

310 GRAND CONCOURSE
310-336 GRAND CONCOURSE
BRONX, NEW YORK 10451
Block 2341, Lots 10 (partial), 28 and 31

REMEDIAL ACTION WORK PLAN

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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).

<u>076058</u>	<u>9/9/2020</u>	<u></u>
NYS Professional Engineer #	Date	Signature

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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 310 Grand Concourse LLC for the property known as 310 Grand Concourse, located at 310-336 Grand Concourse in the Bronx, New York (hereafter referred to as the Site). In February 2019, 310 Grand Concourse LLC filed an application with the New York State Department of Environmental Conservation (NYSDEC), to admit the Project Site into the New York State Brownfield Cleanup Program (BCP). 310 Grand Concourse LLC was accepted into the BCP as a Volunteer through an agreement executed on July 23, 2019. An unrestricted use is proposed for the property. When completed, the Site will be redeveloped with a new 14-story residential building. The proposed development is compatible with the existing C6-2A zoning. Refer to the Brownfield Cleanup Program (BCP) application for additional details.

The street address for the Site is 310-336 Grand Concourse, Bronx, NY (**Figure 1**). The Site is located in the Mott Haven neighborhood of Bronx County and is comprised of the two full tax parcels (Lot 28, 31) with a portion of a third parcel (Lot 10) which are currently being merged (**Figure 2**). The total area of the new lot is 29,538 square feet (0.68 acres). The Site is located in the City of New York and Borough of the Bronx. The Site is irregular shaped with 237.33 feet of frontage along Grand Concourse.

The Site is improved with three 1-story masonry buildings constructed approximately in 1931; two on lot 28 and one on Lot 31. The southern half of lot 28 is partitioned off into two parking lots with 6 to 8 ft high fencing structures and awnings. The buildings and property are currently vacant.

Summary of the Remedial Investigation

A Remedial Investigation was completed at the Site from June 22-25, 2018 and January 30th through February 5th of 2019, and documented in a Remedial Investigation Report dated February 2019. 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 of a Remedial Work Plan to address the contamination.

Activities completed under the RI:

- Installed sixteen soil borings and collected twenty-four soil samples for laboratory analysis of volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), herbicides, pesticides, PCBs, and metals;
- Submitted seven soil samples for analysis of emerging contaminants (PFAS, 1,4-dioxane);
- Installed two groundwater monitoring wells and collected three groundwater samples for laboratory analysis of VOCs, SVOCs, pesticides, PCBs, total and dissolved metals and emerging contaminants (PFAS, 1,4-dioxane);
- Installed four soil gas implants and six subslab vapor implants and collected ten samples for laboratory analysis of VOCs.

The results of sampling performed during this RI identified an area of petroleum-related VOCs at the northwestern portion of Lot 28 in the vicinity of historic underground gasoline storage tanks. This impacted area is estimated to be approximately 1,000 sf.

Historic fill materials have been identified across the Site to depths 5 feet below grade. The fill material contains elevated levels of metals, SVOCs and PCBs. Cadmium, chromium, copper, mercury and lead were all reported above Restricted Residential SCOs. Arsenic and mercury were also reported above Commercial SCOs. SVOCs including benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene and ideno(1,2,3-cd)pyrene were all reported above Restricted Residential SCOs. Benzo(a)pyrene was also reported above Commercial SCOs. PCB1260 was detected within three of the soil samples above Unrestricted Use SCOs.

Petroleum related VOCs detected above groundwater standards included 1,2,4-trimethylbenzene, ethylbenzene, isopropylbenzene, naphthalene, n-propylbenzene, o-xylene, and toluene. The petroleum related VOCs were detected above AWQS within the groundwater sample (MW1) collected from the same location as the soil boring which noted petroleum related VOCs above Protection of Groundwater SCOs.

Qualitative Human Health Exposure Assessment

The qualitative exposure assessment indicated a limited potential exposure to residents and commercial workers in adjacent buildings from dust or vapors during excavation of impacted soil. A site-specific Community Air Monitoring Plan has been developed to identify and minimize the potential for off-site exposure to residents through continuous air monitoring during excavation activity. There were no other identified potential impacts to off-site populations from site-related contaminants.

Potential environmental impacts through the groundwater to surface water discharge were considered unlikely based on the concentrations of VOCs in groundwater, the groundwater flow direction (west to southwest), and the distance to the Harlem River (845 feet).

Summary of the Remedy

The remedy recommended for the Site is a Track 1 alternative (Alternative 1) which consists of the removal of all on-Site soil which exceeds Unrestricted Use SCOs. It is expected that a Track 1 alternative will require excavation to a minimum depth of 5 feet across the Site with additional excavation within the petroleum contaminated area to a depth of 15 feet below grade. Additional excavation across the site as needed to remove soil/fill with contaminants above Unrestricted Use SCOs. The remedy will include the following items:

1. Demolition and C&D disposal of the existing buildings at the Site;
2. Removal and disposal of the asphalt cap to allow removal of the soil beneath;
3. Excavation of soil/fill exceeding Track 1 Unrestricted Use SCOs as listed in **Table 1** to a average depth of 5 feet across the Site with additional excavation to 15 feet within the petroleum impacted area and as needed to meet Track 1 Unrestricted Use SCOs;

4. Screening for indications of contamination (by visual means, odor, and monitoring with PID) of all excavated soil during any intrusive Site work;
5. Dewatering as needed to facilitate excavation of petroleum impacted soil and treatment of impacted groundwater before discharging to the NYC sewer system under a NYCDEP sewer discharge permit;
6. Collection and analysis of end-point samples to evaluate the performance of the remedy with respect to attainment of Track 1 Unrestricted Use SCOs;
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 waterproofing membrane to significantly reduce the potential for any vapor exposure pathway.
10. If Track 1 cleanup is not achieved, an Environmental Easement will be filed against the Site to limit future use of the property to Restricted Residential, Commercial or Industrial;
11. If Track 2 Restricted Residential Use SCOs are not achieved, a composite cover system consisting of the concrete building slab will be constructed;
12. If a Track 2 cleanup is not achieved, implementation of a Site Management Plan (SMP) for long term maintenance of the Engineering Controls.

Although the goal of the remedy will be to remove all soil exceeding the Track 1 Unrestricted Use SCOs, if Track 1 Unrestricted Use SCOs cannot be achieved, then a Track 2 or Track 4 remedy may result.

1.0 INTRODUCTION

This Remedial Action Work Plan (RAWP) was prepared on behalf of 310 Grand Concourse LLC for the property known as 310 Grand Concourse, located at 310-336 Grand Concourse in the Bronx, New York (hereafter referred to as the Site). In February 2019, 310 Grand Concourse LLC filed an application with the New York State Department of Environmental Conservation (NYSDEC), to admit the Project Site into the New York State Brownfield Cleanup Program (BCP). 310 Grand Concourse LLC was accepted into the BCP as a Volunteer through an agreement executed on July 23, 2019. An unrestricted use is proposed for the property. When completed, the Site will be redeveloped with a new 14-story residential building. The proposed development is compatible with the existing C6-2A zoning. Refer to the Brownfield Cleanup Program (BCP) application for additional details.

This RAWP summarizes the nature and extent of contamination as determined from data gathered during the Remedial Investigation (RI), performed in June 2018 through February 2019. It provides an evaluation of a Track 1 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 determined that this Site does not pose a significant threat to human health and the environment. The RI for this Site did not identify fish and wildlife resources. A formal Remedial Design document will not be prepared.

1.1 SITE LOCATION AND DESCRIPTION

The street address for the Site is 310-336 Grand Concourse, Bronx, NY (**Figure 1**). The Site is located in the Mott Haven neighborhood of Bronx County and is comprised of the two full tax parcels (Lot 28, 31) with a portion of a third parcel (Lot 10) which are currently being merged (**Figure 2**). The total area of the new lot is 29,538 square feet (0.68 acres). The Site is located in the City of New York and Borough of the Bronx. The Site is irregular shaped with 237.33 feet of frontage along Grand Concourse.

The north and south sides of the property are bordered by commercial properties. The west side is bordered by Grand Concourse with commercial properties on the west side. The east side is bordered by the Metro North rail line.

The Site is improved with three 1-story masonry buildings constructed approximately in 1931; two on lot 28 and one on Lot 31. The southern half of lot 28 is partitioned off into two parking lots with 6 to 8 ft high fencing structures and awnings. The buildings and property are currently vacant.

The elevation of the Site is between approximately 22 to 30 feet above the National Geodetic Vertical Datum (NGVD). The area topography gradually slopes to the west and south. Groundwater is present intermittently on top of the bedrock surface when deeper than 12 feet below grade. Based on regional groundwater elevation maps and the depth to the bedrock surface across the Site, groundwater is expected to flow west to southwest toward the Harlem River.

1.2 CONTEMPLATED REDEVELOPMENT PLAN

The redevelopment project consists of the construction of a new 14- story residential building, with full cellar, which will cover the entire footprint of the Site. One hundred percent of the Site will be excavated to a depth of approximately 10 feet for the cellar level of the proposed building. With perched groundwater present intermittently on bedrock surfaces below 12 feet it is unlikely that dewatering will be required during construction of the building's foundation.

1.3 DESCRIPTION OF SURROUNDING PROPERTY

Surrounding land use (**Figure 3**) consists primarily of commercial (warehouses, auto repair, etc) and industrial (manufacturing) to the north, south, east and west. There are several multi-family apartment buildings to the north and to the east on the opposite side of the Metro-North railway. The area surrounding the property is highly urbanized and predominantly consists of industrial / commercial buildings interspersed with open air parking / display lots and equipment yards.

There are four schools located within 1,200 feet of the Site including the Health Opportunities High School approximately 975 feet to the west, Hostos Community College located 1,200 feet

to the north, P.S. 31 located 977 feet to the north and P.S. 168 located 750 feet to the east. There were no nursing homes or hospitals identified within 1,200 feet of the Site.

2.0 DESCRIPTION OF REMEDIAL INVESTIGATION FINDINGS

The field work portion of the RI was conducted by EBC on June 22-25, 2018 and January 30th through February 5th of 2019. At DEC's request a Supplemental Investigation was performed on January 15 and February 3, 2020. The investigation is summarized in the sections below. Further details are provided in the Remedial Investigation Report (EBC, April 2020).

2.1 SUMMARY OF REMEDIAL INVESTIGATIONS PERFORMED

2.1.1 Soil Sampling

A total of sixteen soil borings were advanced at the Site to determine if the historic use of the Site had impacted the subsurface of the Site (**Figure 3**). Five soil borings were performed between June 22 to June 25, 2018 (SB1, SB2, SB3, SB4, and SB6), four soil borings were performed on January 30, 2019 (B1, B2, B3 and B4), and two additional soil borings were performed on February 1, 2019 (B5 and B6). Three new soil borings (SB7, SB8 and SB9) were performed on January 15, 2020, and soil borings B5 and B6 were re-sampled (B5D and B6D). For soil borings SB1, SB2, SB3, SB4, SB6, SB7, SB8 and SB9, soil samples were collected continuously in 5-foot intervals to depths varying between 6 and 23 feet below grade until the bedrock surface was encountered using a track-mounted Geoprobe™ model 66DT sampling system. The Geoprobe™ uses a direct push hydraulic percussion system to drive and retrieve core samplers. Soil samples were retrieved using a 2-inch diameter, 5-foot long macro-core sampler with disposable acetate liners. Soil borings B1 through B6 were performed by hand to a depth of 3 feet below grade using an AMS Stainless Steel Hand Auger because access to the proposed sampling areas with the Geoprobe was not possible (low ceiling height, large piles of materials/equipment, etc.). Each soil sample recovered from the soil borings was characterized by an experienced geologist and field screened for the presence of VOCs using a photo-ionization detector (PID). Soil boring locations are shown in **Figure 4**.

2.1.2 Monitoring Wells

Two monitoring wells (MW1 and MW3) were installed at the Site on June 28, 2018. Both wells were installed with a track mounted Geoprobe™ Model 6712DT drilling machine to a depth of

approximately 20 feet below grade with 10 feet of 0.010 PVC well screen and 10 feet of PVC riser.

A No.00 morie filter-pack sand filled the annulus surrounding the screen within two feet above the top of the screen. A one-foot hydrated bentonite seal was then placed on top of the filter sand and the remainder of the borehole was backfilled to grade. Following installation, both monitoring wells were surveyed to determine relative casing elevation to the nearest 0.01 ft and horizontal position to the nearest 0.1 ft.

Prior to sampling, a synoptic round of depth-to-groundwater (DTW) measurements were obtained from the wells on June 28, 2018 to determine the water table elevation and to calculate the volume of standing water in the well. The depth to groundwater ranged from 12-13 feet below grade. Monitoring well locations are identified in **Figure 5**.

2.1.3 Samples Collected

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

Soil Samples

A total of 24 soil samples were collected for laboratory analysis. One soil sample was collected from the shallow zone of borings B1-B6 and SB1-SB9. An additional soil sample was collected from the deeper zone of borings SB1-SB8. The 24 soil samples were analyzed for: VOCs (EPA Method 8260), SVOCs (EPA Method 8270), TAL metals (EPA Method 6010), and Pesticides and PCBs (EPA Method 8081/8082). Soil sample analytical results were compared to NYSDEC Part 375.6 Unrestricted Use SCOs, Restricted Residential SCOs and Commercial SCOs. VOC results were additionally compared to NYSDEC Part 375.6 Protection of Groundwater SCOs. The soil samples from B5(8-10'), B6(5-7'), SB7(2-4'), SB7(10-12'), SB8(1-3'), SB8(5-7') and SB9 (1-3') were submitted for analysis of emerging contaminants (PFAS, 1,4-dioxane).

Groundwater Samples

Groundwater samples were obtained from all monitoring wells. All groundwater samples from the monitoring wells were analyzed for VOCs / SVOCs (EPA Method 8260/8270), pesticides /

PCBs (EPA Method 8081 / 8082), both total and dissolved TAL metals (EPA Method 6010) and emerging contaminants (PFAS, 1,4-dioxane).

Soil Gas Samples

Four soil vapor implants (SG1 to SG4) were installed across the parking lot of the service station building on Lot 28 at a depth of approximately 8 feet below grade, and four soil vapor samples were collected on June 28, 2018. An additional four sub-slab soil gas probes (SS1 to SS4) were installed within the commercial/office building on Lot 31, and two sub-slab soil gas probes (SS5 and SS6) were installed on Lot 10. A total of six sub-slab soil gas samples were collected from the sub-slab soil gas probes on February 5, 2019. Soil vapor samples were collected in accordance with the procedures as described in section 2.4 of the approved RIR and the *Guidance for Evaluating Soil Vapor Intrusion in the State of New York (NYSDOH 10/06)*. Soil vapor sampling locations are shown on **Figure 5**.

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. Laboratory services for soil and groundwater sample analysis were provided by Phoenix Environmental Laboratories, Inc. of Manchester, Connecticut, a New York State ELAP certified environmental laboratory (ELAP Certification No. 11301).

Retained soil 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 and emerging contaminants (PFAS, 1,4-dioxane).

All groundwater samples from the monitoring wells were analyzed for VOCs / SVOCs by EPA Method 8260 / 8270, TAL metals by EPA Method 6010, Pesticides/PCBs by EPA Method 8081/8082 and emerging contaminants (PFAS, 1,4-dioxane). Soil gas samples were analyzed for VOCs by USEPA Method TO-15.

2.1.5 Documentation

A map showing the locations of the soil borings is provided in **Figure 4**. The locations of the monitoring wells and soil gas sample collection points are provided in **Figure 5**. The results of soil, groundwater and soil gas samples collected during the RI are summarized in **Tables 3 through 15**. Below is a summary of the RI findings.

Subsurface soil at the Site consists of historic fill materials to a depth of approximately 5 feet below grade followed by native silty-sand. The fill material contains elevated levels of metals, SVOCs and PCBs. Cadmium, chromium, copper, mercury and lead were all reported above restricted residential SCOs. Arsenic and mercury were also reported above commercial SCOs. SVOCs including benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene and ideno(1,2,3-cd)pyrene were all reported above Restricted Residential SCOs. Benzo(a)pyrene was also reported above Commercial SCOs.

Petroleum VOCs including 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, ethylbenzene, m&p, and o-xylenes and n-propylbenzene were reported above Protection of Groundwater SCOs at the water table interface in the northwest corner of Lot 28. Total VOCs in this area were reported as 96,420 µg/kg. A groundwater sample collected from the same location contained petroleum VOCs such as 1,2,4-trimethylbenzene, ethylbenzene, m&p and o-xylenes, naphthalene, n-propylbenzene, and toluene at concentrations above groundwater standards. The area in which petroleum contamination was found in soil, groundwater and soil gas at elevated concentrations corresponds to the same location in which seven 550-gallon gasoline underground storage tanks are noted on the 1946 Sanborn map.

Groundwater at the Site is present under a perched condition and is only present on top of the bedrock surface in areas of the site where the depth to bedrock is greater 12 feet below grade. Groundwater is not present in overburden materials where the bedrock surface is present at shallower depths.

Several dissolved metals were detected above standards including iron, magnesium, manganese, selenium and sodium in both wells. These metals are consistent with general groundwater quality throughout the area and are representative of brackish conditions.

2.2 SIGNIFICANT THREAT

The NYSDEC and NYSDOH will review the RI Report and will determine whether the Site does or does not pose a significant threat to human health and the environment. Notice of that determination will be provided during the public comment period, through Fact Sheet No. 2 and the Proposed Decision Document.

2.3 SITE HISTORY

2.3.1 Past Uses and Ownership

The Site was developed prior to 1891 with four 2-story, one 4-story and one 2-story residential buildings and out buildings. The 3 and 4-story buildings and outbuildings were gone by 1903 and replaced with three 4-story apartment buildings. By 1935 the apartment buildings were gone and replaced with three small 1-story commercial buildings and a storefront building on Lot 28. The existing 1-story building on Lot 31 is also present at this time and identified as “Auto Trade”. Two gas stations appear on lot 28 in 1944 with the 1-story building on the north side of the lot identified as auto repair. The building on lot 31 is identified as auto glass. By 1977 the two former gas stations and auto repair building are all gone and replaced with a new gas station. A commercial building was added to the gas station building by 1986 with the gas station building now labeled as auto repair. In 1991 the southern portion of Lot 28 is identified as used auto sales. In 2006 the building on Lot 31 is now labeled commercial.

Historically, Lot 28 has been occupied by several gas stations and auto repair shops from 1944 on to the present. Lot 31 has been occupied by auto repair shops (glass, radiator) from 1944 through 2000 at which time it was occupied by a medical imaging facility. A listing of previous owners for the property is as follows:

Previous Owners - Lot 28

Dates	Name	Comments	Contact Info
Prior to 1/15/1980	Shell Oil Company	Deed	2 Corporate Drive, White Plains, NY 10604
From 1/15/1980 to 9/11/1981	Qui Que Real Estate Inc.	Deed	14 Bruckner Boulevard, Bronx, NY 10454
From 9/11/1981 to 6/19/1990	Ricardo Hernandez	Deed	1478 Beach Avenue Apt 16, Bronx, NY 10460
From 6/19/1990 to 8/12/1992	City of New York	Deed	Commissioner of Finance, Room 500 Municipal Bldg, Manhattan, NY 10007
From 8/12/1992 to 12/15/2008	Z&D Realty Corp.	Deed	C/O Steven, Morgan, Roth 10 Allison Lane, Mt. Kisco NY 10549
From 12/15/08 to 10/23/2018	310 GC LP	Deed	54 Larch Hill Road, Lawrence, NY 11558
From 10/23/18 to present	310 Grand Concourse LLC	Deed	199 Lee Avenue, #777, Brooklyn, New York, 11211

Previous Owners - Lot 31

Dates	Name	Comments	Contact Info
From sometime prior to 11/18/1966 to 10/1/1974	Stern Estates Inc	Deed / Mortgage	2 Corporate Drive, White Plains, NY 10604
From 10/1/1974 to 4/7/1982	Ruth Kizner	Deed	38 Aster Drive, New Hyde Park, NY 11041
From 4/7/1982 to 9/11/1985	334 Grand Concourse Inc.	Deed	38 Aster Drive, New Hyde Park, NY 11041
From 9/11/1985 to 6/10/1987	Estella Carlos	Deed	825 Top Sail Lane Secaucus, NJ 07094
From 6/10/1987 to 3/29/1990	Lopiccolo, John J.	Deed	7 Grand Street, New City, NY 10956
From 3/29/1990 to 7/26/1990	Lino Associates, LTD	Deed	1392 Roosevelt Avenue, Pelham Manor, NY 10803
From 7/26/1990 to 6/13/1993	Larry Adler	Deed	99 Cross Highway, Westport CN 10803
From 6/13/1993 to 5/8/1998	334 KC Realty Inc.	Deed	1967 Turnbull Avenue, Bronx, NY 10473
From 5/8/1998 to 10/28/2002	SSL & Associates Inc.	Deed	334 Grand Concourse, Bronx, NY 10451
From 10/28/2002 to 10/26/2018	334 GC LLC	Deed	19030 Fox Landing Drive, Boca Raton, FL 33434
From 10/26/2018 to present	310 Grand Concourse LLC	Deed	199 Lee Avenue, #777, Brooklyn, New York, 11211

2.3.2 Summary of Previous Reports

Environmental investigations performed at the Site include the following:

- Phase I Environmental Site Assessment (EBC - January 2018)

January 2018 – Phase I Environmental Site Assessment (EBC)

The Phase I Environmental Site Assessment was performed as part of a due diligence environmental assessment on three lots (10, 28 and 31) which were being sold together by the owner. The report noted that the Site was currently in use as several commercial businesses, including a medical clinic (334 Grand Concourse); Bonanza Auto & Tire Repair (310 Grand Concourse); Luciano Shipping (310 Grand Concourse); and Alfa Towncar Corporation (310 Grand Concourse). Historically, Lot 28 has been occupied by several gas stations and auto repair shops from 1944 on to the present. Lot 31 has been occupied by auto repair shops (glass, radiator) from 1944 through 2000.

The report identified the following recognized environmental conditions:

- From 1944 to the present day the Site has been occupied by one or more auto repair facilities and was noted on the database as an EDR Historical Auto Stations listing. Auto repair facilities were located on both lots and typically store and utilize solvents and petroleum products on-Site. Based on the historical and current presence of an auto repair facility on Site; there is a potential for historic Site operations to have impacted soil, groundwater, and/or soil vapor quality beneath the Site;
- The northern portions of the Site are equipped with eight below-ground hydraulic lifts. The lifts were presumably installed in 1944 and 1977, when the buildings were constructed. Based on the pre-1977 installation of the lifts, the potential exists that the hydraulic fluid within the lift systems previously contained polychlorinated biphenyls (PCBs). Due to the age of the equipment, the integrity of the equipment is unknown; therefore, the potential exists that a release of hydraulic fluid which may have contained PCBs has occurred onsite. In addition, due to the shallow depth to groundwater at the property, the potential exists that groundwater would be impacted by such a release.
- The Site (north, central) were occupied by three gasoline service stations from 1935 to 1981. 550-gallon gasoline underground storage tanks (USTs) associated with the former gas stations were identified on the Site.

Based upon the above findings and conclusions, EBC recommend the following:

A geophysical survey (e.g., magnetometer and/or ground penetrating radar surveys) should be conducted within the northwestern building (current auto repair shop) to evaluate the presence of gasoline tanks associated with the Site, as well as the configurations of existing underground utilities in advance of a soil boring programs. If present, any historic tanks should be removed in accordance with NYSDEC and New York City Fire Department (FDNY) regulations.

- To evaluate potential impacts related to the historic usage of the Site, a subsurface investigation should be performed. At a minimum, the investigation should include the installation of soil borings with the collection of representative soil, groundwater and/or soil vapor samples for laboratory analysis to document subsurface conditions and determine the nature and extent of contamination (if present).

2.4 GEOLOGICAL CONDITIONS

According to geologic maps of the area created by the United States Geologic Survey (USGS), the bedrock in this area of the Bronx consists of the Ravenswood Granodiorite and Manhattan Schist. Ravenswood Granodiorite consists of sillimanite-garnet-ink microcline-plagioclase-biotite-muscovite-quartz and/or biotite-hornblende-orthoclase banded gneiss. Manhattan Schist consist of lower Cambrian-age layered sillimanite-muscovite-biotite-kyanite schist and gneiss interlayered with layered tourmaline-garnet-plagioclase-biotite-quartz schist and gneiss with black amphibolite layers 3 feet or thicker. The depth to bedrock in this area of the Bronx ranges from 5 to 20 ft below surface grade. Unconsolidated sediments overlie the bedrock and consist of Pleistocene aged sand, gravel and silty clays, deposited by glacial-fluvial activity. Non-native artificial fill materials consisting of dredge spoils, rubble and / or other materials have historically been used to raise and improve the drainage of low-lying areas and reclaim land and marsh areas associated with the Harlem River.

According to the USGS topographic map for the area (Central Park Quadrangle), the elevation of the property is approximately 34 feet above mean sea level. The topography within the

immediate area slopes gradually to the west and south. Subsurface soils at the Site consist of historic fill materials to a depth of approximately 6 feet below grade followed by native silty-sand. Bedrock is present at depths of 6 feet to 23 feet below the surface. Bedrock is generally encountered at shallower depths in the eastern portion of the Site becoming deeper towards the western property line.

Groundwater at the Site is present under a perched condition and is only present on top of the bedrock surface in areas of the site where the depth to bedrock is greater 12 feet below grade. Groundwater is not present in overburden materials where the bedrock surface is present at shallower depths. Based on the depth of the bedrock surface as determined from on-site borings and groundwater elevation using monitoring wells both on-site and on the adjacent property, groundwater flow is generally west to southwest toward the Harlem River (**Figure 6**).

Considering the poor quality of groundwater in the area, including high levels of iron, sodium and magnesium associated with saltwater intrusion and impacts from petroleum and industrial solvents related to the former commercial / industrial use of the area, there is no anticipated future groundwater use.

2.5 CONTAMINATION CONDITIONS

2.5.1 Conceptual Model of Site Contamination

Contamination at the Site consists of historic fill material that contains metals and SVOCs above Unrestricted Use, Restricted Residential Use, and/or Commercial Use SCOs to depths as great as 6 feet below grade, and petroleum contaminated soil and groundwater in the northwest corner of the Site from 10 to 15 feet below grade.

The historic fill material was likely imported to the Site to raise and/or level grade, and/or backfill a former building's cellar or underground storage tank area.

VOC contamination at the Site consists of petroleum related contaminants in soil at the water table interface in the northwestern portion of the Site at the SB1 / MW3 location. The petroleum

related VOCs were detected within a soil boring performed in front of the automotive repair facility in the suspected location of former underground gasoline storage tanks. The former tanks, tank piping and/or former dispensers may be the source of the petroleum contamination. Petroleum VOCs were reported at elevated concentrations in one monitoring well installed in the same location indicating that some of the VOC impacted soil has transferred to the dissolved phase in this area.

2.5.2 Description of Areas of Concern

The source area identified during the RI consists of petroleum related VOCs at concentrations above Protection of Groundwater SCOs, including 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, ethylbenzene, m&p and o-xylenes, and n-propylbenzene at the water table interface. The source area is located in the northwest area of the Site in the area with suspected gasoline underground storage tanks associated with former gas stations on the Site. Total VOCs in this area were reported at 96,420 µg/kg.

Fill material is present on the property to a depth of approximately 6 feet below grade. The fill material contains elevated levels of metals, SVOCs and PCBs. Cadmium, chromium, copper, mercury and lead were all reported above Restricted Residential SCOs. Arsenic and mercury were also reported above Commercial SCOs. SVOCs including benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene and ideno(1,2,3-cd)pyrene were all reported above Restricted Residential SCOs. Benzo(a)pyrene was also reported above Commercial SCOs. PCB1260 was detected within three of the soil samples above Unrestricted Use SCOs

2.5.3 Soil/Fill Contamination

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, February 2019).

Comparison of Soil/Fill with SCGs

Table 8 shows sample results above Track 1 Unrestricted SCOs for all overburden soil at the Site. **Figure 7** is a spider map which shows soil sampling locations and summarizes shallow and deep sample results above Track 1 Unrestricted SCOs for all overburden soil.

2.5.4 On-Site and Off-Site Groundwater Contamination

Summary of Groundwater Data

The results of groundwater samples collected during the RI are summarized in **Tables 9-13**. Further information on groundwater sample collection, handling and analysis can be found in the RI Report (EBC, February 2019).

Comparison of Groundwater with SCGs

Sample results above groundwater standards in monitoring wells prior to the remedy are shown in **Table 14**. Spider maps which show groundwater sampling locations and summarize results above GA groundwater standards prior to the remedy are shown in **Figure 8**.

2.5.5 On-Site and Off-Site Soil Vapor Contamination

Summary of Soil Vapor Data

A table of soil vapor data collected prior to the remedy is shown in **Table 15**. Further information on soil gas sample collection, handling and analysis can be found in the RI Report (EBC, July 2019). Soil vapor results are posted on **Figure 9**.

2.5.6 Environmental and Public Health Assessments

Qualitative Human Health Exposure Assessment

The objective of the qualitative exposure assessment under the Brownfields Cleanup Program (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

Petroleum contaminated soil was encountered at the groundwater interface in the northwest corner of the Site, and a groundwater sample collected from the same location contained petroleum related VOCs at concentrations above AWQS. Historic Sanborn maps note the former use of Lot 28 as a gasoline filling station, and the seven 550-gallon gasoline underground storage tanks are identified on the 1946 Sanborn map as being present in the same location as the soil boring and monitoring well in which petroleum contamination was encountered.

PAHs and other metals such as cadmium, chromium, copper, mercury and lead were also present at concentrations above Unrestricted Use, Restricted Residential Use and/or Commercial SCOs in fill material throughout the Site to depths as great as 6 feet below grade.

Contaminant Release and Transport Mechanism

The petroleum contamination encountered at the Site may be associated with gasoline underground storage tanks associated with the former fill station, or the former piping or dispensers associated with the tanks. There appears to be transfer of petroleum related VOC contaminants in soil to the groundwater and soil vapor.

Historic fill material with elevated concentrations of SVOCs and metals is present across the Site to depths as great as 6 feet below grade. The contaminants detected within the historic fill material are not believed to be associated with a spill/release, but are likely associated with the source of material originally brought in to backfill/raise the property.

Although PCE was not detected within any of the soil samples or groundwater samples, the elevated PCE vapor concentration detected in SG1 appears to be site related because SG1 was collected from the approximate center of the Site. The elevated PCE concentration in soil gas may be due to small spills or the use of spray degreasers by the Site's former/current automotive repair facilities.

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 petroleum VOCs / SVOCs, CVOCs, pesticides, PCBs and heavy metals through several routes. Workers excavating impacted soil may be exposed through inhalation, ingestion and dermal contact. A site specific Health and Safety Plan has been developed to identify and minimize the potential hazards to on-site workers. Site trespassers could also be exposed to impacted soil during excavation, however, security measures including an 8 ft high construction fence and 24 hr security will minimize potential exposure through this route. Potential vapor intrusion is a concern for residents of the planned construction in the north-central area of the Site, however remediation of the source areas is expected to greatly reduce if not eliminate this potential.

Potential Off-Site Exposures: Off-Site residents could also be exposed to dust or vapors during the excavation of impacted soil. A site specific Community Air Monitoring Plan has been developed to identify and minimize the potential for off-site exposure to residents through continuous air monitoring during excavation activity.

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 light end petroleum VOCs or CVOCs. This potential will be further reduced following the removal of the source area under the planned redevelopment of the Site.

Potential Off-Site Environmental Impacts: Since VOCs in groundwater may be migrating beneath the Site at low concentrations in a southerly direction, the groundwater to surface water discharge pathway was evaluated. The nearest surface water to the Site is the Harlem River, located approximately 845 feet to the west. Based upon the concentrations of contaminants currently in groundwater beneath the Site, there are no expected impacts to surface water environments from contaminants migrating from the Site.

2.6 REMEDIAL ACTION OBJECTIVES

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

2.6.1 Groundwater

RAOs for Public Health Protection

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

RAOs for Environmental Protection

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

2.6.2 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.
- Prevent impacts to biota due to ingestion/direct contact with contaminated soil that would cause toxicity or bioaccumulation through the terrestrial food chain.

2.6.3 Soil Vapor

- Mitigate impacts to public health resulting from existing, or the potential for, soil vapor intrusion into buildings at a 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 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 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 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. Presently, 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 I (Unrestricted Use) and one other alternative developed by the applicant for the proposed use of the BCP site. The remedial alternatives presented in Section 3.3 of this work plan 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 does not allow the use of long-term Institutional/Engineering Controls to address impacted media or prevent exposures which may be required beneath the new building. To meet Track 1 this alternative will include removal of all underground storage tanks (if present), excavation to a minimum depth of 6 feet across the Site with additional excavation to 15 ft within the petroleum impacted soil area, and dewatering of the petroleum impacted area to facilitate excavation and to remove impacted groundwater. Additional excavation may be required in other areas of the site to meet Unrestricted Use SCOs. The use of long term engineering controls is not anticipated since the potential for vapor intrusion was not identified during the RI. A waterproofing membrane will be installed to eliminate the potential for vapor intrusion.
- Alternative 2 - Track 2, remediation of all soils to Restricted Residential criteria to a depth of 15 feet below grade with removal of soils below 15 feet which are a source of contamination to the groundwater. This alternative does not allow the use of long-term Institutional/Engineering Controls to meet SCOs. Long-term Institutional/ Engineering Controls are allowed to address or prevent exposures from other impacted media however, such as soil gas. To meet Track 2, this alternative would require many of the same elements as the Track 1 alternative including removal of all underground storage tanks (if present) and excavation/removal petroleum contaminated soil. This alternative will require less excavation than Alternative 1 to meet Restricted Residential SCOs. This alternative is provided as a contingency in the event that Track 1 Unrestricted Use SCOs

cannot be met or in the event that an engineering control for vapor intrusion is required. Since both Alternative 1 and Alternative 2 require excavation to remove fill materials, A waterproofing membrane will be installed to eliminate the potential for vapor intrusion. Alternative 2 has been added as a contingency in the event that Alternative 1 cannot be achieved for non-COC parameters or that operation of a long term (>5 yr) subslab depressurization system (SSDS) is required to meet RAOs. This alternative would require an environmental easement and possibly a Site Management Plan if the SSDS is required.

- Alternative 3 - Track 4 would require remediation of all source material soils and covering the remaining soils with the building slab or other impervious cover. This alternative allows the use of long-term Institutional/Engineering Controls (>5yrs) to meet soil cleanup objectives and to address or prevent exposures from other impacted media such as soil gas. This alternative will require excavation of an approximate 1,100 sf area to a depth of approximately 15 ft to remove VOC impacted soil in the vicinity of SB1. This alternative will also require an environmental easement and a Site Management Plan. Based on the results of the RI, a SSDS is not expected to be required following the removal of the petroleum impacted soil. A waterproofing membrane will be installed to eliminate the potential for vapor intrusion.

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 removing all historic fill material at the Site and by remediating groundwater. 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 Unrestricted Use criteria, disposing of excavated materials off-Site, dewatering and treatment of groundwater within the impacted soil area, and backfilling as needed with certified clean fill or virgin mined materials.

Potential post-remediation exposures to on-Site residents from soil vapors are not expected to require the operation of SSD systems, though groundwater use may be restricted at the Site given the generally poor quality of groundwater in the area. A waterproofing membrane will be installed which exceeds the specifications of a 20-mil vapor barrier and will significantly reduce the potential for any vapor exposure pathway.

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 source removal to Track 1 Unrestricted Use cleanup levels. SCGs for groundwater will also be achieved as impacted groundwater will be removed through dewatering. Compliance with SCGs for soil vapor is expected following completion of the remedial action by removal of all impacted soil and groundwater and through the building's construction which will place the cellar level foundation below the water table. However, DEC and NYSDOH require a Soil Vapor Intrusion evaluation following the remedial action.

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 and groundwater will be eliminated. Alternative 1 will continue to meet RAOs for soil, groundwater and soil vapor in the future, providing a permanent long-term solution for the Site.

3.4.4 Reduction in Toxicity, Mobility or Volume through Treatment

Alternative 1 will permanently eliminate the toxicity, mobility, and volume of contaminants from on-Site soil and groundwater by meeting Unrestricted Use SCOs through excavation and through

dewatering and treatment of impacted groundwater. The removal/remediation of on-Site soil 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 issued building 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 and dewatering for the remediation of soils and groundwater is a "low tech" and reliable method which has a long and proven track record on the remediation of hazardous waste and petroleum spill sites.

3.4.7 Cost

Costs associated with Alternative 1 are estimated at approximately \$ 1,452,847. This cost estimate includes the following elements and assumptions:

- Demolition of on-site buildings and off-site disposal of C&D material to facilitate excavation of soil;
- Removal and disposal of the asphalt cap;
- Removal of underground storage tanks encountered during Site excavation;
- Excavate historic fill material to an average 5 ft across the Site with additional excavation as needed to achieve Track 1 Unrestricted Use SCOs;
- Excavate petroleum impacted soil to a depth of 15 feet within the impacted area;
- Dewatering of the petroleum impacted soil area with treatment and discharge to the combined sewer system;
- Disposal of approximately 6,564 cy of historic fill material and soil;
- Disposal of 488 cy of petroleum impacted soil;
- Installation of a waterproofing membrane to significantly reduce the potential for any vapor exposure pathway.
- 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.

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 the objectives for Unrestricted Use which is appropriate for its planned community use. A groundwater use restriction will be required to prevent future exposure to affected groundwater.

3.4.9 Community Acceptance

This RAWP will be subject to a 45-day public comment period to determine if the community had 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 excavation to a depth of 4 feet below grade to meet restricted residential SCOs in the top 15 feet of soil overall and to 15 feet below grade within the petroleum impacted area. The potential for human and environmental exposure to these constituents on-site will be eliminated by excavation of all soil with parameters in excess of Restricted Residential criteria in the top 15 feet, off-site disposal of excavated materials, and backfilling as needed with certified clean fill meeting restricted residential SCOs or virgin mined materials.

Potential post-remediation exposures to on-Site occupants from soil vapors are not expected to require the operation of SSD systems, though groundwater use will be restricted at the Site until groundwater quality recovers. A waterproofing membrane will be installed which exceeds the specifications of a 20-mil vapor barrier and will significantly reduce the potential for any vapor exposure pathway.

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 excavation to 4 feet to Restricted Residential cleanup levels for the top 15 feet of soil at the site. Compliance with SCGs for groundwater and soil vapor is expected following completion of the remedial action by removal of all impacted soil.

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 SCOs to a depth of 15 feet and by remediating groundwater. Under this Alternative risk from soil impacts and groundwater will be eliminated. Alternative 2 will continue to meet RAOs for soil, groundwater and soil vapor 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 permanently eliminate the toxicity, mobility, and volume of contaminants from on-Site soil by meeting Restricted Residential SCOs in the upper 15 feet.

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 issued building 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

and dewatering for the remediation of soils and groundwater are both "low tech" and reliable methods which have a long and proven track record on the remediation of hazardous waste and petroleum spill sites. Excavation to remove source materials and meet Restricted Residential SCOs will require shoring and dewatering.

3.5.7 Cost

Costs associated with Alternative 2 are similar to Alternative 1 with a reduction in overall excavation depths and adding only those costs associated with preparation of an Environmental Easement package. The costs for Alternative 2 are estimated at approximately \$1,132,728. This cost estimate includes the following elements and assumptions:

- Demolition of on-site buildings and off-site disposal of C&D material to facilitate excavation of soil;
- Removal and disposal of the asphalt cap;
- Removal of underground storage tanks encountered during Site excavation;
- Excavate historic fill material to an average 3 ft across the Site with additional excavation as needed to achieve Track 2 Restricted Residential SCOs;
- Excavate petroleum impacted soil to a depth of 15 feet within the impacted area;
- Dewatering of the petroleum impacted soil area with treatment and discharge to the combined sewer system;
- Disposal of approximately 4,036 cy of historic fill material and soil;
- Disposal of 488 cy of petroleum impacted soil;
- Waste characterization and endpoint verification sampling and analysis;
- Installation of a waterproofing membrane to significantly reduce the potential for any vapor exposure pathway.
- HASP and CAMP monitoring for the duration of the remedial activities; and
- Preparation of a Final Engineering Report; and
- Recording of an Environmental Easement to restrict use of the site to Restricted Residential, Commercial or Industrial and to restrict groundwater use.

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 the objectives for Restricted Residential use which is appropriate for its planned community use. A groundwater use restriction will be required to prevent future exposure to affected groundwater.

3.5.9 Community Acceptance

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 concentrations and constituents in soil to a depth of 15 ft and by capping the Site with the building foundation or other composite cover system. The potential for human and environmental exposure to these constituents on-Site will be eliminated by the excavation and/or capping of all soil 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. Groundwater use will be restricted at the Site until groundwater quality recovers. A waterproofing membrane will be installed which exceeds the specifications of a 20-mil vapor barrier and will significantly reduce the potential for any vapor exposure pathway.

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 and capping of the site. 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 petroleum impacted soils and by capping all soils affected by Site contaminants above Restricted Residential SCOs. 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.

3.6.4 Reduction in Toxicity, Mobility or Volume through Treatment

Alternative 3 will reduce the toxicity, mobility, and volume of contaminants from on-Site soil through source removal and will reduce the potential for mobility by covering the remaining soil with the building slab. The covering of on-Site soil will also reduce the toxicity, mobility, and volume of contaminants within on-Site groundwater.

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 and capping for the remediation / management of soils are both "low tech" s reliable method which have a long and proven track record on the remediation of hazardous waste and petroleum spill sites..

3.6.7 Cost

Costs associated with Alternative 3 are estimated at approximately \$556,399. This cost estimate includes the following elements and assumptions:

- Removal and disposal of the asphalt cap;
- Removal of underground storage tanks encountered during Site excavation;
- Excavate petroleum impacted soil to a depth of 15 feet within the impacted area;
- Dewatering of the petroleum impacted soil area with treatment and discharge to the combined sewer system;
- Disposal of approximately 6,444 cy of historic fill material and soil;
- Disposal of 733 cy of petroleum impacted soil;
- Waste characterization and endpoint verification sampling and analysis;
- Installation of a waterproofing membrane to significantly reduce the potential for any vapor exposure pathway.
- Covering of the Site with the concrete building slab;
- HASP and CAMP monitoring for the duration of the remedial activities; and
- Recording of an Environmental Easement to restrict use of the site to Restricted Residential, Commercial or Industrial and to restrict groundwater use;
- Preparation of a Final Engineering Report; and,

- Preparation of a Site Management Plan.

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

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 1 alternative which consists of the removal of all underground storage tanks, removal and proper off-Site disposal of all historic fill material with parameters above Unrestricted Use SCOs. Over-excavated areas will be backfilled with either virgin mined materials or certified fill which meet Unrestricted Use 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 14 criteria presented in the following subsections.

Zoning

The property is currently zoned C6-2A. C6 districts permit a wide range of high-bulk commercial uses requiring a central location. Most C6 districts are in Manhattan, Downtown Brooklyn and Downtown Jamaica; a C6-3D district is mapped in the Civic Center area of the Bronx. Corporate headquarters, large hotels, department stores and entertainment facilities in high-rise mixed buildings (residential / commercial) are permitted in C6 districts. C6-2A, C6-3A,

C6-3X and C6-4A are contextual districts with maximum building heights. C6 districts are well served by mass transit, and off-street parking is generally not required.

The proposed project which includes a new 14-story residential building is compatible with the surrounding land use and will be in compliance with the current zoning.

Applicable Comprehensive Community Master Plans or Land Use Plans

The application for an amendment of the Zoning Map was filed by the Department of City Planning on January 29, 2009. The requested action, in conjunction with the related zoning text amendment and city map change, would facilitate new development in the Lower Concourse area, Community District 1, Borough of the Bronx.

The proposed project will be in full compliance with the current land use plans as identified in the Lower Concourse Rezoning and Related Actions (CEQR No. 08DCP071X) as adopted by the City on June 30, 2009.

The proposed project is in full compliance with the intent and purpose of the East Harlem Rezoning.

Surrounding Property Uses

Surrounding land use primarily consists of commercial (warehouses, auto repair, etc) and industrial (manufacturing) to the north, south, east and west. There are several multi-family apartment buildings to the north and to the east on the opposite side of the Metro-North railway. The area surrounding the property is highly urbanized and predominantly consists of industrial / commercial buildings interspersed with open air parking / display lots and equipment yards.

There are four schools located within 1,200 feet of the Site including the Health Opportunities High School approximately 975 feet to the west, Hostos Community College located 1,200 feet to the north, P.S. 31 located 977 feet to the north and P.S. 168 located 750 feet to the east. There were no nursing homes or hospitals identified within 1,200 feet of the Site.

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 (125th Street Branch of the New York Public Library, Manhattan Community Board 11).

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 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 on population growth patterns.

Accessibility to existing infrastructure

The Site is accessible to existing infrastructure. The close proximity of the Site to the Major Deegan Expressway (I-87) will assist soil transportation and contractor access to the Site. The Site is also accessible to mass transit and is within walking distance to the No. 4, 5 line with a subway stop on 138th Street and Grand Concourse (1 block south). 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 affect natural resources.

Off-Site groundwater impacts

The proposed remedy will not affect off-site groundwater quality.

Proximity to floodplains

The NYC Flood Hazard Mapper was reviewed to determine if the Site is located within the 100-year or 500-year flood zones. The review indicates that the entire property is located outside the 100-year and 500-year flood zones. This indicates that there is a minimal risk of flooding at the Site.

Geography and geology of the Site

The selected remedy will excavate soil/fill from the Site to a depth of at least 5 feet below sidewalk grade. The selected alternative and development of the Site have considered the geography and geology of the Site.

Current Institutional Controls

There are no Institutional Controls presently assigned to the Site.

3.8 SUMMARY OF SELECTED REMEDIAL ACTIONS

The remedy recommended for the Site is a Track 1 alternative (Alternative 1) which consists of the removal of all on-Site soil which exceeds Unrestricted Use SCOs and the removal of impacted groundwater. It is expected that a Track 1 alternative will require excavation to a minimum depth of 10 feet across the Site with additional excavation as needed to remove soil/fill with contaminants above Unrestricted Use SCOs. The remedy will include the following items:

1. Demolition and C&D disposal of the existing buildings at the Site;
2. Removal and disposal of the asphalt cap to allow removal of the soil beneath;
3. Excavation of soil/fill exceeding Track 1 Unrestricted Use SCOs as listed in **Table 1** to a average depth of 5 feet across the Site with additional excavation to 15 feet within the petroleum impacted area and as needed to meet Track 1 Unrestricted Use SCOs;
4. Screening for indications of contamination (by visual means, odor, and monitoring with PID) of all excavated soil during any intrusive Site work;
5. Dewatering as needed to facilitate excavation of petroleum impacted soil and treatment of impacted groundwater before discharging to the NYC sewer system under a NYCDEP sewer discharge permit;
6. Collection and analysis of end-point samples to evaluate the performance of the remedy with respect to attainment of Track 1 Unrestricted Use SCOs;
7. Installation of a waterproofing membrane to significantly reduce the potential for any vapor exposure pathway.
8. 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;
9. 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;
10. If Track 1 cleanup is not achieved, an Environmental Easement will be filed against the Site to limit future use of the property to Restricted Residential, Commercial or Industrial;
11. If Track 2 Restricted Residential Use SCOs are not achieved, a composite cover system consisting of the concrete building slab will be constructed;

12. If a Track 2 cleanup is not achieved, implementation of a Site Management Plan (SMP) for long term maintenance of the Engineering Controls.

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. A soil vapor intrusion evaluation will be conducted under the guidance of DEC and NYSDOH.

Remedial activities will be performed at the Site in accordance with this NYSDEC-approved RAWP. Any anticipated deviations to the RAWP shall be submitted to the NYSDEC for review.

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 for the Site.

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 Tom Gallo. His 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°C.

Dedicated disposable sampling materials will be used for both soil and groundwater samples (if collected), 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 withalconox® detergent solution and scrub
- Rinse with tap water
- Rinse with distilled or deionized water

Prepare field blanks by pouring distilled or de-ionized 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 / AMC 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 an environmental professional (EP) 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 EP 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. Daily updates will also be submitted to the NYSDEC. See section 4.4.1 Daily Reports.

4.1.4 Soil/Materials Management Plan (SoMP)

A SoMP has been prepared for excavation, handling, storage, transport and disposal of all soils/materials that are disturbed / excavated at the Site. The SoMP 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.

The primary concerns for this site are vapors, nuisance odors and dust particulates. The CAMP prepared for implementation of the RAWP 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)

The public will be informed of key project documents and events through the distribution of fact sheets through the Department's List Serv. The public was initially informed of the Site and the opportunity to join the List Serv through an ad placed in the local newspaper and mailed fact sheets.

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.

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

New York Public Library - Mott Haven Branch

321 East 140th Street

Bronx, NY 10454

(718) 665-4878

Hours

Mon	10:00 AM - 6:00 PM	Thu	10:00 AM - 6:00 PM	Sun - Closed
Tue	10:00 AM - 7:00 PM	Fri	10:00 AM - 5:00 PM	
Wed	10:00 AM - 7:00 PM	Sat	10:00 AM - 5:00 PM	

Bronx Community Board 1

3024 Third Avenue

Bronx, NY, 10455

718-585-7117

4.2 GENERAL REMEDIAL ACTION INFORMATION

4.2.1 Project Organization

The Project Manager for the Remedial Activity will be Mr. Keith Butler. 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. 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 1 week following RAWP approval and 10 days after 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 6 months 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. DEC will be notified by the Applicant of any variances issued by the Department of Buildings. NYSDEC reserves the right to deny alternate remedial construction hours.

4.2.5 Site Security

A construction fence will be erected around the entire 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 Park Avenue. Traffic related to on-going remedial activity will require the staging of 10-wheel dump trucks on Park Avenue on a daily basis during soil excavation activity. The soil disposal transport route will be as follows:

- **EXITING SITE** – Turn Right onto Grand Concourse heading north to E. 144th Street. Turn left on E. 144th Street to the southbound lane of Grand Concourse. Continue south on Grand Concourse to E. 138th Street. Make a right onto E. 138th Street heading west for 1 block to Gerard Avenue. Make a right heading north on Gerard Avenue and merge left onto the Major Deegan Expressway (I-87).
- **ENTERING SITE** - from the I-87 heading south. Follow the signs to the E. 138th Street Exit. Make a left on E. 138th Street heading east to Grand Concourse. Make a left onto Grand Concourse heading north approximately 500 ft to the site entrance on the right (east side).

A map showing the truck routes is included as **Figure 10**.

4.2.7 Worker Training and Monitoring

An excavation contractor with appropriate experience, personnel and training (minimum 24 hr OSHA HAZWOPPER) is required to perform the removal of the petroleum impacted soil, non-hazardous historic fill. The excavation contractor's on-site personnel engaged in this work will all have a minimum of 24 hour Hazardous Waste Operations and Emergency Response Operations training.

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

4.2.9 Pre-Construction Meeting with NYSDEC

A pre-construction meeting or teleconference call with the Project Manager, Remedial Engineer, Construction Manager, Owner's Representative and the NYSDEC will take place prior to the start of major construction activities.

4.2.10 Emergency Contact Information

An emergency contact sheet with names and phone numbers is included in **Table 17**. That document will define the specific project contacts for use by NYSDEC and NYSDOH in the case of a day or night emergency.

4.2.11 Remedial Action Costs

The total estimated cost of the Remedial Action is \$ 1,402,471. An itemized and detailed summary of estimated costs for all remedial activity is attached as **Attachment G**.

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 crushed concrete which will be sloped back toward the interior of the Site. The stabilized entrances will be inspected on a daily basis during soil loading activities and reinforced as needed with additional stone/concrete material to prevent the accumulation of ruts, mud or soil.

4.3.4 Utility Marker and Easements Layout

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

The exact means and methods for the support of excavation (SOE) have not been determined yet and will be forwarded to DEC upon receipt.

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 Superintendant.

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 4 to 6-inch bed of 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. The pad will be inspected on a daily basis during soil loading activities and reinforced as needed with additional stone/concrete material to prevent the accumulation of ruts, mud or soil.

4.3.8 Site Fencing

An 8-foot high construction fence will be erected around the portions of the Site which are not bordered by adjacent buildings (west) with an entrance / exit gate located on Park Avenue. 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.

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 one week following the end of the month of the reporting period and will include:

- Activities relative to the Site during the previous reporting period and those anticipated for the next reporting period, including a quantitative presentation of work performed (i.e. loads 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, PDF) 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 following; the removal and off-Site disposal of the top 5 feet of soil/fill material across the Site, with excavation to 15 feet within the petroleum impacted area and additional excavation as needed to meet Unrestricted Use SCOs and Protection of Groundwater SCOs. Dewatering of the petroleum impacted area will be needed to facilitate excavation below the perched groundwater zone and to remediate impacted groundwater in this area. Prior to beginning the excavation, groundwater samples will be collected from the two existing on-site monitoring wells and analyzed for VOCs by EPA method 8260.

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. If an underground storage tank (UST) is 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. It is anticipated that the excavation of non-hazardous petroleum impacted soil, historic fill material and native soil will be performed by an excavation contractor using appropriately trained personnel (24 hr HAZWOPER).

Over excavated areas will be backfilled using clean native soil excavated from other areas of the Site or imported material meeting Unrestricted Use and Protection of Groundwater SCOs. An excavation plan showing the excavation depths to achieve the Track 1 remedy is provided in **Figure 11**.

5.1 CONTINGENCY

5.1.1 UST Removal Methods

Any USTs encountered during excavation activities at the Site 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 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).

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. Spider maps showing all soil samples that exceed the SCOs proposed for this Remedial Action are shown in **Figure 7**.

5.3 REMEDIAL PERFORMANCE EVALUATION

(POST EXCAVATION END-POINT SAMPLING)

Post excavation (endpoint) soil samples will be collected from across the Site to verify that remedial goals have been achieved. Endpoint soil samples will be collected from the Site as follows:

- (1) Site-wide bottom of excavation endpoint soil samples will be collected following removal of all soil to verify that remedial goals have been achieved (**Figure 12**). The Site-wide endpoint soil samples will be analyzed for VOCs, SVOCs, pesticides, PCBs and metals. Ten percent of the endpoint samples will be analyzed for PFAS compounds.
- (2) Petroleum hotspot bottom and sidewall samples will be collected and analyzed for VOCs, and SVOCs.

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 and will not be collected when the excavation extends to the Site boundaries. Sidewall samples will only be collected if the excavation extends beyond the site-wide excavation depth of 5 ft to address a hot-spot area.

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 /AMC 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

All site-wide post-excavation (endpoint) soil samples will be analyzed for VOCs by EPA Method 8260B, SVOCs by EPA method 8270, pesticides/PCBs by EPA method 8081/8082 and TAL metals. Ten percent of the site-wide post excavation samples will be analyzed for PFAS

compounds. Petroleum hotspot bottom and sidewall samples will be analyzed for VOCs by EPA Method 8260B, SVOCs by EPA method 8270

5.3.3 Reporting of Results

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.

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°C.

Dedicated disposable sampling materials will be used for 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 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 without 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

It is expected that 6,564 cubic yards (10,502 tons) of non-hazardous historic fill material will be generated by excavating the entire Site to a depth of 5 feet to meet the Track 1 SCOs. An additional 488 cubic yards (780 tons) of petroleum contaminated soil will be generated by excavating the petroleum impacted area to a depth of 15 ft. An additional 3,500 cubic yards of clean native soil will be excavated for the new buildings cellar level. Clean native soil, may be reused, if found to be suitable as backfill behind shoring installed around the perimeter of Site, or in over-excavated areas. The remainder of clean soil will be transported off-Site for disposal at a beneficial reuse facility or other approved destination.

5.5 SOIL/MATERIALS MANAGEMENT PLAN

Excavated soil will be secured and temporarily stored on-site until arrangements can be made for off-site disposal. As an alternative, waste characterization soil samples may be collected prior to commencement of excavation activities to allow the soil/fill to be loaded directly on to trucks for transport to the disposal facility. Based on the results of the Remedial Investigation, all soil/fill is

expected to be classified as non-hazardous. 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 5.5 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.).

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.

5.5.1 Excavation of Historic Fill Soil

Historic fill material is present beneath the Site to depths which average approximately 5 feet below grade across the Site. The historic fill material contains SVOCs, metals and pesticides above Unrestricted Use and/or Restricted Residential SCOs. Historic fill material will be segregated from non-contaminated native soils and disposed of off-Site at a permitted disposal facility.

If fill/soil with lead levels above 1,500 mg/kg is encountered during waste characterization soil sampling, the soil/fill may require further segregation for disposal at alternate facilities. Excavated historic fill materials will be secured and temporarily stored on-Site until arrangements can be made for off-Site disposal. It is anticipated that the historic fill material will be classified as non-hazardous material. If this material is classified as non-hazardous, then the excavation of historic fill material will be performed by the excavation contractor for the construction project using trained personnel (24 hr HAZWOPER). If this material is classified as hazardous, then 40 hr HAZWOPER trained personnel will be needed to perform the excavation of this material.

5.5.2 Excavation of Petroleum Impacted Soil

Petroleum contaminated soil has been documented within an estimated 1,100 sf area to a depth of approximately 15 ft below grade. Excavated petroleum contaminated soil will be secured and

temporarily stored on-Site until arrangements can be made for off-Site disposal or pre-classified for live loading. It is anticipated that the petroleum contaminated soil will be classified as non-hazardous material. If this material is classified as non-hazardous, then the excavation of historic fill material will be performed by the excavation contractor for the construction project using trained personnel (24 hr HAZWOPER). If vapors create a need for respiratory protection during excavation then medically cleared 40 hr HAZWOPER trained personnel will be needed to perform the excavation of this material.

5.5.3 Excavation of Native Soils

Native soils present below the fill material may also be excavated for the new building's cellar level. Excavation of native soil for the cellar will begin following removal of historic fill. If evidence of contamination is discovered while excavating the native soil, for the cellar level, the contaminated soil will be removed to the extent possible and segregated from clean native soil for proper disposal. Clean native soil will be stockpiled on-Site and characterized for reuse on-Site in over excavated areas or behind shoring constructed around the perimeter of the Site. Any excess soil will be disposed of off-Site as a beneficial re-use material or reused on-Site if found to meet SCOs through testing and if acceptable to the structural engineer.

It is anticipated that the excavation of native soil will be performed by the excavation contractor for the construction project.

5.5.4 Soil Screening Methods

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

All primary contaminant sources (including but not limited to tanks and hotspots) identified during Site Characterization, Remedial Investigation, and Remedial Action will be surveyed by a

surveyor licensed to practice in the State of New York. This information will be provided on maps in the Final Engineering Report.

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

5.5.5 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 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. Soils which exhibit strong odors will be completely sealed with heavy tarps or vapor suppressant foam.

5.5.6 Materials Excavation and Load Out

The Remedial Engineer or an EP under his/her 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 EP 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 EP

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.

Development-related grading cuts and fills will not interfere with, or otherwise impair or compromise, the performance of remediation required by this plan.

Mechanical processing of historical fill material 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. Truck transport routes are as follows:

- EXITING SITE – Turn Right onto Grand Concourse heading north to E. 144th Street. Turn left on E. 144th Street to the southbound lane of Grand Concourse. Continue south on Grand Concourse to E. 138th Street. Make a right onto E. 138th Street heading west for

1 block to Gerard Avenue. Make a right heading north on Gerard Avenue and merge left onto the Major Deegan Expressway (I-87).

- ENTERING SITE - from the I-87 heading south. Follow the signs to the E. 138th Street Exit. Make a left on E. 138th Street heading east to Grand Concourse. Make a left onto Grand Concourse heading north approximately 500 ft to the site entrance on the right (east side).

These routes are shown in **Figure 10**.

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 residential neighborhoods around the project Site. Egress points for truck and equipment transport from the Site will be kept clean of dirt and other materials during Site remediation and development. Material transported by trucks exiting the Site will be secured with covers. Wet loads are not anticipated since the entire site will be dewatered prior to excavating soils. However, if wet soils are excavated they will be stockpiled within the excavation to dry or blended with dry soils. No loads of material capable of generating free liquid will be allowed to leave the Site. All trucks will be inspected, dry-brushed and / or washed, as needed, before leaving the Site.

5.5.8 Materials Disposal Off-Site

Multiple disposal facility designations may be employed for the materials removed from the Site. Once final arrangements have been made, the disposal facility acceptance letters will be provided to the NYSDEC Project Manager before the start of excavation activities. It is anticipated that the soil will be disposed of at up to 3 different facilities, based on the following classification:

- Non Hazardous - Contaminated (historic fill / petroleum) Low Lead < 1,500 mg/kg

- Non Hazardous - Contaminated (historic fill / petroleum) High Lead > 1,500 mg/kg
- Uncontaminated Native Soil - meets NJDSC Criteria for beneficial Reuse

The total quantity of material expected to be disposed off-Site is 4,203 cubic yards, including 4,203 cubic yards of historic fill material and petroleum impacted soil.

Hazardous Soil Disposal and Transport

It is not expected that any soil will be classified as hazardous, however if any soil is classified as hazardous it will be shipped under a hazardous waste manifest system. All hazardous waste transported and disposed of must have a USEPA ID Number and waste code and must be distributed in accordance with the regulatory requirements.

The multi-part manifest will be filled out for each load of soil shipped off of the Site. At a minimum, the following information will be recorded on each manifest:

- 1) Generator's Name, Address, and Phone Number
- 2) Destination Facility Name, Address and Phone Number
- 3) EPA ID Number
- 4) Waste classification code
- 5) Transporter Name, Address, Phone Number, License Plate Number, Driver Name, and SW Haulers Permit #
- 6) Signatures – Generator or an authorized agent for the generator shall print, sign, and date each non-hazardous material manifest after each truck is loaded. The transporter shall then sign and date noting time material was picked up at the site. Both the transporter and a representative of the disposal facility will sign the non-hazardous material manifest when the material has been delivered to disposal facility.

Non-Hazardous Soil Disposal and Transport

Non-hazardous historic fill material and petroleum contaminated soil classified as non-hazardous, will be handled, at a minimum, as a Municipal Solid Waste per 6NYCRR Part 360-1.2. Historical fill material and contaminated soils from the Site are prohibited from being disposed at Part 360-16 Registration Facilities (also known as Soil Recycling Facilities).

Soils that are contaminated but non-hazardous and are being removed from the Site are considered by the Division of 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 DSHM. 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. Soil classified as non-hazardous fill will be transported under a non-hazardous waste manifest obtained from the selected disposal facility. The multi-part manifest will be filled out for each load of soil shipped off of the Site. At a minimum, the following information will be recorded on each manifest:

- 1) Generator's Name, Address, and Phone Number
- 2) Destination Facility Name, Address and Phone Number
- 3) Transporter Name, Address, Phone Number, License Plate Number, Driver Name, and SW Haulers Permit #
- 4 Signatures – Generator or an authorized agent for the generator shall print, sign, and date each non-hazardous material manifest after each truck is loaded. The transporter shall then sign and date noting time material was picked up at the site. Both the transporter and a representative of the disposal facility will sign the non-hazardous material manifest when the material has been delivered to disposal facility.

A copy of the manifest will be retained by AMC on-Site personnel for each shipment. Final signed manifests will be forwarded by the disposal facility to the generator. Copies of the final manifests will be presented in the FER.

Clean Soil Disposal

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 Unrestricted Use SCOs or Residential / Groundwater Protection SCOs prior to unregulated disposal or meets Unrestricted Use SCOs prior to reuse on-Site. Confirmation testing of clean soils will be in accordance with DER-10 Section 5.4(e)(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 C&D material or sent to a beneficial re-use facility. Note that clean soils disposed of at an out-of-state facility will be subject to the testing requirements of that facility in lieu of testing program outlined above the final destination of soils whether classified as contaminated or uncontaminated must be approved by the Remedial Engineer.

C&D and Scrap Metal Disposal

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. Concrete crushing or processing on-Site is prohibited. Asphalt removed from the parking areas 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 than 5% by volume. This material, if encountered, will be sent to a C&D landfill or other C&D processing facility. 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.

Scale Tickets

All trucks to be utilized for transport of hazardous or non-hazardous contaminated soil shall be weighed before and after unloading at the disposal facility. Disposal facilities must provide truck scales capable of generating load tickets measured in tons. The tonnage transported and disposed will be determined by the disposal facility and reported on a certified scale ticket which will be attached to each returned manifest. Weights will be reported on the certified scale ticket as Tare and Gross weights.

C&D Transport Tickets / Bills of Lading

Bill of Lading system or equivalent will be used for the disposal of C&D and related materials. 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. This information will be reported in the Final Engineering Report.

Disposal Facility Documentation

The following documentation will be obtained and reported by the Remedial Engineer for each disposal location used in this project to fully demonstrate and document that the disposal of material derived from the Site conforms with all applicable laws: (1) a letter from the Remedial Engineer or BCP Applicant to the receiving facility describing the material to be disposed and requesting formal written acceptance of the material. This letter will state that material to be

disposed is contaminated material generated at an environmental remediation Site in New York State. The letter will provide the project identity and the name and phone number of the Remedial Engineer. The letter will include as an attachment a summary of all chemical data for the material being transported (including Site Characterization data); and (2) a letter from all receiving facilities stating it is in receipt of the correspondence (above) and is approved to accept the material. These documents will be included in the FER.

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

Re-use of on-Site clean native soil will only be allowed if the material is found to meet Unrestricted Use SCOs (for Track 1) or Restricted Residential Use SCOs (for Track 2) through the verification testing program detailed above. It is estimated that 1,000 cubic yards of clean native soil will be reused behind the shoring constructed around the perimeter of the Site. Additional soil may be re-used on-site to backfill over excavated areas.

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.

Acceptable demolition material proposed for reuse on-Site, if any, will be sampled for asbestos. Concrete crushing or processing on-Site is prohibited. Contaminated on-Site material, including historic fill material and contaminated soil, removed for grading or other purposes will not be reused within a cover soil layer, within landscaping berms, or as backfill for subsurface utility lines.

5.5.10 Groundwater Remediation

As the depth to groundwater at the Site is approximately 3 feet below the planned excavation depth of the petroleum impacted area, dewatering operations will be required to remove the impacted soil and to remediate impacted groundwater within this area. Groundwater at the Site occurs only intermittently and under perched conditions on top of the bedrock surface when bedrock is 12 feet or more below grade.

Under these conditions dewatering volume and pump rates are expected to be minimal. Pumping will be through a sump pit installed in the base of the excavation. Flow is estimated at 6.9 gallons per minute for a total of 9,900 gallons per day. Treatment of groundwater will consist of a settling tank, a sediment filter unit and two liquid phase granular activated carbon (GAC) vessels (see **Attachment H** for details). Following treatment the effluent will be discharged by gravity into the 24" combined sewer located beneath Grand Concourse.

Dewatering fluids will be handled, transported and disposed of in accordance with applicable local, State, and Federal regulations. Liquids discharged into the New York City sewer system will be addressed through approval by the NYCDEP. This approved permit will be provided to the DEC prior to initiating dewatering operations. Dewatered fluids will not be recharged back to the land surface or subsurface of the Site.

5.5.11 Backfill from Off-Site Sources

Off-site fill material may be needed to stabilize the entrance - exit areas of the Site, 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. 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 NYS DEC 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.

Fill material may also consist of virgin mined sand, gravel or stone products. Gravel or stone material from a virgin mined source may be imported to the Site without testing provided 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. This material must contain less than 10% fines and not be blended with soil or other material. As per DER-10, if soil from sourced from a virgin mine or pit is imported, at least one round of characterization sampling for the first 100 cubic yards is required in accordance with Table 4 of CP-51/Table 5.4(e)10 of DER-10.

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 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. Any soil imported to the Site needs to be tested in accordance with Table 4 of NYSDEC CP-51 Soil Cleanup Guidance Policy. 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 not be limited to STARS parameters where tanks are identified without prior approval by NYSDEC. Analyses will not be otherwise limited without NYSDEC approval.

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

5.5.14 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 construction sites.

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

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 Applicant’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) use of closed settling tanks and carbon treatment of exhaust air from the pumping / dewatering system (b) limiting the area of open excavations; (c) shrouding open excavations with tarps and other covers; and (d) using foams to cover exposed odorous soils. If odors develop and cannot be otherwise controlled, additional means to eliminate odor nuisances will include: (e) direct load-out of soils to trucks for off-Site disposal; (f) use of chemical

odorants in spray or misting systems, (g) use of perimeter misting systems; and, (h) 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 through 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, to NYCDEP noise control standards.

6.0 RESIDUAL CONTAMINATION TO REMAIN ON-SITE

If a Track 1 cleanup is achieved, all on-Site soil remaining after completion of remediation will meet Track 1 Unrestricted Use SCOs, a bulk reduction of groundwater contamination to asymptotic levels will have occurred, and an Institutional Control (IC) will not be required to protect human health and the environment.

However, if a Track 1 cleanup is not achieved, the Track 2 alternative will be implemented as a contingency and an IC will be required. The Track 2 alternative will allow Restricted Residential use of the property. Long-term management of the IC will be executed under an environmental easement recorded with the NYC Department of Finance, Office of the City Register.

If Track 1 is not achieved, long-term management of ICs and of residual contamination will be executed under a Site-specific Site Management Plan (SMP) that will be developed and submitted to DEC, if needed. The FER will report residual contamination on the Site in tabular and map form.

7.0 ENGINEERING CONTROLS

The intent of this project is to achieve Track 1 Unrestricted Use remedy. If a Track 1 Cleanup cannot be achieved, then a Track 2 Restricted Residential cleanup is proposed. If neither a Track 1 nor Track 2 Cleanup can be achieved, then a Track 4 Cleanup will be achieved.

If a Track 4 remedy is achieved, the Site will be restricted to Restricted-Residential, Commercial and Industrial uses and a site cover may be required to allow for the intended use of the Site. The cover will consist either of the structures such as buildings, pavement, sidewalks comprising the site development or two feet of soil meeting the SCOs as set forth in 6 NYCRR Part 375-6.7(d) and Table 375-6.8(b). 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).

8.0 INSTITUTIONAL CONTROLS

Since the intent of this project is to achieve Track 1 cleanup criteria, institutional controls are not expected to be part of the final remedy for the Site.

If Track 1 cleanup is not achieved, ICs will be incorporated into the remedy to render the overall Site remedy protective of public health and the environmental. Two elements have been designed to ensure continual and proper management of residual contamination in perpetuity: an Environmental Easement and a SMP.

If required, a Site-Specific Environmental Easement will be recorded with the City of New York 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 the 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.

8.1 ENVIRONMENTAL EASEMENT

An Environmental Easement, as defined in Article 71 Title 36 of the Environmental Conservation Law, is required when residual contamination is left 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 approved by NYSDEC will be filed and recorded with the City of New York. The 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. ICs can, generally, be subdivided between controls that support ECs, and those that place general restrictions on Site usage or other requirements. ICs 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 ICs which will be needed to support ECs are:

- Use of groundwater underlying the Controlled Property is prohibited without treatment rendering it safe for intended purpose;
- Compliance with the Environmental Easement by the Grantee and the Grantee's successor's is required;
- 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 Controls;
- NYSDEC retains the right to access such Controlled Property at any time in order to evaluate the continued maintenance of any and all controls. This certification shall be submitted annually, or an alternate period of time that NYSDEC may allow. This annual statement must be certified by an expert that the NYSDEC finds acceptable;

8.2 SITE MANAGEMENT PLAN

Site Management is the last phase of remediation and begins with the approval of the Final Engineering Report and issuance of the Certificate of Completion (COC) for the Remedial Action. The SMP is submitted as a separate and independent document from the FER. 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 SMP are performed.

The SMP is intended to provide a detailed description of the procedures required to manage residual contamination left in place at the Site following completion of the Remedial Action in accordance with the BCA with the NYSDEC. This includes: (1) development, implementation, and management of all Engineering and Institutional Controls; (2) development and implementation of monitoring systems and a Monitoring Plan; (3) development of a plan to operate and maintain any treatment, collection, containment, or recovery systems (including, where appropriate, preparation of an Operation and Maintenance Manual); (4) submittal of Site Management Reports, performance of inspections and certification of results, and demonstration of proper communication of Site information to NYSDEC; and (5) defining criteria for termination of treatment system operation.

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

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

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

9.0 FINAL ENGINEERING REPORT

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

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

The Final 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).

9.1 CERTIFICATIONS

The following certification will appear in front of the Executive Summary of the Final Engineering Report. The certification will be signed by the Remedial Engineer 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, I had primary direct responsibility for the implementation of the subject construction program, and I certify that the Remedial Work Plan (or Remedial Design or Plans and Specifications) was implemented and that all construction activities were completed in substantial conformance with the DER-approved Remedial Work Plan (or Remedial Design or Plans and Specifications).

Additionally, 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;*

- *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;*
- *All information and statements in this certification form are true. I understand that a false statement made herein is punishable as a Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law. I, [name], of [business address], am certifying as Owner's Designated Site Representative: [and I have been authorized and designated by all site owners to sign this certification] for this site.*

If the Remedial Action Work Plan (or Remedial Design or Plans and Specifications) identifies time frames to be achieved by the remedial program, the certification must include:

The data submitted to DER demonstrates that the remediation requirements set forth in the Remedial Work Plan (or Remedial Design or Plans and Specifications) and all applicable statutes and regulations have been or will be achieved in accordance with the time frames, if any, established in the work plan (or Remedial Design or Plans and Specifications).

If the remedial program requires ICs or ECs, the certification will include:

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 to ECL 71-3605 and that any affected local governments, as defined in ECL 71-3603, have been notified that such easement has been recorded.

If the remedial program requires applicable SMP, the certification will include:

A Site Management Plan has been submitted for the continual and proper operation, maintenance, and monitoring of any engineering controls employed at the site including the proper maintenance of any remaining monitoring wells, and that such plan has been approved by DER.

If the remedial program requires financial assurance, the certification will include:

Any financial assurance mechanisms required by DEC pursuant to Environmental Conservation Law have been executed.

10.0 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 the installation of shoring structures, removal and disposal of the USTs (if present), excavation and disposal of petroleum impacted soil, historic fill materials and native soil and by confirmation endpoint soil sampling. Excavation work may proceed in several stages as needed to accommodate pile or sheet driving equipment, underpinning and other components related to the support of excavation (SOE). The work is expected to take approximately 12 months 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 2 weeks of RAWP approval
Mobilize equipment to the site and construct truck pad and other designated areas	Within 2 weeks following the pre-construction meeting and issuance of Pre-Construction Fact Sheet
Mobilize shoring contractor and equipment to the Site	Within 3 weeks following the pre-construction meeting
Mobilize excavation contractor and equipment to the Site	Within 3 weeks following the installation of shoring or as shoring proceeds
Collect groundwater samples from existing monitoring wells and analyze for VOCs	Within one week following mobilization of excavation contractor
Begin initial excavation cut (historic fill)	Within one week following mobilization of excavation contractor
Begin excavation of USTs (if present)	Upon discovery during initial excavation cut (top 5 feet of soil).
Begin excavation of petroleum impacted soil area	Following the removal of USTs
Set up and begin dewatering of petroleum impacted soil area	As excavation approaches the perched water zone.
Complete the excavation of the petroleum impacted soil area and collect endpoint samples	Within 2 weeks of starting
Complete excavation and disposal of historic fill material and clean native soil.	Within 12 months of mobilization
Perform endpoint verification of entire site	Performed in sequence as final depth of each excavated area is complete.
Submit SMP (as a contingency) if Track 1 Cleanup is not achieved	By August 15 th of the year in which the COC is sought or as required by DEC.
Submit FER	By September 15 th of the year in which the COC is sought or as required by DEC.

TABLES

TABLE 1
Soil Cleanup Objectives

Contaminant	CAS Number	Protection of Public Health				Protection of Ecological Resources	Protection of Ground-water	Unrestricted Use
		Residential	Restricted-Residential	Commercial	Industrial			
METALS								
Arsenic	7440-38 -2	16f	16f	16f	16f	13f	16f	13 ^c
Barium	7440-39 -3	350f	400	400	10,000 d	433	820	350 ^c
Beryllium	7440-41 -7	14	72	590	2,700	10	47	7.2
Cadmium	7440-43 -9	2.5f	4.3	9.3	60	4	7.5	2.5 ^c
Chromium, hexavalent ^h	18540-29-9	22	110	400	800	1e	19	1 ^b
Chromium, trivalent ^h	16065-83-1	36	180	1,500	6,800	41	NS	30 ^c
Copper	7440-50 -8	270	270	270	10,000 d	50	1,720	50
Total Cyanide ^h		27	27	27	10,000 d	NS	40	27
Lead	7439-92 -1	400	400	1,000	3,900	63f	450	63 ^c
Manganese	7439-96 -5	2,000f	2,000f	10,000 d	10,000 d	1600f	2,000f	1600 ^c
Total Mercury		0.81j	0.81j	2.8j	5.7j	0.18f	0.73	0.18 ^c
Nickel	7440-02 -0	140	310	310	10,000 d	30	130	30
Selenium	7782-49 -2	36	180	1,500	6,800	3.9f	4f	3.9 ^c
Silver	7440-22 -4	36	180	1,500	6,800	2	8.3	2
Zinc	7440-66 -6	2200	10,000 d	10,000 d	10,000 d	109f	2,480	109 ^c
PESTICIDES / PCBs								
2,4,5-TP Acid (Silvex)	93-72-1	58	100a	500b	1,000c	NS	3.8	3.8
4,4'-DDE	72-55-9	1.8	8.9	62	120	0.0033 e	17	0.0033 ^b
4,4'-DDT	50-29-3	1.7	7.9	47	94	0.0033 e	136	0.0033 ^b
4,4'-DDD	72-54-8	2.6	13	92	180	0.0033 e	14	0.0033 ^b
Aldrin	309-00-2	0.019	0.097	0.68	1.4	0.14	0.19	0.005 ^c
alpha-BHC	319-84-6	0.097	0.48	3.4	6.8	0.04g	0.02	0.02
beta-BHC	319-85-7	0.072	0.36	3	14	0.6	0.09	0.036
Chlordane (alpha)	5103-71 -9	0.91	4.2	24	47	1.3	2.9	0.094
delta-BHC	319-86-8	100a	100a	500b	1,000c	0.04g	0.25	0.04
Dibenzofuran	132-64-9	14	59	350	1,000c	NS	210	7
Dieldrin	60-57-1	0.039	0.2	1.4	2.8	0.006	0.1	0.005 ^c
Endosulfan I	959-98-8	4.8i	24i	200i	920i	NS	102	2.4
Endosulfan II	33213-65-9	4.8i	24i	200i	920i	NS	102	2.4
Endosulfan sulfate	1031-07 -8	4.8i	24i	200i	920i	NS	1,000c	2.4
Endrin	72-20-8	2.2	11	89	410	0.014	0.06	0.014
Heptachlor	76-44-8	0.42	2.1	15	29	0.14	0.38	0.042
Lindane	58-89-9	0.28	1.3	9.2	23	6	0.1	0.1
Polychlorinated biphenyls	1336-36 -3	1	1	1	25	1	3.2	0.1
SEMI-VOLATILES								
Acenaphthene	83-32-9	100a	100a	500b	1,000c	20	98	20
Acenaphthylene	208-96-8	100a	100a	500b	1,000c	NS	107	100 ^a
Anthracene	120-12-7	100a	100a	500b	1,000c	NS	1,000c	100 ^a
Benzo(a)anthracene	56-55-3	1f	1f	5.6	11	NS	1f	1 ^c
Benzo(a)pyrene	50-32-8	1f	1f	1f	1.1	2.6	22	1 ^c
Benzo(b) fluoranthene	205-99-2	1f	1f	5.6	11	NS	1.7	1 ^c
Benzo(g,h,i) perylene	191-24-2	100a	100a	500b	1,000c	NS	1,000c	100
Benzo(k) fluoranthene	207-08-9	1	3.9	56	110	NS	1.7	0.8 ^c
Chrysene	218-01-9	1f	3.9	56	110	NS	1f	1 ^c
Dibenz(a,h) anthracene	53-70-3	0.33e	0.33e	0.56	1.1	NS	1,000c	0.33 ^b
Fluoranthene	206-44-0	100a	100a	500b	1,000c	NS	1,000c	100 ^a
Fluorene	86-73-7	100a	100a	500b	1,000c	30	386	30
Indeno(1,2,3-cd) pyrene	193-39-5	0.5f	0.5f	5.6	11	NS	8.2	0.5 ^c
m-Cresol	108-39-4	100a	100a	500b	1,000c	NS	0.33e	0.33 ^b
Naphthalene	91-20-3	100a	100a	500b	1,000c	NS	12	12
o-Cresol	95-48-7	100a	100a	500b	1,000c	NS	0.33e	0.33 ^b
p-Cresol	106-44-5	34	100a	500b	1,000c	NS	0.33e	0.33 ^b
Pentachlorophenol	87-86-5	2.4	6.7	6.7	55	0.8e	0.8e	0.8 ^b
Phenanthrene	85-01-8	100a	100a	500b	1,000c	NS	1,000c	100
Phenol	108-95-2	100a	100a	500b	1,000c	30	0.33e	0.33 ^b
Pyrene	129-00-0	100a	100a	500b	1,000c	NS	1,000c	100

TABLE 1
Soil Cleanup Objectives

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

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	Number of Samples	Rationale for Sampling	Laboratory Analysis
Total (Soils)		31		
Subsurface soil (0 to 6 feet)	From 16 soil borings across the Site.	16	To assess quality of historic fill across the site	VOCs EPA Method 8260B, SVOCs EPA Method 8270, Pesticides / PCBs EPA Method 8081/8082, TAL Metals EPA 6010
Subsurface soil (6 to 14 feet)	From 8 soil borings across the Site	8	To assess quality of native soil at the site	VOCs EPA Method 8260B, SVOCs EPA Method 8270, Pesticides / PCBs EPA Method 8081/8082, TAL Metals EPA 6011
Subsurface soil (1 to 12 feet)	From 7 soil borings across the Site	7	To evaluate the presence of emerging contaminants at the Site	21 PFAS compounds by EPA 537, 1,4-dioxane by EPA 8270 SIM
Total (Groundwater)		2		
Groundwater (below water table)	From 2 monitoring wells.	2	To assess groundwater quality at the Site.	VOCs EPA Method 8260B, SVOCs EPA Method 8270, Pesticide / PCBs EPA Method 8081/8082, Dissolved and Total Metals EPA 6010, 21 PFAS compounds by EPA 537, 1,4-dioxane by EPA 8270 SIM
Total (Soil Gas)		10		
Sub-Slab Soil Gas (2 in below grade)	6 sub-slab soil gas implant locations installed 2in beneath existing building on Lot 31.	6	Evaluate soil gas across the Site.	VOCs EPA Method TO15
Soil Gas (8 ft below grade)	4 soil gas implant locations installed 9ft beneath existing grade across Lot 28.	4	Evaluate soil gas across the Site.	VOCs EPA Method TO15
Total (QA / QC Samples)		3		
Duplicates (Soil)	Created duplicates of soil samples in the field for the purpose of comparison and quality control.	2	To meet requirements of QA / QC program.	VOCs EPA Method 8260B, SVOCs EPA Method 8270, Pesticides / PCBs EPA Method 8081/8082, TAL Metals EPA 6011,
Duplicates (Soil)	Created duplicate of soil samples in the field for the purpose of comparison and quality control.	1	To meet requirements of QA / QC program.	21 PFAS compounds by EPA 537, 1,4-dioxane by EPA 8270 SIM

TABLE 3
310-336 Grand Concourse
Bronx, New York
Soil Analytical Results
Volatile Organic Compounds

COMPOUND	NYSDEC Part 375.6 Groundwater Protection Soil Cleanup Objectives*	NYSDEC Part 375.6 Unrestricted Use Soil Cleanup Objectives*	NYDEC Part 375.6 Residential Soil Cleanup Objectives*	NYDEC Part 375.6 Restricted Commercial Soil Cleanup Objectives*	SB1												SB2												SB3					
					(0-2') 6/22/2018				(12-14') 6/22/2018				(0-2') 6/22/2018				(12-14') 6/22/2018				(0-2') 6/22/2018													
					µg/Kg				µg/Kg				µg/Kg				µg/Kg				µg/Kg													
					Result	RL	Qual	MDL	Result	RL	Qual	MDL	Result	RL	Qual	MDL	Result	RL	Qual	MDL	Result	RL	Qual	MDL										
1,1,1,2-Tetrachloroethane					< 19	19	U	0.95	< 5400	5,400	U	270	< 25	25	U	1.3	< 5.2	5.2	U	1.0	< 24	24	U	1.2										
1,1,1-Trichloroethane	680	680	100,000	500,000	< 4.8	4.8	U	0.48	< 680	680	U	140	< 6.3	6.3	U	0.63	< 5.2	5.2	U	0.52	< 6.0	6.0	U	0.60										
1,1,2,2-Tetrachloroethane					< 4.8	4.8	U	0.95	< 1400	1,400	U	270	< 350	350	U	70	< 5.2	5.2	U	1.0	< 6.0	6.0	U	1.2										
1,1,2-Trichloroethane					< 4.8	4.8	U	0.95	< 1400	1,400	U	270	< 6.3	6.3	U	1.3	< 5.2	5.2	U	1.0	< 6.0	6.0	U	1.2										
1,1-Dichloroethane	270	270	26,000	240,000	< 4.8	4.8	U	0.95	< 270	270	U	270	< 6.3	6.3	U	1.3	< 5.2	5.2	U	1.0	< 6.0	6.0	U	1.2										
1,1-Dichloroethene	330	330	100,000	500,000	< 4.8	4.8	U	0.48	< 330	330	U	140	< 6.3	6.3	U	0.63	< 5.2	5.2	U	0.52	< 6.0	6.0	U	0.60										
1,1-Dichloropropene					< 4.8	4.8	U	0.48	< 1400	1,400	U	140	< 6.3	6.3	U	0.63	< 5.2	5.2	U	0.52	< 6.0	6.0	U	0.60										
1,2,3-Trichlorobenzene					< 4.8	4.8	U	0.95	< 1400	1,400	U	270	< 350	350	U	70	< 5.2	5.2	U	1.0	< 6.0	6.0	U	1.2										
1,2,3-Trichloropropane					< 4.8	4.8	U	0.48	< 1400	1,400	U	140	< 350	350	U	35	< 5.2	5.2	U	0.52	< 6.0	6.0	U	0.60										
1,2,4-Trichlorobenzene					< 4.8	4.8	U	0.95	< 1400	1,400	U	270	< 350	350	U	70	< 5.2	5.2	U	1.0	< 6.0	6.0	U	1.2										
1,2,4-Trimethylbenzene	3,600	3,600	52,000	190,000	0.84	4.8	J	0.48	35,000	3,600	D	540	48	350	J	35	880	320	32	1.6	6.0	J	0.60											
1,2-Dibromo-3-chloropropane					< 4.8	4.8	U	0.95	< 1400	1,400	U	270	< 350	350	U	70	< 5.2	5.2	U	1.0	< 6.0	6.0	U	1.2										
1,2-Dibromomethane					< 4.8	4.8	U	0.48	< 1400	1,400	U	140	< 6.3	6.3	U	0.63	< 5.2	5.2	U	0.52	< 6.0	6.0	U	0.60										
1,2-Dichlorobenzene	1,100	1,100	100,000	500,000	< 4.8	4.8	U	0.48	< 1100	1,100	U	140	< 350	350	U	35	< 5.2	5.2	U	0.52	< 6.0	6.0	U	0.60										
1,2-Dichloroethane	20	20	3,100	30,000	< 4.8	4.8	U	0.48	< 140	140	U	140	< 6.3	6.3	U	0.63	< 5.2	5.2	U	0.52	< 6.0	6.0	U	0.60										
1,2-Dichloropropane					< 4.8	4.8	U	0.95	< 1400	1,400	U	270	< 6.3	6.3	U	1.3	< 5.2	5.2	U	1.0	< 6.0	6.0	U	1.2										
1,3,5-Trimethylbenzene	8,400	8,400	52,000	190,000	< 4.8	4.8	U	0.48	8,700	5,400	D	540	< 350	350	U	35	< 5.2	5.2	U	0.52	0.84	6.0	J	0.60										
1,3-Dichlorobenzene	2,400	2,400	4,900	280,000	< 4.8	4.8	U	0.48	< 1400	1,400	U	140	< 350	350	U	35	< 5.2	5.2	U	0.52	< 6.0	6.0	U	0.60										
1,3-Dichloropropane					< 4.8	4.8	U	0.95	< 1400	1,400	U	270	< 6.3	6.3	U	1.3	< 5.2	5.2	U	1.0	< 6.0	6.0	U	1.2										
1,4-Dichlorobenzene	1,800	1,800	13,000	13,000	< 4.8	4.8	U	0.48	< 1400	1,400	U	140	< 350	350	U	35	< 5.2	5.2	U	0.52	< 6.0	6.0	U	0.60										
1,4-Dioxane		100	13,000	13,000	< 71	71	U	38	< 11000	11,000	U	11000	< 95	95	U	50	< 79	79	U	42	< 90	90	U	48										
2,2-Dichloropropane					< 4.8	4.8	U	0.48	< 1400	1,400	U	140	< 6.3	6.3	U	0.63	< 5.2	5.2	U	0.52	< 6.0	6.0	U	0.60										
2-Chlorotoluene					< 4.8	4.8	U	0.95	< 1400	1,400	U	270	< 350	350	U	70	< 5.2	5.2	U	1.0	< 6.0	6.0	U	1.2										
2-Hexanone (Methyl Butyl Ketone)					< 24	24	U	4.8	< 6800	6,800	U	1400	< 32	32	U	6.3	< 26	26	U	5.2	< 30	30	U	6.0										
2-Isopropyltoluene					< 4.8	4.8	U	0.48	300	1,400	J	140	< 350	350	U	35	0.53	5.2	J	0.52	< 6.0	6.0	U	0.60										
4-Chlorotoluene					< 4.8	4.8	U	0.48	< 1400	1,400	U	140	< 350	350	U	35	< 5.2	5.2	U	0.52	< 6.0	6.0	U	0.60										
4-Methyl-2-Pentanone					< 24	24	U	4.8	< 6800	6,800	U	1400	< 32	32	U	6.3	< 26	26	U	5.2	< 30	30	U	6.0										
Acetone	50	50	100,000	500,000	14	24	JS	4.8	< 1400	1,400	U	1400	34	32	S	6.3	< 26	26	U	5.2	42	27	SL	5.4										
Acrylonitrile					< 19	19	U	0.48	< 5400	5,400	U	140	< 25	25	U	0.63	< 10	10	U	1.0	< 24	24	U	0.60										
Benzene	60	60	4,800	44,000	1.9	4.8	J	0.48	< 140	140	U	140	< 6.3	6.3	U	0.63	< 5.2	5.2	U	0.52	< 6.0	6.0	U	0.60										
Bromobenzene					< 4.8	4.8	U	0.48	< 1400	1,400	U	140	< 350	350	U	35	< 5.2	5.2	U	0.52	< 6.0	6.0	U	0.60										
Bromochloromethane					< 4.8	4.8	U	0.48	< 1400	1,400	U	140	< 6.3	6.3	U	0.63	< 5.2	5.2	U	0.52	< 6.0	6.0	U	0.60										
Bromodichloromethane					< 4.8	4.8	U	0.95	< 1400	1,400	U	270	< 6.3	6.3	U	1.3	< 5.2	5.2	U	1.0	< 6.0	6.0	U	1.2										
Bromoform					< 4.8	4.8	U	0.95	< 1400	1,400	U	270	< 6.3	6.3	U	1.3	< 5.2	5.2	U	1.0	< 6.0	6.0	U	1.2										
Bromomethane					< 4.8	4.8	U	1.9	< 1400	1,400	U	540	< 6.3	6.3	U	2.5	< 5.2	5.2	U	2.1	< 6.0	6.0	U	2.4										
Carbon Disulfide					< 4.8	4.8	U	0.95	< 1400	1,400	U	270	< 6.3	6.3	U	1.3	< 5.2	5.2	U	1.0	< 6.0	6.0	U	1.2										
Carbon tetrachloride	760	760	2,400	22,000	< 4.8	4.8	U	0.95	< 760	760	U	270	< 6.3	6.3	U	1.3	< 5.2	5.2	U	1.0	< 6.0	6.0	U	1.2										
Chlorobenzene	1,100	1,100	100,000	500,000	< 4.8	4.8	U	0.48	< 1100	1,100	U	140	< 6.3	6.3	U	0.63	< 5.2	5.2	U	0.52	< 6.0	6.0	U	0.60										
Chloroethane					< 4.8	4.8	U	0.48	< 1400	1,400	U	140	< 6.3	6.3	U	0.63	< 5.2	5.2	U	0.52	< 6.0	6.0	U	0.60										
Chloroform	370	370	49,000	350,000	< 4.8	4.8	U	0.48	< 370	370	U	140	< 6.3	6.3	U	0.63	< 5.2	5.2	U	0.52	< 6.0	6.0	U	0.60										
Chloromethane					< 4.8	4.8	U	0.95	< 1400	1,400	U	270	< 6.3	6.3	U	1.3	< 5.2	5.2	U	1.0	< 6.0	6.0	U	1.2										
cis-1,2-Dichloroethene	250	250	100,000		< 4.8	4.8	U	0.48	< 250	250	U	140	< 6.3	6.3	U	0.63	< 5.2	5.2	U	0.52	< 6.0	6.0	U	0.60										
cis-1,3-Dichloropropene					< 4.8	4.8	U	0.48	< 1400	1,400	U	140	< 6.3	6.3	U	0.63	< 5.2	5.2	U	0.52	< 6.0	6.0	U	0.60										
Dibromochloromethane					< 4.8	4.8	U	0.95	< 1400	1,400	U	270	< 6.3	6.3	U	1.3	< 5.2	5.2	U	1.0	< 6.0	6.0	U	1.2										
Dibromomethane					< 4.8	4.8	U	0.95	< 1400	1,400	U	270	< 6.3	6.3	U	1.3	< 5.2	5.2	U	1.0	< 6.0	6.0	U	1.2										
Dichlorodifluoromethane					< 4.8	4.8	U	0.48	< 1400	1,400	U	140	< 6.3	6.3	U	0.63	< 5.2	5.2	U	0.52	< 6.0	6.0	U	0.60										
Ethylbenzene	1,000	1,000	41,000	390,000	0.77	4.8	J	0.48	11,000	1,000	D	540	< 6.3	6.3	U	0.63	1	5.2	J	0.52	< 6.0	6.0	U	0.60										
Hexachlorobutadiene					< 4.8	4.8	U	0.48	< 1400	1,400	U	140	< 350	350	U	35	< 5.2	5.2	U	0.52	< 6.0	6.0	U	0.										

TABLE 3
310-336 Grand Concourse
Bronx, New York
Soil Analytical Results
Volatile Organic Compounds

COMPOUND	NYSDEC Part 375.6 Groundwater Protection Soil Cleanup Objectives*	NYSDEC Part 375.6 Restricted Residential Soil Cleanup Objectives*	NYDEC Part 375.6 Restricted Commercial Soil Cleanup Objectives*	SB4								SB6								SB7								
				(0-2') 6/22/2018 µg/Kg				(12-14') 6/22/2018 µg/Kg				(0-2') 6/25/2018 µg/Kg				(12-14') 6/25/2018 µg/Kg				(2-4') 1/15/2020 µg/Kg				(10-12') 1/15/2020 µg/Kg				
				Result	RL	Qual	MDL	Result	RL	Qual	MDL	Result	RL	Qual	MDL	Result	RL	Qual	MDL	Result	RL	Qual	MDL	Result	RL	Qual	MDL	
1,1,1,2-Tetrachlororothane				< 22	22	U	1.1	< 20	20	U	1.0	< 33	33	U	1.6	< 21	21	U	1.0	< 18	18	U	0.90	< 20	20	U	0.98	
1,1,1-Trichloroethane	680	680	100,000	500,000	< 5.5	5.5	U	0.55	< 5.1	5.1	U	0.51	< 8.1	8.1	U	0.81	< 5.2	5.2	U	0.52	< 4.5	4.5	U	0.45	< 4.9	4.9	U	0.49
1,1,2,2-Tetrachloroethane				< 320	320	U	64	< 5.1	5.1	U	1.0	< 8.1	8.1	U	1.6	< 5.2	5.2	U	1.0	< 4.5	4.5	U	0.90	< 4.9	4.9	U	0.98	
1,1,2-Trichloroethane				< 5.5	5.5	U	1.1	< 5.1	5.1	U	1.0	< 8.1	8.1	U	1.6	< 5.2	5.2	U	1.0	< 4.5	4.5	U	0.90	< 4.9	4.9	U	0.98	
1,1-Dichloroethane	270	270	26,000	240,000	< 5.5	5.5	U	1.1	< 5.1	5.1	U	1.0	< 8.1	8.1	U	1.6	< 5.2	5.2	U	1.0	< 4.5	4.5	U	0.90	< 4.9	4.9	U	0.98
1,1-Dichloropropene	330	330	100,000	500,000	< 5.5	5.5	U	0.55	< 5.1	5.1	U	0.51	< 8.1	8.1	U	0.81	< 5.2	5.2	U	0.52	< 4.5	4.5	U	0.45	< 4.9	4.9	U	0.49
1,2,3-Trichlorobenzene				< 320	320	U	64	< 5.1	5.1	U	1.0	< 8.1	8.1	U	1.6	< 5.2	5.2	U	1.0	< 4.5	4.5	U	0.90	< 4.9	4.9	U	0.98	
1,2,3-Trichloropropane				< 320	320	U	32	< 5.1	5.1	U	0.51	< 8.1	8.1	U	0.81	< 5.2	5.2	U	0.52	< 4.5	4.5	U	0.45	< 4.9	4.9	U	0.49	
1,2,4-Trichlorobenzene				< 320	320	U	64	< 5.1	5.1	U	1.0	< 8.1	8.1	U	1.6	< 5.2	5.2	U	1.0	< 4.5	4.5	U	0.90	< 4.9	4.9	U	0.98	
1,2,4-Trimethylbenzene	3,600	3,600	52,000	190,000	< 320	320	U	32	< 5.1	5.1	U	0.51	2.1	8.1	J	0.81	< 5.2	5.2	U	0.52	< 4.5	4.5	U	0.45	< 4.9	4.9	U	0.49
1,2-Dibromo-3-chloropropane				< 320	320	U	64	< 5.1	5.1	U	1.0	< 8.1	8.1	U	1.6	< 5.2	5.2	U	1.0	< 4.5	4.5	U	0.90	< 4.9	4.9	U	0.98	
1,2-Dibromomethane				< 5.5	5.5	U	0.55	< 5.1	5.1	U	0.51	< 8.1	8.1	U	0.81	< 5.2	5.2	U	0.52	< 4.5	4.5	U	0.45	< 4.9	4.9	U	0.49	
1,2-Dichlorobenzene	1,100	1,100	100,000	500,000	< 320	320	U	32	< 5.1	5.1	U	0.51	< 8.1	8.1	U	0.81	< 5.2	5.2	U	0.52	< 4.5	4.5	U	0.45	< 4.9	4.9	U	0.49
1,2-Dichloroethane	20	20	3,100	30,000	< 5.5	5.5	U	0.55	< 5.1	5.1	U	0.51	< 8.1	8.1	U	0.81	< 5.2	5.2	U	0.52	< 4.5	4.5	U	0.45	< 4.9	4.9	U	0.49
1,2-Dichloropropane				< 5.5	5.5	U	1.1	< 5.1	5.1	U	1.0	< 8.1	8.1	U	1.6	< 5.2	5.2	U	1.0	< 4.5	4.5	U	0.90	< 4.9	4.9	U	0.98	
1,3,5-Trimethylbenzene	8,400	8,400	52,000	190,000	< 320	320	U	32	< 5.1	5.1	U	0.51	0.82	8.1	J	0.81	< 5.2	5.2	U	0.52	< 4.5	4.5	U	0.45	< 4.9	4.9	U	0.49
1,3-Dichlorobenzene	2,400	2,400	4,900	280,000	< 320	320	U	32	< 5.1	5.1	U	0.51	< 8.1	8.1	U	0.81	< 5.2	5.2	U	0.52	< 4.5	4.5	U	0.45	< 4.9	4.9	U	0.49
1,3-Dichloropropane				< 5.5	5.5	U	1.1	< 5.1	5.1	U	1.0	< 8.1	8.1	U	1.6	< 5.2	5.2	U	1.0	< 4.5	4.5	U	0.90	< 4.9	4.9	U	0.98	
1,4-Dichlorobenzene	1,800	1,800	13,000	13,000	< 320	320	U	32	< 5.1	5.1	U	0.51	< 8.1	8.1	U	0.81	< 5.2	5.2	U	0.52	< 4.5	4.5	U	0.45	< 4.9	4.9	U	0.49
1,4-Dioxane		100	13,000	13,000	< 82	82	U	44	< 76	76	U	40	< 100	100	U	65	< 78	78	U	41	NA				NA			
2,2-Dichloropropane				< 5.5	5.5	U	0.55	< 5.1	5.1	U	0.51	< 8.1	8.1	U	0.81	< 5.2	5.2	U	0.52	< 4.5	4.5	U	0.45	< 4.9	4.9	U	0.49	
2-Chlorotoluene				< 320	320	U	64	< 5.1	5.1	U	1.0	< 8.1	8.1	U	1.6	< 5.2	5.2	U	1.0	< 4.5	4.5	U	0.90	< 4.9	4.9	U	0.98	
2-Hexanone (Methyl Butyl Ketone)				< 27	27	U	5.5	< 25	25	U	5.1	< 41	41	U	8.1	< 26	26	U	5.2	< 22	22	U	4.5	< 24	24	U	4.9	
2-Isopropyltoluene				< 320	320	U	32	< 5.1	5.1	U	0.51	2.7	8.1	J	0.81	< 5.2	5.2	U	0.52	< 4.5	4.5	U	0.45	< 4.9	4.9	U	0.49	
4-Chlorotoluene				< 320	320	U	32	< 5.1	5.1	U	0.51	< 8.1	8.1	U	0.81	< 5.2	5.2	U	0.52	< 4.5	4.5	U	0.45	< 4.9	4.9	U	0.49	
4-Methyl-2-Pentanone				< 27	27	U	5.5	< 25	25	U	5.1	< 41	41	U	8.1	< 26	26	U	5.2	< 22	22	U	4.5	< 24	24	U	4.9	
Acetone	50	50	100,000	500,000	46	27	S	5.5	9.4	25	JS	5.1	< 49	49	U	49	< 26	26	U	5.2	< 22	22	U	4.5	< 24	24	U	4.9
Acrylonitrile				< 22	22	U	0.55	< 20	20	U	0.51	< 33	33	U	0.81	< 21	21	U	0.52	< 18	18	U	0.45	< 20	20	U	0.49	
Benzene	60	60	4,800	44,000	< 5.5	5.5	U	0.55	< 5.1	5.1	U	0.51	< 8.1	8.1	U	0.81	< 5.2	5.2	U	0.52	< 4.5	4.5	U	0.45	< 4.9	4.9	U	0.49
Bromobenzene				< 320	320	U	32	< 5.1	5.1	U	0.51	< 8.1	8.1	U	0.81	< 5.2	5.2	U	0.52	< 4.5	4.5	U	0.45	< 4.9	4.9	U	0.49	
Bromochloromethane				< 5.5	5.5	U	0.55	< 5.1	5.1	U	0.51	< 8.1	8.1	U	0.81	< 5.2	5.2	U	0.52	< 4.5	4.5	U	0.45	< 4.9	4.9	U	0.49	
Bromodichloromethane				< 5.5	5.5	U	1.1	< 5.1	5.1	U	1.0	< 8.1	8.1	U	1.6	< 5.2	5.2	U	1.0	< 4.5	4.5	U	0.90	< 4.9	4.9	U	0.98	
Bromoform				< 5.5	5.5	U	1.1	< 5.1	5.1	U	1.0	< 8.1	8.1	U	1.6	< 5.2	5.2	U	1.0	< 4.5	4.5	U	0.90	< 4.9	4.9	U	0.98	
Bromomethane				< 5.5	5.5	U	2.2	< 5.1	5.1	U	2.0	< 8.1	8.1	U	3.3	< 5.2	5.2	U	2.1	< 4.5	4.5	U	1.8	< 4.9	4.9	U	2.0	
Carbon Disulfide				< 5.5	5.5	U	1.1	< 5.1	5.1	U	1.0	2.2	8.1	J	1.6	< 5.2	5.2	U	1.0	< 4.5	4.5	U	0.90	< 4.9	4.9	U	0.98	
Carbon tetrachloride	760	760	2,400	22,000	< 5.5	5.5	U	1.1	< 5.1	5.1	U	1.0	< 8.1	8.1	U	1.6	< 5.2	5.2	U	1.0	< 4.5	4.5	U	0.90	< 4.9	4.9	U	0.98
Chlorobenzene	1,100	1,100	100,000	500,000	< 5.5	5.5	U	0.55	< 5.1	5.1	U	0.51	< 8.1	8.1	U	0.81	< 5.2	5.2	U	0.52	< 4.5	4.5	U	0.45	< 4.9	4.9	U	0.49
Chloroethane				< 5.5	5.5	U	0.55	< 5.1	5.1	U	0.51	< 8.1	8.1	U	0.81	< 5.2	5.2	U	0.52	< 4.5	4.5	U	0.45	< 4.9	4.9	U	0.49	
Chloroform	370	370	49,000	350,000	< 5.5	5.5	U	0.55	< 5.1	5.1	U	0.51	< 8.1	8.1	U	0.81	< 5.2	5.2	U	0.52	< 4.5	4.5	U	0.45	< 4.9	4.9	U	0.49
Chloromethane				< 5.5	5.5	U	1.1	< 5.1	5.1	U	1.0	< 8.1	8.1	U	1.6	< 5.2	5.2	U	1.0	< 4.5	4.5	U	0.90	< 4.9	4.9	U	0.98	
cis-1,2-Dichloroethene	250	250	100,000		< 5.5	5.5	U	0.55	< 5.1	5.1	U	0.51	< 8.1	8.1	U	0.81	< 5.2	5.2	U	0.52	< 4.5	4.5	U	0.45	< 4.9	4.9	U	0.49
cis-1,3-Dichloropropene																												

TABLE 3
310-336 Grand Concourse
Bronx, New York
Soil Analytical Results
Volatile Organic Compounds

COMPOUND	NYSDEC Part 375.6 Groundwater Protection Soil Cleanup Objectives*	NYSDEC Part 375.6 Unrestricted Use Soil Cleanup Objectives*	NYDEC Part 375.6 Residential Soil Cleanup Objectives*	NYDEC Part 375.6 Commercial Soil Cleanup Objectives*	SB8								SB9								B1				B2				B3			
					(1-3) 1/15/2020 µg/Kg				(5-7) 1/15/2020 µg/Kg				(1-3) 1/15/2020 µg/Kg				(0-2) 1/30/2019 µg/Kg				(0-2) 1/30/2019 µg/Kg				(0-2) 1/30/2019 µg/Kg							
					Result	RL	Qual	MDL	Result	RL	Qual	MDL	Result	RL	Qual	MDL	Result	RL	Qual	MDL	Result	RL	Qual	MDL	Result	RL	Qual	MDL	Result	RL	Qual	MDL
1,1,1,2-Tetrachloroethane					< 4.8	4.8	U	0.96	< 14	14	U	0.72	< 22	22	U	1.1	< 24	24	U	1.2	< 22	22	U	1.1	< 24	24	U	1.1	< 24	24	U	1.2
1,1,1-Trichloroethane	680	680	100,000	500,000	< 4.8	4.8	U	0.48	< 3.6	3.6	U	0.36	< 5.4	5.4	U	0.54	< 6.1	6.1	U	0.61	< 5.4	5.4	U	0.54	< 6.1	6.1	U	0.61	< 6.1	6.1	U	0.61
1,1,2,2-Tetrachloroethane					< 4.8	4.8	U	0.96	< 3.6	3.6	U	0.72	< 5.4	5.4	U	1.1	< 6.1	6.1	U	1.2	< 5.4	5.4	U	1.1	< 6.1	6.1	U	1.1	< 6.1	6.1	U	1.2
1,1,2-Trichloroethane					< 4.8	4.8	U	0.96	< 3.6	3.6	U	0.72	< 5.4	5.4	U	1.1	< 6.1	6.1	U	1.2	< 5.4	5.4	U	1.1	< 6.1	6.1	U	1.1	< 6.1	6.1	U	1.2
1,1-Dichloroethane	270	270	26,000	240,000	< 4.8	4.8	U	0.96	< 3.6	3.6	U	0.72	< 5.4	5.4	U	1.1	< 6.1	6.1	U	1.2	< 5.4	5.4	U	1.1	< 6.1	6.1	U	1.1	< 6.1	6.1	U	1.2
1,1-Dichloroethene	330	330	100,000	500,000	< 4.8	4.8	U	0.48	< 3.6	3.6	U	0.36	< 5.4	5.4	U	0.54	< 6.1	6.1	U	0.61	< 5.4	5.4	U	0.54	< 6.1	6.1	U	0.61	< 6.1	6.1	U	0.61
1,1-Dichloropropene					< 4.8	4.8	U	0.48	< 3.6	3.6	U	0.36	< 5.4	5.4	U	0.54	< 6.1	6.1	U	0.61	< 5.4	5.4	U	0.54	< 6.1	6.1	U	0.61	< 6.1	6.1	U	0.61
1,2,3-Trichlorobenzene					< 4.8	4.8	U	0.96	< 3.6	3.6	U	0.72	< 5.4	5.4	U	1.1	< 6.1	6.1	U	1.2	< 5.4	5.4	U	1.1	< 6.1	6.1	U	1.1	< 6.1	6.1	U	1.2
1,2,3-Trichloropropane					< 4.8	4.8	U	0.48	< 3.6	3.6	U	0.36	< 5.4	5.4	U	0.54	< 6.1	6.1	U	0.61	< 5.4	5.4	U	0.54	< 6.1	6.1	U	0.54	< 6.1	6.1	U	0.61
1,2,4-Trichlorobenzene					< 4.8	4.8	U	0.96	< 3.6	3.6	U	0.72	< 5.4	5.4	U	1.1	< 6.1	6.1	U	1.2	< 5.4	5.4	U	1.1	< 6.1	6.1	U	1.1	< 6.1	6.1	U	1.2
1,2,4-Trimethylbenzene	3,600	3,600	52,000	190,000	8.9	4.8		0.48	< 3.6	3.6	U	0.36	< 5.4	5.4	U	0.54	< 6.1	6.1	U	0.61	< 5.4	5.4	U	0.54	< 6.1	6.1	U	0.54	< 6.1	6.1	U	0.61
1,2-Dibromo-3-chloropropane					< 4.8	4.8	U	0.96	< 3.6	3.6	U	0.72	< 5.4	5.4	U	1.1	< 6.1	6.1	U	1.2	< 5.4	5.4	U	1.1	< 6.1	6.1	U	1.1	< 6.1	6.1	U	1.2
1,2-Dibromomethane					< 4.8	4.8	U	0.48	< 3.6	3.6	U	0.36	< 5.4	5.4	U	0.54	< 6.1	6.1	U	0.61	< 5.4	5.4	U	0.54	< 6.1	6.1	U	0.61	< 6.1	6.1	U	0.61
1,2-Dichlorobenzene	1,100	1,100	100,000	500,000	< 4.8	4.8	U	0.48	< 3.6	3.6	U	0.36	< 5.4	5.4	U	0.54	< 6.1	6.1	U	0.61	< 5.4	5.4	U	0.54	< 6.1	6.1	U	0.61	< 6.1	6.1	U	0.61
1,2-Dichloroethane	20	20	3,100	30,000	< 4.8	4.8	U	0.48	< 3.6	3.6	U	0.36	< 5.4	5.4	U	0.54	< 6.1	6.1	U	0.61	< 5.4	5.4	U	0.54	< 6.1	6.1	U	0.61	< 6.1	6.1	U	0.61
1,2-Dichloropropane					< 4.8	4.8	U	0.96	< 3.6	3.6	U	0.72	< 5.4	5.4	U	1.1	< 6.1	6.1	U	1.2	< 5.4	5.4	U	1.1	< 6.1	6.1	U	1.1	< 6.1	6.1	U	1.2
1,3,5-Trimethylbenzene	8,400	8,400	52,000	190,000	6.8	4.8		0.48	< 3.6	3.6	U	0.36	< 5.4	5.4	U	0.54	< 6.1	6.1	U	0.61	< 5.4	5.4	U	0.54	< 6.1	6.1	U	0.61	< 6.1	6.1	U	0.61
1,3-Dichlorobenzene	2,400	2,400	4,900	280,000	< 4.8	4.8	U	0.48	< 3.6	3.6	U	0.36	< 5.4	5.4	U	0.54	< 6.1	6.1	U	0.61	< 5.4	5.4	U	0.54	< 6.1	6.1	U	0.61	< 6.1	6.1	U	0.61
1,3-Dichloropropane					< 4.8	4.8	U	0.96	< 3.6	3.6	U	0.72	< 5.4	5.4	U	1.1	< 6.1	6.1	U	1.2	< 5.4	5.4	U	1.1	< 6.1	6.1	U	1.1	< 6.1	6.1	U	1.2
1,4-Dichlorobenzene	1,800	1,800	13,000	13,000	< 4.8	4.8	U	0.48	< 3.6	3.6	U	0.36	< 5.4	5.4	U	0.54	< 6.1	6.1	U	0.61	< 5.4	5.4	U	0.54	< 6.1	6.1	U	0.61	< 6.1	6.1	U	0.61
1,4-Dioxane					NA	NA			NA	NA			NA	NA			< 91	91	U	49	< 81	81	U	43	< 91	91	U	49	< 91	91	U	49
2,2-Dichloropropane					< 4.8	4.8	U	0.48	< 3.6	3.6	U	0.36	< 5.4	5.4	U	0.54	< 6.1	6.1	U	0.61	< 5.4	5.4	U	0.54	< 6.1	6.1	U	0.61	< 6.1	6.1	U	0.61
2-Chlorotoluene					< 4.8	4.8	U	0.96	< 3.6	3.6	U	0.72	< 5.4	5.4	U	1.1	< 6.1	6.1	U	1.2	< 5.4	5.4	U	1.1	< 6.1	6.1	U	1.1	< 6.1	6.1	U	1.2
2-Hexanone (Methyl Butyl Ketone)					< 24	24	U	4.8	< 18	18	U	3.6	< 27	27	U	5.4	< 30	30	U	6.1	< 27	27	U	5.4	< 30	30	U	6.1	< 30	30	U	6.1
2-Isopropyltoluene					< 4.8	4.8	U	0.48	< 3.6	3.6	U	0.36	< 5.4	5.4	U	0.54	< 6.1	6.1	U	0.61	< 5.4	5.4	U	0.54	< 6.1	6.1	U	0.61	< 6.1	6.1	U	0.61
4-Chlorotoluene					< 4.8	4.8	U	0.48	< 3.6	3.6	U	0.36	< 5.4	5.4	U	0.54	< 6.1	6.1	U	0.61	< 5.4	5.4	U	0.54	< 6.1	6.1	U	0.61	< 6.1	6.1	U	0.61
4-Methyl-2-Pentanone					< 24	24	U	4.8	< 18	18	U	3.6	< 27	27	U	5.4	< 30	30	U	6.1	< 27	27	U	5.4	< 30	30	U	6.1	< 30	30	U	6.1
Acetone	50	50	100,000	500,000	25	24	S	4.8	14	JS	3.6	7.7	27	JS	5.4	180	30	S	6.1	120	27	S	5.4	140	30	S	6.1	140	30	S	6.1	
Acrylonitrile					< 9.6	9.6	U	0.96	< 14	14	U	0.36	< 22	22	U	0.54	< 24	24	U	0.61	< 22	22	U	0.54	< 24	24	U	0.61	< 24	24	U	0.61
Benzene	60	60	4,800	44,000	< 4.8	4.8	U	0.48	< 3.6	3.6	U	0.36	< 5.4	5.4	U	0.54	< 6.1	6.1	U	0.61	< 5.4	5.4	U	0.54	< 6.1	6.1	U	0.61	< 6.1	6.1	U	0.61
Bromobenzene					< 4.8	4.8	U	0.48	< 3.6	3.6	U	0.36	< 5.4	5.4	U	0.54	< 6.1	6.1	U	0.61	< 5.4	5.4	U	0.54	< 6.1	6.1	U	0.61	< 6.1	6.1	U	0.61
Bromochloromethane					< 4.8	4.8	U	0.48	< 3.6	3.6	U	0.36	< 5.4	5.4	U	0.54	< 6.1	6.1	U	0.61	< 5.4	5.4	U	0.54	< 6.1	6.1	U	0.61	< 6.1	6.1	U	0.61
Bromodichloromethane					< 4.8	4.8	U	0.96	< 3.6	3.6	U	0.72	< 5.4	5.4	U	1.1	< 6.1	6.1	U	1.2	< 5.4	5.4	U	1.1	< 6.1	6.1	U	1.1	< 6.1	6.1	U	1.2
Bromoform					< 4.8	4.8	U	0.96	< 3.6	3.6	U	0.72	< 5.4	5.4	U	1.1	< 6.1	6.1	U	1.2	< 5.4	5.4	U	1.1	< 6.1	6.1	U	1.1	< 6.1	6.1	U	1.2
Bromomethane					< 4.8	4.8	U	1.9	< 3.6	3.6	U	1.4	< 5.4	5.4	U	2.2	< 6.1	6.1	U	2.4	< 5.4	5.4	U	2.2	< 6.1	6.1	U	2.4	< 6.1	6.1	U	2.4
Carbon Disulfide					< 4.8	4.8	U	0.96	< 3.6	3.6	U	0.72	< 5.4	5.4	U	1.1	< 6.1	6.1	U	1.2	< 5.4	5.4	U	1.								

TABLE 3
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Bronx, New York
Soil Analytical Results
Volatile Organic Compounds

COMPOUND	NYSDEC Part 375.6 Groundwater Protection Soil Cleanup Objectives*	NYSDEC Part 375.6 Unrestricted Use Soil Cleanup Objectives*	NYDEC Part 375.6 Restricted Residential Soil Cleanup Objectives*	NYDEC Part 375.6 Restricted Commercial Soil Cleanup Objectives*	B4				B5				B5D				B6							
					(B-2) 1/30/2019				(B-2) 2/1/2019				(3-5) 1/15/2020				(10-12) 1/15/2020				(B-2) 2/1/2019			
					Result	RL	Qual	MDL	Result	RL	Qual	MDL	Result	RL	Qual	MDL	Result	RL	Qual	MDL	Result	RL	Qual	MDL
1,1,1,2-Tetrachloroethane					< 33	33	U	1.7	< 18	18	U	0.92	< 4.9	4.9	U	0.98	< 19	19	U	0.94	< 19	19	U	0.93
1,1,1-Trichloroethane	680	680	100,000	500,000	< 8.3	8.3	U	0.83	< 4.6	4.6	U	0.46	< 4.9	4.9	U	0.49	< 4.7	4.7	U	0.47	< 4.7	4.7	U	0.47
1,1,2,2-Tetrachloroethane					< 8.3	8.3	U	1.7	< 4.6	4.6	U	0.92	< 4.9	4.9	U	0.98	< 4.7	4.7	U	0.94	< 4.7	4.7	U	0.93
1,1,2-Trichloroethane					< 8.3	8.3	U	1.7	< 4.6	4.6	U	0.92	< 4.9	4.9	U	0.98	< 4.7	4.7	U	0.94	< 4.7	4.7	U	0.93
1,1-Dichloroethane	270	270	26,000	240,000	< 8.3	8.3	U	1.7	< 4.6	4.6	U	0.92	< 4.9	4.9	U	0.98	< 4.7	4.7	U	0.94	< 4.7	4.7	U	0.93
1,1-Dichloroethene	330	330	100,000	500,000	< 8.3	8.3	U	0.83	< 4.6	4.6	U	0.46	< 4.9	4.9	U	0.49	< 4.7	4.7	U	0.47	< 4.7	4.7	U	0.47
1,1-Dichloropropene					< 8.3	8.3	U	0.83	< 4.6	4.6	U	0.46	< 4.9	4.9	U	0.49	< 4.7	4.7	U	0.47	< 4.7	4.7	U	0.47
1,2,3-Trichlorobenzene					< 8.3	8.3	U	1.7	< 4.6	4.6	U	0.92	< 4.9	4.9	U	0.98	< 4.7	4.7	U	0.94	< 4.7	4.7	U	0.93
1,2,3-Trichloropropane					< 8.3	8.3	U	0.83	< 4.6	4.6	U	0.46	< 4.9	4.9	U	0.49	< 4.7	4.7	U	0.47	< 4.7	4.7	U	0.47
1,2,4-Trichlorobenzene					< 8.3	8.3	U	1.7	< 4.6	4.6	U	0.92	< 4.9	4.9	U	0.98	< 4.7	4.7	U	0.94	< 4.7	4.7	U	0.93
1,2,4-Trimethylbenzene	3,600	3,600	52,000	190,000	< 8.3	8.3	U	0.83	< 4.6	4.6	U	0.46	< 4.9	4.9	U	0.49	< 4.7	4.7	U	0.47	260	200	J	33
1,2-Dibromo-3-chloropropane					< 8.3	8.3	U	1.7	< 4.6	4.6	U	0.92	< 4.9	4.9	U	0.98	< 4.7	4.7	U	0.94	< 4.7	4.7	U	0.93
1,2-Dibromomethane					< 8.3	8.3	U	0.83	< 4.6	4.6	U	0.46	< 4.9	4.9	U	0.49	< 4.7	4.7	U	0.47	< 4.7	4.7	U	0.47
1,2-Dichlorobenzene	1,100	1,100	100,000	500,000	< 8.3	8.3	U	0.83	< 4.6	4.6	U	0.46	< 4.9	4.9	U	0.49	< 4.7	4.7	U	0.47	< 4.7	4.7	U	0.47
1,2-Dichloroethane	20	20	3,100	30,000	< 8.3	8.3	U	0.83	< 4.6	4.6	U	0.46	< 4.9	4.9	U	0.49	< 4.7	4.7	U	0.47	< 4.7	4.7	U	0.47
1,2-Dichloropropane					< 8.3	8.3	U	1.7	< 4.6	4.6	U	0.92	< 4.9	4.9	U	0.98	< 4.7	4.7	U	0.94	< 4.7	4.7	U	0.93
1,3,5-Trimethylbenzene	8,400	8,400	52,000	190,000	< 8.3	8.3	U	0.83	< 4.6	4.6	U	0.46	< 4.9	4.9	U	0.49	< 4.7	4.7	U	0.47	86	330	J	33
1,3-Dichlorobenzene	2,400	2,400	4,900	280,000	< 8.3	8.3	U	0.83	< 4.6	4.6	U	0.46	< 4.9	4.9	U	0.49	< 4.7	4.7	U	0.47	< 4.7	4.7	U	0.47
1,3-Dichloropropane					< 8.3	8.3	U	1.7	< 4.6	4.6	U	0.92	< 4.9	4.9	U	0.98	< 4.7	4.7	U	0.94	< 4.7	4.7	U	0.93
1,4-Dichlorobenzene	1,800	1,800	13,000	13,000	< 8.3	8.3	U	0.83	< 4.6	4.6	U	0.46	< 4.9	4.9	U	0.49	< 4.7	4.7	U	0.47	< 4.7	4.7	U	0.47
1,4-Dioxane		100	13,000	13,000	< 100	100	U	67	< 69	69	U	37	NA				NA				< 70	70	U	37
2,2-Dichloropropane					< 8.3	8.3	U	0.83	< 4.6	4.6	U	0.46	< 4.9	4.9	U	0.49	< 4.7	4.7	U	0.47	< 4.7	4.7	U	0.47
2-Chlorotoluene					< 8.3	8.3	U	1.7	< 4.6	4.6	U	0.92	< 4.9	4.9	U	0.98	< 4.7	4.7	U	0.94	< 4.7	4.7	U	0.93
2-Hexanone (Methyl Butyl Ketone)					< 42	42	U	8.3	< 23	23	U	4.6	< 24	24	U	4.9	< 23	23	U	4.7	< 23	23	U	4.7
2-Isopropyltoluene					< 8.3	8.3	U	0.83	< 4.6	4.6	U	0.46	< 4.9	4.9	U	0.49	< 4.7	4.7	U	0.47	< 4.7	4.7	U	0.47
4-Chlorotoluene					< 8.3	8.3	U	0.83	< 4.6	4.6	U	0.46	< 4.9	4.9	U	0.49	< 4.7	4.7	U	0.47	< 4.7	4.7	U	0.47
4-Methyl-2-Pentanone					< 42	42	U	8.3	< 23	23	U	4.6	< 24	24	U	4.9	< 23	23	U	4.7	< 23	23	U	4.7
Acetone	50	50	100,000	500,000	30	42	JS	8.3	9.5	23	JS	4.6	9.5	24	JS	4.9	5.1	23	JS	4.7	9.5	23	JS	4.7
Acrylonitrile					< 33	33	U	0.83	< 18	18	U	0.46	< 9.8	9.8	U	0.98	< 19	19	U	0.94	< 19	19	U	0.93
Benzene	60	60	4,800	44,000	< 8.3	8.3	U	0.83	< 4.6	4.6	U	0.46	< 4.9	4.9	U	0.49	< 4.7	4.7	U	0.47	34	60	J	33
Bromobenzene					< 8.3	8.3	U	0.83	< 4.6	4.6	U	0.46	< 4.9	4.9	U	0.49	< 4.7	4.7	U	0.47	< 4.7	4.7	U	0.47
Bromochloromethane					< 8.3	8.3	U	0.83	< 4.6	4.6	U	0.46	< 4.9	4.9	U	0.49	< 4.7	4.7	U	0.47	< 4.7	4.7	U	0.47
Bromodichloromethane					< 8.3	8.3	U	1.7	< 4.6	4.6	U	0.92	< 4.9	4.9	U	0.98	< 4.7	4.7	U	0.94	< 4.7	4.7	U	0.93
Bromomethane					< 8.3	8.3	U	1.7	< 4.6	4.6	U	0.92	< 4.9	4.9	U	0.98	< 4.7	4.7	U	0.94	< 4.7	4.7	U	0.93
Carbon Disulfide					< 8.3	8.3	U	3.3	< 4.6	4.6	U	1.8	< 4.9	4.9	U	2.0	< 4.7	4.7	U	1.9	< 4.7	4.7	U	1.9
Carbon tetrachloride	760	760	2,400	22,000	< 8.3	8.3	U	1.7	< 4.6	4.6	U	0.92	< 4.9	4.9	U	0.98	< 4.7	4.7	U	0.94	< 4.7	4.7	U	0.93
Chlorobenzene	1,100	1,100	100,000	500,000	< 8.3	8.3	U	0.83	< 4.6	4.6	U	0.46	< 4.9	4.9	U	0.49	< 4.7	4.7	U	0.47	< 4.7	4.7	U	0.47
Chloroethane					< 8.3	8.3	U	0.83	< 4.6	4.6	U	0.46	< 4.9	4.9	U	0.49	< 4.7	4.7	U	0.47	< 4.7	4.7	U	0.47
Chloroform	370	370	49,000	350,000	< 8.3	8.3	U	0.83	< 4.6	4.6	U	0.46	< 4.9	4.9	U	0.49	< 4.7	4.7	U	0.47	< 4.7	4.7	U	0.47
Chloromethane					< 8.3	8.3	U	1.7	< 4.6	4.6	U	0.92	< 4.9	4.9	U	0.98	< 4.7	4.7	U	0.94	< 4.7	4.7	U	0.93
cis-1,2-Dichloroethane					< 8.3	8.3	U	0.83	< 4.6	4.6	U	0.46	< 4.9	4.9	U	0.49	< 4.7	4.7	U	0.47	< 4.7	4.7	U	0.47
cis-1,3-Dichloropropene	250	250	100,000		< 8.3	8.3	U	0.83	< 4.6	4.6	U	0.46	< 4.9	4.9	U	0.49	< 4.7	4.7	U	0.47	< 4.7	4.7	U	0.47
Dibromochloromethane					< 8.3	8.3	U	1.7	< 4.6	4.6	U	0.92	< 4.9	4.9	U	0.98	< 4.7	4.7	U	0.94	< 4.7	4.7	U	0.93
Dibromomethane					< 8.3	8.3	U	1.7	< 4.6	4.6	U	0.92	< 4.9	4.9	U	0.98	< 4.7	4.7	U	0.94	< 4.7	4.7	U	0.93
Dichlorodifluoromethane					< 8.3	8.3	U	0.83	< 4.6	4.6	U	0.46	< 4.9	4.9	U	0.49	< 4.7	4.7	U	0.47	< 4.7	4.7	U	0.47
Ethylbenzene	1,000	1,000	41,000	390,000	< 8.3	8.3	U	0.83	< 4.6	4.6	U	0.46	< 4.9	4.9	U	0.49	< 4.7	4.7	U	0.47	40	330	J	33
Hexachlorobutadiene					< 8.3	8.3	U	0.83	< 4.6	4.6	U	0.46	< 4.9	4.9	U	0.49	< 4.7	4.7	U	0.47	< 4.7	4.7	U	0.47
Isopropylbenzene					< 8.3	8.3	U	0.83	< 4.6	4.6	U	0.46	< 4.9	4.9	U	0.49	< 4.7	4.7	U	0.47	< 4.7	4.7	U	0.47
m&p-Xylenes	160	260	100,000	500,000	< 8.3	8.3	U	1.7	< 4.6	4.6	U	0.92	< 4.9	4.9	U	0.98	<							

TABLE 3
310-336 Grand Concourse
Bronx, New York
Soil Analytical Results
Volatile Organic Compounds

COMPOUND	NYSDEC Part 375.6 Groundwater Protection Soil Cleanup Objectives*	NYSDEC Part 375.6 Unrestricted Use Soil Cleanup Objectives*	NYDEC Part 375.6 Restricted Residential Soil Cleanup Objectives*	NYDEC Part 375.6 Restricted Commercial Soil Cleanup Objectives*	B6D								Duplicate				Duplicate			
					(1-3) 1/15/2020 µg/Kg				(6-8) 1/15/2020 µg/Kg				6/25/2018 µg/Kg				1/15/2020 µg/Kg			
					Result	RL	Qual	MDL	Result	RL	Qual	MDL	Result	RL	Qual	MDL	Result	RL	Qual	MDL
1,1,1,2-Tetrachloroethane					< 25	25	U	1.2	< 20	20	U	1.0	< 20	20	U	1.0	< 36	36	U	1.8
1,1,1-Trichloroethane	680	680	100,000	500,000	< 6.1	6.1	U	0.61	< 5.1	5.1	U	0.51	< 5.0	5.0	U	0.50	< 9.1	9.1	U	0.91
1,1,2,2-Tetrachloroethane					< 6.1	6.1	U	1.2	< 5.1	5.1	U	1.0	< 5.0	5.0	U	1.0	< 9.1	9.1	U	1.8
1,1,2-Trichloroethane					< 6.1	6.1	U	1.2	< 5.1	5.1	U	1.0	< 5.0	5.0	U	1.0	< 9.1	9.1	U	1.8
1,1-Dichloroethane	270	270	26,000	240,000	< 6.1	6.1	U	1.2	< 5.1	5.1	U	1.0	< 5.0	5.0	U	1.0	< 9.1	9.1	U	1.8
1,1-Dichloroethene	330	330	100,000	500,000	< 6.1	6.1	U	0.61	< 5.1	5.1	U	0.51	< 5.0	5.0	U	0.50	< 9.1	9.1	U	0.91
1,1-Dichloropropene					< 6.1	6.1	U	0.61	< 5.1	5.1	U	0.51	< 5.0	5.0	U	0.50	< 9.1	9.1	U	0.91
1,2,3-Trichlorobenzene					< 6.1	6.1	U	1.2	< 5.1	5.1	U	1.0	< 5.0	5.0	U	1.0	< 9.1	9.1	U	1.8
1,2,3-Trichloropropane					< 6.1	6.1	U	0.61	< 5.1	5.1	U	0.51	< 5.0	5.0	U	0.50	< 9.1	9.1	U	0.91
1,2,4-Trichlorobenzene					< 6.1	6.1	U	1.2	< 5.1	5.1	U	1.0	< 5.0	5.0	U	1.0	< 9.1	9.1	U	1.8
1,2,4-Trimethylbenzene	3,600	3,600	52,000	190,000	< 6.1	6.1	U	0.61	< 5.1	5.1	U	0.51	< 5.0	5.0	U	0.50	< 9.1	9.1	U	0.91
1,2-Dibromo-3-chloropropane					< 6.1	6.1	U	1.2	< 5.1	5.1	U	1.0	< 5.0	5.0	U	1.0	< 9.1	9.1	U	1.8
1,2-Dibromomethane					< 6.1	6.1	U	0.61	< 5.1	5.1	U	0.51	< 5.0	5.0	U	0.50	< 9.1	9.1	U	0.91
1,2-Dichlorobenzene	1,100	1,100	100,000	500,000	< 6.1	6.1	U	0.61	< 5.1	5.1	U	0.51	< 5.0	5.0	U	0.50	< 9.1	9.1	U	0.91
1,2-Dichloroethane	20	20	3,100	30,000	< 6.1	6.1	U	0.61	< 5.1	5.1	U	0.51	< 5.0	5.0	U	0.50	< 9.1	9.1	U	0.91
1,2-Dichloropropane					< 6.1	6.1	U	1.2	< 5.1	5.1	U	1.0	< 5.0	5.0	U	1.0	< 9.1	9.1	U	1.8
1,3,5-Trimethylbenzene	8,400	8,400	52,000	190,000	< 6.1	6.1	U	0.61	< 5.1	5.1	U	0.51	< 5.0	5.0	U	0.50	< 9.1	9.1	U	0.91
1,3-Dichlorobenzene	2,400	2,400	4,900	280,000	< 6.1	6.1	U	0.61	< 5.1	5.1	U	0.51	< 5.0	5.0	U	0.50	< 9.1	9.1	U	0.91
1,3-Dichloropropane					< 6.1	6.1	U	1.2	< 5.1	5.1	U	1.0	< 5.0	5.0	U	1.0	< 9.1	9.1	U	1.8
1,4-Dichlorobenzene	1,800	1,800	13,000	13,000	< 6.1	6.1	U	0.61	< 5.1	5.1	U	0.51	< 5.0	5.0	U	0.50	< 9.1	9.1	U	0.91
1,4-Dioxane		100	13,000	13,000				NA				NA	< 75	75	U	40			NA	
2,2-Dichloropropane					< 6.1	6.1	U	0.61	< 5.1	5.1	U	0.51	< 5.0	5.0	U	0.50	< 9.1	9.1	U	0.91
2-Chlorotoluene					< 6.1	6.1	U	1.2	< 5.1	5.1	U	1.0	< 5.0	5.0	U	1.0	< 9.1	9.1	U	1.8
2-Hexanone (Methyl Butyl Ketone)					< 31	31	U	6.1	< 25	25	U	5.1	< 25	25	U	5.0	< 46	46	U	9.1
2-Isopropyltoluene					< 6.1	6.1	U	0.61	< 5.1	5.1	U	0.51	< 5.0	5.0	U	0.50	< 9.1	9.1	U	0.91
4-Chlorotoluene					< 6.1	6.1	U	0.61	< 5.1	5.1	U	0.51	< 5.0	5.0	U	0.50	< 9.1	9.1	U	0.91
4-Methyl-2-Pentanone					< 31	31	U	6.1	< 25	25	U	5.1	< 25	25	U	5.0	< 46	46	U	9.1
Acetone	50	50	100,000	500,000	23	31	JS	6.1	< 25	25	U	5.1	56	25	S	5.0	32	46	JS	9.1
Acrylonitrile					< 25	25	U	0.61	< 20	20	U	0.51	< 20	20	U	0.50	< 36	36	U	0.91
Benzene	60	60	4,800	44,000	< 6.1	6.1	U	0.61	< 5.1	5.1	U	0.51	< 5.0	5.0	U	0.50	< 9.1	9.1	U	0.91
Bromobenzene					< 6.1	6.1	U	0.61	< 5.1	5.1	U	0.51	< 5.0	5.0	U	0.50	< 9.1	9.1	U	0.91
Bromochloromethane					< 6.1	6.1	U	0.61	< 5.1	5.1	U	0.51	< 5.0	5.0	U	0.50	< 9.1	9.1	U	0.91
Bromodichloromethane					< 6.1	6.1	U	1.2	< 5.1	5.1	U	1.0	< 5.0	5.0	U	1.0	< 9.1	9.1	U	1.8
Bromoform					< 6.1	6.1	U	1.2	< 5.1	5.1	U	1.0	< 5.0	5.0	U	1.0	< 9.1	9.1	U	1.8
Bromomethane					< 6.1	6.1	U	2.5	< 5.1	5.1	U	2.0	< 5.0	5.0	U	2.0	< 9.1	9.1	U	3.6
Carbon Disulfide					< 6.1	6.1	U	1.2	< 5.1	5.1	U	1.0	< 5.0	5.0	U	1.0	< 9.1	9.1	U	1.8
Carbon tetrachloride	760	760	2,400	22,000	< 6.1	6.1	U	1.2	< 5.1	5.1	U	1.0	< 5.0	5.0	U	1.0	< 9.1	9.1	U	1.8
Chlorobenzene	1,100	1,100	100,000	500,000	< 6.1	6.1	U	0.61	< 5.1	5.1	U	0.51	< 5.0	5.0	U	0.50	< 9.1	9.1	U	0.91
Chloroethane					< 6.1	6.1	U	0.61	< 5.1	5.1	U	0.51	< 5.0	5.0	U	0.50	< 9.1	9.1	U	0.91
Chloroform	370	370	49,000	350,000	< 6.1	6.1	U	0.61	< 5.1	5.1	U	0.51	< 5.0	5.0	U	0.50	< 9.1	9.1	U	0.91
Chloromethane					< 6.1	6.1	U	1.2	< 5.1	5.1	U	1.0	< 5.0	5.0	U	1.0	< 9.1	9.1	U	1.8
cis-1,2-Dichloroethene	250	250	100,000		< 6.1	6.1	U	0.61	< 5.1	5.1	U	0.51	< 5.0	5.0	U	0.50	< 9.1	9.1	U	0.91
cis-1,3-Dichloropropene					< 6.1	6.1	U	0.61	< 5.1	5.1	U	0.51	< 5.0	5.0	U	0.50	< 9.1	9.1	U	0.91
Dibromochloromethane					< 6.1	6.1	U	1.2	< 5.1	5.1	U	1.0	< 5.0	5.0	U	1.0	< 9.1	9.1	U	1.8
Dibromomethane					< 6.1	6.1	U	1.2	< 5.1	5.1	U	1.0	< 5.0	5.0	U	1.0	< 9.1	9.1	U	1.8
Dichlorodifluoromethane					< 6.1	6.1	U	0.61	< 5.1	5.1	U	0.51	< 5.0	5.0	U	0.50	< 9.1	9.1	U	0.91
Ethylbenzene	1,000	1,000	41,000	390,000	< 6.1	6.1	U	0.61	< 5.1	5.1	U	0.51	< 5.0	5.0	U	0.50	< 9.1	9.1	U	0.91
Hexachlorobutadiene					< 6.1	6.1	U	0.61	< 5.1	5.1	U	0.51	< 5.0	5.0	U	0.50	< 9.1	9.1	U	0.91
Isopropylbenzene					< 6.1	6.1	U	0.61	< 5.1	5.1	U	0.51	< 5.0	5.0	U	0.50	< 9.1	9.1	U	0.91
m&p-Xylenes	160	260	100,000	500,000	< 6.1	6.1	U	1.2	< 5.1	5.1	U	1.0	< 5.0	5.0	U	1.0	< 9.1	9.1	U	1.8
Methyl Ethyl Ketone (2-Butanone)	120	120	100,000	500,000	< 37	37	U	6.1	< 30	30	U	5.1	< 30	30	U	5.0	< 55	55	U	9.1
Methyl t-butyl ether (MTBE)		930	100,000	500,000	< 12	12	U	1.2	< 10	10	U	1.0	< 10	10	U	1.0	< 18	18	U	1.8
Methylene chloride	50	50	100,000	500,000	< 6.1	6.1	U	6.1	< 5.1	5.1	U	5.1	< 5.0	5.0	U	5.0	< 9.1	9.1	U	9.1
Naphthalene	12,000	12,000	100,000		3.4	6.1	J	1.2	< 5.1	5.1	U	1.0	< 5.0	5.0	U	1.0	< 9.1	9.1	U	1.8
n-Butylbenzene	12,000	12,000	100,000		< 6.1	6.1	U	0.61	< 5.1	5.1	U	0.51	< 5.0	5.0	U	0.50	< 9.1	9.1	U	0.91
n-Propylbenzene	3,900	3,900	100,000	500,000	< 6.1	6.1	U	1.2	< 5.1	5.1	U	1.0	< 5.0	5.0	U	1.0	< 9.1	9.1	U	1.8
o-Xylene	160	260	100,000	500,000	< 6.1	6.1	U	1.2	< 5.1	5.1	U	1.0	< 5.0	5.0	U	1.0	< 9.1	9.1	U	1.8
p-Isopropyltoluene					< 6.1	6.1	U	0.61	< 5.1	5.1	U	0.51	< 5.0	5.0	U	0.50	< 9.1	9.1	U	0.91
sec-Butylbenzene	11,000	11,000	100,000	500,000	< 6.1	6.1	U	0.61	< 5.1	5.1	U	0.51	< 5.0	5.0	U	0.50	< 9.1	9.1	U	0.91
Styrene					<															

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COMPOUND	NYSDEC Part 375.6 Unrestricted Use Soil Cleanup Objectives*	NYSDEC Part 375.6 Restricted Residential Soil Cleanup Objectives*	NYSDEC Part 375.6 Restricted Commercial Soil Cleanup Objectives*	SB1								SB2								SB3								SB4							
				(0-2') 6/22/2018				(12-14') 6/22/2018				(0-2') 6/22/2018				(12-14') 6/22/2018				(0-2') 6/22/2018				(0-2') 6/22/2018				(12-14') 6/22/2018							
				Result	RL	Qual	MDL	Result	RL	Qual	MDL	Result	RL	Qual	MDL	Result	RL	Qual	MDL	Result	RL	Qual	MDL	Result	RL	Qual	MDL	Result	RL	Qual	MDL	Result	RL	Qual	MDL
1,2,4,5-Tetrachlorobenzene				< 270	270	U	140	< 260	260	U	130	< 250	250	U	130	< 240	240	U	140	< 240	240	U	120	< 490	490	U	240	< 240	240	U	120				
1,2,4-Trichlorobenzene				< 270	270	U	120	< 260	260	U	110	< 250	250	U	110	< 230	230	U	120	< 240	240	U	100	< 490	490	U	210	< 240	240	U	100				
1,2-Dichlorobenzene				< 270	270	U	110	< 260	260	U	110	< 250	250	U	100	< 230	230	U	110	< 240	240	U	97	< 490	490	U	200	< 240	240	U	97				
1,2-Diphenylhydrazine				< 270	270	U	130	< 260	260	U	120	< 250	250	U	120	< 230	230	U	130	< 240	240	U	110	< 490	490	U	230	< 240	240	U	110				
1,3-Dichlorobenzene				< 270	270	U	110	< 260	260	U	110	< 250	250	U	110	< 230	230	U	120	< 240	240	U	100	< 490	490	U	210	< 240	240	U	100				
1,4-Dichlorobenzene				< 270	270	U	110	< 260	260	U	110	< 250	250	U	110	< 230	230	U	120	< 240	240	U	100	< 490	490	U	210	< 240	240	U	100				
2,4,5-Trichlorophenol				< 270	270	U	210	< 260	260	U	200	< 250	250	U	200	< 230	230	U	220	< 240	240	U	190	< 490	490	U	190	< 240	240	U	190				
2,4,6-Trichlorophenol				< 190	190	U	120	< 190	190	U	120	< 180	180	U	110	< 200	200	U	130	< 170	170	U	110	< 350	350	U	220	< 170	170	U	110				
2,4-Dichlorophenol				< 190	190	U	140	< 190	190	U	130	< 180	180	U	130	< 200	200	U	140	< 170	170	U	120	< 350	350	U	240	< 170	170	U	120				
2,4-Dimethylphenol				< 270	270	U	96	< 260	260	U	92	< 250	250	U	89	< 250	250	U	96	< 240	240	U	96	< 490	490	U	170	< 240	240	U	88				
2,4-Dinitrophenol				< 270	270	U	270	< 260	260	U	260	< 250	250	U	250	< 230	230	U	260	< 240	240	U	240	< 490	490	U	490	< 240	240	U	240				
2,4-Dinitrotoluene				< 190	190	U	150	< 190	190	U	150	< 180	180	U	140	< 200	200	U	160	< 170	170	U	140	< 350	350	U	270	< 170	170	U	140				
2,6-Dinitrotoluene				< 190	190	U	120	< 190	190	U	120	< 180	180	U	110	< 200	200	U	120	< 170	170	U	110	< 350	350	U	220	< 170	170	U	110				
2-Chloronaphthalene				< 270	270	U	110	< 260	260	U	110	< 250	250	U	100	< 230	230	U	110	< 240	240	U	98	< 490	490	U	200	< 240	240	U	97				
2-Chlorophenol				< 270	270	U	110	< 260	260	U	110	< 250	250	U	100	< 230	230	U	110	< 240	240	U	98	< 490	490	U	200	< 240	240	U	97				
2-Methylnaphthalene				< 270	270	U	120	1,800	260	U	110	< 250	250	U	110	< 230	230	U	120	< 240	240	U	100	< 490	490	U	210	< 240	240	U	100				
2-Methylphenol (o-cresol)	330	100,000		< 270	270	U	180	< 260	260	U	180	< 250	250	U	170	< 230	230	U	190	< 240	240	U	180	< 490	490	U	330	< 240	240	U	180				
2-Nitroaniline				< 270	270	U	270	< 260	260	U	260	< 250	250	U	250	< 230	230	U	260	< 240	240	U	240	< 490	490	U	490	< 240	240	U	240				
2-Nitrophenol				< 270	270	U	260	< 260	260	U	240	< 250	250	U	230	< 230	230	U	250	< 240	240	U	220	< 490	490	U	440	< 240	240	U	220				
3,4-Methylphenol (m,p-cresol)	330	100,000		< 270	270	U	190	< 260	260	U	190	< 250	250	U	140	< 230	230	U	160	< 240	240	U	140	< 490	490	U	270	< 240	240	U	140				
3,3'-Dichlorobenzidine				< 190	190	U	180	< 190	190	U	180	< 180	180	U	170	< 200	200	U	190	< 170	170	U	160	< 350	350	U	330	< 170	170	U	160				
3-Nitroaniline				< 360	360	U	770	< 370	370	U	750	< 360	360	U	710	< 400	400	U	790	< 350	350	U	690	< 700	700	U	1400	< 340	340	U	690				
4,6-Dinitro-2-methylphenol				< 230	230	U	77	< 220	220	U	75	< 210	210	U	71	< 240	240	U	79	< 210	210	U	69	< 420	420	U	140	< 210	210	U	69				
4-Bromophenyl phenyl ether				< 270	270	U	110	< 260	260	U	110	< 250	250	U	110	< 230	230	U	120	< 240	240	U	100	< 490	490	U	200	< 240	240	U	100				
4-Chloro-3-methylphenol				< 270	270	U	140	< 260	260	U	130	< 250	250	U	130	< 230	230	U	140	< 240	240	U	120	< 490	490	U	240	< 240	240	U	120				
4-Chloroaniline				< 310	310	U	180	< 300	300	U	170	< 250	250	U	170	< 320	320	U	180	< 280	280	U	160	< 560	560	U	320	< 270	270	U	160				
4-Chlorophenyl phenyl ether				< 270	270	U	130	< 260	260	U	130	< 250	250	U	120	< 250	250	U	130	< 240	240	U	120	< 490	490	U	230	< 240	240	U	120				
4-Nitroaniline				< 360	360	U	130	< 370	370	U	120	< 360	360	U	120	< 400	400	U	130	< 350	350	U	120	< 700	700	U	230	< 340	340	U	110				
4-Nitrophenol				< 360	360	U	170	< 370	370	U	170	< 360	360	U	160	< 400	400	U	180	< 350	350	U	160	< 700	700	U	310	< 340	340	U	150				
Acenaphthene	20,000	100,000	500,000	< 270	270	U	120	< 260	260	U	110	< 250	250	U	110	< 230	230	U	120	< 240	240	U	110	< 490	490	U	210	< 240	240	U	100				
Acenaphthylene	100,000	100,000	500,000	< 270	270	U	110	< 260	260	U	100	< 250	250	U	100	< 230	230	U	110	< 240	240	U	97	< 490	490	U	190	< 240	240	U	96				
Acetophenone				< 270	270	U	120	< 260	260	U	120	< 250	250	U	110	< 250	250	U	120	< 240	240	U	110	< 490	490	U	220	< 240	240	U	110				
Aniline				< 310	310	U	310	< 300	300	U	300	< 290	290	U	290	< 320	320	U	300	< 280	280	U	280	< 560	560	U	560	< 270	270	U	270				
Anthracene	100,000	100,000	500,000	< 270	270	U	130	< 260	260	U	120	< 250	250	U	120	< 230	230	U	130	< 240	240	U	110	380	490	J	230	< 240	240	U	110				
Benzo(a)anthracene	1,000	1,000	5,600	< 270	270	U	130	< 260	260	U	130	300	250	U	120	< 250	250	U	130	< 240	240	U	120	1,500	490	J	230	< 240	240	U	120				
Benzo(a)pyrene	1,000	1,000	5,600	< 360	360	U	230	< 370	370	U	220	< 360	360	U	210	< 400	400	U	230	< 350	350	U	200	< 700	700	U	410	< 340	340	U	200				
Benzo(b)fluoranthene	1,000	1,000	5,600	< 270	270	U	130	< 260	260	U	130	300	250	U	120	< 250	250	U	140	< 240	240	U	120	1,300	490	J	240	< 240	240	U					

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COMPOUND	NYSDC Part 375.6 Unrestricted Use Soil Cleanup Objectives*	NYDEC Part 375.6 Restricted Residential Soil Cleanup Objectives*	NYDEC Part 375.6 Restricted Commercial Soil Cleanup Objectives*	SB6								SB7								SB8								SB9			
				(0-2) 6/25/2018				(12-14) 6/25/2018				(2-4) 1/15/2020				(10-12) 1/15/2020				(1-3) 1/15/2020				(5-7) 1/15/2020				(1-3) 1/15/2020			
				Result	RL	Qual	MDL	Result	RL	Qual	MDL	Result	RL	Qual	MDL	Result	RL	Qual	MDL	Result	RL	Qual	MDL	Result	RL	Qual	MDL	Result	RL	Qual	MDL
1,2,4,5-Tetrachlorobenzene				< 260	260	U	130	< 260	260	U	130	< 270	270	U	140	< 250	250	U	130	< 280	280	U	140	< 250	250	U	120	< 260	260	U	130
1,2,4-Trichlorobenzene				< 260	260	U	110	< 260	260	U	110	< 270	270	U	120	< 250	250	U	110	< 280	280	U	120	< 250	250	U	110	< 260	260	U	110
1,2-Dichlorobenzene				< 260	260	U	100	< 260	260	U	100	< 270	270	U	110	< 250	250	U	100	< 280	280	U	110	< 250	250	U	99	< 260	260	U	100
1,2-Diphenylhydrazine				< 260	260	U	120	< 260	260	U	120	< 270	270	U	130	< 250	250	U	120	< 280	280	U	130	< 250	250	U	110	< 260	260	U	120
1,3-Dichlorobenzene				< 260	260	U	110	< 260	260	U	110	< 270	270	U	110	< 250	250	U	110	< 280	280	U	120	< 250	250	U	100	< 260	260	U	110
1,4-Dichlorobenzene				< 260	260	U	110	< 260	260	U	110	< 270	270	U	110	< 250	250	U	110	< 280	280	U	120	< 250	250	U	100	< 260	260	U	110
2,4,5-Trichlorophenol				< 260	260	U	200	< 260	260	U	200	< 270	270	U	210	< 250	250	U	200	< 280	280	U	220	< 250	250	U	180	< 260	260	U	200
2,4,6-Trichlorophenol				< 190	190	U	120	< 190	180	U	120	< 190	190	U	120	< 180	180	U	120	< 200	200	U	130	< 190	180	U	110	< 190	180	U	120
2,4-Dichlorophenol				< 190	190	U	130	< 190	180	U	130	< 190	190	U	140	< 180	180	U	130	< 200	200	U	140	< 190	180	U	120	< 190	180	U	120
2,4-Dimethylphenol				< 260	260	U	92	< 260	260	U	91	< 270	270	U	95	< 250	250	U	90	< 280	280	U	100	< 250	250	U	87	< 260	260	U	100
2,4-Dinitrophenol				< 260	260	U	260	< 260	260	U	260	< 270	270	U	270	< 250	250	U	260	< 280	280	U	280	< 250	250	U	250	< 260	260	U	260
2,4-Dinitrotoluene				< 190	190	U	150	< 190	180	U	140	< 190	190	U	150	< 180	180	U	140	< 200	200	U	160	< 190	180	U	140	< 190	180	U	140
2,6-Dinitrotoluene				< 190	190	U	120	< 190	180	U	120	< 190	190	U	120	< 180	180	U	110	< 200	200	U	130	< 190	180	U	110	< 190	180	U	120
2-Chloronaphthalene				< 260	260	U	110	< 260	260	U	100	< 270	270	U	110	< 250	250	U	100	< 280	280	U	110	< 250	250	U	100	< 260	260	U	100
2-Chlorophenol				< 260	260	U	110	< 260	260	U	100	< 270	270	U	110	< 250	250	U	100	< 280	280	U	110	< 250	250	U	100	< 260	260	U	100
2-Methylnaphthalene				< 260	260	U	110	< 260	260	U	110	< 270	270	U	110	< 250	250	U	110	< 280	280	U	120	< 250	250	U	100	< 260	260	U	110
2-Methylphenol (o-cresol)	330	100,000		< 260	260	U	170	< 260	260	U	170	< 270	270	U	180	< 250	250	U	170	< 280	280	U	190	< 250	250	U	170	< 260	260	U	170
2-Nitroaniline				< 260	260	U	260	< 260	260	U	260	< 270	270	U	270	< 250	250	U	260	< 280	280	U	280	< 250	250	U	250	< 260	260	U	260
2-Nitrophenol				< 260	260	U	240	< 260	260	U	230	< 270	270	U	240	< 250	250	U	230	< 280	280	U	260	< 250	250	U	220	< 260	260	U	230
3-Methylphenol (m,p-cresol)	330	100,000		< 260	260	U	190	< 260	260	U	140	< 270	270	U	150	< 250	250	U	140	< 280	280	U	160	< 250	250	U	140	< 260	260	U	140
3,3'-Dichlorobenzidine				< 190	190	U	180	< 190	180	U	170	< 190	190	U	180	< 180	180	U	170	< 200	200	U	190	< 190	180	U	170	< 190	180	U	170
3-Nitroaniline				< 370	370	U	740	< 370	370	U	730	< 360	360	U	720	< 360	360	U	720	< 400	400	U	870	< 360	360	U	750	< 360	360	U	730
4,6-Dinitro-2-methylphenol				< 220	220	U	74	< 220	220	U	73	< 230	230	U	77	< 220	220	U	72	< 240	240	U	81	< 210	210	U	70	< 220	220	U	73
4-Bromophenyl phenyl ether				< 260	260	U	110	< 260	260	U	110	< 270	270	U	110	< 250	250	U	110	< 280	280	U	120	< 250	250	U	100	< 260	260	U	110
4-Chloro-3-methylphenol				< 260	260	U	130	< 260	260	U	130	< 270	270	U	140	< 250	250	U	130	< 280	280	U	140	< 250	250	U	120	< 260	260	U	130
4-Chloroaniline				< 300	300	U	170	< 290	290	U	170	< 310	310	U	190	< 290	290	U	170	< 320	320	U	190	< 280	280	U	160	< 320	320	U	170
4-Chlorophenyl phenyl ether				< 260	260	U	120	< 260	260	U	120	< 270	270	U	130	< 250	250	U	120	< 280	280	U	140	< 250	250	U	120	< 260	260	U	120
4-Nitroaniline				< 370	370	U	120	< 370	370	U	120	< 360	360	U	120	< 360	360	U	120	< 400	400	U	120	< 390	390	U	120	< 400	400	U	120
4-Nitrophenol				< 370	370	U	170	< 370	370	U	170	< 360	360	U	170	< 360	360	U	160	< 400	400	U	160	< 390	390	U	160	< 400	400	U	160
Acenaphthene	20,000	100,000	500,000	< 260	260	U	110	< 260	260	U	110	< 270	270	U	120	< 250	250	U	110	< 280	280	U	120	< 250	250	U	110	< 260	260	U	110
Acenaphthylene	100,000	100,000	500,000	< 260	260	U	100	< 260	260	U	100	< 270	270	U	110	< 250	250	U	100	< 280	280	U	110	< 250	250	U	99	< 260	260	U	100
Acetophenone				< 260	260	U	120	< 260	260	U	110	< 270	270	U	120	< 250	250	U	110	< 280	280	U	130	< 250	250	U	110	< 260	260	U	110
Aniline				< 300	300	U	300	< 290	290	U	290	< 310	310	U	310	< 290	290	U	290	< 320	320	U	320	< 290	290	U	290	< 300	300	U	290
Anthracene	100,000	100,000	500,000	120	260	J	120	< 260	260	U	120	< 270	270	U	130	< 250	250	U	120	< 280	280	U	130	< 250	250	U	120	230	260	J	120
Benzo(a)anthracene	1,000	1,000	5,600	180	260	J	120	< 260	260	U	120	< 270	270	U	130	< 250	250	U	120	< 280	280	U	140	< 250	250	U	120	1,100	260	J	120
Benzo(a)pyrene	1,000	1,000	5,600	270	190	J	120	< 190	180	U	120	< 190	190	U	130	< 180	180	U	120	< 200	200	U	130	< 190	180	U	110	1,100	180	J	120
Benzo(b)fluoranthene	1,000	1,000	5,600	280	260	J	120	< 260	260	U	130	< 270	270	U	130	< 250	250	U	120	< 280	280	U	140	< 250	250	U	120	1,200	260	J	120
Benzo(g,h,i)perylene	100,000	100,000	500,000	190	260	J	120	< 260	260	U	120	< 270	270	U	120	< 250	250	U	120	< 280	28										

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COMPOUND	NYDEC Part 375.6 Unrestricted Use Soil Cleanup Objectives*	NYDEC Part 375.6 Restricted Residential Soil Cleanup Objectives*	NYDEC Part 375.6 Restricted Commercial Soil Cleanup Objectives*	B1				B2				B3				B4				B5				B5D											
				(B-7) 1/30/2019 µg/Kg				(B-7) 1/30/2019 µg/Kg				(B-7) 1/30/2019 µg/Kg				(B-7) 1/30/2019 µg/Kg				(B-7) 2/15/2019 µg/Kg				(B-7) 2/15/2019 µg/Kg				(B-7) 1/15/2028 µg/Kg				(B-7) 1/15/2028 µg/Kg			
				Result	RL	Qual	MDL	Result	RL	Qual	MDL	Result	RL	Qual	MDL	Result	RL	Qual	MDL	Result	RL	Qual	MDL	Result	RL	Qual	MDL	Result	RL	Qual	MDL	Result	RL	Qual	MDL
1,2,4,5-Tetrachlorobenzene				< 250	250	U	130	< 250	250	U	120	< 1200	1,200	U	620	< 250	250	U	130	< 250	250	U	140	< 250	250	U	140	< 240	240	U	120				
1,2,4-Trichlorobenzene				< 250	250	U	110	< 250	250	U	110	< 1200	1,200	U	630	< 250	250	U	110	< 250	250	U	120	< 250	250	U	120	< 240	240	U	100				
1,2-Dichlorobenzene				< 250	250	U	100	< 250	250	U	100	< 1100	1,100	U	500	< 250	250	U	110	< 250	250	U	110	< 250	250	U	110	< 240	240	U	88				
1,2-Diphenylhydrazine				< 250	250	U	120	< 250	250	U	120	< 1200	1,200	U	580	< 250	250	U	120	< 250	250	U	130	< 250	250	U	130	< 240	240	U	110				
1,3-Dichlorobenzene				< 250	250	U	110	< 250	250	U	100	< 1200	1,200	U	620	< 250	250	U	110	< 250	250	U	120	< 250	250	U	120	< 240	240	U	100				
1,4-Dichlorobenzene				< 250	250	U	110	< 250	250	U	100	< 1200	1,200	U	620	< 250	250	U	110	< 250	250	U	120	< 250	250	U	120	< 240	240	U	100				
2,4,5-Trichlorophenol				< 250	250	U	200	< 250	250	U	190	< 1200	1,200	U	970	< 250	250	U	200	< 250	250	U	220	< 250	250	U	220	< 240	240	U	190				
2,4,6-Trichlorophenol				< 180	180	U	110	< 180	180	U	110	< 880	880	U	570	< 190	190	U	120	< 200	200	U	130	< 200	200	U	130	< 170	170	U	110				
2,4-Dichlorophenol				< 180	180	U	130	< 180	180	U	120	< 880	880	U	620	< 190	190	U	130	< 200	200	U	140	< 200	200	U	140	< 170	170	U	120				
2,4-Dimethylphenol				< 250	250	U	80	< 250	250	U	80	< 1200	1,200	U	440	< 250	250	U	80	< 250	250	U	90	< 250	250	U	100	< 240	240	U	80				
2,4-Dinitrophenol				< 250	250	U	250	< 250	250	U	250	< 1200	1,200	U	1200	< 250	250	U	250	< 250	250	U	280	< 250	250	U	280	< 240	240	U	240				
2,4-Dinitrotoluene				< 180	180	U	140	< 180	180	U	140	< 880	880	U	700	< 190	190	U	150	< 200	200	U	160	< 200	200	U	160	< 170	170	U	140				
2,6-Dinitrotoluene				< 180	180	U	110	< 180	180	U	110	< 880	880	U	560	< 190	190	U	120	< 200	200	U	130	< 200	200	U	130	< 170	170	U	110				
2-Chloronaphthalene				< 250	250	U	100	< 250	250	U	100	< 1200	1,200	U	590	< 250	250	U	110	< 250	250	U	110	< 250	250	U	110	< 240	240	U	90				
2-Chlorophenol				< 250	250	U	100	< 250	250	U	100	< 1200	1,200	U	590	< 250	250	U	110	< 250	250	U	110	< 250	250	U	110	< 240	240	U	90				
2-Methylnaphthalene				< 250	250	U	110	< 250	250	U	110	< 1200	1,200	U	530	< 250	250	U	110	430	280	U	120	< 250	250	U	120	< 240	240	U	100				
2-Methylphenol (o-cresol)		330	100,000	< 250	250	U	170	< 250	250	U	170	< 350	350	U	300	< 250	250	U	180	< 250	250	U	190	< 250	250	U	190	< 240	240	U	160				
2-Nitroaniline				< 250	250	U	250	< 250	250	U	250	< 1200	1,200	U	1200	< 250	250	U	250	< 250	250	U	280	< 250	250	U	280	< 240	240	U	240				
2-Nitrophenol				< 250	250	U	230	< 250	250	U	220	< 1200	1,200	U	1100	< 250	250	U	240	< 250	250	U	250	< 250	250	U	250	< 240	240	U	220				
3,4-Methylphenol (m,p-cresol)		330	100,000	< 250	250	U	140	< 250	250	U	140	< 1200	1,200	U	730	< 250	250	U	150	< 250	250	U	160	< 250	250	U	160	< 240	240	U	140				
3,3'-Dichlorobenzidine				< 180	180	U	170	< 180	180	U	170	< 880	880	U	830	< 190	190	U	180	< 200	200	U	190	< 200	200	U	190	< 170	170	U	160				
3-Nitroaniline				< 360	360	U	720	< 360	360	U	710	< 1800	1,800	U	3500	< 370	370	U	750	< 400	400	U	800	< 400	400	U	810	< 350	350	U	690				
4,6-Dinitro-2-methylphenol				< 120	120	U	72	< 1100	1,100	U	390	< 220	220	U	75	< 240	240	U	80	< 240	240	U	80	< 240	240	U	80	< 210	210	U	69				
4-Bromophenyl phenyl ether				< 250	250	U	110	< 250	250	U	100	< 1200	1,200	U	620	< 250	250	U	110	< 250	250	U	120	< 250	250	U	120	< 240	240	U	100				
4-Chloro-3-methylphenol				< 250	250	U	130	< 250	250	U	120	< 1200	1,200	U	620	< 250	250	U	130	< 250	250	U	140	< 250	250	U	140	< 240	240	U	120				
4-Chloroaniline				< 250	250	U	170	< 250	250	U	170	< 1400	1,400	U	820	< 300	300	U	170	< 320	320	U	190	< 320	320	U	190	< 250	250	U	160				
4-Chlorophenyl phenyl ether				< 250	250	U	120	< 250	250	U	120	< 1200	1,200	U	590	< 250	250	U	130	< 250	250	U	130	< 250	250	U	130	< 240	240	U	120				
4-Nitroaniline				< 360	360	U	120	< 350	350	U	120	< 1800	1,800	U	590	< 370	370	U	120	< 400	400	U	130	< 400	400	U	130	< 350	350	U	120				
4-Nitrophenol				< 360	360	U	180	< 350	350	U	180	< 1800	1,800	U	800	< 370	370	U	170	< 400	400	U	180	< 400	400	U	180	< 350	350	U	160				
Acenaphthene	20,000	100,000	500,000	< 250	250	U	110	< 250	250	U	110	< 1200	1,200	U	540	< 250	250	U	110	< 250	250	U	120	< 250	250	U	120	< 240	240	U	110				
Acenaphthylene				< 250	250	U	100	< 250	250	U	90	< 1200	1,200	U	490	< 250	250	U	100	< 250	250	U	110	< 250	250	U	110	< 240	240	U	97				
Acetophenone	100,000	100,000	500,000	< 250	250	U	110	< 250	250	U	110	< 1200	1,200	U	550	< 250	250	U	120	< 250	250	U	120	< 250	250	U	120	< 240	240	U	110				
Aniline				< 250	250	U	280	< 250	250	U	280	< 1400	1,400	U	1400	< 300	300	U	300	< 320	320	U	320	< 320	320	U	320	< 280	280	U	280				
Anthracene	100,000	100,000	500,000	< 250	250	U	120	< 250	250	U	120	< 1200	1,200	U	580	< 250	250	U	120	< 250	250	U	130	< 250	250	U	130	< 240	240	U	110				
Benz(a)anthracene	1,000	1,000	5,600	320	250	U	120	120	250	J	120	< 1000	1,000	U	580	< 1000	250	U	130	280	280	J	130	150	280	J	140	< 240	240	U	120				
Benzo(a)pyrene	1,000	1,000	1,000	360	360	U	210	< 350	350	U	210	< 1800	1,800	U	1000	< 370	370	U	220	< 400	400	U	230	< 400	400	U	240	< 350	350	U	200				
Benzo(b)fluoranthene	1,000	1,000	5,600	490	250	U	120	140	250	J	120	< 1000	1,000	U	600	< 250	250	U	120	230	280	J	140	150	280	J	140	< 240	240	U	120				
Benzo(g)haphene	100,000	100,000	500,000	420	250	U	120	150	250	J	110	< 1200	1,200	U	570	< 250	250	U																	

TABLE 4
310-336 Grand Concourse
Bronx, 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*	NYDEC Part 375.6 Restricted Commercial Soil Cleanup Objectives*	B6				B6D												Duplicate				Duplicate			
				(0-2) 2/1/2019 µg/Kg				(1-3) 1/15/2020 µg/Kg				(4-7) 1/15/2020 µg/Kg				6/25/2018 µg/Kg				1/15/2020 µg/Kg							
				Result	RL	Qual	MDL	Result	RL	Qual	MDL	Result	RL	Qual	MDL	Result	RL	Qual	MDL	Result	RL	Qual	MDL				
1,2,4,5-Tetrachlorobenzene				<270	270	U	140	<250	250	U	130	<250	250	U	110	<240	240	U	120	<250	250	U	110	<250	250	U	110
1,2,4-Trichlorobenzene				<270	270	U	120	<250	250	U	110	<250	250	U	110	<240	240	U	100	<250	250	U	110	<250	250	U	110
1,2-Dichlorobenzene				<270	270	U	110	<250	250	U	110	<250	250	U	100	<240	240	U	95	<250	250	U	100	<250	250	U	100
1,2-Diphenylhydrazine				<270	270	U	130	<250	250	U	120	<250	250	U	120	<240	240	U	110	<250	250	U	120	<250	250	U	120
1,3-Dichlorobenzene				<270	270	U	110	<250	250	U	110	<250	250	U	110	<240	240	U	100	<250	250	U	110	<250	250	U	110
1,4-Dichlorobenzene				<270	270	U	110	<250	250	U	110	<250	250	U	110	<240	240	U	100	<250	250	U	110	<250	250	U	110
2,4,5-Trichlorophenol				<270	270	U	210	<250	250	U	210	<250	250	U	200	<240	240	U	190	<250	250	U	200	<250	250	U	200
2,4,6-Trichlorophenol				<190	190	U	120	<190	190	U	120	<180	180	U	110	<170	170	U	110	<180	180	U	120	<180	180	U	120
2,4-Dichlorophenol				<190	190	U	140	<190	190	U	130	<180	180	U	130	<170	170	U	120	<180	180	U	130	<180	180	U	130
2,4-Dimethylphenol				<270	270	U	95	<250	250	U	83	<250	250	U	89	<240	240	U	84	<250	250	U	90	<250	250	U	90
2,4-Dinitrophenol				<270	270	U	270	<250	250	U	280	<250	250	U	250	<240	240	U	240	<250	250	U	250	<250	250	U	250
2,4-Dinitrotoluene				<190	190	U	150	<190	190	U	150	<180	180	U	140	<170	170	U	130	<180	180	U	130	<180	180	U	130
2,6-Dinitrotoluene				<190	190	U	120	<190	190	U	120	<180	180	U	110	<170	170	U	110	<180	180	U	120	<180	180	U	120
2-Chloronaphthalene				<270	270	U	110	<250	250	U	110	<250	250	U	100	<240	240	U	95	<250	250	U	100	<250	250	U	100
2-Chlorophenol				<270	270	U	110	<250	250	U	110	<250	250	U	100	<240	240	U	95	<250	250	U	100	<250	250	U	100
2-Methylnaphthalene				130	270	J	110	120	250	J	110	<250	250	U	110	<240	240	U	100	190	250	J	110	<250	250	U	110
2-Methylphenol (o-cresol)	330	100,000		<270	270	U	180	<250	250	U	180	<250	250	U	170	<240	240	U	160	<250	250	U	170	<250	250	U	170
2-Nitroaniline				<270	270	U	270	<250	250	U	280	<250	250	U	250	<240	240	U	240	<250	250	U	250	<250	250	U	250
2-Nitrophenol				<270	270	U	240	<250	250	U	240	<250	250	U	230	<240	240	U	210	<250	250	U	230	<250	250	U	230
3,4-Methylphenol (m,p-cresol)	330	100,000		<270	270	U	150	<250	250	U	150	<250	250	U	140	<240	240	U	130	<250	250	U	130	<250	250	U	130
3,3'-Dichlorobenzidine				<190	190	U	180	<190	190	U	180	<180	180	U	170	<170	170	U	160	<180	180	U	170	<180	180	U	170
3-Nitroaniline				<380	380	U	770	<380	380	U	750	<360	360	U	720	<340	340	U	680	<370	370	U	740	<370	370	U	740
4,6-Dinitro-2-methylphenol				<230	230	U	77	<230	230	U	75	<220	220	U	72	<200	200	U	68	<220	220	U	70	<220	220	U	70
4-Bromophenyl phenyl ether				<270	270	U	110	<250	250	U	110	<250	250	U	110	<240	240	U	99	<250	250	U	110	<250	250	U	110
4-Chloro-3-methylphenol				<270	270	U	140	<250	250	U	130	<250	250	U	130	<240	240	U	120	<250	250	U	130	<250	250	U	130
4-Chloroaniline				<310	310	U	180	<300	300	U	170	<290	290	U	170	<270	270	U	160	<290	290	U	170	<290	290	U	170
4-Chlorophenyl phenyl ether				<270	270	U	130	<250	250	U	130	<250	250	U	120	<240	240	U	110	<250	250	U	120	<250	250	U	120
4-Nitroaniline				<380	380	U	130	<380	380	U	130	<360	360	U	120	<340	340	U	110	<370	370	U	120	<370	370	U	120
4-Nitrophenol				<380	380	U	170	<380	380	U	170	<360	360	U	160	<340	340	U	150	<370	370	U	170	<370	370	U	170
Acenaphthene	20,000	100,000	500,000	<270	270	U	120	530	250		110	<250	250	U	110	<240	240	U	100	360	250		110	<250	250	U	110
Acenaphthylene	100,000	100,000	500,000	170	270	J	110	<250	250	U	110	<250	250	U	100	<240	240	U	95	<250	250	U	100	<250	250	U	100
Acetophenone				<270	270	U	120	<250	250	U	120	<250	250	U	110	<240	240	U	110	<250	250	U	110	<250	250	U	110
Aniline				<310	310	U	310	<300	300	U	300	<290	290	U	290	<270	270	U	270	<290	290	U	280	<290	290	U	280
Anthracene	100,000	100,000	500,000	230	270	J	130	990	250		120	<250	250	U	120	<240	240	U	110	680	250		120	<250	250	U	120
Benz(a)anthracene	1,000	1,000	5,600	720	270		130	2,100	250		130	<250	250	U	120	<240	240	U	110	1,400	250		120	<250	250	U	120
Benztidine				<380	380	U	230	<380	380	U	220	<360	360	U	210	<340	340	U	200	<370	370	U	220	<370	370	U	220
Benzo(a)pyrene	1,000	1,000	1,000	740	190		130	2,000	250		120	<180	180	U	120	<170	170	U	110	1,300	190		120	<180	180	U	120
Benzo(b)fluoranthene	1,000	1,000	5,600	710	270		130	1,600	250		130	<250	250	U	120	<240	240	U	120	1,100	250		120	<250	250	U	120
Benzo(g)hispicene	100,000	100,000	500,000	560	270		120	1,000	250		120	<250	250	U	120	<240	240	U	110	680	250		120	<250	250	U	120
Benzo(k)fluoranthene	800	3,900	56,000	660	270		130	1,500	250		120	<250	250	U	120	<240	240	U	110	980	250		120	<250	250	U	120
Benzoic acid				<1500	1,500	U	770	<1500	1,500	U	750	<1400	1,400	U	720	<1700	1,700	U	680	<1600	1,600	U	740	<1600	1,600	U	740
Benzyl butyl phthalate				<270	270	U	89	<250	250	U	87	<250	250	U	80	<240	240	U	87	<250	250	U	89	<250	250	U	89
Bis(2-chloroethoxy)methane				<270	270	U	110	<250	250	U	100	<250	250	U	99	<240	240	U	93	<250	250	U	100	<250	250	U	100
Bis(2-chloroethyl)ether				<180	180	U	150	<180	180	U	150	<180	180	U	97	<170	170	U	91	<180	180	U	99	<180	180	U	99
Bis(2-chloroisopropyl)ether				<270	270	U	110	<250	250	U	100	<250	250	U	100	<240	240	U	94	<250	250	U	100	<250	250	U	100
Bis(2-ethylhexyl)phthalate				160	270	J	110	<250	250	U	110	<250	250	U	100	<240	240	U	97	<250	250	U	110	<250	250	U	110
Carbazole				<180	180	U	150	390	190		150	<180	180	U	140	<170	170	U	140	280	190		150	<180	180	U	150
Chrysene	1,000	3,900	56,000	800	270		1																				

TABLE 5
310-336 Grand Concourse
Bronx, New York
Soil Analytical Results
Pesticides and PCBs

	COMPOUND	NYSDEC Part 375.6 Unrestricted Use Soil Cleanup Objectives*	NYDEC Part 375.6 Restricted Residential Soil Cleanup Objectives*	NYDEC Part 375.6 Restricted Commercial Soil Cleanup Objectives*	SB1								SB2								SB3			
					(0-2') 6/22/2018 µg/Kg				(12-14') 6/22/2018 µg/Kg				(0-2') 6/22/2018 µg/Kg				(12-14') 6/22/2018 µg/Kg				(0-2') 6/22/2018 µg/Kg			
					Result	RL	Qual	MDL	Result	RL	Qual	MDL	Result	RL	Qual	MDL	Result	RL	Qual	MDL	Result	RL	Qual	MDL
Pesticides	4,4'-DDD	3.3	13,000	92,000	< 2.3	2.3	U	2.3	< 2.2	2.2	U	2.2	< 2.2	2.2	U	2.2	< 2.4	2.4	U	2.4	< 2.1	2.1	U	2.1
	4,4'-DDE	3.3	8,900	62,000	< 2.3	2.3	U	2.3	< 2.2	2.2	U	2.2	< 2.2	2.2	U	2.2	< 2.4	2.4	U	2.4	< 2.1	2.1	U	2.1
	4,4'-DDT	3.3	7,900	47,000	< 2.3	2.3	U	2.3	< 2.2	2.2	U	2.2	< 2.2	2.2	U	2.2	< 2.4	2.4	U	2.4	< 2.1	2.1	U	2.1
	a-BHC	20	480	3,000	< 7.8	7.8	U	7.8	< 7.3	7.3	U	7.3	< 7.2	7.2	U	7.2	< 7.9	7.9	U	7.9	< 7.0	7.0	U	7.0
	a-Chlordane	94	4,200	24,000	< 3.9	3.9	U	3.9	< 3.7	3.7	U	3.7	< 3.6	3.6	U	3.6	< 4.0	4.0	U	4.0	< 3.5	3.5	U	3.5
	Aldrin	5	97	680	< 3.9	3.9	U	3.9	< 3.7	3.7	U	3.7	< 3.6	3.6	U	3.6	< 4.0	4.0	U	4.0	< 3.5	3.5	U	3.5
	b-BHC	36	360	3,000	< 7.8	7.8	U	7.8	< 7.3	7.3	U	7.3	< 7.2	7.2	U	7.2	< 7.9	7.9	U	7.9	< 7.0	7.0	U	7.0
	Chlordane	94	4,200		< 39	39	U	39	< 37	37	U	37	< 36	36	U	36	< 40	40	U	40	< 35	35	U	35
	d-BHC	40	100,000	500,000	< 7.8	7.8	U	7.8	< 7.3	7.3	U	7.3	< 7.2	7.2	U	7.2	< 7.9	7.9	U	7.9	< 7.0	7.0	U	7.0
	Dieldrin	5	200	1,000	< 3.9	3.9	U	3.9	< 3.7	3.7	U	3.7	< 3.6	3.6	U	3.6	< 4.0	4.0	U	4.0	< 3.5	3.5	U	3.5
	Endosulfan I	2,400	24,000	200,000	< 7.8	7.8	U	7.8	< 7.3	7.3	U	7.3	< 7.2	7.2	U	7.2	< 7.9	7.9	U	7.9	< 7.0	7.0	U	7.0
	Endosulfan II	2,400	24,000	200,000	< 7.8	7.8	U	7.8	< 7.3	7.3	U	7.3	< 7.2	7.2	U	7.2	< 7.9	7.9	U	7.9	< 7.0	7.0	U	7.0
	Endosulfan sulfate	2,400	24,000	200,000	< 7.8	7.8	U	7.8	< 7.3	7.3	U	7.3	< 7.2	7.2	U	7.2	< 7.9	7.9	U	7.9	< 7.0	7.0	U	7.0
	Endrin	14	11,000	89,000	< 7.8	7.8	U	7.8	< 7.3	7.3	U	7.3	< 7.2	7.2	U	7.2	< 7.9	7.9	U	7.9	< 7.0	7.0	U	7.0
	Endrin aldehyde				< 7.8	7.8	U	7.8	< 7.3	7.3	U	7.3	< 7.2	7.2	U	7.2	< 7.9	7.9	U	7.9	< 7.0	7.0	U	7.0
	Endrin ketone				< 7.8	7.8	U	7.8	< 7.3	7.3	U	7.3	< 7.2	7.2	U	7.2	< 7.9	7.9	U	7.9	< 7.0	7.0	U	7.0
	g-BHC				< 1.6	1.6	U	1.6	< 1.5	1.5	U	1.5	< 1.4	1.4	U	1.4	< 1.6	1.6	U	1.6	< 1.4	1.4	U	1.4
	g-Chlordane				< 3.9	3.9	U	3.9	< 3.7	3.7	U	3.7	< 3.6	3.6	U	3.6	< 4.0	4.0	U	4.0	< 3.5	3.5	U	3.5
	Heptachlor	42	2,100	15,000	< 7.8	7.8	U	7.8	< 7.3	7.3	U	7.3	< 7.2	7.2	U	7.2	< 7.9	7.9	U	7.9	< 7.0	7.0	U	7.0
	Heptachlor epoxide				< 7.8	7.8	U	7.8	< 7.3	7.3	U	7.3	< 7.2	7.2	U	7.2	< 7.9	7.9	U	7.9	< 7.0	7.0	U	7.0
	Methoxychlor				< 39	39	U	39	< 37	37	U	37	< 36	36	U	36	< 40	40	U	40	< 35	35	U	35
	Toxaphene				< 160	160	U	160	< 150	150	U	150	< 140	140	U	140	< 160	160	U	160	< 140	140	U	140
PCBs	PCB-1016	100	1,000	1,000	< 78	78	U	78	< 73	73	U	73	< 72	72	U	72	< 79	79	U	79	< 70	70	U	70
	PCB-1221	100	1,000	1,000	< 78	78	U	78	< 73	73	U	73	< 72	72	U	72	< 79	79	U	79	< 70	70	U	70
	PCB-1232	100	1,000	1,000	< 78	78	U	78	< 73	73	U	73	< 72	72	U	72	< 79	79	U	79	< 70	70	U	70
	PCB-1242	100	1,000	1,000	< 78	78	U	78	< 73	73	U	73	< 72	72	U	72	< 79	79	U	79	< 70	70	U	70
	PCB-1248	100	1,000	1,000	< 78	78	U	78	< 73	73	U	73	< 72	72	U	72	< 79	79	U	79	< 70	70	U	70
	PCB-1254	100	1,000	1,000	< 78	78	U	78	< 73	73	U	73	< 72	72	U	72	< 79	79	U	79	< 70	70	U	70
	PCB-1260	100	1,000	1,000	< 78	78	U	78	< 73	73	U	73	180	72		72	< 79	79	U	79	< 70	70	U	70
	PCB-1262	100	1,000	1,000	< 78	78	U	78	< 73	73	U	73	< 72	72	U	72	< 79	79	U	79	< 70	70	U	70
	PCB-1268	100	1,000	1,000	< 78	78	U	78	< 73	73	U	73	< 72	72	U	72	< 79	79	U	79	< 70	70	U	70

Notes:

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

RL - Reporting Limit

MDL - Method Detection Limit

Qual - Qualifier

J - Estimated value - The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

U - The compound was analyzed for but not detected at or above the MDL.

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

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

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

TABLE 5
310-336 Grand Concourse
Bronx, New York
Soil Analytical Results
Pesticides and PCBs

	COMPOUND	NYSDEC Part 375.6 Unrestricted Use Soil Cleanup Objectives*	NYDEC Part 375.6 Restricted Residential Soil Cleanup Objectives*	NYDEC Part 375.6 Restricted Commercial Soil Cleanup Objectives*	SB4								SB6								SB7							
					(0-2') 6/22/2018 µg/Kg				(12-14') 6/22/2018 µg/Kg				(0-2') 6/25/2018 µg/Kg				(12-14') 6/25/2018 µg/Kg				(2-4') 1/15/2020 µg/Kg				(10-12') 1/15/2020 µg/Kg			
					Result	RL	Qual	MDL	Result	RL	Qual	MDL	Result	RL	Qual	MDL	Result	RL	Qual	MDL	Result	RL	Qual	MDL	Result	RL	Qual	MDL
Pesticides	4,4'-DDD	3.3	13,000	92,000	< 2.1	2.1	U	2.1	< 2.1	2.1	U	2.1	< 2.2	2.2	U	2.2	< 2.2	2.2	U	2.2	< 2.3	2.3	U	2.3	< 2.2	2.2	U	2.2
	4,4'-DDE	3.3	8,900	62,000	< 2.1	2.1	U	2.1	< 2.1	2.1	U	2.1	< 2.2	2.2	U	2.2	< 2.2	2.2	U	2.2	< 2.3	2.3	U	2.3	< 2.2	2.2	U	2.2
	4,4'-DDT	3.3	7,900	47,000	< 2.1	2.1	U	2.1	< 2.1	2.1	U	2.1	< 2.2	2.2	U	2.2	< 2.2	2.2	U	2.2	< 3.1	3.1	U	3.1	< 2.2	2.2	U	2.2
	a-BHC	20	480	3,000	< 7.0	7.0	U	7.0	< 6.8	6.8	U	6.8	< 7.5	7.5	U	7.5	< 7.4	7.4	U	7.4	< 7.7	7.7	U	7.7	< 7.3	7.3	U	7.3
	a-Chlordane	94	4,200	24,000	< 3.5	3.5	U	3.5	< 3.4	3.4	U	3.4	< 3.7	3.7	U	3.7	< 3.7	3.7	U	3.7	< 3.9	3.9	U	3.9	< 3.7	3.7	U	3.7
	Aldrin	5	97	680	< 3.5	3.5	U	3.5	< 3.4	3.4	U	3.4	< 3.7	3.7	U	3.7	< 3.7	3.7	U	3.7	< 3.9	3.9	U	3.9	< 3.7	3.7	U	3.7
	b-BHC	36	360	3,000	< 7.0	7.0	U	7.0	< 6.8	6.8	U	6.8	< 7.5	7.5	U	7.5	< 7.4	7.4	U	7.4	< 7.7	7.7	U	7.7	< 7.3	7.3	U	7.3
	Chlordane	94	4,200		< 35	35	U	35	< 34	34	U	34	< 37	37	U	37	< 37	37	U	37	< 39	39	U	39	< 37	37	U	37
	d-BHC	40	100,000	500,000	< 7.0	7.0	U	7.0	< 6.8	6.8	U	6.8	< 7.5	7.5	U	7.5	< 7.4	7.4	U	7.4	< 7.7	7.7	U	7.7	< 7.3	7.3	U	7.3
	Dieldrin	5	200	1,000	< 3.5	3.5	U	3.5	< 3.4	3.4	U	3.4	< 3.7	3.7	U	3.7	< 3.7	3.7	U	3.7	< 3.9	3.9	U	3.9	< 3.7	3.7	U	3.7
	Endosulfan I	2,400	24,000	200,000	< 7.0	7.0	U	7.0	< 6.8	6.8	U	6.8	< 7.5	7.5	U	7.5	< 7.4	7.4	U	7.4	< 7.7	7.7	U	7.7	< 7.3	7.3	U	7.3
	Endosulfan II	2,400	24,000	200,000	< 7.0	7.0	U	7.0	< 6.8	6.8	U	6.8	< 7.5	7.5	U	7.5	< 7.4	7.4	U	7.4	< 7.7	7.7	U	7.7	< 7.3	7.3	U	7.3
	Endosulfan sulfate	2,400	24,000	200,000	< 7.0	7.0	U	7.0	< 6.8	6.8	U	6.8	< 7.5	7.5	U	7.5	< 7.4	7.4	U	7.4	< 7.7	7.7	U	7.7	< 7.3	7.3	U	7.3
	Endrin	14	11,000	89,000	< 7.0	7.0	U	7.0	< 6.8	6.8	U	6.8	< 7.5	7.5	U	7.5	< 7.4	7.4	U	7.4	< 7.7	7.7	U	7.7	< 7.3	7.3	U	7.3
	Endrin aldehyde				< 7.0	7.0	U	7.0	< 6.8	6.8	U	6.8	< 7.5	7.5	U	7.5	< 7.4	7.4	U	7.4	420	190		190	< 15	15	U	15
	Endrin ketone				< 7.0	7.0	U	7.0	< 6.8	6.8	U	6.8	< 7.5	7.5	U	7.5	< 7.4	7.4	U	7.4	< 7.7	7.7	U	7.7	< 7.3	7.3	U	7.3
	g-BHC				< 1.4	1.4	U	1.4	< 1.4	1.4	U	1.4	< 1.5	1.5	U	1.5	< 1.5	1.5	U	1.5	< 1.5	1.5	U	1.5	< 1.5	1.5	U	1.5
	g-Chlordane				< 3.5	3.5	U	3.5	< 3.4	3.4	U	3.4	< 3.7	3.7	U	3.7	< 3.7	3.7	U	3.7	< 3.9	3.9	U	3.9	< 3.7	3.7	U	3.7
	Heptachlor	42	2,100	15,000	< 7.0	7.0	U	7.0	< 6.8	6.8	U	6.8	< 7.5	7.5	U	7.5	< 7.4	7.4	U	7.4	< 7.7	7.7	U	7.7	< 7.3	7.3	U	7.3
	Heptachlor epoxide				< 7.0	7.0	U	7.0	< 6.8	6.8	U	6.8	< 7.5	7.5	U	7.5	< 7.4	7.4	U	7.4	< 7.7	7.7	U	7.7	< 7.3	7.3	U	7.3
	Methoxychlor				< 35	35	U	35	< 34	34	U	34	< 37	37	U	37	< 37	37	U	37	< 39	39	U	39	< 37	37	U	37
	Toxaphene				< 140	140	U	140	< 140	140	U	140	< 150	150	U	150	< 150	150	U	150	< 150	150	U	150	< 150	150	U	150
PCBs	PCB-1016	100	1,000	1,000	< 70	70	U	70	< 68	68	U	68	< 75	75	U	75	< 74	74	U	74	< 77	77	U	77	< 73	73	U	73
	PCB-1221	100	1,000	1,000	< 70	70	U	70	< 68	68	U	68	< 75	75	U	75	< 74	74	U	74	< 77	77	U	77	< 73	73	U	73
	PCB-1232	100	1,000	1,000	< 70	70	U	70	< 68	68	U	68	< 75	75	U	75	< 74	74	U	74	< 77	77	U	77	< 73	73	U	73
	PCB-1242	100	1,000	1,000	< 70	70	U	70	< 68	68	U	68	< 75	75	U	75	< 74	74	U	74	< 77	77	U	77	< 73	73	U	73
	PCB-1248	100	1,000	1,000	< 70	70	U	70	< 68	68	U	68	< 75	75	U	75	< 74	74	U	74	< 77	77	U	77	< 73	73	U	73
	PCB-1254	100	1,000	1,000	< 70	70	U	70	< 68	68	U	68	< 75	75	U	75	< 74	74	U	74	< 77	77	U	77	< 73	73	U	73
	PCB-1260	100	1,000	1,000	< 70	70	U	70	< 68	68	U	68	< 75	75	U	75	< 74	74	U	74	< 77	77	U	77	< 73	73	U	73
	PCB-1262	100	1,000	1,000	< 70	70	U	70	< 68	68	U	68	< 75	75	U	75	< 74	74	U	74	< 77	77	U	77	< 73	73	U	73
	PCB-1268	100	1,000	1,000	< 70	70	U	70	< 68	68	U	68	< 75	75	U	75	< 74	74	U	74	< 77	77	U	77	< 73	73	U	73

Notes:

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

RL- Reporting Limit

MDL - Method Detection Limit

Qual - Qualifier

J - Estimated value - The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

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Boldhighlighted- Indicated exceedance of the NYSDEC UUSCO Guidance Value

Boldhighlighted- Indicated exceedance of the NYSDEC RRSOCO Guidance Value

Boldhighlighted- Indicated exceedance of the NYSDEC RSCSO Guidance Value

TABLE 5
310-336 Grand Concourse
Bronx, New York
Soil Analytical Results
Pesticides and PCBs

	COMPOUND	NYSDEC Part 375.6 Unrestricted Use Soil Cleanup Objectives*	NYDEC Part 375.6 Restricted Residential Soil Cleanup Objectives*	NYDEC Part 375.6 Restricted Commercial Soil Cleanup Objectives*	SB8								SB9				B1				B2				B3			
					(1-3) 1/15/2020 µg/Kg				(5-7) 1/15/2020 µg/Kg				(1-3) 1/15/2020 µg/Kg				(0-2) 1/30/2019 µg/Kg				(0-2) 1/30/2019 µg/Kg				(0-2) 1/30/2019 µg/Kg			
					Result	RL	Qual	MDL	Result	RL	Qual	MDL	Result	RL	Qual	MDL	Result	RL	Qual	MDL	Result	RL	Qual	MDL	Result	RL	Qual	MDL
Pesticides	4,4'-DDD	3.3	13,000	92,000	< 2.4	2.4	U	2.4	< 2.1	2.1	U	2.1	< 2.2	2.2	U	2.2	< 2.2	2.2	U	2.2	< 14	14	U	14	23	2.1		2.1
	4,4'-DDE	3.3	8,900	62,000	< 2.4	2.4	U	2.4	< 2.1	2.1	U	2.1	< 2.2	2.2	U	2.2	< 2.2	2.2	U	2.2	< 14	14	U	14				2.1
	4,4'-DDT	3.3	7,900	47,000	< 2.4	2.4	U	2.4	< 2.1	2.1	U	2.1	< 2.2	2.2	U	2.2	< 3.0	3.0	U	3.0	< 14	14	U	14	51	2.1		2.1
	a-BHC	20	480	3,000	< 8.0	8.0	U	8.0	< 7.0	7.0	U	7.0	< 7.3	7.3	U	7.3	< 7.2	7.2	U	7.2	< 14	14	U	14	< 7.0	7.0	U	7.0
	α-Chlordane	94	4,200	24,000	< 4.0	4.0	U	4.0	< 3.5	3.5	U	3.5	< 3.6	3.6	U	3.6	< 3.6	3.6	U	3.6	< 36	36	U	36	< 3.5	3.5	U	3.5
	Aldrin	5	97	680	< 4.0	4.0	U	4.0	< 3.5	3.5	U	3.5	< 3.6	3.6	U	3.6	< 3.6	3.6	U	3.6	< 14	14	U	14	< 3.5	3.5	U	3.5
	β-BHC	36	360	3,000	< 8.0	8.0	U	8.0	< 7.0	7.0	U	7.0	< 7.3	7.3	U	7.3	< 7.2	7.2	U	7.2	< 14	14	U	14	< 7.0	7.0	U	7.0
	Chlordane	94	4,200		< 40	40	U	40	< 35	35	U	35	< 36	36	U	36	< 36	36	U	36	< 360	360	U	360	< 35	35	U	35
	δ-BHC	40	100,000	500,000	< 8.0	8.0	U	8.0	< 7.0	7.0	U	7.0	< 7.3	7.3	U	7.3	< 7.2	7.2	U	7.2	< 14	14	U	14	< 7.0	7.0	U	7.0
	Dieldrin	5	200	1,000	< 4.0	4.0	U	4.0	< 3.5	3.5	U	3.5	< 3.6	3.6	U	3.6	< 3.6	3.6	U	3.6	< 14	14	U	14	< 3.5	3.5	U	3.5
	Endosulfan I	2,400	24,000	200,000	< 8.0	8.0	U	8.0	< 7.0	7.0	U	7.0	< 7.3	7.3	U	7.3	< 7.2	7.2	U	7.2	< 71	71	U	71	< 7.0	7.0	U	7.0
	Endosulfan II	2,400	24,000	200,000	< 8.0	8.0	U	8.0	< 7.0	7.0	U	7.0	< 7.3	7.3	U	7.3	< 7.2	7.2	U	7.2	< 71	71	U	71	< 7.0	7.0	U	7.0
	Endosulfan sulfate	2,400	24,000	200,000	< 8.0	8.0	U	8.0	< 7.0	7.0	U	7.0	< 7.3	7.3	U	7.3	< 7.2	7.2	U	7.2	< 71	71	U	71	< 7.0	7.0	U	7.0
	Endrin	14	11,000	89,000	< 8.0	8.0	U	8.0	< 7.0	7.0	U	7.0	< 7.3	7.3	U	7.3	< 7.2	7.2	U	7.2	< 36	36	U	36	< 7.0	7.0	U	7.0
	Endrin aldehyde				< 8.0	8.0	U	8.0	< 7.0	7.0	U	7.0	< 7.3	7.3	U	7.3	< 7.2	7.2	U	7.2	< 71	71	U	71	< 7.0	7.0	U	7.0
	Endrin ketone				< 8.0	8.0	U	8.0	< 7.0	7.0	U	7.0	< 7.3	7.3	U	7.3	< 7.2	7.2	U	7.2	< 71	71	U	71	< 10	10	U	10
	γ-BHC				< 1.6	1.6	U	1.6	< 1.4	1.4	U	1.4	< 1.5	1.5	U	1.5	< 1.4	1.4	U	1.4	< 14	14	U	14	< 1.4	1.4	U	1.4
	γ-Chlordane				< 4.0	4.0	U	4.0	< 3.5	3.5	U	3.5	< 3.6	3.6	U	3.6	< 3.6	3.6	U	3.6	< 36	36	U	36	< 3.5	3.5	U	3.5
	Heptachlor	42	2,100	15,000	< 8.0	8.0	U	8.0	< 7.0	7.0	U	7.0	< 7.3	7.3	U	7.3	< 7.2	7.2	U	7.2	< 36	36	U	36	< 7.0	7.0	U	7.0
	Heptachlor epoxide				< 8.0	8.0	U	8.0	< 7.0	7.0	U	7.0	< 7.3	7.3	U	7.3	< 7.2	7.2	U	7.2	< 71	71	U	71	< 7.0	7.0	U	7.0
	Methoxychlor				< 40	40	U	40	< 35	35	U	35	< 36	36	U	36	< 36	36	U	36	< 360	360	U	360	< 35	35	U	35
	Toxaphene				< 160	160	U	160	< 140	140	U	140	< 150	150	U	150	< 140	140	U	140	< 1400	1,400	U	1400	< 140	140	U	140
PCBs	PCB-1016	100	1,000	1,000	< 80	80	U	80	< 70	70	U	70	< 73	73	U	73	< 72	72	U	72	< 71	71	U	71	< 71	71	U	71
	PCB-1221	100	1,000	1,000	< 80	80	U	80	< 70	70	U	70	< 73	73	U	73	< 72	72	U	72	< 71	71	U	71	< 71	71	U	71
	PCB-1232	100	1,000	1,000	< 80	80	U	80	< 70	70	U	70	< 73	73	U	73	< 72	72	U	72	< 71	71	U	71	< 71	71	U	71
	PCB-1242	100	1,000	1,000	< 80	80	U	80	< 70	70	U	70	< 73	73	U	73	< 72	72	U	72	< 71	71	U	71	< 71	71	U	71
	PCB-1248	100	1,000	1,000	< 80	80	U	80	< 70	70	U	70	< 73	73	U	73	< 72	72	U	72	< 71	71	U	71	< 71	71	U	71
	PCB-1254	100	1,000	1,000	< 80	80	U	80	< 70	70	U	70	< 73	73	U	73	< 72	72	U	72	< 71	71	U	71	< 71	71	U	71
	PCB-1260	100	1,000	1,000	< 80	80	U	80	< 70	70	U	70	< 73	73	U	73	< 72	72	U	72	< 71	71	U	71	96	71		71
	PCB-1262	100	1,000	1,000	< 80	80	U	80	< 70	70	U	70	< 73	73	U	73	< 72	72	U	72	< 71	71	U	71	< 71	71	U	71
	PCB-1268	100	1,000	1,000	< 80	80	U	80	< 70	70	U	70	< 73	73	U	73	< 72	72	U	72	< 71	71	U	71	< 71	71	U	71

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310-336 Grand Concourse
Bronx, New York
Soil Analytical Results
Pesticides and PCBs

	COMPOUND	NYSDEC Part 375.6 Unrestricted Use Soil Cleanup Objectives*	NYDEC Part 375.6 Restricted Residential Soil Cleanup Objectives*	NYDEC Part 375.6 Restricted Commercial Soil Cleanup Objectives*	B4				B5				B5D								B6			
					(0-2) 1/30/2019 µg/Kg				(0-2) 2/1/2019 µg/Kg				(3-5) 1/15/2020 µg/Kg				(10-12) 1/15/2020 µg/Kg				(0-2) 2/1/2019 µg/Kg			
					Result	RL	Qual	MDL	Result	RL	Qual	MDL	Result	RL	Qual	MDL	Result	RL	Qual	MDL	Result	RL	Qual	MDL
Pesticides	4,4'-DDD	3.3	13,000	92,000	4.2	2.2		2.2	< 3.3	3.3	U	3.3	< 2.4	2.4	U	2.4	< 2.1	2.1	U	2.1	< 2.3	2.3	U	2.3
	4,4'-DDE	3.3	8,900	62,000	14	2.2		2.2	< 2.4	2.4	U	2.4	< 2.4	2.4	U	2.4	< 2.1	2.1	U	2.1	< 2.3	2.3	U	2.3
	4,4'-DDT	3.3	7,900	47,000	< 3.0	3.0	U	3.0	< 2.4	2.4	U	2.4	< 2.4	2.4	U	2.4	< 2.1	2.1	U	2.1	10	2.3		2.3
	a-BHC	20	480	3,000	< 7.4	7.4	U	7.4	< 7.9	7.9	U	7.9	< 8.0	8.0	U	8.0	< 7.1	7.1	U	7.1	< 7.6	7.6	U	7.6
	a-Chlordane	94	4,200	24,000	< 3.7	3.7	U	3.7	< 4.0	4.0	U	4.0	< 4.0	4.0	U	4.0	< 3.5	3.5	U	3.5	< 3.8	3.8	U	3.8
	Aldrin	5	97	680	< 3.7	3.7	U	3.7	< 4.0	4.0	U	4.0	< 4.0	4.0	U	4.0	< 3.5	3.5	U	3.5	< 3.8	3.8	U	3.8
	b-BHC	36	360	3,000	< 7.4	7.4	U	7.4	< 7.9	7.9	U	7.9	< 8.0	8.0	U	8.0	< 7.1	7.1	U	7.1	< 7.6	7.6	U	7.6
	Chlordane	94	4,200		< 37	37	U	37	< 40	40	U	40	< 40	40	U	40	< 35	35	U	35	< 38	38	U	38
	d-BHC	40	100,000	500,000	< 7.4	7.4	U	7.4	< 7.9	7.9	U	7.9	< 8.0	8.0	U	8.0	< 7.1	7.1	U	7.1	< 7.6	7.6	U	7.6
	Dieldrin	5	200	1,000	< 3.7	3.7	U	3.7	< 5.0	5.0	U	5.0	< 4.0	4.0	U	4.0	< 3.5	3.5	U	3.5	< 3.8	3.8	U	3.8
	Endosulfan I	2,400	24,000	200,000	< 7.4	7.4	U	7.4	< 7.9	7.9	U	7.9	< 8.0	8.0	U	8.0	< 7.1	7.1	U	7.1	< 7.6	7.6	U	7.6
	Endosulfan II	2,400	24,000	200,000	< 7.4	7.4	U	7.4	< 7.9	7.9	U	7.9	< 8.0	8.0	U	8.0	< 7.1	7.1	U	7.1	< 7.6	7.6	U	7.6
	Endosulfan sulfate	2,400	24,000	200,000	< 7.4	7.4	U	7.4	< 7.9	7.9	U	7.9	< 8.0	8.0	U	8.0	< 7.1	7.1	U	7.1	12	7.6		7.6
	Endrin	14	11,000	89,000	< 7.4	7.4	U	7.4	< 7.9	7.9	U	7.9	< 8.0	8.0	U	8.0	< 7.1	7.1	U	7.1	< 7.6	7.6	U	7.6
	Endrin aldehyde				< 7.4	7.4	U	7.4	< 7.9	7.9	U	7.9	< 8.0	8.0	U	8.0	< 7.1	7.1	U	7.1	< 7.6	7.6	U	7.6
	Endrin ketone				< 7.4	7.4	U	7.4	< 7.9	7.9	U	7.9	< 8.0	8.0	U	8.0	< 7.1	7.1	U	7.1	< 7.6	7.6	U	7.6
	g-BHC				< 1.5	1.5	U	1.5	< 1.6	1.6	U	1.6	< 1.6	1.6	U	1.6	< 1.4	1.4	U	1.4	< 1.5	1.5	U	1.5
	g-Chlordane				< 3.7	3.7	U	3.7	< 4.0	4.0	U	4.0	< 4.0	4.0	U	4.0	< 3.5	3.5	U	3.5	< 6.0	6.0	U	6.0
	Heptachlor	42	2,100	15,000	< 7.4	7.4	U	7.4	< 7.9	7.9	U	7.9	< 8.0	8.0	U	8.0	< 7.1	7.1	U	7.1	< 7.6	7.6	U	7.6
	Heptachlor epoxide				< 7.4	7.4	U	7.4	< 7.9	7.9	U	7.9	< 8.0	8.0	U	8.0	< 7.1	7.1	U	7.1	< 7.6	7.6	U	7.6
	Methoxychlor				< 37	37	U	37	< 40	40	U	40	< 40	40	U	40	< 35	35	U	35	< 38	38	U	38
	Toxaphene				< 150	150	U	150	< 160	160	U	160	< 160	160	U	160	< 140	140	U	140	< 150	150	U	150
PCBs	PCB-1016	100	1,000	1,000	< 74	74	U	74	< 79	79	U	79	< 80	80	U	80	< 71	71	U	71	< 76	76	U	76
	PCB-1221	100	1,000	1,000	< 74	74	U	74	< 79	79	U	79	< 80	80	U	80	< 71	71	U	71	< 76	76	U	76
	PCB-1232	100	1,000	1,000	< 74	74	U	74	< 79	79	U	79	< 80	80	U	80	< 71	71	U	71	< 76	76	U	76
	PCB-1242	100	1,000	1,000	< 74	74	U	74	< 79	79	U	79	< 80	80	U	80	< 71	71	U	71	< 76	76	U	76
	PCB-1248	100	1,000	1,000	< 74	74	U	74	< 79	79	U	79	< 80	80	U	80	< 71	71	U	71	< 76	76	U	76
	PCB-1254	100	1,000	1,000	< 74	74	U	74	< 79	79	U	79	< 80	80	U	80	< 71	71	U	71	< 76	76	U	76
	PCB-1260	100	1,000	1,000	< 74	74	U	74	260	79		79	< 80	80	U	80	< 71	71	U	71	340	76		76
	PCB-1262	100	1,000	1,000	< 74	74	U	74	< 79	79	U	79	< 80	80	U	80	< 71	71	U	71	< 76	76	U	76
	PCB-1268	100	1,000	1,000	< 74	74	U	74	< 79	79	U	79	< 80	80	U	80	< 71	71	U	71	< 76	76	U	76

Notes:

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

RL - Reporting Limit

MDL - Method Detection Limit

Qual - Qualifier

J - Estimated value - The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) o (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

U - The compound was analyzed for but not detected at or above the MDL.

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

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

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

TABLE 5
310-336 Grand Concourse
Bronx, New York
Soil Analytical Results
Pesticides and PCBs

	COMPOUND	NYSDEC Part 375.6 Unrestricted Use Soil Cleanup Objectives*	NYDEC Part 375.6 Restricted Residential Soil Cleanup Objectives*	NYDEC Part 375.6 Restricted Commercial Soil Cleanup Objectives*	B6D								Duplicate				Duplicate			
					(1-3*) 1/15/2020 µg/Kg				(6-8*) 1/15/2020 µg/Kg				6/25/2018 µg/Kg				1/15/2020 µg/Kg			
					Result	RL	Qual	MDL	Result	RL	Qual	MDL	Result	RL	Qual	MDL	Result	RL	Qual	MDL
Pesticides	4,4' -DDD	3.3	13,000	92,000	< 3.0	3.0	U	3.0	< 2.2	2.2	U	2.2	< 2.0	2.0	U	2.0	< 2.2	2.2	U	2.2
	4,4' -DDE	3.3	8,900	62,000	< 2.3	2.3	U	2.3	< 2.2	2.2	U	2.2	< 2.0	2.0	U	2.0	< 2.2	2.2	U	2.2
	4,4' -DDT	3.3	7,900	47,000	< 2.3	2.3	U	2.3	< 2.2	2.2	U	2.2	< 2.0	2.0	U	2.0	< 2.2	2.2	U	2.2
	a-BHC	20	480	3,000	< 7.5	7.5	U	7.5	< 7.3	7.3	U	7.3	< 6.8	6.8	U	6.8	< 7.5	7.5	U	7.5
	a-Chlordane	94	4,200	24,000	< 3.8	3.8	U	3.8	< 3.6	3.6	U	3.6	< 3.4	3.4	U	3.4	< 3.7	3.7	U	3.7
	Aldrin	5	97	680	< 3.8	3.8	U	3.8	< 3.6	3.6	U	3.6	< 3.4	3.4	U	3.4	< 5.0	5.0	U	5.0
	b-BHC	36	360	3,000	< 7.5	7.5	U	7.5	< 7.3	7.3	U	7.3	< 6.8	6.8	U	6.8	< 9.0	9.0	U	9.0
	Chlordane	94	4,200		< 38	38	U	38	< 36	36	U	36	< 34	34	U	34	< 37	37	U	37
	d-BHC	40	100,000	500,000	< 7.5	7.5	U	7.5	< 7.3	7.3	U	7.3	< 6.8	6.8	U	6.8	< 7.5	7.5	U	7.5
	Dieldrin	5	200	1,000	< 3.8	3.8	U	3.8	< 3.6	3.6	U	3.6	< 3.4	3.4	U	3.4	< 3.7	3.7	U	3.7
	Endosulfan I	2,400	24,000	200,000	< 7.5	7.5	U	7.5	< 7.3	7.3	U	7.3	< 6.8	6.8	U	6.8	< 7.5	7.5	U	7.5
	Endosulfan II	2,400	24,000	200,000	< 7.5	7.5	U	7.5	< 7.3	7.3	U	7.3	< 6.8	6.8	U	6.8	< 7.5	7.5	U	7.5
	Endosulfan sulfate	2,400	24,000	200,000	< 7.5	7.5	U	7.5	< 7.3	7.3	U	7.3	< 6.8	6.8	U	6.8	< 7.5	7.5	U	7.5
	Endrin	14	11,000	89,000	< 7.5	7.5	U	7.5	< 7.3	7.3	U	7.3	< 6.8	6.8	U	6.8	< 7.5	7.5	U	7.5
	Endrin aldehyde				< 7.5	7.5	U	7.5	< 7.3	7.3	U	7.3	< 6.8	6.8	U	6.8	< 7.5	7.5	U	7.5
	Endrin ketone				< 7.5	7.5	U	7.5	< 7.3	7.3	U	7.3	< 6.8	6.8	U	6.8	< 7.5	7.5	U	7.5
	g-BHC				< 1.5	1.5	U	1.5	< 1.5	1.5	U	1.5	< 1.4	1.4	U	1.4	< 1.5	1.5	U	1.5
	g-Chlordane				< 3.8	3.8	U	3.8	< 3.6	3.6	U	3.6	< 3.4	3.4	U	3.4	< 3.7	3.7	U	3.7
	Heptachlor	42	2,100	15,000	< 7.5	7.5	U	7.5	< 7.3	7.3	U	7.3	< 6.8	6.8	U	6.8	< 7.5	7.5	U	7.5
PCBs	Heptachlor epoxide				< 7.5	7.5	U	7.5	< 7.3	7.3	U	7.3	< 6.8	6.8	U	6.8	< 7.5	7.5	U	7.5
	Methoxychlor				< 38	38	U	38	< 36	36	U	36	< 34	34	U	34	< 37	37	U	37
	Toxaphene				< 150	150	U	150	< 150	150	U	150	< 140	140	U	140	< 150	150	U	150
	PCB-1016	100	1,000	1,000	< 75	75	U	75	< 73	73	U	73	< 68	68	U	68	< 75	75	U	75
	PCB-1221	100	1,000	1,000	< 75	75	U	75	< 73	73	U	73	< 68	68	U	68	< 75	75	U	75
	PCB-1232	100	1,000	1,000	< 75	75	U	75	< 73	73	U	73	< 68	68	U	68	< 75	75	U	75
	PCB-1242	100	1,000	1,000	< 75	75	U	75	< 73	73	U	73	< 68	68	U	68	< 75	75	U	75
	PCB-1248	100	1,000	1,000	< 75	75	U	75	< 73	73	U	73	< 68	68	U	68	< 75	75	U	75
	PCB-1254	100	1,000	1,000	< 75	75	U	75	< 73	73	U	73	< 68	68	U	68	< 75	75	U	75
	PCB-1260	100	1,000	1,000	< 75	75	U	75	< 73	73	U	73	< 68	68	U	68	< 75	75	U	75
	PCB-1262	100	1,000	1,000	< 75	75	U	75	< 73	73	U	73	< 68	68	U	68	< 75	75	U	75
	PCB-1268	100	1,000	1,000	< 75	75	U	75	< 73	73	U	73	< 68	68	U	68	< 75	75	U	75

Notes:

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

RL - Reporting Limit

MDL - Method Detection Limit

Qual - Qualifier

J - Estimated value - The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

U - The compound was analyzed for but not detected at or above the MDL.

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

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

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

TABLE 6
310-336 Grand Concourse
Bronx, 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*	NYDEC Part 375.6 Restricted Commercial Soil Cleanup Objectives*	SB1								SB2								SB3			
				(0-2) 6/22/2018 mg/Kg				(12-14) 6/22/2018 mg/Kg				(0-2) 6/22/2018 mg/Kg				(12-14) 6/22/2018 mg/Kg				(0-2) 6/22/2018 mg/Kg			
				Result	RL	Qual	MDL	Result	RL	Qual	MDL	Result	RL	Qual	MDL	Result	RL	Qual	MDL	Result	RL	Qual	MDL
Aluminum				15,100	38		7.6	10,100	34		6.9	18,700	34		6.9	29,900	370		74	5,110	37		7.4
Antimony				< 3.8	3.8	U	1.9	< 3.4	3.4	U	1.7	< 3.4	3.4	U	1.7	< 3.7	3.7	U	1.9	< 3.7	3.7	U	1.8
Arsenic	13	16	16	1.92	0.76		0.76	3.35	0.69		0.69	17.7	0.69		0.69	1.57	0.74		0.74	4.06	0.74		0.74
Barium	350	350	400	70.6	0.8		0.38	67.7	0.7		0.34	227	0.7		0.34	24.9	0.7		0.37	87.1	0.7		0.37
Beryllium	7.2	14	590	0.78	0.31		0.15	0.84	0.27		0.14	1.34	0.28		0.14	2	0.30		0.15	0.22	0.30	J	0.15
Cadmium	2.5	2.5	9.3	< 0.38	0.38	U	0.38	0.4	0.34		0.34	2.52	0.34		0.34	< 0.37	0.37	U	0.37	1.07	0.37		0.37
Calcium				29,400	38		35	2,100	3.4		3.2	35,600	34		32	20,800	37		34	57,900	37		34
Chromium	30	180	1,500	18.8	0.38		0.38	27.2	0.34		0.34	119	0.34		0.34	50	0.37		0.37	17.3	0.37		0.37
Cobalt				7.2	0.38		0.38	12.5	0.34		0.34	13.8	0.34		0.34	12.7	0.37		0.37	5.57	0.37		0.37
Copper	50	270	270	12	0.38		0.38	36.5	0.34		0.34	133	0.34		0.34	28.7	0.37		0.37	34.8	0.37		0.37
Iron				16,400	38	*	38	26,300	34	*	34	70,000	34	*	34	27,900	37	*	37	31,100	37	*	37
Lead	63	400	1,000	15.3	0.8	*	0.38	8.3	0.7	*	0.34	315	6.9	*	3.4	24	0.7	*	0.37	136	0.7	*	0.37
Magnesium				5,860	38		38	7,380	34		34	10,700	34		34	22,900	37		37	8,910	37		37
Manganese	1,600	2,000	10,000	491	3.8	N	3.8	390	3.4	N	3.4	288	3.4	N	3.4	590	3.7	N	3.7	243	3.7	N	3.7
Mercury	0.18	0.81	2.8	< 0.14	0.14	UN	0.08	< 0.14	0.14	UN	0.08	0.82	0.13	N	0.08	< 0.16	0.16	UN	0.10	3.38	0.13	N	0.08
Nickel	30	140	310	13	0.38		0.38	24.1	0.34		0.34	39.8	0.34		0.34	14.5	0.37		0.37	55.5	0.37		0.37
Potassium				1,100	8	N	3.0	2,600	7	N	2.7	2,360	7	N	2.7	490	7	N	2.9	843	7	N	2.9
Selenium	3.9	36	1,500	< 1.5	1.5	U	1.3	< 1.4	1.4	U	1.2	< 1.4	1.4	U	1.2	< 1.5	1.5	U	1.3	< 1.5	1.5	U	1.3
Silver	2	36	1,500	< 0.38	0.38	U	0.38	< 0.34	0.34	U	0.34	< 0.34	0.34	U	0.34	< 0.37	0.37	U	0.37	0.78	0.37		0.37
Sodium				800	8		3.3	351	7		2.9	642	7		3.0	3,090	7		3.2	568	7		3.2
Thallium				< 1.5	1.5	U	1.5	< 1.4	1.4	U	1.4	< 1.4	1.4	U	1.4	< 1.5	1.5	U	1.5	< 1.5	1.5	U	1.5
Vanadium				25	0.38		0.38	43	0.34		0.34	39.3	0.34		0.34	56.1	0.37		0.37	10.8	0.37		0.37
Zinc	109	2,200	10,000	48.8	0.8		0.38	70.8	0.7		0.34	252	6.9		3.4	77.6	0.7		0.37	132	0.7		0.37

Notes:

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U - The compound was analyzed for but not detected at or above the MDL.

N - The concentration is based on the response to the nearest internal. This flag is used on the TIC form for all compounds identified.

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

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

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

TABLE 6
310-336 Grand Concourse
Bronx, 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*	NYDEC Part 375.6 Restricted Commercial Soil Cleanup Objectives*	SB4								SB6								SB7							
				(0-2') 6/22/2018 mg/Kg				(12-14') 6/22/2018 mg/Kg				(0-2') 6/25/2018 mg/Kg				(12-14') 6/25/2018 mg/Kg				(2-4') 1/15/2020 mg/Kg				(10-12') 1/15/2020 mg/Kg			
				Result	RL	Qual	MDL	Result	RL	Qual	MDL	Result	RL	Qual	MDL	Result	RL	Qual	MDL	Result	RL	Qual	MDL	Result	RL	Qual	MDL
Aluminum				9,700	32		6.5	5,910	31		6.1	7,870	34		6.8	4,120	34		6.9	9,990	37		7.5	9,300	36		7.1
Antimony				2	3.2	J	1.6	< 3.1	3.1	U	1.5	< 3.4	3.4	U	1.7	< 3.4	3.4	U	1.7	< 3.7	3.7	U	3.7	< 3.6	3.6	U	3.6
Arsenic	13	16	16	7.58	0.65		0.65	0.68	0.61		0.61	4.08	0.68		0.68	1.76	0.69		0.69	3.30	0.75		0.75	1.42	0.71		0.71
Barium	350	350	400	166	0.6		0.32	30.9	0.6		0.31	89.6	0.7		0.34	21	0.7		0.34	97.2	0.7		0.37	37	0.7		0.36
Beryllium	7.2	14	590	0.72	0.25		0.13	0.3	0.25		0.12	0.39	0.27		0.14	0.28	0.27		0.14	0.44	0.30		0.15	0.40	0.28		0.14
Cadmium	2.5	2.5	9.3	0.99	0.32		0.32	< 0.31	0.31	U	0.31	0.87	0.34		0.34	< 0.34	0.34	U	0.34	1.13	0.37		0.37	0.47	0.36		0.36
Calcium				34,400	32		30	3,400	3.1		2.8	58,300	34		31	3,270	3.4		3.2	42,400	37		34	5,290	3.6		3.3
Chromium	30	180	1,500	26	0.32		0.32	17.8	0.31		0.31	17.1	0.34		0.34	13.7	0.34		0.34	15.4	0.37		0.37	13.8	0.36		0.36
Cobalt				7.97	0.32		0.32	7.26	0.31		0.31	5.88	0.34		0.34	4.44	0.34		0.34	6.29	0.37		0.37	7.19	0.36		0.36
Copper	50	270	270	83.5	0.32		0.32	18.4	0.31		0.31	31	0.34		0.34	8.74	0.34		0.34	80.7	0.7		0.37	14.20	0.7		0.36
Iron				18,100	32	*	32	14,900	31	*	31	17,600	34	*	34	14,300	34	*	34	15,800	37		37	14,400	36		36
Lead	63	400	1,000	424	6.5	*	3.2	4.7	0.6	*	0.31	130	0.7	*	0.34	3.4	0.7	*	0.34	161	0.7		0.37	4.2	0.7		0.36
Magnesium				9,180	32		32	3,930	3.1		3.1	18,800	34		34	3,080	3.4		3.4	7,540	37		37	7,500	36		36
Manganese	1,600	2,000	10,000	219	3.2	N	3.2	205	3.1	N	3.1	251	3.4	N	3.4	102	0.34	N	0.34	282	3.7		3.7	398	3.6		3.6
Mercury	0.18	0.81	2.8	0.33	0.13	N	0.08	< 0.13	0.13	UN	0.08	0.24	0.15	N	0.09	< 0.14	0.14	UN	0.08	0.19	0.03		0.02	< 0.03	0.03	U	0.02
Nickel	30	140	310	23.8	0.32		0.32	14.5	0.31		0.31	15	0.34		0.34	9.15	0.34		0.34	14	0.37		0.37	14.00	0.36		0.36
Potassium				1,850	6	N	2.5	1,130	6	N	2.4	1,140	7	N	2.6	852	7	N	2.7	1,610	7		2.9	1,780	7		2.8
Selenium	3.9	36	1,500	< 1.3	1.3	U	1.1	< 1.2	1.2	U	1.0	< 1.4	1.4	U	1.2	< 1.4	1.4	U	1.2	< 1.5	1.5	U	1.3	< 1.4	1.4	U	1.2
Silver	2	36	1,500	< 0.32	0.32	U	0.32	< 0.31	0.31	U	0.31	< 0.34	0.34	U	0.34	< 0.34	0.34	U	0.34	2.74	0.37		0.37	< 0.36	0.36	U	0.36
Sodium				490	6		2.8	268	6		2.6	148	7		2.9	128	7		2.9	293	7		3.2	106	7		3.1
Thallium				< 1.3	1.3	U	1.3	< 1.2	1.2	U	1.2	< 1.4	1.4	U	1.4	< 1.4	1.4	U	1.4	< 1.5	1.5	U	1.5	< 1.4	1.4	U	1.4
Vanadium				39.9	0.32		0.32	25.4	0.31		0.31	22.8	0.34		0.34	24.9	0.34		0.34	22.0	0.37		0.37	18.6	0.36		0.36
Zinc	109	2,200	10,000	343	6.5		3.2	35.3	0.6		0.31	122	0.7		0.34	25.1	0.7		0.34	140	0.7		0.37	32.3	0.7		0.36

Notes:

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

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

TABLE 6
310-336 Grand Concourse
Bronx, 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*	NYDEC Part 375.6 Restricted Commercial Soil Cleanup Objectives*	SB8								SB9				B1				B2				B3			
				(1-3) 1/15/2020 mg/Kg				(5-7) 1/15/2020 mg/Kg				(1-3) 1/15/2020 mg/Kg				(0-2) 1/30/2019 mg/Kg				(0-2) 1/30/2019 mg/Kg				(0-2) 1/30/2019 mg/Kg			
				Result	RL	Qual	MDL	Result	RL	Qual	MDL	Result	RL	Qual	MDL	Result	RL	Qual	MDL	Result	RL	Qual	MDL	Result	RL	Qual	MDL
Aluminum				12,000			7.3	8,520			6.9	17,800			6.8	9,210			7.6	6,590			7.3	5,940			7.4
Antimony				< 3.7	3.7	U	3.7	< 3.4	3.4	U	3.4	< 3.4	3.4	U	3.4	< 3.8	3.8	U	3.8	< 3.6	3.6	U	3.6	20.5	3.7		3.7
Arsenic	13	16	16	3.72	0.73		0.73	< 0.69	0.69	U	0.69	1.61	0.68		0.68	3.3	0.76		0.76	10.9	0.73		0.73	6.94	0.74		0.74
Barium	350	350	400	79.6	0.7		0.37	74	0.7		0.34	140	0.7		0.34	82.8	0.8		0.38	59.1	0.7		0.36	212	0.7		0.37
Beryllium	7.2	14	590	0.51	0.29		0.15	0.38	0.28		0.14	0.56	0.27		0.14	0.36	0.31		0.15	0.26	0.29	J	0.15	0.24	0.30	J	0.15
Cadmium	2.5	2.5	9.3	0.87	0.37		0.37	0.63	0.34		0.34	1.28	0.34		0.34	0.58	0.38		0.38	0.39	0.36		0.36	2.29	0.37		0.37
Calcium				29,900	37		34	45,100	34		32	13,800	34		31	29,700	38		35	62,900	36		33	43,500	37		34
Chromium	30	180	1,500	18.3	0.37		0.37	21.8	0.34		0.34	34.9	0.34		0.34	17.2	0.38		0.38	53.6	0.36		0.36	16	0.37		0.37
Cobalt				7.31	0.37		0.37	10.20	0.34		0.34	18	0.34		0.34	7.27	0.38		0.38	5.74	0.36		0.36	7.05	0.37		0.37
Copper	50	270	270	48.4	0.7		0.37	24.10	0.7		0.34	97.1	0.7		0.34	80.7	0.8		0.38	35.8	0.7		0.36	173	7.4		3.7
Iron				21,900	37		37	18,300	34		34	34,000	34		34	14,000	38		38	10,500	36		36	15,000	37		37
Lead	63	400	1,000	74	0.7		0.37	4.3	0.7		0.34	68.3	0.7		0.34	334	7.6		3.8	79.3	0.7		0.36	1,260	7.4		3.7
Magnesium				3,620	3.7		3.7	26,500	34		34	11,900	34		34	5,400	38		38	3,500	3.6		3.6	5,680	37		37
Manganese	1,600	2,000	10,000	590	3.7		3.7	224	3.4		3.4	232	3.4		3.4	299	3.8		3.8	163	3.6		3.6	275	3.7		3.7
Mercury	0.18	0.81	2.8	0.14	0.03		0.02	< 0.03	0.03	U	0.02	0.09	0.03		0.02	0.49	0.03		0.02	0.06	0.03		0.02	0.3	0.07		0.04
Nickel	30	140	310	14.7	0.37		0.37	18.80	0.34		0.34	33.1	0.34		0.34	14	0.38		0.38	26.5	0.36		0.36	28.4	0.37		0.37
Potassium				820	7		2.9	3,570	69		27	10,300	68		26	1,900	8		3.0	2,010	7		2.8	1,170	7		2.9
Selenium	3.9	36	1,500	< 1.5	1.5	U	1.2	< 1.4	1.4	U	1.2	< 1.4	1.4	U	1.2	< 1.5	1.5	U	1.3	< 1.5	1.5	U	1.2	< 1.5	1.5	U	1.3
Silver	2	36	1,500	4.09	0.37		0.37	< 0.34	0.34	U	0.34	< 0.34	0.34	U	0.34	0.59	0.38		0.38	< 0.36	0.36	U	0.36	2.26	0.37		0.37
Sodium				244	7		3.2	203	7		3.0	623	7		2.9	632	8		3.3	693	7		3.1	513	7		3.2
Thallium				< 1.5	1.5	U	1.5	< 1.4	1.4	U	1.4	< 1.4	1.4	U	1.4	< 1.5	1.5	U	1.5	< 1.5	1.5	U	1.5	< 1.5	1.5	U	1.5
Vanadium				21.4	0.37		0.37	26.8	0.34		0.34	70	0.34		0.34	23	0.38		0.38	18.8	0.36		0.36	68	0.37		0.37
Zinc	109	2,200	10,000	117	0.7		0.37	49.8	0.7		0.34	281	0.7		0.34	192	7.6		3.8	105	0.7		0.36	330	7.4		3.7

Notes:

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

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

TABLE 6
310-336 Grand Concourse
Bronx, 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*	NYDEC Part 375.6 Restricted Commercial Soil Cleanup Objectives*	B4				B5				B5D								B6			
				(0-2) 1/30/2019 mg/Kg				(0-2) 2/1/2019 mg/Kg				(3-5) 1/15/2020 mg/Kg				(10-12) 1/15/2020 mg/Kg				(0-2) 2/1/2019 mg/Kg			
				Result	RL	Qual	MDL	Result	RL	Qual	MDL	Result	RL	Qual	MDL	Result	RL	Qual	MDL	Result	RL	Qual	MDL
Aluminum				4,740	36		7.2	7,280	41		8.3	11,900	38		7.6	10,400	33		8.6	10,000	42		8.3
Antimony				< 3.6	3.6	U	3.6	63.4	4.1		4.1	< 3.8	3.8	U	3.8	< 3.3	3.3	U	3.3	13.5	4.2		4.2
Arsenic	13	16	16	3.72	0.72		0.72	14.4	0.83		0.83	4.87	0.76		0.76	1.18	0.66		0.66	14.1	0.83		0.83
Barium	350	350	400	81.3	0.7		0.36	2,730	8.3		4.1	107	0.8	N	0.38	52.5	0.7	N	0.33	485	0.8		0.42
Beryllium	7.2	14	590	0.21	0.29	J	0.14	0.42	0.33		0.17	0.52	0.30		0.15	0.5	0.26		0.13	0.85	0.33		0.17
Cadmium	2.5	2.5	9.3	< 0.36	0.36	U	0.36	26	0.41		0.41	0.72	0.38		0.38	0.68	0.33		0.33	4.9	0.42		0.42
Calcium				49,400	36		33	18,900	41		38	4,120	3.8		3.5	18,700	33		30	21,700	42		38
Chromium	30	180	1,500	9.88	0.36		0.36	49.6	0.41		0.41	17.5	0.38		0.38	26.3	0.33		0.33	42	0.42		0.42
Cobalt				4.37	0.36		0.36	9.62	0.41		0.41	8.12	0.38		0.38	10.2	0.33		0.33	12.9	0.42		0.42
Copper	50	270	270	26.9	0.7		0.36	873	8.3		4.1	23.3	0.8	*	0.38	21.6	0.7	*	0.33	234	8.3		4.2
Iron				8,300	36		36	39,200	41		41	17,900	38		38	21,500	33		33	29,200	42		42
Lead	63	400	1,000	21.3	0.7		0.36	4,210	83		41	188	0.8	N	0.38	7.3	0.7	N	0.33	2,610	83		42
Magnesium				2,350	3.6		3.6	4,020	4.1		4.1	4,320	3.8	*	3.8	15,100	33	*	33	7,520	42		42
Manganese	1,600	2,000	10,000	114	0.36		0.36	400	4.1		4.1	354	3.8		3.8	406	3.3	N, *	3.3	350	4.2		4.2
Mercury	0.18	0.81	2.8	0.02	0.03	J	0.02	1.08	0.07		0.04	0.66	0.03		0.02	< 0.03	0.03	U	0.02	1.5	0.07		0.04
Nickel	30	140	310	9.21	0.36		0.36	66.4	0.41		0.41	14.4	0.38	*	0.38	19.3	0.33	*	0.33	52.7	0.42		0.42
Potassium				812	7		2.8	1,250	8		3.2	638	8		3.0	2,680	7		2.6	1,400	8		3.2
Selenium	3.9	36	1,500	< 1.4	1.4	U	1.2	< 1.7	1.7	U	1.4	< 1.5	1.5	U	1.3	< 1.3	1.3	U	1.1	< 1.7	1.7	U	1.4
Silver	2	36	1,500	0.64	0.36		0.36	3.62	0.41		0.41	< 0.38	0.38	U	0.38	< 0.33	0.33	U	0.33	1.52	0.42		0.42
Sodium				328	7		3.1	907	8		3.5	159	8	N	3.3	158	7	N	2.8	319	8		3.6
Thallium				< 1.4	1.4	U	1.4	< 1.7	1.7	U	1.7	< 1.5	1.5	U	1.5	< 1.3	1.3	U	1.3	< 1.7	1.7	U	1.7
Vanadium				18.7	0.36		0.36	29.8	0.41		0.41	24	0.38		0.38	31.3	0.33		0.33	59.2	0.42		0.42
Zinc	109	2,200	10,000	46.1	0.7		0.36	7,650	83		41	98	0.8		0.38	61.8	0.7		0.33	1,320	8.3		4.2

Notes:

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

TABLE 6
310-336 Grand Concourse
Bronx, 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*	NYDEC Part 375.6 Restricted Commercial Soil Cleanup Objectives*	B6D								Duplicate				Duplicate			
				(1-3) 1/15/2020 mg/Kg				(6-8) 1/15/2020 mg/Kg				6/25/2018 mg/Kg				1/15/2020 mg/Kg			
				Result	RL	Qual	MDL	Result	RL	Qual	MDL	Result	RL	Qual	MDL	Result	RL	Qual	MDL
Aluminum				10,800	36		7.1	7,540	33		6.5	12,300	34		6.8	12,900	36		7.1
Antimony				7.2	3.6		3.6	< 3.3	3.3	U	3.3	< 3.4	3.4	U	1.7	< 3.6	3.6	U	3.6
Arsenic	13	16	16	7.65	0.71		0.71	0.69	0.65		0.65	0.89	0.68		0.68	6.73	0.71		0.71
Barium	350	350	400	283	0.7		0.36	47	0.7		0.33	10.5	0.7		0.34	180	0.7		0.36
Beryllium	7.2	14	590	0.54	0.28		0.14	0.39	0.26		0.13	0.73	0.27		0.14	0.68	0.28		0.14
Cadmium	2.5	2.5	9.3	1.69	0.36		0.36	0.56	0.33		0.33	< 0.34	0.34	U	0.34	1.56	0.36		0.36
Calcium				58,300	36		33	34,000	33		30	173,000	340		310	57,000	36		33
Chromium	30	180	1,500	25.3	0.36		0.36	18.3	0.33		0.33	12.9	0.34		0.34	22.7	0.36		0.36
Cobalt				7.59	0.36		0.36	7.85	0.33		0.33	5.16	0.34		0.34	8.63	0.36		0.36
Copper	50	270	270	72.1	0.7		0.36	20.6	0.7		0.33	12.6	0.34		0.34	57.3	0.7		0.36
Iron				21,300	36		36	15,200	33		33	11,400	34	*	34	22,000	36		36
Lead	63	400	1,000	874	7.1		3.6	4.4	0.7		0.33	4.1	0.7	*	0.34	431	0.7		0.36
Magnesium				14,000	36		36	4,640	3.3		3.3	18,100	34		34	14,000	36		36
Manganese	1,600	2,000	10,000	343	3.6		3.6	313	3.3		3.3	214	3.4	N	3.4	345	3.6		3.6
Mercury	0.18	0.81	2.8	0.46	0.07		0.04	0.08	0.03		0.02	< 0.03	0.03	UN	0.02	0.49	0.06		0.04
Nickel	30	140	310	20.3	0.36		0.36	13.9	0.33		0.33	9.74	0.34		0.34	22.7	0.36		0.36
Potassium				1,820	7		2.8	1,890	7		2.6	1,280	7	N	2.6	2,010	7		2.8
Selenium	3.9	36	1,500	< 1.4	1.4	U	1.2	< 1.3	1.3	U	1.1	< 1.4	1.4	U	1.1	< 1.4	1.4	U	1.2
Silver	2	36	1,500	< 0.36	0.36	U	0.36	< 0.33	0.33	U	0.33	< 0.34	0.34	U	0.34	< 0.36	0.36	U	0.36
Sodium				436	7		3.1	191	7		2.8	790	7		2.9	716	7		3.1
Thallium				< 1.4	1.4	U	1.4	< 1.3	1.3	U	1.3	< 1.4	1.4	U	1.4	< 1.4	1.4	U	1.4
Vanadium				31.9	0.36		0.36	27.3	0.33		0.33	15.1	0.34		0.34	35.8	0.36		0.36
Zinc	109	2,200	10,000	361	0.7		0.36	37.7	0.7		0.33	22.1	0.7		0.34	254	0.7		0.36

Notes:

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Table 7
310-336 Grand Concourse, Bronx, New York
Soil Analytical Results
Emerging Contaminants

Compound	B5				B6				SB7A				SB7				SB8A				SB8A				SB9				Soil Duplicate			
	(8-10')				(5-7')				(2-4')				(10-12')				(1-3')				(5-7')				(1-3')				Duplicate			
	2/3/2020				2/3/2020				2/3/2020				1/15/2020				2/3/2020				2/3/2020				1/15/2020				2/3/2020			
	µg/Kg				µg/Kg				µg/Kg				µg/Kg				µg/Kg				µg/Kg				µg/Kg				µg/Kg			
	Result	Q	RL	MDL	Result	Q	RL	MDL	Result	Q	RL	MDL	Result	Q	RL	MDL	Result	Q	RL	MDL	Result	Q	RL	MDL	Result	Q	RL	MDL	Result	Q	RL	MDL
Perfluorobutanoic Acid (PFBA)	ND		1.07	0.024	ND		1.01	0.023	ND		0.967	0.022	ND		1.03	0.023	ND		1.01	0.023	ND		0.996	0.023	ND		1.0	0.023	ND		1.02	0.023
Perfluoropentanoic Acid (PFPeA)	ND		1.07	0.049	ND		1.01	0.046	ND		0.967	0.045	ND		1.03	0.047	0.048	J	1.01	0.046	0.061	J	0.996	0.046	ND		1.0	0.046	0.054	J	1.02	0.047
Perfluorobutanesulfonic Acid (PFBS)	ND		1.07	0.042	ND		1.01	0.039	ND		0.967	0.038	ND		1.03	0.04	ND		1.01	0.039	ND		0.996	0.039	ND		1.0	0.039	ND		1.02	0.04
Perfluoroheptanoic Acid (PFHxA)	ND		1.07	0.056	ND		1.01	0.053	0.052	J	0.967	0.051	ND		1.03	0.054	0.078	J	1.01	0.053	0.07	J	0.996	0.052	ND		1.0	0.053	0.066	J	1.02	0.054
Perfluoroheptanoic Acid (PFHpA)	ND		1.07	0.048	ND		1.01	0.045	ND		0.967	0.044	ND		1.03	0.047	ND		1.01	0.045	ND		0.996	0.045	ND		1.0	0.045	ND		1.02	0.046
Perfluorohexanesulfonic Acid (PFHxS)	ND		1.07	0.065	ND		1.01	0.061	ND		0.967	0.059	ND		1.03	0.062	ND		1.01	0.061	ND		0.996	0.06	ND		1.0	0.061	ND		1.02	0.062
Perfluorooctanoic Acid (PFOA)	ND		1.07	0.045	ND		1.01	0.042	0.22	J	0.967	0.041	0.062	J	1.03	0.043	0.152	J	1.01	0.042	0.143	J	0.996	0.042	ND		1.0	0.042	0.152	J	1.02	0.043
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	ND		1.07	0.192	ND		1.01	0.181	ND		0.967	0.174	ND		1.03	0.185	ND		1.01	0.181	ND		0.996	0.179	ND		1.0	0.18	ND		1.02	0.183
Perfluorooheptanesulfonic Acid (PFHpS)	ND		1.07	0.146	ND		1.01	0.137	ND		0.967	0.132	ND		1.03	0.141	ND		1.01	0.137	ND		0.996	0.136	ND		1.0	0.137	ND		1.02	0.139
Perfluorononanoic Acid (PFNA)	ND		1.07	0.08	ND		1.01	0.076	ND		0.967	0.073	ND		1.03	0.077	ND		1.01	0.076	ND		0.996	0.075	ND		1.0	0.075	ND		1.02	0.076
Perfluorooctanesulfonic Acid (PFOS)	ND		1.07	0.139	ND		1.01	0.131	0.59	J	0.967	0.126	ND		1.03	0.134	0.842	J	1.01	0.131	ND		0.996	0.13	0.414	J	1.0	0.131	0.246	J	1.02	0.132
Perfluorodecanoic Acid (PFDA)	ND		1.07	0.072	ND		1.01	0.067	ND		0.967	0.065	ND		1.03	0.069	ND		1.01	0.068	ND		0.996	0.067	ND		1.0	0.067	ND		1.02	0.068
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		1.07	0.307	ND		1.01	0.289	ND		0.967	0.278	ND		1.03	0.296	ND		1.01	0.289	ND		0.996	0.286	ND		1.0	0.288	ND		1.02	0.292
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		1.07	0.215	ND		1.01	0.203	ND		0.967	0.195	ND		1.03	0.208	ND		1.01	0.203	ND		0.996	0.201	ND		1.0	0.203	ND		1.02	0.205
Perfluoroundecanoic Acid (PFUnA)	ND		1.07	0.05	ND		1.01	0.047	ND		0.967	0.045	ND		1.03	0.048	ND		1.01	0.047	ND		0.996	0.047	ND		1.0	0.047	ND		1.02	0.048
Perfluorodecanesulfonic Acid (PFDS)	ND		1.07	0.163	ND		1.01	0.154	ND		0.967	0.148	ND		1.03	0.158	ND		1.01	0.154	ND		0.996	0.152	ND		1.0	0.154	ND		1.02	0.156
Perfluorooctanesulfonamide (FOSA)	ND		1.07	0.105	ND		1.01	0.099	ND		0.967	0.095	ND		1.03	0.101	ND		1.01	0.099	ND		0.996	0.098	ND		1.0	0.099	ND		1.02	0.1
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEFOSAA)	ND		1.07	0.09	ND		1.01	0.085	ND		0.967	0.082	ND		1.03	0.087	ND		1.01	0.085	ND		0.996	0.084	ND		1.0	0.085	0.098	J	1.02	0.086
Perfluorodecanoic Acid (PFDoA)	ND		1.07	0.075	ND		1.01	0.07	ND		0.967	0.068	ND		1.03	0.072	ND		1.01	0.071	ND		0.996	0.07	ND		1.0	0.07	ND		1.02	0.071
Perfluorotridecanoic Acid (PFTDA)	ND		1.07	0.218	ND		1.01	0.206	ND		0.967	0.198	ND		1.03	0.211	ND		1.01	0.206	ND		0.996	0.204	ND		1.0	0.206	ND		1.02	0.208
Perfluorotetradecanoic Acid (PFTA)	ND		1.07	0.058	ND		1.01	0.054	ND		0.967	0.052	ND		1.03	0.056	ND		1.01	0.054	ND		0.996	0.054	ND		1.0	0.054	ND		1.02	0.055
Combined PFOA and PFOS	ND				ND				0.810J				0.062J				0.994J				0.143J				0.414J				0.398J			
Combined Total Detections	ND				ND				0.862J				0.062J				1.12J				0.274J				0.414J				0.616J			

Compound	B5D				B6D				SB7				SB7				SB8				SB8				SB9				Soil Duplicate			
	(10-12')				(6-8')				(2-4')				(10-12')				(1-3')				(5-7')				(1-3')				Duplicate			
	1/15/2020				1/15/2020				1/15/2020				1/15/2020				1/15/2020				1/15/2020				1/15/2020				1/15/2020			
	Result	Q	RL	MDL	Result	Q	RL	MDL	Result	Q	RL	MDL	Result	Q	RL	MDL	Result	Q	RL	MDL	Result	Q	RL	MDL	Result	Q	RL	MDL	Result	Q	RL	MDL
1,4-Dioxane	<70	U	70	70	<72	U	72	72	<76	U	76	76	<74	U	74	74	<81	U	81	81	<72	U	72	72	<73	U	73	73	<74	U	74	74

Notes:

RL - Reporting Limit

MDL - Method Detection Limit

Q - Qualifier

J - Estimated value - The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

U - The compound was analyzed for but not detected at or above the MDL.

ND - Not Detected

The USEPA Health Advisory Level for drinking water is 70 ng/L (ppt) for combined detections of PFOA and PFOs

Table 8
310 Grand Concourse
310-336 Grand Concourse, Bronx, NY
Parameters Detected Above Track 1 Soil Cleanup Objectives

COMPOUND	Range in Exceedances	Frequency of Detection	SB1	SB2		SB3	SB4	SB6	SB7	SB8	SB9	B1	B2	B3	B4	B5	B5D	B6	B6D
			6/22/2018	6/22/2018		6/22/2018	6/22/2018	6/25/2018	1/15/2020	1/15/2020	1/15/2020	1/30/2019	1/30/2019	1/30/2019	1/30/2019	2/1/2019	1/15/2020	2/1/2019	1/15/2020
			(12-14)	(0-2)	(12-14)	(0-2)	(0-2)	(0-2)	(2-4)	(1-3)	(0-3)	(0-2)	(0-2)	(0-2)	(0-2)	(0-2)	(3-5)	(0-2)	(1-3)
Sample Results in ug/kg																			
1,2,4-Trimethylbenzene	35,000	1	35,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,3,5-Trimethylbenzene	8,700	1	8,700	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Acetone	120-180	3	-	-	-	-	-	-	-	-	-	180	120	140	-	-	-	-	-
Ethylbenzene	11,000	1	11,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
m&p-Xylenes	170-15000	2	15,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	170	-
n-Propylbenzene	11,000	1	11,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
o-Xylene	4,000	1	4,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sample Results in ug/kg																			
Benzo(a)anthracene	1100-2100	3	-	-	-	-	1,500	-	-	-	1,100	-	-	-	-	-	-	-	2,100
Benzo(a)pyrene	1100-2000	3	-	-	-	-	1,300	-	-	-	1,100	-	-	-	-	-	-	-	2,000
Benzo(b)fluoranthene	1200-1600	3	-	-	-	-	1,300	-	-	-	1,200	-	-	-	-	-	-	-	1,600
Benzo(k)fluoranthene	920-1500	3	-	-	-	-	1,000	-	-	-	920	-	-	-	-	-	-	-	1,500
Chrysene	1400-2100	3	-	-	-	-	1,400	-	-	-	1,400	-	-	-	-	-	-	-	2,100
Indeno(1,2,3-cd)pyrene	590-1100	4	-	-	-	-	920	-	-	-	890	-	-	-	-	-	-	590	1,100
Sample Results in mg/kg																			
4,4'-DDD	4.2-23	2	-	-	-	-	-	-	-	-	-	-	-	23	4.2	-	-	-	-
4,4'-DDE	14-18	2	-	-	-	-	-	-	-	-	-	-	-	18	14	-	-	-	-
4,4'-DDT	10-51	2	-	-	-	-	-	-	-	-	-	-	-	51	-	-	-	10	-
Sample Results in mg/kg																			
PCB-1260	180-340	3	-	180	-	-	-	-	-	-	-	-	-	-	-	260	-	340	-
Sample Results in mg/kg																			
Arsenic	14.1-17.7	3	-	17.7	-	-	-	-	-	-	-	-	-	-	-	14.4	-	14.1	-
Barium	485-2730	2	-	-	-	-	-	-	-	-	-	-	-	-	-	2,730	-	485	-
Cadmium	2.52-26	3	-	2.52	-	-	-	-	-	-	-	-	-	-	-	26.00	-	4.90	-
Chromium	34.9-119	6	-	119	50	-	-	-	-	-	34.9	-	53.6	-	-	49.6	-	42	-
Copper	72.1-873	9	-	133	-	-	83.5	-	81	-	97.1	80.7	-	173	-	873.0	-	234	72.1
Lead	68.3-4210	14	-	315	-	136	424	130	161	74	68.3	334	79	1260	-	4210	188	2,610	874
Mercury	0.19-3.38	11	-	0.82	-	3.38	0.33	0.24	0.19	-	-	0.49	-	0.30	-	1.08	0.66	1.50	0.49
Nickel	2.26-66.4	6	-	39.8	-	55.5	-	-	-	-	33.1	-	-	2.26	-	66.40	-	52.70	-
Silver	2.74-330	4	-	-	-	-	-	-	2.74	4.09	-	-	-	330	-	3.62	-	-	-
Zinc	117-7650	11	-	252	-	132	343	122	140	117	281	192	-	-	-	7650	-	1,320	254

Notes:

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

Table 9
310-336 Grand Concourse
Bronx, New York
Ground Water Analytical Results
Volatile Organic Compounds

Compound	NYSDEC Groundwater Quality Standards µg/L	MW1 6/28/2018 µg/L				MW3 6/28/2018 µg/L			
		Results	RL	Qual	MDL	Results	RL	Qual	MDL
1,1,1,2-Tetrachloroethane	5	< 2.0	2.0	U	0.50	< 1.0	1.0	U	0.25
1,1,1-Trichloroethane	5	< 5.0	5.0	U	0.50	< 5.0	5.0	U	0.25
1,1,2,2-Tetrachloroethane	5	< 2.0	2.0	U	0.50	< 1.0	1.0	U	0.25
1,1,2-Trichloroethane	1	< 1.0	1.0	U	0.50	< 1.0	1.0	U	0.25
1,1-Dichloroethane	5	< 5.0	5.0	U	0.50	< 5.0	5.0	U	0.25
1,1-Dichloroethene	5	< 2.0	2.0	U	0.50	< 1.0	1.0	U	0.25
1,1-Dichloropropene		< 2.0	2.0	U	0.50	< 1.0	1.0	U	0.25
1,2,3-Trichlorobenzene		< 2.0	2.0	U	0.50	< 1.0	1.0	U	0.25
1,2,3-Trichloropropane	0.04	< 0.50	0.50	U	0.50	< 0.25	0.25	U	0.25
1,2,4-Trichlorobenzene		< 2.0	2.0	U	0.50	< 1.0	1.0	U	0.25
1,2,4-Trimethylbenzene	5	41	2.0		0.50	< 1.0	1.0	U	0.25
1,2-Dibromo-3-chloropropane	0.04	< 1.0	1.0	U	1.0	< 0.50	0.50	U	0.50
1,2-Dibromoethane		< 0.50	0.50	U	0.50	< 0.25	0.25	U	0.25
1,2-Dichlorobenzene	5	< 2.0	2.0	U	0.50	< 1.0	1.0	U	0.25
1,2-Dichloroethane	0.6	< 0.60	0.60	U	0.60	< 0.60	0.60	U	0.50
1,2-Dichloropropane	0.94	< 1.0	1.0	U	0.50	< 1.0	1.0	U	0.25
1,3,5-Trimethylbenzene	5	3.4	2.0		0.50	< 1.0	1.0	U	0.25
1,3-Dichlorobenzene		< 2.0	2.0	U	0.50	< 1.0	1.0	U	0.25
1,3-Dichloropropane	5	< 2.0	2.0	U	0.50	< 1.0	1.0	U	0.25
1,4-Dichlorobenzene	5	< 2.0	2.0	U	0.50	< 1.0	1.0	U	0.25
2,2-Dichloropropane	5	< 2.0	2.0	U	0.50	< 1.0	1.0	U	0.25
2-Chlorotoluene	5	< 2.0	2.0	U	0.50	< 1.0	1.0	U	0.25
2-Hexanone (Methyl Butyl Ketone)		< 5.0	5.0	U	5.0	< 2.5	2.5	U	2.5
2-Isopropyltoluene	5	0.94	2.0	J	0.50	< 1.0	1.0	U	0.25
4-Chlorotoluene	5	< 2.0	2.0	U	0.50	< 1.0	1.0	U	0.25
4-Methyl-2-Pentanone		< 5.0	5.0	U	5.0	< 2.5	2.5	U	2.5
Acetone	50	< 10	10	U	5.0	3.6	5.0	JS	2.5
Acrolein		< 5.0	5.0	U	5.0	< 5.0	5.0	U	2.5
Acrylonitrile	5	< 5.0	5.0	U	0.50	< 5.0	5.0	U	0.25
Benzene	1	0.74	0.70		0.50	0.29	0.70	J	0.25
Bromobenzene	5	< 2.0	2.0	U	0.50	< 1.0	1.0	U	0.25
Bromochloromethane	5	< 2.0	2.0	U	0.50	< 1.0	1.0	U	0.25
Bromodichloromethane		< 2.0	2.0	U	0.50	< 1.0	1.0	U	0.25
Bromoform		< 10	10	U	0.50	< 5.0	5.0	U	0.25
Bromomethane	5	< 5.0	5.0	U	0.50	< 5.0	5.0	U	0.25
Carbon Disulfide	60	< 2.0	2.0	U	0.50	< 1.0	1.0	U	0.25
Carbon tetrachloride	5	< 2.0	2.0	U	0.50	< 1.0	1.0	U	0.25
Chlorobenzene	5	< 5.0	5.0	U	0.50	< 5.0	5.0	U	0.25
Chloroethane	5	< 5.0	5.0	U	0.50	< 5.0	5.0	U	0.25
Chloroform	7	< 7.0	7.0	U	0.50	< 5.0	5.0	U	0.25
Chloromethane	60	< 5.0	5.0	U	0.50	< 5.0	5.0	U	0.25
cis-1,2-Dichloroethene	5	< 2.0	2.0	U	0.50	< 1.0	1.0	U	0.25
cis-1,3-Dichloropropene		< 0.40	0.40	U	0.40	< 0.40	0.40	U	0.25
Dibromochloromethane		< 2.0	2.0	U	0.50	< 1.0	1.0	U	0.25
Dibromomethane	5	< 2.0	2.0	U	0.50	< 1.0	1.0	U	0.25
Dichlorodifluoromethane	5	< 2.0	2.0	U	0.50	< 1.0	1.0	U	0.25
Ethylbenzene	5	130	5.0	D	5.0	< 1.0	1.0	U	0.25
Hexachlorobutadiene	0.5	< 0.50	0.50	U	0.40	< 0.50	0.50	U	0.20
Isopropylbenzene	5	28	2.0		0.50	< 1.0	1.0	U	0.25
m&p-Xylenes	5	120	2.0		0.50	< 1.0	1.0	U	0.25
Methyl Ethyl Ketone (2-Butanone)	50	< 5.0	5.0	U	5.0	< 2.5	2.5	U	2.5
Methyl t-butyl ether (MTBE)	10	< 2.0	2.0	U	0.50	< 1.0	1.0	U	0.25
Methylene chloride	5	< 5.0	5.0	U	2.0	< 3.0	3.0	U	1.0
Naphthalene	10	17	2.0		2.0	< 1.0	1.0	U	1.0
n-Butylbenzene	5	1.1	2.0	J	0.50	< 1.0	1.0	U	0.25
n-Propylbenzene	5	23	2.0		0.50	< 1.0	1.0	U	0.25
o-Xylene	5	18	2.0		0.50	< 1.0	1.0	U	0.25
p-Isopropyltoluene		0.6	2.0	J	0.50	< 1.0	1.0	U	0.25
sec-Butylbenzene	5	2.8	2.0		0.50	< 1.0	1.0	U	0.25
Styrene	5	< 2.0	2.0	U	0.50	< 1.0	1.0	U	0.25
tert-Butylbenzene	5	< 2.0	2.0	U	0.50	< 1.0	1.0	U	0.25
Tetrachloroethene	5	< 2.0	2.0	U	0.50	< 1.0	1.0	U	0.25
Tetrahydrofuran (THF)		< 10	10	U	5.0	< 5.0	5.0	U	2.5
Toluene	5	19	2.0		0.50	< 1.0	1.0	U	0.25
trans-1,2-Dichloroethene	5	< 5.0	5.0	U	0.50	< 5.0	5.0	U	0.25
trans-1,3-Dichloropropene	0.4	< 0.40	0.40	U	0.40	< 0.40	0.40	U	0.25
trans-1,4-dichloro-2-butene	5	< 5.0	5.0	U	5.0	< 2.5	2.5	U	2.5
Trichloroethene	5	< 2.0	2.0	U	0.50	< 1.0	1.0	U	0.25
Trichlorofluoromethane	5	< 2.0	2.0	U	0.50	< 1.0	1.0	U	0.25
Trichlorotrifluoroethane		< 2.0	2.0	U	0.50	< 1.0	1.0	U	0.25
Vinyl Chloride	2	< 2.0	2.0	U	0.50	< 1.0	1.0	U	0.25
Tert-butyl alcohol		< 100	100	U	20	< 50	50	U	10

Notes:

RL- Reporting Limit

MDL - Method Detection Limit

Q - Qualifier

J - Estimated value - The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

U - The compound was analyzed for but not detected at or above the MDL.

Bold/highlighted- Indicated exceedance of the NYSDEC Groundwater Standard

TABLE 10
310-336 Grand Concourse
Bronx, New York
Groundwater Analytical Results
Semi-Volatile Organic Compounds

Compound	NYSDEC Groundwater Quality Standards µg/L	MW1 6/28/2018 µg/L				MW3 6/28/2018 µg/L			
		Results	RL	Qual	MDL	Results	RL	Qual	MDL
1,2,4-Trichlorobenzene		< 5.9	5.9	U	1.8	< 5.1	5.1	U	1.5
1,2-Dichlorobenzene		< 1.2	1.2	U	1.2	< 1.0	1.0	U	1.0
1,2-Diphenylhydrazine		< 5.9	5.9	U	1.9	< 5.1	5.1	U	1.6
1,3-Dichlorobenzene	3	< 1.2	1.2	U	1.2	< 1.0	1.0	U	1.0
1,4-Dichlorobenzene		< 1.2	1.2	U	1.2	< 1.0	1.0	U	1.0
2,4,5-Trichlorophenol	1	< 1.0	1.0	U	1.0	< 1.0	1.0	U	1.0
2,4,6-Trichlorophenol	1	< 1.0	1.0	U	1.0	< 1.0	1.0	U	1.0
2,4-Dichlorophenol	5	< 1.0	1.0	U	1.0	< 1.0	1.0	U	1.0
2,4-Dimethylphenol	2	1.2	1.2		1.2	< 1.0	1.0	U	1.0
2,4-Dinitrophenol	5	< 1.0	1.0	U	1.0	< 1.0	1.0	U	1.0
2,4-Dinitrotoluene	5	< 5.0	5.0	U	2.3	< 5.0	5.0	U	2.0
2,6-Dinitrotoluene	5	< 5.0	5.0	U	1.9	< 5.0	5.0	U	1.6
2-Chloronaphthalene	10	< 5.9	5.9	U	1.7	< 5.1	5.1	U	1.4
2-Chlorophenol	1	< 1.0	1.0	U	1.0	< 1.0	1.0	U	1.0
2-Methylnaphthalene		< 5.9	5.9	U	1.8	< 5.1	5.1	U	1.5
2-Methylphenol (o-cresol)	1	< 1.0	1.0	U	1.0	< 1.0	1.0	U	1.0
2-Nitroaniline	5	< 5.0	5.0	U	2.4	< 5.0	5.0	U	2.0
2-Nitrophenol	1	< 1.0	1.0	U	1.0	< 1.0	1.0	U	1.0
3&4-Methylphenol (m&p-cresol)		< 1.2	1.2	U	1.2	< 1.0	1.0	U	1.0
3,3'-Dichlorobenzidine	5	< 5.0	5.0	U	2.6	< 5.0	5.0	U	2.4
3-Nitroaniline	5	< 5.0	5.0	U	2.4	< 5.0	5.0	U	2.0
4,6-Dinitro-2-methylphenol	1	< 1.0	1.0	U	1.0	< 1.0	1.0	U	1.0
4-Bromophenyl phenyl ether		< 5.9	5.9	U	1.7	< 5.1	5.1	U	1.5
4-Chloro-3-methylphenol	1	< 1.0	1.0	U	1.0	< 1.0	1.0	U	1.0
4-Chloroaniline	5	< 4.1	4.1	U	2.7	< 3.5	3.5	U	2.4
4-Chlorophenyl phenyl ether		< 5.9	5.9	U	2.0	< 5.1	5.1	U	1.7
4-Nitroaniline	5	< 5.0	5.0	U	2.0	< 5.0	5.0	U	1.7
4-Nitrophenol	1	< 1.0	1.0	U	1.0	< 1.0	1.0	U	1.0
Acenaphthene	20	< 5.9	5.9	U	1.8	< 5.1	5.1	U	1.5
Acetophenone		< 5.9	5.9	U	1.8	< 5.1	5.1	U	1.6
Aniline	5	< 4.1	4.1	U	5.9	< 3.5	3.5	U	5.1
Anthracene	50	< 5.9	5.9	U	1.9	< 5.1	5.1	U	1.7
Benzidine	5	< 5.0	5.0	U	3.5	< 4.5	4.5	U	3.0
Benzoic acid		< 30	30	U	12	< 25	25	U	10
Benzyl butyl phthalate	50	< 5.9	5.9	U	1.5	< 5.1	5.1	U	1.3
Bis(2-chloroethoxy)methane	5	< 5.0	5.0	U	1.6	< 5.0	5.0	U	1.4
Bis(2-chloroethyl)ether	1	< 1.0	1.0	U	1.0	< 1.0	1.0	U	1.0
Bis(2-chloroisopropyl)ether		< 5.9	5.9	U	1.6	< 5.1	5.1	U	1.4
Carbazole		< 5.9	5.9	U	4.5	< 5.1	5.1	U	3.8
Dibenzofuran		< 5.0	5.0	U	1.7	< 5.0	5.0	U	1.5
Diethyl phthalate	50	< 5.9	5.9	U	1.9	< 5.1	5.1	U	1.6
Dimethylphthalate	50	< 5.9	5.9	U	1.8	< 5.1	5.1	U	1.6
Di-n-butylphthalate	50	< 5.9	5.9	U	1.6	< 5.1	5.1	U	1.3
Di-n-octylphthalate	50	< 5.9	5.9	U	1.5	< 5.1	5.1	U	1.3
Fluoranthene	50	< 5.9	5.9	U	1.9	< 5.1	5.1	U	1.6
Fluorene	50	< 5.9	5.9	U	1.9	< 5.1	5.1	U	1.7
Hexachlorocyclopentadiene	0.5	< 5.0	5.0	U	1.8	< 5.0	5.0	U	1.5
Isophorone	5	< 5.9	5.9	U	1.7	< 5.1	5.1	U	1.4
Naphthalene	50	5.9	5.0		1.7	< 5.0	5.0	U	1.5
N-Nitrosodi-n-propylamine	10	< 5.9	5.9	U	1.9	< 5.1	5.1	U	1.6
N-Nitrosodiphenylamine	0.4	< 5.9	5.9	U	2.3	< 5.1	5.1	U	1.9
Phenol	1	< 1.0	1.0	U	1.0	< 1.0	1.0	U	1.0
Pyrene	50	< 5.9	5.9	U	2.0	< 5.1	5.1	U	1.7
Pyridine	50	< 12	12	U	1.5	< 10	10	U	1.2
1,2,4,5-Tetrachlorobenzene		< 0.59	0.59	U	0.59	< 0.51	0.51	U	0.51
Acenaphthylene		< 0.12	0.12	U	0.12	< 0.10	0.10	U	0.10
Benz(a)anthracene	0.002	< 0.02	0.02	U	0.02	< 0.02	0.02	U	0.02
Benzo(a)pyrene		< 0.02	0.02	U	0.02	< 0.02	0.02	U	0.02
Benzo(b)fluoranthene	0.002	< 0.02	0.02	U	0.02	< 0.02	0.02	U	0.02
Benzo(ghi)perylene		< 0.02	0.02	U	0.02	< 0.02	0.02	U	0.02
Benzo(k)fluoranthene	0.002	< 0.02	0.02	U	0.02	< 0.02	0.02	U	0.02
Bis(2-ethylhexyl)phthalate	5	< 1.2	1.2	U	1.2	< 1.0	1.0	U	1.0
Chrysene	0.002	< 0.02	0.02	U	0.02	< 0.02	0.02	U	0.02
Dibenz(a,h)anthracene		< 0.02	0.02	U	0.02	< 0.02	0.02	U	0.02
Hexachlorobenzene	0.04	< 0.02	0.02	U	0.02	< 0.02	0.02	U	0.02
Hexachlorobutadiene	0.5	< 0.47	0.47	U	0.47	< 0.40	0.40	U	0.40
Hexachloroethane	5	< 0.59	0.59	U	0.59	< 0.51	0.51	U	0.51
Indeno(1,2,3-cd)pyrene	0.002	< 0.02	0.02	U	0.02	< 0.02	0.02	U	0.02
Nitrobenzene	0.4	< 0.12	0.12	U	0.12	< 0.10	0.10	U	0.10
N-Nitrosodimethylamine		< 0.12	0.12	U	0.12	< 0.10	0.10	U	0.10
Pentachloronitrobenzene		< 0.12	0.12	U	0.12	< 0.10	0.10	U	0.10
Pentachlorophenol	1	< 0.12	0.12	U	0.12	< 0.10	0.10	U	0.10
Phenanthrene	50	< 0.12	0.12	U	0.12	< 0.10	0.10	U	0.10

Notes:

RL - Reporting Limit

MDL - Method Detection Limit

Q - Qualifier

J - Estimated value - The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

U - The compound was analyzed for but not detected at or above the MDL.

Bold/highlighted- Indicated exceedance of the NYSDEC Groundwater Standard

TABLE 11
310-336 Grand Concourse
Bronx, New York
Groundwater Analytical Results
Pesticides/PCBs

	Compound	NYSDEC Groundwater Quality Standards µg/L	MW1 6/28/2018 µg/L				MW3 6/28/2018 µg/L			
			Results	RL	Qual	MDL	Results	RL	Qual	MDL
PCBs	PCB-1016	0.09	< 0.054	0.054	U	0.054	< 0.050	0.050	U	0.050
	PCB-1221	0.09	< 0.054	0.054	U	0.054	< 0.050	0.050	U	0.050
	PCB-1232	0.09	< 0.054	0.054	U	0.054	< 0.050	0.050	U	0.050
	PCB-1242	0.09	< 0.054	0.054	U	0.054	< 0.050	0.050	U	0.050
	PCB-1248	0.09	< 0.054	0.054	U	0.054	< 0.050	0.050	U	0.050
	PCB-1254	0.09	< 0.054	0.054	U	0.054	< 0.050	0.050	U	0.050
	PCB-1260	0.09	< 0.054	0.054	U	0.054	< 0.050	0.050	U	0.050
	PCB-1262	0.09	< 0.054	0.054	U	0.054	< 0.050	0.050	U	0.050
	PCB-1268	0.09	< 0.054	0.054	U	0.054	< 0.050	0.050	U	0.050
Pesticides	4,4-DDD	0.3	< 0.005	0.005	U	0.011	< 0.005	0.005	U	0.010
	4,4-DDE	0.2	< 0.005	0.005	U	0.011	< 0.005	0.005	U	0.010
	4,4-DDT	0.11	< 0.005	0.005	U	0.011	< 0.010	0.010	U	0.010
	a-BHC	0.94	< 0.005	0.005	U	0.005	< 0.005	0.005	U	0.005
	a-Chlordane		< 0.011	0.011	U	0.011	< 0.010	0.010	U	0.010
	Alachlor		< 0.081	0.081	U	0.081	< 0.074	0.074	U	0.074
	Aldrin		< 0.002	0.002	U	0.002	< 0.002	0.002	U	0.002
	b-BHC	0.04	< 0.005	0.005	U	0.005	< 0.005	0.005	U	0.005
	Chlordane	0.05	< 0.050	0.050	U	0.050	< 0.050	0.050	U	0.050
	d-BHC	0.04	< 0.005	0.005	U	0.005	< 0.005	0.005	U	0.005
	Dieldrin	0.004	< 0.002	0.002	U	0.002	< 0.002	0.002	U	0.002
	Endosulfan I		< 0.011	0.011	U	0.011	< 0.010	0.010	U	0.010
	Endosulfan II		< 0.011	0.011	U	0.011	< 0.010	0.010	U	0.010
	Endosulfan Sulfate		< 0.011	0.011	U	0.011	< 0.010	0.010	U	0.010
	Endrin		< 0.010	0.010	U	0.010	< 0.010	0.010	U	0.010
	Endrin aldehyde	5	< 0.011	0.011	U	0.011	< 0.010	0.010	U	0.010
	Endrin ketone		< 0.011	0.011	U	0.011	< 0.010	0.010	U	0.010
	gamma-BHC	0.05	< 0.005	0.005	U	0.005	< 0.005	0.005	U	0.005
	g-Chlordane		< 0.011	0.011	U	0.011	< 0.010	0.010	U	0.010
	Heptachlor	0.04	< 0.010	0.010	U	0.010	< 0.010	0.010	U	0.010
	Heptachlor epoxide	0.03	< 0.010	0.010	U	0.010	< 0.010	0.010	U	0.010
	Methoxychlor	35	< 0.11	0.11	U	0.11	< 0.099	0.099	U	0.099
	Toxaphene		< 0.22	0.22	U	0.22	< 0.20	0.20	U	0.20

Notes:

RL- Reporting Limit

MDL - Method Detection Limit

Q - Qualifier

J - Estimated value - The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

U - The compound was analyzed for but not detected at or above the MDL.

Bold/highlighted- Indicated exceedance of the NYSDEC Groundwater Standard

Table 12
310-336 Grand Concourse
Bronx, New York
Groundwater Analytical Results
TAL Metals

Compound	NYSDEC Groundwater Quality Standards mg/L	MW1 6/28/2018 mg/L				MW3 6/28/2018 mg/L			
		Results	RL	Qual	MDL	Results	RL	Qual	MDL
Aluminum	NS	26.1	0.010		0.0024	13.1	0.010		0.0024
Antimony	0.003	< 0.003	0.003	U	0.003	< 0.003	0.003	U	0.003
Arsenic	0.025	0.006	0.004		0.001	0.003	0.004	J	0.001
Barium	1	0.92	0.010		0.001	0.21	0.010		0.001
Beryllium	0.003	0.002	0.001		0.001	< 0.001	0.001	U	0.001
Cadmium	0.005	0.001	0.004	J	0.0005	< 0.004	0.004	U	0.0005
Calcium	NS	336	1.0		0.30	105	0.010		0.003
Chromium	0.05	0.045	0.001		0.001	0.027	0.001		0.001
Cobalt	NS	0.021	0.005		0.001	0.013	0.005		0.001
Copper	0.2	0.091	0.005		0.001	0.035	0.005		0.001
Iron	0.5	69.1	0.01		0.01	19.8	0.01		0.01
Lead	0.025	0.031	0.002		0.001	0.015	0.002		0.001
Magnesium	35	93.3	1.0		1.0	40.8	0.010		0.01
Manganese	0.3	10.1	0.50		0.10	0.947	0.005		0.001
Mercury	0.0007	< 0.0002	0.0002	U	0.00015	< 0.0002	0.0002	U	0.00015
Nickel	0.1	0.047	0.004		0.001	0.025	0.004		0.001
Potassium	NS	19.5	0.1		0.1	10.1	0.1		0.1
Selenium	0.01	< 0.010	0.010	U	0.01	0.016	0.010		0.01
Silver	0.05	< 0.005	0.005	UJ	0.001	< 0.005	0.005	U	0.001
Sodium	2	742	10		10	64.7	1.0		1.0
Thallium	0.0005	< 0.0005	0.0005	U	0.0005	< 0.0005	0.0005	U	0.0005
Vanadium	NS	0.063	0.010		0.001	0.024	0.010		0.001
Zinc	2	0.24	0.010		0.001	0.07	0.010		0.001

Notes:

RL- Reporting Limit

MDL - Method Detection Limit

Qual - Qualifier

J - Estimated value - The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

U - The compound was analyzed for but not detected at or above the MDL.

Bold/highlighted- Indicated exceedance of the NYSDEC Groundwater Standard

NS - No Standard

Table 13
310-336 Grand Concourse
Bronx, New York
Groundwater Analytical Results
TAL Filtered (Dissolved) Metals

Compound	NYSDEC Groundwater Quality Standards mg/L	MW1 6/28/2018 mg/L				MW3 6/28/2018 mg/L			
		Results	RL	Qual	MDL	Results	RL	Qual	MDL
Aluminum	NS	0.024	0.011		0.0026	0.042	0.011		0.0026
Antimony	0.003	< 0.003	0.003	U	0.003	< 0.003	0.003	U	0.003
Arsenic	0.025	0.001	0.003	J	0.001	< 0.003	0.003	U	0.001
Barium	1	0.705	0.011		0.001	0.095	0.011		0.001
Beryllium	0.003	< 0.001	0.001	U	0.001	< 0.001	0.001	U	0.001
Cadmium	0.005	< 0.004	0.004	U	0.0005	< 0.004	0.004	U	0.0005
Calcium	NS	341	1.1		0.32	81.3	0.01		0.003
Chromium	0.05	< 0.001	0.001	U	0.001	0.002	0.001		0.001
Cobalt	NS	0.003	0.005	J	0.001	< 0.005	0.005	U	0.001
Copper	0.2	< 0.005	0.005	U	0.001	< 0.005	0.005	U	0.001
Iron	0.5	2.11	0.01		0.01	< 0.01	0.01	U	0.01
Lead	0.025	0.001	0.002	J	0.001	< 0.002	0.002	U	0.001
Magnesium	35	87	1.1		1.1	23.6	0.01		0.01
Manganese	0.3	9.96	0.53		0.11	0.115	0.005		0.001
Mercury	0.0007	< 0.0002	0.0002	U	0.00015	< 0.0002	0.0002	U	0.00015
Nickel	0.1	0.006	0.004		0.001	< 0.004	0.004	U	0.001
Potassium	NS	9.8	0.1	N	0.1	5.9	0.1	N	0.1
Selenium	0.01	< 0.01	0.01	U	0.01	0.011	0.01	J	0.01
Silver	0.05	< 0.005	0.005	UJ	0.001	< 0.005	0.005	U	0.001
Sodium	2	814	11		11	62.3	1.1		1.1
Thallium	0.0005	< 0.0003	0.0003	U	0.0001	< 0.0003	0.0003	U	0.0001
Vanadium	NS	< 0.011	0.011	U	0.001	< 0.011	0.011	U	0.001
Zinc	2	< 0.011	0.011	U	0.001	< 0.011	0.011	U	0.001

Notes:

RL- Reporting Limit

MDL - Method Detection Limit

Q - Qualifier

J - Estimated value - The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

U - The compound was analyzed for but not detected at or above the MDL.

Bold/highlighted- Indicated exceedance of the NYSDEC Groundwater Standard

NS - No Standard

Table 14
310-336 Grand Concourse
Bronx, New York
Groundwater Analytical Results
Emerging Contaminants

Compound	MW1				MW3			
	2/27/2020				2/27/2020			
	ng/L				ng/L			
	Result	Q	RL	MDL	Result	Q	RL	MDL
Perfluorobutanoic Acid (PFBA)	22.9		1.8	0.367	5.81		1.9	0.388
Perfluoropentanoic Acid (PFPeA)	46.5		1.8	0.356	1.87	J	1.9	0.376
Perfluorobutanesulfonic Acid (PFBS)	8.29		1.8	0.214	ND		1.9	0.226
Perfluorohexanoic Acid (PFHxA)	29.3		1.8	0.295	2.36		1.9	0.312
Perfluoroheptanoic Acid (PFHpA)	16		1.8	0.202	2.19		1.9	0.214
Perfluorohexanesulfonic Acid (PFHxS)	8.25		1.8	0.338	0.54	J	1.9	0.357
Perfluorooctanoic Acid (PFOA)	43.5		1.8	0.212	7.26		1.9	0.224
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	3.78		1.8	1.2	20		1.9	1.27
Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.8	0.619	ND		1.9	0.654
Perfluorononanoic Acid (PFNA)	1.9		1.8	0.28	1.89	J	1.9	0.296
Perfluorooctanesulfonic Acid (PFOS)	19.8		1.8	0.453	16.9		1.9	0.479
Perfluorodecanoic Acid (PFDA)	ND		1.8	0.273	0.3	J	1.9	0.289
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	ND		1.8	1.09	ND		1.9	1.15
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	ND		1.8	0.583	ND		1.9	0.616
Perfluoroundecanoic Acid (PFUnA)	ND		1.8	0.234	ND		1.9	0.247
Perfluorodecanesulfonic Acid (PFDS)	ND		1.8	0.881	ND		1.9	0.932
Perfluorooctanesulfonamide (FOSA)	ND		1.8	0.522	ND		1.9	0.551
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	ND		1.8	0.723	ND		1.9	0.764
Perfluorododecanoic Acid (PFDoA)	ND		1.8	0.334	ND		1.9	0.354
Perfluorotridecanoic Acid (PFTTrDA)	ND		1.8	0.294	ND		1.9	0.311
Perfluorotetradecanoic Acid (PFTA)	ND		1.8	0.223	ND		1.9	0.236
PFOA/PFOS, Total	63.3		1.8	0.212	24.2		1.9	0.224
1,4-dioxane By SW8270DSIM (ug/L)	0.3		0.20	0.20	<0.20	U	0.20	0.20

Notes:

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MDL - Method Detection Limit

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U - The compound was analyzed for but not detected at or above the MDL.

ND- Not Detected

The USEPA Health Advisory Level for drinking water is 70 ng/L (ppt) for combined detections of PFOA and PFOS

TABLE 15
310-336 Grand Concourse, Bronx, NY
Parameters Detected Above Groundwater Standards

Compound	Range of Exceedances	Frequency of Detection	MW1 6/28/2018	MW3 6/28/2018
<i>Sample Results in ug/L</i>				
1,2,4-Trimethylbenzene	41	1	41	-
Ethylbenzene	130	1	130	-
m&p-Xylenes	120	1	120	-
Napthalene	17	1	17	-
n-Propylbenzene	23	1	23	-
o-xylene	18	1	18	-
Toluene	19	1	19	-
<i>Sample Results in mg/L</i>				
Iron (dissolved)	2.11	1	2.11	-
Magnesium (dissolved)	87	1	87	-
Manganese (dissolved)	9.96	1	9.96	-
Selenium (dissolved)	0.011	1	-	0.011
Sodium (dissolved)	62.3-814	2	814	62.3
Iron (total)	19.8-69.1	2	69.1	19.8
Lead (total)	0.031	1	0.031	-
Magnesium (total)	40.8-93.3	2	93.3	40.8
Manganese (total)	0.947-10.1	2	10.1	0.947
Selenium (total)	0.016	1	-	0.016
Sodium (total)	64.7-742	2	742	64.7

Notes:

Bold/highlighted- Indicated exceedance of the NYSDEC Groundwater Standard

TABLE 16
310-336 Grand Concourse
Bronx, New York
Soil Gas - Volatile Organic Compounds

COMPOUNDS	NYSDOH Maximum Sub-Slab Value (µg/m ³) ^(a)	NYSDOH Soil Outdoor Background Levels (µg/m ³) ^(b)	SG1 6/28/2018 (µg/m ³)		SG2 6/28/2018 (µg/m ³)		SG3 6/28/2018 (µg/m ³)		SG4 6/28/2018 (µg/m ³)		SS1 2/5/2019 (µg/m ³)		SS2 2/5/2019 (µg/m ³)		SS3 2/5/2019 (µg/m ³)		SS4 2/5/2019 (µg/m ³)		SS5 2/5/2019 (µg/m ³)		SS6 2/5/2019 (µg/m ³)	
			Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL
1,1,1,2-Tetrachloroethane			< 600	600	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00
1,1,1-Trichloroethane	100	<2.0 - 2.8	< 600	600	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00
1,1,2,2-Tetrachloroethane		<1.5	< 600	600	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00
1,1,2-Trichloroethane		<1.0	< 600	600	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00
1,1-Dichloroethane		<1.0	< 599	599	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00
1,1-Dichloroethene		<1.0	< 120	120	< 0.20	0.20	< 0.20	0.20	< 0.20	0.20	< 0.20	0.20	< 0.20	0.20	< 0.20	0.20	< 0.20	0.20	< 0.20	0.20	< 0.20	0.20
1,2,4-Trichlorobenzene		NA	< 600	600	1.5	1.00	4.1	1.00	< 1.00	1.00	< 1.00	1.00	2.68	1.00	< 1.00	1.00	< 1.00	1.00	10.9	1.00	9.64	1.00
1,2,4-Trimethylbenzene		<1.0	< 599	599	19.0	1.00	18.1	1.00	17.1	1.00	< 1.00	1.00	1.36	1.00	< 1.00	1.00	< 1.00	1.00	7.76	1.00	6.24	1.00
1,2-Dibromoethane		<1.5	< 600	600	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00
1,2-Dichlorobenzene		<2.0	< 600	600	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00
1,2-Dichloroethane		<1.0	< 599	599	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00
1,2-Dichloropropane			< 600	600	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00
1,2-Dichlorotetrafluoroethane			< 600	600	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00
1,3,5-Trimethylbenzene		<1.0	< 599	599	6.1	1.00	5.1	1.00	5.9	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	2.08	1.00	1.7	1.00
1,3-Butadiene		NA	< 599	599	< 1.00	1.00	c	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00
1,3-Dichlorobenzene		<2.0	< 600	600	7.6	1.00	15.1	1.00	6.9	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	14.2	1.00	12.4	1.00
1,4-Dichlorobenzene		NA	< 600	600	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00
1,4-Dioxane			< 602	602	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00
2-Hexanone			< 602	602	< 1.00	1.00	5.9	1.00	19.6	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00
4-Ethyltoluene		NA	< 599	599	5.1	1.00	3.3	1.00	3.3	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	2.06	1.00	1.32	1.00
4-Isopropyltoluene			< 598	598	1.2	1.00	1.1	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00
4-Methyl-2-pentanone			< 602	602	5.2	1.00	3.3	1.00	3.7	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00
Acetone		NA	< 601	601	565	9.99	396	5.01	921	15.0	316	9.99	38	1.00	468	9.99	280	9.99	337	9.99	456	9.99
Acrylonitrile			< 601	601	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00
Benzene		<1.6 - 4.7	< 600	600	2.1	1.00	1.4	1.00	4.7	1.00	1.01	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	1.68	1.00	3.93	1.00
Benzyl Chloride		NA	< 600	600	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00
Bromodichloromethane		<5.0	< 600	600	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00
Bromoforn		<1.0	< 600	600	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00
Bromomethane		<1.0	< 601	601	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00
Carbon Disulfide		NA	< 601	601	1.1	1.00	< 1.00	1.00	21.6	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	6.91	1.00	6.19	1.00
Carbon Tetrachloride	5	<3.1	< 120	120	< 0.20	0.20	0.2	0.20	< 0.20	0.20	0.37	0.20	0.32	0.20	0.25	0.20	0.36	0.20	0.44	0.20	0.38	0.20
Chlorobenzene		<2.0	< 598	598	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00
Chloroethane		NA	< 601	601	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00
Chloroform		<2.4	< 600	600	5.5	1.00	1.5	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	2.08	1.00	< 1.00	1.00	< 1.00	1.00	7.12	1.00
Chloromethane		<1.0 - 1.4	< 601	601	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00
cis-1,2-Dichloroethene		<1.0	< 120	120	< 0.20	0.20	< 0.20	0.20	< 0.20	0.20	< 0.20	0.20	< 0.20	0.20	< 0.20	0.20	< 0.20	0.20	< 0.20	0.20	< 0.20	0.20
cis-1,3-Dichloropropene		NA	< 599	599	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00
Cyclohexane		NA	18,600	599	< 1.00	1.00	< 1.00	1.00	9.1	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	1.73	1.00	1.09	1.00
Dibromochloromethane		<5.0	< 600	600	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00
Dichlorodifluoromethane		NA	< 598	598	2.7	1.00	2.6	1.00	2.7	1.00	2.71	1.00	2.27	1.00	5.39	1.00	2.14	1.00	2.04	1.00	2.44	1.00
Ethanol			1,660	601	341.0	5.01	215.0	5.01	180.0	15.0	71.4	1.00	43.7	1.00	56.5	1.00	70.4	1.00	52.9	1.00	46.9	1.00
Ethyl Acetate		NA	< 601	601	< 1.00	1.00	2.2	1.00	< 1.00	1.00	< 1.00	1.00	6.99	1.00	< 1.00	1.00	< 1.00	1.00	44.3	1.00	41.4	1.00
Ethylbenzene		<4.3	2,330	599	11.5	1.00	6.2	1.00	7.3	1.00	< 1.00	1.00	1.17	1.00	< 1.00	1.00	< 1.00	1.00	3.9	1.00	3.38	1.00
Heptane		NA	110,000	1200	15.2	1.00	4.1	1.00	15.8	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	2.67	1.00	3.42	1.00
Hexachlorobutadiene		NA	< 600	600	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00
Hexane		<1.5	91,200	1200	5.5	1.00	3.1	1.00	27.6	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	1.46	1.00
Isopropylalcohol		NA	< 599	599	11.8	1.00	10.7	1.00	11.9	1.00	9.8	1.00	6.63	1.00	7.52	1.00	65.3	1.00	4.18	1.00	3.71	1.00
Isopropylbenzene			< 599	599	1.4	1.00	< 1.00	1.00	1.4	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00	< 1.00	1.00
Xylene (m&p)		<4.3	1,270																			

TABLE 17
Project Permit Listing
To Be Updated as Project Progresses

<i>Permit</i>	<i>Permit Number</i>	<i>Originating Agency</i>	<i>Pursuant to</i>	<i>Issued</i>	<i>Expires</i>	<i>Contact Phone</i>

Note: This list will be updated as the project progresses

Table 18
Emergency Contact List

General Emergencies		911
NYC Police		911
NYC Fire Department		911
Montefiore Westchester Square Campus		(718) 430-7300
NYSDEC Spills Hotline		1-800-457-7362
NYSDEC Project Manager		(518) 402-9687
NYC Department of Health		(212) 676-2400
National Response Center		1-800-424-8802
Poison Control		1-800-222-1222
EBC Project Manager	Keith Butler	(631) 504-6000
EBC BCP Program Manager	Charles Sosik	(631) 504-6000
EBC Site Safety Officer	Thomas Gallo	(631) 504-6000
Remedial Engineer	Ariel Czemerinski	(516) 987-1662
Developer	Elliott Lazarus	(516) 808-9085
Construction Manager	To be determined	

FIGURES

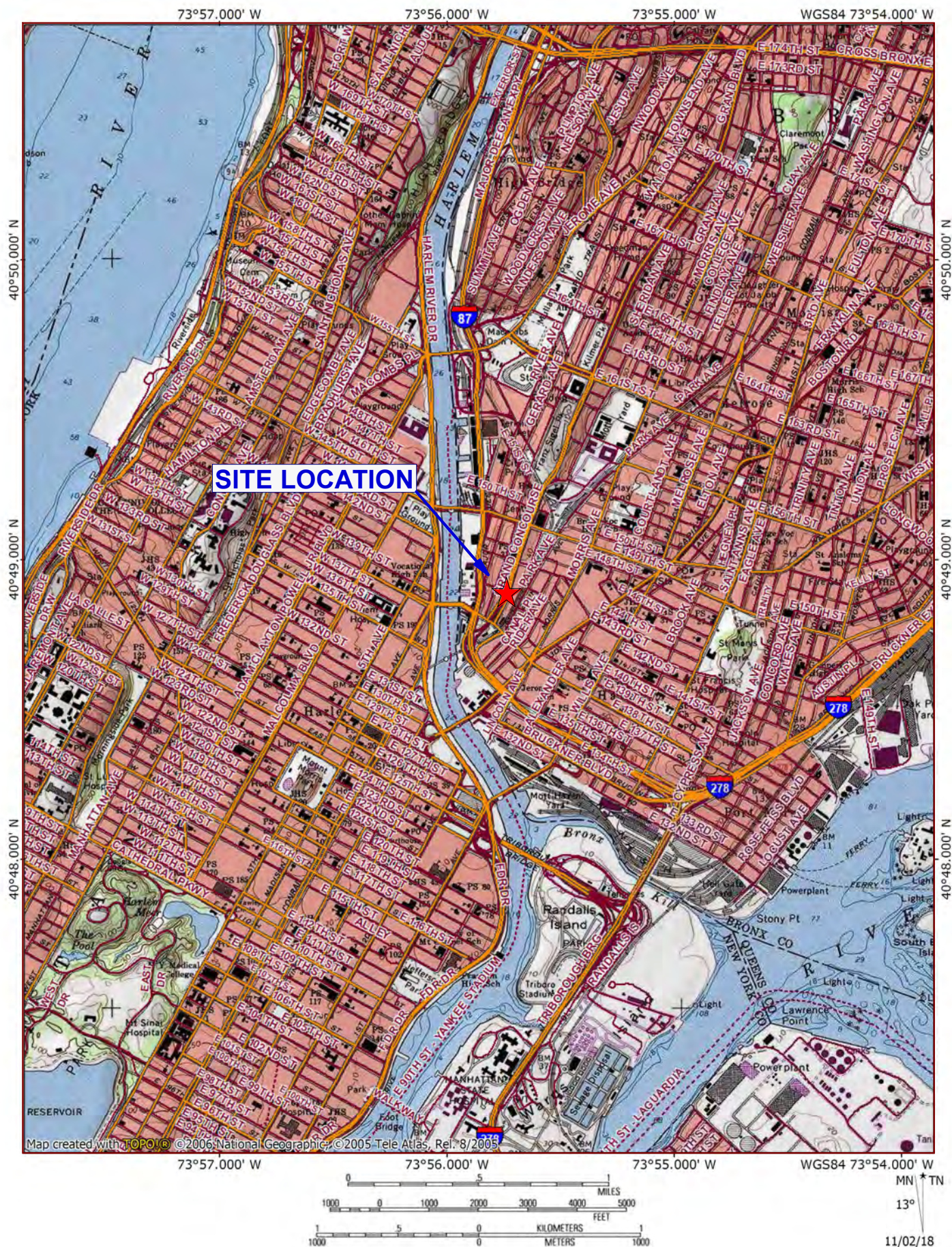
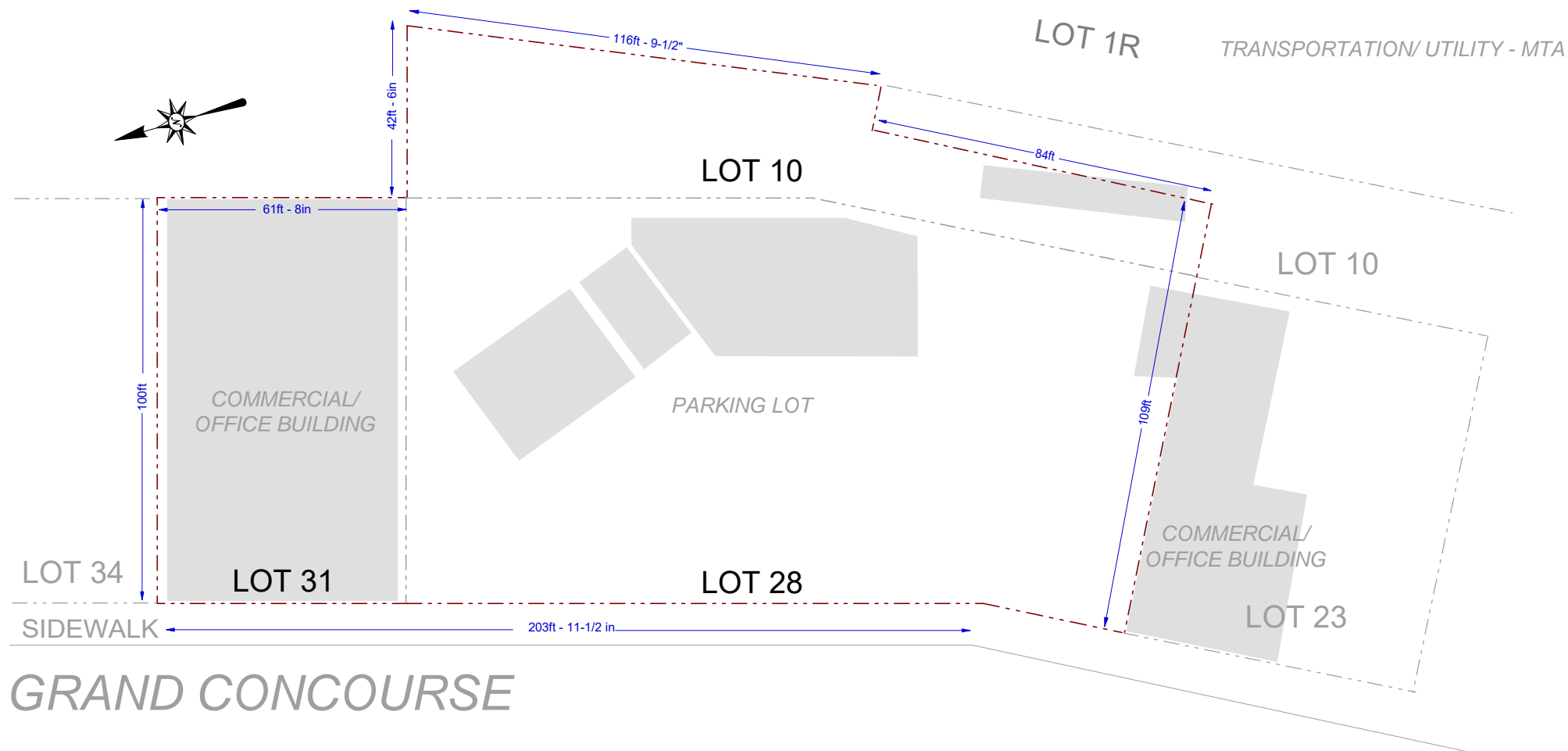


Figure No.
1

Site Name: 310 Grand Concourse
 Site Address: 310-336 Grand Concourse, Bronx, NY
 Drawing Title: Site Location Map

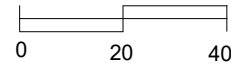


KEY:



BCP Site Boundary

SCALE:



Scale: 1 inch = 40 feet



Phone 631.504.6000
Fax 631.924.2870

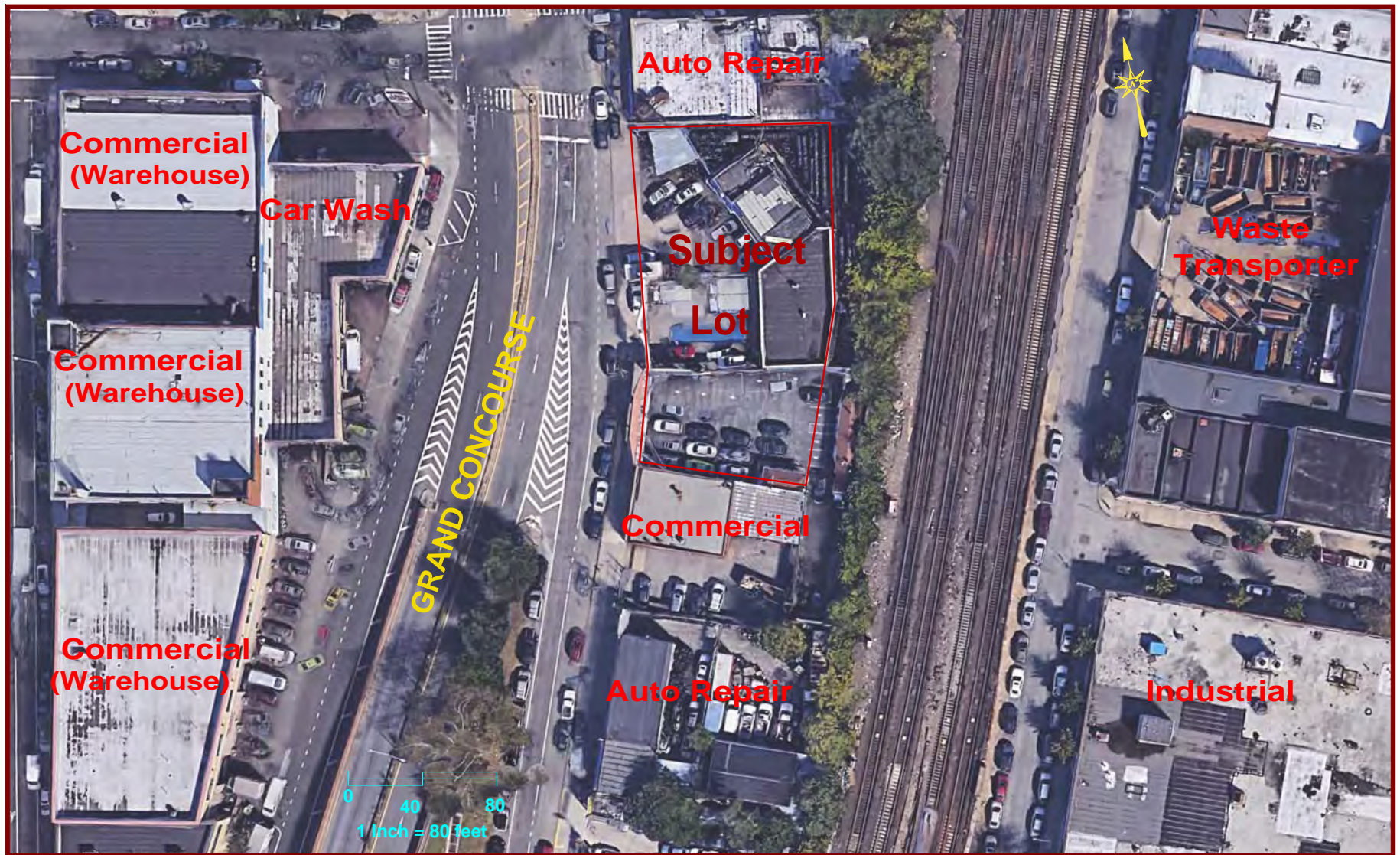
ENVIRONMENTAL BUSINESS CONSULTANTS

Figure No.
2

Site Name: **310 GRAND CONCOURSE**

Site Address: **310 GRAND CONCOURSE, BRONX, NY**

Drawing Title: **SITE PLAN**



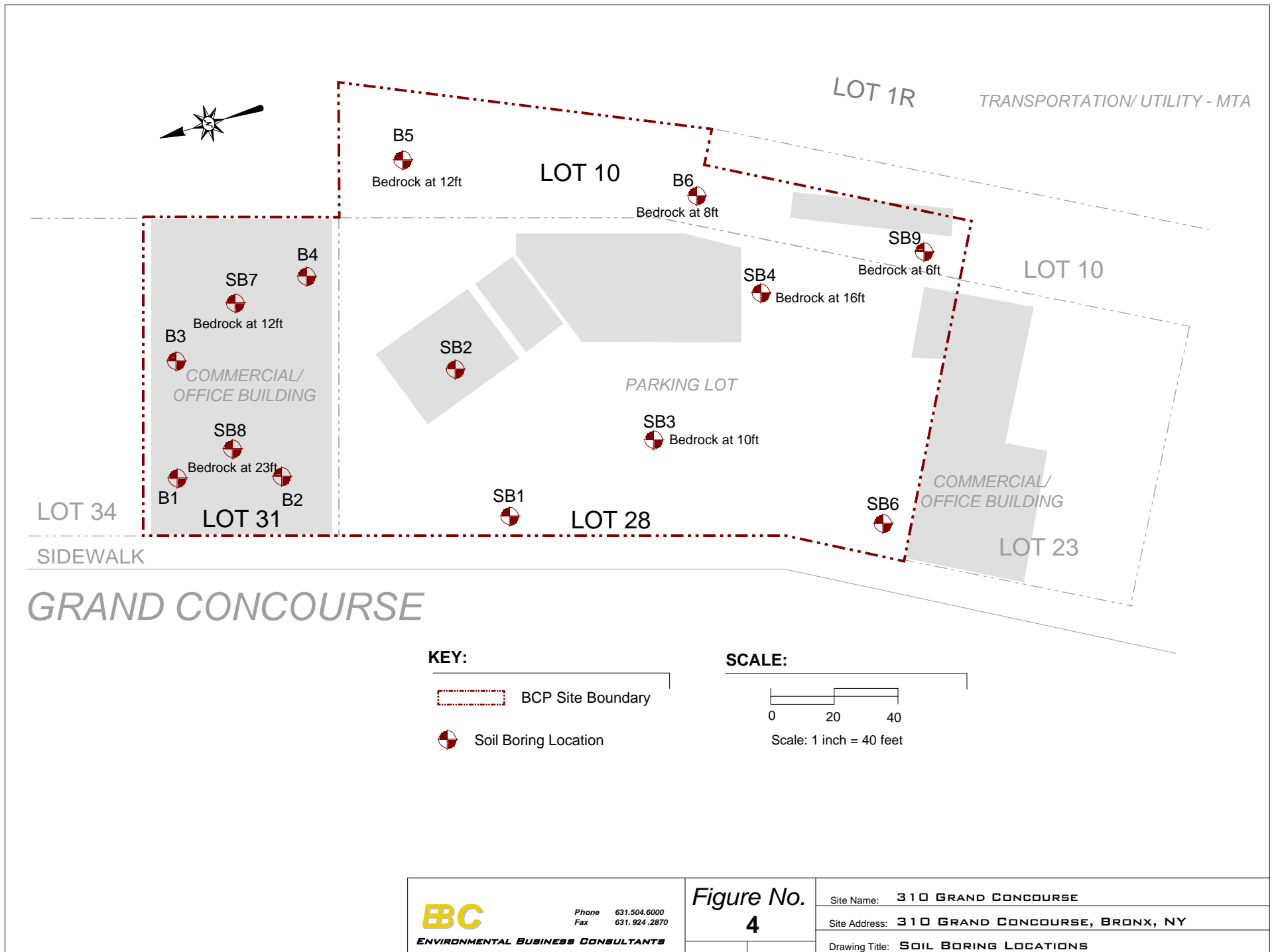
ENVIRONMENTAL BUSINESS CONSULTANTS
1808 MIDDLE COUNTRY ROAD, RIDGE, NY 11961

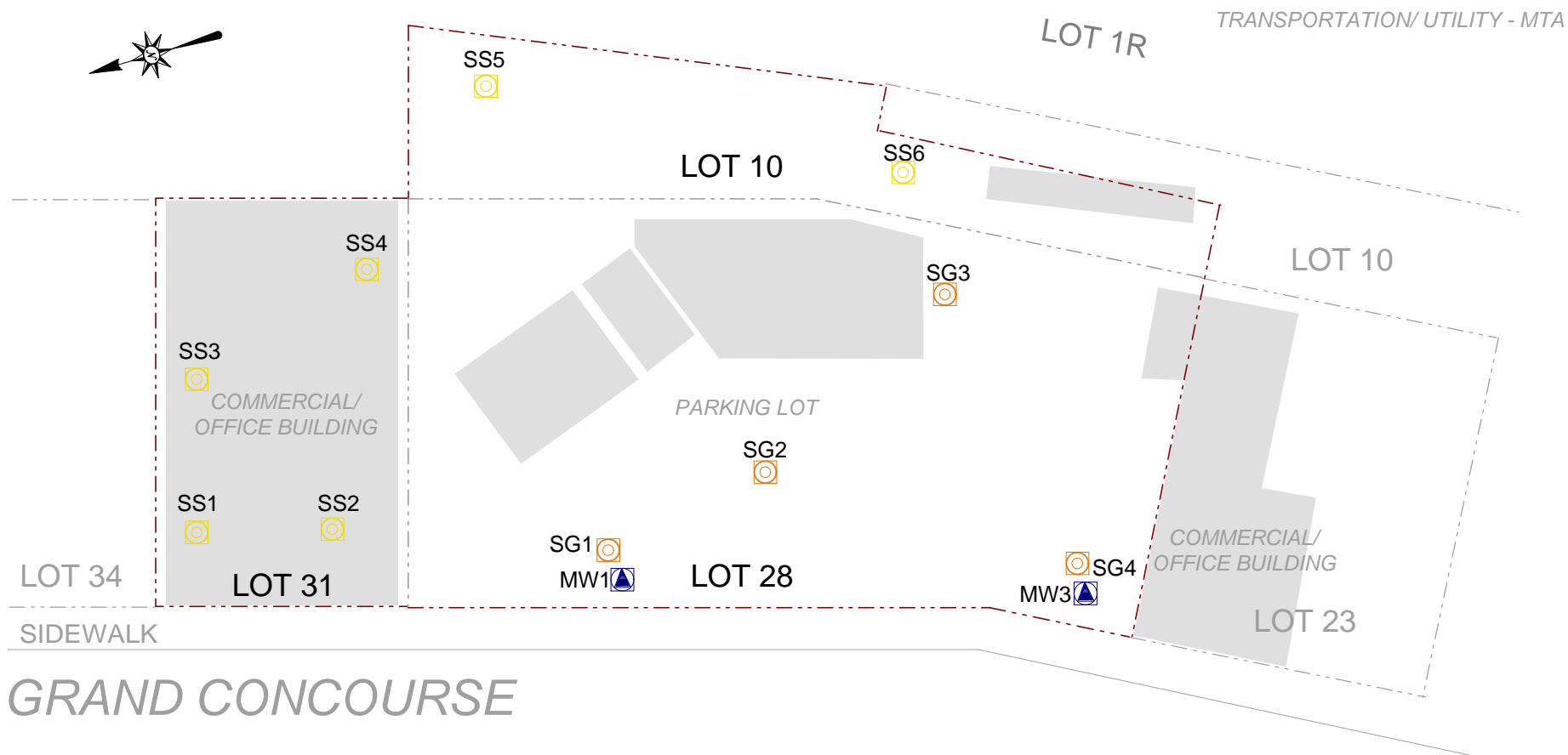
Phone: 631.504.6000
Fax: 631.924.2780

**310 GRAND CONCOURSE
BRONX 10451**

FIGURE 3

**PROJECT SITE AND
ADJACENT PROPERTIES**

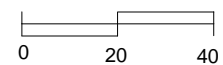




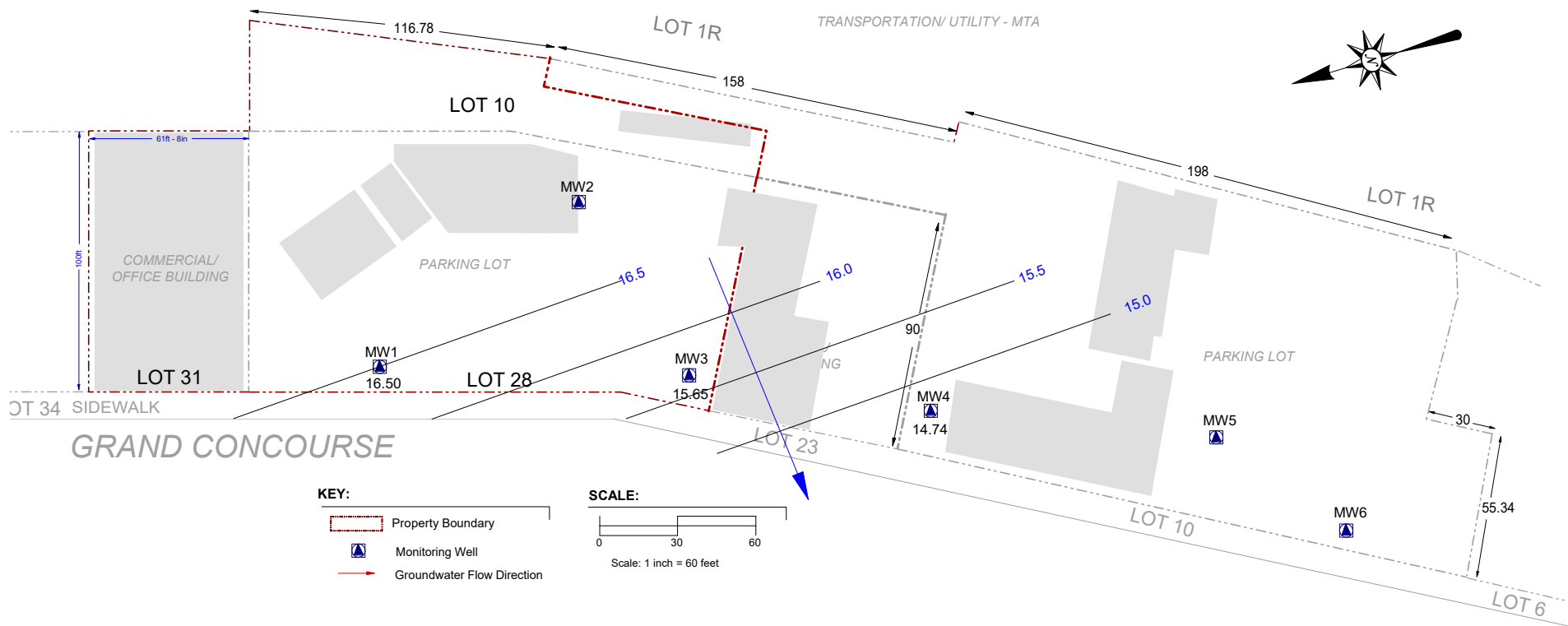
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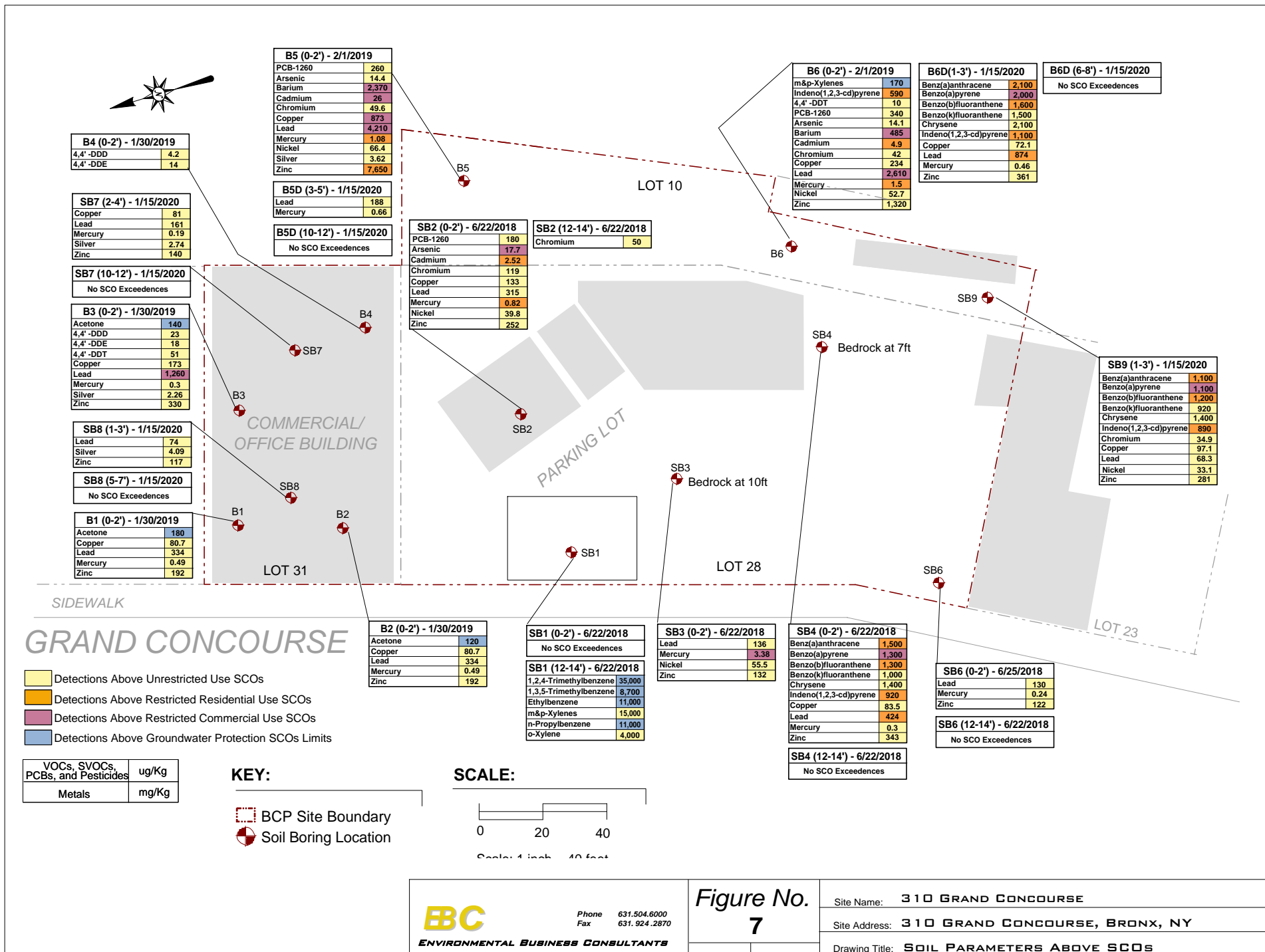
- BCP Site Boundary
- MWx Groundwater Sampling Location
- SGx Soil Gas Location
- SSx Subslab Location

SCALE:





Scale: 1 inch = 40 feet





[illegible]

 BCP Site Boundary
 Groundwater Sampling Location

0 20 40

Scale: 1 inch = 40 feet

KEY:

- BCP Site Boundary
 SGx Soil Gas Location
 SSx Subslab Location

SS5 - 2/5/2019 - ug/m3	
1,2,4-Trichlorobenzene	10.9
1,2,4-Trimethylbenzene	7.76
1,3,5-Trimethylbenzene	2.08
1,3-Dichlorobenzene	14.2
4-Ethyltoluene	2.06
Acetone	337
Benzene	1.68
Carbon Disulfide	6.91
Carbon Tetrachloride	0.44
Cyclohexane	1.73
Dichlorodifluoromethane	2.04
Ethanol	52.9
Ethyl Acetate	44.3
Ethylbenzene	3.9
Heptane	2.67
Isopropylalcohol	4.18
Xylene (m&p)	14.1
Methyl Ethyl Ketone	9.76
Xylene (o)	5.51
Propylene	5.69
Styrene	2.82
Tetrachloroethene	1.93
Tetrahydrofuran	3.95
Toluene	16.7
Trichlorofluoromethane	1.33

SS4 - 2/5/2019 - ug/m3	
Acetone	280
Carbon Tetrachloride	0.36
Dichlorodifluoromethane	2.14
Ethanol	70.4
Isopropylalcohol	65.3
Xylene (m&p)	2.2
Methyl Ethyl Ketone	55.4
Tetrachloroethene	0.49
Tetrahydrofuran	88.4
Toluene	3.66
Trichlorofluoromethane	2.82

SS3 - 2/5/2019 - ug/m3	
Acetone	468
Carbon Tetrachloride	0.25
Chloroform	2.08
Dichlorodifluoromethane	5.39
Ethanol	56.5
Isopropylalcohol	7.52
Xylene (m&p)	3.02
Methyl Ethyl Ketone	43.3
Tetrachloroethene	0.65
Tetrahydrofuran	85.2
Toluene	5.35
Trichloroethene	1.77
Trichlorofluoromethane	17.6

SS1 - 2/5/2019 - ug/m3	
Acetone	316
Benzene	1.01
Carbon Tetrachloride	0.37
Dichlorodifluoromethane	2.71
Ethanol	71.4
Isopropylalcohol	9.8
Xylene (m&p)	2.26
Methyl Ethyl Ketone	48
Tetrachloroethene	1.68
Tetrahydrofuran	90.5
Toluene	5.05
Trichlorofluoromethane	6.74

SS2 - 2/5/2019 - ug/m3	
1,2,4-Trichlorobenzene	2.68
1,2,4-Trimethylbenzene	1.36
Acetone	38
Carbon Tetrachloride	0.32
Dichlorodifluoromethane	2.27
Ethanol	43.7
Ethyl Acetate	6.99
Ethylbenzene	1.17
Isopropylalcohol	6.63
Xylene (m&p)	3.45
Methyl Ethyl Ketone	2.33
Xylene (o)	1.4
Tetrachloroethene	4.95
Tetrahydrofuran	1.01
Toluene	6.29
Trichlorofluoromethane	1.95

SG1 - 6/1/2018 - ug/m3	
Cyclohexane	18,600
Ethanol	1,660
Ethylbenzene	2,330
Heptane	110000
Hexane	91200
Xylene (m&p)	1,270

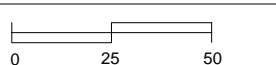
SG2 - 6/28/2018 - ug/m3	
1,2,4-Trichlorobenzene	1.5
1,2,4-Trimethylbenzene	19
1,3,5-Trimethylbenzene	6.1
1,3-Dichlorobenzene	7.6
4-Ethyltoluene	5.1
4-Isopropyltoluene	1.2
4-Methyl-2-pentanone	5.2
Acetone	565
Benzene	2.1
Carbon Disulfide	1.1
Chloroform	5.5
Dichlorodifluoromethane	2.7
Ethanol	341
Ethylbenzene	11.5
Heptane	15.2
Hexane	5.5
Isopropylalcohol	11.8
Isopropylbenzene	1.4
Xylene (m&p)	36.8
Methyl Ethyl Ketone	22.8
n-Butylbenzene	2.2
Xylene (o)	20.5
Propylene	11.8
Styrene	2.52
Tetrachloroethene	143
Tetrahydrofuran	8.81
Toluene	24.9
Trichloroethene	0.41
Trichlorofluoromethane	3.57

SG3 - 6/28/2018 - ug/m3	
1,2,4-Trichlorobenzene	4.1
1,2,4-Trimethylbenzene	18.1
1,3,5-Trimethylbenzene	5.11
1,3-Dichlorobenzene	15.1
2-Hexanone	5.9
4-Ethyltoluene	3.33
4-Isopropyltoluene	1.09
4-Methyl-2-pentanone	3.32
Acetone	396
Benzene	1.42
Carbon Tetrachloride	0.2
Chloroform	1.54
Dichlorodifluoromethane	2.58
Ethanol	215
Ethyl Acetate	2.16
Ethylbenzene	6.16
Heptane	4.1
Hexane	3.08
Isopropylalcohol	10.7
Xylene (m&p)	23.9
Methyl Ethyl Ketone	20.0
n-Butylbenzene	2.2
Xylene (o)	13.7
Propylene	8.0
Styrene	2.1
Tetrachloroethene	20.6
Tetrahydrofuran	4.3
Toluene	15.2
Trichlorofluoromethane	3.1

SG4 - 6/28/2018 - ug/m3	
1,2,4-Trichlorobenzene	17.1
1,2,4-Trimethylbenzene	5.9
1,3,5-Trimethylbenzene	5.9
1,3-Dichlorobenzene	6.9
2-Hexanone	19.6
4-Ethyltoluene	3.3
4-Methyl-2-pentanone	3.7
Acetone	921.0
Benzene	4.7
Carbon Disulfide	21.6
Cyclohexane	9.1
Dichlorodifluoromethane	2.7
Ethanol	180.0
Dichlorodifluoromethane	2.58
Ethanol	215
Ethylbenzene	7.3
Heptane	15.8
Hexane	27.6
Isopropylalcohol	11.9
Isopropylbenzene	1.4
Xylene (m&p)	29.2
Methyl Ethyl Ketone	46.3
n-Butylbenzene	1.6
Xylene (o)	18.5
Propylene	329.0
Styrene	2.1
Tetrachloroethene	5.5
Toluene	24.5
Trichlorofluoromethane	1.9

SS6 - 2/5/2019 - ug/m3	
1,2,4-Trichlorobenzene	9.64
1,2,4-Trimethylbenzene	6.24
1,3,5-Trimethylbenzene	1.7
1,3-Dichlorobenzene	12.4
4-Ethyltoluene	1.32
Acetone	456
Benzene	3.93
Carbon Disulfide	6.19
Carbon Tetrachloride	0.38
Chloroform	7.12
Cyclohexane	1.09
Dichlorodifluoromethane	2.44
Ethanol	46.9
Ethyl Acetate	41.4
Ethylbenzene	3.38
Heptane	3.42
Hexane	1.46
Isopropylalcohol	3.71
Xylene (m&p)	12.6
Methyl Ethyl Ketone	9.76
Xylene (o)	4.86
Propylene	5.18
Styrene	2.58
Tetrachloroethene	3
Tetrahydrofuran	2.38
Toluene	18.4
Trichlorofluoromethane	1.33

SCALE:



Scale: 1 inch = 50 feet



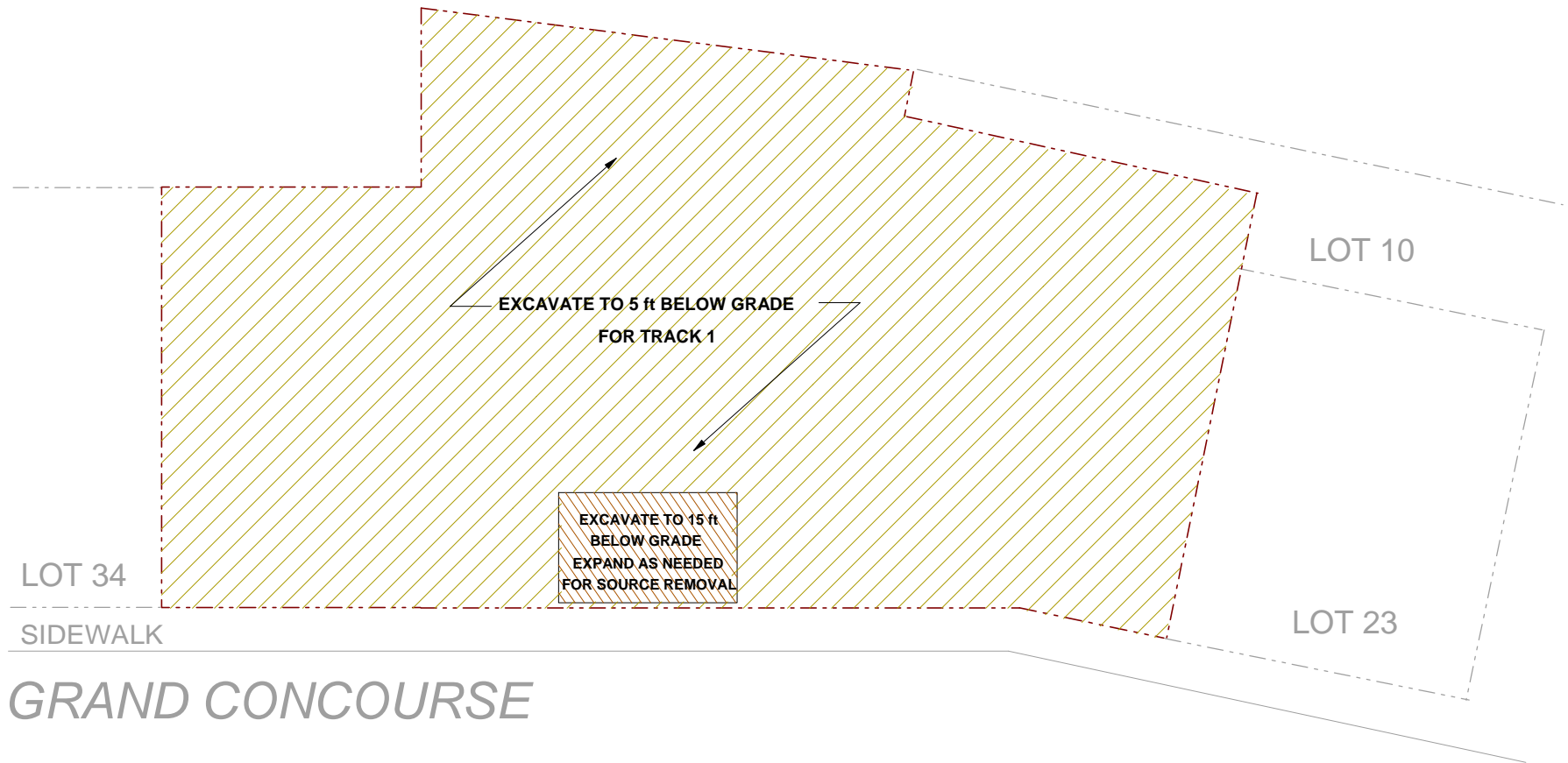
Key:

Truck Route From Site 

Truck Route To Site 

Figure No.
10

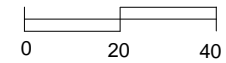
Site Name:	REDEVELOPMENT PROJECT
Site Address:	276 GRAND CONCOURSE, BRONX, NY
Drawing Title:	TRUCK ROUTE



KEY:

 BCP Site Boundary

SCALE:



Scale: 1 inch = 40 feet

EB

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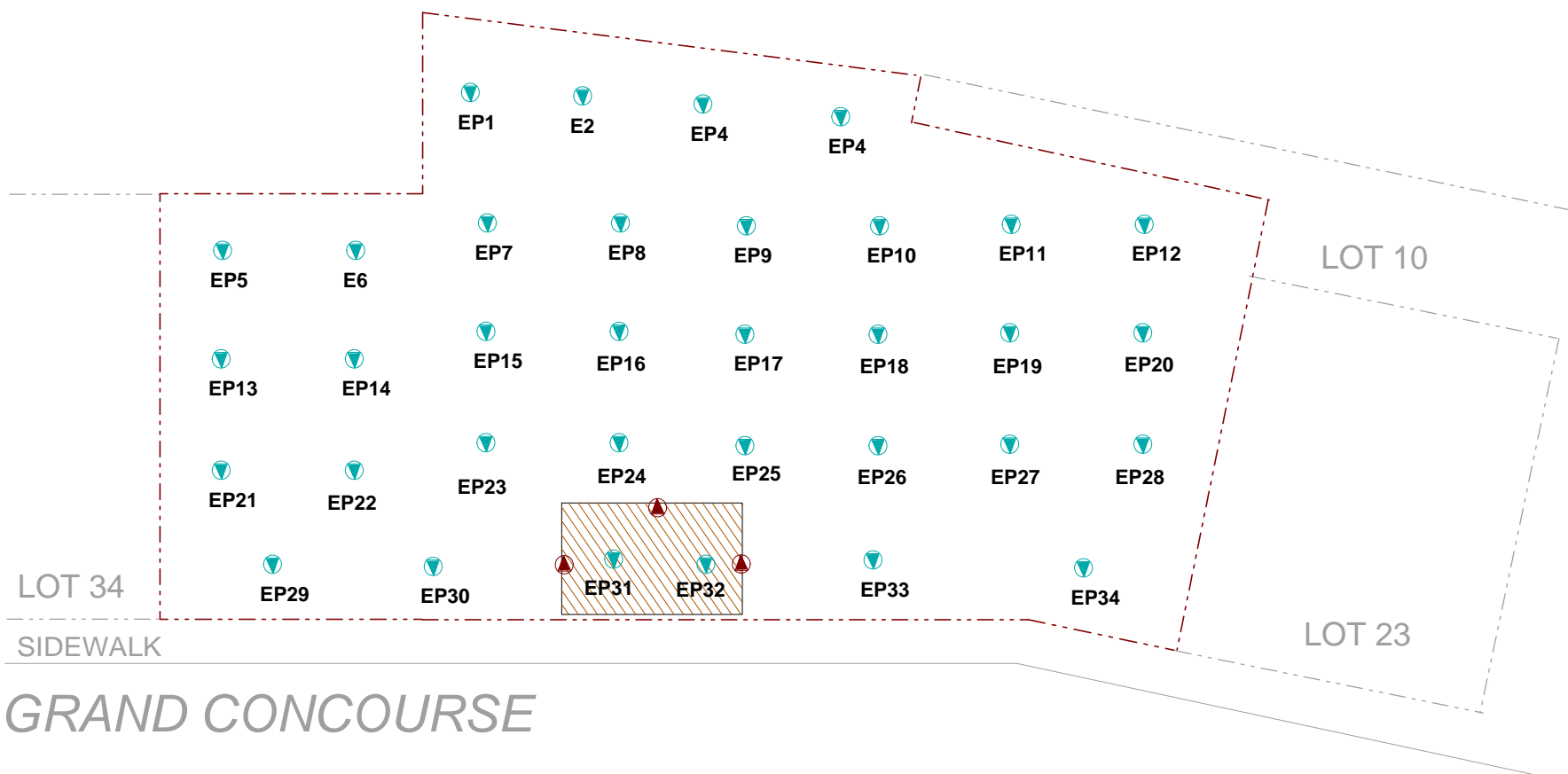
Phone 631.504.6000
Fax 631.924.2870

Figure No.
11




Site Name: **310 GRAND CONCOURSE**

Site Address: **310 GRAND CONCOURSE, BRONX, NY**

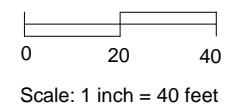
Drawing Title: **EXCAVATION PLAN**



KEY:

-  BCP Site Boundary
-  Proposed Bottom Endpoint Sample Location
-  Proposed Sidewall Endpoint Sample Location

SCALE:



EB

ENVIRONMENTAL BUSINESS CONSULTANTS

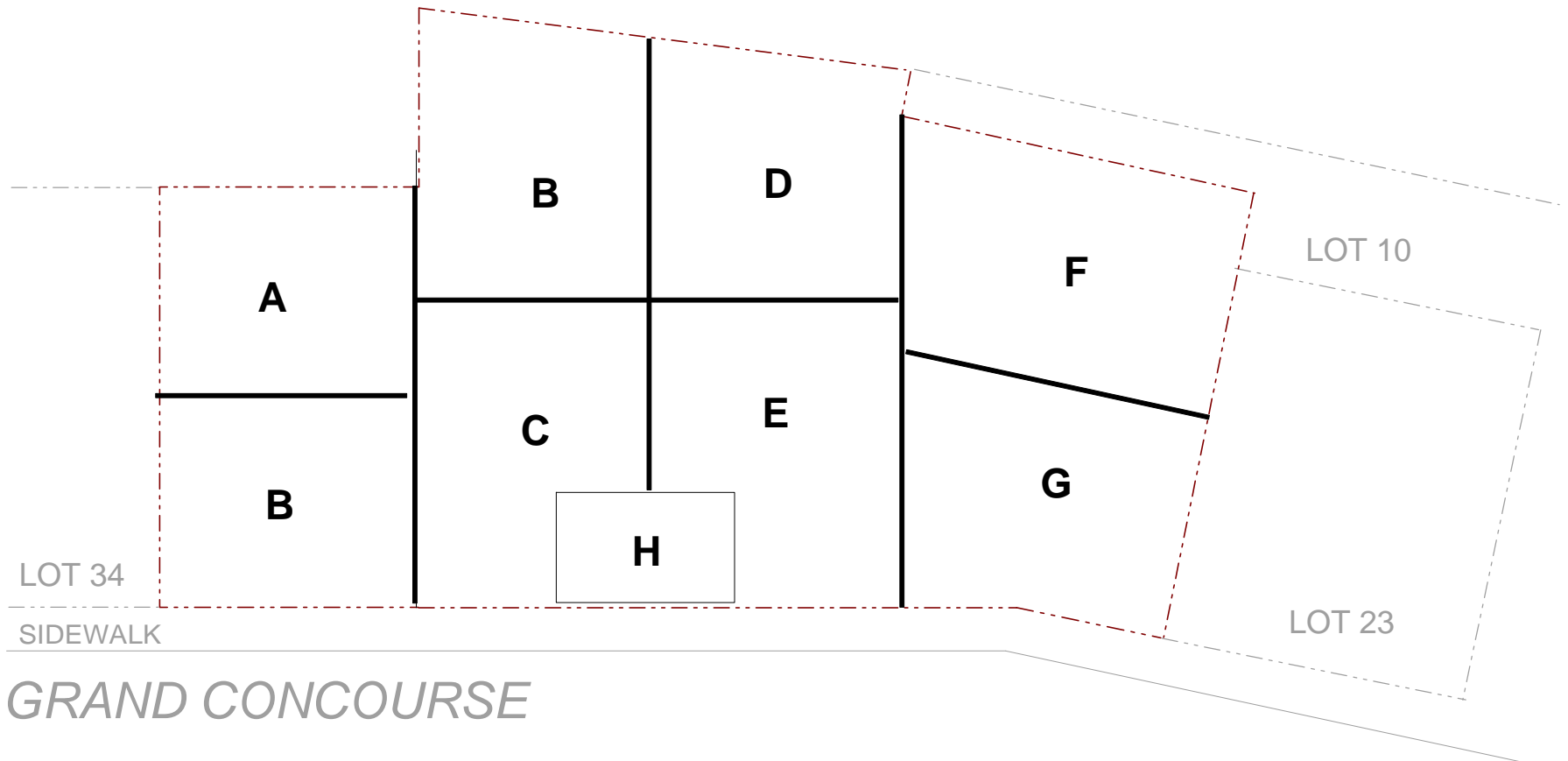
Phone 631.504.6000
Fax 631.924.2870

Figure No.
12

Site Name: **310 GRAND CONCOURSE**

Site Address: **310 GRAND CONCOURSE, BRONX, NY**

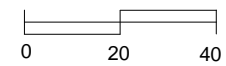
Drawing Title: **ENDPOINT SAMPLING LOCATIONS**



KEY:

 BCP Site Boundary

SCALE:



Scale: 1 inch = 40 feet

EBC

ENVIRONMENTAL BUSINESS CONSULTANTS

Phone 631.504.6000
Fax 631.924.2870

Figure No.
13

Site Name: **310 GRAND CONCOURSE**

Site Address: **310 GRAND CONCOURSE, BRONX, NY**

Drawing Title: **GRID MAP**

ATTACHMENT A
Metes and Bounds Description of Property

ALL that certain plot, piece or parcel of land, lying and being in the Borough and County of Bronx, City and State of New York, being more particularly bounded and described as follows:

BEGINNING at a point on the Easterly line of Grand Concourse; said point being distant 581.05' southerly from E. 144th Street and being the Northwesterly corner of the lot herein described;

RUNNING THENCE along the Southerly line of lot 34 in block 2341 N90°00'00"E, a distance of 100.00';

THENCE the following courses and distances:

1. S0°00'00"E, a distance of 61.67'
2. N90°00'00"E, a distance of 42.50'
3. S 7°22'10"W, a distance of 116.79'
4. N78°51'20"W, a distance of 11.00'
5. S11°08'40"W, a distance of 84.00'

To a point on the Northerly line of lot 10 in block 2341;

THENCE on a Westerly direction along the Northerly lines of lots 10 & 23 in block 2341 the following courses and distances:

1. N78°48'52"W, a distance of 19.00'
2. N78°51'20"W, a distance of 90.00'

To the Easterly line of Grand Concourse;

THENCE along the Easterly line of Grand Concourse the following courses and distances:

1. N11°08'50"E, a distance of 33.37'
2. N0°00'00"W, a distance of 203.96 To the POINT OF BEGINNING

ATTACHMENT B ***Health and Safety Plan***

**310 GRAND CONCOURSE
310-336 GRAND CONCOURSE
BRONX, NEW YORK 10451
Block 2341, Lots 10 (partial), 28 and 31**

**CONSTRUCTION
HEALTH AND SAFETY PLAN**

AUGUST 2019

*310 Grand Concourse LLC
829 Kent Avenue
Brooklyn, NY 11205*

Prepared by:



ENVIRONMENTAL BUSINESS CONSULTANTS

1808 Middle Country Road
Ridge, NY 11961

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310 GRAND CONCOURSE, BRONX, NY

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310 GRAND CONCOURSE, BRONX, NY

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APPENDIX C	CHEMICAL HAZARDS
APPENDIX D	HOSPITAL INFORMATION, MAP AND FIELD ACCIDENT REPORT

STATEMENT OF COMMITMENT

This Construction Health and Safety Plan (CHASP) has been prepared to ensure that workers are not exposed to risks from hazardous materials during the Remedial Action at the 310 Grand Concourse Site.

This CHASP, 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 CHASP 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 the 310 Grand Concourse Brownfield Site located at 310-336 Grand Concourse, Bronx NY 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 developer 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.

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 CHASP. 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
Keith Butler	EBC Project Manager	1808 Middle Country Rd Ridge, NY 11961	(631) 504-6000
Tom Gallo	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.

2.0 SITE BACKGROUND AND SCOPE OF WORK

The street address for the Site is 310-336 Grand Concourse, Bronx, NY. The Site is located in the Mott Haven neighborhood of Bronx County and is comprised of the two full tax parcels (Lot 28, 31) with a portion of a third parcel (Lot 10) which are currently being merged. The total area of the new lot is 29,538 square feet (0.68 acres). The Site is located in the City of New York and Borough of the Bronx. The Site is irregular shaped with 237.33 feet of frontage along Grand Concourse.

2.1 Previous Investigations

A Remedial Investigation was completed at the Site from June 22-25, 2018 and January 30th through February 5th of 2019 and documented in a Remedial Investigation Report dated February 2019. 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 of a Remedial Work Plan to address the contamination.

Activities completed under the RI:

- Installed eleven soil borings and collected fifteen soil samples for laboratory analysis of volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), herbicides, pesticides, organophosphate pesticides, PCBs, and metals;
- Installed two groundwater monitoring wells and collected groundwater samples for laboratory analysis of VOCs, SVOCs, pesticides, PCBs, and total and dissolved metals;
- Installed four soil gas implants and collected six soil gas samples for laboratory analysis of VOCs.

The results of sampling performed during this RI identified an area of petroleum-related VOCs at the northwestern portion of Lot 28 in the vicinity of historic underground gasoline storage tanks. This impacted area is estimated to be approximately 1,000 sf.

Historic fill materials have been identified across the Site to depths 5 feet below grade. The fill material contains elevated levels of metals, SVOCs and PCBs. Cadmium, chromium, copper, mercury and lead were all reported above Restricted Residential SCOs. Arsenic and mercury were also reported above Commercial SCOs. SVOCs including benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene and ideno(1,2,3-cd)pyrene were all reported above Restricted Residential SCOs. Benzo(a)pyrene was also reported above Commercial SCOs. PCB1260 was detected within three of the soil samples above Unrestricted Use SCOs.

Petroleum related VOCs detected above groundwater standards included 1,2,4-trimethylbenzene, ethylbenzene, isopropylbenzene, naphthalene, n-propylbenzene, o-xylene, and toluene. The petroleum related VOCs were detected above AWQS within the groundwater sample (MW1) collected from the same location as the soil boring which noted petroleum related VOCs above Protection of Groundwater SCOs.

2.2 Redevelopment Plans

The proposed redevelopment project consists of constructing a 19-story mixed-use (commercial/residential) building, with a single basement level. The building will occupy the majority of site footprint, with a paved yard area at the southeastern portion. The cellar level will consist of 7,916 SF of commercial space, utility/mechanical rooms, a bicycle room, restrooms, elevators and stairways. The first floor will include 9,040 SF of commercial space, the residential entrance lobby, restrooms, elevators and stairways. The 2nd floor will contain 6,487 SF of commercial space, utility space, elevators and stairways. The 3rd floor will consist of utility and mechanical space, a bicycle room, and recreational space, including an outdoor recreation area atop the 2nd floor roof. Floors 4 through 19 will consist of 66-studio, 31 1-bedroom and 63 2-bedroom residential apartments, elevators and stairways.

2.3 Description of Remedial Action

The remedy will include the following items:

- Demolition of on-site buildings and off-site disposal of C&D material to facilitate excavation of soil;
- Removal and disposal of the asphalt cap;
- Removal of underground storage tanks encountered during Site excavation;
- Excavate historic fill material to 5 ft across the Site with additional excavation as needed to achieve Track 1 Unrestricted Use SCOs;
- Excavate petroleum impacted soil to a depth of 5 feet within the impacted areas;
- Disposal of approximately 6,444 cy of historic fill material and soil;
- Disposal of 444 cy of petroleum impacted soil;
- 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.

3.0 HAZARD ASSESSMENT

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

3.1 Physical Hazards

3.1.1 Tripping Hazards

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

3.1.2 Climbing Hazards

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

3.1.3 Cuts and Lacerations

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

3.1.4 Lifting Hazards

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

3.1.5 Utility Hazards

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

3.1.6 Traffic Hazards

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

3.2 Work in Extreme Temperatures

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

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 of irritation and cool skin with water or wet cloths.

b. Heat Cramps (or heat prostration)

Cause: Profuse perspiration accompanied by inadequate replenishment of body water and electrolytes.

Symptoms: Muscular weakness, staggering gait, nausea, dizziness, shallow breathing, pale and clammy skin, approximately normal body temperature.

Treatment: Perform the following while making arrangement for transport to a medical facility. Remove the worker to a contamination reduction zone. Remove protective clothing. Lie worker down on back in a cool place and raise feet 6 to 12 inches. Keep warm, but loosen all clothing. If conscious, provide sips of salt-water solution, using one teaspoon of salt in 12 ounces of water. Transport to a medical facility.

c. Heat Stroke

Cause: Same as heat exhaustion. This is also an extremely serious condition.

Symptoms: Dry hot skin, dry mouth, dizziness, nausea, headache, rapid pulse.

Treatment: Cool worker immediately by immersing or spraying with cool water or sponge bare skin after removing protective clothing. Transport to hospital.

3.2.2 Cold Exposure

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

“Historic 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 reported to be present at elevated concentrations in soil and /or groundwater at the Site include the following:

xylene	n-propylbenzene	ethylbenzene	124/135-trimethylbenzene	Acetone
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Semi-Volatile organic compounds reported to be present at elevated concentrations in soil at the Site include the following:

Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene
Benzo(k)fluoranthene	Indeno(1,2,3-cd)pyrene	Chrysene

Metals reported to be present at elevated concentrations in soil at the Site include the following:

Arsenic	Chromium	Cadmium	Lead	Mercury	Nickel
Barium	Silver	Copper	Zinc		

Pesticides reported to be present at elevated concentrations in soil at the Site include the following:

4,4-DDD	4,4-DDE	4,4-DDT	PCB-1260
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The primary routes of exposure to these contaminants are inhalation, ingestion and absorption.

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 Officer will employ dust monitoring using a particulate monitor (Minirae 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 $\mu\text{g}/\text{m}^3$ 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 soil vapor 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.

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.

- 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.

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%	<ul style="list-style-type: none">• Continue excavating• Level D protection• Continue monitoring every 10 minutes

1-5 ppm Above Background, Sustained Reading	1-10%	<ul style="list-style-type: none"> • Continue excavating • Go to Level C protection or employ engineering controls • Continue monitoring every 10 minutes
5-25 ppm Above Background, Sustained Reading	10-20%	<ul style="list-style-type: none"> • 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%	<ul style="list-style-type: none"> • 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 than 5 ppm (see Community Air Monitoring Plan).

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.

Due to the dimensions of the Site and the work area, it is expected that an exclusion zone will include the entire fenced area with the exception of the construction entrance area, which will serve as the decontamination zone. A support zone if needed will be located outside of the fenced area. All onSite workers engaged in the excavation of hazardous or contaminated materials must provide evidence of OSHA 24 or 40-hour Hazardous Waste Operations and Emergency Response Operations training to conduct work within the exclusion zone established by the Site Safety Officer. 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.

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
New York City Police	911
Lincoln Medical Center	1-718-579-5000
NYSDEC Spills Division	1-800-457-7362
NYSDEC Hazardous Waste Division	1-718-482-4994
NYCDEP	1-718-699-9811
NYC Department of Health	1-212-788-4711
NYC Fire Department	911
National Response Center	1-800-424-8802
Poison Control	1-212-340-4494
Site Safety Officer	1-631-504-6000
Alternate 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 | Kevin Brussee (631) 504-6000 |
| • Construction Health and Safety Manager | Eyal Amos (718) 887-9840 |
| • Site Safety Officer | Tom Gallo (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; and
- 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

DAILY BRIEFING 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

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

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

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

1,2,4-TRIMETHYLBENZENE

ICSC: 1433

<p>I M P O R T A N T D A T A</p>	<p>PHYSICAL STATE; APPEARANCE: COLOURLESS LIQUID , WITH CHARACTERISTIC ODOUR.</p> <p>PHYSICAL DANGERS:</p> <p>CHEMICAL DANGERS: The substance decomposes on burning producing toxic and irritating fumes Reacts violently with strong oxidants causing fire and explosion hazard.</p> <p>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/m³) NIOSH IDLH: N.D. See: IDLH INDEX</p>	<p>ROUTES OF EXPOSURE: The substance can be absorbed into the body by inhalation.</p> <p>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.</p> <p>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</p> <p>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.</p>
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<p>PHYSICAL PROPERTIES</p>	<p>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</p>	<p>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</p>
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<p>ENVIRONMENTAL DATA</p>	<p>The substance is toxic to aquatic organisms. Bioaccumulation of this chemical may occur in fish.</p>	
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NOTES

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 Trimethylbenzene (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

<p>ICSC: 1433</p>	<p>1,2,4-TRIMETHYLBENZENE</p>
<p>(C) IPCS, CEC, 1994</p>	

<p>IMPORTANT LEGAL NOTICE:</p>	<p>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.</p>
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International Chemical Safety Cards

1,3,5-TRIMETHYLBENZENE

ICSC: 1155



Mesitylene
C₉H₁₂
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

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

1,3,5-TRIMETHYLBENZENE

ICSC: 1155

I M P O R T A N T D A T A	<p>PHYSICAL STATE; APPEARANCE: COLOURLESS LIQUID , WITH CHARACTERISTIC ODOUR.</p> <p>PHYSICAL DANGERS:</p> <p>CHEMICAL DANGERS: The substance decomposes on burning producing toxic and irritating fumes. Reacts violently with strong oxidants causing fire and explosion hazard.</p> <p>OCCUPATIONAL EXPOSURE LIMITS: TLV (as mixed isomers): 25 ppm; (ACGIH 2001). MAK (all isomers): 20 ppm; 100 mg/m³; class II 1 © (2001) OSHA PEL†: none NIOSH REL: TWA 25 ppm (125 mg/m³) NIOSH IDLH: N.D. See: IDLH INDEX</p>	<p>ROUTES OF EXPOSURE: The substance can be absorbed into the body by inhalation.</p> <p>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.</p> <p>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.</p> <p>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.</p>
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PHYSICAL PROPERTIES	<p>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</p>	<p>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</p>
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ENVIRONMENTAL DATA	<p>The substance is harmful to aquatic organisms. Bioaccumulation of this chemical may occur in fish.</p>	
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NOTES

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 Trimethylbenzene (mixed isomers).

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

ADDITIONAL INFORMATION

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ICSC: 1155

1,3,5-TRIMETHYLBENZENE

(C) IPCS, CEC, 1994

IMPORTANT LEGAL NOTICE:	<p>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.</p>
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International Chemical Safety Cards

ACETONE

ICSC: 0087



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

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



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

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

SEE IMPORTANT INFORMATION ON BACK

ICSC: 0087

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

ACETONE

ICSC: 0087

<p>I M P O R T A N T D A T A</p>	<p>PHYSICAL STATE; APPEARANCE: COLOURLESS LIQUID , WITH CHARACTERISTIC ODOUR.</p> <p>PHYSICAL DANGERS: The vapour is heavier than air and may travel along the ground; distant ignition possible.</p> <p>CHEMICAL DANGERS: The substance can form explosive peroxides on contact with strong oxidants such as acetic acid, nitric acid, hydrogen peroxide. Reacts with chloroform and bromoform under basic conditions, causing fire and explosion hazard. Attacks plastic.</p> <p>OCCUPATIONAL EXPOSURE LIMITS: TLV: 500 ppm as TWA, 750 ppm as STEL; A4 (not classifiable as a human carcinogen); BEI issued; (ACGIH 2004). MAK: 500 ppm 1200 mg/m³ Peak limitation category: I(2); Pregnancy risk group: D; (DFG 2006). OSHA PEL⁺: TWA 1000 ppm (2400 mg/m³) NIOSH REL: TWA 250 ppm (590 mg/m³) NIOSH IDLH: 2500 ppm 10%LEL See: 67641</p>	<p>ROUTES OF EXPOSURE: The substance can be absorbed into the body by inhalation and through the skin.</p> <p>INHALATION RISK: A harmful contamination of the air can be reached rather quickly on evaporation of this substance at 20°C; on spraying or dispersing, however, much faster.</p> <p>EFFECTS OF SHORT-TERM EXPOSURE: The vapour irritates the eyes and the respiratory tract. The substance may cause effects on the central nervous system , liver , kidneys and gastrointestinal tract .</p> <p>EFFECTS OF LONG-TERM OR REPEATED EXPOSURE: Repeated or prolonged contact with skin may cause dermatitis. The substance may have effects on the blood and bone marrow .</p>
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<p>PHYSICAL PROPERTIES</p>	<p>Boiling point: 56°C Melting point: -95°C Relative density (water = 1): 0.8 Solubility in water: miscible Vapour pressure, kPa at 20°C: 24</p>	<p>Relative vapour density (air = 1): 2.0 Relative density of the vapour/air-mixture at 20°C (air = 1): 1.2 Flash point: -18°C c.c. Auto-ignition temperature: 465°C Explosive limits, vol% in air: 2.2-13 Octanol/water partition coefficient as log Pow: -0.24</p>
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<p>ENVIRONMENTAL DATA</p>	
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NOTES

<p>Use of alcoholic beverages enhances the harmful effect.</p> <p style="text-align: right;">Transport Emergency Card: TEC (R)-30S1090</p> <p style="text-align: right;">NFPA Code: H 1; F 3; R 0;</p> <p style="text-align: right;">Card has been partially updated in July 2007: see Occupational Exposure Limits. Card has been partially updated in January 2008: see Storage.</p>
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ADDITIONAL INFORMATION

<p>ICSC: 0087</p> <p style="text-align: right;">ACETONE</p> <p style="text-align: center;">(C) IPCS, CEC, 1994</p>
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<p>IMPORTANT LEGAL NOTICE:</p>	<p>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.</p>
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International Chemical Safety Cards

ETHYLBENZENE

ICSC: 0268



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

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



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

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

SEE IMPORTANT INFORMATION ON BACK

ICSC: 0268

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

ETHYLBENZENE

ICSC: 0268

<p>I M P O R T A N T D A T A</p>	<p>PHYSICAL STATE; APPEARANCE: COLOURLESS LIQUID , WITH AROMATIC ODOUR.</p> <p>PHYSICAL DANGERS: The vapour mixes well with air, explosive mixtures are easily formed.</p> <p>CHEMICAL DANGERS: Reacts with strong oxidants. Attacks plastic and rubber.</p> <p>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/m³) NIOSH REL: TWA 100 ppm (435 mg/m³) ST 125 ppm (545 mg/m³) NIOSH IDLH: 800 ppm 10%LEL See: 100414</p>	<p>ROUTES OF EXPOSURE: The substance can be absorbed into the body by inhalation of its vapour, through the skin and by ingestion.</p> <p>INHALATION RISK: A harmful contamination of the air will be reached rather slowly on evaporation of this substance at 20°C.</p> <p>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.</p> <p>EFFECTS OF LONG-TERM OR REPEATED EXPOSURE: Repeated or prolonged contact with skin may cause dermatitis.</p>
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<p>PHYSICAL PROPERTIES</p>	<p>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</p>	<p>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</p>
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<p>ENVIRONMENTAL DATA</p>	<p>The substance is harmful to aquatic organisms.</p>	
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<p>NOTES</p>		
<p>The odour warning when the exposure limit value is exceeded is insufficient.</p>		
		<p>Transport Emergency Card: TEC (R)-30S1175 or 30GF1-I+II NFPA Code: H2; F3; R0</p>

<p>ADDITIONAL INFORMATION</p>		
<p>ICSC: 0268 ETHYLBENZENE</p> <p style="text-align: center;">(C) IPCS, CEC, 1994</p>		

<p>IMPORTANT LEGAL NOTICE:</p>	<p>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.</p>
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Material Safety Data Sheet

Version 4.0

Revision Date 07/28/2010

Print Date 12/07/2011

1. PRODUCT AND COMPANY IDENTIFICATION

Product name : Propylbenzene

Product Number : P52407

Brand : Aldrich

Company : Sigma-Aldrich
3050 Spruce Street
SAINT LOUIS MO 63103
USA

Telephone : +1 800-325-5832

Fax : +1 800-325-5052

Emergency Phone # : (314) 776-6555

2. HAZARDS IDENTIFICATION

Emergency Overview

OSHA Hazards

Combustible Liquid

Target Organs

Lungs, Eyes, Kidney

GHS Label elements, including precautionary statements

Pictogram



Signal word

Danger

Hazard statement(s)

H226

Flammable liquid and vapour.

H304

May be fatal if swallowed and enters airways.

H335

May cause respiratory irritation.

H401

Toxic to aquatic life.

Precautionary statement(s)

P261

Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.

P301 + P310

IF SWALLOWED: Immediately call a POISON CENTER or doctor/ physician.

P331

Do NOT induce vomiting.

HMIS Classification

Health hazard:

0

Chronic Health Hazard:

*

Flammability:

2

Physical hazards:

0

NFPA Rating

Health hazard:

1

Fire:

2

Reactivity Hazard:

0

Potential Health Effects

Inhalation

May be harmful if inhaled. May cause respiratory tract irritation.

Skin

May be harmful if absorbed through skin. May cause skin irritation.

Eyes

May cause eye irritation.

Ingestion

Aspiration hazard if swallowed - can enter lungs and cause damage. May be harmful if swallowed.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Synonyms : 1-Phenylpropane

Formula : C₉H₁₂

Molecular Weight : 120.19 g/mol

CAS-No.	EC-No.	Index-No.	Concentration
Propylbenzene			
103-65-1	203-132-9	601-024-00-X	-

4. FIRST AID MEASURES**General advice**

Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.

If inhaled

If breathed in, move person into fresh air. If not breathing give artificial respiration. Consult a physician.

In case of skin contact

Wash off with soap and plenty of water. Consult a physician.

In case of eye contact

Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

If swallowed

Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

5. FIRE-FIGHTING MEASURES**Suitable extinguishing media**

For small (incipient) fires, use media such as "alcohol" foam, dry chemical, or carbon dioxide. For large fires, apply water from as far as possible. Use very large quantities (flooding) of water applied as a mist or spray; solid streams of water may be ineffective. Cool all affected containers with flooding quantities of water.

Special protective equipment for fire-fighters

Wear self contained breathing apparatus for fire fighting if necessary.

Further information

Use water spray to cool unopened containers.

6. ACCIDENTAL RELEASE MEASURES**Personal precautions**

Use personal protective equipment. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas.

Environmental precautions

Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

Methods and materials for containment and cleaning up

Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13). Keep in suitable, closed containers for disposal.

7. HANDLING AND STORAGE**Precautions for safe handling**

Avoid inhalation of vapour or mist.

Keep away from sources of ignition - No smoking. Take measures to prevent the build up of electrostatic charge.

Conditions for safe storage

Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Store in cool place.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Contains no substances with occupational exposure limit values.

Personal protective equipment

Respiratory protection

Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Hand protection

For prolonged or repeated contact use protective gloves.

Eye protection

Face shield and safety glasses

Skin and body protection

Choose body protection according to the amount and concentration of the dangerous substance at the work place.

Hygiene measures

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Form	liquid, clear
Colour	colourless

Safety data

pH	no data available
Melting point	-99 °C (-146 °F) - lit.
Boiling point	159 °C (318 °F) - lit.
Flash point	42.0 °C (107.6 °F) - closed cup
Ignition temperature	450 °C (842 °F)
Lower explosion limit	0.8 %(V)
Upper explosion limit	6 %(V)
Density	0.862 g/cm ³ at 25 °C (77 °F)
Water solubility	slightly soluble

10. STABILITY AND REACTIVITY

Chemical stability

Stable under recommended storage conditions.

Possibility of hazardous reactions

Vapours may form explosive mixture with air.

Conditions to avoid

Heat, flames and sparks.

Materials to avoid

Strong oxidizing agents

Hazardous decomposition products

Hazardous decomposition products formed under fire conditions. - Carbon oxides

11. TOXICOLOGICAL INFORMATION**Acute toxicity**

LD50 Oral - rat - 6,040 mg/kg

Remarks: Behavioral:Somnolence (general depressed activity).

LC50 Inhalation - rat - 2 h - 65000 ppm

Skin corrosion/irritation

no data available

Serious eye damage/eye irritation

no data available

Respiratory or skin sensitization

no data available

Germ cell mutagenicity

no data available

Carcinogenicity

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Reproductive toxicity

no data available

Specific target organ toxicity - single exposure (Globally Harmonized System)

May cause respiratory irritation.

Specific target organ toxicity - repeated exposure (Globally Harmonized System)

no data available

Aspiration hazard

May be fatal if swallowed and enters airways.

Potential health effects**Inhalation**

May be harmful if inhaled. May cause respiratory tract irritation.

Ingestion

Aspiration hazard if swallowed - can enter lungs and cause damage. May be harmful if swallowed.

Skin

May be harmful if absorbed through skin. May cause skin irritation.

Eyes

May cause eye irritation.

Signs and Symptoms of Exposure

Damage to the lungs., To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Additional Information

RTECS: DA8750000

12. ECOLOGICAL INFORMATION**Toxicity**

Toxicity to fish

LC50 - Oncorhynchus mykiss (rainbow trout) - 1.55 mg/l - 96.0 h

Toxicity to daphnia and other aquatic invertebrates. Immobilization EC50 - Daphnia magna (Water flea) - 2 mg/l - 24 h

Persistence and degradability

no data available

Bioaccumulative potential

no data available

Mobility in soil

no data available

PBT and vPvB assessment

no data available

Other adverse effects

An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Avoid release to the environment.

13. DISPOSAL CONSIDERATIONS

Product

This combustible material may be burned in a chemical incinerator equipped with an afterburner and scrubber. Observe all federal, state, and local environmental regulations. Contact a licensed professional waste disposal service to dispose of this material.

Contaminated packaging

Dispose of as unused product.

14. TRANSPORT INFORMATION

DOT (US)

UN-Number: 2364 Class: 3 Packing group: III
Proper shipping name: n-Propyl benzene
Marine pollutant: No
Poison Inhalation Hazard: No

IMDG

UN-Number: 2364 Class: 3 Packing group: III EMS-No: F-E, S-D
Proper shipping name: PROPYLBENZENE
Marine pollutant: No

IATA

UN-Number: 2364 Class: 3 Packing group: III
Proper shipping name: n-Propylbenzene

15. REGULATORY INFORMATION

OSHA Hazards

Combustible Liquid

DSL Status

All components of this product are on the Canadian DSL list.

SARA 302 Components

SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 Components

SARA 313: This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

SARA 311/312 Hazards

Fire Hazard

Massachusetts Right To Know Components

Propylbenzene

CAS-No.
103-65-1Revision Date
2007-03-01**Pennsylvania Right To Know Components**

Propylbenzene

CAS-No.
103-65-1Revision Date
2007-03-01**New Jersey Right To Know Components**

Propylbenzene

CAS-No.
103-65-1Revision Date
2007-03-01**California Prop. 65 Components**

This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

16. OTHER INFORMATION**Further information**

Copyright 2010 Sigma-Aldrich Co. License granted to make unlimited paper copies for internal use only.

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Co., shall not be held liable for any damage resulting from handling or from contact with the above product. See reverse side of invoice or packing slip for additional terms and conditions of sale.

International Chemical Safety Cards

o-XYLENE

ICSC: 0084



ortho-Xylene
1,2-Dimethylbenzene
o-Xylol
 $C_6H_4(CH_3)_2 / C_8H_{10}$
Molecular mass: 106.2

ICSC # 0084
CAS # 95-47-6
RTECS # [ZE2450000](#)
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 32°C explosive vapour/air mixtures may be formed.	Above 32°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 and 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			
Prepared in the context of cooperation between the International Programme on Chemical Safety & the Commission of the			

ICSC: 0084

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

o-XYLENE

ICSC: 0084

I M P O R T A N T D A T A	PHYSICAL STATE; APPEARANCE: COLOURLESS LIQUID , WITH CHARACTERISTIC ODOUR.	ROUTES OF EXPOSURE: The substance can be absorbed into the body by inhalation, through the skin and by ingestion.
	PHYSICAL DANGERS: As a result of flow, agitation, etc., electrostatic charges can be generated.	INHALATION RISK: A harmful contamination of the air will be reached rather slowly on evaporation of this substance at 20°C.
	CHEMICAL DANGERS: Reacts with strong acids and strong oxidants .	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.
	OCCUPATIONAL EXPOSURE LIMITS: TLV: 100 ppm as TWA; 150 ppm as STEL A4 (ACGIH 2001). BEI specified by (ACGIH 2001). 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	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: 144°C Melting point: -25°C Relative density (water = 1): 0.88 Solubility in water: none Vapour pressure, kPa at 20°C: 0.7	Relative vapour density (air = 1): 3.7 Relative density of the vapour/air-mixture at 20°C (air = 1): 1.02 Flash point: 32°C c.c. Auto-ignition temperature: 463°C Explosive limits, vol% in air: 0.9-6.7 Octanol/water partition coefficient as log Pow: 3.12
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ENVIRONMENTAL DATA	The substance is toxic to aquatic organisms.	
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NOTES

Depending on the degree of exposure, periodic medical examination is indicated. The recommendations on this Card also apply to technical xylene. See ICSC 0086 p-Xylene and 0085 m-Xylene.

Transport Emergency Card: TEC (R)-30S1307-III

NFPA Code: H 2; F 3; R 0;

Card has been partially updated in January 2008: see Occupational Exposure Limits.

ADDITIONAL INFORMATION

ICSC: 0084

o-XYLENE

(C) IPCS, CEC, 1994

IMPORTANT LEGAL	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
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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

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

p-XYLENE

ICSC: 0086

<p>I M P O R T A N T D A T A</p>	<p>PHYSICAL STATE; APPEARANCE: COLOURLESS LIQUID , WITH CHARACTERISTIC ODOUR.</p> <p>PHYSICAL DANGERS: As a result of flow, agitation, etc., electrostatic charges can be generated.</p> <p>CHEMICAL DANGERS: Reacts with strong acids strong oxidants</p> <p>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/m³) NIOSH REL: TWA 100 ppm (435 mg/m³) ST 150 ppm (655 mg/m³) NIOSH IDLH: 900 ppm See: 95476</p>	<p>ROUTES OF EXPOSURE: The substance can be absorbed into the body by inhalation, through the skin and by ingestion.</p> <p>INHALATION RISK: A harmful contamination of the air will be reached rather slowly on evaporation of this substance at 20°C.</p> <p>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.</p> <p>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.</p>
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<p>PHYSICAL PROPERTIES</p>	<p>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</p>	<p>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</p>
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<p>ENVIRONMENTAL DATA</p>	<p>The substance is toxic to aquatic organisms.</p>	
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NOTES

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

<p>ICSC: 0086</p>	<p>p-XYLENE</p>

(C) IPCS, CEC, 1994

<p>IMPORTANT LEGAL NOTICE:</p>	<p>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.</p>
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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

<p>I M P O R T A N T D A T A</p>	<p>PHYSICAL STATE; APPEARANCE: COLOURLESS LIQUID , WITH CHARACTERISTIC ODOUR.</p> <p>PHYSICAL DANGERS: As a result of flow, agitation, etc., electrostatic charges can be generated.</p> <p>CHEMICAL DANGERS: Reacts with strong acids strong oxidants</p> <p>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/m³) NIOSH REL: TWA 100 ppm (435 mg/m³) ST 150 ppm (655 mg/m³) NIOSH IDLH: 900 ppm See: 95476</p>	<p>ROUTES OF EXPOSURE: The substance can be absorbed into the body by inhalation, through the skin and by ingestion.</p> <p>INHALATION RISK: A harmful contamination of the air will be reached rather slowly on evaporation of this substance at 20°C.</p> <p>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.</p> <p>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.</p>
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<p>PHYSICAL PROPERTIES</p>	<p>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</p>	<p>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</p>
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<p>ENVIRONMENTAL DATA</p>	<p>The substance is toxic to aquatic organisms.</p>	
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NOTES

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

<p>ICSC: 0085</p>	<p>m-XYLENE</p>
<p>(C) IPCS, CEC, 1994</p>	

<p>IMPORTANT LEGAL NOTICE:</p>	<p>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.</p>
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International Chemical Safety Cards

BENZ(a)ANTHRACENE

ICSC: 0385



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

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



TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE	Combustible.		Water spray, powder. In case of fire in the surroundings: use appropriate extinguishing media.
EXPLOSION	Finely dispersed particles form explosive mixtures in air.	Prevent deposition of dust; closed system, dust explosion-proof electrical equipment and lighting.	
EXPOSURE		AVOID ALL CONTACT!	
•INHALATION		Local exhaust or breathing protection.	Fresh air, rest.
•SKIN		Protective gloves. Protective clothing.	Remove contaminated clothes. Rinse and then wash skin with water and soap.
•EYES		Safety goggles face shield or eye protection in combination with breathing protection.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
•INGESTION		Do not eat, drink, or smoke during work. Wash hands before eating.	Rinse mouth.
SPILLAGE DISPOSAL		STORAGE	PACKAGING & LABELLING
Sweep spilled substance into sealable containers; if appropriate, moisten first to prevent dusting. Carefully collect remainder, then remove to safe place. Personal protection: complete protective clothing including self-contained breathing apparatus.		Well closed.	T symbol N symbol R: 45-50/53 S: 53-45-60-61
SEE IMPORTANT INFORMATION ON BACK			
ICSC: 0385		Prepared in the context of cooperation between the International Programme on Chemical Safety & the Commission of the European Communities (C) IPCS CEC 1994. No modifications to the International version have been made except to add the OSHA PELs, NIOSH RELs and NIOSH IDLH values.	


International Chemical Safety Cards

ICSC: 0385

BENZ(a)ANTHRACENE

I M P O R T A N T D A T A	PHYSICAL STATE; APPEARANCE: COLOURLESS TO YELLOW BROWN FLUORESCENT FLAKES OR POWDER.	ROUTES OF EXPOSURE: The substance can be absorbed into the body by inhalation, through the skin and by ingestion.
	PHYSICAL DANGERS: Dust explosion possible if in powder or granular form, mixed with air.	INHALATION RISK: Evaporation at 20°C is negligible; a harmful concentration of airborne particles can, however, be reached quickly.
	CHEMICAL DANGERS:	EFFECTS OF SHORT-TERM EXPOSURE:
	OCCUPATIONAL EXPOSURE LIMITS: TLV: A2 (suspected human carcinogen); (ACGIH 2004). MAK: Carcinogen category: 2 (as pyrolysis product of organic materials) (DFG 2005).	EFFECTS OF LONG-TERM OR REPEATED EXPOSURE: This substance is probably carcinogenic to humans.

PHYSICAL PROPERTIES	Sublimation point: 435°C Melting point: 162°C Relative density (water = 1): 1.274 Solubility in water: none	Vapour pressure, Pa at 20°C: 292 Octanol/water partition coefficient as log Pow: 5.61
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ENVIRONMENTAL DATA	Bioaccumulation of this chemical may occur in seafood.	
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NOTES

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

ADDITIONAL INFORMATION

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ICSC: 0385	BENZ(a)ANTHRACENE
(C) IPCS, CEC, 1994	

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International Chemical Safety Cards

BENZO(a)PYRENE

ICSC: 0104



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

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



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

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

SEE IMPORTANT INFORMATION ON BACK


ICSC: 0104

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

International Chemical Safety Cards

BENZO(a)PYRENE

ICSC: 0104

<p>I M P O R T A N T D A T A</p>	<p>PHYSICAL STATE; APPEARANCE: PALE-YELLOW CRYSTALS</p> <p>PHYSICAL DANGERS:</p> <p>CHEMICAL DANGERS: Reacts with strong oxidants causing fire and explosion hazard.</p> <p>OCCUPATIONAL EXPOSURE LIMITS: TLV: Exposure by all routes should be carefully controlled to levels as low as possible A2 (suspected human carcinogen); (ACGIH 2005). MAK: Carcinogen category: 2; Germ cell mutagen group: 2; (DFG 2005).</p>	<p>ROUTES OF EXPOSURE: The substance can be absorbed into the body by inhalation of its aerosol, through the skin and by ingestion.</p> <p>INHALATION RISK: Evaporation at 20°C is negligible; a harmful concentration of airborne particles can, however, be reached quickly when dispersed.</p> <p>EFFECTS OF SHORT-TERM EXPOSURE:</p> <p>EFFECTS OF LONG-TERM OR REPEATED EXPOSURE: This substance is carcinogenic to humans. May cause heritable genetic damage to human germ cells. Animal tests show that this substance possibly causes toxicity to human reproduction or development.</p>
<p>PHYSICAL PROPERTIES</p>	<p>Boiling point: 496°C Melting point: 178.1°C Density: 1.4 g/cm³</p>	<p>Solubility in water: none (<0.1 g/100 ml) Vapour pressure : negligible Octanol/water partition coefficient as log Pow: 6.04</p>
<p>ENVIRONMENTAL DATA</p>	<p>The substance is very toxic to aquatic organisms. Bioaccumulation of this chemical may occur in fish, in plants and in molluscs. The substance may cause long-term effects in the aquatic environment.</p>	
<p>NOTES</p>		
<p>Do NOT take working clothes home. Benzo(a)pyrene is present as a component of polycyclic aromatic hydrocarbons (PAHs) in the environment, usually resulting from the incomplete combustion or pyrolysis of organic matters, especially fossil fuels and tobacco.</p>		
<p>ADDITIONAL INFORMATION</p>		
<p>ICSC: 0104 BENZO(a)PYRENE</p> <p style="text-align: center;">(C) IPCS, CEC, 1994</p>		
<p>IMPORTANT LEGAL NOTICE:</p>	<p>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.</p>	

International Chemical Safety Cards

BENZO(b)FLUORANTHENE

ICSC: 0720



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

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



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

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

SEE IMPORTANT INFORMATION ON BACK

ICSC: 0720


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

International Chemical Safety Cards

BENZO(b)FLUORANTHENE

ICSC: 0720

I	PHYSICAL STATE; APPEARANCE: COLOURLESS CRYSTALS	ROUTES OF EXPOSURE: The substance can be absorbed into the body by inhalation
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M P O R T A N T D A T A	<div> <div> of its aerosol and through the skin. </div> <div> INHALATION RISK: Evaporation at 20°C is negligible; a harmful concentration of airborne particles can, however, be reached quickly. </div> <div> EFFECTS OF SHORT-TERM EXPOSURE: </div> <div> EFFECTS OF LONG-TERM OR REPEATED EXPOSURE: This substance is possibly carcinogenic to humans. May cause genetic damage in humans. </div> </div> <div> PHYSICAL DANGERS: </div> <div> CHEMICAL DANGERS: Upon heating, toxic fumes are formed. </div> <div> OCCUPATIONAL EXPOSURE LIMITS: TLV: A2 (suspected human carcinogen); (ACGIH 2004). MAK: Carcinogen category: 2; (DFG 2004). </div>
PHYSICAL PROPERTIES	<div> Boiling point: 481°C Melting point: 168°C Solubility in water: none </div> <div> Octanol/water partition coefficient as log Pow: 6.12 </div>
ENVIRONMENTAL DATA	<div> This substance may be hazardous to the environment; special attention should be given to air quality and water quality. </div> 
NOTES	
Benzo(b)fluoranthene is present as a component of polycyclic aromatic hydrocarbons (PAH) content in the environment usually resulting from the incomplete combustion or pyrolysis of organic matters, especially fossil fuels and tobacco.ACGIH recommends environment containing benzo(b)fluoranthene should be evaluated in terms of the TLV-TWA for coal tar pitch volatile, as benzene soluble 0.2 mg/m ³ . Insufficient data are available on the effect of this substance on human health, therefore utmost care must be taken.	
ADDITIONAL INFORMATION	
<div> <div>ICSC: 0720</div> <div>BENZO(b)FLUORANTHENE</div> <div>(C) IPCS, CEC, 1994</div> </div>	
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

BENZO(k)FLUORANTHENE

ICSC: 0721



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

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



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

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

SEE IMPORTANT INFORMATION ON BACK

ICSC: 0721


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

International Chemical Safety Cards

BENZO(k)FLUORANTHENE

ICSC: 0721

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

P O R T A N T D A T A	<div> <div> PHYSICAL DANGERS: </div> <div> CHEMICAL DANGERS: Upon heating, toxic fumes are formed. </div> <div> OCCUPATIONAL EXPOSURE LIMITS: TLV not established. MAK: Carcinogen category: 2; (DFG 2004). </div> <div> INHALATION RISK: Evaporation at 20°C is negligible; a harmful concentration of airborne particles can, however, be reached quickly. </div> <div> EFFECTS OF SHORT-TERM EXPOSURE: </div> <div> EFFECTS OF LONG-TERM OR REPEATED EXPOSURE: This substance is possibly carcinogenic to humans. </div> </div>
PHYSICAL PROPERTIES	<div> Boiling point: 480°C Melting point: 217°C Solubility in water: none </div> <div> Octanol/water partition coefficient as log Pow: 6.84 </div>
ENVIRONMENTAL DATA	<div> This substance may be hazardous to the environment; special attention should be given to air quality and water quality. Bioaccumulation of this chemical may occur in crustacea and in fish. </div> 
NOTES	
Benzo(k)fluoranthene is present as a component of polycyclic aromatic hydrocarbons (PAH) content in the environment usually resulting from the incomplete combustion or pyrolysis of organic matters, especially fossil fuels and tobacco.ACGIH recommends environment containing benzo(k)fluoranthene should be evaluated in terms of the TLV-TWA for coal tar pitch volatile, as benzene soluble 0.2 mg/m ³ . Insufficient data are available on the effect of this substance on human health, therefore utmost care must be taken.	
ADDITIONAL INFORMATION	
<div> ICSC: 0721 BENZO(k)FLUORANTHENE </div> <div> (C) IPCS, CEC, 1994 </div>	
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

CHRYSENE

ICSC: 1672



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

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



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

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

SEE IMPORTANT INFORMATION ON BACK


International Chemical Safety Cards

CHRYSENE

ICSC: 1672

I M P O R T A N T D A T A	<p>PHYSICAL STATE; APPEARANCE: COLOURLESS TO BEIGE CRYSTALS OR POWDER</p> <p>PHYSICAL DANGERS: Dust explosion possible if in powder or granular form, mixed with air.</p> <p>CHEMICAL DANGERS: The substance decomposes on burning producing toxic fumes Reacts violently with strong oxidants</p> <p>OCCUPATIONAL EXPOSURE LIMITS: TLV: A3 (confirmed animal carcinogen with unknown relevance to humans); (ACGIH 2006). MAK not established.</p> <p>ROUTES OF EXPOSURE: The substance can be absorbed into the body by inhalation of its aerosol, through the skin and by ingestion.</p> <p>INHALATION RISK: A harmful concentration of airborne particles can be reached quickly when dispersed</p> <p>EFFECTS OF SHORT-TERM EXPOSURE:</p> <p>EFFECTS OF LONG-TERM OR REPEATED EXPOSURE: This substance is possibly carcinogenic to humans.</p>
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PHYSICAL PROPERTIES	<p>Boiling point: 448°C Melting point: 254 - 256°C Density: 1.3 g/cm³</p> <p>Solubility in water: very poor Octanol/water partition coefficient as log Pow: 5.9</p>
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ENVIRONMENTAL DATA	<p>The substance is very toxic to aquatic organisms. Bioaccumulation of this chemical may occur in seafood. It is strongly advised that this substance does not enter the environment.</p> 
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NOTES

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

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

ADDITIONAL INFORMATION

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ICSC: 1672

CHRYSENE

(C) IPCS, CEC, 1994

IMPORTANT LEGAL NOTICE:

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International Chemical Safety Cards

INDENO(1,2,3-cd)PYRENE

ICSC: 0730



o-Phenylenepyrene
2,3-Phenylenepyrene
 $C_{22}H_{12}$

Molecular mass: 276.3

ICSC # 0730

CAS # 193-39-5

RTECS # [NK9300000](#)

March 25, 1999 Peer reviewed

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

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

SEE IMPORTANT INFORMATION ON BACK

ICSC: 0730


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

International Chemical Safety Cards

INDENO(1,2,3-cd)PYRENE

ICSC: 0730

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

O R T A N T D A T A	<div> <div> CHEMICAL DANGERS: Upon heating, toxic fumes are formed. </div> <div> OCCUPATIONAL EXPOSURE LIMITS: TLV not established. MAK: Carcinogen category: 2; (DFG 2004). </div> </div> <div> Evaporation at 20°C is negligible; a harmful concentration of airborne particles can, however, be reached quickly. </div> <div> EFFECTS OF SHORT-TERM EXPOSURE: </div> <div> EFFECTS OF LONG-TERM OR REPEATED EXPOSURE: This substance is possibly carcinogenic to humans. </div>
PHYSICAL PROPERTIES	<div> Boiling point: 536°C Melting point: 164°C Solubility in water: none </div> <div> Octanol/water partition coefficient as log Pow: 6.58 </div>
ENVIRONMENTAL DATA	<div> This substance may be hazardous to the environment; special attention should be given to air quality and water quality. Bioaccumulation of this chemical may occur in fish. </div> 
NOTES	
Indeno(1,2,3-cd)pyrene is present as a component of polycyclic aromatic hydrocarbons (PAH) content in the environment usually resulting from the incomplete combustion or pyrolysis of organic matters, especially fossil fuels and tobacco.ACGIH recommends environment containing Indeno(1,2,3-c,d)pyrene should be evaluated in terms of the TLV-TWA for coal tar pitch volatile, as benzene soluble 0.2 mg/m ³ . Insufficient data are available on the effect of this substance on human health, therefore utmost care must be taken.	
ADDITIONAL INFORMATION	
<div> ICSC: 0730 INDENO(1,2,3-cd)PYRENE </div> <div> (C) IPCS, CEC, 1994 </div>	
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

ARSENIC

ICSC: 0013



Grey arsenic

As

Atomic mass: 74.9

ICSC # 0013

CAS # 7440-38-2

RTECS # [CG0525000](#)

UN # 1558

EC # 033-001-00-X

October 18, 1999 Peer reviewed



TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE	Combustible. Gives off irritating or toxic fumes (or gases) in a fire.	NO open flames. NO contact with strong oxidizers. NO contact with hot surfaces.	Powder, water spray, foam, carbon dioxide.
EXPLOSION	Risk of fire and explosion is slight when exposed to hot surfaces or flames in the form of fine powder or dust.	Prevent deposition of dust; closed system, dust explosion-proof electrical equipment and lighting.	
EXPOSURE		PREVENT DISPERSION OF DUST! AVOID ALL CONTACT! AVOID EXPOSURE OF (PREGNANT) WOMEN!	IN ALL CASES CONSULT A DOCTOR!
• INHALATION	Cough. Sore throat. Shortness of breath. Weakness. See Ingestion.	Closed system and ventilation.	Fresh air, rest. Artificial respiration may be needed. Refer for medical attention.
• SKIN	Redness.	Protective gloves. Protective clothing.	Remove contaminated clothes. Rinse skin with plenty of water or shower.
• EYES	Redness.	Face shield or eye protection in combination with breathing protection if powder.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
• INGESTION	Abdominal pain. Diarrhoea. Nausea. Vomiting. Burning sensation in the throat and chest. Shock or collapse. Unconsciousness.	Do not eat, drink, or smoke during work. Wash hands before eating.	Rinse mouth. Induce vomiting (ONLY IN CONSCIOUS PERSONS!). Refer for medical attention.

SPILLAGE DISPOSAL	STORAGE	PACKAGING & LABELLING
Evacuate danger area! Sweep spilled substance into sealable containers. Carefully collect remainder, then remove to safe place. Chemical protection suit including self-contained breathing apparatus. Do NOT let this chemical enter the environment.	Separated from strong oxidants, acids, halogens, food and feedstuffs. Well closed.	Do not transport with food and feedstuffs. Marine pollutant. T symbol N symbol R: 23/25-50/53 S: 1/2-20/21-28-45-60-61 UN Hazard Class: 6.1 UN Packing Group: II

SEE IMPORTANT INFORMATION ON BACK

ICSC: 0013

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

ARSENIC

ICSC: 0013

I M P O R T A N T D A T A	PHYSICAL STATE; APPEARANCE: ODOURLESS, BRITTLE, GREY, METALLIC-LOOKING CRYSTALS.	ROUTES OF EXPOSURE: The substance can be absorbed into the body by inhalation of its aerosol and by ingestion.	
	PHYSICAL DANGERS:	INHALATION RISK: Evaporation at 20°C is negligible; a harmful concentration of airborne particles can, however, be reached quickly, when dispersed.	
	CHEMICAL DANGERS: Upon heating, toxic fumes are formed. Reacts violently with strong oxidants and halogens, causing fire and explosion hazard. Reacts with acids to produce	EFFECTS OF SHORT-TERM EXPOSURE: The substance is irritating to the eyes the skin and the respiratory tract. The substance may cause effects on the gastrointestinal tract cardiovascular system central nervous system kidneys , resulting in severe gastroenteritis, loss of fluid, and electrolytes, cardiac disorders shock convulsions and kidney impairment Exposure above the OEL may result in death. The effects may be delayed. Medical observation is indicated.	
	OCCUPATIONAL EXPOSURE LIMITS: TLV: 0.01 mg/m³ as TWA A1 (confirmed human carcinogen); BEI issued (ACGIH 2004). MAK: Carcinogen category: 1; Germ cell mutagen group: 3A; (DFG 2004). OSHA PEL: 1910.1018 TWA 0.010 mg/m³ NIOSH REL: Ca C 0.002 mg/m³ 15-minute See Appendix A NIOSH IDLH: Ca 5 mg/m³ (as As) See: 7440382	EFFECTS OF LONG-TERM OR REPEATED EXPOSURE: Repeated or prolonged contact with skin may cause dermatitis. The substance may have effects on the mucous membranes, skin, peripheral nervous system liver bone marrow , resulting in pigmentation disorders, hyperkeratosis, perforation of nasal septum, neuropathy, liver impairment anaemia This substance is carcinogenic to humans. Animal tests show that this substance possibly causes toxicity to human reproduction or development.	
	PHYSICAL PROPERTIES	Sublimation point: 613°C Density: 5.7 g/cm³	Solubility in water: none
	ENVIRONMENTAL DATA	The substance is toxic to aquatic organisms. It is strongly advised that this substance does not enter the environment.	
NOTES			
The substance is combustible but no flash point is available in literature. Depending on the degree of exposure, periodic medical examination is suggested. Do NOT take working clothes home. Refer also to cards for specific arsenic compounds, e.g., Arsenic pentoxide (ICSC 0377), Arsenic trichloride (ICSC 0221), Arsenic trioxide (ICSC 0378), Arsine (ICSC 0222).			
Transport Emergency Card: TEC (R)-61GT5-II			
ADDITIONAL INFORMATION			
ICSC: 0013			
ARSENIC			
(C) IPCS, CEC, 1994			
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

BARIUM SULFATE

ICSC: 0827



Barium sulphate

Blanc fixe

Artificial barite

BaSO₄

Molecular mass: 233.43

ICSC # 0827

CAS # 7727-43-7

RTECS # [CR0600000](#)

October 20, 1999 Peer reviewed

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE	Not combustible. Gives off irritating or toxic fumes (or gases) in a fire.		In case of fire in the surroundings: use appropriate extinguishing media.
EXPLOSION			
EXPOSURE		PREVENT DISPERSION OF DUST!	
•INHALATION		Local exhaust or breathing protection.	Fresh air, rest.
•SKIN		Protective gloves.	Remove contaminated clothes. Rinse skin with plenty of water or shower.
•EYES		Safety spectacles.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
•INGESTION		Do not eat, drink, or smoke during work.	Rinse mouth.
SPILLAGE DISPOSAL	STORAGE		PACKAGING & LABELLING
Sweep spilled substance into containers; if appropriate, moisten first to prevent dusting. Personal protection: P1 filter respirator for inert particles.			R: S:
SEE IMPORTANT INFORMATION ON BACK			
ICSC: 0827		Prepared in the context of cooperation between the International Programme on Chemical Safety & the Commission of the European Communities (C) IPCS CEC 1994. No modifications to the International version have been made except to add the OSHA PELs, NIOSH RELs and NIOSH IDLH values.	

International Chemical Safety Cards

BARIUM SULFATE

ICSC: 0827

I M P O R T A N T D A T A	PHYSICAL STATE; APPEARANCE: ODOURLESS TASTELESS, WHITE OR YELLOWISH CRYSTALS OR POWDER.	ROUTES OF EXPOSURE: The substance can be absorbed into the body by inhalation of its aerosol.
	PHYSICAL DANGERS:	INHALATION RISK: Evaporation at 20°C is negligible; a nuisance-causing concentration of airborne particles can, however, be reached quickly.
	CHEMICAL DANGERS: Reacts violently with aluminium powder.	EFFECTS OF SHORT-TERM EXPOSURE:
	OCCUPATIONAL EXPOSURE LIMITS: TLV: 10 mg/m ³ as TWA; (ACGIH 2004). MAK: (Inhalable fraction) 4 mg/m ³ ; (Respirable fraction) 1.5 mg/m ³ ; (DFG 2004). OSHA PEL [†] : TWA 15 mg/m ³ (total) TWA 5 mg/m ³ (resp) NIOSH REL: TWA 10 mg/m ³ (total) TWA 5 mg/m ³ (resp) NIOSH IDLH: N.D. See: IDLH INDEX	EFFECTS OF LONG-TERM OR REPEATED EXPOSURE: Lungs may be affected by repeated or prolonged exposure to dust particles, resulting in baritosis (a form of benign pneumoconiosis).

PHYSICAL PROPERTIES	Melting point (decomposes): 1600°C Density: 4.5 g/cm ³	Solubility in water: none
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ENVIRONMENTAL DATA	
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NOTES

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

ADDITIONAL INFORMATION

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ICSC: 0827	BARIUM SULFATE
(C) IPCS, CEC, 1994	

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.
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International Chemical Safety Cards

CADMIUM

ICSC: 0020



Cd
Atomic mass: 112.4

ICSC # 0020
CAS # 7440-43-9
RTECS # [EU9800000](#)
UN # 2570
EC # 048-002-00-0
April 22, 2005 Peer reviewed



TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE	Flammable in powder form and spontaneously combustible in pyrophoric form. Gives off irritating or toxic fumes (or gases) in a fire.	NO open flames, NO sparks, and NO smoking. NO contact with heat or acid(s).	Dry sand. Special powder. NO other agents.
EXPLOSION	Finely dispersed particles form explosive mixtures in air.	Prevent deposition of dust; closed system, dust explosion-proof electrical equipment and lighting.	
EXPOSURE		PREVENT DISPERSION OF DUST! AVOID ALL CONTACT!	IN ALL CASES CONSULT A DOCTOR!
• INHALATION	Cough. Sore throat.	Local exhaust or breathing protection.	Fresh air, rest. Refer for medical attention.
• SKIN		Protective gloves.	Remove contaminated clothes. Rinse and then wash skin with water and soap.
• EYES	Redness. Pain.	Safety goggles or eye protection in combination with breathing protection.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
• INGESTION	Abdominal pain. Diarrhoea. Headache. Nausea. Vomiting.	Do not eat, drink, or smoke during work.	Rest. Refer for medical attention.

SPILLAGE DISPOSAL	STORAGE	PACKAGING & LABELLING
Evacuate danger area! Personal protection: chemical protection suit including self-contained breathing apparatus. Remove all ignition sources. Sweep spilled substance into containers. Carefully collect remainder, then remove to safe place.	Fireproof. Dry. Keep under inert gas. Separated from ignition sources, oxidants acids, food and feedstuffs	Airtight. Unbreakable packaging; put breakable packaging into closed unbreakable container. Do not transport with food and feedstuffs. Note: E T+ symbol N symbol R: 45-26-48/23/25-62-63-68-50/53 S: 53-45-60-61 UN Hazard Class: 6.1

SEE IMPORTANT INFORMATION ON BACK

ICSC: 0020

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

CADMIUM

ICSC: 0020

<p>I M P O R T A N T A D D A</p>	<p>PHYSICAL STATE; APPEARANCE: SOFT BLUE-WHITE METAL LUMPS OR GREY POWDER. MALLEABLE. TURNS BRITTLE ON EXPOSURE TO 80°C AND TARNISHES ON EXPOSURE TO MOIST AIR.</p> <p>PHYSICAL DANGERS: Dust explosion possible if in powder or granular form, mixed with air.</p> <p>CHEMICAL DANGERS: Reacts with acids forming flammable/explosive gas (hydrogen - see ICSC0001.) Dust reacts with oxidants, hydrogen azide, zinc, selenium or tellurium , causing fire and explosion hazard.</p> <p>OCCUPATIONAL EXPOSURE LIMITS: TLV: (Total dust) 0.01 mg/m³ (Respirable fraction) 0.002 mg/m³ as TWA A2 (suspected human carcinogen); BEI issued (ACGIH 2005). MAK: skin absorption (H); Carcinogen category: 1; Germ cell mutagen group: 3A; (DFG 2004). OSHA PEL*: 1910.1027 TWA 0.005 mg/m³ *Note: The PEL applies to all Cadmium compounds (as Cd). NIOSH REL*: Ca See Appendix A *Note: The REL applies to all Cadmium compounds (as Cd). NIOSH IDLH: Ca 9 mg/m³ (as Cd) See: IDLH INDEX</p>	<p>ROUTES OF EXPOSURE: The substance can be absorbed into the body by inhalation of its aerosol and by ingestion.</p> <p>INHALATION RISK: A harmful concentration of airborne particles can be reached quickly when dispersed, especially if powdered.</p> <p>EFFECTS OF SHORT-TERM EXPOSURE: The fume is irritating to the respiratory tract Inhalation of fume may cause lung oedema (see Notes). Inhalation of fumes may cause metal fume fever. The effects may be delayed. Medical observation is indicated.</p> <p>EFFECTS OF LONG-TERM OR REPEATED EXPOSURE: Lungs may be affected by repeated or prolonged exposure to dust particles. The substance may have effects on the kidneys , resulting in kidney impairment This substance is carcinogenic to humans.</p>
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<p>PHYSICAL PROPERTIES</p>	<p>Boiling point: 765°C Melting point: 321°C Density: 8.6 g/cm³</p>	<p>Solubility in water: none Auto-ignition temperature: (cadmium metal dust) 250°C</p>
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<p>ENVIRONMENTAL DATA</p>	
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NOTES

Reacts violently with fire extinguishing agents such as water, foam, carbon dioxide and halons. Depending on the degree of exposure, periodic medical examination is indicated. The symptoms of lung oedema often do not become manifest until a few hours have passed and they are aggravated by physical effort. Rest and medical observation are therefore essential. Do NOT take working clothes home. Cadmium also exists in a pyrophoric form (EC No. 048-011-00-X), which bears the additional EU labelling symbol F, R phrase 17, and S phrases 7/8 and 43. UN numbers and packing group will vary according to the physical form of the substance.

ADDITIONAL INFORMATION

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<p>ICSC: 0020</p>	<p>CADMIUM</p>
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(C) IPCS, CEC, 1994

<p>IMPORTANT LEGAL NOTICE:</p>	<p>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.</p>
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International Chemical Safety Cards

CHROMIUM

ICSC: 0029



Chrome
Cr
Atomic mass: 52.0
(powder)

ICSC # 0029
CAS # 7440-47-3
RTECS # [GB4200000](#)
October 27, 2004 Peer reviewed

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE	Combustible under specific conditions.	No open flames if in powder form.	In case of fire in the surroundings: use appropriate extinguishing media.
EXPLOSION		Prevent deposition of dust; closed system, dust explosion-proof electrical equipment and lighting.	
EXPOSURE		PREVENT DISPERSION OF DUST!	
•INHALATION	Cough.	Local exhaust or breathing protection.	Fresh air, rest.
•SKIN		Protective gloves.	Remove contaminated clothes. Rinse skin with plenty of water or shower.
•EYES	Redness.	Safety goggles.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
•INGESTION		Do not eat, drink, or smoke during work.	Rinse mouth.

SPILLAGE DISPOSAL	STORAGE	PACKAGING & LABELLING
Sweep spilled substance into containers; if appropriate, moisten first to prevent dusting. Personal protection: P2 filter respirator for harmful particles.		R: S:

SEE IMPORTANT INFORMATION ON BACK

ICSC: 0029

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

CHROMIUM

ICSC: 0029

I	PHYSICAL STATE; APPEARANCE: GREY POWDER	ROUTES OF EXPOSURE:
M	PHYSICAL DANGERS: Dust explosion possible if in powder or granular form, mixed with air.	INHALATION RISK: A harmful concentration of airborne particles can be reached quickly when dispersed.
P		

O R T A N T D A T A	CHEMICAL DANGERS: Chromium is a catalytic substance and may cause reaction in contact with many organic and inorganic substances , causing fire and explosion hazard.		EFFECTS OF SHORT-TERM EXPOSURE: May cause mechanical irritation to the eyes and the respiratory tract.		
	OCCUPATIONAL EXPOSURE LIMITS: TLV: (as Cr metal, Cr(III) compounds) 0.5 mg/m³ as TWA A4 (ACGIH 2004). MAK not established.		EFFECTS OF LONG-TERM OR REPEATED EXPOSURE:		
	OSHA PEL*: TWA 1 mg/m³ See Appendix C *Note: The PEL also applies to insoluble chromium salts.				
	NIOSH REL: TWA 0.5 mg/m³ See Appendix C				
	NIOSH IDLH: 250 mg/m³ (as Cr) See: 7440473				
PHYSICAL PROPERTIES		Boiling point: 2642°C Melting point: 1900°C Density: 7.15 g/cm³		Solubility in water: none	
ENVIRONMENTAL DATA					
NOTES					
The surface of the chromium particles is oxidized to chromium(III)oxide in air. See ICSC 1531 Chromium(III) oxide.					
ADDITIONAL INFORMATION					
ICSC: 0029 <div>(C) IPCS, CEC, 1994</div>					
IMPORTANT LEGAL NOTICE:		Neither NIOSH, the CEC or the IPCS nor any person acting on behalf of NIOSH, the CEC or the IPCS is responsible for the use which might be made of this information. This card contains the collective views of the IPCS Peer Review Committee and may not reflect in all cases all the detailed requirements included in national legislation on the subject. The user should verify compliance of the cards with the relevant legislation in the country of use. The only modifications made to produce the U.S. version is inclusion of the OSHA PELs, NIOSH RELs and NIOSH IDLH values.			

International Chemical Safety Cards

COPPER

ICSC: 0240



Cu
(powder)

ICSC # 0240

CAS # 7440-50-8

RTECS # [GL5325000](#)

September 24, 1993 Validated

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

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

SEE IMPORTANT INFORMATION ON BACK

ICSC: 0240

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

COPPER

ICSC: 0240

I	PHYSICAL STATE; APPEARANCE: RED POWDER, TURNS GREEN ON EXPOSURE TO MOIST AIR.	ROUTES OF EXPOSURE: The substance can be absorbed into the body by inhalation and by ingestion.
M	PHYSICAL DANGERS:	INHALATION RISK: Evaporation at 20°C is negligible; a harmful concentration of airborne particles can, however, be reached quickly when dispersed.
P	CHEMICAL DANGERS:	

O R T A N T D A T A	Shock-sensitive compounds are formed with acetylenic compounds, ethylene oxides and azides. Reacts with strong oxidants like chlorates, bromates and iodates, causing explosion hazard.		EFFECTS OF SHORT-TERM EXPOSURE: Inhalation of fumes may cause metal fume fever. See Notes.
	OCCUPATIONAL EXPOSURE LIMITS: TLV: 0.2 mg/m ³ fume (ACGIH 1992-1993). TLV (as Cu, dusts & mists): 1 mg/m ³ (ACGIH 1992-1993). Intended change 0.1 mg/m ³ Inhal., A4 (not classifiable as a human carcinogen); MAK: 0.1 mg/m ³ (Inhalable fraction) Peak limitation category: II(2) Pregnancy risk group: D (DFG 2005). OSHA PEL*: TWA 1 mg/m ³ *Note: The PEL also applies to other copper compounds (as Cu) except copper fume. NIOSH REL*: TWA 1 mg/m ³ *Note: The REL also applies to other copper compounds (as Cu) except Copper fume. NIOSH IDLH: 100 mg/m ³ (as Cu) See: 7440508	EFFECTS OF LONG-TERM OR REPEATED EXPOSURE: Repeated or prolonged contact may cause skin sensitization.	
	PHYSICAL PROPERTIES		Boiling point: 2595°C Melting point: 1083°C Relative density (water = 1): 8.9
	ENVIRONMENTAL DATA		Solubility in water: none
	NOTES		
	The symptoms of metal fume fever do not become manifest until several hours.		
	ADDITIONAL INFORMATION		
	ICSC: 0240		COPPER
	(C) IPCS, CEC, 1994		
IMPORTANT LEGAL NOTICE:	Neither NIOSH, the CEC or the IPCS nor any person acting on behalf of NIOSH, the CEC or the IPCS is responsible for the use which might be made of this information. This card contains the collective views of the IPCS Peer Review Committee and may not reflect in all cases all the detailed requirements included in national legislation on the subject. The user should verify compliance of the cards with the relevant legislation in the country of use. The only modifications made to produce the U.S. version is inclusion of the OSHA PELs, NIOSH RELs and NIOSH IDLH values.		

International Chemical Safety Cards

LEAD

ICSC: 0052



Lead metal
Plumbum
Pb
Atomic mass: 207.2
(powder)

ICSC # 0052

CAS # 7439-92-1


RTECS # [OF7525000](#)

October 08, 2002 Peer reviewed

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE	Not combustible. Gives off irritating or toxic fumes (or gases) in a fire.		In case of fire in the surroundings: use appropriate extinguishing media.
EXPLOSION	Finely dispersed particles form explosive mixtures in air.	Prevent deposition of dust; closed system, dust explosion-proof electrical equipment and lighting.	
EXPOSURE	See EFFECTS OF LONG-TERM OR REPEATED EXPOSURE.	PREVENT DISPERSION OF DUST! AVOID EXPOSURE OF (PREGNANT) WOMEN!	
• INHALATION		Local exhaust or breathing protection.	Fresh air, rest.
• SKIN		Protective gloves.	Remove contaminated clothes. Rinse and then wash skin with water and soap.
• EYES		Safety spectacles.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
• INGESTION	Abdominal pain. Nausea. Vomiting.	Do not eat, drink, or smoke during work. Wash hands before eating.	Rinse mouth. Give plenty of water to drink. Refer for medical attention.
SPILLAGE DISPOSAL		STORAGE	PACKAGING & LABELLING
Sweep spilled substance into containers; if appropriate, moisten first to prevent dusting. Carefully collect remainder, then remove to safe place. Do NOT let this chemical enter the environment. Personal protection: P3 filter respirator for toxic particles.		Separated from food and feedstuffs incompatible materials See Chemical Dangers.	R: S:
SEE IMPORTANT INFORMATION ON BACK			
ICSC: 0052		Prepared in the context of cooperation between the International Programme on Chemical Safety & the Commission of the European Communities (C) IPCS CEC 1994. No modifications to the International version have been made except to add the OSHA PELs, NIOSH RELs and NIOSH IDLH values.	

International Chemical Safety Cards

I M P O R T A N T T A D A	<p>PHYSICAL STATE; APPEARANCE: BLUISH-WHITE OR SILVERY-GREY SOLID IN VARIOUS FORMS. TURNS TARNISHED ON EXPOSURE TO AIR.</p> <p>PHYSICAL DANGERS: Dust explosion possible if in powder or granular form, mixed with air.</p> <p>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.</p> <p>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/m³ See Appendix C *Note: The PEL also applies to other lead compounds (as Pb) -- see Appendix C. NIOSH REL*: TWA 0.050 mg/m³ See Appendix C *Note: The REL also applies to other lead compounds (as Pb) -- see Appendix C. NIOSH IDLH: 100 mg/m³ (as Pb) See: 7439921</p> <p>ROUTES OF EXPOSURE: The substance can be absorbed into the body by inhalation and by ingestion.</p> <p>INHALATION RISK: A harmful concentration of airborne particles can be reached quickly when dispersed, especially if powdered.</p> <p>EFFECTS OF SHORT-TERM EXPOSURE:</p> <p>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.</p>
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PHYSICAL PROPERTIES	Boiling point: 1740°C Melting point: 327.5°C Density: 11.34 g/cm ³ 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. 

NOTES

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 <div style="text-align: right;">LEAD</div> <div style="text-align: center;">(C) IPCS, CEC, 1994</div>	

IMPORTANT LEGAL NOTICE:

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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

ICSC: 0056

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

I M P O R T A N T D A T A	<p>PHYSICAL STATE; APPEARANCE: ODOURLESS, HEAVY AND MOBILE SILVERY LIQUID METAL.</p> <p>PHYSICAL DANGERS:</p> <p>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.</p> <p>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/m³ NIOSH REL: Hg Vapor: TWA 0.05 mg/m³ skin Other: C 0.1 mg/m³ skin NIOSH IDLH: 10 mg/m³ (as Hg) See: 7439976</p>	<p>ROUTES OF EXPOSURE: The substance can be absorbed into the body by inhalation of its vapour and through the skin , also as a vapour!</p> <p>INHALATION RISK: A harmful contamination of the air can be reached very quickly on evaporation of this substance at 20°C.</p> <p>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 system and kidneys. The effects may be delayed. Medical observation is indicated.</p> <p>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.</p>
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PHYSICAL PROPERTIES	<p>Boiling point: 357°C Melting point: -39°C Relative density (water = 1): 13.5 Solubility in water: none</p> <p>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</p>
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ENVIRONMENTAL DATA	<p>The substance is very toxic to aquatic organisms. In the food chain important to humans, bioaccumulation takes place, specifically in fish.</p> 
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NOTES

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

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ICSC: 0056	MERCURY
<p style="text-align: center;">(C) IPCS, CEC, 1994</p>	

IMPORTANT LEGAL NOTICE:	<p>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.</p>
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International Chemical Safety Cards

NICKEL

ICSC: 0062



Ni
Atomic mass: 58.7
(powder)

ICSC # 0062
CAS # 7440-02-0
RTECS # [QR5950000](#)
EC # 028-002-00-7
October 17, 2001 Peer reviewed

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE	Flammable as dust. Toxic fumes may be released in a fire.		Dry sand. NO carbon dioxide. NO water.
EXPLOSION	Finely dispersed particles form explosive mixtures in air.	Prevent deposition of dust; closed system, dust explosion-proof electrical equipment and lighting.	
EXPOSURE		PREVENT DISPERSION OF DUST! AVOID ALL CONTACT!	
•INHALATION	Cough. Shortness of breath.	Local exhaust or breathing protection.	Fresh air, rest.
•SKIN		Protective gloves. Protective clothing.	Remove contaminated clothes. Rinse and then wash skin with water and soap.
•EYES		Safety spectacles, or eye protection in combination with breathing protection.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
•INGESTION		Do not eat, drink, or smoke during work.	Rinse mouth.

SPILLAGE DISPOSAL	STORAGE	PACKAGING & LABELLING
Vacuum spilled material. Carefully collect remainder, then remove to safe place. Personal protection: P2 filter respirator for harmful particles.	Separated from strong acids.	Xn symbol R: 40-43 S: 2-22-36

SEE IMPORTANT INFORMATION ON BACK

ICSC: 0062

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

NICKEL

ICSC: 0062

I	PHYSICAL STATE; APPEARANCE: SILVERY METALLIC SOLID IN VARIOUS FORMS. PHYSICAL DANGERS:	ROUTES OF EXPOSURE: The substance can be absorbed into the body by inhalation of the dust.
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M P O R T A N T I N F O R M A T I O N	<p>Dust explosion possible if in powder or granular form, mixed with air.</p> <p>CHEMICAL DANGERS: Reacts violently, in powder form, with titanium powder and potassium perchlorate, and oxidants such as ammonium nitrate, causing fire and explosion hazard. Reacts slowly with non-oxidizing acids and more rapidly with oxidizing acids. Toxic gases and vapours (such as nickel carbonyl) may be released in a fire involving nickel.</p> <p>OCCUPATIONAL EXPOSURE LIMITS: TLV: (Inhalable fraction) 1.5 mg/m³ as TWA A5 (not suspected as a human carcinogen); (ACGIH 2004). MAK: (Inhalable fraction) sensitization of respiratory tract and skin (Sah); Carcinogen category: 1; (DFG 2004). OSHA PEL*†: TWA 1 mg/m³ *Note: The PEL does not apply to Nickel carbonyl. NIOSH REL*: Ca TWA 0.015 mg/m³ See Appendix A *Note: The REL does not apply to Nickel carbonyl. NIOSH IDLH: Ca 10 mg/m³ (as Ni) See: 7440020</p> <p>INHALATION RISK: Evaporation at 20°C is negligible; a harmful concentration of airborne particles can, however, be reached quickly when dispersed.</p> <p>EFFECTS OF SHORT-TERM EXPOSURE: May cause mechanical irritation. Inhalation of fumes may cause pneumonitis.</p> <p>EFFECTS OF LONG-TERM OR REPEATED EXPOSURE: Repeated or prolonged contact may cause skin sensitization. Repeated or prolonged inhalation exposure may cause asthma. Lungs may be affected by repeated or prolonged exposure. This substance is possibly carcinogenic to humans.</p>
PHYSICAL PROPERTIES	<p>Boiling point: 2730°C Melting point: 1455°C Density: 8.9 g/cm³</p> <p>Solubility in water: none</p>
ENVIRONMENTAL DATA	
NOTES	
<p>At high temperatures, nickel oxide fumes will be formed. Depending on the degree of exposure, periodic medical examination is suggested. The symptoms of asthma often do not become manifest until a few hours have passed and they are aggravated by physical effort. Rest and medical observation are therefore essential. Anyone who has shown symptoms of asthma due to this substance should avoid all further contact with this substance.</p>	
ADDITIONAL INFORMATION	
ICSC: 0062	
(C) IPCS, CEC, 1994	
IMPORTANT LEGAL NOTICE:	<p>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.</p>

International Chemical Safety Cards

SILVER

ICSC: 0810



Argentum
C.I. 77820
Ag

ICSC # 0810
CAS # 7440-22-4
RTECS # [VW3500000](#)
September 10, 1997 Validated

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE	Not combustible, except as powder.		
EXPLOSION			
EXPOSURE		PREVENT DISPERSION OF DUST!	
• INHALATION		Local exhaust or breathing protection.	Fresh air, rest.
• SKIN		Protective gloves.	Rinse skin with plenty of water or shower.
• EYES		Safety spectacles, or eye protection in combination with breathing protection if powder.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
• INGESTION		Do not eat, drink, or smoke during work.	

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.	Separated from ammonia, strong hydrogen peroxide solutions, strong acids.	

SEE IMPORTANT INFORMATION ON BACK

ICSC: 0810


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

SILVER

ICSC: 0810

I	PHYSICAL STATE; APPEARANCE:	ROUTES OF EXPOSURE:
M	WHITE METAL, TURNS DARK ON EXPOSURE TO OZONE, HYDROGEN SULFIDE OR SULFUR.	The substance can be absorbed into the body by inhalation and by ingestion.
P	PHYSICAL DANGERS:	INHALATION RISK:
O		Evaporation at 20°C is negligible; a harmful concentration of airborne particles can, however, be reached quickly when dispersed.
R	CHEMICAL DANGERS:	
	Shock-sensitive compounds are formed with acetylene.	

T A N T D A T A	<p>Reacts with acids causing fire hazard. Contact with strong hydrogen peroxide solution will cause violent decomposition to oxygen gas. Contact with ammonia may cause formation of compounds that are explosive when dry.</p> <p>OCCUPATIONAL EXPOSURE LIMITS: TLV (metal): 0.1 mg/m³ (ACGIH 1997). EU OEL: 0.1 mg/m³ as TWA (EU 2000). OSHA PEL: TWA 0.01 mg/m³ NIOSH REL: TWA 0.01 mg/m³ NIOSH IDLH: 10 mg/m³ (as Ag) See: IDLH INDEX</p> <p>EFFECTS OF SHORT-TERM EXPOSURE: Inhalation of high amounts of metallic silver vapours may cause lung damage with pulmonary oedema.</p> <p>EFFECTS OF LONG-TERM OR REPEATED EXPOSURE: The substance may cause a grey-blue discoloration of the eyes, nose, throat and skin (argyria/argyrosis).</p>
PHYSICAL PROPERTIES	<div>Boiling point: 2212°C</div> <div>Melting point: 962°C</div> <div>Relative density (water = 1): 10.5</div> <div>Solubility in water: none</div>
ENVIRONMENTAL DATA	<p>This substance may be hazardous to the environment; special attention should be given to aquatic organisms.</p> 
NOTES	
Card has been partially updated in March 2008: see Occupational Exposure Limits.	
ADDITIONAL INFORMATION	
<div>ICSC: 0810</div> <div>(C) IPCS, CEC, 1994</div> <div>SILVER</div>	
IMPORTANT LEGAL NOTICE:	<p>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.</p>

International Chemical Safety Cards

ZINC POWDER

ICSC: 1205



Blue powder
Merrillite
Zn
Atomic mass: 65.4
(powder)

ICSC # 1205
CAS # 7440-66-6
RTECS # [ZG8600000](#)
UN # 1436 (zinc powder or dust)
EC # 030-001-00-1
October 24, 1994 Peer reviewed



TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE	Highly flammable. Many reactions may cause fire or explosion. Gives off irritating or toxic fumes (or gases) in a fire.	NO open flames, NO sparks, and NO smoking. NO contact with acid(s), base (s) and incompatible substances (see Chemical Dangers).	Special powder, dry sand, NO other agents. NO water.
EXPLOSION	Risk of fire and explosion on contact with acid(s), base(s), water and incompatible substances.	Closed system, ventilation, explosion-proof electrical equipment and lighting. Prevent build-up of electrostatic charges (e.g., by grounding). Prevent deposition of dust.	In case of fire: cool drums, etc., by spraying with water but avoid contact of the substance with water.
EXPOSURE		PREVENT DISPERSION OF DUST! STRICT HYGIENE!	
• INHALATION	Metallic taste and metal fume fever. Symptoms may be delayed (see Notes).	Local exhaust.	Fresh air, rest. Refer for medical attention.
• SKIN	Dry skin.	Protective gloves.	Rinse and then wash skin with water and soap.
• EYES		Safety spectacles.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
• INGESTION	Abdominal pain. Nausea. Vomiting.	Do not eat, drink, or smoke during work. Wash hands before eating.	Rinse mouth. Refer for medical attention.

SPILLAGE DISPOSAL	STORAGE	PACKAGING & LABELLING
Extinguish or remove all ignition sources. Do NOT wash away into sewer. Sweep spilled substance into containers. then remove to safe place. Personal protection: self-contained breathing apparatus.	Fireproof. Separated from acids, bases oxidants Dry.	Airtight. F symbol N symbol R: 15-17-50/53 S: 2-7/8-43-46-60-61 UN Hazard Class: 4.3 UN Subsidiary Risks: 4.2

SEE IMPORTANT INFORMATION ON BACK

ICSC: 1205

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

ZINC POWDER

ICSC: 1205

I M P O R T A N T D A T A	PHYSICAL STATE; APPEARANCE: ODOURLESS GREY TO BLUE POWDER.	ROUTES OF EXPOSURE: The substance can be absorbed into the body by inhalation and by ingestion.
	PHYSICAL DANGERS: Dust explosion possible if in powder or granular form, mixed with air. If dry, it can be charged electrostatically by swirling, pneumatic transport, pouring, etc.	INHALATION RISK: Evaporation at 20°C is negligible; a harmful concentration of airborne particles can, however, be reached quickly when dispersed.
	CHEMICAL DANGERS: Upon heating, toxic fumes are formed. The substance is a strong reducing agent and reacts violently with oxidants. Reacts with water and reacts violently with acids and bases forming flammable/explosive gas (hydrogen - see ICSC0001) Reacts violently with sulfur, halogenated hydrocarbons and many other substances causing fire and explosion hazard.	EFFECTS OF SHORT-TERM EXPOSURE: Inhalation of fumes may cause metal fume fever. The effects may be delayed.
	OCCUPATIONAL EXPOSURE LIMITS: TLV not established.	EFFECTS OF LONG-TERM OR REPEATED EXPOSURE: Repeated or prolonged contact with skin may cause dermatitis.

PHYSICAL PROPERTIES	Boiling point: 907°C Melting point: 419°C Relative density (water = 1): 7.14	Solubility in water: reaction Vapour pressure, kPa at 487°C: 0.1 Auto-ignition temperature: 460°C
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ENVIRONMENTAL DATA	
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NOTES

Zinc may contain trace amounts of arsenic, when forming hydrogen, may also form toxic gas arsine (see ICSC 0001 and ICSC 0222). Reacts violently with fire extinguishing agents such as water, halons, foam and carbon dioxide. The symptoms of metal fume fever do not become manifest until several hours later. Rinse contaminated clothes (fire hazard) with plenty of water. <div>Transport Emergency Card: TEC (R)-43GWS-II+III NFPA Code: H0; F1; R1;</div>

ADDITIONAL INFORMATION

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ICSC: 1205	ZINC POWDER
(C) IPCS, CEC, 1994	

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Material Safety Data Sheet

Version 4.0

Revision Date 03/12/2010

Print Date 12/09/2011

1. PRODUCT AND COMPANY IDENTIFICATION

Product name : 4,4'-DDD PESTANAL,250 MG (2,2-BIS(4-CHL&

Product Number : 35486

Brand : Fluka

Company : Sigma-Aldrich
3050 Spruce Street
SAINT LOUIS MO 63103
USA

Telephone : +1 800-325-5832

Fax : +1 800-325-5052

Emergency Phone # : (314) 776-6555

2. HAZARDS IDENTIFICATION

Emergency Overview

OSHA Hazards

Toxic by ingestion, Harmful by skin absorption., Possible carcinogen.

GHS Label elements, including precautionary statements

Pictogram



Signal word

Danger

Hazard statement(s)

H301 Toxic if swallowed.

H312 Harmful in contact with skin.

H351 Suspected of causing cancer.

H400 Very toxic to aquatic life.

H413 May cause long lasting harmful effects to aquatic life.

Precautionary statement(s)

P273 Avoid release to the environment.

P280 Wear protective gloves/protective clothing.

P301 + P310 IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.

HMIS Classification

Health hazard: 2

Chronic Health Hazard: *

Flammability: 0

Physical hazards: 0

NFPA Rating

Health hazard: 2

Fire: 0

Reactivity Hazard: 0

Potential Health Effects

Inhalation May be harmful if inhaled. May cause respiratory tract irritation.

Skin Harmful if absorbed through skin. May cause skin irritation.

Eyes May cause eye irritation.

Ingestion Toxic if swallowed.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Synonyms : 1,1-Dichloro-2,2-bis(4-chlorophenyl)ethane
4,4'-DDD
TDE

Formula : $C_{14}H_{10}Cl_4$
Molecular Weight : 320.04 g/mol

CAS-No.	EC-No.	Index-No.	Concentration
2,2-bis(4-Chlorophenyl)-1,1-dichloro-ethane			
72-54-8	200-783-0	-	-

4. FIRST AID MEASURES

General advice

Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.

If inhaled

If breathed in, move person into fresh air. If not breathing give artificial respiration. Consult a physician.

In case of skin contact

Wash off with soap and plenty of water. Consult a physician.

In case of eye contact

Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

If swallowed

Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media

Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

Special protective equipment for fire-fighters

Wear self contained breathing apparatus for fire fighting if necessary.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions

Use personal protective equipment. Avoid dust formation. Avoid breathing dust. Ensure adequate ventilation. Evacuate personnel to safe areas.

Environmental precautions

Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

Methods and materials for containment and cleaning up

Pick up and arrange disposal without creating dust. Keep in suitable, closed containers for disposal.

7. HANDLING AND STORAGE

Precautions for safe handling

Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Provide appropriate exhaust ventilation at places where dust is formed. Normal measures for preventive fire protection.

Conditions for safe storage

Keep container tightly closed in a dry and well-ventilated place.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Contains no substances with occupational exposure limit values.

Personal protective equipment

Respiratory protection

Where risk assessment shows air-purifying respirators are appropriate use a full-face particle respirator type N100 (US) or type P3 (EN 143) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Hand protection

Handle with gloves.

Eye protection

Face shield and safety glasses

Skin and body protection

Choose body protection according to the amount and concentration of the dangerous substance at the work place.

Hygiene measures

Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Form solid

Safety data

pH	no data available
Melting point	94.0 - 96.0 °C (201.2 - 204.8 °F)
Boiling point	193.0 °C (379.4 °F) at 1.3 hPa (1.0 mmHg)
Flash point	no data available
Ignition temperature	no data available
Lower explosion limit	no data available
Upper explosion limit	no data available
Vapour pressure	< 0.00001 hPa (< 0.00001 mmHg) at 25.0 °C (77.0 °F)
Density	1.38 g/cm ³
Water solubility	no data available
Partition coefficient: n-octanol/water	log Pow: 6.02

10. STABILITY AND REACTIVITY

Chemical stability

Stable under recommended storage conditions.

Conditions to avoid

no data available

Materials to avoid

Strong oxidizing agents

Hazardous decomposition products

Hazardous decomposition products formed under fire conditions. - Carbon oxides, Hydrogen chloride gas

Hazardous decomposition products formed under fire conditions. - Nature of decomposition products not known.

11. TOXICOLOGICAL INFORMATION

Acute toxicity

LD50 Oral - Hamster - > 5,000 mg/kg

TDLo Oral - Human - 428.5 mg/kg

Remarks: Endocrine:Adrenal cortex hypoplasia.

TDLo Oral - rat - 6,000 mg/kg

Remarks: Cardiac:Other changes. Gastrointestinal:Other changes. Kidney, Ureter, Bladder:Changes in both tubules and glomeruli.

TDLo Oral - rat - 14 mg/kg

Remarks: Liver:Changes in liver weight. Endocrine:Estrogenic. Musculoskeletal:Other changes.

TDLo Oral - rat - 2,100 mg/kg

Remarks: Behavioral:Altered sleep time (including change in righting reflex).

LD50 Dermal - rabbit - 1,200 mg/kg

Remarks: Behavioral:Excitement. Behavioral:Convulsions or effect on seizure threshold. Skin irritation

Skin corrosion/irritation

no data available

Serious eye damage/eye irritation

no data available

Respiratory or skin sensitization

no data available

Germ cell mutagenicity

no data available

Carcinogenicity

This product is or contains a component that has been reported to be possibly carcinogenic based on its IARC, ACGIH, NTP, or EPA classification.

Limited evidence of carcinogenicity in animal studies

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Reproductive toxicity

no data available

Specific target organ toxicity - single exposure (GHS)

no data available

Specific target organ toxicity - repeated exposure (GHS)

no data available

Aspiration hazard

no data available

Potential health effects**Inhalation**

May be harmful if inhaled. May cause respiratory tract irritation.

Ingestion

Toxic if swallowed.

Skin

Harmful if absorbed through skin. May cause skin irritation.

Eyes

May cause eye irritation.

Signs and Symptoms of Exposure

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Additional Information

RTECS: KI0700000

12. ECOLOGICAL INFORMATION**Toxicity**

Toxicity to fish	LC50 - other fish - 1.18 - 9 mg/l - 96.0 h
	LC50 - <i>Lepomis macrochirus</i> (Bluegill) - 0.04 - 0.05 mg/l - 96.0 h
	LC50 - <i>Oncorhynchus mykiss</i> (rainbow trout) - 0.06 - 0.09 mg/l - 96.0 h
	LC50 - <i>Pimephales promelas</i> (fathead minnow) - 3.47 - 5.58 mg/l - 96.0 h
Toxicity to daphnia and other aquatic invertebrates.	EC50 - <i>Daphnia pulex</i> (Water flea) - 0.01 mg/l - 48 h

Persistence and degradability

no data available

Bioaccumulative potential

Indication of bioaccumulation.

Mobility in soil

no data available

PBT and vPvB assessment

no data available

Other adverse effects

An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

13. DISPOSAL CONSIDERATIONS**Product**

Observe all federal, state, and local environmental regulations. Contact a licensed professional waste disposal service to dispose of this material. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber.

Contaminated packaging

Dispose of as unused product.

14. TRANSPORT INFORMATION**DOT (US)**

UN-Number: 2811 Class: 6.1 Packing group: III
Proper shipping name: Toxic solids, organic, n.o.s. (2,2-bis(4-Chlorophenyl)-1,1-dichloro-ethane)
Reportable Quantity (RQ): 1 lbs
Marine pollutant: No
Poison Inhalation Hazard: No

IMDG

UN-Number: 2811 Class: 6.1 Packing group: III EMS-No: F-A, S-A
Proper shipping name: TOXIC SOLID, ORGANIC, N.O.S. (2,2-bis(4-Chlorophenyl)-1,1-dichloro-ethane)
Marine pollutant: No

IATA

UN-Number: 2811 Class: 6.1 Packing group: III
Proper shipping name: Toxic solid, organic, n.o.s. (2,2-bis(4-Chlorophenyl)-1,1-dichloro-ethane)

15. REGULATORY INFORMATION

OSHA Hazards

Toxic by ingestion, Harmful by skin absorption., Possible carcinogen.

DSL Status

This product contains the following components that are not on the Canadian DSL nor NDSL lists.

2,2-bis(4-Chlorophenyl)-1,1-dichloro-ethane	CAS-No. 72-54-8
---	--------------------

SARA 302 Components

SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 Components

SARA 313: This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

SARA 311/312 Hazards

Acute Health Hazard

Massachusetts Right To Know Components

2,2-bis(4-Chlorophenyl)-1,1-dichloro-ethane	CAS-No. 72-54-8	Revision Date
---	--------------------	---------------

Pennsylvania Right To Know Components

2,2-bis(4-Chlorophenyl)-1,1-dichloro-ethane	CAS-No. 72-54-8	Revision Date
---	--------------------	---------------

New Jersey Right To Know Components

2,2-bis(4-Chlorophenyl)-1,1-dichloro-ethane	CAS-No. 72-54-8	Revision Date
---	--------------------	---------------

California Prop. 65 Components

WARNING! This product contains a chemical known to the State of California to cause cancer.	CAS-No. 72-54-8	Revision Date
2,2-bis(4-Chlorophenyl)-1,1-dichloro-ethane		

16. OTHER INFORMATION

Further information

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The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Co., shall not be held liable for any damage resulting from handling or from contact with the above product. See reverse side of invoice or packing slip for additional terms and conditions of sale.



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Search

72-55-9 msds

+ G.O

MSDS 250,000+

MSDS : 2,2-Bis-(4-chlorophenyl)-1,1-dichloroethylene, 99%
CAS : 72-55-9
SYNONYMS : p,p'-DDE ; ethylene,1,1-dichloro-2,2-bis-(p-chlorophenyl)- ; DDT dehydrochloride ; DDE; 1-1'-(Dichloroethenylidene)bis(4-chlorobenzene)

[MSDS Safety Sheet](#)

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www.NEDTinc.com

AdChoices

Catalog of Chemical Suppliers, Buyers, Custom Synthesis Companies And Equipment Manufacturers
[2,2-Bis-(4-chlorophenyl)-1,1-dichloroethylene, 99% 72-55-9]

Suppliers:

Not Available

Buyers:

Not Available

[Sprayon® LU711 Lubricant](#) Because your environment demands a TRUE Industrial Lubricant Sprayon.com

[MSDS Safety Sheet](#) We Get Companys In Compliance & Keep Them There! Custom Catalogs www.MSDSCatalogService.com

[Hazardous Waste Disposal](#) Free Estimates! Bulk & Drummed Liquid & Solid Haz & Non-Haz Waste www.NEDTinc.com

AdChoices

**** SECTION 2 - COMPOSITION, INFORMATION ON INGREDIENTS ****

CAS#	Chemical Name	%	EINECS#
72-55-9	2,2-Bis-(4-chlorophenyl)-1,1-dichloroethy	99	200-784-6
	lene		

Hazard Symbols: XN

Risk Phrases: 22 33

**** SECTION 3 - HAZARDS IDENTIFICATION ****

EMERGENCY OVERVIEW

Harmful if swallowed. Danger of cumulative effects.Cancer suspect
agent.Possible risks of irreversible effects.

Potential Health Effects

Eye:

May cause eye irritation.

Skin:

May cause skin irritation.

Ingestion:

May cause irritation of the digestive tract. May be harmful if
swallowed. Ingestion of large amounts may cause liver and/or kidney
damage.

Inhalation:

May cause respiratory tract irritation.

Chronic:

May cause cancer according to animal studies. Adverse reproductive
effects have been reported in animals. Laboratory experiments have
resulted in mutagenic effects.

**** 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.

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:

If victim is conscious and alert, give 2-4 cupfuls of milk or water.

Never give anything by mouth to an unconscious person. Get medical
aid immediately.

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:

MSDS PAGE: MSDS 72-55-9 CAS 2,2-Bis-(4-chlorophenyl)-1,1-dichloroethylene, 99% p,p'-DDE ; ethylene,1,1-di...

As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. Water runoff can cause environmental damage. Dike and collect water used to fight fire. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion. Will burn if involved in a fire.

Extinguishing Media:

For large fires, use water spray, fog or regular foam. For small fires, use dry chemical, carbon dioxide, water spray or regular foam. Cool containers with flooding quantities of water until well after fire is out.

**** SECTION 6 - ACCIDENTAL RELEASE MEASURES ****

General Information: Use proper personal protective equipment as indicated in Section 8.

Spills/Leaks:

Avoid runoff into storm sewers and ditches which lead to waterways. Clean up spills immediately, observing precautions in the Protective Equipment section. Sweep up, then place into a suitable container for disposal. Avoid generating dusty conditions. Provide ventilation.

**** SECTION 7 - HANDLING and STORAGE ****

Handling:

Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Minimize dust generation and accumulation. Avoid contact with eyes, skin, and clothing. Do not ingest or inhale. Use with adequate ventilation.

Storage:

Keep container closed when not in use. Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances.

**** SECTION 8 - EXPOSURE CONTROLS, PERSONAL PROTECTION ****

Engineering Controls:

Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate ventilation to keep airborne concentrations low.

Exposure Limits

CAS# 72-55-9:

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:

A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements or European Standard EN 149 must be followed whenever workplace conditions warrant respirator use.

**** SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES ****

Physical State: Crystals

Color: white

Odor: None reported.

pH: Not available.

Vapor Pressure: 6.5106 mm Hg @ 20 C

Viscosity: Not available.

Boiling Point: 336 deg C

Freezing/Melting Point: 88.00 - 90.00 deg C

Autoignition Temperature: Not available.

Flash Point: Not available.

Explosion Limits, lower: Not available.

Explosion Limits, upper: Not available.

Decomposition Temperature:

Solubility in water: 0.010 ppm

Specific Gravity/Density:

Molecular Formula: C14H8Cl4

Molecular Weight: 318.02

**** SECTION 10 - STABILITY AND REACTIVITY ****

Chemical Stability:

Stable under normal temperatures and pressures.

Conditions to Avoid:

Incompatible materials, dust generation, strong oxidants.

Incompatibilities with Other Materials:

Strong oxidizing agents - strong bases.

Hazardous Decomposition Products:

Hydrogen chloride, carbon monoxide, carbon dioxide.

Hazardous Polymerization: Has not been reported.

**** SECTION 11 - TOXICOLOGICAL INFORMATION ****

RTECS#:

CAS# 72-55-9: KV9450000

LD50/LC50:

CAS# 72-55-9: Oral, mouse: LD50 = 700 mg/kg; Oral, rat: LD50 = 880 mg/kg.

Carcinogenicity:

2,2-Bis-(4-chlorophenyl)-1,1-dichloroethylene -

California: carcinogen, initial date 1/1/89

Other:

See actual entry in RTECS for complete information.

**** SECTION 12 - ECOLOGICAL INFORMATION ****

Ecotoxicity:

Estimated BCF value = 8,300 based on water solubility. Estimated Koc value = 8,300. There was no movement of DDE reported in soil column mobility experiments.

**** SECTION 13 - DISPOSAL CONSIDERATIONS ****

Dispose of in a manner consistent with federal, state, and local regulations.

**** SECTION 14 - TRANSPORT INFORMATION ****

IATA

Not regulated as a hazardous material.

IMO

Not regulated as a hazardous material.

RID/ADR

Not regulated as a hazardous material.

USA RQ: CAS# 72-55-9: 1 lb final RQ; 0.454 kg final RQ

**** SECTION 15 - REGULATORY INFORMATION ****

European/International Regulations

European Labeling in Accordance with EC Directives

Hazard Symbols: XN

Risk Phrases:

R 22 Harmful if swallowed.

R 33 Danger of cumulative effects.

Safety Phrases:

S 24/25 Avoid contact with skin and eyes.

WGK (Water Danger/Protection)

CAS# 72-55-9: 3

Canada

None of the chemicals in this product are listed on the DSL/NDL list.

CAS# 72-55-9 is listed on Canada's Ingredient Disclosure List.

US FEDERAL

TSCA

CAS# 72-55-9 is not listed on the TSCA inventory.

It is for research and development use only.

**** SECTION 16 - ADDITIONAL INFORMATION ****

MSDS Creation Date: 9/28/1998 Revision #3 Date: 3/18/2003

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no way shall the company be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if the company has been advised of the possibility of such damages.

Search More

72-55-9 msds

GO

ALL MSDS PAGES IN THIS GROUP

NAME	CAS
M-Benzoyloxybenzyl Alcohol , 97%	1700-30-7
Octaphenylcyclotetrasiloxane, 98%	546-56-5
Cetylpyridinium chloride	123-03-5
3,4-Difluorophenol, 99%	2713-33-9
1-Benzyl-4-Hydroxypiperidine, 97%	4727-72-4
4-tert-Butylbenzoyl chloride	1710-98-1
Borane-morpholine complex, 97%	4856-95-5
Benzyl Ether, 99%	103-50-4
5-Amino-1-Naphtol (Pract)	83-55-6
Pyridinium-P-Toluenesulfonate 98%	24057-28-1
Pyrogallol Red, 98% (Titr.)	32638-88-3
Amberlite ira 416	9002-26-0
3-Methoxybenzonitrile, 98%	1527-89-5
1-Adamantanemethanol, 99%	770-71-8
Inosine, 99%	58-63-9
Pentafluoropropionic Acid	422-64-0
Pyruvic Acid	127-17-3
Potassium hydrogen fluoride, 99+%	7789-29-9
Aluminum Nitride, 98% Particle Size <10 Micron	24304-00-5
Nickel(II) hydroxide, c.p., 60-61% Ni	12054-48-7
1-Adamantanamine sulfate, 99%	31377-23-8
S-(Thiobenzoyl)-Thioglycolic Acid, 97%	942-91-6
N,N-Dimethyl-P-Nitroaniline	100-23-2
Benzofuroxan	480-96-6
cis-2-Aminomethyl-1-cyclohexanol hydrochloride, 99%	24947-68-0
Silver Phosphate, 98% (Titr.)	7784-09-0

International Chemical Safety Cards

DDT

ICSC: 0034



Dichlorodiphenyltrichloroethane
 1,1,1-Trichloro-2,2-bis(p-chlorophenyl)ethane
 2,2-bis(p-Chlorophenyl)-1,1,1-trichloroethane
 1,1'-(2,2,2-Trichloroethylidene)bis(4-chlorobenzene)
 p,p'-DDT
 $C_{14}H_9Cl_5$
 Molecular mass: 354.5



ICSC # 0034

CAS # 50-29-3

RTECS # [KJ3325000](#)

UN # 2761

EC # 602-045-00-7

April 20, 2004 Peer reviewed

TYPES OF HAZARD/ EXPOSURE	ACUTE HAZARDS/ SYMPTOMS	PREVENTION	FIRST AID/ FIRE FIGHTING
FIRE	Combustible. Liquid formulations containing organic solvents may be flammable. Gives off irritating or toxic fumes (or gases) in a fire.	NO open flames.	Powder, water spray, foam, carbon dioxide.
EXPLOSION			
EXPOSURE		PREVENT DISPERSION OF DUST! STRICT HYGIENE! AVOID EXPOSURE OF (PREGNANT) WOMEN!	
• INHALATION	Cough.	Local exhaust or breathing protection.	Fresh air, rest.
• SKIN		Protective gloves.	Remove contaminated clothes. Rinse and then wash skin with water and soap.
• EYES	Redness.	Safety goggles, or eye protection in combination with breathing protection if powder.	First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.
• INGESTION	Tremors. Diarrhoea. Dizziness. Headache. Vomiting. Numbness. Paresthesias. Hyperexcitability. Convulsions.	Do not eat, drink, or smoke during work. Wash hands before eating.	Rinse mouth. Give a slurry of activated charcoal in water to drink. Rest. Refer for medical attention.
SPILLAGE DISPOSAL		STORAGE	PACKAGING & LABELLING
Do NOT let this chemical enter the environment. Sweep spilled substance into sealable non-metallic containers; if appropriate, moisten first to prevent dusting. Carefully collect remainder, then remove to safe place. Personal protection: P3 filter respirator for toxic particles.		Provision to contain effluent from fire extinguishing. Separated from iron, aluminum and its salts, food and feedstuffs See Chemical Dangers.	Do not transport with food and feedstuffs. Severe marine pollutant. T symbol N symbol R: 25-40-48/25-50/53 S: 1/2-22-36/37-45-60-61 UN Hazard Class: 6.1 UN Packing Group: III

SEE IMPORTANT INFORMATION ON BACK


ICSC: 0034

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

DDT

ICSC: 0034

<p>I M P O R T A N T D A T A</p>	<p>PHYSICAL STATE; APPEARANCE: COLOURLESS CRYSTALS WHITE POWDER. TECHNICAL PRODUCT IS WAXY SOLID.</p> <p>PHYSICAL DANGERS:</p> <p>CHEMICAL DANGERS: On combustion, forms toxic and corrosive fumes including hydrogen chloride. Reacts with aluminium and iron.</p> <p>OCCUPATIONAL EXPOSURE LIMITS: TLV: 1 mg/m³ as TWA A3 (ACGIH 2004). MAK: 1 mg/m³ H Peak limitation category: II(8) (DFG 2003). OSHA PEL: TWA 1 mg/m³ skin NIOSH REL: Ca TWA 0.5 mg/m³ See Appendix A NIOSH IDLH: Ca 500 mg/m³ See: 50293</p>	<p>ROUTES OF EXPOSURE: The substance can be absorbed into the body by ingestion.</p> <p>INHALATION RISK: Evaporation at 20°C is negligible; a harmful concentration of airborne particles can, however, be reached quickly especially if powdered.</p> <p>EFFECTS OF SHORT-TERM EXPOSURE: May cause mechanical irritation. The substance may cause effects on the central nervous system, resulting in convulsions and respiratory depression. Exposure at high levels may result in death. Medical observation is indicated.</p> <p>EFFECTS OF LONG-TERM OR REPEATED EXPOSURE: The substance may have effects on the central nervous system and liver. This substance is possibly carcinogenic to humans. Animal tests show that this substance possibly causes toxicity to human reproduction or development.</p>
<p>PHYSICAL PROPERTIES</p>	<p>Boiling point: 260°C Melting point: 109°C Density: 1.6 g/cm³</p>	<p>Solubility in water: poor Octanol/water partition coefficient as log Pow: 6.36</p>
<p>ENVIRONMENTAL DATA</p>	<p>The substance is very toxic to aquatic organisms. This substance may be hazardous to the environment; special attention should be given to birds. Bioaccumulation of this chemical may occur along the food chain, for example in milk and aquatic organisms. This substance does enter the environment under normal use. Great care, however, should be given to avoid any additional release, e.g. through inappropriate disposal.</p>	
<p>NOTES</p>		
<p>Depending on the degree of exposure, periodic medical examination is indicated. Carrier solvents used in commercial formulations may change physical and toxicological properties. Do NOT take working clothes home. Consult national legislation. Agritan, Azotox, Anofex, Ixodex, Gesapon, Gesarex, Gesarol, Guesapon, Clofenotane, Zeidane, Dicophane, Neocid are trade names.</p> <p style="text-align: right;">Transport Emergency Card: TEC (R)-61GT7-III</p>		
<p>ADDITIONAL INFORMATION</p>		
<p>ICSC: 0034</p>		<p>DDT</p>
<p>(C) IPCS, CEC, 1994</p>		
<p>IMPORTANT LEGAL NOTICE:</p>	<p>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.</p>	

Material Safety Data Sheet

Version 4.2

Revision Date 07/07/2011

Print Date 12/09/2011

1. PRODUCT AND COMPANY IDENTIFICATION

Product name : Aroclor 1262

Product Number : 442463

Brand : Supelco

Supplier : Sigma-Aldrich
3050 Spruce Street
SAINT LOUIS MO 63103
USA

Telephone : +1 800-325-5832

Fax : +1 800-325-5052

Emergency Phone # (For both supplier and manufacturer) : (314) 776-6555

Preparation Information : Sigma-Aldrich Corporation
Product Safety - Americas Region
1-800-521-8956

2. HAZARDS IDENTIFICATION

Emergency Overview

OSHA Hazards

Carcinogen

GHS Classification

Carcinogenicity (Category 1B)

Specific target organ toxicity - repeated exposure (Category 2)

Acute aquatic toxicity (Category 3)

Chronic aquatic toxicity (Category 3)

GHS Label elements, including precautionary statements

Pictogram



Signal word

Danger

Hazard statement(s)

H350

May cause cancer.

H373

May cause damage to organs through prolonged or repeated exposure.

H412

Harmful to aquatic life with long lasting effects.

Precautionary statement(s)

P201

Obtain special instructions before use.

P273

Avoid release to the environment.

P308 + P313

IF exposed or concerned: Get medical advice/ attention.

HMIS Classification

Health hazard: 0

Chronic Health Hazard: *

Flammability: 0

Physical hazards: 0

NFPA Rating

Health hazard: 0

Fire: 0

Reactivity Hazard: 0

Potential Health Effects

Inhalation	May be harmful if inhaled. May cause respiratory tract irritation.
Skin	May be harmful if absorbed through skin. May cause skin irritation.
Eyes	May cause eye irritation.
Ingestion	May be harmful if swallowed.

3. COMPOSITION/INFORMATION ON INGREDIENTS

CAS-No.	EC-No.	Index-No.	Concentration
PCB - Aroclor 1262			
37324-23-5	-	602-039-00-4	-

4. FIRST AID MEASURES

General advice

Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.

If inhaled

If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact

Wash off with soap and plenty of water. Consult a physician.

In case of eye contact

Flush eyes with water as a precaution.

If swallowed

Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

5. FIRE-FIGHTING MEASURES

Conditions of flammability

Not flammable or combustible.

Suitable extinguishing media

Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

Special protective equipment for fire-fighters

Wear self contained breathing apparatus for fire fighting if necessary.

Hazardous combustion products

Hazardous decomposition products formed under fire conditions. - Nature of decomposition products not known.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions

Use personal protective equipment. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas.

Environmental precautions

Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

Methods and materials for containment and cleaning up

Soak up with inert absorbent material and dispose of as hazardous waste. Keep in suitable, closed containers for disposal.

7. HANDLING AND STORAGE

Precautions for safe handling

Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.

Conditions for safe storage

Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Contains no substances with occupational exposure limit values.

Personal protective equipment**Respiratory protection**

Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Hand protection

Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Eye protection

Face shield and safety glasses Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin and body protection

Complete suit protecting against chemicals, The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Hygiene measures

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

9. PHYSICAL AND CHEMICAL PROPERTIES**Appearance**

Form	liquid
Colour	no data available

Safety data

pH	no data available
Melting point/freezing point	no data available
Boiling point	no data available
Flash point	no data available
Ignition temperature	no data available
Autoignition temperature	no data available
Lower explosion limit	no data available
Upper explosion limit	no data available
Vapour pressure	no data available
Density	no data available
Water solubility	no data available
Partition coefficient: n-octanol/water	no data available
Relative vapour density	no data available

Odour	no data available
Odour Threshold	no data available
Evaporation rate	no data available

10. STABILITY AND REACTIVITY

Chemical stability

Stable under recommended storage conditions.

Possibility of hazardous reactions

no data available

Conditions to avoid

no data available

Materials to avoid

Strong oxidizing agents

Hazardous decomposition products

Hazardous decomposition products formed under fire conditions. - Nature of decomposition products not known.
Other decomposition products - no data available

11. TOXICOLOGICAL INFORMATION

Acute toxicity

Oral LD50

LD50 Oral - rat - 11,300 mg/kg

Inhalation LC50

no data available

Dermal LD50

Other information on acute toxicity

no data available

Skin corrosion/irritation

no data available

Serious eye damage/eye irritation

no data available

Respiratory or skin sensitization

no data available

Germ cell mutagenicity

no data available

Carcinogenicity

Carcinogen

Possible human carcinogen

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Reproductive toxicity

no data available

Teratogenicity

no data available

Specific target organ toxicity - single exposure (Globally Harmonized System)

no data available

Specific target organ toxicity - repeated exposure (Globally Harmonized System)

May cause damage to organs through prolonged or repeated exposure.

no data available

Aspiration hazard

no data available

Potential health effects

Inhalation	May be harmful if inhaled. May cause respiratory tract irritation.
Ingestion	May be harmful if swallowed.
Skin	May be harmful if absorbed through skin. May cause skin irritation.
Eyes	May cause eye irritation.

Signs and Symptoms of Exposure

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Synergistic effects

no data available

Additional Information

RTECS: TQ1364000

12. ECOLOGICAL INFORMATION

Toxicity

Toxicity to fish	LC50 - Oncorhynchus clarki - 50 mg/l - 96 h
------------------	---

Persistence and degradability

Biodegradability	Result: - According to the results of tests of biodegradability this product is not readily biodegradable. Remarks: no data available
------------------	--

Bioaccumulative potential

no data available

Mobility in soil

no data available

PBT and vPvB assessment

no data available

Other adverse effects

An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

Harmful to aquatic life with long lasting effects.

13. DISPOSAL CONSIDERATIONS

Product

Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber.

Contaminated packaging

Dispose of as unused product.

14. TRANSPORT INFORMATION

DOT (US)

UN number: 2315 Class: 9 Packing group: II
Proper shipping name: Polychlorinated biphenyls, liquid
Reportable Quantity (RQ):
Marine pollutant: No
Poison Inhalation Hazard: No

IMDG

UN number: 2315 Class: 9 Packing group: II EMS-No: F-A, S-A
Proper shipping name: POLYCHLORINATED BIPHENYLS, LIQUID
Marine pollutant: No

IATA

UN number: 2315 Class: 9 Packing group: II
Proper shipping name: Polychlorinated biphenyls, liquid

15. REGULATORY INFORMATION

OSHA Hazards

Carcinogen

SARA 302 Components

SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 Components

SARA 313: This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

SARA 311/312 Hazards

Chronic Health Hazard

Massachusetts Right To Know Components

No components are subject to the Massachusetts Right to Know Act.

Pennsylvania Right To Know Components

	CAS-No.	Revision Date
PCB - Aroclor 1262	37324-23-5	1989-08-11

New Jersey Right To Know Components

	CAS-No.	Revision Date
PCB - Aroclor 1262	37324-23-5	1989-08-11

California Prop. 65 Components

	CAS-No.	Revision Date
WARNING! This product contains a chemical known to the State of California to cause cancer. PCB - Aroclor 1262	37324-23-5	2008-08-01

California Prop. 65 Components

	CAS-No.	Revision Date
WARNING! This product contains a chemical known to the State of California to cause birth defects or other reproductive harm. PCB - Aroclor 1262	37324-23-5	2008-08-01

16. OTHER INFORMATION

Further information

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The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Co., shall not be held liable for any damage resulting from handling or from contact with the above product. See reverse side of invoice or packing slip for additional terms and conditions of sale.

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

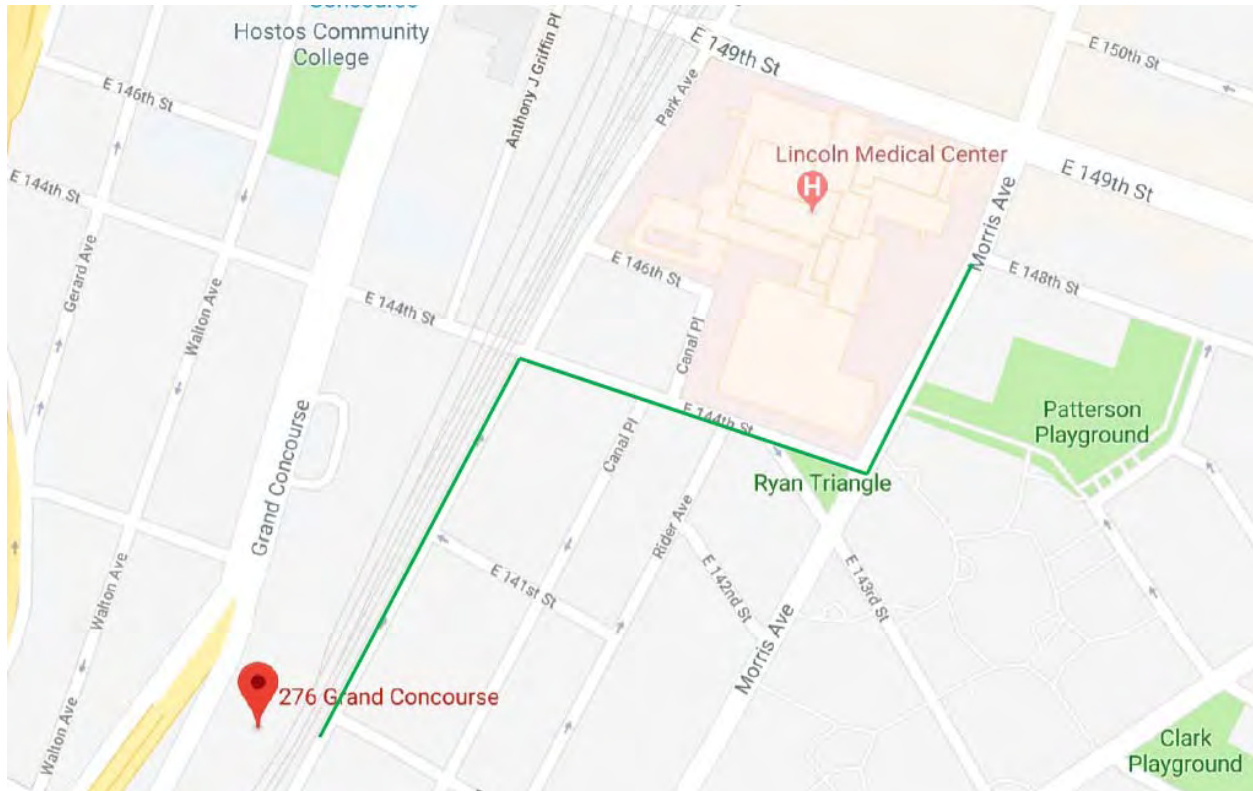
The hospital nearest the site is:

Lincoln Medical Center

234 Eugenio Maria De Hostos Blvd (East 149th Street)

Bronx, New York 10451

(718) 579-5000



Directions

START

276 Grand Concourse, Bronx, NY 10451

1. Head northeast on Grand Concourse toward East 140th Street
2. Turn right onto East 144th Street
3. Turn left onto Morris Avenue
4. Hospital will be on the left.

FINISH

Lincoln Medical Center, 234 E 149th St, Bronx, NY 10451

ATTACHMENT C

Quality Assurance Project Plan

QUALITY ASSURANCE PROJECT PLAN
310 Grand Concourse
Bronx, NY

Prepared on behalf of:

310 Grand Concourse LLC
829 Kent Avenue
Brooklyn, NY 11205

Prepared by:

EBC
ENVIRONMENTAL BUSINESS CONSULTANTS
1808 MIDDLE COUNTRY ROAD
RIDGE, NY 11961

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QUALITY ASSURANCE PROJECT PLAN

310 Grand Concourse, Bronx NY

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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 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. Ms. Chawinie Miller 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.

Keith Butler will serve as the Project Manager and will be responsible for implementation of the remedial action and coordination with field sampling crews and subcontractors. Reporting directly to the Project Manager will be the Field Operations Officer, Tom Gallo; who will serve as the on-Site qualified environmental professional who will record observations, monitor excavation activities 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	Monitoring of Remedial Activities, sample collection and handling	T. Gallo, EBC
Project Manager	Implementation of the Remedial Action according to the RAWP	Keith Butler, EBC
Laboratory Analysis	Analysis of soil samples by NYSDEC ASP methods Laboratory	NYSDOH-Certified Laboratory
Data review	Review for completeness and compliance	3 rd party validation

2.0 QUALITY ASSURANCE PROJECT PLAN OBJECTIVES

2.1 Overview

Overall project goals are defined through the development of Data Quality Objectives (DQOs), which are qualitative and quantitative Statements that specify the quality of the data required to support decisions; DQOs, as described in this section, are based on the end uses of the data as described in the work plan.

In this plan, Quality Assurance and Quality Control are defined as follows:

- Quality Assurance - The overall integrated program for assuring reliability of monitoring and measurement data.
- Quality Control - The routine application of procedures for obtaining prescribed standards of performance in the monitoring and measurement process.

2.2 QA / QC Requirements for Analytical Laboratory

Samples will be analyzed by a New York State Department of Health (NYSDOH) certified laboratory. Data generated from the laboratory will be used to evaluate contaminants such as metals, semi-volatile organic compounds (SVOCs) and pesticides / PCBs in both historic fills and native soils, chlorinated and other volatile organic compounds (VOCs) in soil and PFOS compounds. 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 the most recent version of (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.

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 the related samples. It 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 NY5DEC ASP protocols for samples falling within the quantification limits without dilution.

2.2.6 Matrix Spike / Matrix Spike Duplicate / Matrix Spike Blank (MS/MSDIMSB) Analysis

MS, MSD and MSB analyses will be performed to evaluate the matrix effect of the sample upon the analytical methodology along with the precision of the instrument by measuring recoveries. The MS / MSD / MSB samples will be analyzed for each group of samples of a similar matrix at a rate of 5% (one for every 20 field samples). The RPD will be calculated from the difference between the MS and MSD. Matrix spike blank analysis will be performed to indicate the appropriateness of the spiking solution(s) used for the MS/MSD.

2.3 Accuracy

Accuracy is defined as the nearness of a real or the mean (x) of a set of results to the true value. Accuracy is assessed by means of reference samples and percent recoveries. Accuracy includes both precision and recovery and is expressed as percent recovery (% REC). The MS sample is used to determine the percent recovery. The matrix spike percent recovery (% REC) is calculated by the following equation:

$$\%REC = \frac{SSR - SR}{SA} \times 100$$

Where:

SSR = spike sample results

SR = sample results

SA = spike added from spiking mix

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

D¹ = first sample value

D² = 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 Action Work Plan.

2.7 Completeness

Completeness is a measure of the quantity of data obtained from a measurement system as compared to the amount of data expected from the measurement system. Completeness is defined as the percentage of all results that are not affected by failing QC qualifiers, and should be between 70 and 100% of all analyses performed. The objective of completeness in laboratory reporting is to provide a thorough data support package. The laboratory data package provides documentation of sample analysis and results in the form of summaries, QC data, and raw analytical data. The laboratory will be required to submit data packages that follow NYSDEC ASP reporting format which, at a minimum, will include the following components:

1. All sample chain-of-custody forms.
2. The case narrative(s) presenting a discussion of any problems and/or procedural changes required during analyses. Also presented in the case narrative are sample summary forms.
3. Documentation demonstrating the laboratory's ability to attain the contract specified detection limits for all target analytes in all required matrices.
4. Tabulated target compound results and tentatively identified compounds.
5. Surrogate spike analysis results (organics).
6. Matrix spike/matrix spike duplicate/matrix spike blank results.

7. QC check sample and standard recovery results
8. Blank results (field, trip, and method).
9. Internal standard area and RT summary.

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

3.0 ANALYTICAL PROCEDURES

3.1 Laboratory Analysis

Samples will be analyzed by the NYSDOH ELAP laboratory for one or more of the following parameters: VOCs in soil and groundwater by USEPA Method 8260, SVOCs in soil by USEPA Method 8270BN, Target Analyte List (TAL) Metals in soil, pesticides / PCBs in soil by USEPA Method 8081/8082 and PFOS compounds by USEPA Method 537. 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).

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 when waste characterization samples are analyzed they 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 if analyzed will be in results only format and will not be evaluated in the DUSR.

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.

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	Site Wide Excavation	34	1 per 900 square feet of excavation base	Endpoint Verification of Track 1 SCOs	VOCs EPA Method 8260B, SVOCs EPA Method 8270, pesticide / PCBs EPA Method 8081/8082, TAL metals EPA 6010.	1 per day	1 per 20 samples	1 per 20 samples	1 per trip
Soil	Site Wide Excavation	4	10% of Sidewide excavation base samples.	Endpoint Verification of Track 1 SCOs	PFOS Compounds EPA Method 537	1 per day	1 per 20 samples	1 per 20 samples	1 per trip
Water	Two On-site monitoring wells	2	1 event	Establish baseline before remediation	VOCs EPA Method 8260B,	1 per day	1 per 20 samples	1 per 20 samples	1 per trip
Soil	Excavated Historic Fill Material	6	1 per 800 cy	Waste Characterization for disposal if not stockpiled on site	VOCs EPA Method 8260B, PAHs EPA Method 8270, RCRA metals, pesticides and PCBs by EPA 8081/8082, other as per disposal facility	0	0	0	0
Soil	Excavated Uncontaminated Native Soil	7	7 Grabs for 1st 1,000 cy, 2 for each additional 1,000 cy As per CP51	Clean Verification for disposal pr reuse on-site	VOCs EPA Method 8260B	0	0	0	0
Soil	Excavated Uncontaminated Native Soil	2	2 Composites for 1st 1,000 cy, 1 for each additional 1,000 cy As per CP51	Clean Verification for disposal pr reuse on-site	SVOCs, pesticides/and PCBs by EPA 8081/8082, and RCRA metals.	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
Grab	Soil	Scoop Direct into Jar	VOCs	(1) 2 oz Jar	Cool to 4° C	EPA Method 8260C (test method 5035A)	Compound specific (1-5 ug/kg)	14 days
Grab	Soil	Scoop Direct into Jar	SVOCs	(1) 8 oz jar	Cool to 4° C	EPA Method 8270D	Compound specific (1-5 ug/kg)	14 day ext/40 days
Grab	Soil	Scoop Direct into Jar	Pest/PCBs	from 8oz jar above	Cool to 4° C	EPA Method 8081B/8082A	Compound specific (1-5 ug/kg)	14 day ext/40 days
Grab	Soil	Scoop Direct into Jar	Metals	from 8oz jar above	Cool to 4° C	TAL Metals 6010	Compound specific (01-1 mg/kg)	6 months
Grab	Soil	Scoop Direct into Jar	PFAS Target Analyte List	from 8oz jar above	Cool to 4° C	EPA Method 537	Compound specific (1 ug/kg)	14 days
Grab	water	Peristaltic pump	VOCs	(3) 40 ml VOA	Cool to 4° C	EPA Method 8260C (test method 5035A)	Compound specific (1-5 ug/kg)	14 days

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

NA = Not available or not applicable.

ATTACHMENT D

Community Air Monitoring Plan

COMMUNITY AIR MONITORING PLAN

310 GRAND CONCOURSE
BRONX, NY

AUGUST - 2019

Prepared on behalf of:

310 Grand Concourse LLC
829 Kent Avenue
Brooklyn, NY 11205

Prepared by:



ENVIRONMENTAL BUSINESS CONSULTANTS

RIDGE, NY 11961

**COMMUNITY AIR MONITORING PLAN
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APPENDICES

Appendix A Action Limit Report

1.0 INTRODUCTION

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

Compliance with this CAMP is required during all activities associated with redevelopment that have the potential to generate airborne particulate matter and volatile organic compounds (VOCs). These activities include soil excavation and tank removal. This CAMP has been prepared to ensure that remedial activities do not adversely affect passersby, residents, or workers in the area immediately surrounding the Site and to preclude or minimize airborne migration of site-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) DER-10 Technical Guidance for Site Investigation and Remediation: 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

Petroleum related VOCs / SVOCs, chlorinated VOCs and SVOCs and heavy metals 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.

The continuous monitoring locations for VOCs and particulates must reflect the nearest potentially exposed individuals and the location of ventilation system intakes for nearby structures.

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 continuously in series during the site work. 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 miniRAE 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. Upwind concentrations will be measured at the start of each workday and periodically thereafter to establish background conditions. The monitoring work will be performed using equipment appropriate to measure the types of contaminants known or suspected to be present.

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

- If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 parts per million (ppm) above background for the 15-minute average, work activities 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.
- If total VOC concentrations opposite the walls of occupied structures or next to the intake vents exceed 1 ppm, monitoring should occur within the occupied structure(s) (if access is granted by owner or occupants). Background readings in the occupied spaces must be taken prior to the commencement of the planned work. Any unusual background readings should be discussed with NYSDOH prior to the commencement of the work.

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:

- limiting the excavation size;
- limiting the drop-height when loading soil into trucks;
- spraying chemical odorants onto the soil;
- covering soil stockpiles with 6-mil plastic sheeting or tarps;
- hauling waste materials in properly tarped containers; and/or
- applying vapor suppressant foam.

4.0 PARTICULATE MONITORING

Air monitoring for particulates (i.e., dust) will be performed continuously during excavation and loading 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 (PM10) 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 ($\mu\text{g}/\text{m}^3$). This setting will allow proactive evaluation of worksite conditions prior to reaching the action level of $100 \mu\text{g}/\text{m}^3$ 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 $100 \mu\text{g}/\text{m}^3$ greater than background (upwind perimeter) for the 15-minute period, or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed $150 \mu\text{g}/\text{m}^3$ 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 $150 \mu\text{g}/\text{m}^3$ 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 $150 \mu\text{g}/\text{m}^3$ of the upwind level and in preventing visible dust migration.
- If the total particulate concentrations opposite the walls of occupied structures or next to intake vents exceeds $150 \mu\text{g}/\text{m}^3$, work activities should be suspended until controls are implemented and are successful in reducing the total particulate concentration to $150 \mu\text{g}/\text{m}^3$ or less at the monitoring point.

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 $100 \mu\text{g}/\text{m}^3$ at any time during remediation 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:

- limiting the excavation size;

- spraying water onto the excavation faces and equipment;
- covering soil stockpiles with plastic sheeting or tarps;
- Use of gravel paths / roadways;
- hauling waste materials in properly tarped containers; and/or
- limiting vehicle speeds onsite.

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

There may also be situations where the dust is generated by remediation 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 $150 \mu\text{g}/\text{m}^3$, 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.

APPENDIX A
ACTION LIMIT REPORT

**CAMP
ACTION LIMIT REPORT**

Project Location: _____

Date: _____

Time: _____

Name: _____

Contaminant: _____ PM-10: _____ VOC: _____

Wind Speed: _____

Wind Direction: _____

Temperature: _____

Barometric Pressure: _____

DOWNWIND DATA

Monitor ID #: _____ Location: _____ Level Reported: _____

Monitor ID#: _____ Location: _____ Level Reported: _____

UPWIND DATA

Monitor ID #: _____ Location: _____ Level Reported: _____

Monitor ID#: _____ Location: _____ Level Reported: _____

BACKGROUND CORRECTED LEVELS

Monitor ID #: Location: _____ Level Reported: Level Reported: _____

ACTIONS TAKEN

ATTACHMENT E ***Citizen Participation Plan***



New York State Department of Environmental Conservation

Brownfield Cleanup Program

Citizen Participation Plan **for** **310 GRAND CONCOURSE**

310-336 GRAND CONCOURSE
BRONX, NY

July 2019

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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: 310 Grand Concourse LLC, 336 Grand Concourse LLC
Site Name: 310 Grand Concourse (“Site”)
Site Address: 310 – 336 Grand Concourse, Bronx
Site County: Bronx
Site Number: C203121

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)
<p align="center">Application Process:</p> <ul style="list-style-type: none"> • Prepare site contact list • Establish document repositories 	
<ul style="list-style-type: none"> • 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 	<p>At time of preparation of application to participate in the BCP.</p> <hr/> <p>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.</p>
<p align="center">After Execution of Brownfield Site Cleanup Agreement:</p> <ul style="list-style-type: none"> • Prepare Citizen Participation (CP) Plan 	
<p align="center">Before NYSDEC Approves Remedial Investigation (RI) Work Plan:</p> <ul style="list-style-type: none"> • 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 	
<p align="center">After Applicant Completes Remedial Investigation:</p> <ul style="list-style-type: none"> • Distribute fact sheet to site contact list that describes RI results 	<p>Before NYSDEC approves RI Report</p>
<p align="center">Before NYSDEC Approves Remedial Work Plan (RWP):</p> <ul style="list-style-type: none"> • 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 	<p>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.</p>
<p align="center">Before Applicant Starts Cleanup Action:</p> <ul style="list-style-type: none"> • Distribute fact sheet to site contact list that describes upcoming cleanup action 	<p>Before the start of cleanup action.</p>
<p align="center">After Applicant Completes Cleanup Action:</p> <ul style="list-style-type: none"> • 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) 	<p>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.</p>

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 Site is located in an 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. While this Site is in an Environmental Justice Area, there is no need to translate any future fact sheets into another language.

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.

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 address of the Site is 310-336 Grand Concourse, Bronx County, NY. It is comprised of Block 2341, Lots 28, 31 and a portion of Lot 10. The Site is currently occupied by an auto repair facility (portion of Lot 10, lot 28) and by a medical clinic (Lot 31).

The Site is located in the Mott Haven neighborhood of Bronx County and is comprised of the two full tax parcels (Lot 28, 31) with a portion of a third parcel (Lot 10) which are currently being merged. The total area of the new lot is 29,538 square feet (0.68 acres). The Site is located in the City of New York and Borough of the Bronx. The Site is irregular shaped with 237.33 feet of frontage along Grand Concourse.

The north and south sides of the property are bordered by commercial properties. The west side is bordered by Grand Concourse with commercial properties on the west side. The east side is bordered by the Metro North rail line.

Surrounding land use primarily consists of commercial (warehouses, auto repair, etc) and industrial (manufacturing) to the north, south, east and west. There are several multi-family apartment buildings to the north and to the east on the opposite side of the Metro-North railway. The area surrounding the property is highly urbanized and predominantly consists of industrial / commercial buildings interspersed with open air parking / display lots and equipment yards.

There are four schools located within 1,200 feet of the Site including the Health Opportunities High School approximately 975 feet to the west, Hostos Community College located 1,200 feet to the north, P.S. 31 located 977 feet to the north and P.S. 168 located 750 feet to the east. There were no nursing homes or hospitals identified within 1,200 feet of the Site.

History of Site Use, Investigation, and Cleanup

The Site is improved with three 1-story masonry buildings constructed approximately in 1931; two on lot 28 and one on Lot 31. The southern half of lot 28 is partitioned off into two parking lots with 6 to 8 ft high fencing structures and awnings. The buildings and property are currently vacant. Historically, the property was used as a gas station, auto repair (portion of Lot 10, Lot 28) and an auto glass shop (Lot 31).

A Remedial Investigation was performed at the Site from June 25, 2018 through February 4, 2019 and included the collection and analysis of soil, groundwater and soil vapor samples. The RI consisted of the installation of eleven soil borings with the collection of sixteen soil samples, three monitoring wells / groundwater samples and six subsurface vapor, one outdoor air and two indoor air samples.

Soil and groundwater samples were analyzed for VOCs by EPA method 8260 SVOCs by EPA method 8270, target analyte list (TAL) metals and dissolved metals by EPA method 6010 and Pesticides/PCBs by method 8081/8082.

The Report concluded the following:

Subsurface soils at the Site consist of historic fill materials to a depth of approximately 5 feet below. The fill material contains elevated levels of some metals and SVOCs. Groundwater occurs beneath the Site at a depth of approximately feet below grade under water table conditions. Groundwater flow is generally southwest.

The results of sampling performed during this RI, identified petroleum VOCs in soil at the water table above groundwater protection SCOs in the vicinity of suspected underground storage tanks associated with a historic gas station. These same VOCs were present in groundwater above standards.

5. Investigation and Cleanup Process

Application

The Requestor has applied for and been accepted into New York's Brownfield Cleanup Program (BCP) as a Volunteer. This means that the Applicant was the owner and 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 onsite, 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 in its Application proposes that the site will be used for **unrestricted** purposes.

To achieve this goal, the Applicant will conduct **cleanup** activities at the site with oversight provided by NYSDEC. The Brownfield Cleanup Agreement executed by NYSDEC and the Applicant sets forth the responsibilities of each party in conducting these activities at the site.

Investigation

A Remedial Investigation was completed before the property was entered into the BCP. For the remedial investigation, NYSDEC will determine if the investigation goals and requirements of the BCP have been met or if additional work is needed before a remedy can be selected.

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.

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):

Steven Walsh
NYS Dept. of Environmental Conservation
625 Broadway, 12th Floor
Albany, NY 12233-7016
(518) 402-9824
steven.walsh@dec.ny.gov

Thomas Panzone
Regional Citizen Participation Specialist
NYSDEC Region 2
Office of Communications Services
47-40 21st Street
Long Island City, NY 11101-5407
Tel: (718) 482-4953
Email: thomas.panzone@dec.ny.gov

New York State Department of Health (NYSDOH):

Christine Vooris
Director
NYSDOH
Empire State Plaza
Corning Tower Room 1782
Albany, NY 12237
Phone: (518) 402-7860
Email: BEEI@health.ny.gov

Locations of Reports and Information

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

New York Public Library - Mott Haven Branch
321 East 140th Street, Bronx, NY 10454 - (718) 665-4878

Hours:

Mon 10:00 AM - 6:00 PM
Tue 10:00 AM - 7:00 PM
Wed 10:00 AM - 7:00 PM
Thu 10:00 AM - 6:00 PM
Fri 10:00 AM - 5:00 PM
Sat 10:00 AM - 5:00 PM
Sun closed

Bronx Community Board 1
3024 Third Avenue, Bronx, NY, 10455 718-585-7117

Appendix B - Site Contact List

Local Government Contacts:

Bill de Blasio
Mayor of New York City
City Hall
New York, NY 10007

Ruben Diaz, Jr.
Bronx Borough President
851 Grand Concourse, Suite 301
Bronx, New York 10451
Telephone (718) 590-3500

George Rodriguez
Chair, Bronx Community Board 1
3024 Third Avenue
Bronx, NY 10455
TEL: (718) 585-7117
FAX: (718) 292-0558

Cedric Loftin
District manager, Bronx Community Board 1
3024 Third Avenue
Bronx, NY 10455
TEL: (718) 585-7117
FAX: (718) 292-0558

Diana Ayala
New York City Council Speaker – District 8
214 St. Ann's Avenue
Bronx, New York 10454
Phone: 347-297-4922
Fax: 347-270-1213

Carl Weisbrod
Chair of City Planning (Zoning)
22 Reade St.
Third Floor
New York, NY 10007

Carol Samol
Director, NYC Planning Commission – Bronx Office
1 Fordham Plz.
Bronx, New York 10458
Telephone (718) 220-8500
Fax (718) 584-8628

Carl Weisbrod
Commissioner, NYC Dept. of City Planning
22 Reade St.
Third Floor
New York, NY 10007

Keith Bray
New York City Department of Transportation
Brooklyn Borough Commissioner
55 Water Street, 9th Floor
New York, NY 10041

Constance Moran
New York City Department of Transportation
Bronx Borough Commissioner
55 Water Street, 9th Floor
New York, NY 10041
212-748-6680

Bronx County Clerk's Office
Luis M. Diaz, County Clerk
851 Grand Concourse, Room 118
Bronx, New York 10451
Telephone (866) 797-7214

Ms. Letitia James
Public Advocate
1 Centre Street, 15th Floor
New York, NY 10007
Email: kjfoyl@pubadvocate.nyc.gov

Scott M. Stringer
Office of the Comptroller
1 Centre Street
New York, NY 10007
Email: intergov@comptroller.nyc.gov

John Wuthenow
Office of Environmental Planning & Assessment
NYC Dept. of Environmental Protection
96-05 Horace Harding Expressway
Flushing, NY 11373

Mark McIntyre
NYC Department of Environmental Remediation
100 Gold Street, 2nd Floor
New York, NY 10038

New York State

Senator José M. Serrano
Senatorial District: 29
1916 Park Avenue Suite 202,
New York, NY 10037
Telephone (212) 828-5829
Fax (212) 828-2420

Asm. Carmen E. Arroyo
84th Assembly District
384 East 149th Street, Suite 301
Bronx, New York 10455
Telephone (718) 292-2901

Federal

Charles Schumer
U.S. Senator
757 Third Avenue, Suite 17-02
New York, NY 10017

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

Rep. José E. Serrano
Congressional District: 15
1231 Lafayette Avenue, 4th Floor
Bronx, New York 10474
Telephone (718) 620-0084
Fax (718) 620-0658

Adjacent Property Owner Contacts

Contact information for the identified owners, as listed in the New York City ACRIS Database, are as follows:

North

1. 340 GRAND CONCOURSE INC.
46 OXFORD DR.
MONTEBELLO NY 10901-3957

OCCUPANT / TENANT
338 GRAND CONCOURSE
BRONX 10451

East

2. IESI NY CORPORATION
99 WOOD AVENUE S. STE 1001
ISELIN NJ 08830-2713

OCCUPANT / TENANT
329 CANAL PLACE,
BRONX 10451

3. IESI NY CORPORATION
99 WOOD AVENUE S.
STE 1001 ISELIN NJ 08830-2713

OCCUPANT / TENANT
2640 PARK AVENUE,
BRONX 10451

4. IESI NY CORPORATION
99 WOOD AVENUE S. STE 1001
ISELIN NJ 08830-2713

OCCUPANT / TENANT
2634 PARK AVENUE,
BRONX 10451

5. IESI NY CORPORATION
2630 PARK AVENUE
BRONX NY 10451-6015

OCCUPANT / TENANT
2630 PARK AVENUE,
BRONX 10451

South

6. C/O JAMES GIDDINGS
2590 PARK AVENUE, LLC
38 RENWICK ST.
NEW YORK NY 10013-1315

OCCUPANT / TENANT
2590 PARK AVENUE,
BRONX 10451

7. C/O ROSENBERG & ESTIS,
P.C. BIB DETAILING LLC
733 3RD AVE.
NEW YORK NY 10017-3204

OCCUPANT / TENANT
304 GRAND CONCOURSE
BRONX 10451

West

8. JOHN LAGE
3621 21ST ST.
QUEENS, NY 11106-4705

OCCUPANT / TENANT
270 WALTON AVENUE,
BRONX 10451

9. 315 RE CORP.
315 GRAND CONCOURSE
BRONX NY 10451-5445

OCCUPANT / TENANT
315 GRAND CONCOURSE,
BRONX 10451

Local News Media

Bronx Times
900 E. 132nd Street
Bronx, NY 10454
(718) 597-1116

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

NY 1 News
75 Ninth Avenue
New York, NY 10011

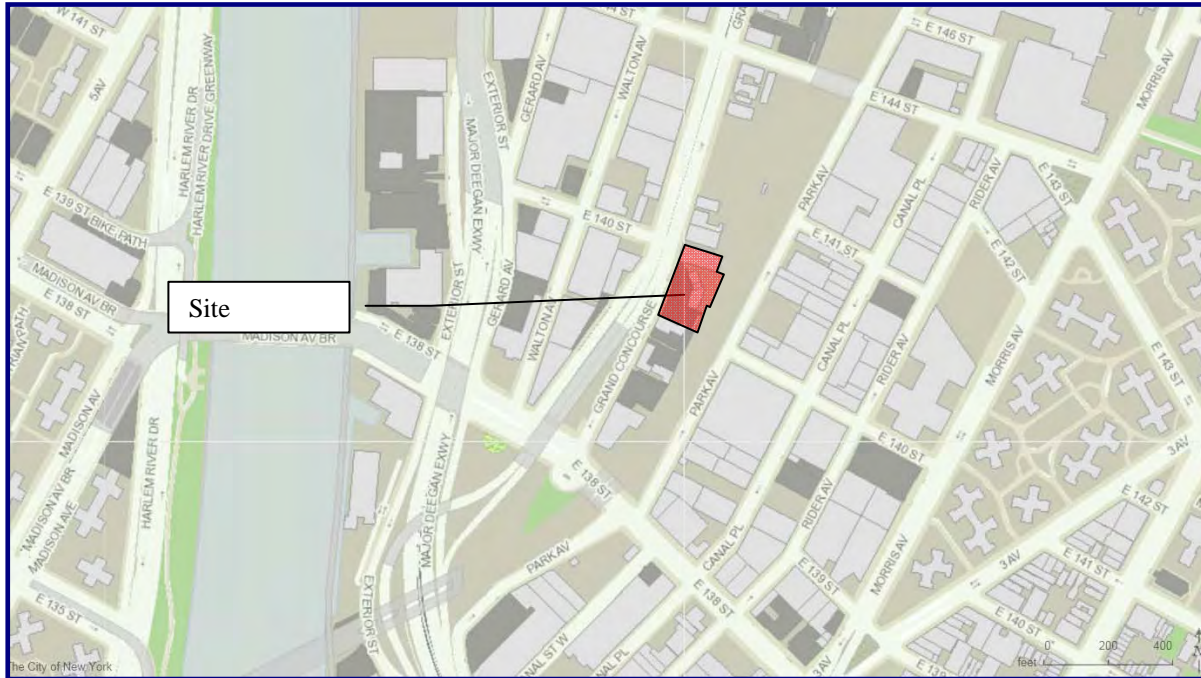
Public Water Supplier

Emily Lloyd, Commissioner
New York City Department of Environmental Protection
59-17 Junction Boulevard
Flushing, NY 11373

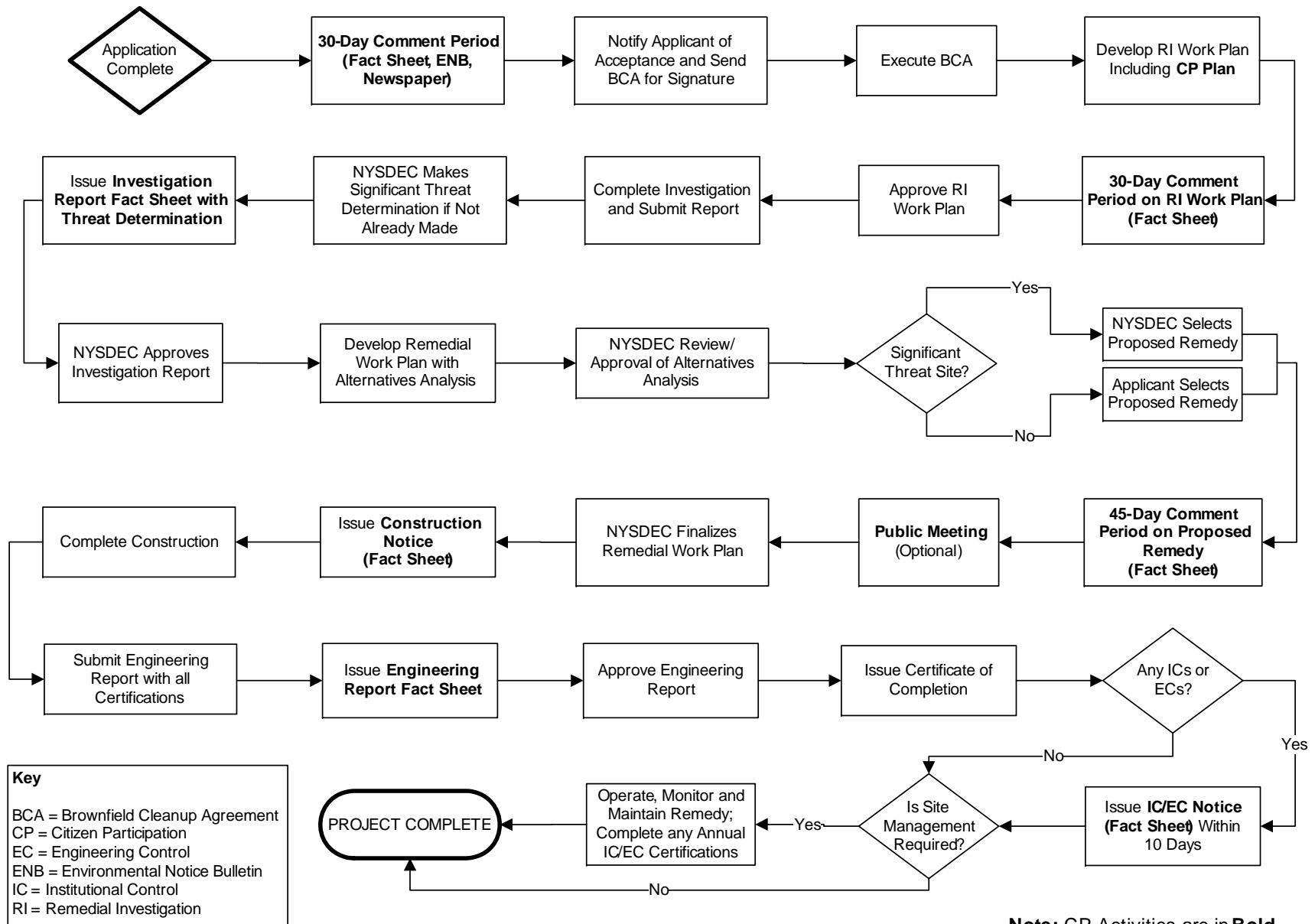
Schools and Daycare Facilities

1. Health Opportunities High School
350 Gerard Ave
Bronx, NY 10451
(718) 401-1826
Andrew Clayman, Principal
2. Hostos Community College
500 Grand Concourse
Bronx, NY 10451
(718) 518-4444
David Gómez, President
3. P.S. 31
250 East 156th Street
Bronx NY 10451
718-292-4397
William Hewlett Jr., Principal
4. P.S. 168
3050 Webster Ave
Bronx, NY 10467
718-585-2100
Maureen Fullerton, Principal

Appendix C - Site Location Map



Appendix D– Brownfield Cleanup Program Process



ATTACHMENT F ***Resumes***



AMC Engineering
99 Jericho Turnpike, Suite 300J
Jericho, NY 11590
Phone: (516) 417-8588

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 20 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

AMC: 14

Prior: 6 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
- Dewatering & Treatment System Design
- NYCDEP Sewer Discharge Permitting
- 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
- Waste Management Plans

Professional Certifications

- OSHA 40-hr HAZWOPER
- OSHA 10-hr Construction Safety and Health



AMC Engineering

99 Jericho Turnpike, Suite 300J
Jericho, NY 11590
Phone: (516) 417-8588

PROJECT EXPERIENCE (Representative Projects)

Project: Domsey Fiber Corp. - 431 Kent Avenue, Brooklyn NY

Project Description: NYS Brownfield cleanup project / NYC E-Designation. Soil contaminated with chlorinated solvents, petroleum and heavy metals requiring excavation, soil management and disposal under a Remedial Action Work Plan, Soil / Materials Management Plan, Construction Health and Safety Plan and Community Air Monitoring Plan

Client: Express Builders

Regulatory Authority: NYSDEC, NYCOER

Role: Mr. Czemerinski served as the Remedial Engineer for the project.

Project: Springfield Gardens Residential Area BMP - Springfield Gardens, Queens, NY

Project Description: NYC Residential infrastructure (sewer, gas, water) upgrade, drainage channel installation and pond restoration. Soil contaminated with, petroleum and heavy metals requiring excavation, soil management and disposal under a Materials Handling Plan, Construction Health and Safety Plan and Community Air Monitoring Plan

Client: EIC Associates - NYCEDC

Regulatory Authority: NYSDEC, NYCParks

Role: Mr. Czemerinski served as the Remedial Engineer for the project.

Project: Former Domino Sugar Site - Kent Avenue, Brooklyn NY

Project Description: NYC E-Designation. Soil contaminated with semi-volatile organic compounds and heavy metals requiring excavation, soil management and disposal under a Remedial Action Work Plan, Soil / Materials Management Plan, Construction Health and Safety Plan and Community Air Monitoring Plan

Client: Two Trees Management

Regulatory Authority: NYCOER

Role: Mr. Czemerinski served as the Remedial Engineer for the project.

Project: Former Uniforms For Industry Site - Jamaica Avenue, Queens NY

Project Description: NYS Brownfield cleanup project / NYC E-Designation. Soil contaminated with chlorinated solvents, petroleum, mop oil and heavy metals requiring excavation, soil management and disposal under a Remedial Action Work Plan, Soil / Materials Management Plan, Construction Health and Safety Plan and Community Air Monitoring Plan

Client: The Arker Companies

Regulatory Authority: NYSDEC, NYCOER

Role: Mr. Czemerinski served as the Remedial Engineer for the project.



AMC Engineering

99 Jericho Turnpike, Suite 300J
Jericho, NY 11590
Phone: (516) 417-8588

PROJECT EXPERIENCE (Representative Projects)

Project: Former Charles Pfizer & Co. Site - 407 Marcy Avenue, Brooklyn, NY

Project Description: NYS Brownfield cleanup project / NYC E-Designation. Soil contaminated with chlorinated solvents, petroleum, and heavy metals requiring excavation, soil management and disposal under a Remedial Action Work Plan, Soil / Materials Management Plan, Construction Health and Safety Plan and Community Air Monitoring Plan

Client: The Rabsky Group

Regulatory Authority: NYSDEC, NYCOER

Role: Mr. Czemerinski served as the Remedial Engineer for the project.

Project: Former East Coast Industrial Uniforms Site - 39 Skillman Street, Brooklyn, NY

Project Description: NYS Brownfield cleanup project / NYC E-Designation. Soil contaminated with chlorinated solvents, petroleum, and heavy metals requiring excavation, soil management and disposal under a Remedial Action Work Plan, Soil / Materials Management Plan, Construction Health and Safety Plan and Community Air Monitoring Plan

Client: Riverside Builders

Regulatory Authority: NYSDEC, NYCOER

Role: Mr. Czemerinski served as the Remedial Engineer for the project.

Project: Former BP Amoco Service Station Site - 1800 Southern Boulevard, Bronx, NY

Project Description: NYS Brownfield cleanup project / NYC E-Designation. Soil contaminated with petroleum, and heavy metals requiring excavation, soil management and disposal under a Remedial Action Work Plan, Soil / Materials Management Plan, Construction Health and Safety Plan and Community Air Monitoring Plan

Client: SoBro, Joy Construction

Regulatory Authority: NYSDEC, NYCOER

Role: Mr. Czemerinski served as the Remedial Engineer for the project.

Project: Former Dico G Auto & Truck Repair Site - 3035 White Plains Road, Bronx, NY

Project Description: NYS Brownfield cleanup project. Soil contaminated with petroleum, and heavy metals requiring excavation, soil management and disposal under a Remedial Action Work Plan, Soil / Materials Management Plan, Construction Health and Safety Plan and Community Air Monitoring Plan

Client: The Arker Companies

Regulatory Authority: NYSDEC

Role: Mr. Czemerinski served as the Remedial Engineer for the project.



ENVIRONMENTAL BUSINESS CONSULTANTS

Charles B. Sosik, PG, PHG, Principal

Professional Experience

28 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
- NYC OER Qualified Environmental Professional

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 28 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 15 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



Charles B. Sosik, PG, PHG, Principal

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 identified 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 vulnerable 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 activities 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 Consulting 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 herbicide and its metabolites applied 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 efficient 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 metamorphic 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



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, 2nd Report: Aug. 2013, 2nd Deposition Nov. 2013, Bench Trial: December 2013 - qualified as expert in Federal Court),

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.

Expert Witness / Fact Witness for NYS Attorney General with respect to cost recovery for a NYSDEC petroleum spill site in Lindenhurst, NY (Trial date Dec. 2009, in favor of plaintiff. Qualified as Expert State Supreme Court.

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 plaintiffs in class action case with respect to damages from chlorinated plume impact to residences in Dayton, OH. (Draft Report – May 2013).

Expert Witness / Fact Witness for defendant with respect to cost recovery and third party responsibility for a NYSDEC petroleum spill site in Lindenhurst, NY (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 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.

Expert Witness - for plaintiff in case regarding impact to private wells from a spill at adjacent Town and County properties with open gasoline spill files in Goshen, NY. Expert report submitted August 2013.

Expert Witness for defendant with respect to cost recovery from Sunoco for a NYSDEC petroleum spill site. (Declaration – January 2013).

Expert Witness - for plaintiff (municipal water supply purveyor) seeking damages from Dow Chemical for PCE impact at various locations in Suffolk County, NY. Affidavit submitted 2011.

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)



ENVIRONMENTAL BUSINESS CONSULTANTS

Keith W. Butler, Senior Project Manager

PROFILE

Mr. Butler has extensive project management experience with respect to environmental due diligence and subsurface investigations. He is responsible for the preparation of project proposals, Phase I and II Environmental Site Assessments, Work Plans, Health and Safety Plans, Quality Assurance Project Plans, and investigation reports. Additionally, Mr. Butler has conducted and managed numerous Phase I and II ESAs. In these roles, Mr. Butler is responsible for applying the various state and local regulations, which govern environmental compliance and determine the need for additional investigation and/or remediation.

SELECTED PROJECTS

Madison National Bank, Various Sites, New York

Mr. Butler served as the Project Manager and principal contact for Madison National Bank. He was responsible for the preparation of Transaction Screen and Phase I/II Environmental Site Assessments (ESAs) at various sites throughout the New York metropolitan area, as required by the bank to satisfy client mortgage or construction loan requests.

Jewish Home & Hospital, Manhattan, NY

Most recently, Mr. Butler completed a Phase I ESA at their Bronx campus to obtain U.S. Housing and Urban Development (HUD) funding for a future construction project. Mr. Butler was also responsible for implementing a Remedial Action Work (RAW) Plan at the Bronx facility as required by the NYSDEC under a Voluntary Cleanup Agreement. The RAW included the preparation of contract documents, excavation of over 2,000 tons petroleum contaminated soils, installation of a Soil Vapor Extraction (SVE) system remedial oversight, and sampling.

Pulte Homes of New York, Patchogue, NY

Mr. Butler served as the Project Manager for the re-development of this six-acre site and was responsible for field oversight and coordination between remediation contractors and various regulatory agencies. Initial phases of the project included the completion of Phase I and II ESAs. Subsequent remediation consisted of UST removal, excavation of petroleum-impacted soils, closure of three NYSDEC spill numbers, removal of contaminated UIC sediment/sludge, the closure of commercial and residential UIC structures and the excavation of arsenic and metals contaminated soil. The project was conducted under approved Remedial Work and Soil Management Plans with oversight from the State, County and Village agencies.

Town of Islip, Blydenburgh Road Landfill, Hauppauge, NY

Mr. Butler served as the Project Manager for the groundwater and leachate monitoring program at the Blydenburgh Road Landfill - Cleanfills 1 and 2 and Leachate Impoundment Area. Mr. Butler was the principal contact for the Town's Resource Recovery Agency. He prepared the quarterly and annual monitoring reports, oversaw sampling efforts, and coordinated with the Town's analytical laboratory and data validation contractors. Mr. Butler was also responsible for preparing quarterly well condition reports and leachate quality reports for compliance with the Town's Suffolk County Discharge Certification Permit.

Ogden Aviation, Various Sites, JFK International Airport, Jamaica, New York

Mr. Butler served as the project manager for the rehabilitation of the satellite fuel farm recovery well system. Recovery wells at the fuel farm had become clogged with iron deposits and bacteria limiting product recovery efforts. Mr. Butler developed and supervised chemical cleaning and redevelopment of recovery wells under the approval of the NYSDEC. The chemical treatment has resulted in significant increases in product recovery volumes.

Brookhaven National Laboratory, Upton, NY

Mr. Butler has worked on a number of remediation system and monitoring well installation projects at BNL. His duties included oversight of installations, system pump tests, performance evaluations, and well development. He also provided oversight of soil borings, temporary well construction, soil and water sampling, and air monitoring for groundwater screening survey of two operable units in hazardous and radioactive waste storage areas. Mr. Butler also provided oversight for groundwater monitoring, well construction, well abandonment, and methane-monitoring wells for landfill closure.

metroPCS, Various Sites, New York

Mr. Butler served as the Project Manager for metroPCS' Long Island region telecommunications site acquisition and expansion program. Mr. Butler was responsible for the preparation of Phase I ESAs, the conduct of Phase II ESAs, including asbestos, lead paint and soil sampling, and coordination of National Environmental Policy Act (NEPA) reports and planning studies at various locations proposed for construction of new cellular telephone facilities. Reports and associated communications were transmitted electronically through metroPCS' data management system.

Dormitory Authority - State of New York, Harlem Hospital Center Modernization Project - Hazardous and Universal Waste Survey, Harlem Hospital, New York, NY

Mr. Butler served as the field team leader for conducting hazardous and universal waste surveys in multiple buildings affiliated with Harlem Hospital Center. The survey included the identification of hazardous and universal waste materials including chemicals, paints, fluorescent bulbs, high intensity discharge bulbs/fixtures, battery operated equipment, above and underground petroleum storage tank identification, PCB containing light ballasts and electrical equipment.



ENVIRONMENTAL BUSINESS CONSULTANTS

Keith W. Butler, Senior Project Manager

The hospital is comprised of a number of buildings, many that were abandoned and slated for demolition.

SVE Monitoring at Newark International Airport, Elizabeth, NJ

A routine leak detection test indicated that two 10,000-gallon underground storage tanks, which were used to store unleaded gasoline, had failed tightness tests. Follow-up investigation revealed that the product had impacted the subsurface environment. In response to this, a soil vapor extraction system was installed to reduce the residual concentrations of petroleum constituents in soil and groundwater and to minimize vapor migration into subsurface utility vaults. Mr. Butler was responsible for implementing the Remedial Action Work Plan, developed for the site by Ogden and the State of New Jersey. Activities conducted under the RAW include quarterly groundwater monitoring, air sampling, vacuum pressure monitoring, system maintenance and reporting.

Federal Express Site, Newark International Airport, Elizabeth, NJ

Mr. Butler worked with Ogden Aviation and the State of New Jersey to address outstanding environmental issues at the site related to a spill of jet fuel, which occurred during a construction accident. Mr. Butler performed a site assessment, which included groundwater monitoring, product gauging, and groundwater flow modeling. After reviewing these data, Mr. Butler determined that fill material at the site was contributing to soil and groundwater contamination and has petitioned the State for partial site closure. Mr. Butler is continuing to address the remaining area of concern through product recovery and continued monitoring.

Northrop Grumman, Various Sites

Mr. Butler conducted three Phase I ESAs and a Phase II investigation for the presence of PCBs in soil. He also inspected and supervised the removal of underground storage tanks, asbestos abatement projects, and sanitary system closures related to the facility decommissioning. Mr. Butler also conducted groundwater investigations and provided oversight during soil sampling, drilling and soil remediation activities.

New York City Department of Environmental Protection, Various Sites

Mr. Butler served as an Environmental Scientist for hazard investigation at seven sewage pump stations. Mr. Butler addressed a wide range of environmental concerns including asbestos, lead based paints, PCB oil, light ballasts, and other hazardous building materials. He conducted field investigations, sampling, and prepared Hazardous Materials Survey Reports for use during preparation of plans and specifications for proposed pump station construction projects.

Fresh Kills Landfill, Staten Island, New York

Mr. Butler participated in the field operations during pump and yield tests conducted on Cells 1 and 9. The tests were performed to determine the hydraulic properties of the landfill's refuse. He collected groundwater and leachate measurements in recovery wells and in adjacent observation wells under pumping and non-pumping conditions.

PREVIOUS EXPERIENCE

DECA Real Estate Advisors

Director of Environmental Services, 2011-2017

VHB Engineering, Surveying and Landscape Architecture PC, Hauppauge NY

Senior Project Manager, 2005-2011

Parsons Brinkerhoff, Inc. New York NY

Senior Project Manager, 2004-2005

P.W. Grosser Consulting, Bohemia, NY

Senior Project Manager, 1998-2004

Eder Associates, Locust Valley, NY

Field Hydrogeologist, 1992-1998

EDUCATION

BS, Geology, Slippery Rock University of Pennsylvania, 1990

PROFESSIONAL REGISTRATIONS/CERTIFICATIONS

OSHA Certification, 40-hour Health & Safety Training at Hazardous Waste Sites

OSHA Confined Space Entry Training

OSHA Certification, 8-hour Refresher Health & Safety Training at Hazardous Waste Sites



ENVIRONMENTAL BUSINESS CONSULTANTS

Chawinie Reilly, Project Manager / Industrial Hygienist

Professional Experience

EBC: March 2013

Prior: 8 years

Education

Bachelor of Science, Health Sciences, Concentration in Environmental Health and Safety, Stony Brook University, NY

Areas of Expertise

- Remedial Investigation Work Plans, Remedial Investigation Reports, Remedial Action Work Plans
- 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
- Lead Paint and Asbestos Surveys
- Hazardous Materials Assessments

Professional Certification

- OSHA 40-hr HAZWOPER
- NYS Asbestos Inspector
- NYC Asbestos Investigator
- USEPA Lead Inspector
- USEPA Lead Risk Assessor
- OSHA 10-hr Construction Health and Safety
- Hazard Analysis and Critical Control Point (HACCP) Certified

PROFILE

Mrs. Reilly has 13 year's experience as an environmental consultant/contractor and has worked on and managed a wide range of environmental projects. Major responsibilities include Remedial Investigation Work Plans, Remedial Investigation Reports, Remedial Action Work Plan and Noise Remedial Action Work Plans. Mrs. Reilly has conducted Phase Is and Property Condition Assessments for commercial, industrial, and residential properties in New York, New Jersey and Connecticut. In addition, Mrs. Reilly 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



ENVIRONMENTAL BUSINESS CONSULTANTS

Thomas Gallo, Field Manager / Project Manager

Professional Experience

EBC: July 2015

Education

Bachelor of Arts, Geology, State University of New York at Potsdam, NY

Areas of Expertise

- Phase I Property Assessments
- Phase II Subsurface Investigations
- Indoor Air Quality (IAQ) Investigations
- NYSDEC Spill Site Investigations
- Asbestos Surveys
- Hazardous Materials Assessments
- Remedial Investigation Work Plans, Remedial Investigation Reports, Remedial Action Work Plans
- Remedial Oversight of NYC E-Designation Sites

Professional Certification

- OSHA 40-hr HAZWOPER
- NYS Asbestos Inspector
- OSHA 10-hr Construction Health and Safety

PROFILE

Mr. Gallo has 4 years' experience as an environmental consultant and has worked on and managed a wide range of environmental projects. Major responsibilities include Phase I and Phase II Site Assessments and Investigations for commercial, industrial, and residential properties in New York and New Jersey. Additional responsibilities include Remedial Investigation Work Plans, Remedial Investigation Reports, and Remedial Investigation Work Plans.

Mr. Gallos' field experience includes environmental sampling (groundwater, soil, surface water, air, soil gas), the oversight of soil boring and well installations, managing remediation on Site, tank removals, and spill management and closure. Mr. Gallo has prepared reports for both regulatory and client use.

ATTACHMENT G

Estimated Remedial Costs

**310 Grand Concourse
Bronx, NY**

Summary of Project Costs

NYS Brownfields Cleanup Program

Costs by Task

TASK - ENVIRONMENTAL REMEDIATION	Alternative 1 - Track 1	Alternative 2 - Track 2	Alternative 3 - Track 4
Building Demolition, Asbestos removal and C&D disposal	\$ 220,786.00	\$ 220,786.00	\$ 20,786.00
UST Removal	\$ 30,000.00	\$ 30,000.00	\$ 30,000.00
Excavation and Disposal	\$ 759,160.00	\$ 491,920.00	\$ 123,640.00
Air Monitoring and Field Oversight	\$ 42,500.00	\$ 29,750.00	\$ 8,500.00
Waste Characterization and Facility Approvals	\$ 18,650.00	\$ 14,250.00	\$ 8,350.00
Endpoint analysis, DUSR, EDDs	\$ 70,300.00	\$ 70,300.00	\$ 23,600.00
Dewatering and Treatment	\$ 46,000.00	\$ 46,000.00	\$ 46,000.00
Project Management	\$ 46,300.00	\$ 39,825.00	\$ 19,300.00
Status Reports	\$ 4,200.00	\$ 4,200.00	\$ 4,200.00
Composite Cover System	-	-	\$ 150,000.00
Environmental Easement Package	-	\$ 12,500.00	\$ 12,500.00
Site Management Plan	-	-	\$ 11,500.00
Final Engineering Report	\$ 25,450.00	\$ 25,450.00	\$ 25,450.00
<i>Subtotal</i>	\$ 1,263,346.00	\$ 984,981.00	\$ 483,826.00
<i>15% Contingency</i>	\$ 189,501.90	\$ 147,747.15	\$ 72,573.90
Total	\$ 1,452,847.90	\$ 1,132,728.15	\$ 556,399.90

ATTACHMENT H

Dewatering Plans and Specifications

Environmental
Protection

PERMIT

Customer Name: AMC ENGINEERING PLLC

Phone No.:

Account No.: 2001005206001

BBL: 04-99999-9999

Permit Type: PO-BLDG PRPS MS PERMIT-
BUILDNG (POMSC)

Permit No: 904023

Fee: \$2,847.91

Issued By: RP

Issued Date: 06/30/2020

Permitted Activity:

PO-BLDG PRPS MS AMC ENGINEERING, DEWATERING @ 310 GRAND CONCOURSE BX,CASE # SC-1003, DISCHARGE 336,000 GALLONS, 7/2020 THRU 6/2021.

Start Date:

End Date:

Start Time:

End Time:

Days Used: 0

Permittee: EXPEDITOR

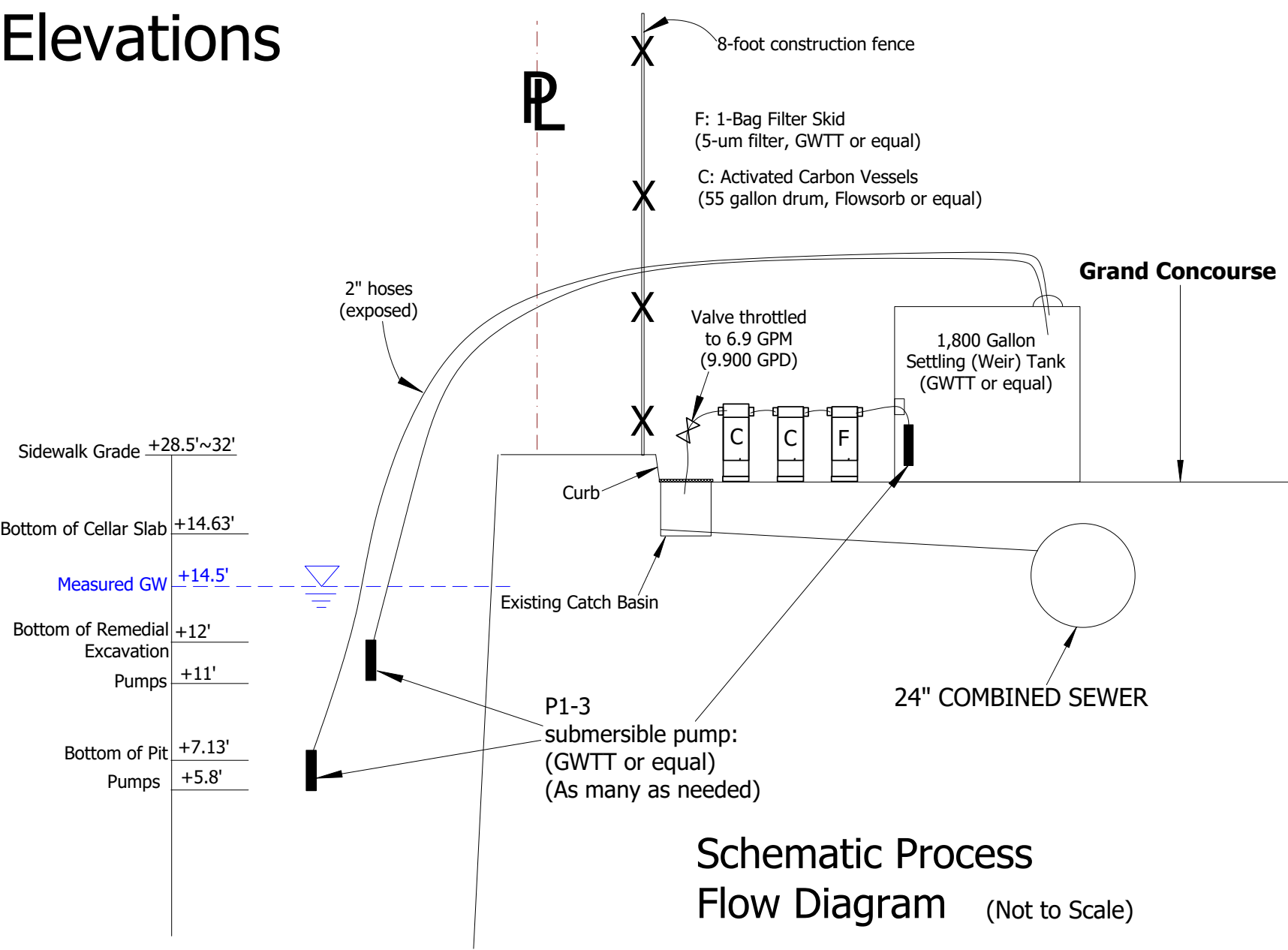
Permittee's Address:

Additional Notes:

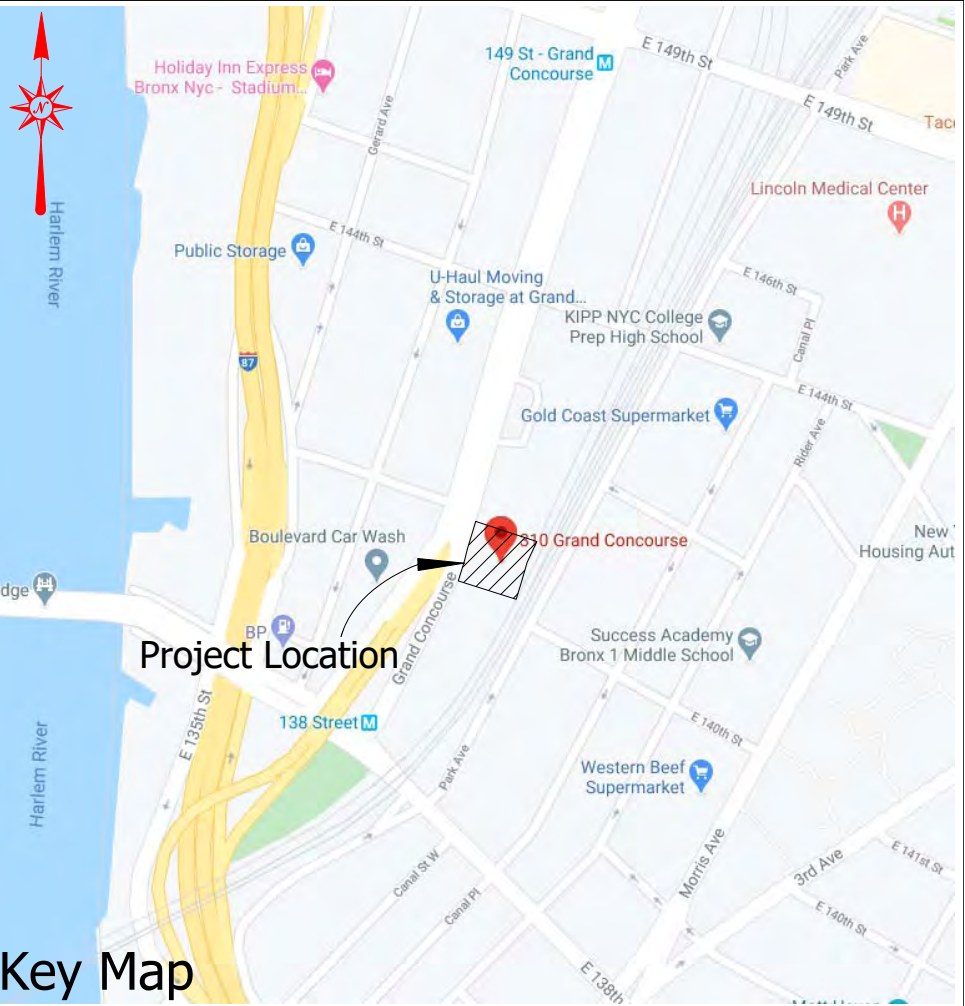
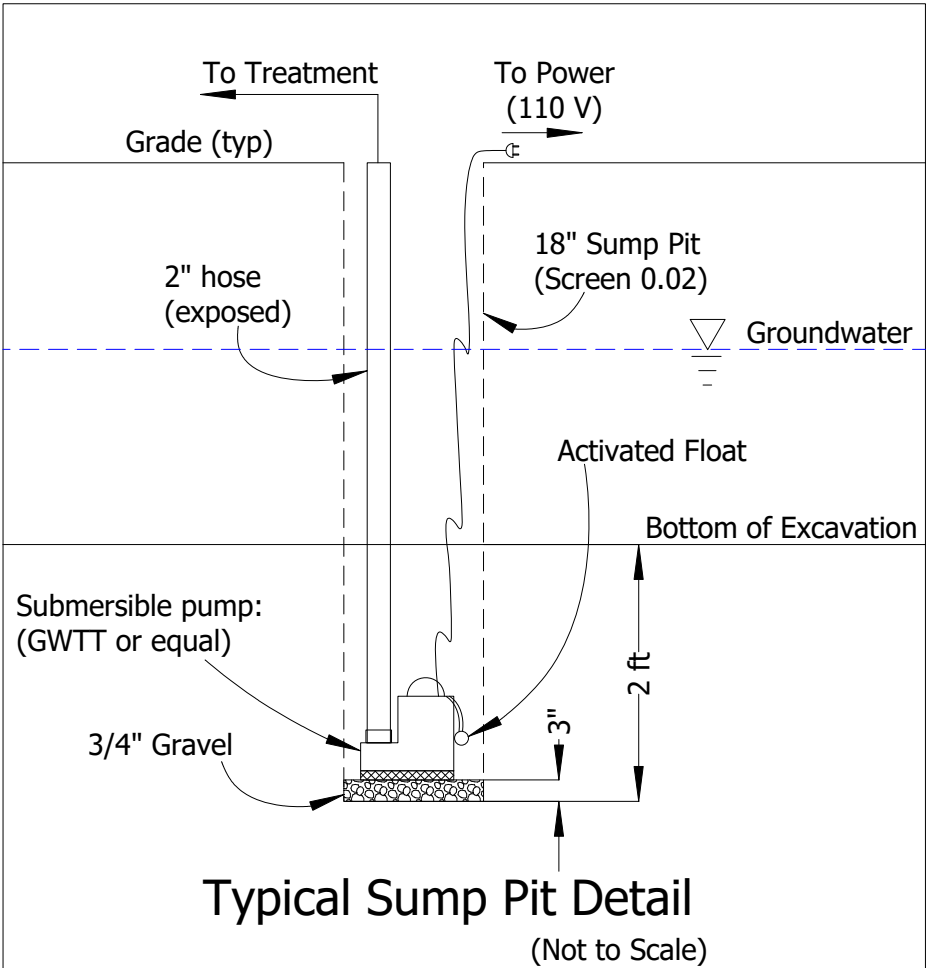
1. An approved backflow prevention device is required for all hydrant connections unless otherwise noted.
2. Hydrant permits are valid between the hours of 7:30 AM and 7:30 PM unless otherwise noted.
3. Hydrant permits are invalid when the temperature is below 32 degrees Fahrenheit.
4. Hydrants must be pumped out immediately after use from November 1st to April 15th.
5. Hydrant permit must be displayed at site where the water is being used.
6. Unless otherwise noted above, all hydrant use must comply with §20-08(b) of RCNY Title 15 Chapter 20.

2020 JUN 30 PM 1:37

Elevations



Schematic Process Flow Diagram (Not to Scale)

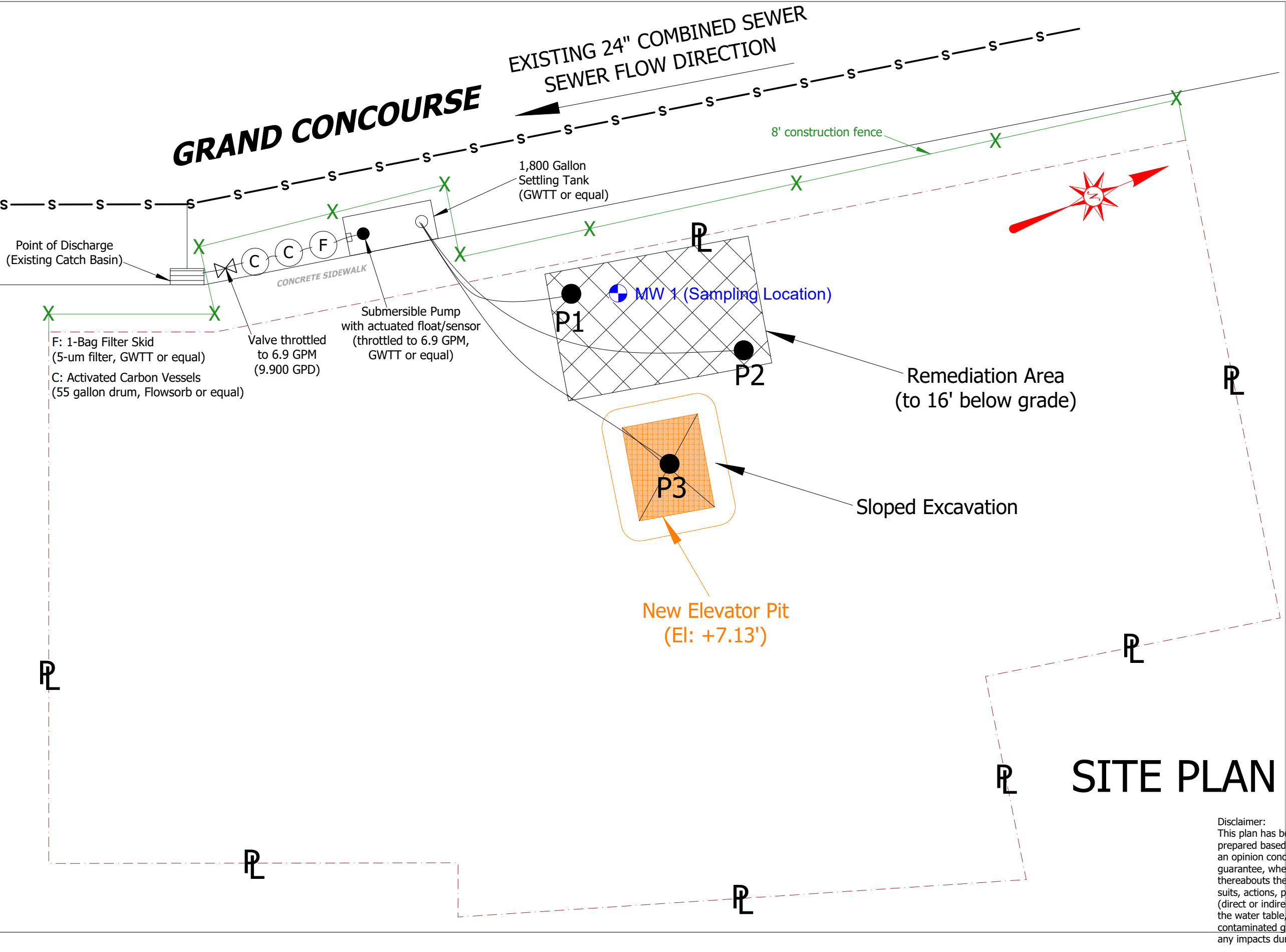


- NOTES TO GC:
1. ENSURE THAT ALL UTILITIES ARE MARKED OUT AND SITE IS SAFE FOR EXCAVATION. FOLLOW ALL CITY, STATE AND FEDERAL REGULATIONS WHEN WORKING AT THIS SITE.
 2. PROVIDE PROOF OF UTILITY MARK OUT TO ENGINEER OF RECORD.
 3. OBTAIN APPROVAL FROM OWNER OR STRUCTURAL ENGINEER THAT LOCATION OF TREATMENT SYSTEM IS ADEQUATELY SUPPORTED. DO NOT PLACE TREATMENT EQUIPMENT UNTIL INDICATED SO BY STRUCTURAL ENGINEER.
 4. PERMIT TO DISCHARGE WILL BE OBTAINED FROM NYCDEP. DO NOT COMMENCE DISCHARGE UNTIL SUCH PERMIT IS SECURED.
 5. DEWATERING AND DISCHARGE OF GROUNDWATER TO THE COMBINED SEWER WILL REQUIRE TREATMENT.
 6. ALL CONDITIONS MUST BE VIF. ANY DISCREPANCIES MUST BE BROUGHT UP TO THE ATTENTION OF THE DEWATERING CONTRACTOR AND ENGINEER.
 7. IF DISCHARGE EXCEEDS 10,000 GPD, THEN DISCHARGE MUST OCCUR THROUGH A CONNECTION. OBTAIN SUCH APPROVAL FROM THE BWSO.
 8. IF DISCHARGE EXCEEDS 45 GPM, THEN A LONG ISLAND WELL PERMIT MUST BE OBTAINED FROM NYSDEC.
 9. Since excavation / construction activities occur within 200 ft of a rail line (MTA), plans must be filed with respective MTA agency to obtain letter of no exception.
 10. Site information and elevations obtained from plans by permission from owner.


Important Note: Dewatering system may affect subsurface conditions on adjacent properties, and must be continuously monitored. Precautions will be needed to limit the risk of cracks, heave or settlement of adjacent structures.

- DEWATERING NOTES:
1. Obtain approval from structural engineer to position settling tank and treatment where indicated.
 2. Dewatering is expected for the new pit, and onsite remediation.
 3. Groundwater was measured at El: +14.5'. This is expected to be perched groundwater.
 4. Monitor movement of adjacent structures: Vibration settling and optical monitoring (by others). Coordinate these activities with geotechnical engineer.
 5. Using pumps will require a continuous power supply, and back up generators to ensure continuous pumps operation.
 6. Pumps will be used as-needed. Dewatering is expected to be a maximum of 9,900 GPD, regardless of the number of pumps used.

- ENGINEERING NOTES:
1. Treatment consists of one (1) settling tank, one (1) filter unit, and two (2) carbon vessels (see plan for details).
 2. Treatment to be located on grade as indicated.
 3. The location of submersible pumps will be based on site/field conditions.
 4. The effluent will be discharged by gravity from the treatment into the 24" combined sewer.
 5. Exposed hoses can be manifolded into a main PVC header provided that each connection is fitted with a check valve and an adjustable flow valve.



Disclaimer:
This plan has been prepared for the purpose of obtaining a dewatering permit from the overseeing agency. This plan (and supplemental documents) have been prepared based on the information provided by others and through reasonable engineering assumptions. The recommendations expressed in this plan are not an opinion concerning the compliance of any past or present owner or operator of the site with any federal, state, or local law or regulation. No warranty or guarantee, whether express or implied, is made with respect to the data reported or conclusions expressed in this plan. The project construction manager and thereabouts the project owner hereby agree to indemnify and to save harmless AMC Engineering, PLLC and its professionals from and against any and all claims, suits, actions, proceedings, and losses that may arise after the date of this agreement from the construction, maintenance, operation, or use of any equipment (direct or indirect) for the purpose of dewatering at this location. Additionally, AMC Engineering, PLLC is held harmless due to any harmful side effects of lowering the water table, such as but not limited to: impact of drawdown on the perimeter of the site, salt water intrusion, movement of adjacent structures, movement of contaminated groundwater, backflow due to surcharge of outlet sewer and effect on any wetlands. Monitoring procedures for securing adjacent structures against any impacts during dewatering such as settlement, drawing of fines from beneath existing structures, and formation of cracks should be adopted.



AMC ENGINEERING PLLC
18-36 42nd Street
Astoria, NY 11105
718 545-0474

PROJECT

310 Grand Concourse
Bronx, NY 10451
Block: 2341 Lots: 10 (partial), 28 ,31

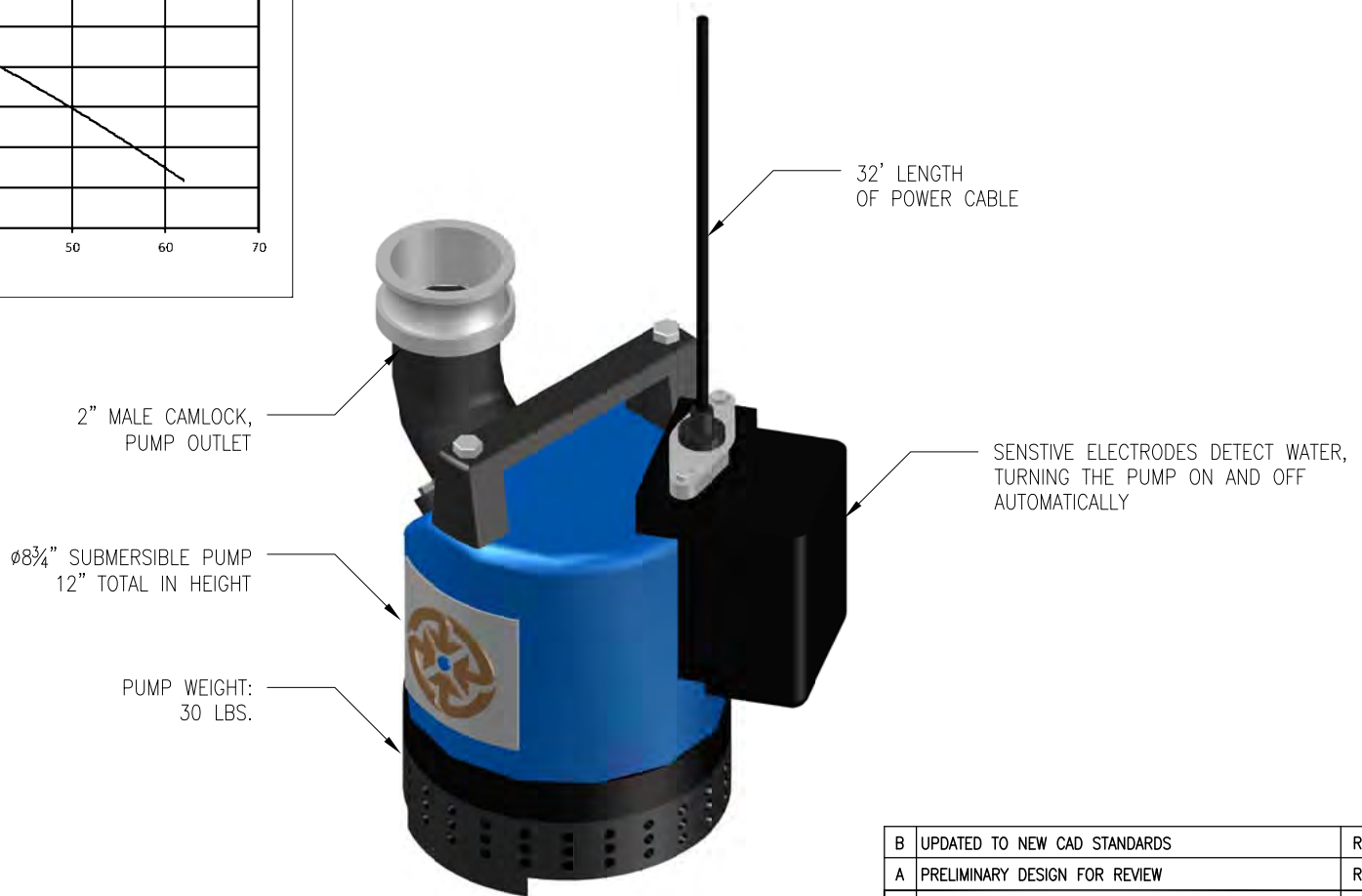
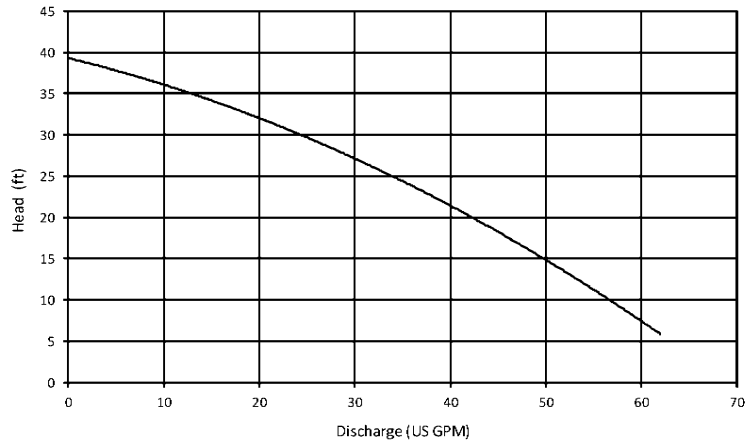
TITLE:

Proposed Dewatering Plan
for Remediation Activities

SEAL & SIGNATURE:

DATE: MAY 7, 2020
PROJECT No:
DRAWING BY: AS
CHK BY:
DWG No:
DW-1.00
1 of 1


2/3 HP Submersible Pump Performance Chart



B	UPDATED TO NEW CAD STANDARDS	RJS	10/15/15
A	PRELIMINARY DESIGN FOR REVIEW	RJS	05/29/14
NO.	REVISIONS	BY	DATE

TITLE: **EQUIPMENT SPECIFICATION
STANDARD
SINGLE 2/3HP SUBMERSIBLE PUMP**

SCALE: NTS	APPROVED BY: RJS	DRAWN BY: RJS
DATE: 05/29/14		



627 MOUNT HOPE ROAD • WHARTON, NJ 07885

PHONE: 973-983-0901 • FAX: 973-983-0903

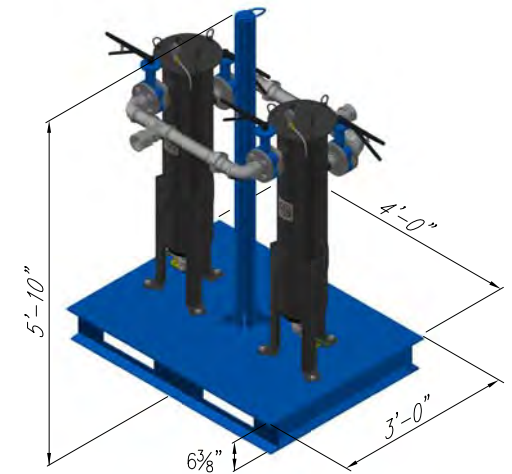
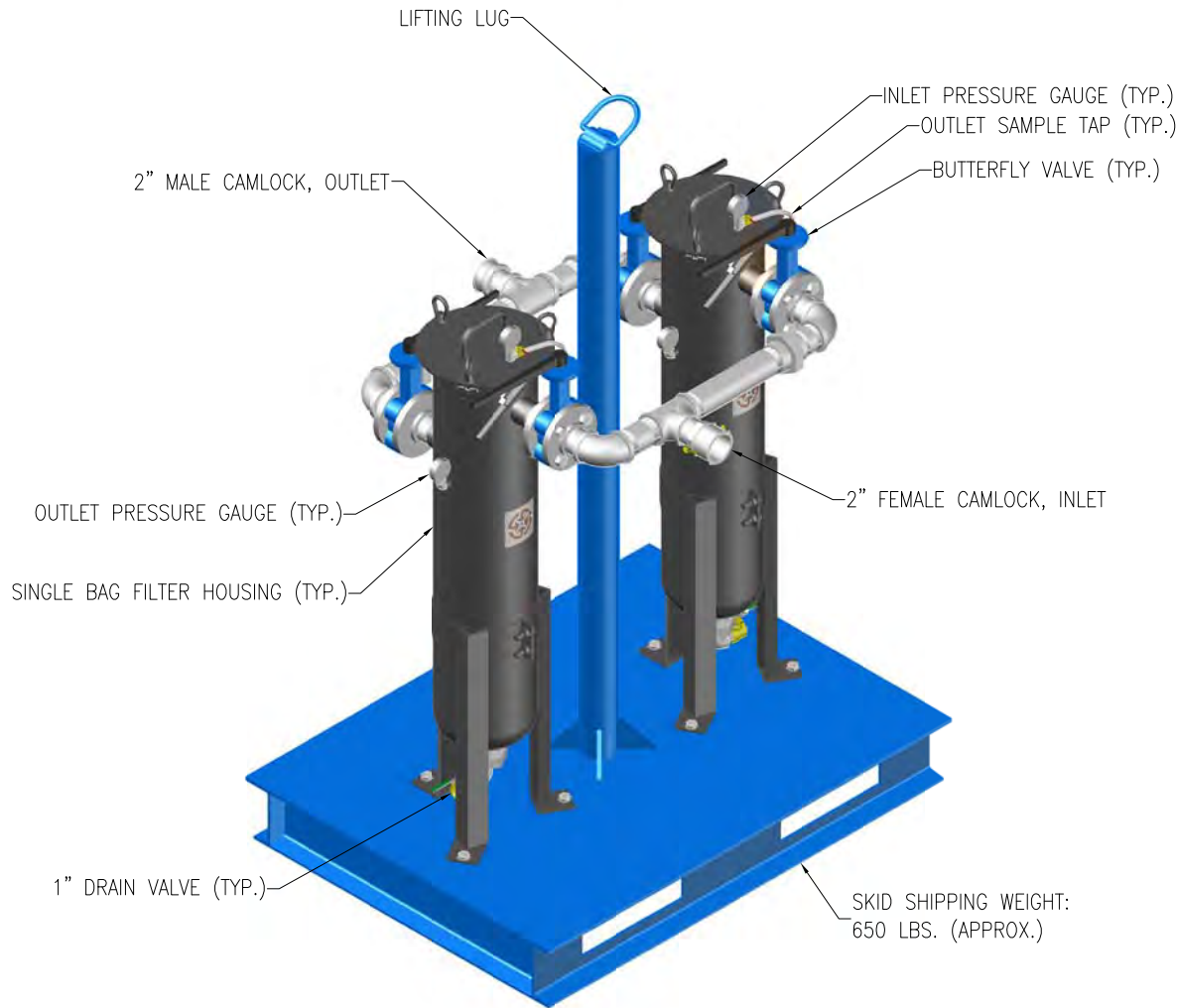
www.gwttl.com

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DWG SIZE: A	SHEET: 1 OF 1	DRAWING NO.: ST-000271-SPC01	B
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0.66HP SUBMERSIBLE PUMP SPECIFICATIONS:


- | | | | |
|-----------------|-----------------|--|---------|
| - CAPACITY: | 30 GPM @ 28' | - HEIGHT: | 12" |
| - OUTLET: | 2" MALE CAMLOCK | - WEIGHT: | 30 LBS. |
| - MOTOR OUTPUT: | 2/3 HP | - BUILT IN ELECTRODES DETECT WATER TURNING THE PUMP ON AND OFF AUTOMATICALLY | |
| - VOLTAGE: | 110 V | - URETHANE SEMI VORTEX IMPELLER | |
| - CABLE LENGTH: | 32' | - ELASTOMER LINED PUMP CASING FOR MAXIMUM WEAR LIFE | |
| - DIAMETER: | 8 3/4" | | |

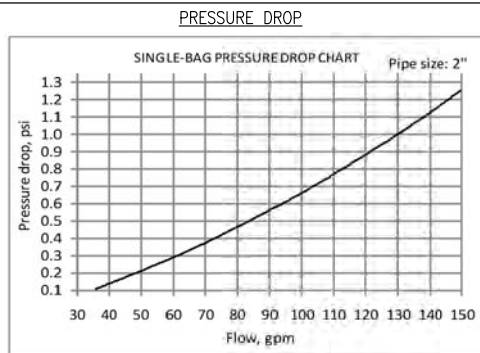


NOTE: THIS DRAWING DEPICTS A "TYPICAL" SKID.
ACTUAL DETAILS AND DIMENSIONS MAY VARY.

E	REVISED TITLEBLOCK.	01/05/15
D	REVISED SPECIFICATIONS.	08/25/10
NO.	REVISIONS	DATE

CUSTOMER:		
SITE:		

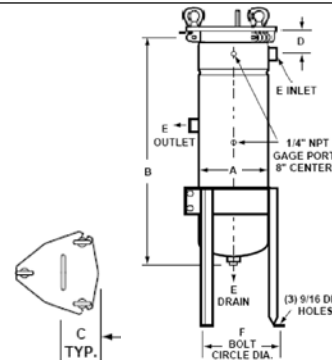
TITLE: EQUIPMENT SPECIFICATION STANDARD DUPLEX SINGLE BAG FILTER SKID		
SCALE: NTS	APPROVED BY: JB	DRAWN BY: AAV
DATE: 08/25/10		
 <div>627 MOUNT HOPE ROAD • WHARTON, NJ 07885 PHONE: 973-983-0901 • FAX: 973-983-0903 www.gwttl.com</div> <p>Ground/Water Treatment & Technology, LLC</p>		
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DWG SIZE: A	SHEET: 1 OF 1	DRAWING NO.: ST-0002-SPC E



SINGLE BAG FILTER SPECIFICATIONS

- | | |
|---------------------------|--------------|
| CONSTRUCTION: | CARBON STEEL |
| HOUSING STYLE: | STANDARD |
| NUMBER OF BASKETS: | 1 |
| STRAINING FILTERING AREA: | 4.4 SQ. FT. |
| INLET/OUTLET SIZE: | 2" |
| DRAIN SIZE: | 2" |
| NOMINAL FLOW RATE: | 100 GPM |
| STANDARD PRESSURE: | 125 PSI |
| WEIGHT (PER DRY UNIT): | 70 Lbs. |

BASIC DIMENSIONS
MODEL NUMBER & A: 8 (8.6")
LEG BOLT CIRCLE (F): Ø12.0
B: 35.9" C: 6.0"
D: 3.5" E: 2.0"



FLOWSORB®

Liquid Phase Adsorption Canister

Description

Designed for low-flow water treatment applications, prefabricated 55-gallon FLOWSORB canisters contain all the operating elements found in a full-scale adsorption system. These small, economical treatment systems hold 180 pounds of granular activated carbon for applications including:

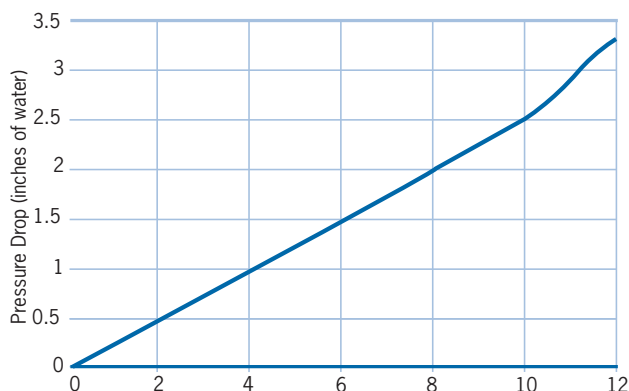
- Small wastewater streams
- Groundwater remediation
- Underground storage tank leaks
- Well pump tests
- Product purification or de-colorization
- Tank cleaning water treatment
- Batch water or product treatment
- Carbon adsorption pilot testing
- Emergency spill treatment
- Monitoring well water treatment

Features

FLOWSORB offers several features and benefits to industrial, commercial, and municipal users including:

- Low cost per unit makes carbon treatment economical
- Simple installation and operation
- Space above carbon bed facilitates flow distribution or back-flushing
- Flexibility to be used in series or parallel operation
- Supplied with virgin or reactivated carbon
- Practical disposal option: pre-approved spent carbon canisters may be returned to Calgon Carbon Corporation for safe carbon reactivation
- Continuous treatment at various flow rates and concentrations

Pressure Drop



Specifications

FLOWSORB

Vessel	Open head steel canister
Cover	Removable steel cover, 12 gauge bolt ring
Internal Coating	Heat-cured phenolic epoxy
External Coating	Baked enamel (white)
Temperature Limit	140°F (60°C) continuous 180°F (82°C) maximum
Inlet	2" FNPT
Outlet	2" FNPT
Carbon	180 lbs. granular activated carbon: Specify FILTRASORB 300 or reactivated grade
Ship Weight	219 lbs. (99.4 kg)
Identification	Sequentially numbered for traceability

Typical Operating Parameters

FLOWSORB

Flow Rate	10 gpm (37.8 l/m)
Contact Time	4.5 minutes
Pressure Drop	< 1 psi (clean water and carbon)
Operating Pressures	3 psig maximum no vacuum



Installation

FLOWSORB canisters should be set on a flat, level surface and piped as recommended in the installation illustration. The influent pipe connection should be attached to the unit by using a flexible connection. Some minor deflection of the lid may occur if pressure builds due to filtration or other flow blockage downstream.

FLOWSORB discharge piping should include a piping loop elevated above the top of the canister to ensure that the canister remains flooded with water at all times. In addition to the piping loop, a drain connection is recommended on the discharge piping; this allows drainage of the unit prior to disconnection or temporary shutdown.

Pipe connections to the canister are the responsibility of the customer. It is recommended that influent and discharge pipe connections be made using fittings that are of good quality and have un-damaged threads. Application of sealant tape to the pipe thread ensures better contact with the limited depth of the fittings on the canister. Over tightening of the pipe fitting will damage the canister fittings and cause leaks.

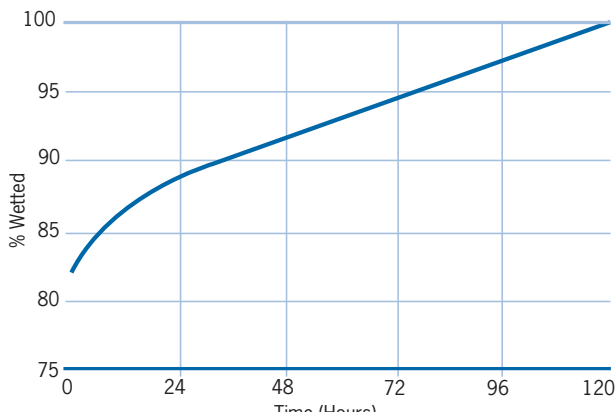
FLOWSORB canisters are shipped with dry activated carbon; the carbon must be wetted and de-aerated prior to use. This procedure displaces air from the internal structure of the carbon granule, thus assuring that the liquid to be treated is in contact with the carbon surface.

Prior to operation each canister must be filled with clean water; the water should be introduced into the bottom outlet connection. The unit should sit for approximately 48 hours to allow most of the carbon's internal surface to become wetted as shown on the wetting curve.

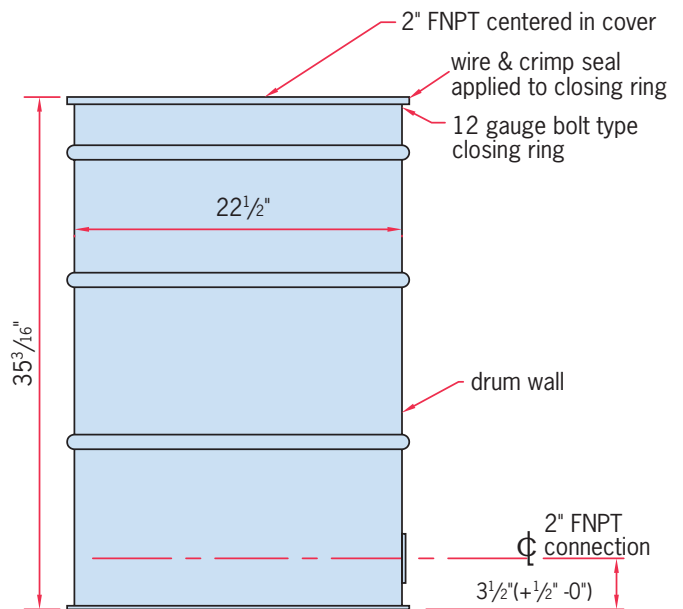
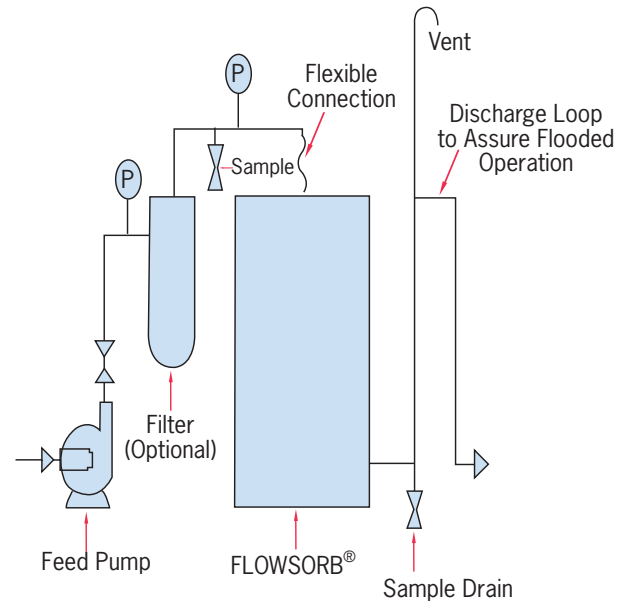
After wetting, the carbon bed can be de-aerated by draining the canister and refilling the canister upflow with clean water. This procedure will eliminate any air pockets which may have formed between the carbon granules. The FLOWSORB is now ready for operation.

A filter should be installed if the liquid to be treated contains substantial amounts of suspended solids. A simple cartridge or screen filter helps prevent pressure buildup in the carbon bed.

Wetting Curve for GAC (77°F/25°C)



Typical Installation



Operation

FLOWSORB canisters should be full of clean water before treatment begins. Flow rate to the canister should be determined based on required contact time between the liquid and the carbon media. In groundwater treatment applications, the recommended contact time is typically 8-10 minutes with a resultant flow of approximately 5 gpm. Consult your Calgon Carbon Corporation Technical Sales Representative for advice about proper contact time for your application.

FLOWSORBS can be manifolded in parallel operation for higher flow rates. For series operation, two FLOWSORBS can be piped together sequentially, as normal pressure drop will not exceed the recommended operating pressure.

These canisters have space for bed expansion and can be back flushed by introducing clean water or liquid at approximately 20-25 gpm to the outlet and taking backflush water from the inlet.

How to Estimate FLOWSORB Life

The treatment table on this page lists the volume of water that can be purified by the FLOWSORB for typical contamination situations. Most applications, however, involve a unique mixture of organic chemical contaminants including some chemicals that adsorb at different capacities or strengths. Please consult with your Calgon Carbon Technical Sales Representative for more information about carbon usage rates.

Calgon Carbon Liquid Purification System

FLOWSORB is a unit specifically designed for a variety of small flow applications. Calgon Carbon Corporation offers a wide range of carbon adsorption systems and services for a greater range of flow rates and carbon usages to meet specific applications.

Return of FLOWSORB

Arrangements should be made at the time of purchase to return canisters containing spent carbon. Calgon Carbon will provide instructions on how to sample the spent carbon and arrange for carbon acceptance testing. The spent carbon is reactivated by Calgon Carbon and all of the contaminants are thermally destroyed. The company will not accept FLOWSORB for landfill, incineration, or other means of disposal.

FLOWSORB cannot be returned to Calgon Carbon unless the carbon acceptance procedure has been completed, an acceptance number provided, and the return labels (included with the unit at the time of purchase) are attached. FLOWSORB must be drained and inlet/outlet connections must be plugged prior to return to Calgon Carbon.

Theoretical Treatment Capacity for Typical Cases

	Case 1 1,600,000 gal	Case 2 400,000 gal	Case 3 85,000 gal
Benzene	20 ppb	200 ppb	2 ppm
Toluene	40 ppb	400 ppb	4 ppm
Xylene	40 ppb	400 ppb	4 ppm
	Case 4 1,900,000 gal	Case 5 550,000 gal	Case 6 125,000 gal
TCE	50 ppb	500 ppb	5 ppm
PCE	50 ppb	500 ppb	4 ppm
	Case 7 230,000 gal	Case 8 50,000 gal	Case 9 10,000 gal
Phenol	1 ppm	10 ppm	100 ppm
Total SOC	10 ppm	100 ppm	1,000 ppm

Each case represents a groundwater or wastewater stream that contains the combination of contaminants listed. The treatment capacity indicates the total gallons of that particular water that may be treated before any of the specific contaminants are present in the treated water as noted. Theoretical capacity based on 5 gpm water at 70°F or less and 180 lbs. of FILTRASORB 300. Background TOC is < 1 ppm except phenol cases as noted. Contaminants reduced to < 5 ppb except phenol case which is for 95% phenol reduction.

Warranty

Calgon Carbon Corporation warrants that the FLOWSORB canister will be free from defects in materials and workmanship for a period of 90 days following the date of purchase. In the event of a breach of this warranty, Calgon Carbon Corporation will, in its discretion, repair or replace any defective parts or the complete unit during the warranty period. This warranty does not apply to defects caused by (i) normal wear and tear, (ii) accident, disaster or event of force majeure, (iii) misuse, fault or negligence of or by Buyer, (iv) use of the FLOWSORB canister in a manner for which it is not designed, (v) use of media in the FLOWSORB canister not supplied by Calgon Carbon Corporation, (vi) external causes such as, but not limited to, power failure or electrical power surges, or (v) improper storage and handling of the FLOWSORB canister. Except as expressly provided in this warranty statement, **Calgon Carbon Corporation disclaims all other warranties, whether express or implied, oral or written, including without limitations all implied warranties or merchantability or fitness for particular purpose. Calgon Carbon Corporation does not warrant that the FLOWSORB canisters are error-free or will accomplish any particular result. Any advice or assistance furnished by Calgon Carbon Corporation in relation to the FLOWSORB canister provided for hereunder shall not give rise to any warranty or guarantee of any kind. This warranty will take precedence over any and all other warranties unless specifically disclaimed and referenced by Calgon Carbon Corporation.**

Safety Message

It is unlikely that a worker would be able to physically enter a FLOWSORB canister; however, the following information and precautions apply to partially closed canisters or situations where carbon is to be removed from the canister and stored elsewhere. Wet activated carbon preferentially removes oxygen from air. In closed or partially closed containers and vessels, oxygen depletion may reach hazardous levels. If workers are to enter a vessel containing carbon, appropriate sampling and work procedures for potentially low oxygen spaces should be followed including all applicable federal and state requirements.

Should the canister need to be opened, first vent the drum by slowly opening the inlet or outlet connection before removing the drum ring.

Limitation of Liability

Calgon Carbon Corporation's liability and the Buyer's exclusive remedy for any cause of action arising out of this transaction, including, but not limited to, breach of warranty, negligence and/or indemnification, is expressly limited to a maximum of the purchase price of the FLOWSORB canister sold hereunder. All claims of whatsoever nature shall be deemed waived unless made in writing within forty-five (45) days of the occurrence giving rise to the claim. Under no circumstance shall Calgon Carbon Corporation be liable for any incidental, consequential, punitive, exemplary, or special damages of any kind arising as a result of or in connection with the FLOWSORB canisters regardless of the cause giving rise to any claim. Nor shall Calgon Carbon Corporation be liable for loss of profits or fines imposed by governmental agencies. In no event shall Calgon Carbon Corporation's liability exceed the purchase price paid by purchaser, for any reason, whether by reason of breach of contract, tort, indemnification, warranty or otherwise. This limitation of liability statement will take precedence over any and all other liability provisions unless specifically disclaimed and referenced by Calgon Carbon Corporation.

Making Water and Air Safer and Cleaner



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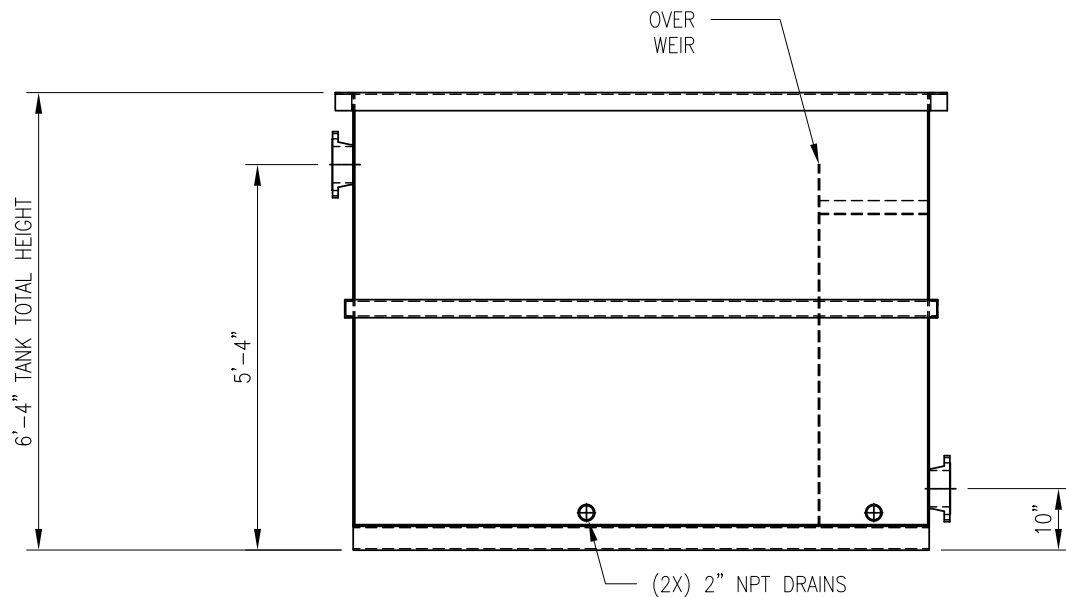
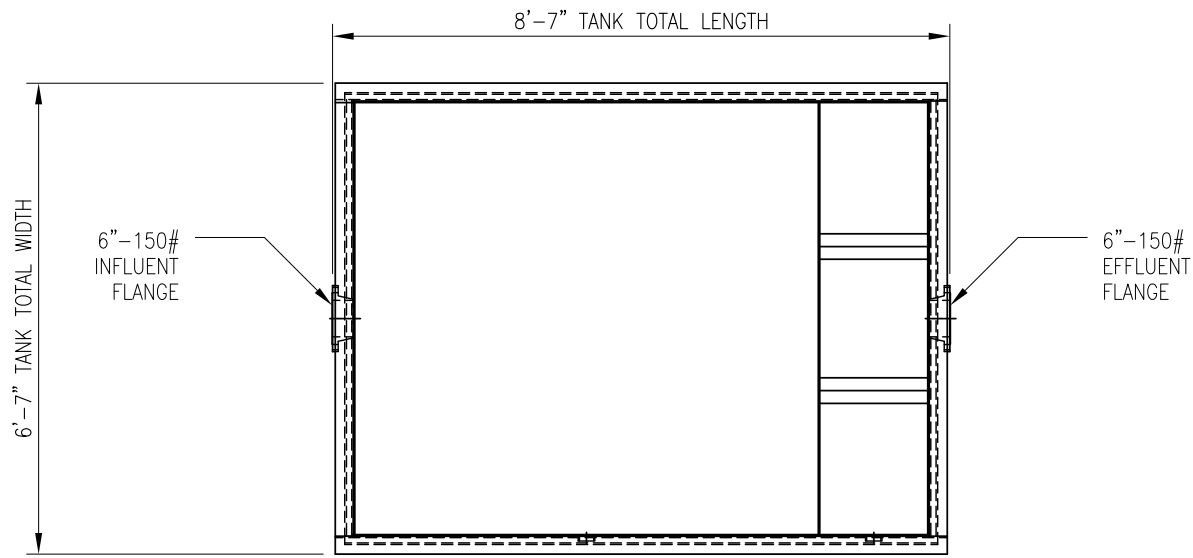
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Your local representative



1,800 GALLON SETTLING TANK SPECIFICATIONS

- TANK CONSTRUCTION: A-36 CARBON STEEL
- INLET CONNECTION: 6" FLANGE
- OUTLET CONNECTION: 6" FLANGE
- DRAINS (2x): 2" NPT
- APPX. TANK WEIGHT (EMPTY): 3,250 Lbs.
- APPX. TANK WEIGHT (OPERATING): 18,250 Lbs.

	VOLUME (GAL.)	DESIGN FLOW (GPM) @ 15 MIN. RETENTION
NOMINAL	2,000	133.3
OPERATING	1,800	120

NOTES:

1. ALL MATERIAL TO BE CARBON STEEL
UNLESS OTHERWISE NOTED.
2. INTERIOR FINISH:
PREP: SSPC-SP10-2 MIL PROFILE
TREATMENT: CARBOLINE PHENOLINE 353 (GRAY)
5-6 MILS DFT
3. EXTERIOR FINISH:
PREP: SSPC-SP3-2 MIL PROFILE
TREATMENT: CARBOLINE CARBOCOAT 8215 (BLUE)
2-3 MILS DFT

B	UPDATED TO NEW CAD STANDARDS		RJS	09/09/15
A	TYPICAL		RJS	02/25/11
NO.	REVISIONS		BY	DATE
TITLE: <div>EQUIPMENT SPECIFICATION STANDARD 1,800 GALLON SETTLING TANK</div>				
SCALE: NTS		APPROVED BY: RJS	DRAWN BY: RJS	
DATE: 02/25/11				
<div><div>627 MOUNT HOPE ROAD • WHARTON, NJ 07885 PHONE: 973-983-0901 • FAX: 973-983-0903 www.gwttllc.com</div></div>				
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DWG SIZE: A	SHEET: 1 OF 1	DRAWING NO.: ST-000334-SPC01		B