenzene	4,000-47,000	5	13,000	41,000						47,000	30,000		4,000									
o-Xylene	15,000-33,000	3		33,000						15,000	67,000											
Benz(a)anthracene	1,500-2,700	5				2,700							1,600		1,600		1,500		2,600			
Benzo(a)pyrene	1,300-2,500	5				2,500							1,300		1,500		1,400		2,200			
Benzo(b)fluoranthene	1,700-3,000	5				3,000							1,700		2,200		1,900		2,600			
Benzo(k)fluoranthene	960-1,100	2				1,100													960			
Chrysene	1,500-2,700	5				2,700							1,500		1,500		1,600		2,600			
Debenz(a,h)anthracene	440	1				440																
Indeno(1,2,3-cd)pyrene	880-1,600	4				1,600							880				980		1,400			
Naphthalene	17,000-47,000	2								47,000	17,000											
Sample Results in mg/kg																						
Arsenic	15-119	2				119								15								
Chromium	36-45.9	3	46.5		45.9																	36
Copper	61.4-81.1	3				63.6		61.4							81.1							
Lead	68-638	7				638		205			68		102		139		119		634		253	
Mercury	0.29-0.75	5				0.59		0.29							0.39		0.35		0.75			
Zinc	118-1,030	4				220		1,030							125		118					

TABLE 8
1103-1107 DeKalb Avenue, Brooklyn , New York
Groundwater Analytical Results
Volatile Organic Compounds

Compound	NYSDEC Groundwater Quality Standards	2/2/2013											
		B1302		B1304		B1306		MW2		MW3		MW4	
	µg/L	µg/L		µg/L		µg/L		µg/L		µg/L		µg/L	
		Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL
1,1,1,2-Tetrachlorothane	5	ND	50	ND	1	ND	1	ND	10	ND	5	ND	1
1,1,1-Trichloroethane	5	ND	50	ND	1	ND	1	ND	10	ND	5	ND	1
1,1,2,2-Tetrachloroethane	5	ND	25	ND	0.5	ND	0.5	ND	5	ND	2.5	ND	0.5
1,1,2-Trichloroethane	1	ND	50	ND	1	ND	1	ND	10	ND	5	ND	1
1,1-Dichloroethane	5	ND	50	ND	1	ND	1	ND	10	ND	5	ND	1
1,1-Dichloroethene	5	ND	50	ND	1	ND	1	ND	10	ND	5	ND	1
1,1-Dichloropropene		ND	50	ND	1	ND	1	ND	10	ND	5	ND	1
1,2,3-Trichlorobenzene		ND	50	ND	1	ND	1	ND	10	ND	5	ND	1
1,2,3-Trichloropropane	0.04	ND	50	ND	1	ND	1	ND	10	ND	5	ND	1
1,2,4-Trichlorobenzene		ND	50	ND	1	ND	1	ND	10	ND	5	ND	1
1,2,4-Trimethylbenzene	5	**2,600**	200	ND	1	ND	1	**390**	10	**130**	5	**130**	10
1,2-Dibromo-3-chloropropane	0.04	ND	50	ND	1	ND	1	ND	10	ND	5	ND	1
1,2-Dichlorobenzene	5	ND	50	ND	1	ND	1	ND	10	ND	5	ND	1
1,2-Dichloroethane	0.6	ND	30	ND	0.6	ND	0.6	ND	6	ND	3	ND	0.6
1,2-Dichloropropane	0.94	ND	50	ND	1	ND	1	ND	10	ND	5	ND	1
1,3,5-Trimethylbenzene	5	**820**	50	ND	1	ND	1	**65**	10	**33**	5	**22**	1
1,3-Dichlorobenzene	5	ND	50	ND	1	ND	1	ND	10	ND	5	ND	1
1,3-Dichloropropane	5	ND	50	ND	1	ND	1	ND	10	ND	5	ND	1
1,4-Dichlorobenzene	5	ND	50	ND	1	ND	1	ND	10	ND	5	ND	1
2,2-Dichloropropane	5	ND	50	ND	1	ND	1	ND	10	ND	5	ND	1
2-Chlorotoluene	5	ND	50	ND	1	ND	1	ND	10	ND	5	ND	1
2-Hexanone (Methyl Butyl Ketone)		ND	250	ND	5	ND	5	ND	50	ND	25	ND	5
2-Isopropyltoluene	5	ND	50	ND	1	ND	1	ND	10	ND	5	**1.1**	1
4-Chlorotoluene	5	ND	50	ND	1	ND	1	ND	10	ND	5	ND	1
4-Methyl-2-Pentanone		ND	250	ND	5	ND	5	ND	50	ND	25	ND	5
Acetone		ND	1300	ND	25	ND	25	ND	250	ND	130	ND	25
Acrylonitrile	5	ND	250	ND	5	ND	5	ND	50	ND	25	ND	5
Benzene	1	ND	35	ND	0.7	ND	0.7	ND	7	ND	3.5	ND	0.7
Bromobenzene	5	ND	50	ND	1	ND	1	ND	10	ND	5	ND	1
Bromochloromethane	5	ND	50	ND	1	ND	1	ND	10	ND	5	ND	1
Bromodichloromethane		ND	25	ND	0.5	ND	0.5	ND	5	ND	2.5	ND	0.5
Bromoform		ND	50	ND	1	ND	1	ND	10	ND	5	ND	1
Bromomethane	5	ND	50	ND	1	ND	1	ND	10	ND	5	ND	1
Carbon Disulfide	60	ND	250	ND	5	ND	5	ND	50	ND	25	ND	5
Carbon tetrachloride	5	ND	50	ND	1	ND	1	ND	10	ND	5	ND	1
Chlorobenzene	5	ND	50	ND	1	ND	1	ND	10	ND	5	ND	1
Chloroethane	5	ND	50	ND	1	ND	1	ND	10	ND	5	ND	1
Chloroform	7	ND	50	ND	5	ND	5	ND	10	ND	5	ND	5
Chloromethane	60	ND	50	ND	1	ND	1	ND	10	ND	5	ND	1
cis-1,2-Dichloroethene	5	ND	50	**1.1**	1	ND	1	**17**	10	ND	5	**1.7**	1
cis-1,3-Dichloropropene		ND	25	ND	0.5	ND	0.5	ND	5	ND	2.5	ND	0.5
Dibromochloromethane		ND	25	ND	0.5	ND	0.5	ND	5	ND	2.5	ND	0.5
Dibromomethane	5	ND	50	ND	1	ND	1	ND	10	ND	5	ND	1
Dichlorodifluoromethane	5	ND	50	ND	1	ND	1	ND	10	ND	5	ND	1
Ethylbenzene	5	**1,300**	50	ND	1	ND	1	**350**	10	**150**	5	**120**	10
Hexachlorobutadiene	0.5	ND	20	ND	0.4	ND	0.4	ND	4	ND	2	ND	0.4
Isopropylbenzene	5	**300**	50	ND	1	ND	1	**39**	10	**17**	5	**14**	1
m&p-Xylenes	5	**1,500**	50	ND	1	ND	1	**490**	10	**290**	5	**220**	10
Methyl Ethyl Ketone (2-Butanone)		ND	250	ND	5	ND	5	ND	50	ND	25	ND	5
Methyl t-butyl ether (MTBE)	10	ND	50	ND	1	ND	1	ND	10	ND	5	ND	1
Methylene chloride	5	ND	50	ND	1	ND	1	ND	10	ND	5	ND	1
Naphthalene	10	**470**	50	ND	1	ND	1	**120**	10	**21**	5	**28**	1
n-Butylbenzene	5	**170**	50	ND	1	ND	1	**12**	10	ND	5	**6**	1
n-Propylbenzene	5	**700**	50	ND	1	ND	1	**87**	10	**26**	5	**25**	1
o-Xylene	5	ND	50	ND	1	ND	1	**34**	10	**110**	5	**24**	1
p-Isopropyltoluene		**63**	50	ND	1	ND	1	ND	10	ND	5	**1.1**	1
sec-Butylbenzene	5	**70**	50	ND	1	ND	1	**11**	10	ND	5	**4**	1
Styrene	5	ND	50	ND	1	ND	1	ND	10	ND	5	ND	1
tert-Butylbenzene	5	ND	50	ND	1	ND	1	ND	10	ND	5	ND	1
Tetrachloroethene	5	ND	50	**3.4**	1	**1.4**	1	ND	10	**8**	5	**1.6**	1
Tetrahydrofuran (THF)		ND	130	ND	2.5	ND	2.5	ND	25	ND	13	ND	2.5
Toluene	5	ND	50	ND	1	ND	1	ND	10	ND	5	**9**	1
trans-1,2-Dichloroethene	5	ND	50	ND	1	ND	1	ND	10	ND	5	ND	1
trans-1,3-Dichloropropene	0.4	ND	25	ND	0.5	ND	0.5	ND	5	ND	2.5	ND	0.5
trans-1,4-dichloro-2-butene	5	ND	250	ND	5	ND	5	ND	50	ND	25	ND	5
Trichloroethene	5	ND	50	**29**	1	**24**	1	**14**	10	**21**	5	**20**	1
Trichlorofluoromethane	5	ND	50	ND	1	ND	1	ND	10	ND	5	ND	1
Trichlorotrifluoroethane		ND	50	ND	1	ND	1	ND	10	ND	5	ND	1
Vinyl Chloride	2	ND	50	ND	1	ND	1	ND	10	ND	5	ND	1

Notes:
ND - Not detected
Bold/highlighted- Indicated exceedance of the NYSDEC Groundwater Standard

TABLE 8
1103-1107 DeKalb Avenue,
Brooklyn, New York
Groundwater Analytical Results
Volatile Organic Compounds

Compound	NYSDEC Groundwater Quality Standards	4/7/2014									
		MW 1309		MW 1310		MW 1311		MW 1312		Duplicate	
	µg/L	µg/L		µg/L		µg/L		µg/L		µg/L	
		Result	RL	Result	RL	Result	RL	Result	RL	Result	RL
1,1,1,2-Tetrachlorothane	5	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1
1,1,1-Trichloroethane	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5
1,1,2,2-Tetrachloroethane	5	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1
1,1,2-Trichloroethane	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1
1,1-Dichloroethane	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5
1,1-Dichloroethene	5	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1
1,1-Dichloropropene		< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1
1,2,3-Trichlorobenzene		< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1
1,2,3-Trichloropropane	0.04	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1
1,2,4-Trichlorobenzene		< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1
1,2,4-Trimethylbenzene	5	< 1.0	1	< 1.0	1	**26**	1	**110**	5	< 1.0	1
1,2-Dibromo-3-chloropropane	0.04	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1
1,2-Dibromoethane		< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1
1,2-Dichlorobenzene	5	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1
1,2-Dichloroethane	0.6	< 1.0	1	< 0.6	0.6	< 0.6	0.6	< 0.6	0.6	< 0.6	0.6
1,2-Dichloropropane	0.94	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1
1,3,5-Trimethylbenzene	5	< 1.0	1	< 1.0	1	**1.1**	1	**20**	1	< 1.0	1
1,3-Dichlorobenzene	5	< 3.0	3	< 3.0	3	< 3.0	3	< 3.0	3	< 3.0	3
1,3-Dichloropropane	5	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1
1,4-Dichlorobenzene	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5
2,2-Dichloropropane	5	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1
2-Chlorotoluene	5	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1
2-Hexanone (Methyl Butyl Ketone)		< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1
2-Isopropyltoluene	5	< 1.0	1	< 1.0	1	**0.65**	1	**0.47**	1	< 1.0	1
4-Chlorotoluene	5	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1
4-Methyl-2-Pentanone		< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1
Acetone		< 5.0	5	**4.7**	5	< 5.0	5	< 5.0	5	< 5.0	5
Acrylonitrile	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5
Benzene	1	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5
Bromobenzene	5	< 0.70	0.7	< 0.70	0.7	< 0.70	0.7	**0.26**	0.7	< 0.70	0.7
Bromochloromethane	5	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1
Bromodichloromethane		< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1
Bromoform		< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1
Bromomethane	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5
Carbon Disulfide	60	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5
Carbon tetrachloride	5	< 1.0	1	< 1.0	1	< 1.0	1	**0.37**	1	< 1.0	1
Chlorobenzene	5	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1
Chloroethane	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5
Chloroform	7	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5
Chloromethane	60	**1.7**	5	**1.1**	5	< 5.0	5	< 5.0	5	**1.8**	5
cis-1,2-Dichloroethene	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5
cis-1,3-Dichloropropene		**0.31**	1	**0.51**	1	< 1.0	1	**3.6**	1	**0.34**	1
Dibromochloromethane		< 0.40	0.4	< 0.40	0.4	< 0.40	0.4	< 0.40	0.4	< 0.40	0.4
Dibromomethane	5	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1
Dichlorodifluoromethane	5	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1
Ethylbenzene	5	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1
Hexachlorobutadiene	0.5	< 1.0	1	< 1.0	1	< 1.0	1	**25**	1	< 1.0	1
Isopropylbenzene	5	< 0.5	0.5	< 0.5	0.5	< 0.5	0.5	< 0.5	0.5	< 0.5	0.5
m&p-Xylenes	5	< 1.0	1	< 1.0	1	**20**	1	**16**	1	< 1.0	1
Methyl Ethyl Ketone (2-Butanone)		< 1.0	1	< 1.0	1	< 1.0	1	**44**	1	< 1.0	1
Methyl t-butyl ether (MTBE)	10	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1
Methylene chloride	5	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1
Naphthalene	10	< 3.0	3	< 3.0	3	< 3.0	3	< 3.0	3	< 3.0	3
n-Butylbenzene	5	< 1.0	1	< 1.0	1	**0.53**	1	**8.8**	1	< 1.0	1
n-Propylbenzene	5	< 1.0	1	< 1.0	1	**12**	1	**1.8**	1	< 1.0	1
o-Xylene	5	< 1.0	1	< 1.0	1	**8.7**	1	**21**	1	< 1.0	1
p-Isopropyltoluene		< 1.0	1	< 1.0	1	< 1.0	1	**14**	1	< 1.0	1
sec-Butylbenzene	5	< 1.0	1	< 1.0	1	**1.7**	1	**0.72**	1	< 1.0	1
Styrene	5	< 1.0	1	< 1.0	1	**4.9**	1	**3.2**	1	< 1.0	1
tert-Butylbenzene	5	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1
Tetrachloroethene	5	< 1.0	1	< 1.0	1	**0.41**	1	< 1.0	1	< 1.0	1
Tetrahydrofuran (THF)		**0.83**	1	**1.2**	1	**3**	1	**1.7**	1	**0.91**	1
Toluene	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5
Total Xylenes	5	< 1.0	1	< 1.0	1	< 1.0	1	**3.9**	1	< 1.0	1
trans-1,2-Dichloroethene	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5
trans-1,3-Dichloropropene	0.4	< 0.40	0.4	< 0.40	0.4	< 0.40	0.4	< 0.40	0.4	< 0.40	0.4
trans-1,4-dichloro-2-butene	5	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1
Trichloroethene	5	**18**	1	**20**	1	**25**	1	**15**	1	**19**	1
Trichlorofluoromethane	5	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1
Trichlorotrifluoroethane		< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1
Vinyl Chloride	2	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1

Notes:
ND - Not detected
Bold/highlighted- Indicated exceedance of the NYSDEC Groundwater Standard

TABLE 9
1103-1107 DeKalb Avenue,
Brooklyn, New York
Groundwater Analytical Results
Semi-Volatile Organic Compounds

Compound	NYSDEC Groundwater Quality Standards	4/7/2014									
		MW 1309		MW 1310		MW 1311		MW 1312		Duplicate	
	µg/L	µg/L		µg/L		µg/L		µg/L		µg/L	
		Result	RL	Result	RL	Result	RL	Result	RL	Result	RL
1,2,4,5-Tetrachlorobenzene		< 1.5	1.5	< 1.5	1.5	< 1.5	1.5	< 1.5	1.5	< 1.5	1.5
1,2,4-Trichlorobenzene		< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 0.10	0.1
1,2-Dichlorobenzene		< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	**0.05**	0.02
1,2-Diphenylhdrazine		< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 0.02	0.02
1,3-Dichlorobenzene		< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 0.02	0.02
1,4-Dichlorobenzene		< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 0.02	0.02
2,4,5-Trichlorophenol	3	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 0.02	0.02
2,4,6-Trichlorophenol	3	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.6	1.6
2,4-Dichlorophenol		< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	**0.03**	0.02
2,4-Dimethylphenol		< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 0.02	0.02
2,4-Dinitrophenol		< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 0.02	0.02
2,4-Dinitrotoluene	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 2.4	2.4
2,6-Dinitrotoluene	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 0.02	0.02
2-Chloronaphthalene	10	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 0.10	0.1
2-Chlorophenol		< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 0.80	0.8
2-Methylnaphthalene		< 5.0	5	< 5.0	5	**44**	5	**3.5**	5	< 0.10	0.1
2-Methylphenol (o-cresol)		< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 5.0	5
2-Nitroaniline	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 1.0	1
2-Nitrophenol		< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 5.0	5
3&4-Methylphenol (m&p-cresol)		< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1
3,3'-Dichlorobenzidine	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 1.0	1
3-Nitroaniline	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 1.0	1
4,6-Dinitro-2-methylphenol		< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1
4-Bromophenyl phenyl ether		< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 1.0	1
4-Chloro-3-methylphenol		< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1
4-Chloroaniline	5	< 3.5	3.5	< 3.5	3.5	< 3.5	3.5	< 3.5	3.5	< 1.0	1
4-Chlorophenyl phenyl ether		< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5
4-Nitroaniline	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5
4-Nitrophenol		< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 5.0	5
Acenaphthene	20	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 1.0	1
Acenaphthylene		< 0.10	0.1	< 0.10	0.1	< 0.10	0.1	< 0.10	0.1	< 5.0	5
Acetophenone		< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 1.0	1
Aniline		< 3.5	3.5	< 3.5	3.5	< 3.5	3.5	< 3.5	3.5	< 5.0	5
Anthracene	50	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 1.0	1
Benzo(a)anthracene	0.002	**0.07**	0.02	**0.03**	0.02	**0.03**	0.02	**0.04**	0.02	< 1.0	1
Benzidine	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5
Benzo(a)pyrene		< 0.02	0.02	< 0.02	0.02	< 0.02	0.02	< 0.02	0.02	< 5.0	5
Benzo(b)fluoranthene	0.002	**0.02**	0.02	< 0.02	0.02	< 0.02	0.02	< 0.02	0.02	< 1.0	1
Benzo(g,h,i)perylene		< 0.02	0.02	< 0.02	0.02	< 0.02	0.02	< 0.02	0.02	< 5.0	5
Benzo(k)fluoranthene	0.002	< 0.02	0.02	< 0.02	0.02	< 0.02	0.02	< 0.02	0.02	< 1.0	1
Benzoic Acid		< 25	25	< 25	25	< 25	25	< 25	25	< 3.5	3.5
Benzyl Butyl phthalate		< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5
Bis(2-chloroethoxy)methane	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5
Bis(2-chloroethyl)ether	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1
Bis(2-chloroisopropyl)ether		< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5
Bis(2-ethylhexyl)phthalate	5	< 1.6	1.6	< 1.6	1.6	< 1.6	1.6	< 1.6	1.6	< 5.0	5
Carbazole		< 25	25	< 25	25	< 25	25	< 25	25	< 3.5	3.5
Chrysene	0.002	**0.06**	0.02	**0.02**	0.02	**0.02**	0.02	**0.02**	0.02	< 5.0	5
Dibenzo(a,h)anthracene		< 0.02	0.02	< 0.02	0.02	< 0.02	0.02	< 0.02	0.02	< 5.0	5
Dibenzofuran		< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 25	25
Diethylphthalate	50	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5
Dimethylphthalate	50	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5
Di-n-butylphthalate	50	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 1.0	1
Di-n-octylphthalate	50	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5
Fluoranthene	50	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 25	25
Hexachlorobenzene	0.04	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5
Fluorene	50	< 0.02	0.02	< 0.02	0.02	< 0.02	0.02	< 0.02	0.02	< 5.0	5
Hexachlorobutadiene	0.5	< 0.5	0.5	< 0.5	0.5	< 0.5	0.5	< 0.5	0.5	< 5.0	5
Hexachlorocyclopentadiene	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5
Hexachloroethane	5	< 2.4	2.4	< 2.4	2.4	< 2.4	2.4	< 2.4	2.4	< 5.0	5
Indeno(1,2,3-cd)pyrene	0.002	< 0.02	0.02	< 0.02	0.02	< 0.02	0.02	< 0.02	0.02	< 5.0	5
Isophorone	50	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5
Naphthalene	10	< 5.0	5	< 5.0	5	< 5.0	5	**7.2**	5	< 0.5	0.5
Nitrobenzene	0.4	< 0.4	0.4	< 0.4	0.4	< 0.4	0.4	< 0.4	0.4	< 5.0	5
N-Nitrosodimethylamine		< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 5.0	5
N-Nitrosodi-n-propylamine		< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5
N-Nitrosodiphenylamine	50	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 0.4	0.4
Pentachloronitrobenzene		< 0.10	0.1	< 0.10	0.1	< 0.10	0.1	< 0.10	0.1	< 1.0	1
Pentachlorophenol		< 0.80	0.8	< 0.80	0.8	< 0.80	0.8	< 0.80	0.8	< 5.0	5
Phenanthrene	50	< 0.10	0.1	< 0.10	0.1	**0.38**	0.1	**0.18**	0.1	< 5.0	5
Phenol		< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1	< 1.0	1
Pyrene	50	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5	< 5.0	5
Pyridine		< 10	10	< 10	10	< 10	10	< 10	10	< 10	10

Notes:

ND - Not detected

Bold/highlighted- Indicated exceedance of the NYSDEC Groundwater Standard

TABLE 10
1103-1107 DeKalb Avenue,
Brooklyn, New York
Groundwater Analytical Results
Pesticides/PCBs

Compound	NYSDEC Groundwater Quality Standards	4/7/2014									
		MW 1309		MW 1310		MW 1311		MW 1312		Duplicate	
	µg/L	µg/L		µg/L		µg/L		µg/L		µg/L	
		Result	RL	Result	RL	Result	RL	Result	RL	Result	RL
PCB-1016	**0.09**	< 0.072	0.072	< 0.072	0.072	< 0.072	0.072	< 0.072	0.072	< 0.072	0.072
PCB-1221	**0.09**	< 0.072	0.072	< 0.072	0.072	< 0.072	0.072	< 0.072	0.072	< 0.072	0.072
PCB-1232	**0.09**	< 0.072	0.072	< 0.072	0.072	< 0.072	0.072	< 0.072	0.072	< 0.072	0.072
PCB-1242	**0.09**	< 0.072	0.072	< 0.072	0.072	< 0.072	0.072	< 0.072	0.072	< 0.072	0.072
PCB-1248	**0.09**	< 0.072	0.072	< 0.072	0.072	< 0.072	0.072	< 0.072	0.072	< 0.072	0.072
PCB-1254	**0.09**	< 0.072	0.072	< 0.072	0.072	< 0.072	0.072	< 0.072	0.072	< 0.072	0.072
PCB-1260	**0.09**	< 0.072	0.072	< 0.072	0.072	< 0.072	0.072	< 0.072	0.072	< 0.072	0.072
PCB-1262	**0.09**	< 0.072	0.072	< 0.072	0.072	< 0.072	0.072	< 0.072	0.072	< 0.072	0.072
PCB-1268	**0.09**	< 0.072	0.072	< 0.072	0.072	< 0.072	0.072	< 0.072	0.072	< 0.072	0.072
4,4-DDD	**0.3**	< 0.010	0.01	< 0.010	0.01	< 0.010	0.01	< 0.010	0.01	< 0.010	0.01
4,4-DDE	**0.2**	< 0.010	0.01	< 0.010	0.01	< 0.010	0.01	< 0.010	0.01	< 0.010	0.01
4,4-DDT	**0.11**	< 0.010	0.01	< 0.010	0.01	< 0.010	0.01	< 0.010	0.01	< 0.010	0.01
a-BHC	**0.94**	< 0.005	0.005	< 0.005	0.005	< 0.005	0.005	< 0.020	0.02	< 0.005	0.005
a-Chlordane		< 0.010	0.01	< 0.010	0.01	< 0.010	0.01	< 0.010	0.01	< 0.010	0.01
Alachlor		< 0.075	0.075	< 0.075	0.075	< 0.075	0.075	< 0.075	0.075	< 0.075	0.075
Aldrin		< 0.002	0.002	< 0.002	0.002	< 0.002	0.002	< 0.002	0.002	< 0.002	0.002
b-BHC	**0.04**	< 0.005	0.005	< 0.005	0.005	< 0.005	0.005	< 0.005	0.005	< 0.005	0.005
Chlordane	**0.05**	< 0.030	0.03	< 0.030	0.03	< 0.030	0.03	< 0.030	0.03	< 0.030	0.03
d-BHC	**0.04**	< 0.005	0.005	< 0.005	0.005	< 0.010	0.01	< 0.005	0.005	< 0.005	0.005
Dieldrin	**0.004**	< 0.002	0.002	< 0.002	0.002	< 0.002	0.002	< 0.002	0.002	< 0.002	0.002
Endosulfan I		< 0.010	0.01	< 0.010	0.01	< 0.010	0.01	< 0.010	0.01	< 0.010	0.01
Endosulfan II		< 0.010	0.01	< 0.010	0.01	< 0.010	0.01	< 0.010	0.01	< 0.010	0.01
Endosulfan Sulfate		< 0.010	0.01	< 0.010	0.01	< 0.010	0.01	< 0.010	0.01	< 0.010	0.01
Endrin		< 0.010	0.01	< 0.010	0.01	< 0.010	0.01	< 0.010	0.01	< 0.010	0.01
Endrin aldehyde	**5**	< 0.010	0.01	< 0.010	0.01	< 0.010	0.01	< 0.010	0.01	< 0.010	0.01
Endrin ketone		< 0.010	0.01	< 0.010	0.01	< 0.010	0.01	< 0.010	0.01	< 0.010	0.01
gamma-BHC	**0.05**	< 0.005	0.005	< 0.005	0.005	< 0.035	0.035	< 0.005	0.005	< 0.005	0.005
g-Chlordane		< 0.010	0.01	< 0.010	0.01	< 0.010	0.01	< 0.010	0.01	< 0.010	0.01
Heptachlor	**0.04**	< 0.010	0.01	< 0.010	0.01	< 0.010	0.01	< 0.010	0.01	< 0.010	0.01
Heptachlor epoxide	**0.03**	< 0.010	0.01	< 0.010	0.01	< 0.010	0.01	< 0.010	0.01	< 0.010	0.01
Methoxychlor	**35**	< 0.10	0.1	< 0.10	0.1	< 0.10	0.1	< 0.10	0.1	< 0.10	0.1
Toxaphene		< 0.20	0.2	< 0.20	0.2	< 0.20	0.2	< 0.20	0.2	< 0.20	0.2

Notes:
ND - Non-detect
Bold/highlighted- Indicated exceedance of the NYSDEC Groundwater Standard

Table 11
1103-1107 DeKalb Avenue,
Brooklyn, New York
Groundwater Analytical Results
TAL Metals

Compound	NYSDEC Groundwater Quality Standards	4/7/2014									
		MW 1309		MW 1310		MW 1311		MW 1312		Duplicate	
	mg/L	mg/L		mg/L		mg/L		mg/L		mg/L	
		Result	RL	Result	RL	Result	RL	Result	RL	Result	RL
Aluminum	**NS**	**58.6**	0.1	**116**	0.1	**70.3**	0.1	**57.7**	0.1	**40.8**	0.1
Antimony	**0.003**	< 0.003	0.003	< 0.003	0.003	< 0.003	0.003	< 0.003	0.003	< 0.003	0.003
Arsenic	**0.025**	**0.011**	0.004	**0.038**	0.004	**0.018**	0.004	**0.016**	0.004	**0.008**	0.004
Barium	**1**	**0.578**	0.01	**1.41**	0.01	**1.06**	0.01	**0.717**	0.01	**0.456**	0.01
Beryllium	**0.003**	**0.004**	0.001	**0.009**	0.001	**0.005**	0.001	**0.005**	0.001	**0.003**	0.001
Cadmium	**0.005**	**0.004**	0.004	**0.012**	0.004	**0.006**	0.004	**0.006**	0.004	**0.003**	0.004
Calcium	**NS**	**75.2**	0.01	**69.8**	0.01	**69.1**	0.01	**51.4**	0.01	**71.3**	0.01
Chromium	**0.05**	**0.44**	0.001	**0.425**	0.001	**0.36**	0.001	**0.263**	0.001	**0.2**	0.001
Cobalt	**NS**	**0.087**	0.005	**0.33**	0.005	**0.106**	0.005	**0.092**	0.005	**0.065**	0.005
Copper	**0.2**	**0.228**	0.005	**0.501**	0.005	**0.337**	0.005	**0.307**	0.005	**0.154**	0.005
Iron	**0.5**	**205**	0.1	**583**	0.1	**312**	0.1	**307**	0.1	**133**	0.1
Lead	**0.025**	**0.075**	0.002	**0.161**	0.002	**0.115**	0.002	**0.16**	0.002	**0.053**	0.002
Magnesium	**35**	**45.9**	0.01	**58.7**	0.01	**72.8**	0.01	**56.9**	0.01	**38.2**	0.01
Manganese	**0.3**	**5.76**	0.05	**5.77**	0.05	**5.25**	0.05	**14.5**	0.05	**4.55**	0.05
Mercury	**0.0007**	< 0.0002	0.0002	< 0.0002	0.0002	< 0.0002	0.0002	< 0.0002	0.0002	< 0.0002	0.0002
Nickel	**0.1**	**0.333**	0.004	**0.887**	0.004	**0.438**	0.004	**0.304**	0.004	**0.164**	0.004
Potassium	**NS**	**17.4**	0.1	**29.9**	0.1	**21.4**	0.1	**18**	0.1	**14.1**	0.1
Selenium	**0.01**	< 0.004	0.004	< 0.004	0.004	< 0.004	0.004	< 0.004	0.004	< 0.004	0.004
Silver	**0.05**	< 0.005	0.005	< 0.005	0.005	< 0.005	0.005	< 0.005	0.005	< 0.005	0.005
Sodium	**20**	**62.3**	1	**61.5**	1	**107**	1	**99.7**	1	**60.5**	1
Thallium	**0.0005**	< 0.002	0.002	< 0.002	0.002	< 0.002	0.002	< 0.002	0.002	< 0.002	0.002
Vanadium	**NS**	**0.183**	0.01	**0.513**	0.01	**0.282**	0.01	**0.312**	0.01	**0.125**	0.01
Zinc	**2**	**0.259**	0.01	**0.743**	0.01	**0.405**	0.01	**0.396**	0.01	**0.179**	0.01

Notes:
BRL - Below Reporting Limit
NS - No Standard
Bold/highlighted- Indicated exceedance of the NYSDEC Groundwater Standard

Table 12
1103-1107 DeKalb Avenue,
Brooklyn, New York
Groundwater Analytical Results
TAL Filtered Metals

Compound	NYSDEC Groundwater Quality Standards	4/7/2014									
		MW 1309		MW 1310		MW 1311		MW 1312		Duplicate	
	mg/L	mg/L		mg/L		mg/L		mg/L		mg/L	
		Result	RL	Result	RL	Result	RL	Result	RL	Result	RL
Aluminum	NS	0.61	0.01	0.2	0.01	0.08	0.01	0.29	0.01	0.09	0.01
Antimony	0.003	< 0.003	0.003	< 0.003	0.003	< 0.003	0.003	< 0.003	0.003	< 0.003	0.003
Arsenic	0.025	0.001	0.003	0.001	0.003	0.004	0.003	0.006	0.003	< 0.003	0.003
Barium	1	0.093	0.011	0.052	0.011	0.128	0.011	0.117	0.011	0.089	0.011
Beryllium	0.003	< 0.001	0.001	< 0.001	0.001	< 0.001	0.001	< 0.001	0.001	< 0.001	0.001
Cadmium	0.005	< 0.004	0.004	< 0.004	0.004	< 0.004	0.004	< 0.004	0.004	< 0.004	0.004
Calcium	NS	63.2	0.01	49.2	0.01	52.8	0.01	37.3	0.01	63.3	0.01
Chromium	0.05	0.002	0.001	< 0.001	0.001	< 0.001	0.001	< 0.001	0.001	< 0.001	0.001
Cobalt	NS	0.015	0.005	0.038	0.005	0.006	0.005	0.004	0.005	0.014	0.005
Copper	0.2	0.002	0.005	0.001	0.005	< 0.005	0.005	0.002	0.005	0.001	0.005
Iron	0.5	0.91	0.01	0.23	0.01	0.16	0.01	0.53	0.01	0.2	0.01
Lead	0.025	< 0.002	0.002	< 0.002	0.002	0.002	0.002	0.001	0.002	< 0.002	0.002
Magnesium	35	22.7	0.01	9.81	0.01	33.5	0.01	28.9	0.01	22.4	0.01
Manganese	0.3	3.04	0.053	0.949	0.005	1.21	0.005	3.96	0.053	2.99	0.053
Mercury	0.0007	< 0.0002	0.0002	< 0.0002	0.0002	< 0.0002	0.0002	< 0.0002	0.0002	< 0.0002	0.0002
Nickel	0.1	0.025	0.004	0.041	0.004	0.034	0.004	0.019	0.004	0.024	0.004
Potassium	NS	6	0.1	6.5	0.1	5.7	0.1	5.5	0.1	5.9	0.1
Selenium	0.01	< 0.004	0.004	< 0.004	0.004	< 0.004	0.004	< 0.004	0.004	< 0.004	0.004
Silver	0.05	< 0.005	0.005	< 0.005	0.005	< 0.005	0.005	< 0.005	0.005	< 0.005	0.005
Sodium	20	59.4	0.11	55	0.11	103	1.1	103	1.1	60.8	0.11
Thallium	0.0005	< 0.001	0.001	< 0.001	0.001	< 0.001	0.001	< 0.001	0.001	< 0.001	0.001
Vanadium	NS	0.002	0.01	0.001	0.01	< 0.01	0.01	0.002	0.01	< 0.01	0.01
Zinc	2	0.003	0.011	0.002	0.011	0.001	0.011	0.004	0.011	0.002	0.011

Notes:
BRL - Below Reporting Limit
NS - No Standard
Bold/highlighted- Indicated exceedance of the NYSDEC Groundwater Standard

TABLE 13
1103-1107 DeKalb Avenue, Brooklyn NY
Parameters Detected Above Ambient Water Quality Standards

VOCs / SVOCs

COMPOUND	Range in Detections	B1302	B1304	B1306	MW2	MW3	MW4	MW1309	MW1310	MW1311	MW1312
Sample Results in (µg/L)											
1,2,4-Trimethylbenzene	26-2,600	2,600			390	130	130			26	110
1,3,5-Trimethylbenzene	20-820	820			65	33	22				20
cis-1,2-Dichloroethene	17				17						
Ethylbenzene	120-1,300	1,300			350	150	120				
Hexachlorobutadiene	25										25
Isopropylbenzene	120-350	300			350	150	120				
m&p-Xylenes	16-1,500	1,500			490	290	220			20	16
Naphthalene	21-470	470			120	21	28				
n-Butylbenzene	6-170	170			12		6				8.8
n-Propylbenzene	12-700	700			87	26	25			12	
o-Xylene	21-110				34	110	24			8.7	21
p-Isopropyltolune	14										14
sec-Butylbenzene	4-70	70			11		4				
Tetrachloroethene	8					8					
Toluene	9						9				
Trichloroethene	14-29		29	24	14	21	20	18	20	25	15
Benzo(a)anthracene	0.03-0.07	0.07	0.03	0.03	0.04						
Benzo(b)fluoranthene	0.02	0.02									
Chrysene	0.02-0.06	0.06	0.02	0.02	0.02						

Metals (dissolved)

COMPOUND	Range in Detections	B1302	B1304	B1306	MW2	MW3	MW4	MW1309	MW1310	MW1311	MW1312
Sample Results in (mg/L)											
Iron	0.53-0.91							0.91			0.53
Manganese	0.949-3.96							3.04	0.949	1.21	3.96
Sodium	55-103							59.4	55	103	103

Metals (total)

COMPOUND	Range in Detections	B1302	B1304	B1306	MW2	MW3	MW4	MW1309	MW1310	MW1311	MW1312
Sample Results in (mg/L)											
Arsenic									0.038		
Barium									1.41	1.06	
Beryllium								0.004	0.009	0.005	0.005
Cadmium									0.120	0.006	0.006
Chromium								0.44	0.425	0.36	0.263
Copper								0.228	0.501	0.34	0.307
Iron								205	583.0	312	307
Lead								0.075	0.161	0.012	0.16
Magnesium								45.9	58.7	72.8	56.9
Manganese								5.76	5.77	5.3	14.5
Nickel								0.333	0.887	0.438	0.304
Sodium								62.3	61.5	107	99.7

TABLE 14
1103-1107 DeKalb Avenue,
Brooklyn, New York
Soil Gas - Volatile Organic Compounds

COMPOUNDS	NYSDOH Maximum Sub Slab Value ($\mu g/m^3$) [a]	NYSDOH Soil Outdoor Background Levels ($\mu g/m^3$) [b]	SG-1 (µg/m3)		SG-2 (µg/m3)		SG-3 (µg/m3)		SG-4 (µg/m3)		SG-5 (µg/m3)		SS-1 (µg/m3)		OA-1 (µg/m3)	
			Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL
1,1,1,2-Tetrachloroethane			< 1.00	1	< 15.0	15	< 1.00	1	< 15.0	15	< 1.00	1	< 1.00	1	< 1.00	1
1,1,1-Trichloroethane	30	<2.0 - 2.8	< 1.00	1	< 15.0	15	< 1.00	1	< 15.0	15	< 1.00	1	< 1.00	1	< 1.00	1
1,1,2,2-Tetrachloroethane		<1.5	< 1.00	1	< 15.0	15	< 1.00	1	< 15.0	15	< 1.00	1	< 1.00	1	< 1.00	1
1,1,2-Trichloroethane		<1.0	< 1.00	1	< 15.0	15	< 1.00	1	< 15.0	15	< 1.00	1	< 1.00	1	< 1.00	1
1,1-Dichloroethane		<1.0	< 1.00	1	< 15.0	15	< 1.00	1	< 15.0	15	< 1.00	1	< 1.00	1	< 1.00	1
1,1-Dichloroethene		<1.0	< 1.00	1	< 15.0	15	< 1.00	1	< 15.0	15	< 1.00	1	< 1.00	1	< 1.00	1
1,2,4-Trichlorobenzene		NA	< 1.00	1	< 15.0	15	< 1.00	1	< 15.0	15	< 1.00	1	< 1.00	1	< 1.00	1
1,2,4-Trimethylbenzene		<1.0	**39.6**	1	**54**	15	**27.1**	1	**81.6**	15	**33.1**	1	**26.7**	1	< 1.00	1
1,2-Dibromoethane		<1.5	< 1.00	1	< 15.0	15	< 1.00	1	< 15.0	15	< 1.00	1	< 1.00	1	< 1.00	1
1,2-Dichlorobenzene		<2.0	< 1.00	1	< 15.0	15	< 1.00	1	< 15.0	15	< 1.00	1	< 1.00	1	< 1.00	1
1,2-Dichloroethane		<1.0	< 1.00	1	**59.9**	15	< 1.00	1	**39.4**	15	< 1.00	1	< 1.00	1	< 1.00	1
1,2-Dichloropropane			< 1.00	1	< 15.0	15	< 1.00	1	< 15.0	15	< 1.00	1	< 1.00	1	< 1.00	1
1,2-Dichlorotetrafluoroethane			< 1.00	1	< 15.0	15	< 1.00	1	< 15.0	15	< 1.00	1	< 1.00	1	< 1.00	1
1,3,5-Trimethylbenzene		<1.0	**13.6**	1	**45.7**	15	**9.63**	1	**33.2**	15	**11**	1	**11**	1	< 1.00	1
1,3-Butadiene		NA	< 1.00	1	< 15.0	15	< 1.00	1	< 15.0	15	< 1.00	1	< 1.00	1	< 1.00	1
1,3-Dichlorobenzene		<2.0	< 1.00	1	< 15.0	15	< 1.00	1	< 15.0	15	< 1.00	1	< 1.00	1	< 1.00	1
1,4-Dichlorobenzene		NA	< 1.00	1	< 15.0	15	< 1.00	1	< 15.0	15	< 1.00	1	< 1.00	1	< 1.00	1
1,4-Dioxane			< 1.00	1	< 15.0	15	< 1.00	1	< 15.0	15	< 1.00	1	< 1.00	1	< 1.00	1
2-Hexanone			< 1.00	1	< 15.0	15	< 1.00	1	< 15.0	15	< 1.00	1	< 1.00	1	< 1.00	1
4-Ethyltoluene		NA	**11.2**	1	**31**	15	**8.11**	1	**22.8**	15	**11.5**	1	**9.68**	1	< 1.00	1
4-Isopropyltoluene			**1.54**	1	< 15.0	15	**1.04**	1	< 15.0	15	**1.32**	1	**1.26**	1	< 1.00	1
4-Methyl-2-pentanone			**3.19**	1	< 15.0	15	< 1.00	1	< 15.0	15	**1.76**	1	**9.62**	1	< 1.00	1
Acetone		NA	**1,840**	1	**11,200**	15	**1,280**	1	< 15.0	15	**736**	1	**221**	1	**7**	1
Acrylonitrile			< 1.00	1	< 15.0	15	< 1.00	1	< 15.0	15	< 1.00	1	< 1.00	1	< 1.00	1
Benzene		<1.6 - 4.7	**3.32**	1	< 15.0	15	**10.3**	1	**73.8**	15	**4.4**	1	**1.5**	1	< 1.00	1
Benzyl Chloride		NA	< 1.00	1	< 15.0	15	< 1.00	1	< 15.0	15	< 1.00	1	< 1.00	1	< 1.00	1
Bromodichloromethane		<5.0	< 1.00	1	< 15.0	15	< 1.00	1	< 15.0	15	< 1.00	1	< 1.00	1	< 1.00	1
Bromoform		<1.0	< 1.00	1	< 15.0	15	< 1.00	1	< 15.0	15	< 1.00	1	< 1.00	1	< 1.00	1
Bromomethane		<1.0	< 1.00	1	< 15.0	15	< 1.00	1	< 15.0	15	< 1.00	1	< 1.00	1	< 1.00	1
Carbon Disulfide		NA	**8.28**	1	**174**	15	**187**	1	**88.4**	15	**20**	1	< 1.00	1	< 1.00	1
Carbon Tetrachloride	5	<3.1	< 0.25	0.25	< 3.74	3.74	**0.314**	0.25	< 3.74	3.74	< 0.25	0.25	**0.503**	0.25	< 0.25	0.25
Chlorobenzene		<2.0	< 1.00	1	< 15.0	15	< 1.00	1	< 15.0	15	< 1.00	1	< 1.00	1	< 1.00	1
Chloroethane		NA	< 1.00	1	< 15.0	15	< 1.00	1	< 15.0	15	< 1.00	1	< 1.00	1	< 1.00	1
Chloroform		<2.4	**10.5**	1	< 15.0	15	< 1.00	1	< 15.0	15	< 1.00	1	**15.6**	1	< 1.00	1
Chloromethane		<1.0 - 1.4	< 1.00	1	< 15.0	15	**1.51**	1	< 15.0	15	< 1.00	1	< 1.00	1	< 1.00	1
cis-1,2-Dichloroethene		<1.0	< 1.00	1	< 15.0	15	< 1.00	1	< 15.0	15	< 1.00	1	< 1.00	1	< 1.00	1
cis-1,3-Dichloropropene		NA	< 1.00	1	< 15.0	15	< 1.00	1	< 15.0	15	< 1.00	1	< 1.00	1	< 1.00	1
Cyclohexane		NA	< 1.00	1	**3,000**	15	< 1.00	1	**3,230**	15	< 1.00	1	**1.48**	1	< 1.00	1
Dibromochloromethane		<5.0	< 1.00	1	< 15.0	15	< 1.00	1	< 15.0	15	< 1.00	1	< 1.00	1	< 1.00	1
Dichlorodifluromethane		NA	**1.78**	1	< 15.0	15	**1.14**	1	< 15.0	15	**1.88**	1	**2.52**	1	**1.98**	1
Ethanol			**50**	1	**142**	15	**30.1**	1	**20.9**	15	**24.1**	1	**60.2**	1	**9.83**	1
Ethyl Acetate		NA	**3.28**	1	< 15.0	15	< 1.00	1	< 15.0	15	< 1.00	1	**4.64**	1	**1.87**	1
Ethylbenzene		<4.3	**23.3**	1	**469**	15	**23.4**	1	**173**	15	**17.7**	1	**27.6**	1	< 1.00	1
Heptane		NA	**6.43**	1	**7,410**	15	**60.6**	1	**4,710**	15	**18.1**	1	**10.5**	1	< 1.00	1
Hexachlorobutadiene		NA	< 1.00	1	< 15.0	15	< 1.00	1	< 15.0	15	< 1.00	1	< 1.00	1	< 1.00	1
Hexane		<1.5	**5.5**	1	**10,500**	15	**84.2**	1	**4,190**	15	**6.9**	1	**3.17**	1	< 1.00	1
Isopropylalcohol		NA	**17.3**	1	**95.1**	15	< 1.00	1	< 15.0	15	**8.28**	1	**20.6**	1	< 1.00	1
Isopropylbenzene			**5.9**	1	**57.5**	15	**4.67**	1	**32.4**	15	**4.32**	1	**6.93**	1	< 1.00	1
Xylene (m&p)		<4.3	**55.1**	1	**290**	15	**58.1**	1	**126**	15	**48.6**	1	**70.3**	1	< 1.00	1
Methyl Ethyl Ketone			**34.2**	1	**295**	15	**55.4**	1	< 15.0	15	**69**	1	**39.2**	1	< 1.00	1
MTBE		NA	**2.56**	1	< 15.0	15	< 1.00	1	< 15.0	15	< 1.00	1	**7.6**	1	< 1.00	1
Methylene Chloride		<3.4	< 1.00	1	**24.5**	15	< 1.00	1	< 15.0	15	< 1.00	1	< 1.00	1	< 1.00	1
n-Butylbenzene			**2.91**	1	< 15.0	15	**2.14**	1	< 15.0	15	**2.47**	1	**1.7**	1	< 1.00	1
Xylene (o)		<4.3	**9.03**	1	**135**	15	**10.7**	1	**16.9**	15	**10.5**	1	**12.5**	1	< 1.00	1
Propylene		NA	**36.5**	1	**249**	15	**1,140**	1	**151**	15	**23**	1	**1.5**	1	**1.01**	1
sec-Butylbenzene			**1.15**	1	< 15.0	15	< 1.00	1	< 15.0	15	< 1.00	1	< 1.00	1	< 1.00	1
Styrene		<1.0	< 1.00	1	< 15.0	15	< 1.00	1	< 15.0	15	< 1.00	1	**1.19**	1	< 1.00	1
Tetrachloroethene	30		**1.76**	0.25	**4.07**	3.75	**1**	0.25	< 3.75	3.75	**3.18**	0.25	**5.56**	0.25	**3.59**	0.25
Tetrahydrofuran		NA	**1.3**	1	< 15.0	15	< 1.00	1	< 15.0	15	**1.62**	1	**17.1**	1	< 1.00	1
Toluene		1.0 - 6.1	**6.59**	1	**29.9**	15	**31**	1	**27.7**	15	**33.7**	1	**14.7**	1	**1.66**	1
trans-1,2-Dichloroethene		NA	< 1.00	1	< 15.0	15	< 1.00	1	< 15.0	15	< 1.00	1	< 1.00	1	< 1.00	1
trans-1,3-Dichloropropene		NA	< 1.00	1	< 15.0	15	< 1.00	1	< 15.0	15	< 1.00	1	< 1.00	1	< 1.00	1
Trichloroethene	5	<1.7	< 0.25	0.25	< 3.75	3.75	< 0.25	0.25	< 3.75	3.75	**1.88**	0.25	**0.806**	0.25	< 0.25	0.25
Trichlorofluoromethane		NA	< 1.00	1	< 15.0	15	**1.18**	1	< 15.0	15	**8.37**	1	**1.01**	1	< 1.00	1
Trichlorotrifluoroethane			< 1.00	1	< 15.0	15	< 1.00	1	< 15.0	15	< 1.00	1	< 1.00	1	< 1.00	1
Vinyl Chloride		<1.0	< 0.25	0.25	< 3.76	3.76	< 0.25	0.25	< 3.76	3.76	< 0.25	0.25	< 0.25	0.25	< 0.25	0.25

Notes:
NA No guidance value or standard available
(a) Final Guidance for Evaluating Soil Vapor Intrusion in the State of New York. October 2006. New York State Department of Health.
(b) NYSDOH Guidance for Evaluating Soil Vapor Intrusion in the State of New York, February 2005, Summary of Background Levels for Selected Compounds (NYSDOH Database, Outdoor values)
Value detected above NYSDOH Air Guidance Value of 5 µg/m3, which according to Soil Vapor/Indoor Air Matrix 1 would require at a minimum, monitoring.

TABLE 15
Project Permit Listing
To Be Updated as Project Progresses

Permit	*Permit Number*	*Originating Agency*	*Pursuant to*	*Issued*	*Expires*	*Contact Phone*

Note: This list will be updated as the project progresses

Table 16
Emergency Contact List

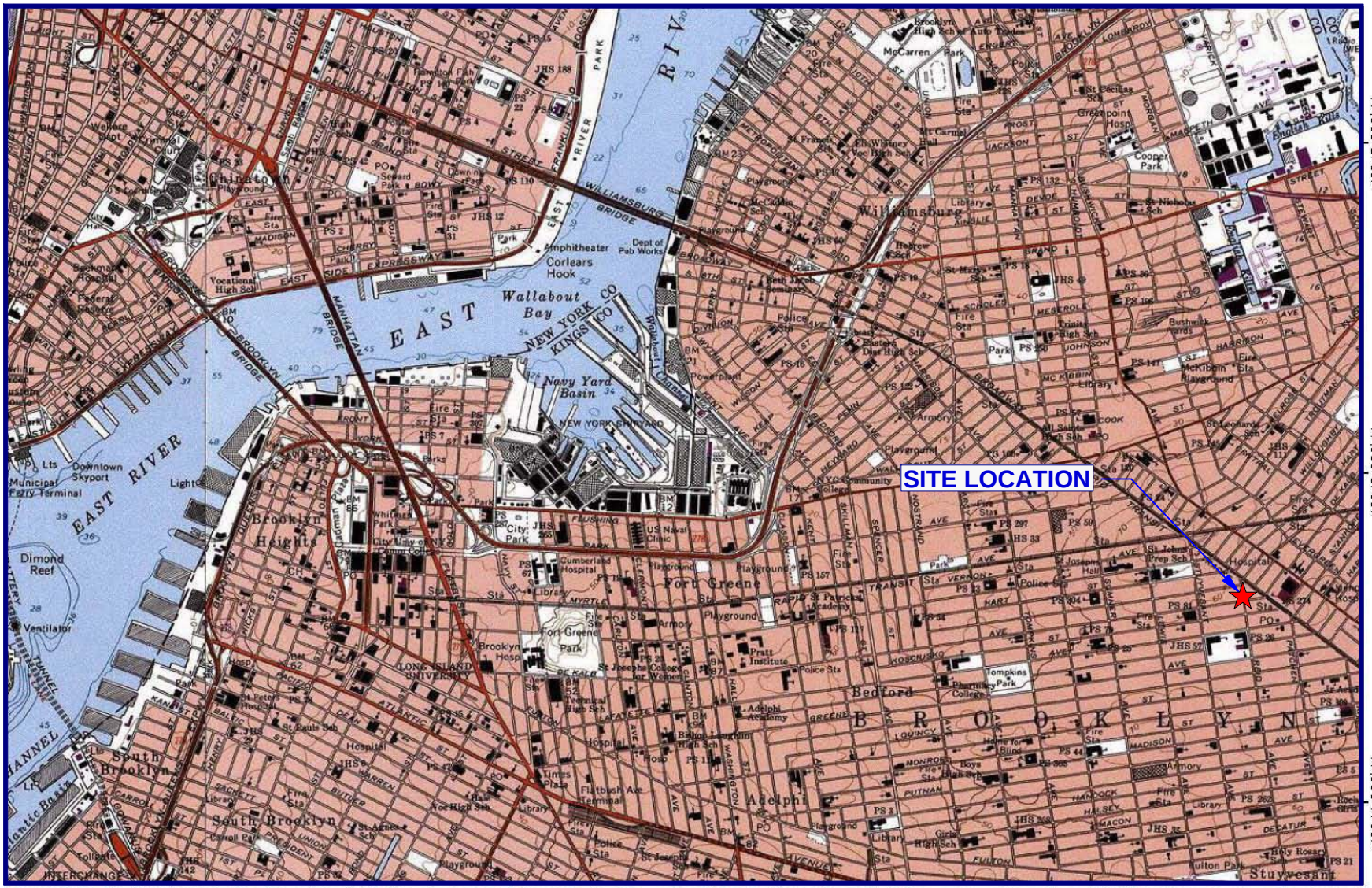
General Contacts

General Emergencies	911
NYC Police	911
NYC Fire Department	911
NYC Department of Health	212-676-2400
Woodhul Medical Center	718-963-8000
Poison Control	800-222-1222
National Response Center	800-424-8802
NYSDEC Spills Hotline	800-457-7362

Project Contacts

NYSDEC Project Manager	Shaun Bollers	718-482-4096
NYSDOH Project Manager	Krista Anders	518-402-7860
EBC Project Manager	Kristen DiScenza	631-504-6000
EBC BCP Program Manager	Charles Sosik	631-504-6000
EBC Site Safety Officer	Chawinie Miller	631-504-6000
Remedial Engineer	Ariel Czemerinski	516-987-1662
Construction Manager	TBD	TBD

FIGURES



USGS Brooklyn Quadrangle 1995, Contour Interval = 10 feet

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Fax 631.924.2780

1103-1107 DEKALB AVENUE
BROOKLYN, NY

FIGURE 1 SITE LOCATION MAP

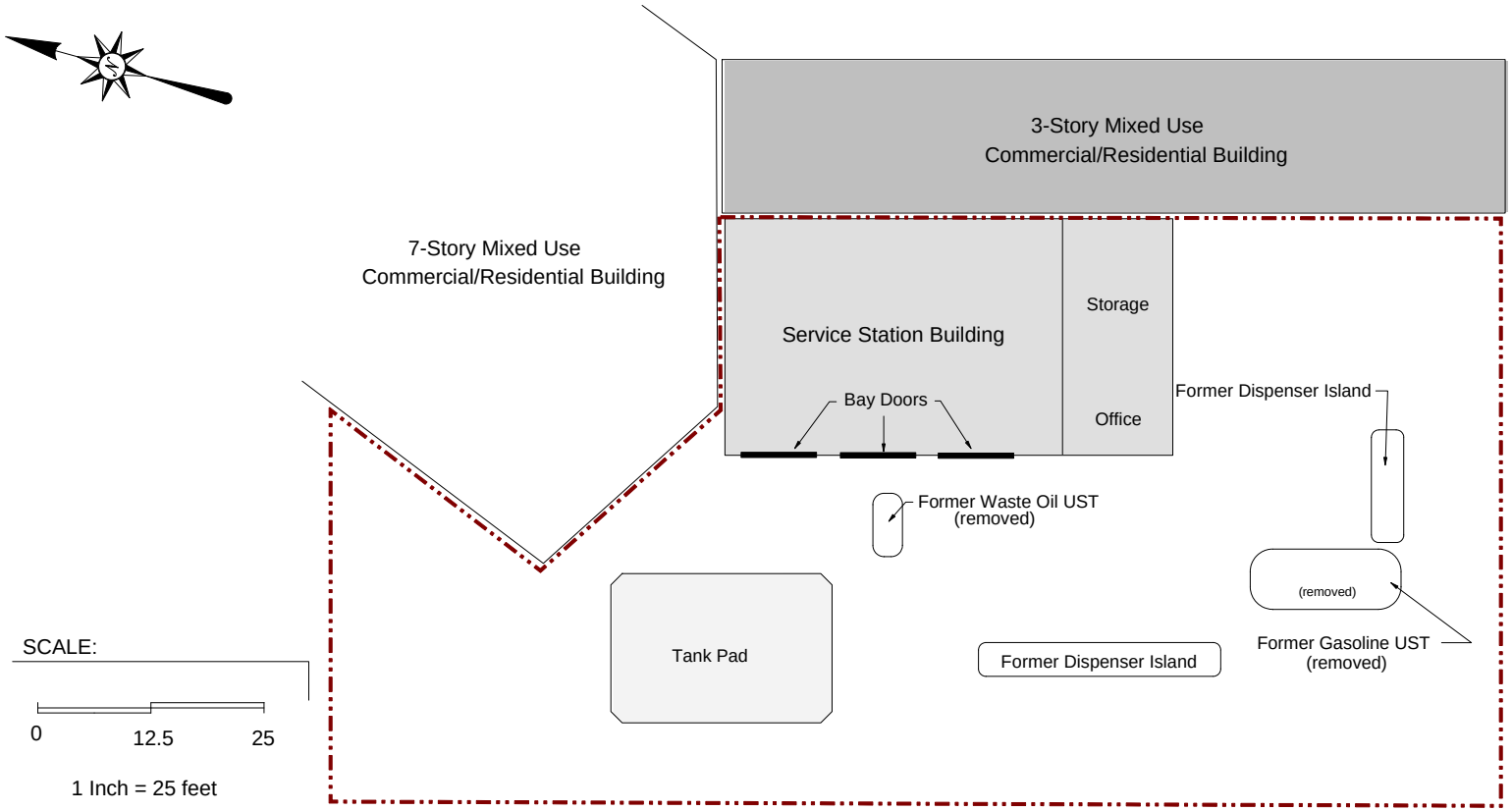

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Figure No. 2

Site Name: FORMER GETTY SERVICE STATION
Site Address: 1103-1107 DEKLB AVENUE, BROOKLYN, NY
Drawing Title: SITE PLAN

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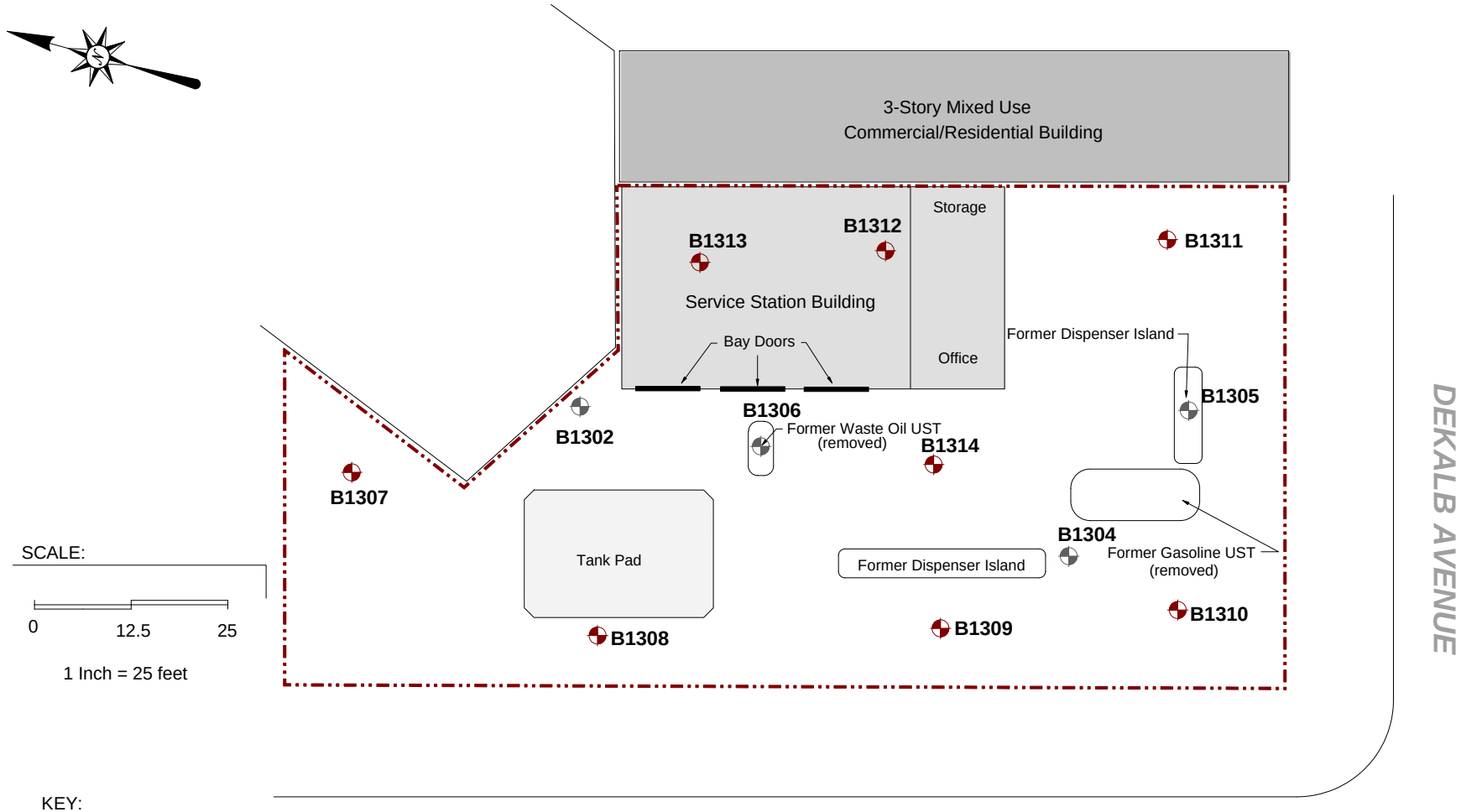
Fax: 631.924.2780

1103-1107 DeKalb Avenue
Brooklyn, NY

FIGURE 3 Project Site and Adjacent Properties



KEY:

- Site Boundary
- Phase II Soil Boring Location
- RI Soil Boring Location

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Figure No. 4

Site Name: FORMER GETTY SERVICE STATION
Site Address: 1103-1107 DEKALB AVENUE, BROOKLYN, NY
Drawing Title: SOIL SAMPLING LOCATIONS

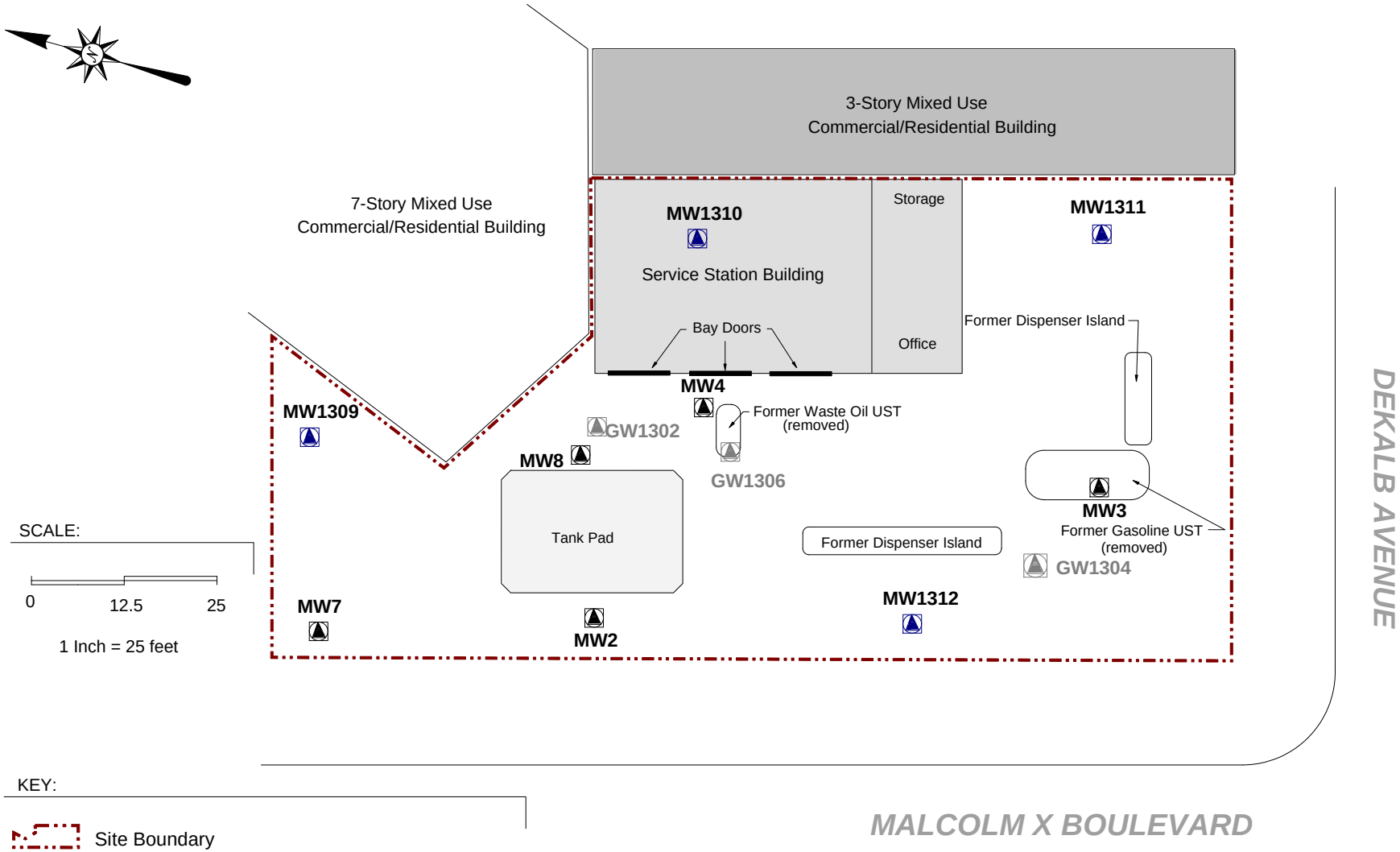

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Figure No. 5

Site Name: FORMER GETTY SERVICE STATION
Site Address: 1103-1107 DEKALB AVENUE, BROOKLYN, NY
Drawing Title: GROUNDWATER SAMPLING LOCATIONS

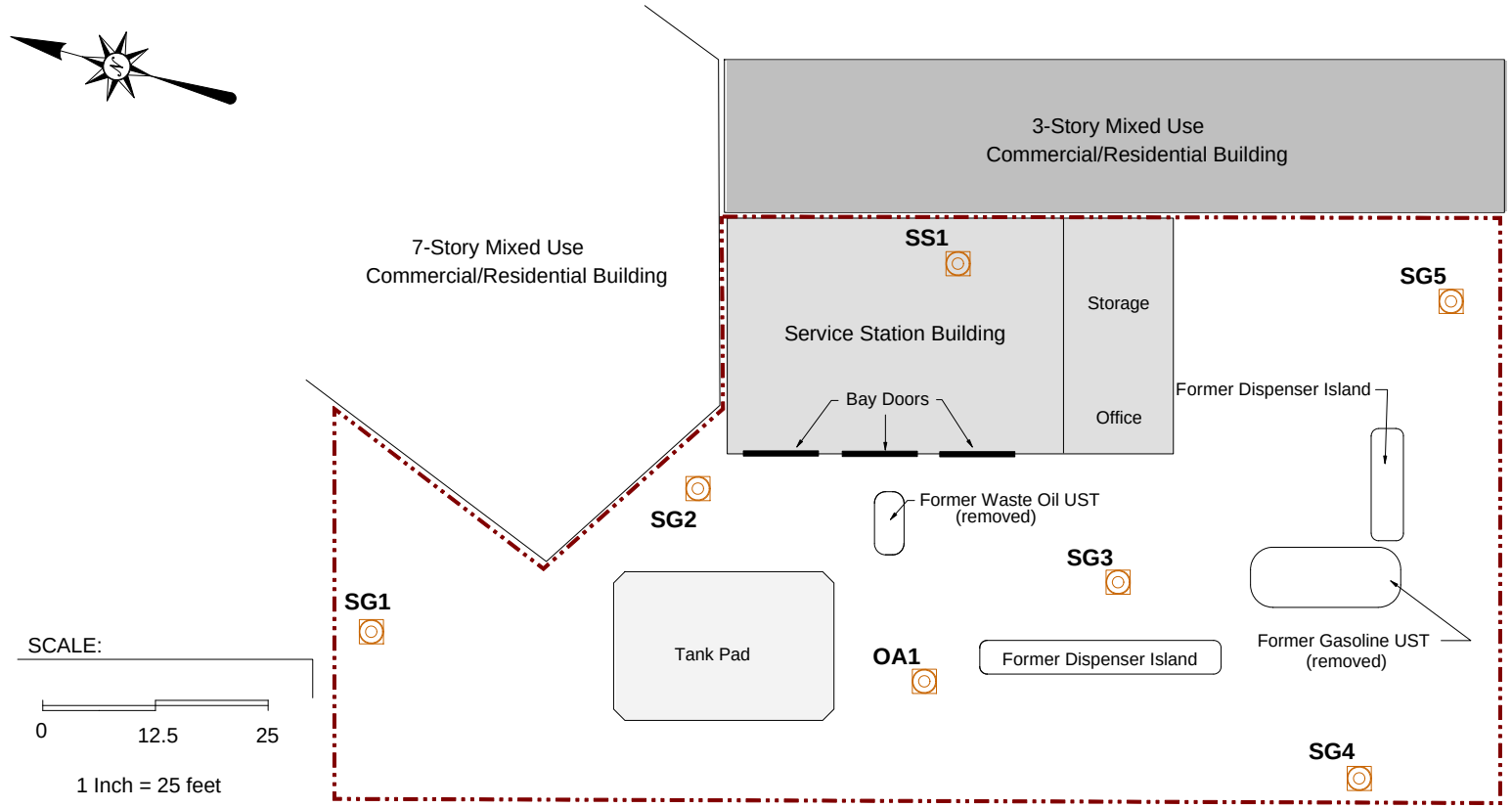

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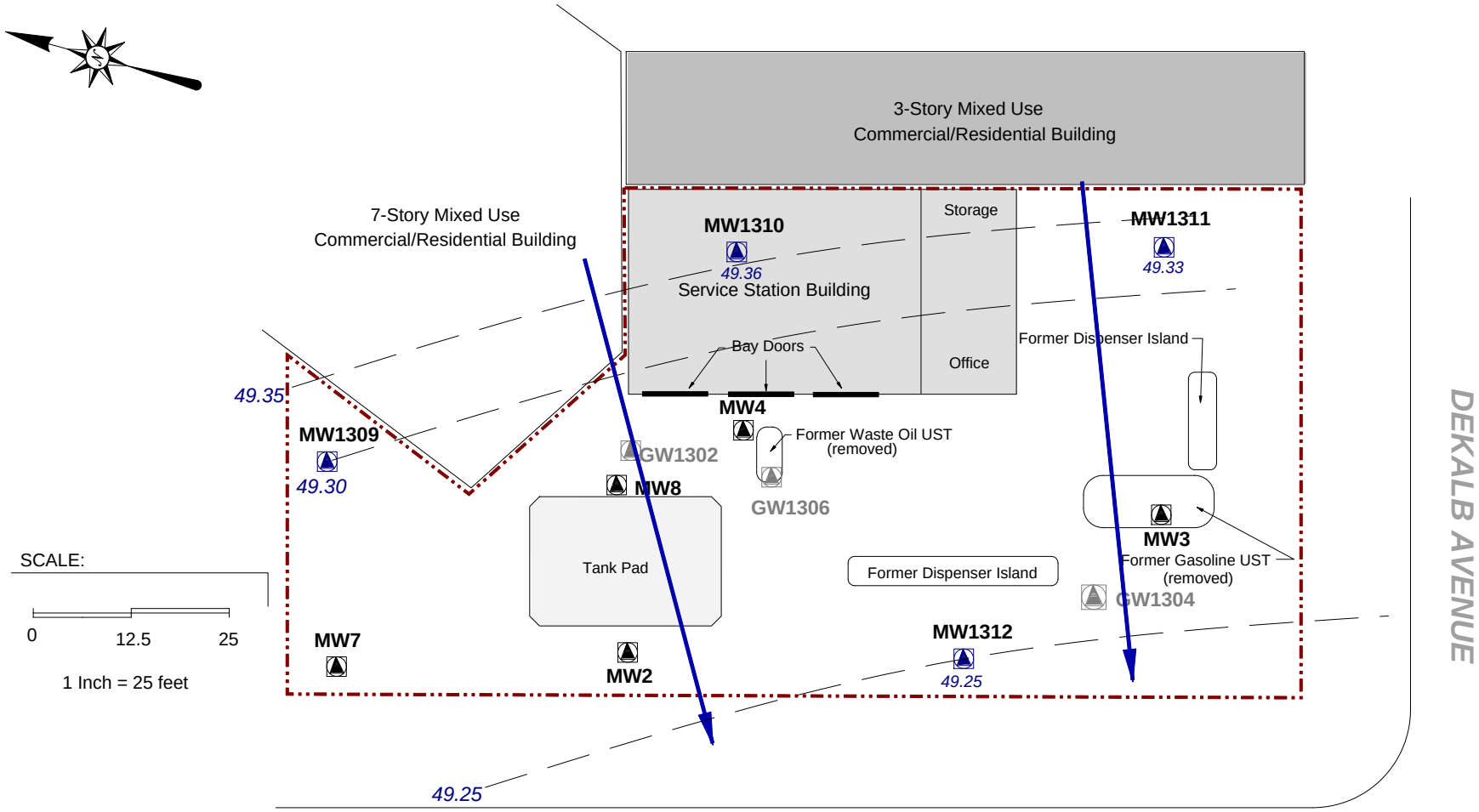
Figure No. 6

Site Name: FORMER GETTY SERVICE STATION
Site Address: 1103-1107 DEKALB AVENUE, BROOKLYN, NY
Drawing Title: SOIL GAS SAMPLING LOCATIONS



KEY:

- Site Boundary
- February 2013 Groundwater Sampling Location
- Abandoned Monitoring Well Location
- Monitoring Well Location
- Groundwater Contour
- Groundwater Flow Direction

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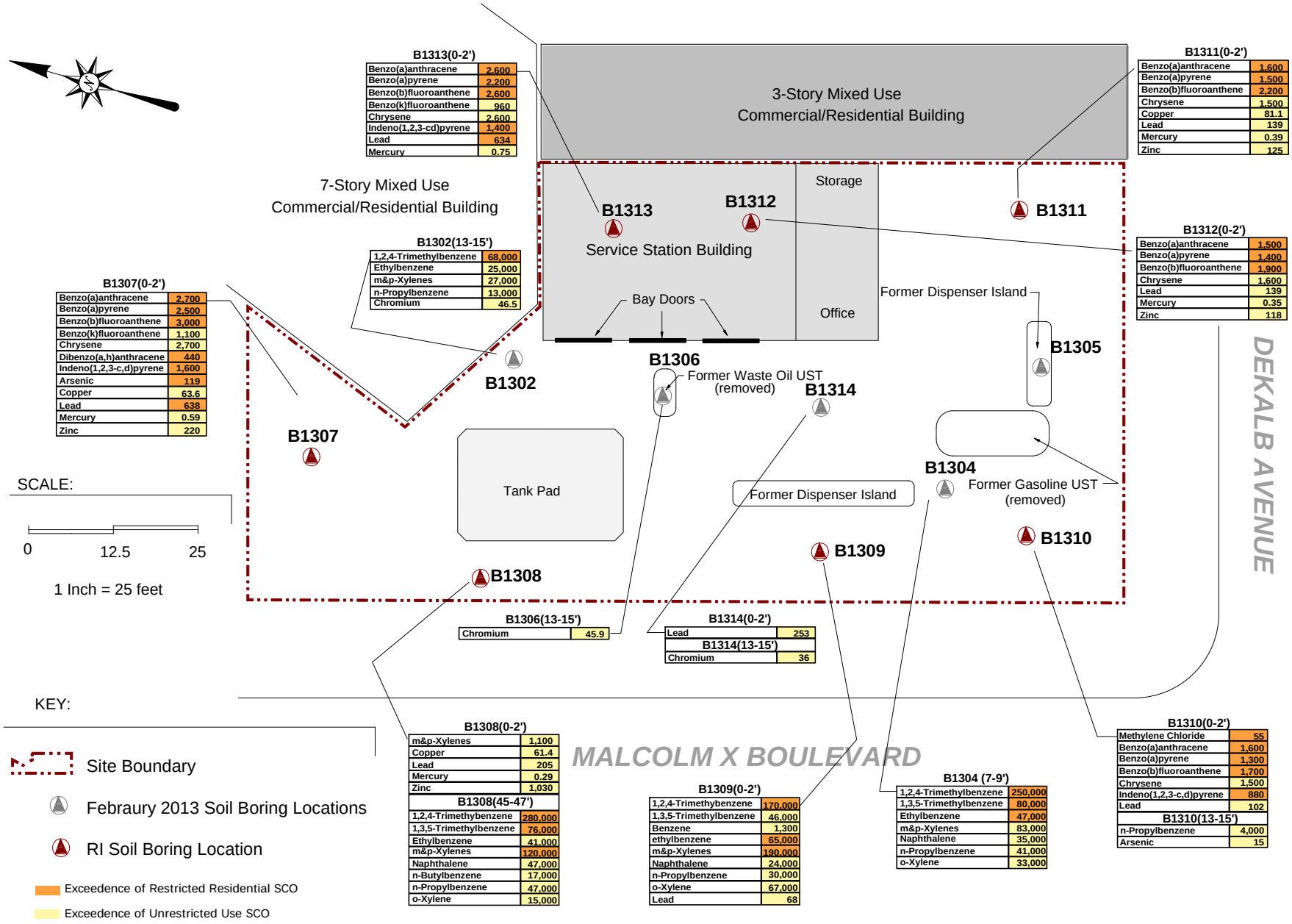
Figure No. 7

Site Name: FORMER GETTY SERVICE STATION
Site Address: 1103-1107 DEKALB AVENUE, BROOKLYN, NY
Drawing Title: GROUNDWATER SAMPLING LOCATIONS



B1313(0-2')

Benzo(a)anthracene	2,600
Benzo(a)pyrene	2,200
Benzo(b)fluoroanthene	2,600
Benzo(k)fluoroanthene	960
Chrysene	2,600
Indeno(1,2,3-cd)pyrene	1,400
Lead	634
Mercury	0.75

B1311(0-2')

Benzo(a)anthracene	1,600
Benzo(a)pyrene	1,500
Benzo(b)fluoroanthene	2,200
Chrysene	1,500
Copper	81.1
Lead	139
Mercury	0.39
Zinc	125

B1302(13-15')

1,2,4-Trimethylbenzene	68,000
Ethylbenzene	25,000
m&p-Xylenes	27,000
n-Propylbenzene	13,000
Chromium	46.5

B1312(0-2')

Benzo(a)anthracene	1,500
Benzo(a)pyrene	1,400
Benzo(b)fluoroanthene	1,900
Chrysene	1,600
Lead	139
Mercury	0.35
Zinc	118

B1307(0-2')

Benzo(a)anthracene	2,700
Benzo(a)pyrene	2,500
Benzo(b)fluoroanthene	3,000
Benzo(k)fluoroanthene	1,100
Chrysene	2,700
Dibenzo(a,h)anthracene	440
Indeno(1,2,3-c,d)pyrene	1,600
Arsenic	119
Copper	63.6
Lead	638
Mercury	0.59
Zinc	220

B1306(13-15')

Chromium	45.9

B1314(0-2')

Lead	253

B1314(13-15')

Chromium	36

B1308(0-2')

m&p-Xylenes	1,100
Copper	61.4
Lead	205
Mercury	0.29
Zinc	1,030

B1308(45-47')

1,2,4-Trimethylbenzene	280,000
1,3,5-Trimethylbenzene	76,000
Ethylbenzene	41,000
m&p-Xylenes	120,000
Naphthalene	47,000
n-Butylbenzene	17,000
n-Propylbenzene	47,000
o-Xylene	15,000

B1309(0-2')

1,2,4-Trimethylbenzene	170,000
1,3,5-Trimethylbenzene	46,000
Benzene	1,300
ethylbenzene	65,000
m&p-Xylenes	190,000
Naphthalene	24,000
n-Propylbenzene	30,000
o-Xylene	67,000
Lead	68

B1304 (7-9')

1,2,4-Trimethylbenzene	250,000
1,3,5-Trimethylbenzene	80,000
Ethylbenzene	47,000
m&p-Xylenes	83,000
Naphthalene	35,000
n-Propylbenzene	41,000
o-Xylene	33,000

B1310(0-2')

Methylene Chloride	55
Benzo(a)anthracene	1,600
Benzo(a)pyrene	1,300
Benzo(b)fluoroanthene	1,700
Chrysene	1,500
Indeno(1,2,3-c,d)pyrene	880
Lead	102

B1310(13-15')

n-Propylbenzene	4,000
Arsenic	15

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Figure No. 8

Site Name: Former Getty Service Station
Site Address: 1103-1107 DeKalb Avenue, Brooklyn, NY
Drawing Title: Soil Results Above SCOs

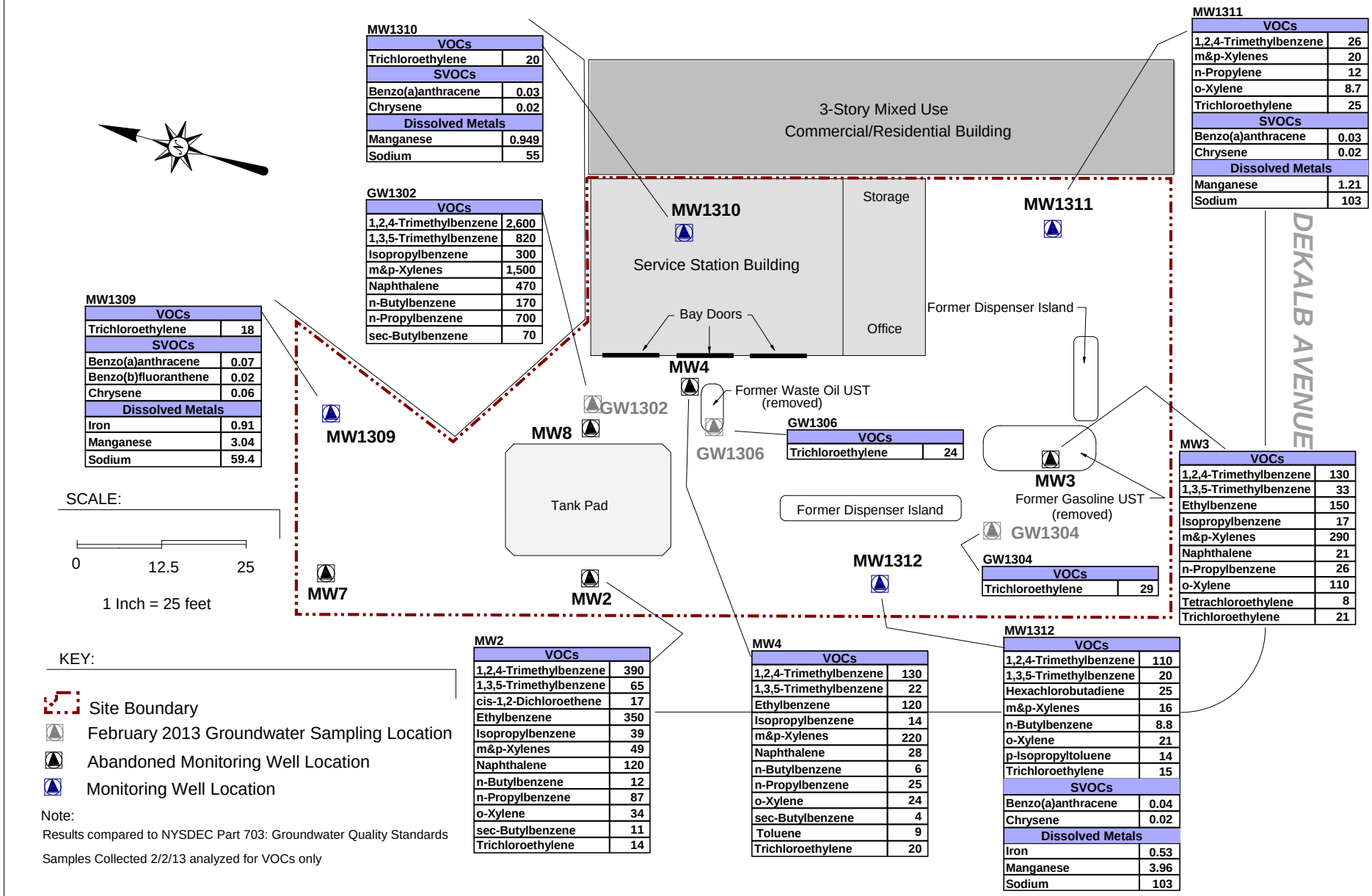

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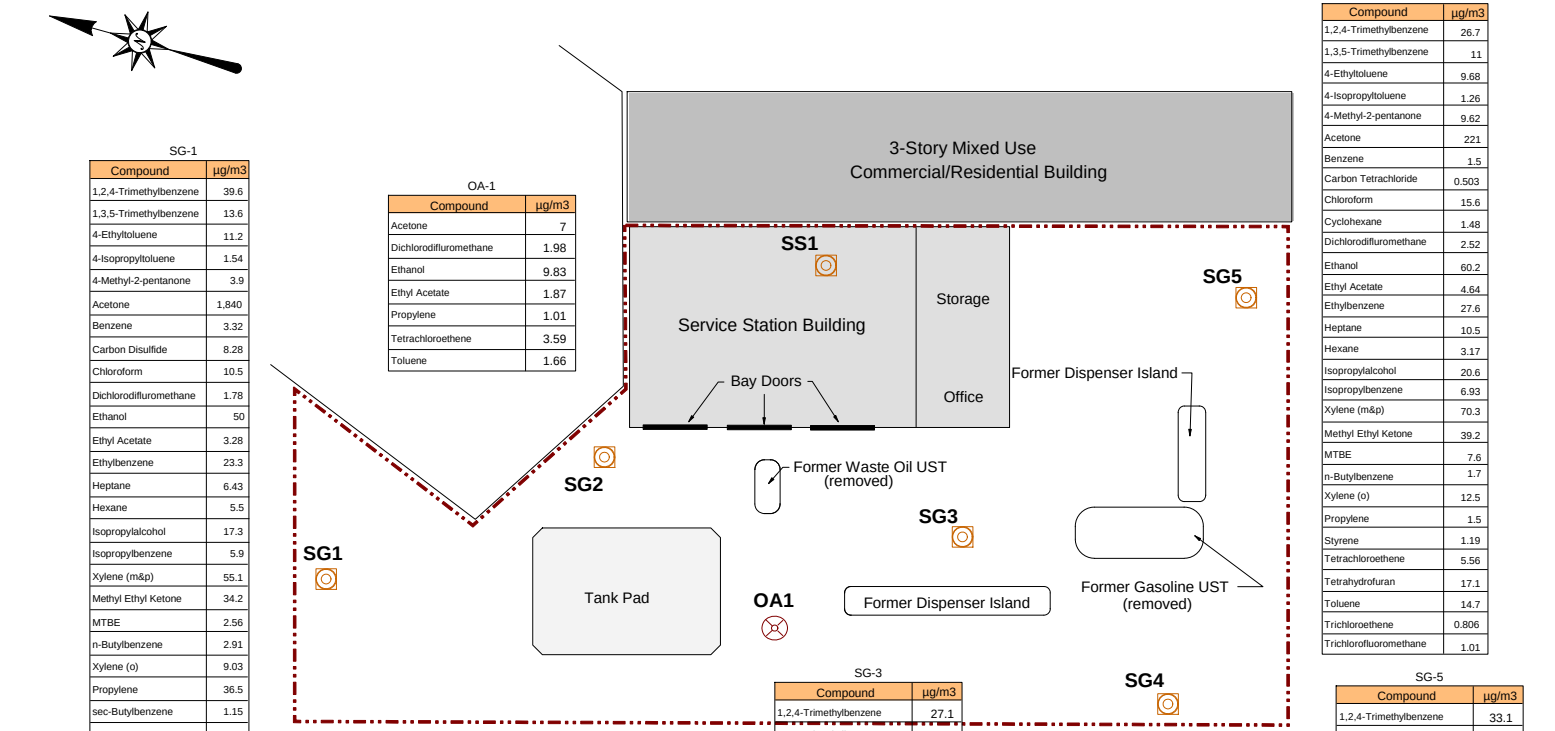
Figure No. 9

Site Name: Former Getty Service Station
Site Address: 1103-1107 DeKalb Avenue, Brooklyn, NY
Drawing Title: Groundwater Results Above GQS



SG-1

Compound	µg/m3
1,2,4-Trimethylbenzene	39.6
1,3,5-Trimethylbenzene	13.6
4-Ethyltoluene	11.2
4-Isopropyltoluene	1.54
4-Methyl-2-pentanone	3.9
Acetone	1,840
Benzene	3.32
Carbon Disulfide	8.28
Chloroform	10.5
Dichlorodifluromethane	1.78
Ethanol	50
Ethyl Acetate	3.28
Ethylbenzene	23.3
Heptane	6.43
Hexane	5.5
Isopropylalcohol	17.3
Isopropylbenzene	5.9
Xylene (m&p)	55.1
Methyl Ethyl Ketone	34.2
MTBE	2.56
n-Butylbenzene	2.91
Xylene (o)	9.03
Propylene	36.5
sec-Butylbenzene	1.15
Tetrachloroethene	1.76
Tetrahydrofuran	1.3
Toluene	6.59

OA-1

Compound	µg/m3
Acetone	7
Dichlorodifluromethane	1.98
Ethanol	9.83
Ethyl Acetate	1.87
Propylene	1.01
Tetrachloroethene	3.59
Toluene	1.66

SS-1

Compound	µg/m3
1,2,4-Trimethylbenzene	26.7
1,3,5-Trimethylbenzene	11
4-Ethyltoluene	9.68
4-Isopropyltoluene	1.26
4-Methyl-2-pentanone	9.62
Acetone	221
Benzene	1.5
Carbon Tetrachloride	0.503
Chloroform	15.6
Cyclohexane	1.48
Dichlorodifluromethane	2.52
Ethanol	60.2
Ethyl Acetate	4.64
Ethylbenzene	27.6
Heptane	10.5
Hexane	3.17
Isopropylalcohol	20.6
Isopropylbenzene	6.93
Xylene (m&p)	70.3
Methyl Ethyl Ketone	39.2
MTBE	7.6
n-Butylbenzene	1.7
Xylene (o)	12.5
Propylene	1.5
Styrene	1.19
Tetrachloroethene	5.56
Tetrahydrofuran	17.1
Toluene	14.7
Trichloroethene	0.806
Trichlorofluoromethane	1.01

SG-2

Compound	µg/m3
1,2,4-Trimethylbenzene	39.6
1,2-Dichloroethane	13.6
1,3,5-Trimethylbenzene	13.6
4-Ethyltoluene	11.2
Acetone	1,840
Carbon Disulfide	8.28
Cyclohexane	10.5
Ethanol	50
Ethylbenzene	23.3
Heptane	6.43
Hexane	5.5
Isopropylalcohol	17.3
Isopropylbenzene	5.9
Xylene (m&p)	55.1
Methyl Ethyl Ketone	34.2
Methylene Chloride	2.56
Xylene (o)	9.03
Propylene	36.5
Tetrachloroethene	1.76
Toluene	6.59

SG-3

Compound	µg/m3
1,2,4-Trimethylbenzene	27.1
1,3,5-Trimethylbenzene	9.63
4-Ethyltoluene	8.11
4-Isopropyltoluene	1.04
Acetone	1,280
Benzene	10.3
Carbon Disulfide	187
Carbon Tetrachloride	0.314
Chloromethane	1.51
Dichlorodifluromethane	1.14
Ethanol	30.1
Ethylbenzene	23.4
Heptane	60.3
Hexane	84.2
Isopropylbenzene	4.67
Xylene (m&p)	58.1
Methyl Ethyl Ketone	55.4
n-Butylbenzene	2.14
Xylene (o)	10.7
Propylene	1,140
Tetrachloroethene	1
Toluene	31
Trichlorofluoromethane	1.18

SG-4

Compound	µg/m3
1,2,4-Trimethylbenzene	81.6
1,2-Dichloroethane	39.4
1,3,5-Trimethylbenzene	33.2
4-Ethyltoluene	22.8
Benzene	73.8
Carbon Disulfide	88.4
Cyclohexane	3,230
Ethanol	20.9
Ethylbenzene	173
Heptane	4,710
Hexane	4,190
Isopropylbenzene	32.4
Xylene (m&p)	126
Xylene (o)	16.9
Propylene	151
Toluene	27.7

SG-5

Compound	µg/m3
1,2,4-Trimethylbenzene	33.1
1,3,5-Trimethylbenzene	11
4-Ethyltoluene	11.5
4-Isopropyltoluene	1.32
4-Methyl-2-pentanone	1.76
Acetone	736
Benzene	4.4
Carbon Disulfide	20
Dichlorodifluromethane	1.88
Ethanol	24.1
Ethylbenzene	17.7
Heptane	18.1
Hexane	6.9
Isopropylalcohol	8.28
Isopropylbenzene	4.32
Xylene (m&p)	48.6
Methyl Ethyl Ketone	69
n-Butylbenzene	2.47
Xylene (o)	10.5
Propylene	23
Tetrachloroethene	3.18
Tetrahydrofuran	1.62
Toluene	33.7
Trichloroethene	1.88
Trichlorofluoromethane	8.37

SCALE:

0 15 30

1 Inch = 30 feet

KEY:

Site Boundary

Soil Gas/Air Sampling Location

Outdoor Air Sampling Location

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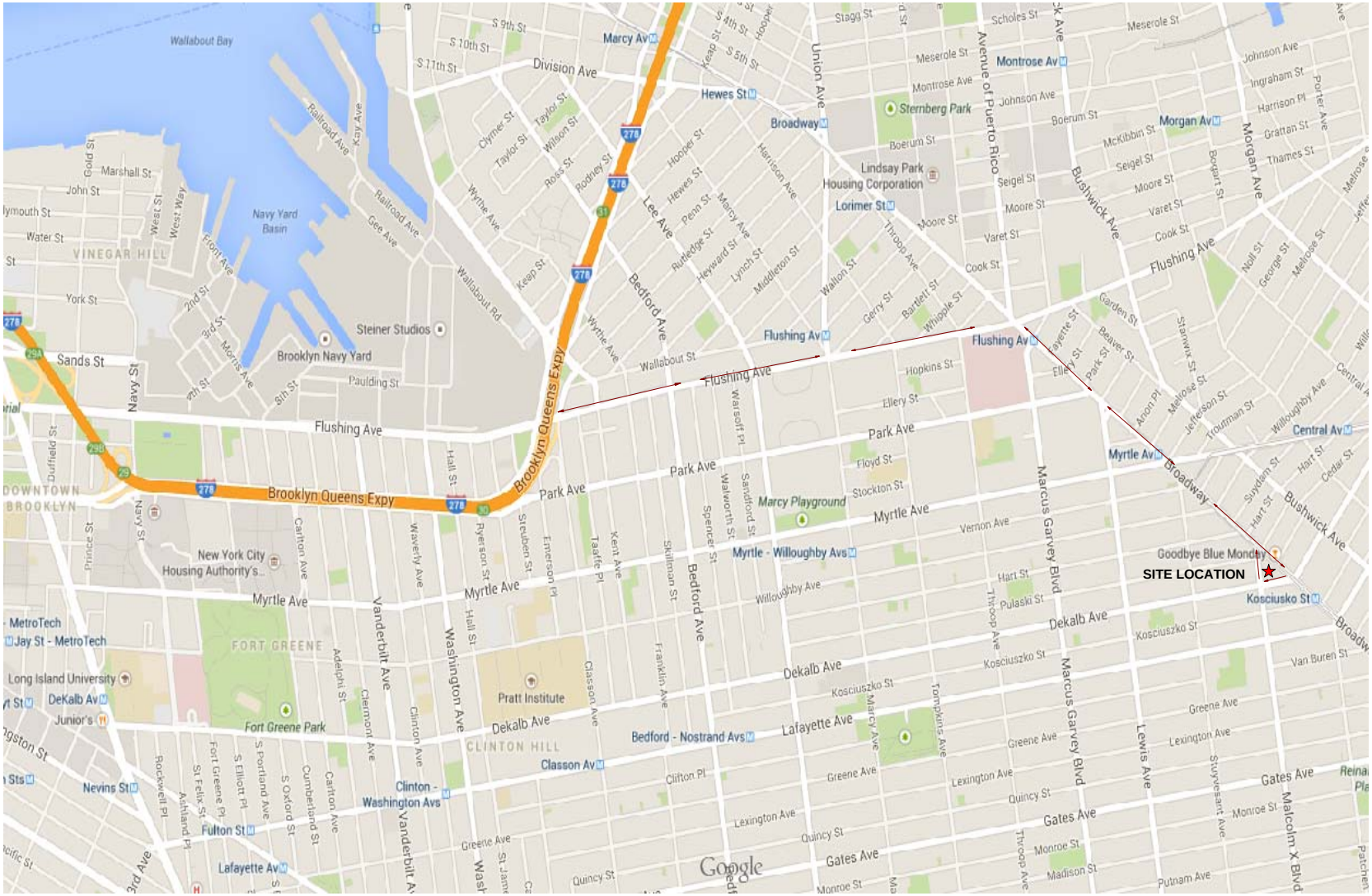
Figure No. 10

Site Name: Former Getty Service Station

Site Address: 1103-1107 DeKalb Avenue, Brooklyn, NY

Drawing Title: Soil Gas Sampling Locations



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FORMER GETTY SERVICE STATION
1103-1107 DEKALB AVENUE, BROOKLYN, NY

FIGURE 11 TRUCK ROUTE

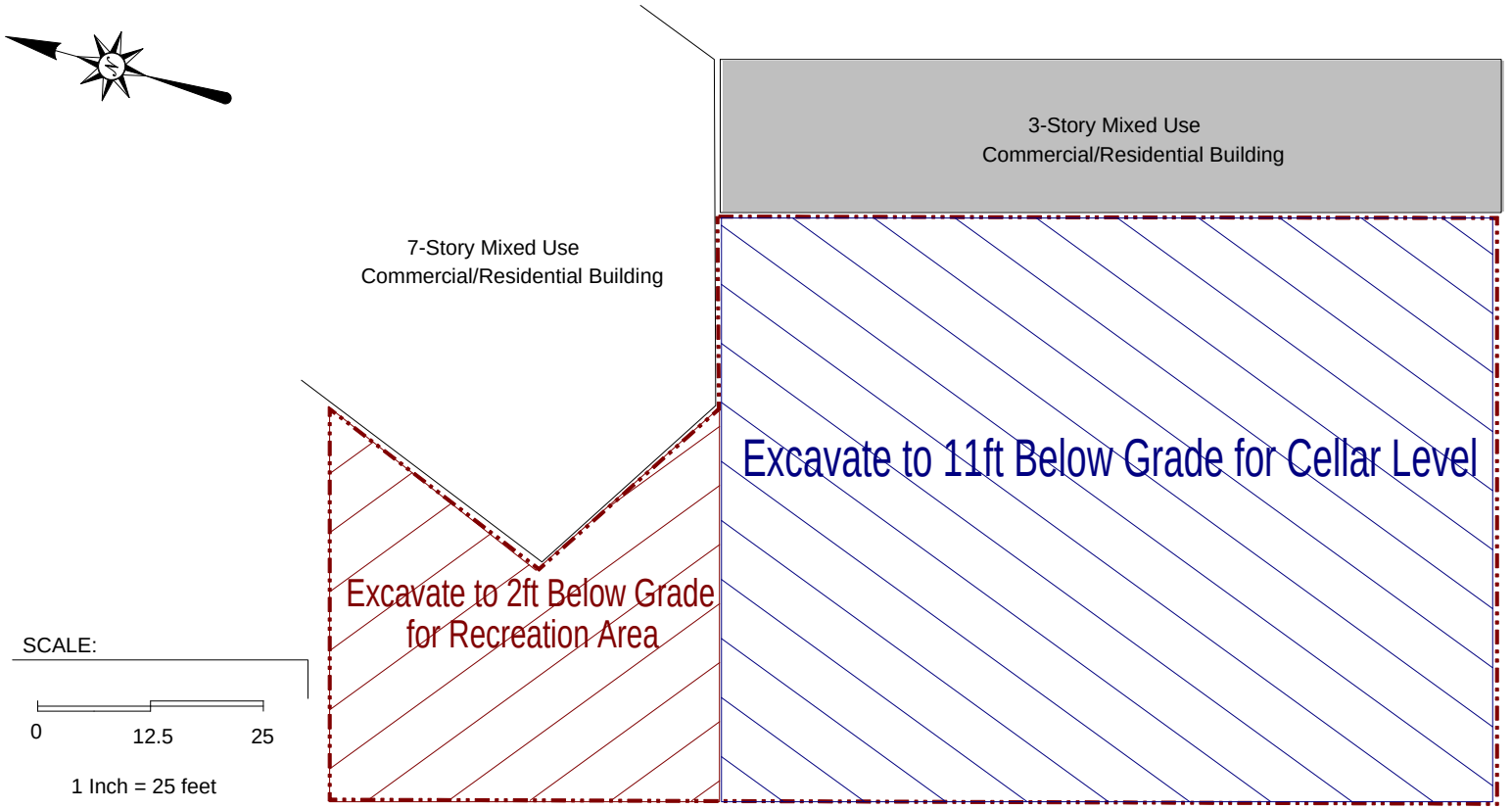

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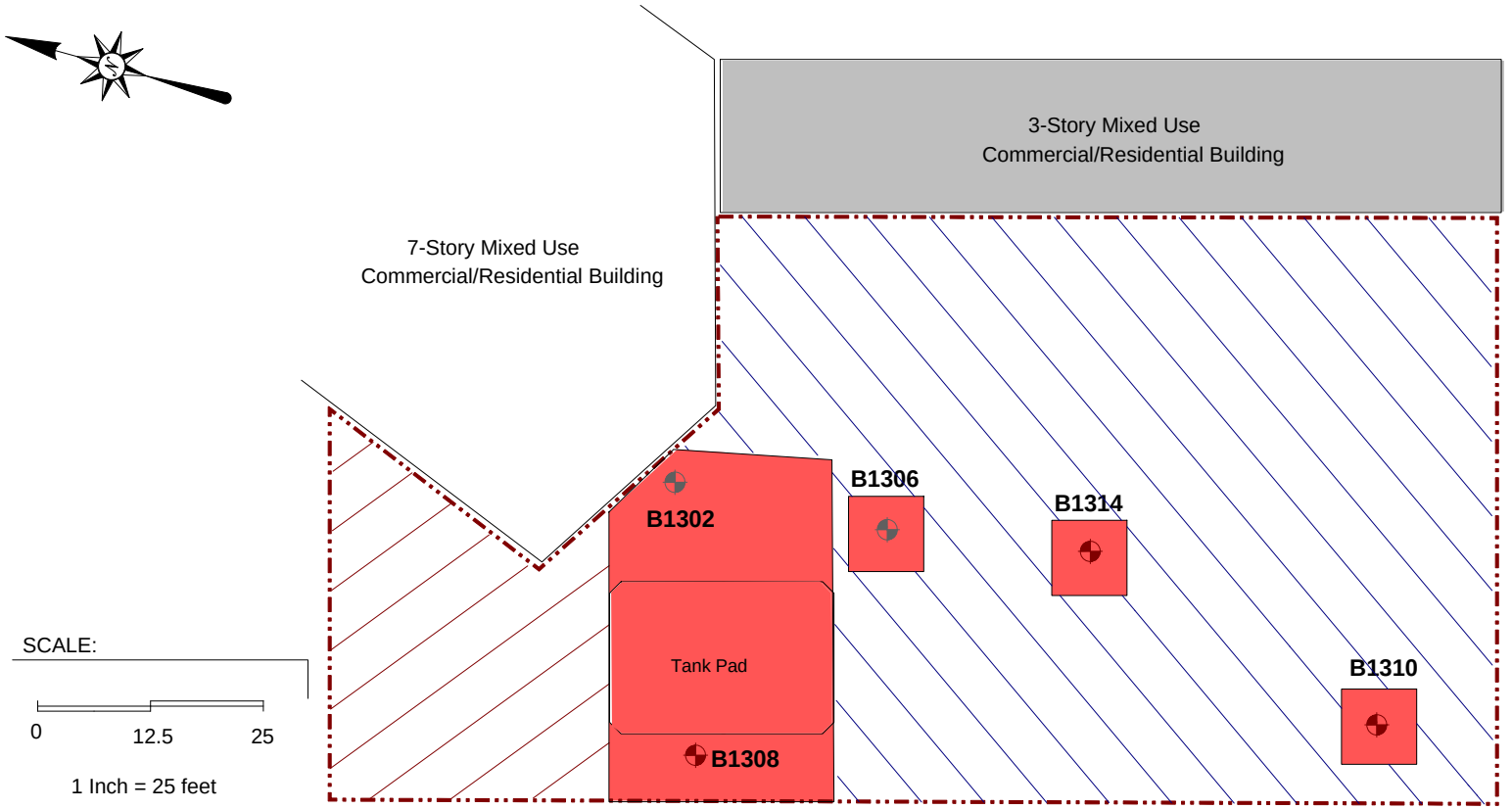
Figure No. 12

Site Name: FORMER GETTY SERVICE STATION
Site Address: 1103-1107 DEKLB AVENUE, BROOKLYN, NY
Drawing Title: PLANNED CONSTRUCTION EXCAVATION DEPTHS



KEY:

- Site Boundary
- Excavation Area - 11ftbg
- Excavation Area - 2ftbg
- Hotspot Excavation Area - 15ftbg

MALCOLM X BOULEVARD

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Figure No. 13

Site Name: FORMER GETTY SERVICE STATION
Site Address: 1103-1107 DEKLB AVENUE, BROOKLYN, NY
Drawing Title: REMEDIAL EXCAVATION PLAN

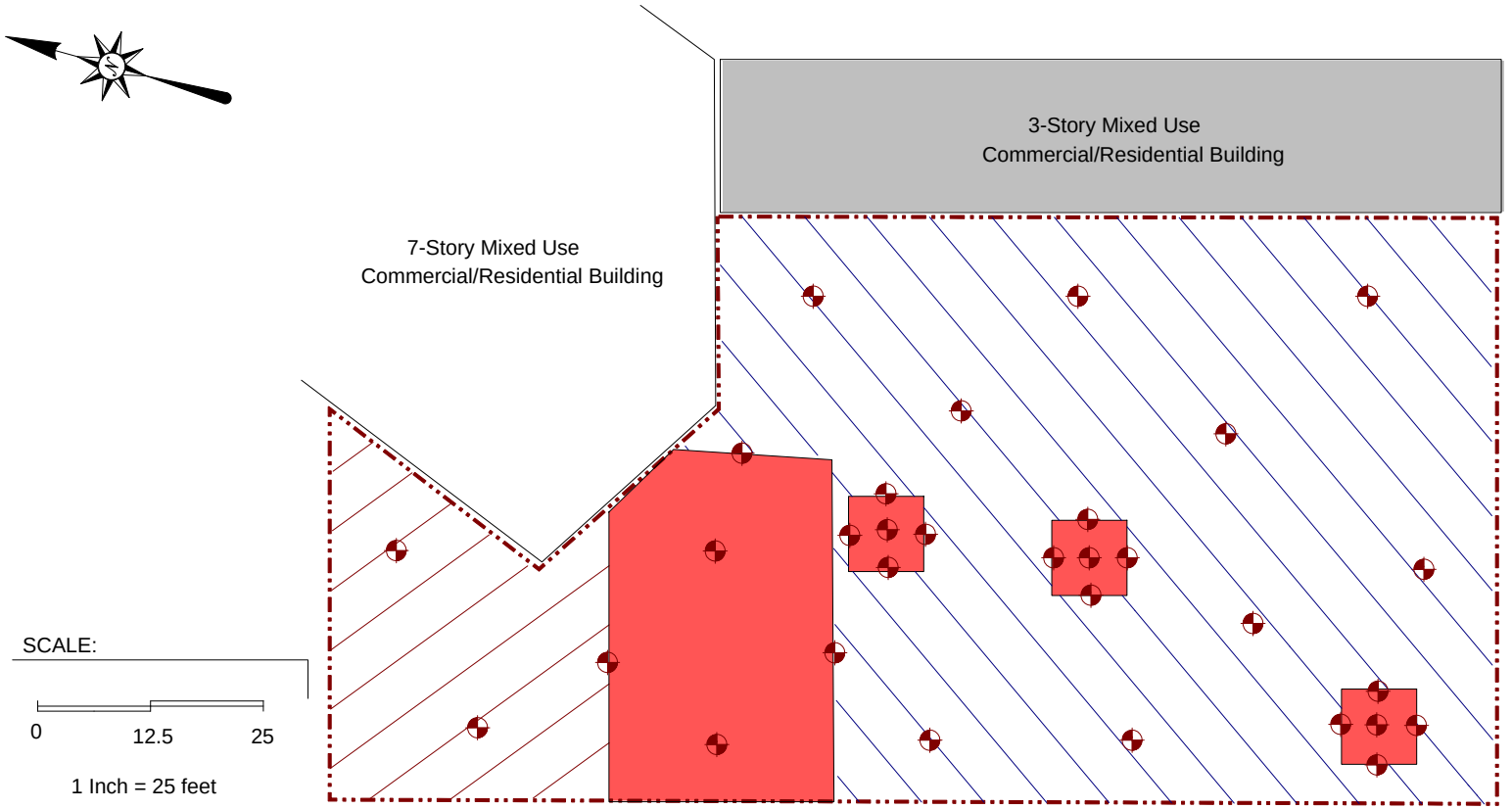

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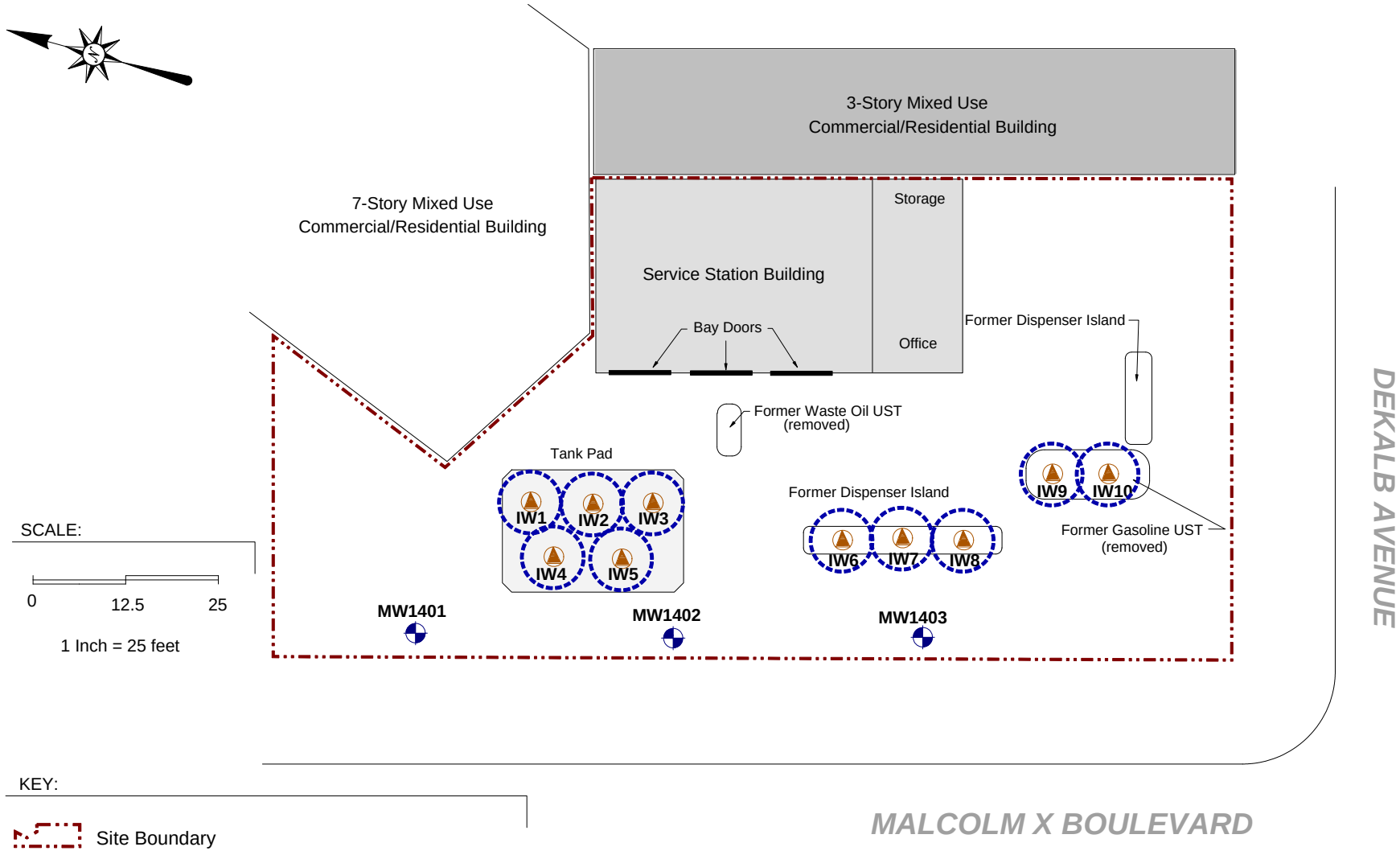
Figure No. 14

Site Name: FORMER GETTY SERVICE STATION
Site Address: 1103-1107 DEKLB AVENUE, BROOKLYN, NY
Drawing Title: ENDPOINT SAMPLE LOCATIONS



KEY:

Site Boundary

MWx

Performance Monitoring Well Location

IWx

Chemical Injection Well / Inj. Radius

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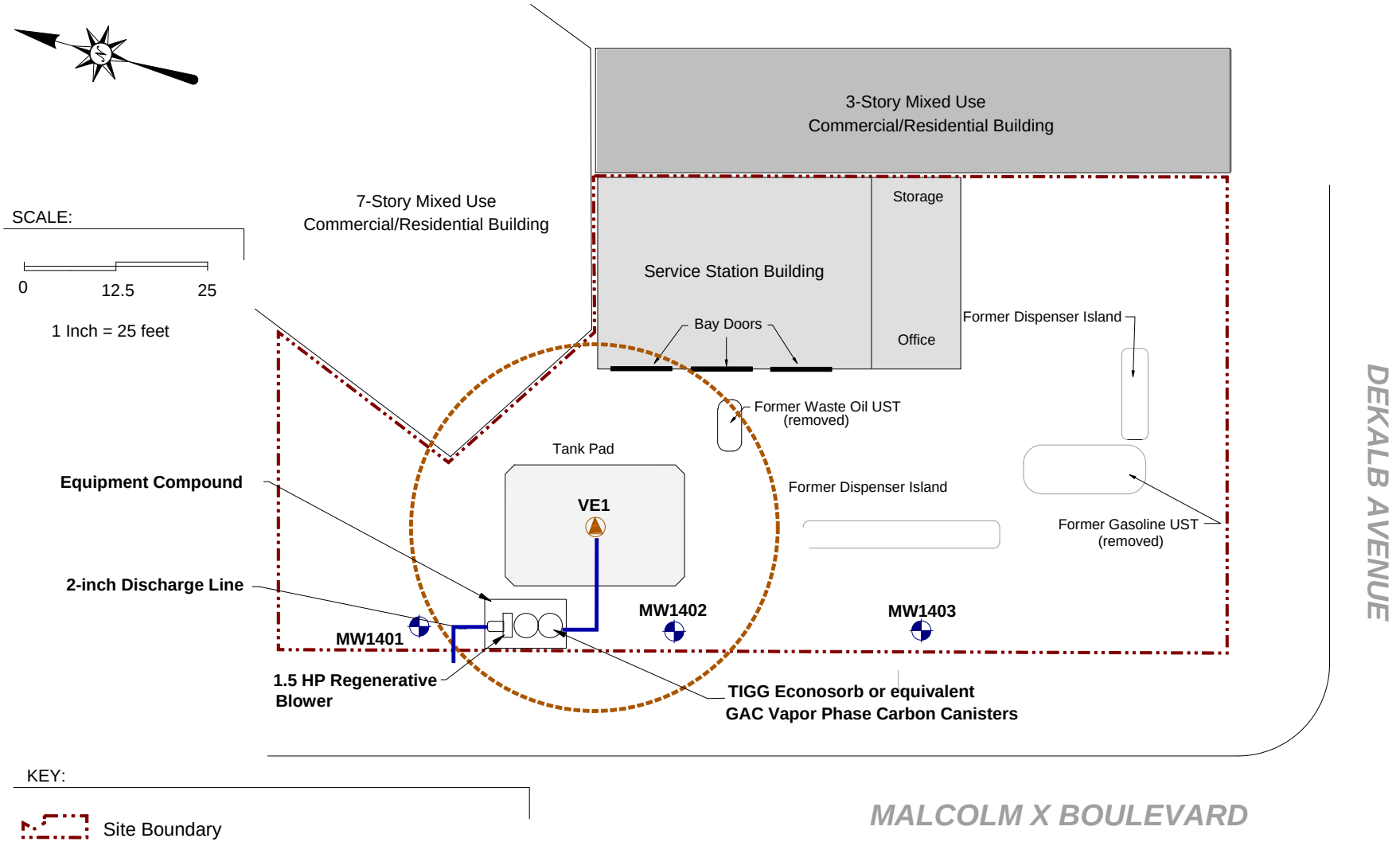
Figure No. 15

Site Name: FORMER GETTY SERVICE STATION

Site Address: 1103-1107 DEKALB AVENUE, BROOKLYN, NY

Drawing Title: PROPOSED CHEMICAL INJECTION LOCATIONS



KEY:

Site Boundary

MWx

Performance Monitoring Well Location

VE1

Vapor Extraction Well / Radius of Influence

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Figure No. 16

Site Name: FORMER GETTY SERVICE STATION

Site Address: 1103-1107 DEKALB AVENUE, BROOKLYN, NY

Drawing Title: PROPOSED SVE SYSTEM LAYOUT

ATTACHMENT A
Metes and Bounds Description of Property

LEGAL DESCRIPTION

BEGINNING at a point on the Easterly side of Malcolm X Boulevard distant 100 feet Northerly from the corner formed by the intersection of the Easterly side of Malcolm X Boulevard with the Northerly side of DeKalb Avenue;

THENCE Easterly parallel with DeKalb Avenue 50 feet;

THENCE Northwesterly parallel with Broadway 32 feet 1 inch, more or less to the division line. between land formerly of Charles B. Hart and land formerly of J. Struthers;

THENCE Northeasterly along said division line 32 feet to a point therein distant 49 feet 10 inches Easterly from the Easterly side of Malcolm X Boulevard on a line drawn at right angles thereto;

THENCE Westerly parallel with DeKalb Avenue 49 feet 10 inches more or less to the Easterly side of Malcolm X Boulevard;

THENCE Southerly along the Easterly side of Malcolm X Boulevard, 50 feet to the point or place of BEGINNING.

ATTACHMENT B
Health & Safety Plan

FORMER GETTY SERVICE STATION

1103-1107 DEKALB AVENUE
BROOKLYN, NEW YORK
Block 1600 Lots 1 and 28
Site No. C-224176

CONSTRUCTION HEALTH AND SAFETY PLAN

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

JULY 2014

Program Volunteer:
1107D LLC
45 North Station Plaza, Suite 315
Great Neck, NY 11021

Prepared By:

EBC
ENVIRONMENTAL BUSINESS CONSULTANTS

1808 Middle Country Road
Ridge, NY 11961

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1103-1107 DeKalb Avenue, Brooklyn, New York

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2040 Frederick Douglas Boulevard, Harlem, New York

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APPENDICES

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 at 1103-1107 DeKalb Avenue, Brooklyn, 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 AND SITE ENTRY REQUIREMENTS

This document describes the health and safety guidelines developed by Environmental Business Consultants (EBC) for the planned Remedial Action at 1103-1107 DeKalb Avenue, Brooklyn, New York to protect on-site personnel, visitors, and the public from physical harm and exposure to hazardous materials or wastes during remedial 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 CHASP, including the attachments, addresses safety and health hazards related to excavation, loading and other soil disturbance activities and is based on the best information available. The CHASP may be revised by EBC at the request of the client and/or a regulatory agency 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 Training Requirements

Personnel entering the exclusion zone or decontamination zone are required to be certified in health and safety practices for hazardous waste site operations as specified in the Federal OSHA Regulations CFR 1910.120e (revised 3/6/90).

Paragraph (e - 3) of the above referenced regulations requires that all on-site management personnel directly responsible for or who supervise employees engaged in hazardous waste operations, must initially receive 8 hours of supervisor training related to managing hazardous waste work.

Paragraph (e - 8) of the above referenced regulations requires that workers and supervisors receive 8 hours of refresher training annually on the items specified in Paragraph (e-1) and/or (e-3).

Additionally all on-site personnel must receive adequate site-specific training in the form of an on-site Health and Safety briefing prior to participating in field work with emphasis on the following:

- Protection of the adjacent community from hazardous vapors and / or dust which may be released during intrusive activities.
- Identification of chemicals known or suspected to be present on-site and the health effects and hazards of those substances.
- The need for vigilance in personnel protection, and the importance of attention to proper use, fit and care of personnel protective equipment.
- Decontamination procedures.
- Site control including work zones, access and security.
- Hazards and protection against heat or cold.
- The proper observance of daily health and safety practices, such as entry and exit of work zones and site. Proper hygiene during lunch, break, etc.
- Emergency procedures to be followed in case of fire, explosion and sudden release of hazardous gases.

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Health and Safety meetings will be conducted on a daily basis and will cover protective clothing and other equipment to be used that day, potential and chemical and physical hazards, emergency procedures, and conditions and activities from the previous day.

1.2 Medical Monitoring Requirements

Field personnel and visitors entering the exclusion zone or decontamination zone must have completed appropriate medical monitoring required under OSHA 29 CFR 1910.120(f) if respirators or other breathing related PPE is needed. Medical monitoring enables a physician to monitor each employee's health, physical condition, and his fitness to wear respiratory protective equipment and carry out on-site tasks.

1.3 Site Safety Plan Acceptance, Acknowledgment and Amendments

The project superintendent and the site safety officer are responsible for informing personnel (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 Health and Safety Plan are:

Name	Title	Address	Contact Numbers
Ms. Kristen DiScenza	EBC – Project Manager	1808 Middle Country Rd Ridge, NY 11961	(631) 504-6000 (516) 652-8338
Ms. Chawinie Miller	Health & Safety Manager	1808 Middle Country Rd Ridge, NY 11961	(631) 504-6000
Mr. Kevin Waters	Site Safety Officer	1808 Middle Country Rd 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 CHASP. 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 CHASP 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 CHASP.

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.

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2.0 SITE BACKGROUND AND SCOPE OF WORK

The address for the subject property is 1103-1107 DeKalb Avenue, Brooklyn, New York 11211. The subject property is designated as Block 1600, Lots 1 and 28 by the New York City Department of Assessment. The subject property is located in the City of New York and Borough of Brooklyn (Kings County). The lot has 75 feet of frontage on DeKalb Avenue and 150 feet of frontage on Malcolm X Boulevard for a total area of 9,498 square feet (0.218 acres).

The Lot is currently developed with a one-story vacant service station building. The remainder of the Lot consists of a paved parking area, formerly used to store both derelict and functioning vehicles awaiting sale or repair.

The elevation of the property is approximately 58 feet above the National Geodetic Vertical Datum (NGVD) feet. based upon regional groundwater contour maps, and measurements made at the property, the depth to groundwater beneath the site is approximately 46 feet below existing grade and flows southwest.

2.1 Previous Investigations

2.1.1 July 2011 - September 2011 - Quarterly Monitoring Report (Tyree)

This report documents and summarizes the results of on-going monitoring at the Site which began in July 2000. According to the report there were six monitoring wells within the property boundaries and two monitoring wells in the adjacent sidewalk along Malcolm X Boulevard during the reporting period. The wells were sampled for STARs list volatile organic compounds (VOCs) by EPA method 8260. VOCs were reported above standards in 4 of the 7 wells with total VOCs ranging from 828 µg/L to 3,812 µg/L.

2.1.2 February 2013 - Limited Phase II Subsurface Investigation (EBC)

On February 12, 2013, a limited Phase II investigation began at the subject site as part of the due diligence to complete the purchase of the property. Although eight borings and groundwater samples were planned, only four borings were installed due to accessibility issues and scheduling constraints. A total of four soil samples and six groundwater samples including three from the borings and three from existing monitoring wells were collected. Soil samples were submitted for analysis of VOCs, PCBs and metals. Groundwater samples were submitted for analysis of VOCs only.

The results of this limited investigation showed elevated petroleum VOC levels in two of the four soil samples with total VOCs ranging from 184,000 µg/kg to 705,600 µg/kg. Xylenes, naphthalene, and n-propylbenzene were reported above unrestricted soil cleanup objectives (SCOs) while 1,2,4-trimthylbenzene, 1,3,5-trimethylbenzene and ethylbenzene were all reported above restricted residential SCOs. In addition to the VOCs, chromium was also reported in two soil samples above unrestricted SCOs.

Petroleum VOCs were reported above standards in four of six groundwater samples ranging from 605 µg/L to 7,993 µg/L. Chlorinated VOCs were reported above standards in five of the six samples and ranged from 22 µg/L to 34 µg/L

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2.2 Redevelopment Plans

The development project consists of redeveloping the property with a new 8-story mixed use building. The building will have 7,627 sq. ft. cellar which will be utilized for storage, mechanical rooms, and retail/commercial space. The cellar will have both stair and elevator access, and will require excavation of 80% of the property to a depth of approximately 11 feet below grade. The first floor will contain retail/commercial space as well as the residential lobby and floors 2 through 8 will contain residential apartments. The remaining portions of the property will be capped and utilized for outdoor recreation.

2.3 Description of Remedial Action

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

1. Removal of underground storage tanks
2. Excavation of soil/fill exceeding Track 2 restricted residential SCOs as listed in Table 1 to a depth as great as 15 feet below grade;
3. Excavation of VOC and metal hotspot areas to depths ranging from 32 to 37ft below grade;
4. Treatment of residual groundwater contamination via injection of chemical oxidants;
5. Screening for indications of contamination (by visual means, odor, and monitoring with PID) of all excavated soil during any intrusive Site work;
6. Collection and analysis of end-point soil samples and post-remedial groundwater samples to evaluate the performance of the remedy with respect to attainment of unrestricted SCOs and groundwater standards;
7. 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;
8. Import of materials to be used for backfill and cover in compliance with: (1) chemical limits and other specifications included in **Table 1**, (2) all Federal, State and local rules and regulations for handling and transport of material.
9. Installation of a site cover system consisting of the concrete building slab and paved outdoor recreation area.
10. Implementation of a Site Management Plan (SMP) for long term maintenance of the Engineering Controls.
11. An Environmental Easement will be filed against the Site to ensure implementation of the SMP.

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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.

3.0 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

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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.

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

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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 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

"Urban fill" materials, present throughout the New York City area typically contain elevated levels of semi-volatile organic compounds and metals. These "contaminants" are not related to a chemical release occurring on the site, but are inherent in the reworked fill material in the area which contains ash and bits of tar and asphalt. Considering the previous sampling results and the past and present use of the site, the following compounds are considered for the site as potential contaminants: volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), pesticides, polychlorinated biphenyl's (PCBs), and heavy metals such as arsenic, chromium, lead and mercury.

Based on the findings of the Remedial Investigation and the inherent properties of urban fill, the following compounds are considered for the site as potential contaminants: volatile organic compounds (VOCs), semi-volatile organic compounds (SVCOs) and heavy metals.

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

1,2,4-Trimethylbenzene	1,3,5-Trimethylbenzene	Benzene	Ethylbenzene
m&p xylenes	naphthalene	o-xylenes	n-propylbenzene
Cis-1,2-Dichloroethene	Isopropylbenzene	trichloroethene	
n-Butylbenzene	tetrachloroethene	Sec-Butylbenezene	
Toluene			

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

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Benz(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene
Chrysene	Dibenzo(a,h)anthracene	Indeno(1,2,3-cd)pyrene
Naphthalene	Benzo(b)fluoranthene	

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

Arsenic	Chromium	Copper	Lead	Mercury
Zinc				

The primary routes of exposure to these contaminants are inhalation, ingestion and absorption.

Appendix C includes information sheets for 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 $\mu g/m^3$ 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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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 uniform, 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 the concentrations of measured total organic vapors in the breathing zone exceed background concentrations (using a portable OVA, or equivalent), but are less 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.

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- chemical resistant coveralls;
- steel-toe and steel-shank workboots;
- chemical resistant overboots or disposable boot covers;
- disposable inner gloves;
- disposable outer gloves;
- hard hat; and,
- ankles/wrists taped.

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.

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 drilling locations, active venting, etc.) will be implemented before requiring the use of respiratory protection.

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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

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1-5 ppm Above Background, Sustained Reading	1-10%	• Continue excavating • Go to Level C protection or employ 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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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 SVOC hotspot area. 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 the SVOC 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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Phone 631.504.6000
Fax 631.924.2870

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
NYPD	911
NYC Fire Department	911
Woodhull Medical Center	(718) 963-8000
NYSDEC Spills Hotline	1-800-457-7362
NYSDEC Project Manager	(718) 482-4096
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;

- 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 — Ms. Kristen DiScenza (631) 504-6000
- Construction Superintendent — To be added
- 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.
- 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.

APPENDIX A

SITE SAFETY ACKNOWLEDGEMENT FORM

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

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.
10.	20.

APPENDIX B

SITE SAFETY PLAN AMENDMENTS

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

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**

_____ _____

Site Safety Officer (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

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 one or two glasses of water to drink. Rest.

SPILLAGE DISPOSAL	STORAGE	PACKAGING & LABELLING
Ventilation. Personal protection: filter respirator for organic gases and vapours adapted to the airborne concentration of the substance. 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.	Separated from metals (see Chemical Dangers), strong bases, food and feedstuffs . Dry. Keep in the dark. Ventilation along the floor. Store in an area without drain or sewer access.	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

ICSC: 0081 OSHA PELs, NIOSH RELs and NIOSH IDLH values.

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 2007).
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: 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.

Transport Emergency Card: TEC (R)-61S1710

NFPA Code: H2; F1; R0;
Card has been partially updated in October 2004: see Occupational Exposure Limits, EU Classification, Emergency Response.
Card has been partially updated in April 2010: see Occupational Exposure Limits, Ingestion First Aid, Storage.

ADDITIONAL INFORMATION

ICSC: 0081 **TRICHLOROETHYLENE**

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

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

IMPORTANT LEGAL NOTICE:

	modifications made to produce the U.S. version is inclusion of 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.

NOTES

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

Material Safety Data Sheet

Normal-Butylbenzene, 99+%

ACC# 55434

Section 1 - Chemical Product and Company Identification

MSDS Name: Normal-Butylbenzene, 99+%
Catalog Numbers: AC107850000, AC107850050, AC107850250, AC107850500, AC107851000, AC107852500 AC107852500
Synonyms: 1-Phenylbutane
Company Identification:

Acros Organics N.V.
One Reagent Lane
Fair Lawn, NJ 07410

For information in North America, call: 800-ACROS-01
For emergencies in the US, call CHEMTREC: 800-424-9300

Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name	Percent	EINECS/ELINCS
104-51-8	n-Butylbenzene	>99	203-209-7

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Appearance: clear, colorless liquid. Flash Point: 59 deg C.
Warning! Flammable liquid and vapor. May cause eye and skin irritation. May cause respiratory and digestive tract irritation. The toxicological properties of this material have not been fully investigated.
Target Organs: Liver, nervous system.

Potential Health Effects

Eye: May cause eye irritation. The toxicological properties of this material have not been fully investigated.
Skin: May cause skin irritation. The toxicological properties of this material have not been fully investigated.
Ingestion: May cause gastrointestinal irritation with nausea, vomiting and diarrhea. The toxicological properties of this substance have not been fully investigated.
Inhalation: May cause respiratory tract irritation. The toxicological properties of this substance have not been fully investigated. Vapors may cause dizziness or suffocation.
Chronic: No information found.

Section 4 - First Aid Measures

Eyes: Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid immediately.
Skin: Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse.
Ingestion: Never give anything by mouth to an unconscious person. Get medical aid immediately. Do NOT induce vomiting. If conscious and alert, rinse mouth and drink 2-4 cupfuls of milk or water.
Inhalation: Remove from exposure and move to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.
Notes to Physician: Treat symptomatically and supportively.

Section 5 - Fire Fighting Measures

General Information: As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. Vapors may form an explosive mixture with air. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion. Will burn if involved in a fire. Use water spray to keep fire-exposed containers cool. Containers may explode in the heat of a fire. Flammable liquid and vapor. Vapors may be heavier than air. They can spread along the ground and collect in low or confined areas.
Extinguishing Media: For small fires, use dry chemical, carbon dioxide, water spray or alcohol-resistant foam. For large fires, use water spray, fog, or alcohol-resistant foam. Use water spray to cool fire-exposed containers. Water may be ineffective. Use agent most appropriate to extinguish fire. Do NOT use straight streams of water.
Flash Point: 59 deg C (138.20 deg F)
Autoignition Temperature: 412 deg C (773.60 deg F)
Explosion Limits, Lower:.80 vol %
Upper: 5.80 vol %
NFPA Rating: (estimated) Health: 1; Flammability: 2; Instability: 0

Section 6 - Accidental Release Measures

General Information: Use proper personal protective equipment as indicated in Section 8.
Spills/Leaks: Absorb spill with inert material (e.g. vermiculite, sand or earth), then place in suitable container. Clean up spills immediately, observing precautions in the Protective Equipment section. Remove all sources of ignition. Use a spark-proof tool. Provide ventilation. A vapor suppressing foam may be used to reduce vapors.

Section 7 - Handling and Storage

Handling: Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Use with adequate ventilation. Ground and bond containers when transferring material. Use spark-proof tools and explosion proof equipment. Avoid contact with eyes, skin, and clothing. Empty containers retain product residue, (liquid and/or vapor), and can be dangerous. Keep container tightly closed. Keep away from heat, sparks and flame. Avoid ingestion and inhalation. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose empty containers to heat, sparks or open flames.
Storage: Keep away from heat, sparks, and flame. Keep away from sources of ignition. Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances. Flammables-area.

Section 8 - Exposure Controls, Personal Protection

Engineering Controls: Use adequate ventilation to keep airborne concentrations low. Use process enclosure, local exhaust ventilation, or other engineering controls to control airborne levels.
Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
n-Butylbenzene	none listed	none listed	none listed

OSHA Vacated PELs: n-Butylbenzene: No OSHA Vacated PELs are listed for this chemical.
Personal Protective Equipment
Eyes: Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.
Skin: Wear appropriate protective gloves to prevent skin exposure.
Clothing: Wear appropriate protective clothing to prevent skin exposure.
Respirators: Wear a NIOSH/MSHA or European Standard EN 149 approved full-facepiece airline respirator in the positive pressure mode with emergency escape provisions. Follow the OSHA respirator regulations found in 29

CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Section 9 - Physical and Chemical Properties

Physical State: Liquid
Appearance: clear, colorless
Odor: None reported.
pH: Not available.
Vapor Pressure: 1.33 hPa @ 23 C
Vapor Density: 4.6
Evaporation Rate: Not available.
Viscosity: Not available.
Boiling Point: 183 deg C @ 760.00mm Hg
Freezing/Melting Point:-88 deg C
Decomposition Temperature:> 183 deg C
Solubility: insoluble
Specific Gravity/Density:.8600g/cm3
Molecular Formula:C10H14
Molecular Weight:134.22

Section 10 - Stability and Reactivity

Chemical Stability: Stable under normal temperatures and pressures.
Conditions to Avoid: Incompatible materials, ignition sources, excess heat, strong oxidants.
Incompatibilities with Other Materials: Oxidizing agents.
Hazardous Decomposition Products: Carbon monoxide, irritating and toxic fumes and gases, carbon dioxide.
Hazardous Polymerization: Has not been reported.

Section 11 - Toxicological Information

RTECS#:
CAS# 104-51-8: CY9070000
LD50/LC50:
Not available.

Carcinogenicity:
CAS# 104-51-8: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

Epidemiology: No information available.
Teratogenicity: No information available.
Reproductive Effects: No information available.
Mutagenicity: No information available.
Neurotoxicity: No information available.
Other Studies:

Section 12 - Ecological Information

Ecotoxicity: No data available. No information available.
Environmental: Rapidly volatilizes into the atmosphere where it is photochemically degraded by hydroxyl radicals.

Physical: No information available.
Other: No information available.

Section 13 - Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.
RCRA P-Series: None listed.
RCRA U-Series: None listed.

Section 14 - Transport Information

	US DOT	Canada TDG
Shipping Name:	BUTYL BENZENES	No information available.
Hazard Class:	3	
UN Number:	UN2709	
Packing Group:	III	

Section 15 - Regulatory Information

US FEDERAL

TSCA
CAS# 104-51-8 is listed on the TSCA inventory.
Health & Safety Reporting List
CAS# 104-51-8: Effective 6/1/87, Sunset 12/19/95
Chemical Test Rules
None of the chemicals in this product are under a Chemical Test Rule.
Section 12b
None of the chemicals are listed under TSCA Section 12b.
TSCA Significant New Use Rule
None of the chemicals in this material have a SNUR under TSCA.
CERCLA Hazardous Substances and corresponding RQs
None of the chemicals in this material have an RQ.
SARA Section 302 Extremely Hazardous Substances
None of the chemicals in this product have a TPQ.
SARA Codes
CAS # 104-51-8: immediate, fire.
Section 313 No chemicals are reportable under Section 313.
Clean Air Act:
This material does not contain any hazardous air pollutants.
This material does not contain any Class 1 Ozone depletors.
This material does not contain any Class 2 Ozone depletors.
Clean Water Act:
None of the chemicals in this product are listed as Hazardous Substances under the CWA.
None of the chemicals in this product are listed as Priority Pollutants under the CWA.
None of the chemicals in this product are listed as Toxic Pollutants under the CWA.
OSHA:
None of the chemicals in this product are considered highly hazardous by OSHA.
STATE
CAS# 104-51-8 can be found on the following state right to know lists: New Jersey, Pennsylvania, Massachusetts.

California Prop 65

California No Significant Risk Level: None of the chemicals in this product are listed.

European/International Regulations

European Labeling in Accordance with EC Directives

Hazard Symbols:

Not available.

Risk Phrases:

R 10 Flammable.

Safety Phrases:

S 16 Keep away from sources of ignition - No smoking.
S 24/25 Avoid contact with skin and eyes.
S 33 Take precautionary measures against static discharges.
S 37 Wear suitable gloves.
S 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
S 9 Keep container in a well-ventilated place.
S 28A After contact with skin, wash immediately with plenty of water
.

WGK (Water Danger/Protection)

CAS# 104-51-8: 1

Canada - DSL/NDSL

CAS# 104-51-8 is listed on Canada's DSL List.

Canada - WHMIS

This product has a WHMIS classification of B3, D2B.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

Canadian Ingredient Disclosure List

Section 16 - Additional Information

MSDS Creation Date: 4/15/1998
Revision #4 Date: 3/16/2007

ADDITIONAL INFORMATION	

ICSC: 0896 **HEXACHLOROBUTADIENE**

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

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

International Chemical Safety Cards

ETHYLBENZENE

ICSC: 0268

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

BENZENE

ICSC: 0015

Cyclohexatriene
Benzol
C_6H_6
Molecular mass: 78.1

ICSC # 0015
CAS # 71-43-2
RTECS # CY1400000
UN # 1114
EC # 601-020-00-8
May 06, 2003 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. Risk of fire and explosion: see Chemical Dangers.	Closed system, ventilation, explosion-proof electrical equipment and lighting. Do NOT use compressed air for filling, discharging, or handling. Use non-sparking handtools. Prevent build-up of electrostatic charges (e.g., by grounding).	In case of fire: keep drums, etc., cool by spraying with water.
EXPOSURE		AVOID ALL CONTACT!	
•INHALATION	Dizziness. Drowsiness. Headache. Nausea. Shortness of breath. Convulsions. Unconsciousness.	Ventilation, local exhaust, or breathing protection.	Fresh air, rest. Refer for medical attention.
•SKIN	MAY BE ABSORBED! Dry skin. Redness. Pain. (Further see Inhalation).	Protective gloves. Protective clothing.	Remove contaminated clothes. Rinse skin with plenty of water or shower. Refer for medical attention.
•EYES	Redness. Pain.	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	Abdominal pain. Sore throat. Vomiting. (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
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 wash away into sewer. Do NOT let this chemical enter the environment. Personal protection: complete protective clothing including self-contained breathing apparatus.	Fireproof. Separated from food and feedstuffs oxidants halogens	Do not transport with food and feedstuffs. Note: E F symbol T symbol R: 45-46-11-36/38-48/23/24/25-65 S: 53-45 UN Hazard Class: 3 UN Packing Group: II

SEE IMPORTANT INFORMATION ON BACK

ICSC: 0015

International Chemical Safety Cards

BENZENE

ICSC: 0015

IMPORTANT DATA

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

CHEMICAL DANGERS:
Reacts violently with oxidants, nitric acid, sulfuric acid and halogens causing fire and explosion hazard. Attacks plastic and rubber.

OCCUPATIONAL EXPOSURE LIMITS:
TLV: 0.5 ppm as TWA 2.5 ppm as STEL (skin) A1 BEI (ACGIH 2004).
MAK: H
Carcinogen category: 1 Germ cell mutagen group: 3A (DFG 2004).
OSHA PEL: 1910.1028 TWA 1 ppm ST 5 ppm See Appendix F
NIOSH REL: Ca TWA 0.1 ppm ST 1 ppm See Appendix A
NIOSH IDLH: Ca 500 ppm See: 71432

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 very quickly 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 , resulting in lowering of consciousness Exposure far above the occupational exposure limit value may result in unconsciousness death

EFFECTS OF LONG-TERM OR REPEATED EXPOSURE:
The liquid defats the skin. The substance may have effects on the bone marrow immune system , resulting in a decrease of blood cells. This substance is carcinogenic to humans.

PHYSICAL PROPERTIES

Boiling point: 80°C
Melting point: 6°C
Relative density (water = 1): 0.88
Solubility in water, g/100 ml at 25°C: 0.18
Vapour pressure, kPa at 20°C: 10
Relative vapour density (air = 1): 2.7
Relative density of the vapour/air-mixture at 20°C (air = 1): 1.2
Flash point:
-11°C c.c.
Auto-ignition temperature: 498°C
Explosive limits, vol% in air: 1.2-8.0
Octanol/water partition coefficient as log Pow: 2.13

ENVIRONMENTAL DATA

The substance is very toxic to aquatic organisms.

NOTES

Use of alcoholic beverages enhances the harmful effect. Depending on the degree of exposure, periodic medical examination is indicated. The odour warning when the exposure limit value is exceeded is insufficient.

Transport Emergency Card: TEC (R)-30S1114 / 30GF1-II
NFPA Code: H2; F3; R0

ADDITIONAL INFORMATION

ICSC: 0015 **BENZENE**

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

ICSC: 1155

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

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

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

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

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

p-XYLENE

ICSC: 0086

para-Xylene
1,4-Dimethylbenzene
p-Xylol
$C_6H_4(CH_3)_2$ / C_8H_{10}
Molecular mass: 106.2

ICSC # 0086
CAS # 106-42-3
RTECS # ZE2625000
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! AVOID EXPOSURE OF (PREGNANT) WOMEN!	
•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: 0086

International Chemical Safety Cards

p-XYLENE

ICSC: 0086

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: 138°C Melting point: 13°C Relative density (water = 1): 0.86 Solubility in water: none 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: 27°C c.c. Auto-ignition temperature: 528°C Explosive limits, vol% in air: 1.1-7.0 Octanol/water partition coefficient as log Pow: 3.15
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 0085 m-Xylene.

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

ADDITIONAL INFORMATION

ICSC: 0086 **p-XYLENE**

International Chemical Safety Cards

MERCURY

ICSC: 0056

Quicksilver
Liquid silver
Hg
Atomic mass: 200.6

ICSC # 0056
CAS # 7439-97-6
RTECS # OV4550000
UN # 2809
EC # 080-001-00-0
April 22, 2004 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	Risk of fire and explosion.		In case of fire: keep drums, etc., cool by spraying with water.
EXPOSURE		STRICT HYGIENE! AVOID EXPOSURE OF (PREGNANT) WOMEN! AVOID EXPOSURE OF ADOLESCENTS AND CHILDREN!	IN ALL CASES CONSULT A DOCTOR!
•INHALATION	Abdominal pain. Cough. Diarrhoea. Shortness of breath. Vomiting. Fever or elevated body temperature.	Local exhaust or breathing protection.	Fresh air, rest. Artificial respiration if indicated. Refer for medical attention.
•SKIN	MAY BE ABSORBED! Redness.	Protective gloves. Protective clothing.	Remove contaminated clothes. Rinse and then wash skin with water and soap. Refer for medical attention.
•EYES		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.	Refer for medical attention.

SPILLAGE DISPOSAL	STORAGE	PACKAGING & LABELLING
Evacuate danger area in case of a large spill! Consult an expert! Ventilation. Collect leaking and spilled liquid in sealable non-metallic containers as far as possible. Do NOT wash away into sewer. Do NOT let this chemical enter the environment. Chemical protection suit including self-contained breathing apparatus.	Provision to contain effluent from fire extinguishing. Separated from food and feedstuffs Well closed.	Special material. Do not transport with food and feedstuffs. T symbol N symbol R: 23-33-50/53 S: 1/2-7-45-60-61 UN Hazard Class: 8 UN Packing Group: III

SEE IMPORTANT INFORMATION ON BACK

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

MERCURY

ICSC: 0056

IMPORTANT DATA

PHYSICAL STATE; APPEARANCE:
ODOURLESS, HEAVY AND MOBILE SILVERY LIQUID METAL.

PHYSICAL DANGERS:

CHEMICAL DANGERS:
Upon heating, toxic fumes are formed. Reacts violently with ammonia and halogens causing fire and explosion hazard. Attacks aluminium and many other metals forming amalgams.

OCCUPATIONAL EXPOSURE LIMITS:
TLV: 0.025 mg/m³ as TWA (skin) A4 BEI issued (ACGIH 2004).
MAK: 0.1 mg/m³ Sh
Peak limitation category: II(8) Carcinogen category: 3B (DFG 2003).
OSHA PEL†: C 0.1 mg/m^3
NIOSH REL: Hg Vapor: TWA 0.05 mg/m^3 skin
Other: C 0.1 mg/m^3 skin
NIOSH IDLH: 10 mg/m^3 (as Hg) See: 7439976

ROUTES OF EXPOSURE:
The substance can be absorbed into the body by inhalation of its vapour and through the skin , also as a vapour!

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

EFFECTS OF SHORT-TERM EXPOSURE:
The substance is irritating to the skin. Inhalation of the vapours may cause pneumonitis. The substance may cause effects on the central nervous systemandkidneys. The effects may be delayed. Medical observation is indicated.

EFFECTS OF LONG-TERM OR REPEATED EXPOSURE:
The substance may have effects on the central nervous system kidneys , resulting in irritability, emotional instability, tremor, mental and memory disturbances, speech disorders. Danger of cumulative effects. Animal tests show that this substance possibly causes toxic effects upon human reproduction.

PHYSICAL PROPERTIES

Boiling point: 357°C
Melting point: -39°C
Relative density (water = 1): 13.5
Solubility in water:
none

Vapour pressure, Pa at 20°C: 0.26
Relative vapour density (air = 1): 6.93
Relative density of the vapour/air-mixture at 20°C (air = 1): 1.009

ENVIRONMENTAL DATA

The substance is very toxic to aquatic organisms. In the food chain important to humans, bioaccumulation takes place, specifically in fish.

N O T E S

Depending on the degree of exposure, periodic medical examination is indicated. No odour warning if toxic concentrations are present. Do NOT take working clothes home.

Transport Emergency Card: TEC (R)-80GC9-II+III

ADDITIONAL INFORMATION

ICSC: 0056 **MERCURY**

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**

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.)? _____

_____

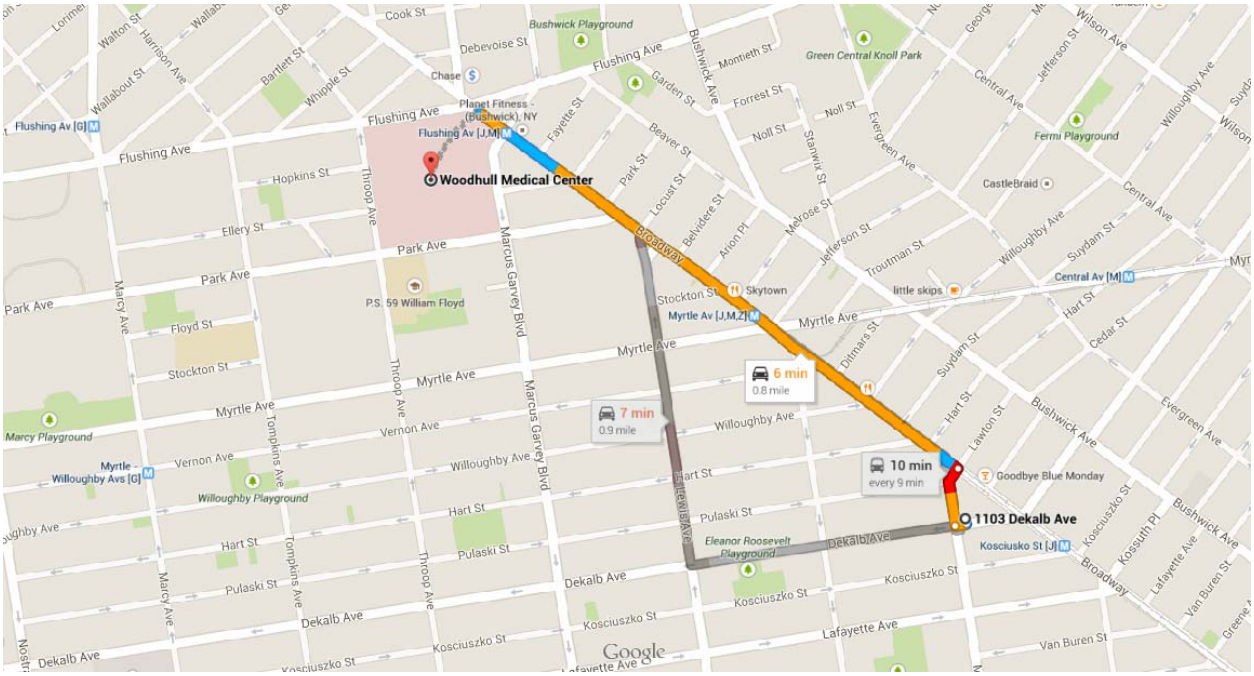
(If not, it is the EMPLOYEE'S sole responsibility to process his/her claim through his/her Health and Welfare Fund.)

INDICATE STREET NAMES, DESCRIPTION OF VEHICLES, AND NORTH ARROW

HOSPITAL INFORMATION AND MAP

The hospital nearest the site is:

WOODHUL MEDICAL CENTER
760 Broadway, Brooklyn, New York 11206
718-963-8000
0.8 Miles – About 3 Minutes



1103 Dekalb Ave
Brooklyn, NY 11221

1. Head west on Dekalb Ave toward Malcolm X Blvd

69 ft

2. Take the 1st right onto Malcolm X Blvd

371 ft

3. Turn left onto Broadway

Destination will be on the left

0.7 mi

Woodhull Medical Center
760 Broadway, Brooklyn, NY 11206

ATTACHMENT C
Quality Assurance Project Plan

QUALITY ASSURANCE PROJECT PLAN
Former Getty Service Station
1103-1107 DeKalb Avenue, Brooklyn, NY

Prepared on behalf of:

1107D LLC
45 North Station Plaza, Suite 315
Great Neck, NY 11021

Prepared by:

EBC
Environmental Business Consultants
1808 Middle Country Road
Ridge, NY 11961

TABLE OF CONTENTS

QUALITY ASSURANCE PROJECT PLAN
Former Getty Service Station
1103-1107 DeKalb Avenue, Brooklyn, NY

TABLES

1.0 INTRODUCTION

This Quality Assurance Project Plan (QAPP) has been prepared in accordance with DER-10 to detail procedures to be followed during the course of the sampling and analytical portion of the project, as required by the approved work plan.

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 (QA/QC) for the project. The Project Director will be responsible for overseeing all technical and administrative aspects of the project and for directing QA/QC activities. Mr. Kevin Brussee will serve as the Quality Assurance Officer (QAO) and in this role may conduct:

- conduct periodic field and sampling audits;
- interface with the analytical laboratory to resolve problems; and
- interface with the data validator and/or the preparer of the DUSR to resolve problems.

Kristen DiScenza will serve as the Project Manager and will be responsible for implementation of the Remedial Action Workplan and coordination with field sampling crews and subcontractors. Reporting directly to the Project Manager will be the Field Operations Officer, Kevin Waters; who will serve as the on-Site qualified environmental professional who will record observations, direct the drilling crew and be responsible for the collection and handling of all samples.

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, sample collection and handling	K. Waters, EBC
Project Manager	Implementation of the RAWP.	Kristen DiScenza, EBC
Laboratory Analysis	Analysis of soil samples by NYSDEC ASP methods Laboratory	NYSDOH-Certified Laboratory
Data review	Review for completeness and compliance	3rd party validation

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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, certified in the appropriate categories. Data generated from the laboratory will be used to evaluate contaminants such as metals and semi-volatile organic compounds (SVOCs) in both historic fills and hot-spot areas, chlorinated volatile organic compounds (VOCs) in soil, soil gas and groundwater and SVOCs in groundwater. 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, 07/2005). 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 NYSDEC ASP 07/2005.

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.

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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 for each 12 hr period during the analysis of samples for volatiles. An acceptable method blank will contain less than two (2) 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 NYSDEC 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:

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SSR = spike sample results
SR = sample results
SA = spike added from spiking mix

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 Remedial Investigation 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).

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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.

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

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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 8260C, SVOCs in soil by USEPA Method 8270D, Target Analyte Metals 6010C in soil, pesticides and PCBs by USEPA Method 8081B/8082A 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).

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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.

Sample analysis will be provided by a New York State certified environmental laboratory. Laboratory reports will include ASP category B deliverables for use in the preparation of a data usability summary report (DUSR). All results will be provided in accordance with the NYSDEC Environmental Information Management System (EIMS) electronic data deliverable (EDD) format. 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. Note that waste characterization samples (if collected) will be in results only format and will not be evaluated in the DUSR.

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 (7/2005), Category B data deliverable requirements as applicable to the method utilized. All results will be provided in accordance with the NYSDEC Environmental Information Management System (EIMS) electronic data deliverable (EDD) format. Note that waste characterization samples will be in results only format and will not be evaluated in the DUSR.

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
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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 Bottom	11	1 per 900 square feet	Endpoint verification	VOCs / SVOCs by 8260C / 8270 (PAHs), arsenic and lead	1 per day	1 per 20 samples	1 per 20 samples	1 per trip
Soil	VOC/Metal Contaminated Soil Hotspot Excavation Bottom	4	1 per 900 square feet	Endpoint Verification of VOC/Metal Contaminated Soil Hot Spot	VOCs / SVOCs by 8260C / 8270 (PAHs), arsenic and lead	1 per day	1 per 20 samples	1 per 20 samples	1 per trip
Soil	VOC/Metal Contaminated Soil Hotspot Excavation Sidewalls	16	1 per 30 linear feet	Endpoint Verification of VOC/Metal Contaminated Soil Hot Spot	VOCs / SVOCs by 8260C / 8270 (PAHs), arsenic and lead	1 per day	1 per 20 samples	1 per 20 samples	1 per trip
Groundwater	Groundwater Monitoring Wells	3	1 per well	Groundwater Treatment Performance	VOCs by 8260C	1 per day	1 per 20 samples	1 per 20 samples	1 per trip
Soil	Excavated VOC Contaminated Soil	1	1 per 800 cy	Waste Characterization	VOCs EPA Method 8260C, pesticides and PCBs by EPA 8081B/8082A, other as per disposal facility	0	0	0	0
Soil	Excavated Historic Fill Material	4	1 per 800 cy	Waste Characterization	VOCs EPA Method 8260C, pesticides and PCBs by EPA 8081B/8082A, other as per disposal facility	0	0	0	0
Soil	Excavated Native Material	1	1 per 800 cy	Waste Characterization	VOCs EPA Method 8260C, pesticides and PCBs by EPA 8081B/8082A, other as per disposal facility	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 8260C	Compound specific (1-5 ug/kg)	14 days
			SVOCs	(1) 8 oz jar	Cool to 4^{o} C	EPA Method 8260D	Compound specific (1-5 ug/kg)	14 day ext/40 days
			Pest/PCBs	from 8oz jar above	Cool to 4^{o} C	EPA Method 8081B/8082A	Compound specific (1-5 ug/kg)	14 day ext/40 days
			Metals	from above	Cool to 4^{o} C	TAL Metals 6010C	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 D
Community Air Monitoring Plan

COMMUNITY AIR MONITORING PLAN

FORMER GETTY SERVICE STATION
1103-1107 DEKALB AVENUE
BROOKLYN, NY

JULY - 2014

FORMER GETTY SERVICE STATION

COMMUNITY AIR MONITORING PLAN
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APPENDICES

1.0 INTRODUCTION

This Community Air Monitoring Plan (CAMP) has been prepared for the excavation and building activities to be performed under a Remedial Action Work Plan (RAWP) at the Former Getty Service Station. The CAMP provides measures for protection for the downwind community (i.e., off-site receptors including residences, businesses, and on-site wor
kers not directly involved in the investigation activities) from potential airborne contaminant releases resulting from investigative activities at the site.

Compliance with this CAMP is required during all activities associated with drilling and sampling activities that have the potential to generate airborne particulate matter and volatile organic compounds (VOCs). These activities include drilling and soil and groundwater sampling. This CAMP has been prepared to ensure that investigation activities do not adversely affect passersby, residents, or workers in the area immediately surrounding the Site and to preclude or minimize airborne migration of investigation-related contaminants to off-site areas.

1.1 Regulatory Requirements

This CAMP was established in accordance with the following requirements:

- New York State Department of Health's (NYSDOH) Generic Community Air Monitoring Plan as presented in DER-10 Technical Guidance for Site Investigation and Remediation (NYSDEC May 3, 2010). This guidance specifies that a community air-monitoring program shall be implemented to protect the surrounding community and to confirm that the work does not spread contamination off-site through the air;

- New York State Department of Environmental Conservation (NYSDEC) Technical and Guidance Memorandum (TAGM) #4031 - Fugitive Dust Suppression and Particulate Monitoring Program at Inactive Hazardous Waste Sites: This guidance provides a basis for developing and implementing a fugitive dust suppression and particulate monitoring program as an element of a hazardous waste site's health and safety program.

2.0 AIR MONITORING

VOCs are the constituents of concern at the Site. The appropriate method to monitor air for these constituents during remediation activities is through real-time VOC and air particulate (dust) monitoring.

2.1 Meteorological Data

At a minimum, wind direction will be evaluated at the start of each workday, noon of each workday, and the end of each workday. These readings will be utilized to position the monitoring equipment in appropriate upwind and downwind locations.

2.2 Community Air Monitoring Requirements

To establish ambient air background concentrations, air will be monitored at several locations around the site perimeter before activities begin. These points will be monitored periodically in series during the site work. When the drilling area is within 20 feet of potentially exposed populations or occupied structures, the perimeter monitoring points will be located to represent the nearest potentially exposed individuals at the downwind location.

Fugitive respirable dust will be monitored using a MiniRam Model PDM-3 aerosol monitor (or equivalent). Air will be monitored for VOCs with a portable Ionscience 3000 photoionization detector (PID), or equivalent. All air monitoring data will be documented in a site log book by the designated site safety officer. The site safety officer or delegate must ensure that air monitoring instruments are calibrated and maintained in accordance with manufacturer's specifications. All instruments will be zeroed daily and checked for accuracy. A daily log will be kept. If additional monitoring is required, the protocols will be developed and appended to this plan

3.0 VOC MONITORING, RESPONSE LEVELS, AND ACTIONS

Volatile organic compounds (VOCs) will be monitored at the downwind perimeter of the immediate work area (i.e., the exclusion zone) on a continuous basis or as otherwise specified. Upwind concentrations should be measured at the start of each workday and periodically thereafter to establish background conditions. The monitoring work should be performed using equipment appropriate to measure the types of contaminants known or suspected to be present.

The equipment should be calibrated at least daily for the contaminant(s) of concern or for an appropriate surrogate. The equipment should be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below.

- If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 parts per million (ppm) above background for the 15-minute average, work activities must be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities can resume with continued monitoring.

- If total organic vapor levels at the downwind perimeter of the work area or exclusion zone persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities must be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities can resume provided that the total organic vapor level 200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less - but in no case less than 20 feet, is below 5 ppm over background for the 15-minute average.

- If the organic vapor level is above 25 ppm at the perimeter of the work area, activities must be shutdown. All 15-minute readings must be recorded and be available for State (DEC and DOH) personnel to review. Instantaneous readings, if any, used for decision purposes should also be recorded.

All readings will be recorded and made available for NYSDEC and NYSDOH personnel to review. If an exceedance of the Action Limits occurs, an Action Limit Report, as shown in Appendix A, will be completed.

3.1 Potential Corrective Measures and VOC Suppression Techniques

If the 15-minute integrated VOC level at the downwind location persists at a concentration that exceeds the upwind level by more than 5 ppm but less than 25 ppm during remediation activities, then vapor suppression techniques will be employed. The following techniques, or others, may be employed to mitigate the generation and migration of fugitive organic vapors:

- Collection of purge water in covered containers;
- storage of excess sample and drill cuttings in drums or covering with plastic

4.0 PARTICULATE MONITORING

Air monitoring for particulates (i.e., dust) will be performed continuously during drilling activities using both air monitoring equipment and visual observation at upwind and downwind locations. Monitoring equipment capable of measuring particulate matter smaller than 10 microns (PM_{10}) and capable of integrating (averaging) over periods of 15 minutes or less will be set up at upwind (i.e., background) and downwind locations, at heights approximately four to five feet above land surface (i.e., the breathing zone). Monitoring equipment will be MIE Data Ram monitors, or equivalent. The audible alarm on the particulate monitoring device will be set at 90 micrograms per cubic meter ($\mu g/m^3$). This setting will allow proactive evaluation of worksite conditions prior to reaching the action level of 100 $\mu g/m^3$ above background. The monitors will be calibrated at least once per day prior to work activities and recalibrated as needed thereafter. In addition, fugitive dust migration will be visually assessed during all intrusive work activities.

The following summarizes particulate action levels and the appropriate responses:

- If the downwind PM-10 particulate level is 100 $\mu g/m^3$ greater than background (upwind perimeter) for the 15-minute period, or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 $\mu g/m^3$ above the upwind level and provided that no visible dust is migrating from the work area.

- If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 $\mu g/m^3$ above the upwind level, work must be stopped and an evaluation of activities initiated. Work can resume provided that dust suppression measures (as described in Section 2.3.1 below) and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 $\mu g/m^3$ of the upwind level and in preventing visible dust migration.

All readings will be recorded and be available for NYSDEC and NYSDOH personnel to review. If an exceedance of the Action Limits occurs, an Action Limit Report as shown in **Appendix A** will be completed.

4.1 Potential Particulate Suppression Techniques

If the integrated particulate level at the downwind location exceeds the upwind level by more than 100 $\mu g/m^3$ at any time during drilling activities, then dust suppression techniques will be employed. The following techniques, or others, may be employed to mitigate the generation and migration of fugitive dusts:

- Placement of drill cuttings in drums or covering stockpiles with plastic;
- Misting of the drilling area with a fine water spray from a hand-held spray bottle

Work may continue with dust suppression techniques provided that downwind PM_{10} levels are not more than 150 $\mu g/m^3$ greater than the upwind levels.

There may also be situations where the dust is generated by drilling activities and migrates to downwind locations, but is not detected by the monitoring equipment at or above the action level. Therefore, if dust is observed leaving the working area, dust suppression techniques such as those listed above will be employed.

If dust suppression techniques do not lower particulates to below 150 $\mu g/m^3$, or visible dust persists, work will be suspended until appropriate corrective measures are identified and implemented to remedy the situation.

All air monitoring readings will be recorded in the field logbook and will be available for the NYSDEC and NYSDOH personnel to review.

5.0 DATA QUALITY ASSURANCE

5.1 Calibration

Instrument calibration shall be documented on instrument calibration and maintenance sheets or in the designated field logbook. All instruments shall be calibrated as required by the manufacturer. Calibration checks may be used during the day to confirm instrument accuracy. Duplicate readings may be taken to confirm individual instrument response.

5.2 Operations

All instruments shall be operated in accordance with the manufacturer's specifications. Manufacturers' literature, including an operations manual for each piece of monitoring equipment will be maintained on-site by the SSO for reference.

5.3 Data Review

The SSO will interpret all monitoring data based the established criteria and his/her professional judgment. The SSO shall review the data with the PM to evaluate the potential for worker exposure, upgrades/downgrades in level of protection, comparison to direct reading instrumentation and changes in the integrated monitoring strategy.

Monitoring and sampling data, along with all sample documentation will be periodically reviewed by the PM.

6.0 RECORDS AND REPORTING

All air readings must be recorded on daily air monitoring log sheets and made available for review by personnel from NYSDEC and NYSDOH.

ATTACHMENT E
Citizen Participation Plan

New York State Department of Environmental Conservation

Brownfield Cleanup Program

Citizen Participation Plan

for

FORMER GETTY SERVICE STATION No. 00564 SITE

1103-1107 DeKalb Avenue
Brooklyn, NY 11221

September 2013

Contents

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Note: The information presented in this Citizen Participation Plan was current as of the date of its approval by the New York State Department of Environmental Conservation. Portions of this Citizen Participation Plan may be revised during the site's investigation and cleanup process.

Applicant: **1107D LLC**
Site Name: **Former Getty Service Station No. 00564 ("Site")**
Site Address: **1103-1107 DeKalb Avenue, Brooklyn**
Site County: **Kings**
Site Number: **C224176**

1. What is New York's Brownfield Cleanup Program?

New York's Brownfield Cleanup Program (BCP) works with private developers to encourage the voluntary cleanup of contaminated properties known as "brownfields" so that they can be reused and developed. These uses include recreation, housing, and business.

A *brownfield* is any real property that is difficult to reuse or redevelop because of the presence or potential presence of contamination. A brownfield typically is a former industrial or commercial property where operations may have resulted in environmental contamination. A brownfield can pose environmental, legal, and financial burdens on a community. If a brownfield is not addressed, it can reduce property values in the area and affect economic development of nearby properties.

The BCP is administered by the New York State Department of Environmental Conservation (NYSDEC) which oversees Applicants that conduct brownfield site investigation and cleanup activities. An Applicant is a person who has requested to participate in the BCP and has been accepted by NYSDEC. The BCP contains investigation and cleanup requirements, ensuring that cleanups protect public health and the environment. When NYSDEC certifies that these requirements have been met, the property can be reused or redeveloped for the intended use.

For more information about the BCP, go online at: http://www.dec.ny.gov/chemical/8450.html.

2. Citizen Participation Activities

Why NYSDEC Involves the Public and Why It Is Important

NYSDEC involves the public to improve the process of investigating and cleaning up contaminated sites, and to enable citizens to participate more fully in decisions that affect their health, environment, and social well being. NYSDEC provides opportunities for citizen involvement and encourages early two-way communication with citizens before decision makers form or adopt final positions.

Involving citizens affected and interest in site investigation and cleanup programs is important for many reasons. These include:

- Promoting the development of timely, effective site investigation and cleanup programs that protect public health and the environment;

- Improving public access to, and understanding of, issues and information related to a particular site and that Site's investigation and cleanup process;

- Providing citizens with early and continuing opportunities to participate in NYSDEC's site investigation and cleanup process;

- Ensuring that NYSDEC makes site investigation and cleanup decisions that benefit from input that reflects the interests and perspectives found within the affected community; and

- Encouraging dialogue to promote the exchange of information among the affected/interested public, State agencies, and other interested parties that strengthens trust among the parties, increases understanding of site and community issues and concerns, and improves decision making.

This Citizen Participation (CP) Plan provides information about how NYSDEC will inform and involve the public during the investigation and cleanup of the Site identified above. The public information and involvement program will be carried out with assistance, as appropriate, from the Applicant.

Project Contacts

Appendix A identifies NYSDEC project contact(s) to whom the public should address questions or request information about the site's investigation and cleanup program. The public's suggestions about this CP Plan and the CP program for the Site are always welcome. Interested people are encouraged to share their ideas and suggestions with the project contacts at any time.

Locations of Reports and Information

The locations of the reports and information related to the Site's investigation and cleanup program also are identified in Appendix A. These locations provide convenient access to important project documents for public review and comment. Some documents may be placed on the NYSDEC website. If this occurs, NYSDEC will inform the public in fact sheets distributed about the Site and by other means, as appropriate.

Site Contact List

Appendix B contains the site contact list. This list has been developed to keep the community informed about, and involved in, the site's investigation and cleanup process. The site contact list will be used periodically to distribute fact sheets that provide updates about the status of the project. These will include notifications of upcoming activities at the Site (such as fieldwork), as well as availability of project documents and announcements about public comment periods.
The site contact list includes, at a minimum:

- Chief executive officer and planning board chairperson of each county, city, town and village in which the Site is located;
- Residents, owners, and occupants of the Site and properties adjacent to the Site;
- The public water supplier which services the area in which the Site is located;
- Any person who has requested to be placed on the site contact list;

- The administrator of any school or day care facility located on or near the Site for purposes of posting and/or dissemination of information at the facility; and
- Location(s) of reports and information.

The site contact list will be reviewed periodically and updated as appropriate. Individuals and organizations will be added to the site contact list upon request. Such requests should be submitted to the NYSDEC project contact(s) identified in Appendix A. Other additions to the site contact list may be made at the discretion of the NYSDEC project manager, in consultation with other NYSDEC staff as appropriate.

CP Activities

The table at the end of this section identifies the CP activities, at a minimum, that have been and will be conducted during the Site's investigation and cleanup program. The flowchart in Appendix D shows how these CP activities integrate with the site investigation and cleanup process. The public is informed about these CP activities through fact sheets and notices distributed at significant points during the program. Elements of the investigation and cleanup process that match up with the CP activities are explained briefly in Section 5.

- **Notices and fact sheets** help the interested and affected public to understand contamination issues related to a site, and the nature and progress of efforts to investigate and clean up a site.

- **Public forums, comment periods and contact with project managers** provide opportunities for the public to contribute information, opinions and perspectives that have potential to influence decisions about a site's investigation and cleanup.

- **Document repositories** allow the public to access and review project documents including investigation and cleanup work plans and final reports.

The public is encouraged to contact project staff at any time during the Site's investigation and cleanup process with questions, comments, or requests for information. This CP Plan may be revised due to changes in major issues of public concern identified in Section 3 or in the nature and scope of investigation and cleanup activities. Modifications may include additions to the site contact list and changes in planned citizen participation activities.

Technical Assistance Grant

NYSDEC must determine if the Site poses a significant threat to public health or the environment. This determination generally is made using information developed during the investigation of the Site, as described in Section 5.

If the Site is determined to be a significant threat, a qualifying community group may apply for a Technical Assistance Grant (TAG). The purpose of a TAG is to provide funds to the qualifying group to obtain independent technical assistance. This assistance helps the TAG recipient to interpret

and understand existing environmental information about the nature and extent of contamination related to the Site and the development/implementation of a remedy.

An eligible community group must certify that its membership represents the interests of the community affected by the Site, and that its members' health, economic well-being or enjoyment of the environment may be affected by a release or threatened release of contamination at the Site.

For more information about TAGs, go online at http://www.dec.ny.gov/regulations/2590.html.

Note: The table identifying the citizen participation activities related to the Site's investigation and cleanup program follows on the next page:

Citizen Participation Requirements (Activities)	Timing of CP Activity(ies)
Application Process:	
• Prepare site contact list • Establish document repositories	At time of preparation of application to participate in the BCP.
• Publish notice in Environmental Notice Bulletin (ENB) announcing receipt of application and 30-day public comment period • Publish above ENB content in local newspaper • Mail above ENB content to site contact list • Conduct 30-day public comment period	When NYSDEC determines that BCP application is complete. The 30-day public comment period begins on date of publication of notice in ENB. End date of public comment period is as stated in ENB notice. Therefore, ENB notice, newspaper notice, and notice to the site contact list should be provided to the public at the same time.
After Execution of Brownfield Site Cleanup Agreement:	
• Prepare Citizen Participation (CP) Plan	Before start of Remedial Investigation
Before NYSDEC Approves Remedial Investigation (RI) Work Plan:	
• Distribute fact sheet to site contact list about proposed RI activities and announcing 30-day public comment period about draft RI Work Plan • Conduct 30-day public comment period	Before NYSDEC approves RI Work Plan. If RI Work Plan is submitted with application, public comment periods will be combined and public notice will include fact sheet. Thirty-day public comment period begins/ends as per dates identified in fact sheet.
After Applicant Completes Remedial Investigation:	
• Distribute fact sheet to site contact list that describes RI results	Before NYSDEC approves RI Report
Before NYSDEC Approves Remedial Work Plan (RWP):	
• Distribute fact sheet to site contact list about proposed RWP and announcing 45-day public comment period • Public meeting by NYSDEC about proposed RWP (if requested by affected community or at discretion of NYSDEC project manager) • Conduct 45-day public comment period	Before NYSDEC approves RWP. Forty-five day public comment period begins/ends as per dates identified in fact sheet. Public meeting would be held within the 45-day public comment period.
Before Applicant Starts Cleanup Action:	
• Distribute fact sheet to site contact list that describes upcoming cleanup action	Before the start of cleanup action.
After Applicant Completes Cleanup Action:	
• Distribute fact sheet to site contact list that announces that cleanup action has been completed and that summarizes the Final Engineering Report • Distribute fact sheet to site contact list announcing issuance of Certificate of Completion (COC)	At the time NYSDEC approves Final Engineering Report. These two fact sheets are combined if possible if there is not a delay in issuing the COC.

3. Major Issues of Public Concern

This section of the CP Plan identifies major issues of public concern that relate to the Site. Additional major issues of public concern may be identified during the course of the Site's investigation and cleanup process.

The major issues of concern to the public will be potential impacts of nuisance odors and dust during the removal of affected soil at the Site. Another example of a major issue of public concern would be the impact of increased truck traffic on the surrounding neighborhood. Construction safety issues will also be addressed. In addition, this Site is located in a potential environmental justice area. Environmental justice is defined as the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Environmental justice efforts focus on improving the environment in communities, specifically minority and low-income communities, and addressing disproportionate adverse environmental impacts that may exist in those communities.

This Site is located in an area that has a sizable African-American population. In addition, 19.6% of the local population is Hispanic-American. Therefore there may be environmental justice concerns with regards to this neighborhood, primarily due to the large percentage of African Americans who live nearby.

If necessary, it may be determined that translation services may be needed for fact sheets and public meetings. This work will be performed in accordance with procedures which will be specified under a detailed Remedial Program which considers and takes preventive measures for exposures to future residents of the property and those on adjacent properties during construction. Detailed plans to monitor the potential for exposure including a Health and Safety Plan (HASP) and a Community Air Monitoring Plan (CAMP) are required components of the remedial program. Implementation of these plans will be under the direct oversight of the NYSDEC and the New York State Department of Health (NYSDOH).

These plans will specify the following worker and community health and safety activities during remedial activity at the Site:

- On-site air monitoring for worker protection;
- Perimeter air monitoring for community protection;
- The use of odor, vapor, and dust controls, such as water or foam sprays, as needed;
- Monitoring and control of soil, sediments, and water generated during remediation; and
- Truck routes which avoid residential streets.

The HASP and the CAMP will be prepared as part of the Remedial Action Work Plan (RAWP) and will be available for public review at the document repository as identified in Appendix A (page 11).

Furthermore, the Applicant has prepared a Scoping Sheet for Major Issues of Public Concern which will assist them in identifying any concerns. Experience from similar projects, 311 complaints and other construction projects in the area will help in identifying such issues.

4. Site Information

Appendix C contains a map identifying the location of the Site.

Site Description

The Site to be remediated and redeveloped is located in the Bedford Stuyvesant section of Brooklyn (Kings County) and is comprised of two tax parcels totaling 9,498 square feet (0.218 acres). The subject property is located in the City of New York and Borough of Brooklyn (Kings County). The lot has 75 feet of frontage on DeKalb Avenue and 150 feet of frontage on Malcolm X Boulevard.

The lot is currently developed with a one-story service station building which is currently leased by an auto repair shop. The remainder of the lot consists of a paved lot which is used to store both derelict and functioning vehicles awaiting sale or repair. According to the NYC Department of Buildings, the current building was constructed in 1931.

The elevation of the Site is approximately 39 feet above the National Geodetic Vertical Datum (NGVD). The area topography gradually slopes to the east. The depth to groundwater beneath the Site, as determined from field measurements, is approximately 45 feet below grade. Based on regional and local groundwater contour maps, groundwater flow is expected to be northwest toward East River approximately 2.5 miles from the Site.

The area surrounding the property is highly urbanized and predominantly consists of multi-family residential buildings with mixed-use buildings (residential w/ first floor retail) along main artery corridors such as Broadway located just 500 feet to the northeast. Commercial / industrial properties, equipment yards and warehouses are interspersed throughout the residential as are institutions such as parks, schools, churches and playgrounds within a quarter mile of the Site in all directions.

History of Site Use, Investigation, and Cleanup

Tulla Service / James Mannix, collectively owned the property from 1966 to 1990. Jamar Realty owned the property prior to 1966 and signed a 15 year lease agreement with Shell Oil in 1965. The lease with Shell was renewed with new owners Tulla / Mannix in 1967 and ran through January 1982. It is not known if Shell continued its tenancy from 1982 to 1990 when Getty purchased it, or if Getty or a third party leased it from 1982 to 1990. Getty operated a service station (#564) on the property from at least 1990 to 2001. When Getty ceased operations it abandoned-in-place three 4,000 gallon underground storage tanks.

The property was most recently occupied by Morillo Auto Repair which ran an automotive repair shop out of the service station building and stored vehicles on the lot.

The property is listed on the NYSPILLS database. The database indicates that there is one spill associated with the Site. Spill No. 98-10224 was reported to the DEC on November 13, 1998 following the removal of petroleum-impacted soil during the removal of 14 underground storage tanks. The spill was closed on February 2, 2013.

A supplemental investigation performed at the Site identified volatile organic compounds in soil and groundwater at the site and chlorinated volatile organic compounds in groundwater.

5. Investigation and Cleanup Process

Application

The Applicant has applied for and been accepted into New York's Brownfield Cleanup Program (BCP) as a Volunteer. This means that the Applicant was not responsible for the disposal or discharge of the contaminants or whose ownership or operation of the Site took place after the discharge or disposal of contaminants. The Volunteer must fully characterize the nature and extent of contamination on-site, and must conduct a qualitative exposure assessment, (a process that characterizes the actual or potential exposures of people, fish and wildlife to contaminants on the Site and to contamination that has migrated from the Site).

The Applicant proposes that the Site will be used for the new construction of an 8-story 36,000 sf hotel. To achieve this goal, the Applicant will conduct investigation and cleanup activities at the Site with oversight provided by NYSDEC. The Brownfield Cleanup Agreement (BCA) executed by NYSDEC and the Applicant sets forth the responsibilities of each party in conducting these activities at the Site.

Investigation

The Applicant has completed a preliminary site investigation before it entered into the BCP. The Applicant will now conduct an investigation of the Site officially called a "remedial investigation" (RI). This investigation will be performed with NYSDEC oversight. The Applicant previously developed a remedial investigation workplan, which was subject to public comment.

The site investigation has several goals:

1) Define the nature and extent of contamination in soil, surface water, groundwater and any other parts of the environment that may be affected;
2) Identify the source(s) of the contamination;
3) Assess the impact of the contamination on public health and the environment; and
4) Provide information to support the development of a proposed remedy to address the contamination or the determination that cleanup is not necessary.

When the investigation is complete, the Applicant will prepare and submit a report that summarizes the results. This report also will recommend whether cleanup action is needed to address site-related contamination. The investigation report is subject to review and approval by NYSDEC.

NYSDEC will use the information in the investigation report to determine if the Site poses a significant threat to public health or the environment. If the Site is a significant threat, it must be cleaned up using a remedy selected by NYSDEC from an analysis of alternatives prepared by the Applicant and approved by NYSDEC. If the Site does not pose a significant threat, the Applicant may select the remedy from the approved analysis of alternatives.

Remedy Selection

When the investigation of the Site has been determined to be complete, the project likely would proceed in one of two directions:

1. The Applicant may recommend in its investigation report that no action is necessary at the Site. In this case, NYSDEC would make the investigation report available for public comment for 45 days. NYSDEC then would complete its review, make any necessary revisions, and, if appropriate, approve the investigation report. NYSDEC would then issue a Certificate of Completion (COC) (described below) to the Applicant.

or

2. The Applicant may recommend in its investigation report that action needs to be taken to address site contamination. After NYSDEC approves the investigation report, the Applicant may then develop a cleanup plan, officially called a Remedial Work Plan. The Remedial Work Plan describes the Applicant's proposed remedy for addressing contamination related to the Site.

When the Applicant submits a proposed Remedial Work Plan for approval, NYSDEC would announce the availability of the proposed plan for public review during a 45-day public comment period.

Cleanup Action

NYSDEC will consider public comments, and revise the draft cleanup plan if necessary, before approving the proposed remedy. The New York State Department of Health (NYSDOH) must concur with the proposed remedy. After approval, the proposed remedy becomes the selected remedy.

The Applicant may then design and perform the cleanup action to address the site contamination. NYSDEC and NYSDOH oversee the activities. When the Applicant completes cleanup activities, it will prepare a Final Engineering Report (FER) that certifies that cleanup requirements have been achieved or will be achieved within a specific time frame. NYSDEC will review the report to be certain that the cleanup is protective of public health and the environment for the intended use of the Site.

Certificate of Completion

When NYSDEC is satisfied that cleanup requirements have been achieved or will be achieved for the Site, it will approve the FER. NYSDEC then will issue a COC to the Applicant. The COC states that cleanup goals have been achieved, and relieves the Applicant from future liability for site-related contamination, subject to certain conditions. The Applicant would be eligible to redevelop the Site after it receives a COC.

Site Management

Site management is the last phase of the site cleanup program. This phase begins when the COC is issued. Site management may be conducted by the Applicant under NYSDEC oversight, if contamination will remain in place. Site management incorporates any institutional and engineering controls required to ensure that the remedy implemented for the Site remains protective of public health and the environment. All significant activities are detailed in a Site Management Plan (SMP).

An institutional control is a non-physical restriction on use of the Site, such as a deed restriction that would prevent or restrict certain uses of the property. An institutional control may be used when the cleanup action leaves some contamination that makes the Site suitable for some, but not all uses.

An engineering control is a physical barrier or method to manage contamination. Examples include: caps, covers, barriers, fences, and treatment of water supplies.

Site management also may include the operation and maintenance of a component of the remedy, such as a system that is pumping and treating groundwater. Site management continues until NYSDEC determines that it is no longer needed.

Appendix A
Project Contacts and Locations of Reports and Information

Project Contacts

For information about the site's investigation and cleanup program, the public may contact any of the following project staff:

New York State Department of Environmental Conservation (NYSDEC):

Shaun Bollers
Project Manager
NYSDEC Region 2
Division of Environmental Remediation
One Hunters Point Plaza 47-4021st Street
Long Island City, NY 11101
(718) 482-4096
snboller@gw.dec.state.ny.us

Thomas Panzone
Regional Citizen Participation Specialist
NYSDEC Region 2
Division of Environmental Remediation
One Hunters Point Plaza
47-40 21st Street
Long Island City, NY 11101
Tel: (718) 482-4953

New York State Department of Health (NYSDOH):
Krista Anders
New York State Department of Health
Bureau of Environmental Exposure Investigation
Empire State Plaza – Corning Tower Room 1787
Albany, New York 12237
Tel: (518) 402-7860
Email: beei@health.state.ny.us

Locations of Reports and Information

The facilities identified below are being used to provide the public with convenient access to important project documents:

Brooklyn Public Library– Macon Branch
361 Lewis Avenue at Macon Street.
Brooklyn, NY 11233
718-573-5606

Hours:
Mon 10:00 AM - 6:00 PM
Tue 10:00 AM - 8:00 PM
Wed 10:00 AM - 6:00 PM
Thu 10:00 AM - 6:00 PM
Fri 10:00 AM - 6:00 PM
Sat 10:00 AM to 5:00 PM
Sun closed

Appendix B - Site Contact List

Local Government Contacts:

City of New York
Hon. Michael Bloomberg
Mayor of New York City
City Hall
New York, NY 10007

Hon. Marty Markowitz
Brooklyn Borough President
209 Joralemon Street
Brooklyn, NY 11201

Henry Butler
District Manager, Brooklyn Community Board 3
1360 Fulton Street
Brooklyn, NY, 11216

Tremaine Wright
Chair, Brooklyn Community Board 3
1360 Fulton Street
Brooklyn, NY, 11216

Nelson M. Stoute, Chairman
Infrastructure, Environmental Protection
& Sanitation Committee, Brooklyn Community Board 3
1360 Fulton Street
Brooklyn, NY, 11216

Hon. Darlene Mealy
NYC Council Member
41st District
1757 Union Street, 2nd Floor
Brooklyn, NY 11213

Amanda M. Burden
Commissioner
NYC Dept. of City Planning
22 Reade St. Third Floor
New York, NY 10007

New York City Department of Transportation
Brooklyn Borough Commissioner
Attn: Joseph Palmieri
16 Court Street
Brooklyn, NY 11241

Kings County Clerk's Office
Nancy T. Sunshine, County Clerk
360 Adams Street, Room 189
Brooklyn, NY 11201

Hon. Bill de Blasio
Public Advocate
1 Centre Street, 15th Floor
New York, NY 10007

Hon. John Liu
NYC Comptroller
1 Centre Street
New York, NY 10007

Hon. Martin Malave Dilan
NYS Senator
786 Knickerbocker Avenue
Brooklyn, NY 11207

Hon. Rafael L. Espinal Jr.
NYS Assembly Member
840 Jamaica Avenue
Brooklyn, NY 11208

Hon. Charles Schumer
U.S. Senator
780 Third Avenue, Suite 2301
New York, NY 10017

Hon. Kirsten Gillibrand
U.S. Senator
780 Third Avenue, Suite 2601
New York, NY 10017

Hon. Hakeem Jeffries
U.S. House of Representatives
55 Hanson Place, Suite 603
Brooklyn, NY 11217

John Wuthenow
Office of Environmental Planning & Assessment
NYC Dept. of Environmental Protection
96-05 Horace Harding Expressway
Flushing, NY 11373

Dr. Robert Kulikowski
Director
NYC Office of Environmental Coordination
100 Gold Street, 2nd Floor
New York, NY 10038

Daniel Walsh
Director
NYC Department of Environmental Remediation
100 Gold Street – 2nd Floor
New York, NY 10038

Local News Media:

The Brooklyn Paper
One Metrotech Center, Suite 1001
Brooklyn, NY 11201
(718) 260-4504

Courier-Life Publications
1 Metro-Tech Center North - 10th Floor
Brooklyn, NY 11201

Brooklyn Daily Eagle
30 Henry Street
Brooklyn, NY 11201

New York 1 News
75 Ninth Avenue
New York, NY 10011

New York Times
620 Eighth Ave.
New York, NY 10018

News 12 Brooklyn
East 18th & Avenue Z
Brooklyn, NY 11235

New York Daily News
4 New York Plaza

New York, NY 10004

New York Post
1211 Avenue of the Americas
New York, NY 10036-8790

Hoy Nueva York
1 MetroTech Center, 18th Floor
Brooklyn, NY 11201

El Diario La Prensa
1 MetroTech Center, 18th Floor
Brooklyn, NY 11201

Public Water Supplier:
NYC Dept. of Environmental Protection
Attn: Hon. Carter Strickland, Commissioner
59-17 Junction Boulevard
Flushing, NY 11373

Schools and Daycare Facilities:

1 EBC Bushwick High School
1155 Dekalb Avenue Brooklyn, NY 11221
1 718-452-3440
Attn: Shawn Brown, Principal

3. Public School 274
800 Bushwick Avenue
Brooklyn, NY 11221
718-574-0273
Attn: Maritza Olliviera-Jones, Principal

3. Bushwick Leaders High School
797 Bushwick Avenue Brooklyn, NY 11221
718-919-4212
Attn: Cathy Reilly, Principal

4. Calvary & St Cyprian's Church & School
966 Bushwick Avenue Brooklyn, NY 11221
718-453-3764
Attn: Principal

5. Charles Churn Christian Academy
1052 Greene Avenue Brooklyn, NY 11221
718-919-6887

Attn: Principal

6. Brooklyn Excelsior Charter School
   856 Quincy Street Brooklyn, NY 11221
   718-246-5681
   Attn: Adam Stevens, Principal

7. Frederick Douglass Academy IV Secondary School
   1014 Lafayette Avenue, Brooklyn, NY 11221
   718-574-2820
   Attn: Elvin Crespo, Principal

8. School of Business Finance & Entrepreneurship
   125 Stuyvesant Avenue Brooklyn, NY 11221
   718-602-3271
   Attn: Anne Marie Malcolm, Principal

9. Putnam Child Development Center
   706 Quincy Street Brooklyn, NY 11221
   Attn: Director

10. La Cima Charter School
    800 Gates Avenue Brooklyn, NY 11221
    718-443-2136
    Attn: Ms. Cavaliere, Principal

11. P.S. 308 Clara Cardwell
    616 Quincy Street New York, NY 11221
    718-574-2373
    Attn: George Patterson, Principal

12. Patricias Day Care
    480A Kosciuszko Street Brooklyn, NY 11221
    718-602-4601
    Attn: Director

13. P.S. 81 Thaddeus Stevens
    990 DeKalb Avenue
    Brooklyn New York, NY
    718-574-2365
    Attn: Cheryl Ault Barker

14. SCO Family of Services
    75 Lewis Avenue Brooklyn, NY 11206
    718-455-1166
    Attn: Director

15. Child Prodigy Learning Center
    1001 Broadway Brooklyn, NY 11221

718-574-7558
Attn: Director

16. Brooklyn Temple SDA Elementary School
Brooklyn New York, NY 11206
718-574-0907
Attn: Director

17. St Marks Lutheran School
626 Bushwick Avenue Brooklyn, NY 11206
718-455-5445
Attn: Principal

18. St Frances Cabrini School
181 Suydam Street Brooklyn, NY 11221
718-386-9277
Attn: Principal

19. P.S. 26 Jesse Owens School
1014 Lafayette Avenue
Brooklyn, NY 11221
Attn: Cynthia Celestine, Principal

Community, Civic, Religious and other Educational Institutions

Open Space Alliance of North Brooklyn
79 North 11th Street
Brooklyn, NY 11211

Brooklyn Chamber of Commerce
25 Elm Place, Suite 200 2nd Floor
Brooklyn, NY 11201

New York City Housing Authority
250 Broadway
New York, NY 10007
Attn: Sheila Stainback, Media Relations

Roosevelt Houses (NYCHA)
Attn: Management Office
314 Pulaski Street
Brooklyn, NY 11206

Roosevelt Houses (NYCHA)
Attn: President, Resident Association

314 Pulaski Street
Brooklyn, NY 11206

Believers Mennonite Fellowship Church
36 Reid Avenue
Brooklyn, NY 11221
Attn: Pastor

Morningstar Highway Church
1110 DeKalb Avenue
Brooklyn, NY 11221
Attn: Pastor

New Creation Christian Church
1060 Broadway
Brooklyn, NY 11221
Attn: Pastor

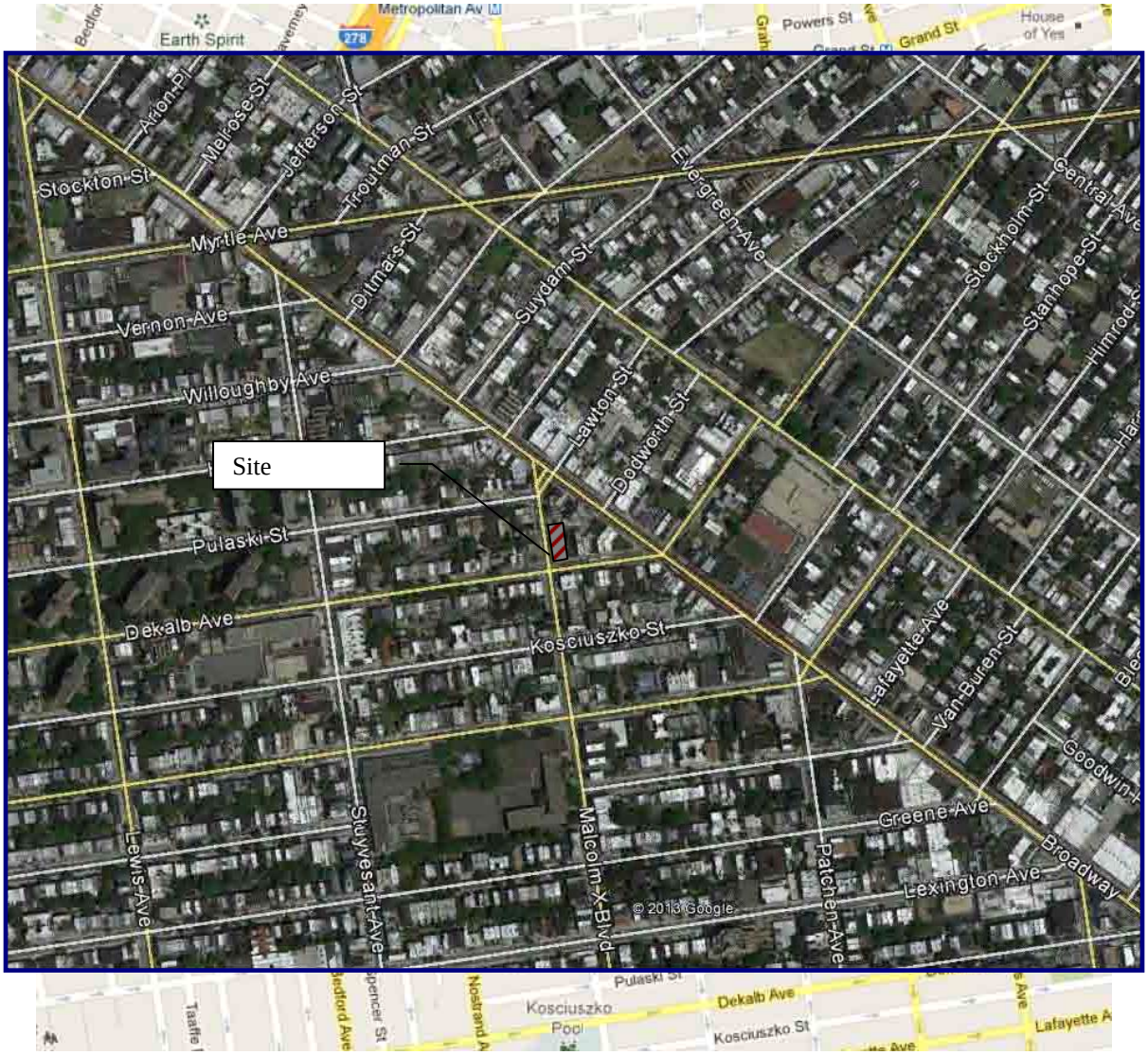
Redeemed Christian Church of God
61 Malcolm X Boulevard
Brooklyn, NY 11221
Attn: Pastor

South Bushwick Reformed Church
855 Bushwick Avenue
Brooklyn, NY 11221
Attn: Pastor

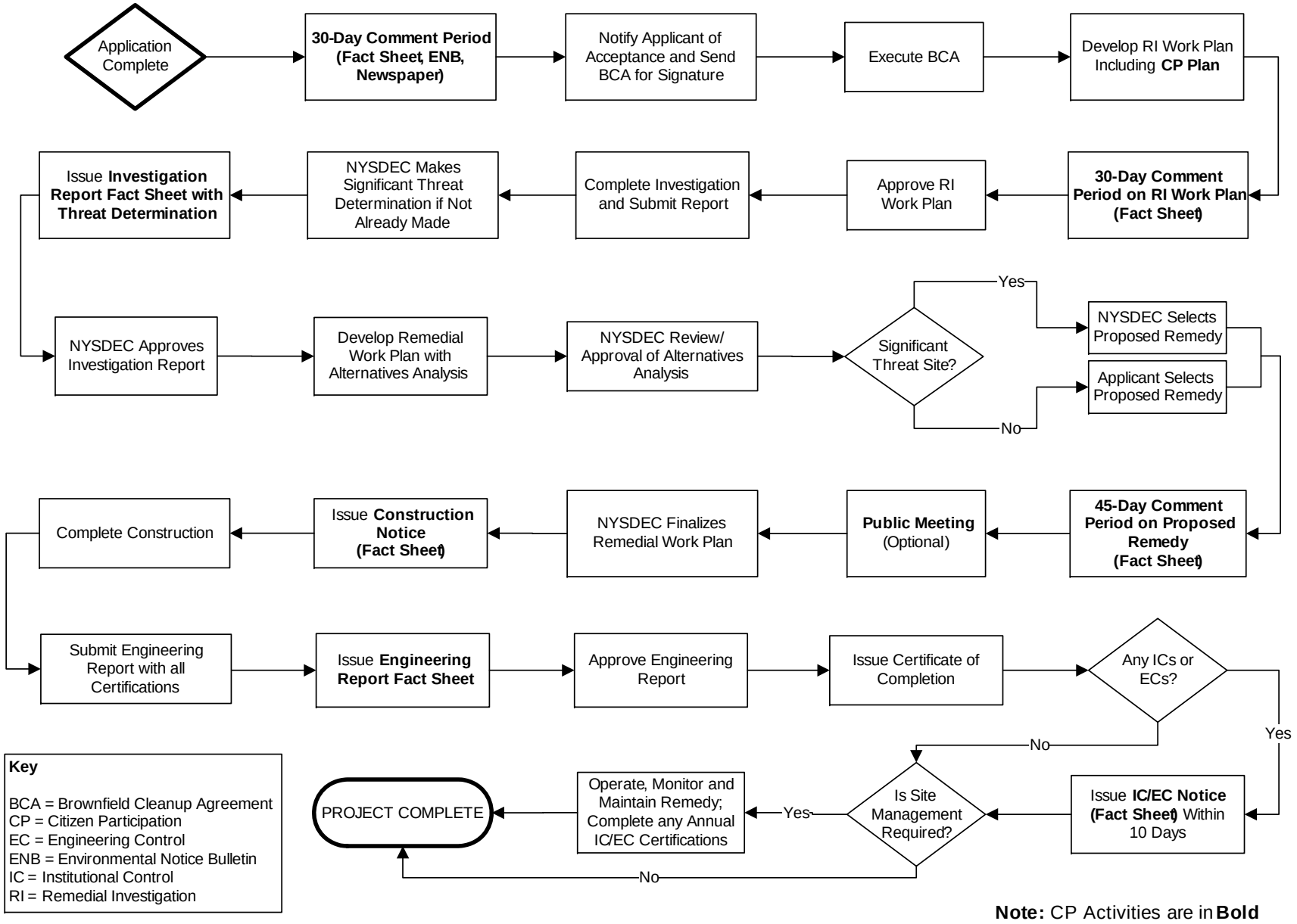
Northeast Brooklyn Housing Development Co.
132 Ralph Avenue
Brooklyn, NY 11233
Attn: Executive Director

Lindsay Park Housing Corporation
202 Union Avenue
Brooklyn, NY 11211
Attn: Director

Appendix C - Site Location Map



Appendix D– Brownfield Cleanup Program Process



Note: CP Activities are in **Bold**

ATTACHMENT F
Resumes

EBC

ENVIRONMENTAL BUSINESS CONSULTANTS

Charles B. Sosik, PG, PHG, Principal

Professional Experience

24 years

Education

MS, Hydrogeology, Adelphi University, NY
BS, Geology, Northern Arizona University, AZ

Areas of Expertise

- Brownfields Redevelopment
- Hazardous Waste Site Investigations
- Pre-purchase Site Evaluations and Support
- Regulatory Negotiations
- Remedial Planning and "Cost to Cure" Analysis
- Strategic Planning
- Real Estate Transactions
- NYC "E" Designations

Professional Certification

- Professional Geologist, NH
- Professional Geologist, Hydrogeologist, WA
- OSHA 40-hr HAZMAT
- OSHA 8-hr. Supervisor

Professional Affiliation / Committees

- NYS Council of Professional Geologists (NYSCPG)
- Association of Groundwater Scientists & Engineers (AGSE)
- NYS RBCA Advisory Committee
- Massachusetts LSP Association
- New Hampshire Association of Professional Geologists
- Interstate Technology Regulatory Council/MTBE Team
- Environmental Business Association, Brownfields Task Force
- Part 375 Working Group

PROFILE

Mr. Sosik has 24 years of experience in environmental consulting. He specializes in advising clients on managing environmental compliance with federal, state, and municipal agencies and has successfully directed numerous investigation and remediation projects involving petroleum, pesticides, chlorinated solvents, heavy metals and radiologically activated media. His work included extensive three-dimensional investigations on MTBE, which have been used effectively to help shape public policy. He also has experience in applying models to groundwater related problems and has completed several large-scale projects to determine fate and transport of contaminants, establish spill scenarios, and closure criteria. His experience and expertise in the area of contaminant hydrogeology has resulted in requests from environmental attorneys, property owners and New York State to serve as an expert witness and technical advisor on a variety of legal disputes.

For the past 10 years Mr. Sosik has been primarily engaged in providing environmental consulting to developers responding to the extensive re-zoning of former industrial and commercial properties, which is currently taking place throughout New York City. These services include everything from pre-purchase evaluations and contract negotiations to gaining acceptance in and moving projects through the NYS Brownfields Program. Mr. Sosik has taken a pro-active role in the continued development of the NYS Brownfields Program and related policy, by attending numerous working seminars, active participation in work groups and task forces and by providing commentary to draft versions of new guidance documents. Throughout his professional career, Mr. Sosik has remained committed to developing innovative cost- efficient solutions to environmental issues, specifically tailored to the needs of his clients.

SELECTED PROJECTS

Scavenger Waste Treatment Facility (SWTF), Suffolk County, NY

Water Treatment Plant EIS - Focused EIS - In response to requests from the Suffolk County Council on Environmental Quality and the Brookhaven Conservation Advisory Council, Mr. Sosik prepared a focused EIS to evaluate the potential impacts to an important surface water resource from the proposed facility including cumulative and synergistic effects with established contaminant plumes in the area.

Advanced Residential Communities, Rockville Centre, NY

Brownfield Project – As the senior project manager on this large scale, high profile redevelopment project, Mr. Sosik was asked to develop a plan to accelerate the regulatory process in the face of general community opposition. Through numerous discussions with the BCP management team, He was able to condense the schedule and review period, through the submission of supporting documents (Investigation Report, Remedial Work Plan) with the BCP application package. Community opposition, which focused on the environmental condition of the site as a means to block the project, was used to advantage in expediting approval of the aggressive interim remedial plan. This will allow the developer to begin remedial work approximately 5 months ahead of schedule.

Former Temco Uniform site, West Haverstraw, NY

Brownfield Project – Mr. Sosik took over management of this project from another consultant following transition of this VCP site to the BCP. Mr. Sosik used the opportunity to renegotiate and revise the scope of work to allow a more cost effective and focused investigation plan without re-writing or resubmitting the RIWP. During the NYSDEC's review of the transition package, he met with and coordinated changes with the NYSDEC Project Manager to gain approval. The result saved the client a significant amount of money, but perhaps more importantly in this case, did so without loss of time.

Grovick Properties, Jackson Heights, NY

Brownfield Project – This Brownfield property is somewhat unique in that it had been investigated and partially remediated by the NYSDEC through the petroleum spill fund. The client was interested in purchasing the property and redeveloping it as office and retail space. Mr. Sosik reviewed the NYSDEC investigation and developed a

supplemental plan to meet the requirements of an RI under the BCP program. By performing this limited amount of field work "up-front" he was able to complete an RI Report and Remedial Plan and submit both with the BCP application package. The NYSDEC and NYSDOH approved the RI Report and the Remedial Plan with minor changes. This cut 120 days from the review process and allowed the client to arrange financing and move his project forward knowing what the clean-up costs would be at the outset.

Metro Management, Bronx, NY

Brownfield Project – The site of a former gas station, the developer had planned to construct a 12-story affordable housing apartment complex with first floor retail space. Since the site was located in an Environmental zone, potential tax credits of 22% for site development, remediation and tangible property could be realized under the BCP. In a pre-application meeting with the NYSDEC, Mr. Sosik realized that the department did not believe the site was eligible for the BCP, since it had been previously investigated and closed under the spills program.

Mr. Sosik assisted the developer in securing financing, and due to the demands of an aggressive construction schedule developed an Interim Remedial Measure (IRM), based on chemical oxidation treatment. Working closely with the clients environmental counsel, Mr. Sosik was able to get the IRM approved without a public comment period. Implementation of the IRM is currently underway.

The project was awarded the 2009 NYC Brownfield Award for Innovation.

Brandt Airflex, NY

Technical Consulting Services - Mr. Sosik provided senior level technical advice and strategic planning in developing an off-site RI/FS for the site, in negotiating a tax reduction for the property due to the environmental condition and in preparing a cost to cure estimate for settlement between business partners. After achieving a favorable tax consideration and settlement agreement for his client

Allied Aviation Services, Dallas, Fort Worth, Airport, Dallas, TX

Jet Fuel Investigation - Mr. Sosik developed and managed an investigative plan to quickly identify the extent and source of jet fuel which was discharging from the Airport's storm drain system to a creek a mile away. Through the use of a refined conceptual model, accelerated investigative techniques and a flexible work plan, he was able to identify the source of the fuel and the migration route within a single week. He then identifled remedial options and successfully negotiated a risk based plan with the Texas regulatory agency that had issued a notice of enforcement action against the facility.

KeySpan – Former LILCO Facilities, Various NY Locations

Pesticide Impact Evaluation - Mr. Sosik developed, negotiated and implemented a site screening procedure to evaluate impact to public health and the environment as the result of past herbicide use at 211 utility sites. Using an unsaturated zone leaching model (PRZM) on a small subset of the sites, he was able to establish mass loading schedules for the remaining sites. This was combined with public well data in a GIS environment to perform queries with respect to mass loading, time transport and proximity to vunerable public supply wells. Using this approach Mr. Sosik was able to show that there were no concerns for future impact. This effort satisfied the public health and resource concerns of the state environmental agency and county health department in a reasonable amount of time and at a fraction of the cost of a full scale investigation.

Former Computer Circuits (Superfund) Site, Hauppauge, NY

CERCLA RI/FS - As Senior Project Manager for the site, he played a major role in regaining control of the investigation activites for the PRP. This action prevented the USEPA from initiating an extensive investigation at the site using a RAC II contractor allowing the client to perform a more efficient investigation. He was involved in all negotiations with EPA and was the project lead in developing a revised site characterization plan (work plan, field sampling plan, quality assurance plan, etc.). By carefully managing all phases of the investigation and continued interaction with each of the three regulatory agencies involved, Mr. Sosik was able to keep the project focused and incrementally reinforce the clients position. The estimated cost of the revised investigation is expected to save the client 1.5 to 2 million dollars.

Sun Oil, Seaford, NY

Remediation Consuliting Services & Project Management - Under an atmosphere of regulatory distrust, political pressure and mounting public hostility toward the client, Mr. Sosik conducted an off-site 3-D investigation to define the extent of contamination and the potential impact on public health. By designing and implementing an aggressive source area remediation program and personal interaction with the public and regulatory agencies, he was able to successfully negotiate a limited off-site remediation favorable to the client. Source area remediation was completed within 6 months and the project successfully closed without damage to the client's public image or working relationship with the regulatory agencies.

Con Edison, Various Locations, NY

Hydrogeologic Consulting Services - Under a general consulting contract, Mr. Sosik conducted detailed subsurface hydrogeologic investigations at five locations to assist in the development of groundwater contingency planning. He also developed and implemented work plans to investigate and remediate existing petroleum, cable fluid, and PCB releases at many of the generating facilities and substations. An important aspect of his role was in assisting the client in strategic planning and negotiations with the regulatory agency.

Keyspan - Tuthill Substation, Aqueboque, NY

Accelerated Site Characterization - Using accelerated site characterization techniques, Mr. Sosik presented the project as a case study in establishing the transport of an herbacide and its metobolites aplied at utility sites in the 1980's The results were then used to establish a screening method for evaluating 211 similar sites controlled by the client in a reasonable and eficient manner.

NYSDEC Spill, East Moriches, NY

Spill Release Analysis - With recognized expertise in the area of gasoline plume development on Long Island, Mr. Sosik was asked by

Charles B. Sosik, PG, PHG, Principal

the State to establish the release date (and principal responsible party) of an extensive petroleum spill, which impacted a residential neighborhood. He used multiple lines of evidence, and a new EPA model (HSSM), which he has helped to refine, to reconstruct the release scenario and spill date, in support of the State Attorney General's cost recovery effort from the PRP.

Minmilt Realty, Farmingdale, NY

Fate & Transport Modeling - He completed an RI/FS at this location for a PCE plume that had been in transit for over 30 years. Mr. Sosik applied a conservative model to evaluate time/concentration impacts under a variety of transport scenarios to a municipal wellfield located 13,000 feet away. Through the use of the model and careful interpretation of an extensive data set compiled from several sources, Mr. Sosik was able to propose a plan which was both acceptable to the regulator and favorable to the client.

Sebonack Golf Course Project, Town of Southampton, NY

IPM Pesticide Study - Provided professional hydrogeologic services in support of the EIS prepared for the development of the site. The proposed development included an 18-hole golf course, clubhouse, dormitory facility, cottages, associated structures, and a 6,000 square foot research station for Southampton College. Mr. Sosik performed an extensive evaluation (using a pesticide-leaching model) on the effects of pesticide and nitrogen loading to groundwater as part of the projects commitment to an Integrated Pest Management (IPM) approach.

NYSDEC, Spills Division, Regions 1 – 4

Petroleum Spills Investigation & Remediation - As a prime contractor/consultant for the NYSDEC in Regions 1-4, Mr. Sosik has managed the investigation and remediation of numerous petroleum spills throughout the State. Many of these projects required the development of innovative investigation and remediation techniques to achieve project goals. He was also involved in many pilot projects and research studies to evaluate innovative investigation techniques such as accelerated site characterization, and alternative approaches to remediation such as monitored natural attenuation and risk based corrective action.

Sun Oil, E. Meadow, NY

Exposure Assessment - Performed to seek closure of the spill file, despite the presence of contaminants above standards, Mr. Sosik determined after the extended assessment that the level of remaining contamination would not pose a future threat to human health or the environment. He used multiple lines of evidence, and a fate and transport model to show that degradation processes would achieve standards within a reasonable time.

Sand & Gravel Mine, NY

Property Development - As part of the development of a sand and gravel mine, Mr. Sosik provided environmental consulting services to assist in obtaining a mining permit, which would result in the construction of a 150-acre lake. Specifically, Mr. Sosik investigated if the proposed lake would reduce groundwater quantity to domestic and public well fields, and/or accelerate the migration of potential surface contaminants to the lower part of the aquifer. After assuming the lead role in negotiations with the regulatory agency, Mr. Sosik was able to obtain a permit for the client by adequately addressing water quality and quantity issues, and by preparing a monitoring plan and spill response plan, acceptable to all parties.

NYSDEC, Mamaroneck, NY

Site Characterization / Source Identification - In a complex hydrogeologic setting consisting of contaminant transport through fractured metomorphic bedrock and variable overburden materials, Mr. Sosik was able to develop and implement a sub-surface investigation to differentiate and separate the impact associated with each of two sources. The results of this investigation were successful in encouraging the spiller to accept responsibility for the release.

Riverhead Municipal Water District, NY

Site Characterization / Remedial Planning - Using accelerated characterization techniques, he implemented a 3-D site investigation to identify two service stations 4,000 ft. away as the source of contamination impacting a municipal wellfield. In accordance with the strict time table imposed by the need to return the wellfield to production by early spring, he designed and implemented a multi-point (9 RW, 6 IW) recovery and injection well system using a 3-d numerical flow model, and completed the project on time. Using a contaminant transport model, Mr. Sosik developed clean-up goals which were achieved in 9 months of operation, well below the projected 3 to 5 year project duration.

Montauk Fire Department, NY

Site Assessment - Mr. Sosik performed a limited investigation and used a 2-D flow model to demonstrate that the property could not have been the source of contamination which had impacted an adjacent wellfield as per the results of a previous investigation. This small focused effort successfully reversed a $500,000, and rising, claim against the department by the water district and the NYSDEC.

PREVIOUS EXPERIENCE

P.W. Grosser Consulting, Bohemia, NY
Senior Project Manager, 1999-2006

Environmental Assessment & Remediation, Patchogue, NY
Senior Project Manager, 1994-1999

Miller Environmental Group, Calverton, NY
Project Manager, 1989-1994

DuPont Biosystems, Aston, PA
Hydrogeologist, 1988-1989

EBC

ENVIRONMENTAL BUSINESS CONSULTANTS

Charles B. Sosik, PG, PHG, Principal

EXPERT WITNESS TESTIMONY AND DEPOSITIONS

Fact Witness -Testimony on relative age of petroleum spill based on nature and extent of residual and dissolved components at the Delta Service Station in Uniondale, NY Fall/1999

Expert Witness / Expert Report for defendant in cost recovery case by NYS Attorney General regarding a Class II Inactive Hazardous Waste (State Superfund) project by the NYSDEC (October 2004 – present, Report: March 2005, Deposition: April 2005)

Expert Witness / Fact Witness for plaintiff seeking compensation for partial expenses incurred during the investigation and remediation of a USEPA CERCLA site due to the release and migration of contaminants from an "upgradient" industrial property. (Deposition May 2005, case settled April 2007).

Expert Witness / Fact Witness for NYS Attorney General with respect to cost recovery for a NYSDEC petroleum spill site in Holtzville, NY (Deposition April 2005 - case settled).

Expert Witness – Statement of opinion and expert testimony at trial for plaintiff seeking damages from a major oil corporation for contamination under a prior leasing agreement in Rego Park, NY. Case decided in favor of plaintiff. Trial July 2007, in favor of Plaintiff. Qualified as Expert Witness.

Expert Witness / Fact Witness for NYS Attorney General with respect to cost recovery for a NYSDEC petroleum spill site in Lindenhurst, NY (Trial date December 2009, in favor of plaintiff. Qualified as Expert Witness.

Expert Witness / Fact Witness for defendant with respect to cost recovery and third party responsibility for a NYSDEC petroleum spill site. (Expert Statement of Fact – October 2005).

Expert Witness for plaintiff seeking damages related to a petroleum spill from the previous owner/operator of a gas station in College Point, NY. Case settled 2009.

Expert Witness for plaintiff (municipal water supply purveyor) seeking damages from major oil companies and manufacturer of MTBE at various locations in Suffolk County, NY. Expert reports July 2007, August 2007 and October 2007, Case settled August, 2008.

Expert Witness - Deposition for NYS Attorney General regarding NYSDEC cost recovery for a petroleum spill site at Sag Harbor, NY. August 2002

Expert Witness - for NYS Attorney General regarding NYSDEC cost recovery for a petroleum spill site at Riverhead, NY. Case settled July 2008.

Expert Witness for defendant responding to a claim from adjacent commercial property owner on the origin of chlorinated solvents on plaintiff's property located in Cedarhurst, NY. Expert opinion submitted to lead counsel on March 6, 2009, case settled April 2009.

Expert Report - for Attorney General on modeling performed to determine the spill release scenario at a NYSDEC petroleum spill site in East Moriches, NY. June 2000.

MODELING EXPERIENCE (PARTIAL LISTING)

PROJECT	MODEL	APPLICATION
Riverhead Water District, Riverhead, NY	MODFLOW, MODPATH	Remediation system design to intercept MTBE plume and prevent continued impact to municipal well field.
NYSDEC - Region 1, Holbrook, NY	MODFLOW, MODPATH	Simulate transport of MTBE plume to predict future impact.
NYSDEC - Region 1, East Moriches, NY	HSSM	Evaluate release scenario and start date of petroleum spill in support of cost recovery by NYS AG office.
AMOCO, Deer Park, NY	HSSM	Estimate release amount, start date and spill scenario to evaluate the potential for mass unaccounted for
Keyspan Energy, Nassau/Suffolk Counties Substations	PRZM	Estimate mass load of simazine used at 211 electric substations and screen sites according to potential for human health and ecological impacts.
Saboneck Golf Club, Southampton NY	PRZM	Estimate mass load of proposed pesticides on new golf course to evaluate acceptability under an IPM program.
Suffolk County Department of Public Works (SCDPW) Scavenger Waste Treatment Plant, Yaphank, NY	DYNFLOW, DYNTRAC	Evaluate time-transport and nitrogen impact on local river system.
SCDPW SUNY Waste Water Treatment Plant, Stony Brook, NY	DYNFLOW, DYNTRAC	Determine outfall location and time-transport of nitrogen from proposed upgrades to an existing wastewater treatment plant
Water Authority of Great Neck North Great Neck, NY	MODFLOW, MODPATH, MT3D	Review of modeling study performed by EPA to evaluate potential future impact to Well field from PCE plume. Identified serious flaws in model construction and implementation, which invalidated conclusions

PUBLICATIONS / PROFESSIONAL PAPERS

Smart Pump & Treat Strategy for MTBE Impacting a Public Water Supply (14th Annual Conference on Contaminated Soils Proceedings, 1998)

Transport & Transformation of BTEX & MTBE in a Sand Aquifer (Groundwater Monitoring & Remediation 05/1998)

Characteristics of Gasoline Releases in the Water Table Aquifer of Long Island (Petroleum Hydrocarbons Conference Proceedings, 1999)

Field Applications of the Hydrocarbon Spill Screening Model (HSSM) (USEPA Interactive Modeling Web Course www.epa.gov/athens/software/training/webcourse Authored module on model application and applied use of calculators, 02/2000)

Comparative Evaluation of MTBE Sites on Long Island, US EPA Workshop on MTBE Bioremediation (Cincinnati, 02/2000)

Comparison of Four MTBE Plumes in the Upper Glacial Aquifer of Long Island (American Geophysical Union, San Francisco, 12/1996)

Analysis and Simulation of the Gasoline Spill at East Patchogue, New York (American Geophysical Union, San Francisco, 12/1998)

EBC

ENVIRONMENTAL BUSINESS CONSULTANTS

ARIEL CZEMERINSKI, P.E.

Mr. Czemerinski is a New York State Professional Engineer and CEO of AMC Engineering PLLC an EBC affiliate. Mr. Czemerinski has with 16 years of experience in the chemical and environmental areas. Areas of expertise include environmental compliance, permitting, remedial system design, process and plant safety, and management of a production facility. Mr. Czemerinski is a Registered Professional Engineer in NY, IN, IL, and MI.

Professional Experience
EBC: January 2007
Prior: 20 years

Education
Master of Science in Chemical Engineering, Columbia University, New York, NY, Feb. 1990. Bachelor of Science in Chemical Engineering, University Of Buenos Aires, Buenos Aires, Argentina, May 1987

Areas of Expertise

- Vapor Intrusion - Barrier and Sub Slab Venting System Design
- Environmental Assessment Statements and Environmental Impact Assessments under CEQR, ULURP
- Remedial Program Design and Management
- Environmental Compliance, Clean Water Act, Clean Air Act, Hazardous Materials
- Transfer Station Permitting and Compliance
- Chemical Process Design and Optimization
- Wastewater Treatment Systems and Permitting, SPEDES, Air
- Zoning Regulations and Permitting
- Safety and environmental training

Professional Certification

- OSHA 40-hr HAZWOPER
- OSHA 8-hr HAZWOPER Supervisor

EBC

ENVIRONMENTAL BUSINESS CONSULTANTS

Kevin R. Brussee, Senior Project Manager

Professional Experience
EBC: January 2008
Prior: 6 years

Education
Bachelor of Science, Environmental Science, Plattsburgh State University, NY
Master of Science, Environmental Studies, University of Massachusetts, Lowell

Areas of Expertise
- Management of Site Investigations / Remedial Oversight NYC "E" Designation Sites
- Management of RI Investigations / RAWP Implementation NYS BCP Sites
- NYSDEC Spill Site Investigations
- Phase I / Phase II Property Assessments
- Waste Characterization / Soil Management

Professional Certification
- OSHA 40-hr HAZWOPER
- OSHA 8-hr HAZWOPER Supervisor

PROFILE

Mr. Brussee has 10 years experience as an environmental consultant/contractor and has worked on and managed a wide range of environmental projects. Mr. Brussee has conducted Phase I, II and III Environmental Site Assessments for commercial, industrial, and residential properties in New York, New Jersey, Maryland and Delaware.

Mr. Brussee's field experience includes tank removal and installations, spill management and closure, soil and groundwater sampling, and both the oversight and operation of soil boring and well installation equipment. In addition, Mr. Brussee has performed project research, data reduction and evaluation, and has prepared reports for both regulatory and client use.

PREVIOUS EXPERIENCE

Eastern Environmental Solutions, Inc., Manorville, NY
Project Manager, 2006-2008

EA Engineering, Science & Technology
Hydrogeologist, 2005-2006

P.W. Grosser Consulting, Bohemia, NY
Field Hydrogeologist, 2002-2003

EBC

ENVIRONMENTAL BUSINESS CONSULTANTS

Kevin R. Brussee, Senior Project Manager

SELECT PROJECT EXPERIENCE

Project:	Former Dico G, Autio and Truck Repair Site - Bronx Park Apartments, redevelopment from commercial to mixed use
Location:	Bronx, NY, White Plains Road
Type:	NYS BCP Site, Former gas station, repair shop & junk yard
Contamination:	Petroleum - Gasoline
Role:	Project Manager, during Site Management Phase

Project:	Former Uniforms for Industry Site – Richmond Hill Senior Living Residences / Richmond Place
Location:	Jamaica Ave, Richmond Hill Queens, NY
Type:	NYS BCP, NYC E-Site Hazmat, Noise, Former industrial Laundry
Contamination:	Chlorinated Solvents, Historic Fill, Petroleum - Fuel oil/Mop oil
Role:	Project Manager, RAWP implementation

Project:	Former Gas Station / car wash to mixed use affordable housing / commercial
Location:	Bronx, NY, Southern Boulevard
Type:	NYS BCP, NYC E-Site Hazmat, Former gas station / gar wash
Contamination:	Petroleum - Gasoline
Role:	Project Manager, RAWP implementation

Project:	Redevelopment of former industrial property to residential
Location:	Williamsburg section of Brooklyn, NY, Bedford Ave
Type:	NYC E-Designation Site, Former dye manufacturing plant
Contamination:	Hazardous levels of heavy metals, fuel oil tanks
Role:	Project Manager, RAWP implementation

Project:	Former Domsey Fiber Corp Site
Location:	Williamsburg section of Brooklyn, NY, Kent Ave
Type:	NYC E-Designation Site, Former commercial property
Contamination:	Chlorinated solvents, fuel oil and Historic fill
Role:	Project Manager, RIWP Development and Implementation, RAWP development and implementation, waste characterization and soil management

PUBLICATIONS

Chemical Stress Induced by Copper, Examination of a Biofilm System;
(Water Science Technology, 2006; 54(9): 191-199.)

EBC

ENVIRONMENTAL BUSINESS CONSULTANTS

Kristen DiScenza, Project Manager

Professional Experience
EBC: February 2013
Prior: 7.5 years

Education
Graduate Certificate, Waste Management, Stony Brook University, NY
Bachelor of Science, Environmental Science, SUNY Oneonta, Oneonta, NY

Areas of Expertise
- Phase I /Phase II Property Assessments
- NYSDEC Spill Site Investigations
- Management of Site Investigations/Remedial Oversight NYC "E" Designation Sites
- Management of RI Investigations/RAWP Implementation NYS BCP Sites

Professional Certification
- OSHA 40-hr HAZWOPER
- OSHA 10-hr Construction Health and Safety
- Lead Awareness

PROFILE

Ms. DiScenza has 7.5 years experience as an environmental consultant/contractor and has worked on and managed a wide range of environmental projects. Ms. DiScenza has conducted Phase I, Phase II, and Phase III Environmental Site Assessments for commercial, industrial and residential properties in New York.

Ms. DiScenza's field experience includes tank removal and installations, spill management and closure, soil and groundwater sampling, oversight of soil boring and well installation and abandonment activities, UIC structure remediation and abandonment, Enhanced Fluid Recovery oversight and installation and operation of soil vapor extraction/air sparge and oxygen injection remediation systems. Ms. DiScenza has prepared reports for both regulatory and client use.

PREVIOUS EXPERIENCE

Sovereign Consulting, Inc., Farmingdale, New York
Senior Project Manager, 2006-2013

Tyree Brothers Environmental Services, Farmingdale, New York
Field Technician, 2005-2006

EBC

ENVIRONMENTAL BUSINESS CONSULTANTS

Chawinie Miller, Project Manager / Industrial Hygienist

Professional Experience
EBC: March 2013
Prior: 7.5 years

Education
Bachelor of Science, Environmental Health and Safety, Stony Brook University, NY

Areas of Expertise
- Phase I / Property Condition Assessments
- Occupational Health and Safety Sampling
- Indoor Air Quality (IAQ) Investigations
- Mold Investigations and Remediation
- Soil and Ground Water Investigations
- Noise Studies

Professional Certification
- OSHA 40-hr HAZWOPER
- NYS Asbestos Inspector
- NYC Asbestos Investigator
- OSHA 10-hr Construction Health and Safety
- Hazard Analysis and Critical Control Point (HACCP) Certified

PROFILE

Ms. Miller has 7.5 years experience as an environmental consultant/contractor and has worked on and managed a wide range of environmental projects. Ms. Miller has conducted Phase Is and Property Condition Assessments for commercial, industrial, and residential properties in New York, New Jersey and Connecticut. In addition, Ms. Miller has conducted various IAQ, asbestos, mold and occupational health and safety sampling investigations for a variety of city, state, federal and private clients.

PREVIOUS EXPERIENCE

The Louis Berger Group, New York, New York
Industrial Hygienist, 2008-2013

AEI Consultants, Jersey City, New Jersey
Environmental Scientist, 2005-2008

ATTACHMENT G
BCP Sign Specifications

New York State Brownfield Cleanup Program

Former Getty Service Station
BCP Site No. C-224176
1107D LLC

Governor Andrew M. Cuomo
NYSDEC Commissioner Joe Martens
Mayor Bill de Blasio

Transform the Past...Build for the Future

ATTACHMENT H
Estimated Remedial Costs

TABLE 1
FORMER GETTY SERVICE STATION SITE
1107 DeKalb Avenue
Brooklyn, NY

Summary of Project Costs

NYS Brownfields Cleanup Program

TASK	Costs by Task Track 1	Costs by Task Track 2	Costs by Task Track 4
BCP Entry Documents	$ 26,600.00	$ 26,600.00	$ 26,600.00
Supplemental Investigation and RI Report	$ 73,210.00	$ 73,210.00	$ 73,210.00
Remedial Work Plan, Remedy Scoping & Coordination	$ 19,250.00	$ 19,250.00	$ 19,250.00
Remedial Program Implementation	$ 915,482.75	$ 483,521.75	$ 434,080.25
Final Engineering Report, Site Management Plan & IC/ECs	$ 53,250.00	$ 53,250.00	$ 53,250.00
Long Term Groundwater Monitoring and Reporting	$ 54,550.00	$ 54,550.00	$ 54,550.00
Subtotal	$ 1,142,342.75	$ 710,381.75	$ 660,940.25
15% Contingency	$ 171,351.41	$ 106,557.26	$ 99,141.04
Total	**$ 1,313,694.16**	**$ 816,939.01**	**$ 760,081.29**

ATTACHMENT I
Chemical Oxidant Calculations

Enter Data Here to Input in All Zones

	Surface Area of Zone (ft^2)	Height of Water Column Contamination (ft)	Height of Soil Contamination Layer (ft)	Soil Density (lb/ft^3)	Total Mass of Contaminants in Groundwater (lb)	Amount of Klozur Required to Treat Groundwater (lb)	Total Mass of Contaminants in Soil (lb)	Amount of Klozur Required to Treat Soil (lb)	Total Amount of Klozur Required for Site (lb)
Zone 1	0	0	0	0	0.888102658	35.74067474	469.5044952	18611.43566	18647.17633
Zone 2	0	0	0	0					
Zone 3	0	0	0	0					
Zone 4	0	0	0	0					
Zone 5	0	0	0	0					
Zone 6	0	0	0	0					
Zone 7	0	0	0	0					

ZONE 1

Enter Data	Enter Data	Enter Data
1355	5	0.30

Contaminant	Groundwater Concentration (µg/L)		Conversion (µg to g)		Conversion (g to lb)		Groundwater Concentration (lb/L)		Converstion (ft^3 to L)		Area (ft^2)		Height of Water Column Contamination (ft)		Porosity		Mass of Contaminant (lb)			Total Klozur Required (lb)
chlorinated ethenes		(X)	1.E-06	(X)	0.0022	=	0	(X)	28.3168	(X)	1355	(X)	5	(X)	0.30	=	0	(X)	=	35.74067
chlorinated ethanes		(X)	1.E-06	(X)	0.0022	=	0	(X)	28.3168	(X)	1355	(X)	5	(X)	0.30	=	0	(X)	=	
chlorinated methanes		(X)	1.E-06	(X)	0.0022	=	0	(X)	28.3168	(X)	1355	(X)	5	(X)	0.30	=	0	(X)	=	
chlorinated benzenes		(X)	1.E-06	(X)	0.0022	=	0	(X)	28.3168	(X)	1355	(X)	5	(X)	0.30	=	0	(X)	=	
1,4-Dioxane		(X)	1.E-06	(X)	0.0022	=	0	(X)	28.3168	(X)	1355	(X)	5	(X)	0.30	=	0	(X)	=	
BTEX		(X)	1.E-06	(X)	0.0022	=	0	(X)	28.3168	(X)	1355	(X)	5	(X)	0.30	=	0	(X)	=	
PAHs		(X)	1.E-06	(X)	0.0022	=	0	(X)	28.3168	(X)	1355	(X)	5	(X)	0.30	=	0	(X)	=	
GRO		(X)	1.E-06	(X)	0.0022	=	0	(X)	28.3168	(X)	1355	(X)	5	(X)	0.30	=	0	(X)	=	
DRO		(X)	1.E-06	(X)	0.0022	=	0	(X)	28.3168	(X)	1355	(X)	5	(X)	0.30	=	0	(X)	=	
Alkanes		(X)	1.E-06	(X)	0.0022	=	0	(X)	28.3168	(X)	1355	(X)	5	(X)	0.30	=	0	(X)	=	
TPH		(X)	1.E-06	(X)	0.0022	=	0	(X)	28.3168	(X)	1355	(X)	5	(X)	0.30	=	0	(X)	=	
MTBE		(X)	1.E-06	(X)	0.0022	=	0	(X)	28.3168	(X)	1355	(X)	5	(X)	0.30	=	0	(X)	=	
Creosote		(X)	1.E-06	(X)	0.0022	=	0	(X)	28.3168	(X)	1355	(X)	5	(X)	0.30	=	0	(X)	=	
Pesticides		(X)	1.E-06	(X)	0.0022	=	0	(X)	28.3168	(X)	1355	(X)	5	(X)	0.30	=	0	(X)	=	
1,2,4-Trimethylbenzene	2,600	(X)	1.E-06	(X)	0.0022	=	0.00000572	(X)	28.3168	(X)	1355	(X)	5	(X)	0.30	=	0.329208285	(X)	=	
1,3,5-Trimethylbenzene	820	(X)	1.E-06	(X)	0.0022	=	0.000001804	(X)	28.3168	(X)	1355	(X)	5	(X)	0.30	=	0.103827228	(X)	=	
2-Butanone		(X)	1.E-06	(X)	0.0022	=	0	(X)	28.3168	(X)	1355	(X)	5	(X)	0.30	=	0	(X)	=	
2-Chlorotoluene		(X)	1.E-06	(X)	0.0022	=	0	(X)	28.3168	(X)	1355	(X)	5	(X)	0.30	=	0	(X)	=	
2-Hexanone		(X)	1.E-06	(X)	0.0022	=	0	(X)	28.3168	(X)	1355	(X)	5	(X)	0.30	=	0	(X)	=	
4-Methyl-2-Pentanone		(X)	1.E-06	(X)	0.0022	=	0	(X)	28.3168	(X)	1355	(X)	5	(X)	0.30	=	0	(X)	=	
Acetone		(X)	1.E-06	(X)	0.0022	=	0	(X)	28.3168	(X)	1355	(X)	5	(X)	0.30	=	0	(X)	=	
Benzene		(X)	1.E-06	(X)	0.0022	=	0	(X)	28.3168	(X)	1355	(X)	5	(X)	0.30	=	0	(X)	=	
Bromobenzene		(X)	1.E-06	(X)	0.0022	=	0	(X)	28.3168	(X)	1355	(X)	5	(X)	0.30	=	0	(X)	=	
Cyclohexane		(X)	1.E-06	(X)	0.0022	=	0	(X)	28.3168	(X)	1355	(X)	5	(X)	0.30	=	0	(X)	=	
Ethyl Benzene	350	(X)	1.E-06	(X)	0.0022	=	0.00000077	(X)	28.3168	(X)	1355	(X)	5	(X)	0.30	=	0.0443165	(X)	=	
Hexachlorobutadiene		(X)	1.E-06	(X)	0.0022	=	0	(X)	28.3168	(X)	1355	(X)	5	(X)	0.30	=	0	(X)	=	
Isopropylbenzene	300	(X)	1.E-06	(X)	0.0022	=	0.00000066	(X)	28.3168	(X)	1355	(X)	5	(X)	0.30	=	0.037985571	(X)	=	
m/p-Xylenes	1,500	(X)	1.E-06	(X)	0.0022	=	0.0000033	(X)	28.3168	(X)	1355	(X)	5	(X)	0.30	=	0.189927857	(X)	=	
Methyl Cyclohexane		(X)	1.E-06	(X)	0.0022	=	0	(X)	28.3168	(X)	1355	(X)	5	(X)	0.30	=	0	(X)	=	
methyl tert-butyl Ether		(X)	1.E-06	(X)	0.0022	=	0	(X)	28.3168	(X)	1355	(X)	5	(X)	0.30	=	0	(X)	=	
Naphthalene	470	(X)	1.E-06	(X)	0.0022	=	0.000001034	(X)	28.3168	(X)	1355	(X)	5	(X)	0.30	=	0.059510728	(X)	=	
n-Butylbenzene	170	(X)	1.E-06	(X)	0.0022	=	0.000000374	(X)	28.3168	(X)	1355	(X)	5	(X)	0.30	=	0.021525157	(X)	=	
n-Propylbenzene	700	(X)	1.E-06	(X)	0.0022	=	0.00000154	(X)	28.3168	(X)	1355	(X)	5	(X)	0.30	=	0.088633	(X)	=	
o-Xylene	34	(X)	1.E-06	(X)	0.0022	=	7.48E-08	(X)	28.3168	(X)	1355	(X)	5	(X)	0.30	=	0.004305031	(X)	=	
p-Isopropyltoluene		(X)	1.E-06	(X)	0.0022	=	0	(X)	28.3168	(X)	1355	(X)	5	(X)	0.30	=	0	(X)	=	
sec-Butylbenzene	70	(X)	1.E-06	(X)	0.0022	=	0.000000154	(X)	28.3168	(X)	1355	(X)	5	(X)	0.30	=	0.0088633	(X)	=	
Styrene		(X)	1.E-06	(X)	0.0022	=	0	(X)	28.3168	(X)	1355	(X)	5	(X)	0.30	=	0	(X)	=	
tert-Butylbenzene		(X)	1.E-06	(X)	0.0022	=	0	(X)	28.3168	(X)	1355	(X)	5	(X)	0.30	=	0	(X)	=	
Toluene		(X)	1.E-06	(X)	0.0022	=	0	(X)	28.3168	(X)	1355	(X)	5	(X)	0.30	=	0	(X)	=	
															Total	=	0.888102658			

SOIL ZONE 1

Contaminant	Soil Concentration (µg/kg)		Conversion (µg to g)		Conversion (g to lb)		Soil Concentration (lb/kg soil)		Contaminated Area (ft^2)		Height of Soil Contamination Layer (ft)		Soil Density (lb/ft^3)		Conversion (lb to kg)		Mass of Contaminant (lb)			Total Klozur Required (lb)
									Enter Data 1355		Enter Data 5		Enter Data 108.00							
chlorinated ethenes		(X)	1.E-06	(X)	0.0022	=	0	(X)	1355	(X)	5	(X)	108.00	(X)	0.4536	=	0	(X)	=	18611.44
chlorinated ethanes		(X)	1.E-06	(X)	0.0022	=	0	(X)	1355	(X)	5	(X)	108.00	(X)	0.4536	=	0	(X)	=	
chlorinated methanes		(X)	1.E-06	(X)	0.0022	=	0	(X)	1355	(X)	5	(X)	108.00	(X)	0.4536	=	0	(X)	=	
chlorinated benzenes		(X)	1.E-06	(X)	0.0022	=	0	(X)	1355	(X)	5	(X)	108.00	(X)	0.4536	=	0	(X)	=	
1,4-Dioxane		(X)	1.E-06	(X)	0.0022	=	0	(X)	1355	(X)	5	(X)	108.00	(X)	0.4536	=	0	(X)	=	
BTEX		(X)	1.E-06	(X)	0.0022	=	0	(X)	1355	(X)	5	(X)	108.00	(X)	0.4536	=	0	(X)	=	
PAHs		(X)	1.E-06	(X)	0.0022	=	0	(X)	1355	(X)	5	(X)	108.00	(X)	0.4536	=	0	(X)	=	
GRO		(X)	1.E-06	(X)	0.0022	=	0	(X)	1355	(X)	5	(X)	108.00	(X)	0.4536	=	0	(X)	=	
DRO		(X)	1.E-06	(X)	0.0022	=	0	(X)	1355	(X)	5	(X)	108.00	(X)	0.4536	=	0	(X)	=	
Alkanes		(X)	1.E-06	(X)	0.0022	=	0	(X)	1355	(X)	5	(X)	108.00	(X)	0.4536	=	0	(X)	=	
TPH		(X)	1.E-06	(X)	0.0022	=	0	(X)	1355	(X)	5	(X)	108.00	(X)	0.4536	=	0	(X)	=	
MTBE		(X)	1.E-06	(X)	0.0022	=	0	(X)	1355	(X)	5	(X)	108.00	(X)	0.4536	=	0	(X)	=	
Creosote		(X)	1.E-06	(X)	0.0022	=	0	(X)	1355	(X)	5	(X)	108.00	(X)	0.4536	=	0	(X)	=	
Pesticides		(X)	1.E-06	(X)	0.0022	=	0	(X)	1355	(X)	5	(X)	108.00	(X)	0.4536	=	0	(X)	=	
1,2,4-Trimethylbenzene	280,000	(X)	1.E-06	(X)	0.0022	=	0.000616	(X)	1355	(X)	5	(X)	108.00	(X)	0.4536	=	204.4498579	(X)	=	
1,3,5-Trimethylbenzene	76,000	(X)	1.E-06	(X)	0.0022	=	0.0001672	(X)	1355	(X)	5	(X)	108.00	(X)	0.4536	=	55.49353286	(X)	=	
2-Butanone		(X)	1.E-06	(X)	0.0022	=	0	(X)	1355	(X)	5	(X)	108.00	(X)	0.4536	=	0	(X)	=	
2-Chlorotoluene		(X)	1.E-06	(X)	0.0022	=	0	(X)	1355	(X)	5	(X)	108.00	(X)	0.4536	=	0	(X)	=	
2-Hexanone		(X)	1.E-06	(X)	0.0022	=	0	(X)	1355	(X)	5	(X)	108.00	(X)	0.4536	=	0	(X)	=	
4-Methyl-2-Pentanone		(X)	1.E-06	(X)	0.0022	=	0	(X)	1355	(X)	5	(X)	108.00	(X)	0.4536	=	0	(X)	=	
Acetone		(X)	1.E-06	(X)	0.0022	=	0	(X)	1355	(X)	5	(X)	108.00	(X)	0.4536	=	0	(X)	=	
Benzene		(X)	1.E-06	(X)	0.0022	=	0	(X)	1355	(X)	5	(X)	108.00	(X)	0.4536	=	0	(X)	=	
Bromobenzene		(X)	1.E-06	(X)	0.0022	=	0	(X)	1355	(X)	5	(X)	108.00	(X)	0.4536	=	0	(X)	=	
Cyclohexane		(X)	1.E-06	(X)	0.0022	=	0	(X)	1355	(X)	5	(X)	108.00	(X)	0.4536	=	0	(X)	=	
Ethyl Benzene	41,000	(X)	1.E-06	(X)	0.0022	=	0.0000902	(X)	1355	(X)	5	(X)	108.00	(X)	0.4536	=	29.93730062	(X)	=	
Hexachlorobutadiene		(X)	1.E-06	(X)	0.0022	=	0	(X)	1355	(X)	5	(X)	108.00	(X)	0.4536	=	0	(X)	=	
Isopropylbenzene		(X)	1.E-06	(X)	0.0022	=	0	(X)	1355	(X)	5	(X)	108.00	(X)	0.4536	=	0	(X)	=	
m/p-Xylenes	120,000	(X)	1.E-06	(X)	0.0022	=	0.000264	(X)	1355	(X)	5	(X)	108.00	(X)	0.4536	=	87.62136768	(X)	=	
Methyl Cyclohexane		(X)	1.E-06	(X)	0.0022	=	0	(X)	1355	(X)	5	(X)	108.00	(X)	0.4536	=	0	(X)	=	
methyl tert-butyl Ether		(X)	1.E-06	(X)	0.0022	=	0	(X)	1355	(X)	5	(X)	108.00	(X)	0.4536	=	0	(X)	=	
Naphthalene	47,000	(X)	1.E-06	(X)	0.0022	=	0.0001034	(X)	1355	(X)	5	(X)	108.00	(X)	0.4536	=	34.31836901	(X)	=	
n-Butylbenzene	17,000	(X)	1.E-06	(X)	0.0022	=	0.0000374	(X)	1355	(X)	5	(X)	108.00	(X)	0.4536	=	12.41302709	(X)	=	
n-Propylbenzene	47,000	(X)	1.E-06	(X)	0.0022	=	0.0001034	(X)	1355	(X)	5	(X)	108.00	(X)	0.4536	=	34.31836901	(X)	=	
o-Xylene	15,000	(X)	1.E-06	(X)	0.0022	=	0.000033	(X)	1355	(X)	5	(X)	108.00	(X)	0.4536	=	10.95267096	(X)	=	
p-Isopropyltoluene		(X)	1.E-06	(X)	0.0022	=	0	(X)	1355	(X)	5	(X)	108.00	(X)	0.4536	=	0	(X)	=	
sec-Butylbenzene		(X)	1.E-06	(X)	0.0022	=	0	(X)	1355	(X)	5	(X)	108.00	(X)	0.4536	=	0	(X)	=	
Styrene		(X)	1.E-06	(X)	0.0022	=	0	(X)	1355	(X)	5	(X)	108.00	(X)	0.4536	=	0	(X)	=	
tert-Butylbenzene		(X)	1.E-06	(X)	0.0022	=	0	(X)	1355	(X)	5	(X)	108.00	(X)	0.4536	=	0	(X)	=	
Toluene		(X)	1.E-06	(X)	0.0022	=	0	(X)	1355	(X)	5	(X)	108.00	(X)	0.4536	=	0	(X)	=	
															Total	**=**	469.5044952			