470 Kent Avenue
Remedial Action Work Plan

470 Kent Avenue – Brooklyn, New York
Block 2134, Lots 1 and 150 (portion)
BCP Site #C224053

Submitted to:
New York State Department of Environmental Conservation
Division of Environmental Remediation
Remedial Bureau C, Section C
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September 2023

CERTIFICATIONS

I, Matthew M. Carroll, certify that I am currently a registered professional engineer licensed by the State of New York 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).



091629	09/12/2023	
NYS Professional Engineer #	Date	Matthew M. Carroll, P.E. Signature

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LIST OF ACRONYMS

AGV	NYSDOH Air Guidance Value
AOC	area of concern
AS	air sparging
BCA	Brownfield Cleanup Agreement
BCP	Brownfield Cleanup Program
ECL	Environmental Conservation Law
BTEX	benzene, toluene, ethylbenzene and xylenes
CAMP	Community Air Monitoring Program
C&D	construction and demolition
CDS	construction dewatering system
Class GA Standards	NYSDEC TOGS 1.1.1 Class GA Ambient Water Quality Standards and Guidance Values
CEQR	City Environmental Quality Review
CFR	Code of Federal Regulations
CPP	Citizen Participation Plan
COC	Certificate of Completion
DCE	dichloroethylene
DER-10	NYSDEC Division of Environmental Remediation (DER), DER-10 / Technical Guidance for Site Investigation and Remediation
DRO	diesel range organics
DOC	dissolved organic carbon
DUSR	Data Usability Summary Report
EC	engineering control
ESA	Environmental Site Assessment
EZ	exclusion zone
FB	field blanks
FER	Final Engineering Report
ft-bs	feet below building slab
ft-bg	feet below sidewalk grade
ft-msl	feet above mean sea level
GPM	Gallons per minute
HASP	Health and Safety Plan
HSA	Hollow Stem Auger
HSO	Health and Safety Officer
IC	institutional control
ISCO	*in-situ* chemical oxidation
IRM	Interim Remedial Measure
MW	monitoring well
NAVD	North American Vertical Datum of 1988
NGVD	National Geodetic Vertical Datum of 1929
NIOSH	National Institute for Occupational Safety and Health
NYCDEP	New York City Department of Environmental Protection
NYCDEP Limits	NYCDEP Limitations for Effluent to Sanitary or Combined Sewers
NYCDOB	New York City Department of Buildings

NYCDOT	New York City Department of Transportation
NYCRR	New York Codes, Rules and Regulations
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
NYSDOH-ELAP	NYSDOH Environmental Laboratory Approval Program
O&M Plan	Operations and Maintenance Plan
OSHA	Occupational Safety and Health Association
PCB	polychlorinated biphenyl
PCE	perchloroethylene, aka tetrachloroethylene
PID	photoionization detector
PGWSCOs	6 NYCRR 375-6.8(b) and CP-51 Protection of Groundwater Soil Cleanup Objectives
PP Metals	Priority Pollutant Metals
PPE	personal protective equipment
QA/QC	quality assurance / quality control
QAPP	Quality Assurance Project Plan
RAWP	Remedial Action Plan
RCNY	Rules of the City of New York
RAO	Remedial Action Objective
RE	Remedial Engineer
RI	remedial investigation
RSCOs	Recommended Soil Cleanup Objectives
RUSCOs	6 NYCRR 375-6.8(b) and CP-51 Track 2 – Commercial Use Soil Cleanup Objectives
SB	soil boring
SCGs	Standards, Criteria and Guidance
SV	soil vapor
SMP	Site Management Plan
SMMP	Soil/Material Management Plan
SSDS	sub-slab depressurization system
SVE	soil vapor extraction
SVOC	semi-volatile organic compound
TAL	Target Analyte List
TAGM 4046	NYSDEC Technical and Administrative Guidance Memorandum #4046
TB	trip blanks
TCE	trichloroethylene
TCL	Target Compound List
TCLP	Toxicity Characteristic Leaching Procedure
TCLP Limits	USEPA Maximum Concentrations of Contaminants for the Toxicity Characteristic
TOC	total organic carbon
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey
UST	underground storage tank

UUSCOs	6 NYCRR 375-6.8(a) Track 1 Unrestricted Use Soil Cleanup Objectives
VOC	volatile organic compound

EXECUTIVE SUMMARY

SITE DESCRIPTION/PHYSICAL SETTING/SITE HISTORY

On May 20, 2019, 470 Kent Ave Associates LLC (the "Volunteer") entered into a Brownfield Cleanup Agreement (BCA) with the New York State Department of Environmental Conservation (NYSDEC) to investigate and remediate the property located at 470 Kent Avenue, Brooklyn, New York (the "Site"). The New York State Brownfield Cleanup Agreement Index Number is C224053-07-14 and the Site Number is C224053.

The Site is located at the northwest corner of Kent Avenue and Division Street in the South Williamsburg area of Brooklyn. The property is 3.7 acres. The western boundary of the Site is generally the existing shoreline with the Wallabout Channel. The Site is located in Community Board 1 and is generally identified as a Block 2134, Portions of Lots 1 and 150 (portion), as shown on Figure 1.

The Site is currently vacant. Prior to demolition, two buildings with a covered area between them were used as a lumber yard. Alternate addresses include 462-490 Kent Avenue and 1-19 Division Avenue. Adjoining and surrounding properties are a mix of residential, industrial and park land. A map of the current Site layout is included as Figure 2.

The Site has a history of industrial operations spanning over 100 years and past uses have included molasses storage; sugar refining; warehousing; brewery bottling and case storage; and a lumberyard. The northern portion of the property was historically utilized as a manufactured gas plant (MGP). Starting in the 1980's, the eastern building along Kent Avenue, also housed various apparel-related operations. A truck loading area is shown in the historic maps dated 1950 and later.

The Volunteer is proposing to develop the Site with mixed commercial/residential uses.

SUMMARY OF THE REMEDIAL INVESTIGATION

A Remedial Investigation Report (RIR) dated March 2021 was prepared by Tenen Environmental LLC (Tenen). Data from the RIR is presented in Tables 6 through 17.

The investigation consisted of installation of several soil borings and collection of soil samples, installation and sampling of groundwater monitoring wells, and sampling of interior sub-slab soil vapor, indoor and ambient air. Based on the results of the remedial investigation (RI) and previous investigations, the following summary has been prepared:

Site Geology and Hydrogeology

- The Site is covered by four to 15 feet of soil classified as historic fill material consisting of asphalt, concrete, rock fragments and fine- to medium-grained, silty sand. At the western border, the depth increases to up to 30 feet below grade.

- The fill material is underlain by layers of sand and silt with increasing silty clay to clay toward Wallabout Channel.

Polychlorinated biphenyls (PCBs), pesticides and metals were not detected at significant concentrations and are not considered to be contaminants of concern. The identified contaminants of concern are summarized by media below.

Soil

- The results of the RI indicate that there are petroleum-related compounds and semivolatile organic compounds (SVOCs), specifically polyaromatic hydrocarbons (PAHs), above regulatory standards in the soil located across the Site.
- Petroleum-related compounds are likely attributed to the historic storage of petroleum products at the Site.
- SVOCs are common constituents of historic fill material.

Groundwater

- Petroleum-related volatile organic compounds (VOCs) were detected above the NYSDEC Division of Water Technical and Operational Guidance Series (TOGS) 1.1.1 Class GA Water Quality Standards and Guidance Values (Class GA Standards) in the central portion of the Site.
- SVOCs were detected above the Class GA Standards in four groundwater samples within the former MGP portion of the Site.
- Perfluorinated chemicals (PFCs) were detected at low concentrations in all three groundwater samples collected on the southern portion of the Site. Perfluorooctanoic acid (PFOA) was detected above the 10 nanograms per liter (ng/L) screening level from the Guidance for Sampling and Analysis of PFAS Under NYSDEC's Part 375 Remedial Programs (January 2021) in all four wells, at a maximum concentration of 63.4 ng/L. Perfluorooctanesulfonic acid (PFOS) was not detected above the same screening level.

Soil Vapor

- Tetrachloroethene (PCE) was detected in three sub-slab soil vapor sample locations at a maximum concentration of 219 micrograms per cubic meter (ug/m3). Comparison of PCE concentrations to the New York State Department of Health (NYSDOH) Decision Matrix indicates that no further action is necessary.
- Trichloroethene (TCE) was detected in two sub-slab soil vapor sample locations at a maximum concentration of 2,160 ug/m3. While not detected in indoor air, comparison of TCE concentrations to the NYSDOH Decision Matrix indicates that mitigation is required in two locations.
- Several petroleum-related compounds, including benzene, toluene, ethylbenzene, xylenes and trimethylbenzene, were detected at generally low levels in sub-slab soil vapor and indoor air.

Qualitative Environmental Assessment

- The following potential exposure routes were identified: direct contact with surface soils, inhalation (and incidental ingestion), ingestion of groundwater, direct contact with groundwater and inhalation of vapors.
- Potential impacts from these exposure routes can be mitigated through the implementation of a health and safety plan (HASP) and community air monitoring plan (CAMP) during ground-intrusive activities below current Site caps (building foundations, asphalt parking lot and concrete building slabs) and through Site remediation performed under an approved remedial action work plan.

QUALITATIVE HUMAN HEALTH EXPOSURE ASSESSMENT

The results of the remedial investigations provided sufficient data to complete a Qualitative Human Health Exposure Assessment, which identified several potential exposure pathways that include:

- direct contact with subsurface soils (and incidental ingestion);
- ingestion of groundwater;
- dermal contact with groundwater/inhalation of volatile groundwater constituents; and,
- inhalation of vapors.

The potential exposure pathways associated with the remediation/construction phase of the remedial action are temporary and of limited duration. Worker exposure to impacted soil, soil vapor, groundwater and particulates will be addressed by adherence to health and safety protocols. Potential exposure of neighborhood residents and other off-site populations will be addressed through compliance with a CAMP. A summary of the CAMP is included in Appendix A of this RAWP. Potential for exposure of building workers to contaminants in indoor air will be minimized by soil source remediation, groundwater remediation, installing a composite cover system and by implementing post-COC indoor air quality analysis and undertaking measures (including, but not limited to, changes to building HVAC throughout) to mitigate indoor air quality issues, if any are identified.

SUMMARY OF THE INTERIM REMEDIAL MEASURES

Interim Remedial Measures Work Plans (IRM Work Plans) dated March 2021 and January 2022 prepared by Tenen Environmental LLC (Tenen).

The IRM Work Plans describe the necessary components to describe the scope below, which will be completed to facilitate the implementation of this RAWP and which have been implemented or started to be implemented as noted below:

<u>March 2021 IRM Work Plan</u>

1. Removal of two petroleum underground storage tanks (USTs) and appurtenant piping (completed in May 2022);

2. Removal of petroleum-contaminated soil beneath and emanating from the USTs (anticipated August 2022);
3. Demolition of the existing onsite buildings (completed first quarter of 2022); and,
4. Installation of a new bulkhead on the Wallabout Channel (commenced June 2022).

January 2022 IRM Work Plan (commenced in May 2022)

1. Site mobilization involving Site security setup, equipment mobilization, utility mark outs and marking and staking of excavation areas;
2. Remedial excavation and off-Site disposal of soil/fill to a depth of two feet across the IRM area, as well as removal of any deeper source material;
3. As part of redevelopment, excavation and off-Site disposal of soil/fill below the remedial excavation to an elevation of +0.5 feet [approximately 10 to 15 feet below grade (ft-bg)] within the building footprints in a portion of the Site;
4. Disposal of approximately 4,200 cubic yards of soil/fill as part of remedial excavation plus and additional 10,800 cubic yards of soil/fill for redevelopment purposes from the Site in accordance with all Federal, State and local rules and regulations for handling, transport and disposal;
5. If encountered, removal of unknown USTs in compliance with applicable local, State and Federal laws and regulations. The removal of the two known USTs will be completed in accordance with a separate IRM Work Plan;
6. Collection and analysis of post-remedial end-point samples to document remaining concentrations of contaminants. Samples will be evaluated for attainment of Restricted-Residential and Protection of Groundwater SCOs, which would support a Track 4 remedy;
7. Dewatering in compliance with City, State and Federal laws and regulations. Extracted groundwater generated during bulk excavation will be treated under a SPDES permit from NYSDEC; groundwater will be treated prior to discharge;
8. If needed, import of materials to be used for backfill and cover in compliance with: (1) the Part 375-6.7(d) and (2) all Federal, State and local rules and regulations for handling and transport of material;
9. The building slabs will be located beneath the groundwater interface and waterproofing will be used beneath building slabs and along sidewalls to grade as a green construction technique;
10. Implementation of storm-water pollution prevention measures in compliance with applicable laws and regulations;
11. Installation of a surface Site cap including concrete slabs, paving and soil, which will prevent direct contact with residual contamination in a portion of the Site; and,
12. Preparation of a IRM Construction Completion Report (CCR) to document the implemented interim remedial measures.

SUMMARY OF THE REMEDIAL ACTIONS

The proposed Track 4 remedy, intended to address all environmental issues not already addressed under the IRM Work Plans, consists of the following:

- Removal of known USTs and associated petroleum-contaminated soil, demolition of the existing on-site buildings and installation of a new bulkhead [completed as part of the March 2021 IRM Work Plan currently being implemented];
- Site mobilization involving Site security setup, equipment mobilization, utility mark outs and marking and staking of excavation areas;
- Excavation and off-site disposal of 13,400 cubic yards of material from the Site in accordance with all Federal, State and local rules and regulations for handling, transport and disposal, including grossly contaminated media;
- In addition to the remedial excavation of 13,400 cubic yards, an additional 10,000 cubic yards of material will be excavated and disposed off-site as part of Site redevelopment;
- Removal of unknown USTs in compliance with applicable local, State and Federal laws and regulations;
- Collection and analysis of post-remedial end-point samples to document remaining concentrations of contaminants. Samples will be evaluated for attainment of Part 375 Restricted-Residential and Protection of Groundwater SCOs, which would support a Track 4 remedy;
- Dewatering in compliance with city, State and Federal laws and regulations to treat contaminated groundwater and to support remedial hot spot excavations. All extracted groundwater generated during construction activities or remedial activities will be treated under a SPDES permit from NYSDEC or a discharge permit from the New York City Department of Environmental Protection (NYCDEP); groundwater will be treated to remove compounds identified in the SPDES permit.
- In the event that post-dewatering monitoring indicates that additional groundwater treatment is necessary, then groundwater impacted by source material may be treated using oxygen release compound (ORC®) pellets. The details on location and dosing would be provided in a Design Document.
- Import of materials to be used for backfill and cover in compliance with: (1) the Part 375-6.7(d) and (2) all Federal, State and local rules and regulations for handling and transport of material;
- The building slabs will be located beneath the groundwater interface and waterproofing will be used beneath building slabs and along sidewalls to grade as a green construction technique. Before each building is occupied, each building will be evaluated for the potential for soil vapor intrusion by collecting confirmatory indoor air samples;
- Installation of a secant pile wall along the northern border of the Site to prevent recontamination from off-site non-aqueous phase liquid (NAPL);
- Implementation of storm-water pollution prevention measures in compliance with applicable laws and regulations;
- Installation of a surface Site cap including concrete slabs, paving and soil that will prevent direction contact with residual contamination;
- Preparation of a Final Engineering Report (FER) to document the implemented remedial actions; and,
- Development of a Site Management Plan (SMP) for long term management of residual contamination as required by an Environmental Easement, including plans for: (1) Institutional and Engineering Controls, (2) monitoring, and (3) reporting.

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

REMEDIAL ACTION WORK PLAN

1.0 INTRODUCTION

470 Kent Ave Associates LLC entered into a Brownfield Cleanup Agreement (BCA) with the New York State Department of Environmental Conservation (NYSDEC) on May 20, 2019, to investigate and remediate an approximately 3.7 acre property located at 470 Kent Avenue (Block 2134, Lots 1 and 150 (portion)) in the South Williamsburg neighborhood of Brooklyn, New York (the "Site"). 470 Kent Ave Associates LLC is a Volunteer in the Brownfield Cleanup Program.

The Site is currently vacant. Prior to demolition, two buildings with a covered area between them were used as a lumber yard. Alternate addresses include 462-490 Kent Avenue and 1-19 Division Avenue. Adjoining and surrounding properties are a mix of residential, industrial and park land.

The proposed redevelopment of the Site consists of three new commercial/residential use buildings. Additionally, a new bulkhead will be constructed on the western boundary of the Site, along the Wallabout Channel, which will support the development.

This Remedial Action Work Plan (RAWP) summarizes the nature and extent of contamination, as determined from data gathered during the Remedial Investigation (RI) activities performed between July and September 2020.

The RAWP provides an evaluation of Track 1 and Track 4 remedies and other applicable remedial measure alternatives, their associated costs, and the recommended and preferred remedy to address on-Site contamination. 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 yet to determine if the Site poses a significant threat to human health. The RI for this Site did not identify fish and wildlife resources.

1.1 Site Location and Description

The Site is located at the northwest corner of Kent Avenue and Division Street in the South Williamsburg area of Brooklyn, New York. The property is approximately 4.5 acres. The western boundary of the Site is generally the Wallabout Channel. The Site is located in Community Board 1 and is generally identified as Block 2134, Lots 1 and 150 (portion), as shown in Figure 1. The Site is currently vacant. Prior to demolition, two buildings with a covered area between them were used as a lumber yard. A map of the current Site layout is included as Figure 2.

1.2 Proposed Site Plan

The Remedial Actions being performed under the RAWP are intended to make the Site protective of human health and the environment consistent with the contemplated end use of the Site. The Volunteer is proposing to redevelop the Site for mixed residential and commercial uses.

1.3 Description of Surrounding Property

The surrounding area is a mix of residential, industrial and park land. The western boundary of the Site is the Wallabout Channel. The South Williamsburg Ferry is located to the north of the Site, a residential building is located to the east of the Site, and a vacant lot is located to the south of the Site.

The Site is located in an R7-3 zoning district with a C2-4 commercial overlay; a designation that typically denotes medium-density apartment houses with commercial uses that serve a wide range of uses, such as restaurants, funeral homes and repair services.

Based on a review of the New York City Office of Environmental Remediation's (OER's) Searchable Property Environmental E-Database (SPEED), no hospitals, schools or day care centers are present within 500 feet of the Site. However, please note that nearby schools and day care facilities were identified at 430 Kent Avenue, 485 Kent Avenue, 157 Wilson Street, 80 Clymer Street and 114 Taylor Street.

2.0 DESCRIPTION OF REMEDIAL INVESTIGATION FINDINGS

The Site was investigated in accordance with the scope of work described in the October 2019 Remedial Investigation Work Plan (RIWP) and the August 2020 Supplemental RIWP, which were approved by NYSDEC. This section presents the findings of the previous investigations conducted on-Site between 2004 and 2019, as well as the findings of the 2020 remedial investigation (RI) performed by Tenen.

Investigations and sampling efforts conducted at the Site are described in the following reports:

- *Phase I Environmental Site Assessment Report, 460 Kent Avenue, Brooklyn, New York. AKRF. January 2004*
- *470 Kent Avenue, Subsurface (Phase II) Investigation. AKRF. October 2005*
- *Phase I Environmental Site Assessment Report, 462 Kent Avenue, Brooklyn, New York. Environmental Business Consultants, September 6, 2011*
- *Phase II Subsurface Investigation Report (REVISED), NYCOER Environmental Review Program, CEQR No. 08DCP056K, 462 Kent Avenue, Brooklyn, New York. Environmental Business Consultants. December 28, 2011*
- *470 Kent Avenue, Brooklyn, New York, Subsurface Investigation Letter Report. Tenen Environmental, March 17, 2014.*
- *Phase I Environmental Site Assessment, 470 Kent Avenue, Brooklyn, NY. Tenen Environmental, May 2019.*
- *Remedial Investigation Report, 470 Kent Avenue, Brooklyn, New York. Tenen Environmental. April 2022.*
- *Final Site Characterization Report (Final SCR), Peoples Works Former Manufactured Gas Plant Site.* Tetra Tech, Inc. April 2018.

Site Geology and Hydrogeology

- The Site is covered by four to 15 feet of soil classified as historic fill material consisting of asphalt, concrete, rock fragments and fine- to medium-grained, silty sand. At the western border, the depth increases to up to 30 feet below grade.
- The fill material is underlain by layers of sand and silt with increasing silty clay to clay toward Wallabout Channel.

PCBs, pesticides and metals were not detected at significant concentrations and are not considered to be contaminants of concern. The identified contaminants of concern are summarized by media below.

Soil

- The results of the RI indicate that there are petroleum-related compounds and semivolatile organic compounds (SVOCs), specifically polyaromatic hydrocarbons (PAHs), above regulatory standards in the soil located across the Site.
- Petroleum-related compounds are likely attributed to the historic storage of petroleum products at the Site.
- SVOCs are common constituents of historic fill material.

Groundwater

- Petroleum-related volatile organic compounds (VOCs) were detected above the NYSDEC Division of Water Technical and Operational Guidance Series (TOGS) 1.1.1 Class GA Water Quality Standards and Guidance Values (Class GA Standards) in the central portion of the Site.
- SVOCs were detected above the Class GA Standards in four groundwater samples within the former MGP portion of the Site.
- Perfluorinated chemicals (PFCs) were detected at low concentrations in all three groundwater samples collected on the southern portion of the Site. PFOA was detected above the 10 ng/L screening level in all four wells, at a maximum concentration of 63.4 ng/L. PFOS was not detected above the same screening level.

Soil Vapor

- Tetrachloroethene (PCE) was detected in three sub-slab soil vapor sample locations at a maximum concentration of 219 micrograms per cubic meter (ug/m3).
- Trichloroethene (TCE) was detected in two sub-slab soil vapor sample locations at a maximum concentration of 2,160 ug/m3.
- Several petroleum-related compounds, including benzene, toluene, ethylbenzene, xylenes and trimethylbenzene, were detected at generally low levels in sub-slab soil vapor and indoor air.

Qualitative Environmental Assessment

The following potential exposure routes were identified: direct contact with surface soils, inhalation (and incidental ingestion), ingestion of groundwater, direct contact with groundwater and inhalation of vapors.

- Potential impacts from these exposure routes can be mitigated through the implementation of a health and safety plan (HASP) and CAMP during ground-intrusive activities, activities on site and through Site remediation performed under an approved remedial action work plan.

2.1 Significant Threat

The NYSDEC and NYSDOH have determined the Site poses no significant threat to human health or the environment. The RI for this Site did not identify fish and wildlife resources.

3.0 CONTAMINATION CONDITIONS

3.1 Conceptual Model of Site Contamination

The Site is currently vacant. The northern portion of the Site was historically utilized as a MGP site; however, only limited MGP-related impacts have been identified during previous remedial investigation activities. Other prior uses include industrial uses such as: molasses storage, sugar refining, warehousing, brewery bottling and case storage, and a lumberyard.

Based on the results of the RI and the findings of prior investigations, the contaminants of concern at the Site are petroleum-related compounds, historic fill-related polyaromatic hydrocarbons (PAHs), and chlorinated compounds, specifically PCE and TCE.

Petroleum-related VOCs and SVOCs and historic-filled related PAHs were detected in soil above regulatory standards throughout the Site, including above the total 500 ppm threshold indicating grossly contaminated media. Petroleum-related VOCs and SVOCs were detected in groundwater above the Class GA Standards in samples collected from the northern portion of the Site. PCE and TCE were detected at elevated concentrations in the sub-slab soil vapor and indoor air at concentrations requiring mitigation along Kent Avenue.

Petroleum-related VOCs and SVOCs and historic-fill related PAHs were detected in soil and groundwater above regulatory standards. The distribution of VOC, SVOC and fill-related PAH impacts supports a relationship between the soil and concentrations in the groundwater. Elevated concentrations of cVOCs in soil vapor are likely attributed to an upgradient, off-site source.

Table 1 presents the Part 375 Restricted Residential Use and Protection of Groundwater SCOs. Table 2 presents the TOGS 1.1.1 Ambient Class GA Water Quality Standards. Tables 6 through 17 and Figures 3, 4, 4A, 5, 5A, 6, 7 and 7A present soil, groundwater, soil vapor and indoor analytical results from the remedial investigation sampling completed at the Site.

4.0 ENVIRONMENTAL AND PUBLIC HEALTH ASSESSMENTS

4.1 Qualitative Human Health Exposure Assessment

A qualitative exposure assessment (QHHEA) has been completed in accordance with Section 3.3(c)4 of DER-10 and the NYSDOH guidance for performing a qualitative EA (NYSDEC DER-10; Technical Guidance for Site Investigation and Remediation; Appendix 3 B). The qualitative exposure assessment evaluates the potential for populations to be exposed to Site contaminants.

An exposure pathway describes the means by which an individual may be exposed to contaminants originating from a site. An exposure pathway has five elements: (1) a contaminant source; (2) contaminant release and transport mechanisms to an exposed population; (3) a receptor population; (4) a route of exposure; and (5) a point of exposure to a receptor population. Potential contaminant receptors include the following populations:

- Site workers (primarily environmental professionals and contractors)
- Construction workers, visitors or trespassers
- Current building occupants, tenants, commercial workers, and patrons
- Future building occupants, tenants, commercial workers, and patrons
- Future on-Site workers and utility workers
- Off-Site residents/building occupants
- Off-Site maintenance workers

The following potential exposure routes are considered incomplete:

Groundwater Ingestion

New York City code prohibits the use of groundwater for potable purposes. The surrounding area is on public water that is not impacted by site related contamination. This pathway is incomplete.

Inhalation of Vapors by Future Building Employees

Remediation will include excavation of soil. Following the remediation of the soil and groundwater, the bottom of the new slab will be at or below the groundwater A waterproofing system will be applied beneath the slab and to subgrade walls as part of construction. Confirmatory indoor air samples will be collected from the lowest regularly occupied space of the structure prior to building occupancy as part of the required soil vapor intrusion evaluation.

The following potential exposure routes are considered complete:

Inhalation of Vapors and Particulates by On-Site Environmental and Construction Workers (and incidental ingestion).

During slab penetrations, excavation and soil handling, on-Site personnel and construction workers may be exposed to dust and vapors via inhalation. This exposure would be mitigated by adherence to the Health and Safety Plan (HASP), included in Appendix B, during ground intrusive activities.

Dermal Contact with Soil by On-Site Environmental and Construction Workers

During slab penetrations, excavation and soil handling, on-Site personnel and construction workers may be exposed to contaminants in soil via dermal contact. This exposure would be mitigated by adherence to the HASP, included in Appendix B, during ground intrusive activities.

Dermal Contact with Groundwater by On-Site Environmental and Construction Workers

Groundwater is relatively shallow and is anticipated to be encountered during excavation. Dermal exposure to contaminants in groundwater is not expected as dewatering is anticipated during excavation. This exposure would be mitigated by adherence to the HASP, included in Appendix B, during sampling activities.

Inhalation of Vapors and Particulates by Off-Site Residents/Building Workers

Work during slab penetrations as well as soil excavation and removal may generate dust and vapors that could be inhaled by off-Site residents/building occupants and maintenance personnel.

The above potential exposures are limited to the remediation/construction phase of the proposed remedial action. Adherence to health and safety protocols will address environmental and construction worker exposure to contaminated soil vapors, particulates and groundwater. Potential exposure of off-Site residents and building occupants will be addressed by implementation of the Community Air Monitoring Plan (CAMP) referenced in Section 7.4 of this RAWP and included as Appendix A.

4.2 Remedial Action Objectives

The goals of remediation are to remove the on-Site sources of petroleum-related VOCs and SVOCs and historic-fill related PAHs so as to allow for the Site's proposed residential and commercial use and reduce the concentrations of contaminants in soil vapor, soil and groundwater to levels approaching or below applicable Standards, Criteria and Guidance (SCGs). Based on the results of the remedial investigations conducted at the Site, the following Remedial Action Objectives (RAOs) have been identified:

4.2.1 Soil

Petroleum-related VOCs and SVOCs and historic-fill related PAHs were detected at concentrations above the regulatory standards.

RAOs for Public Health Protection

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

4.2.2 Groundwater

Petroleum-related VOCs and SVOCs and historic-fill related PAHs were detected in the groundwater above applicable SCGs.

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 the groundwater aquifer to pre-disposal/pre-release conditions, to the extent practicable.
- Remove the source of groundwater contamination.

4.2.3 Soil Vapor

Chlorinated solvents, specifically PCE and TCE, have been detected in the soil vapor at the Site at concentrations that require mitigation.

RAOs for Public Health Protection

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

5.0 DESCRIPTION OF REMEDIAL ACTION WORK PLAN

5.1 Evaluation of Remedial Alternatives

The alternatives considered to address contamination in soil, soil vapor and groundwater are discussed below.

5.1.1 Track 1 Remediation

A remedy pursuant to this track must achieve compliance with the Unrestricted Use SCOs and institutional and engineering controls are generally allowed only for periods of less than five years. This alternative would involve the complete removal and/or remediation of the fill material at the Site. Based on previous investigations, this alternative would include excavation along Wallabout Channel, at depths up to 30 feet below grade to address detections of SVOCs. Excavation to this depth would be complicated given the installation of the bulkhead and the extensive dewatering that would be required. Redevelopment of the Site would be implemented concurrent with the remediation, with additional dewatering to support the excavation and after backfilling the additional excavated volume.

The Track 1 remediation would remove all sources of contamination at the Site, including groundwater exceedances through the dewatering, treatment and off-site disposal under a SPDES permit and treatment of residual VOCs and SVOCs through application of ORC®. VOCs would not remain at the Site in concentrations requiring engineering controls to address potential soil vapor intrusion conditions. Soil containing VOCs and SVOCs exceeding the RRSCOs and PGWSCOs would be removed as well as soil with total SVOCs exceeding 500 parts per million.

A secant pile wall would be installed on the northern border to prevent recontamination from non-aqueous phase liquid (NAPL) observed in borings PWSB-27 and PWSB-31 and which may remain off-site. The location of the wall is shown on Figure 8.

5.1.2 Track 2 Remediation

This track requires remediation that achieves the Restricted-Residential and Protection of Groundwater SCOs, consistent with the intended Site use, for the top 15 feet of soil (as well as removal of source material if deeper) and the presence of contaminated groundwater. Limited institutional and engineering controls would be allowed. Based on a review of the RI concentrations, a Track 2 (Restricted-Residential) soil remediation would be require excavation to approximately 15 feet in most areas in the western portion of the Site.

Dewatering will be implemented with treatment and off-site disposal under a SPDES permit. VOCs in soil vapor will be evaluated under the Site Management Plan following building construction but prior to occupancy and any necessary vapor mitigation implemented, as discussed in Section 5.1.4 below.

5.1.3 Track 3 Remediation

Given the compounds detected at the Site during the RI, a Track 3 remediation is not applicable.

5.1.4 Track 4 Remediation

A Track 4 remedy for a Restricted-Residential use does not need to meet specific soil cleanup objectives but requires source removal and typically a Site-wide cover system. Short and long-term institutional and engineering controls are allowed to achieve protection of public health and the environment. The Track 4 remedy is the proposed remediation for this Site. This alternative is the preferred remedy as it is appropriate for source removal and the proposed future residential and commercial use of the Site.

Soil
As part of construction, the Site will be excavated to approximately 10-15 ft-bg. Excavation of the Site would allow for the removal of the bulk of the petroleum-related VOC and historic-fill/elevated SVOC related contamination with total SVOCs over 500 milligrams per kilogram (mg/kg) at the Site. Additionally, any migration of potential contaminants in soil below the final depth of excavation will be prevented via the construction of a composite cover system. In addition, as shown on Figure 8 and detailed in Appendix F, a secant pile wall will be installed on the northern border to prevent recontamination from non-aqueous phase liquid (NAPL) observed in borings PWSB-27 and PWSB-31. This cover system will constitute an engineering control that will require a Site Management Plan and Environmental Easement.

The extent of remedial excavation is depicted on Figure 8. The extent of development excavation is depicted on Figure 9. Post excavation endpoint sample locations are depicted on Figure 10.

A CAMP (Appendix A) and Soil/Materials Management Plan (Appendix C) will be implemented during the invasive Site activities to prevent or minimize potential impacts to human health and the environment. End-point samples will confirm the removal of soil to concentrations below applicable Track 4 SCOs and will also be compared to the Part 375 Restricted-Residential Use and Protection of Groundwater SCOs.

Soil Vapor
The trapped soil vapor beneath the Site will be released from the below the slab during excavation. The bottom of the new slab will be at or below the groundwater interface thereby minizing the potential for soil vapor below the slab. As part of construction, a waterproofing membrane will be applied beneath the proposed building slab and on the sub-grade building walls.

All buildings will be evaluated for the potential for soil vapor intrusion through an evaluation of post-remedial soil and groundwater results as well as indoor air sampling. If a sub-slab depressurization system (SSDS) is not incorporated into the design of any building (due to the bottom of slab being lower than the groundwater interface) and indoor air sampling indicates soil vapor mitigation is necessary, the HVAC systems are capable of being modified to allow for additional ventilation (garage areas) or additional make-up air (amenity spaces). The current HVAC design is in accordance with NYCDOB requirements which includes ventilation based on

carbon monoxide levels in the garage and introduction of tempered air in the amenity spaces. Of note, the garage venting system has smoke clearing mode that can completely change the air within two hours and the amenity space makeup air is designed so that more air is delivered to areas most likely to have occupants. If indoor air sampling results from the soil vapor intrusion evaluation indicates impacts in indoor air, actions must be implemented to reduce contaminant concentrations to below background levels. Any mitigative measures and post implementation confirmatory sampling would require a work plan and approval by NYSDEC and NYSDOH.

Groundwater

Dewatering will be completed to remediate contaminated groundwater, support hot spot removal below the groundwater interface beyond development depth and support the proposed redevelopment excavation. A site-wide dewatering system will be installed and expanded as necessary to remove and treat the shallow groundwater. Figure 11 shows the dewatering system, including the treatment system.

Following completion of the redevelopment, post-remedial groundwater monitoring wells will be installed at the locations shown on Figure 13. The groundwater well detail is included in Appendix F.

Groundwater in the New York City area is not used as a potable (drinking) water source. New York City residents receive their drinking water supply from surface reservoirs located in upstate New York.

5.1.5 No-Action

The no-action alternative would leave existing sources of contamination in soil and groundwater and potentially soil vapor. The no-action alternative is not acceptable and has not been compared to the factors below.

5.2 Standards, Criteria and Guidance (SCGs)

The Remedial Action SCGs are listed below.

SCG	Scope / Application
NYSDEC Brownfield Cleanup Program Guide (draft 2004)	General program guidance
NYSDEC CP-51 / Soil Cleanup Guidance (2010)	Restricted Use SCOs for soil
NYSDEC DER-10 Technical Guidance for Site Investigation and Remediation (2010)	End-point sampling methodology; underground storage tank (UST) closure
NYSDEC DER-31 Green Remediation (2011)	Green construction components
NYSDEC TOGS 1.1.1 Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations (1998)	Class GA Standards for groundwater
NYSDOH Guidance for Evaluating Soil Vapor Intrusions in the State of New York (2006)	Soil vapor guidance
NYSDOH Generic Community Air Monitoring Plan	Plan for monitoring dust and volatile organics resulting from construction activities
New York State Codes, Rules and Regulations (NYCRR) Title 6 Part 360 – Solid Waste Management Facilities	Off-site disposal of waste for facilities in NYC
New York State Codes, Rules and Regulations (NYCRR) Title 6 Part 364 – Waste Transporter Permits	Transporter requirements for off-site disposal of waste
6 NYCRR Part 370 – Hazardous Waste Management System	Disposal of hazardous waste, if encountered
6 NYCRR Part 375 – Environmental Remediation Programs (December 2006)	General administrative guidance
6 NYCRR Part 376 – Land Disposal Restrictions	Disposal of hazardous waste, if encountered
6 NYCRR Part 750 – State Pollutant Discharge Elimination System (SPDES) Regulations	Discharge of wastewater and stormwater
Code of Federal Regulations (CFR) Title 29 Part 1910.120 - Hazardous Waste Operations and Emergency Response Standard	Worker safety
29 CFR Title 29 Part 1926 - Safety and Health Regulations for Construction	Worker safety
40 CFR Parts 144 and 146 – Underground Injection Control Program	Injection of chemicals into the groundwater
Title 15, Rules of the City of New York (RCNY), Chapter 19 - Use of the Public Sewers	Discharge of groundwater to the municipal sewer system
NYCDEP Limitations for Effluent to Sanitary or Combined Sewers	Discharge of groundwater to the municipal sewer system

5.3 Evaluation of Alternatives

The remedial alternatives for soil, groundwater and soil vapor are discussed below. Each alternative was evaluated based on the following remedy selection factors (as defined in DER-10, Section 4.2):

- Protection of human health and the environment
- Conformance with standards, criteria and guidelines
- Short-term effectiveness and performance
- Long-term effectiveness and performance
- Reduction in toxicity, mobility or volume
- Implementability
- Cost effectiveness
- Community acceptance
- Land use

5.3.1 Protection of Human Health and the Environment

Each alternative would be protective of human health and the environment. The Track 1 remedy will remove all contaminants so that no engineering controls will be required. Some residual contamination may remain in a Track 2 remedy, but at concentrations that will not require engineering controls given the proposed use. In a Track 4 remedy, residual soil/fill will remain in place beneath a composite cover system which will be installed and managed under an SMP, consistent with the proposed future commercial and residential use of the Site. Groundwater in this area is not used as a source of drinking water. The source of potential soil vapor impacts would be removed in a Track 1 and Track 2 remedy. For the Track 4 remedy, building slabs will be installed below the groundwater interface thereby minimizing the potential for soil vapor; in addition, a soil vapor evaluation will be completed, including post-remedial indoor air sampling under the Site Management Plan and prior to occupancy. If impacts are detected in indoor-air, actions must be implemented to reduce contaminant concentrations to below background levels. Any such mitigative measures and post implementation confirmatory sampling will be submitted as a work plan that would require approval by NYSDEC and NYSDOH.
A Health and Safety Plan (HASP), including monitoring/management for particulates and volatiles under a CAMP will be implemented during remedial activities.

5.3.2 Conformance with Standards, Criteria and Guidelines

Each alternative would conform to the SCGs. The soil alternatives would remove the bulk of petroleum-related and historic-fill related soil impacts. A Track 1 remedy will conform to the Part 375 Unrestricted Use SCOs, whereas a Track 2 remedy will conform to the use appropriate Restricted-Residential SCOs and the Protection of Groundwater SCOs. The Track 4 remedy will allow for some exceedances of the SVOC Restricted-Residential SCOs as long as the total concentration is below 500 ppm.

On-site construction safety will conform to the HASP requirements, which incorporate Occupational Safety and Health Administration (OSHA) requirements.

5.3.3 Short-Term Effectiveness and Performance

Each alternative would be effective over a short-term time horizon. The soil alternatives are consistent with the proposed use. The Track 1 remedy is associated with the most significant short-term impacts, related to the increased duration associated with more extensive and deeper soil removal. These impacts include the potential for particulate and volatile impacts and additional truck traffic. To a lesser extent, the Track 2 and Track 4 remedies would have similar potential impacts but of more limited duration. These potential impacts are addressed in the various control plans included in this RAWP.

5.3.4 Long-Term Effectiveness and Performance

Each alternative would be effective over a long-term time horizon. Each remedy would be consistent with the proposed use. Track 1 and Track 2 remedies will not require long-term engineering controls. A Track 2 remedy will require long-term groundwater monitoring to confirm that any residual impacts are limited. A Track 4 remedy will require the long-term maintenance of engineering controls under an SMP to confirm the effectiveness of the remedy and document the performance. In the Track 4 remedy, the potential for a soil vapor intrusion condition will be evaluated, including by testing, and mitigated as necessary. Groundwater in this area is not used as a source of drinking water.

5.3.5 Reduction in Toxicity, Mobility or Volume

All alternatives would reduce the toxicity, mobility and volume of the contaminants present on-site. A Track 1 remedy would remove all sources of contamination. Both Track 2 and Track 4 remedies would remove the bulk of the impacts present at the Site but with some residual impacts remaining. In the Track 2 remedy, the residual impacts would be monitored but would not require engineering controls. The Track 4 remedy will require long term maintenance and monitoring of engineering controls.

5.3.6 Implementability

All alternatives would be implementable; however, a Track 1 remedy would require a much greater effort. Track 2 and Track 4 remedies can be implemented as part of the Site remedial action utilizing standard environmental and construction means and methods. A Track 1 would be more difficult to implement given the deeper excavation, which would require additional SOE and dewatering.

5.3.7 Cost Effectiveness

The implementation of a Track 4 remedy is estimated at approximately $11,500,000, as shown in Table 3. The costs to implement a Track 1 or Track 2 remedy would be much higher due to the additional excavation both by area and depth, in particular along the new bulkhead.

5.3.8 Community Acceptance

Each alternative eliminates potential exposure pathways and will result in a decrease in toxicity, mobility and volume (see Section 5.3.5). These considerations, in conjunction with the future

residential and commercial use of the Site and acknowledgement that groundwater is not used as a potable source of water in this area of Brooklyn, should result in acceptance by the community.

The short-term impacts (see Section 5.3.3) are greater due to the additional construction impacts, although these will be addressed by the various control plans in this RAWP. The selected Track 4 remedy will be subject to a 45-day public comment period in accordance with the Citizen Participation Plan. Any substantive public comments received will be addressed before the remedy is approved.

5.3.9 Land Use

Each of the proposed alternatives is compatible with the proposed land use at the Site, which has been documented in the BCP Application and in Section 1.3.

The following findings, based on a review of previous environmental and public documents, support the compatibility of the proposed Site land use with that of the surrounding area:

1. The use proposed for the Site conforms to applicable zoning laws or maps or the reasonably anticipated future use of the Site.
2. The proposed use conforms to historical and/or recent development patterns in the area.
3. The Site does not fall within the boundaries of an existing Brownfield Opportunity Area (BOA).
4. According to the New York City Planning Commission Zoning Map, the Site is located in an R7-3 zoning district with a 100-foot commercial C2-4 overlay; a designation that typically denotes medium-density apartment houses with commercial uses that serve a wide range of uses, such as restaurants, funeral homes and repair services.
5. The Site is located in an urban setting characterized by residential and commercial uses. There are no areas zoned for agricultural use in the proximity of the Site.
6. According to the NYSDEC database for environmental justice concerns, the Site is located in a Potential Environmental Justice Area (PEJA).
7. There are no federal or state land designations.
8. The population growth patterns and projections support the proposed land use.
9. The Site is accessible to existing infrastructure.
10. The Site is not located in close proximity to important federal, state or local natural resources, including waterways, wildlife refuges, wetlands, or critical habitats of endangered or threatened species.
11. Municipal water supply wells are not present in this area of New York City; therefore, groundwater from the Site cannot affect municipal water supply wells or recharge areas.
12. The Federal Emergency Management Agency (FEMA) flood insurance rate maps for the Site (Map numbers 3604970204G and 3604970204G) indicate that the Site is located within multiple flood zones. Along the shoreline is a V-zone with a base flood (0.1% annual chance, or 100-year flood) of 13 feet (VE13) and further east are A-zones with base flood elevations of 11 and 12 feet (AE11 and AE12). The V-zone indicated there is the potential for high velocity wave action.

5.4 Selection of the Preferred Remedial Actions

The preferred Track 4 remedy, intended to address all environmental issues associated with the Site, consists of the following:

- Removal of known USTs and associated petroleum-contaminated soil, demolition of the existing on-site buildings and installation of a new bulkhead [completed as part of the March 2021 IRM Work Plan currently being implemented];
- Site mobilization involving Site security setup, equipment mobilization, utility mark outs and marking and staking of excavation areas;
- Excavation and off-site disposal of 17,500 cubic yards of material from the Site in accordance with all Federal, State and local rules and regulations for handling, transport and disposal, including grossly contaminated media;
- In addition to the remedial excavation of 17,500 cubic yards, an additional 20,000 cubic yards of material will be excavated and disposed off-site as part of Site redevelopment;
- Removal of unknown USTs in compliance with applicable local, State and Federal laws and regulations;
- Collection and analysis of post-remedial end-point samples to document remaining concentrations of contaminants. Samples will be evaluated for attainment of Part 375 Restricted-Residential and Protection of Groundwater SCOs, which would support a Track 4 remedy;
- Dewatering in compliance with city, State and Federal laws and regulations to treat contaminated groundwater and to support remedial hot spot excavations. All extracted groundwater generated during construction activities or remedial activities will be treated under a SPDES permit from NYSDEC or a discharge permit from the New York City Department of Environmental Protection (NYCDEP); groundwater will be treated to remove compounds identified in the SPDES permit.
- In the event that post-dewatering monitoring indicates that additional groundwater treatment is necessary, then groundwater impacted by source material may be treated using oxygen release compound (ORC®) pellets. The details on location and dosing would be provided in a Design Document.
- Import of materials to be used for backfill and cover in compliance with: (1) the Part 375-6.7(d) and (2) all Federal, State and local rules and regulations for handling and transport of material;
- The building slabs will be located beneath the groundwater interface and waterproofing will be used beneath building slabs and along sidewalls to grade as a green construction technique. Before each building is occupied, the indoor air of each building will be sampled as part of the required soil vapor intrusion evaluation; If indoor air sampling during the soil vapor intrusion evaluation indicates impacts to indoor air, actions must be implemented to reduce contaminant concentrations to below background levels. Any such mitigative measures and post implementation confirmatory sampling will be submitted as a work plan that would require approval by NYSDEC and NYSDOH.
- Installation of a secant pile wall along the northern border of the Site to prevent recontamination from off-site non-aqueous phase liquid (NAPL);
- Implementation of storm-water pollution prevention measures in compliance with applicable laws and regulations;

- Installation of a surface Site cap including concrete slabs, paving and soil that will prevent direction contact with residual contamination;
- Preparation of a Final Engineering Report (FER) to document the implemented remedial actions; and,
- Development of a Site Management Plan (SMP) for long term management of residual contamination as required by an Environmental Easement, including plans for: (1) Institutional and Engineering Controls, (2) monitoring, and (3) reporting.

Remedial activities will be performed at the Site in accordance with this NYSDEC-approved RAWP and the Department-issued Decision Document. All deviations from the RAWP and/or Decision Document will be promptly reported to NYSDEC for approval and fully explained in the FER. The Site source of petroleum-related contaminants and historic-fill related PAHs will be removed. Site soils will meet the Track 4 SCOs; end-point sampling will confirm targeted SCOs are met. Soil vapor impacts will be evaluated and addressed by post-remediation indoor air sampling as part of a soil vapor intrusion evaluation under the Site Management Plan and prior to occupancy. If indoor air sampling during the soil vapor intrusion evaluation indicates impacts to indoor air, actions must be implemented to reduce contaminant concentrations to below background levels.

The following land-use factors were considered in selecting these remedial measures. Land Use Factor	Remedy Evaluation Result
Zoning	Remedy is consistent
Applicable comprehensive community master plans or land use plans	Remedy is consistent (not within a Brownfield Opportunity Area)
Surrounding property uses	Remedy is consistent
Citizen participation	Remedy is consistent; CPP requirements implemented regardless of selected remedy
Environmental justice concerns	None identified (Site is in a PEJA)
Land use designations	Remedy is consistent
Populations growth patterns	Remedy is consistent
Accessibility to existing infrastructure	Remedy is consistent
Proximity to cultural resources	None identified
Proximity to natural resources	None identified
Off-Site groundwater impacts	Groundwater will be monitored on-Site following implementation of the remedy.
Proximity to floodplains	Site is outside the 500 year flood zone.
Geography and geology of the Site	Remedy is consistent
Current Institutional Controls	None currently present

Green construction principles and techniques will be implemented to the extent feasible in the design, implementation, and site management of the remedy as per DER-31. The major green construction components are as follows;

- Considering the environmental impacts of treatment technologies and remedy stewardship over the long term;
- Reducing direct and indirect greenhouse gases and other emissions;
- Increasing energy efficiency and minimizing use of non-renewable energy;
- Conserving and efficiently managing resources and materials;
- Reducing waste, increasing recycling and increasing reuse of materials which would otherwise be considered a waste. This includes reuse of Site materials during temporary stabilization;
- Maximizing habitat value and creating habitat when possible;
- Fostering green and healthy communities and working landscapes which balance ecological, economic and social goals; and,
- Integrating the remedy with the end use where possible.

6.0 REMEDIAL ACTION PROGRAM

6.1 Governing Documents

6.1.1 Site Specific Health and Safety Plan

A Site Specific HASP has been created for the Site and is included in Appendix B. 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. An emergency contact sheet with names and phone numbers is included in Table 1 of the HASP and defines the specific project contacts for use by NYSDEC and NYSDOH in the case of a day or night emergency. The HASP and requirements defined in this RAWP pertain to all remedial and invasive work performed at the Site until the issuance of a Certificate of Completion.

6.1.2 Quality Assurance Project Plan

A Quality Assurance Project Plan (QAPP) has been created for the site to address quality control and quality assurance procedures for all site sampling, including post excavation end-point sampling, and is included in Appendix D.

6.1.3 Soil/Materials Management Plan

The Soil/Materials Management Plan (SMMP) includes plans for managing all soils/materials that are disturbed at the Site during remedial activities. The SMMP includes provisions for sediment and erosion control and stormwater management. The development is greater than one acre in area and a Stormwater Pollution Prevention Plan (SWPPP) is required.

The SMMP, which describes procedures for excavation, handling, storage, and transport and disposal, is included in Appendix C.

6.1.4 Community Air Monitoring Plan

The purpose of the Community Air Monitoring Plan (CAMP) is to protect downwind receptors (e.g., residences, businesses, schools, nearby workers, and the public) from potential airborne contaminants released as a direct result of the Remedial Action being performed at the Site. A summary of the CAMP plan is included in Appendix A.

6.1.5 Citizen Participation Plan

The Citizen Participation Plan (CPP) enables citizens to participate more fully in decisions that affect their health, environment, and social well-being. The CPP will be updated throughout the Remedial Action in response to any community feedback.

6.1.6 Site Operations Plan

The Remedial Engineer is responsible to ensure that all 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.

6.2 General Remedial Construction Information

6.2.1 Project Organization and Emergency Contacts

The following are the principal personnel who will be assist in the management, oversight and completion of this project:

Remedial Engineer
Matthew M. Carroll, PE
1085 Sackett Avenue
Bronx, NY 10461
(917) 510-6767

Tenen Environmental, LLC
121 West 27th Street, Suite 702, New York, NY 10001
(646) 606-2332

- Mohamed Ahmed, Professional Geologist: responsible for quality assurance of sampling procedures and laboratory data.
- Victor Chang, Project Engineer: responsible for the day-to-day field monitoring activities, including soil excavation and load-out, dust monitoring and PID monitoring. Report preparation will be the function of a Project Engineer from Tenen.

Subcontractors
Laboratory:
Alpha Analytical, Inc., 8 Walkup Drive in Westborough, MA
(800) 624-9220
NYSDOH Environmental Laboratory Approval Program (ELAP) Certification No. 11148 for solid and hazardous waste

Contractor:
New Line Structures, 512 Fashion Avenue, Suite 6A, New York, NY 10018
(212) 280-3019

Data Validation:
L.A.B Validation Corp., 14 West Point Drive, East Northport, NY 11731
(516) 523-7891

Remedial Party:
470 Kent Ave Associates LLC, 152 West 57th Street, 45th Floor, New York, NY 10019
(646) 477-7619

Resumes of key personnel involved in the Remedial Action are presented in the QAPP, included as Appendix D.

6.2.2 Remedial Engineer

The Remedial Engineer (RE) for this project will be Matthew M. Carroll, P.E. The RE is a registered professional engineer (PE) licensed by the State of New York. The RE will have primary direct responsibility for implementation of the remedial program for the 470 Kent Avenue site (NYSDEC BCA Index No. C224053-07-14; Site No. C224053). The RE will certify in the Final Engineering Report (FER) that the remedial activities were observed by qualified environmental professionals under his supervision and that the remediation requirements set forth in the RAWP and any other relevant provisions of ECL 27-1419 have been achieved in conformance with that Plan. Other RE certification requirements are listed later in this RAWP.

The RE will coordinate the work of other contractors and subcontractors involved in all aspects of remedial construction, including soil excavation, stockpiling, characterization, removal, air monitoring, emergency spill response, import of back fill material (if any), and management of waste transport and disposal. The RE will be responsible for all appropriate communication with NYSDEC and NYSDOH.

The RE will review all pre-remedial plans submitted by contractors for compliance with this RAWP and will certify compliance in the FER.

6.2.3 Remedial Action Construction Schedule

A general Remedial Action construction schedule is included in Table 4.

6.2.4 Work Hours

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

6.2.5 Mobilization

Mobilization includes field personnel orientation, equipment mobilization (including CAMP equipment), marking/staking sampling locations and utility mark-outs. Each field team member will attend an orientation meeting to become familiar with the general operation of the Site, health and safety requirements, and field procedures. The contractor will mobilize all necessary materials and equipment on Site directly prior to the initiation of any remedial activities. Material stockpile and equipment decontamination areas will be designated.

6.2.6 Erosion and Sedimentation Controls

The development is greater than one acre in area and a Stormwater Pollution Prevention Plan (SWPPP) is required. A SWPPP has been submitted to Division of Water.

6.2.7 Equipment and Material Staging

All equipment and materials will be stored and staged in a manner that complies with applicable laws and regulations. There will be no specific material or equipment staging area; any staging will

be in areas where space permits. Soil will be placed in lined containers and covered at the end of each day, in accordance with Section 1.2 of the Soil/Materials Management Plan included as Appendix C.

6.2.8 Demobilization

Excavated areas will be restored during the construction redevelopment activities. Equipment decontamination will take place on-Site in order to prevent dispersion of any contaminating materials.

All remediation and construction materials will be disposed of in accordance with the applicable rules and regulations. General refuse will be handled in accordance with the rules and regulations of the New York City Department of Sanitation.

6.2.9 Utility Markout and Easement Layout

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

6.2.10 Required Permits

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 included as Table 5. 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 FER.

6.2.11 Site Security

The work zone will be maintained with fences and barriers, as necessary, to protect the public.

6.2.12 Pre-Construction Meeting with NYSDEC

The NYSDEC project manager will be invited to attend a pre-remedial action meeting at the Site with all parties involved in the remedial process prior to implementation of the RAWP.

6.2.13 Estimated Remedial Action Costs

The estimated cost to implement the Remedial Action is approximately $11,500,000. An itemized summary of estimated costs is included as Table 3. This table will be revised based on actual costs and included in the FER.

6.2.14 Deviations from the Remedial Action Plan

During the implementation of the RAWP, any material deviation from the RAWP will be noted and immediately brought to the attention of the RE. The RE or his/her representative will contact the NYSDEC Project Manager and determine if the deviation necessitates a formal RAWP modification and NYSDEC approval. If no formal RAWP modification is required, the deviation will be noted in the Site reports and explained in the FER.

6.3 Reporting

6.3.1 Daily Reporting

Daily reports will be submitted to the NYSDEC Project Manager by the end of each day following the reporting period and will include:

- An update of progress made during each day;
- Locations of work and quantities of material imported and exported from the Site;
- A summary of any and all complaints with relevant details (names, phone numbers);
- A summary of CAMP findings, including excursions; and,
- An explanation of notable Site conditions.

Daily reporting will be conducted during active Site remediation periods including air monitoring and off-Site disposal of material.

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

Daily reports will include a description of daily activities keyed to a map for the Site that identifies work areas. These reports will include a summary of air sampling results, odor and dust problems and corrective actions, and any complaints received from the public. All complaints received will immediately be reported to NYSDEC.

The NYSDEC assigned project number will appear on all reports.

6.3.2 Monthly Reporting

Monthly reports will be submitted to NYSDEC Project Manager by the 10th day of the following month and will include:

- Activities relative to the Site during the previous reporting period and those anticipated for the next reporting period, including a quantitative presentation of work performed (i.e., tons of material exported and imported, etc.);
- Photographs of the work completed during the reporting period;
- Description of approved activity modifications, including changes to 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.

6.3.3 Other Reporting

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

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

7.0 REMEDIAL ACTION IMPLEMENTATION: EXCAVATION AND DEWATERING

As discussed in Section 5.3, the components of the remedial action include the excavation and off-Site disposal of soil for attainment of a Track 4 cleanup. The applicable RRSCOs and PGWSCOs are presented in Table 1. Soil/fill containing compounds in soil above the Track 4 SCOs will be excavated/remediated within the proposed deep excavations ranging from 9-23 feet below grade, based on site investigation data to date.

The following remedy will be implemented to achieve a Track 4 remedy in soil: Soil Alternative 1 (soil excavation for Track 4 SCOs) and Groundwater Alternative 1 (dewatering). An 18-inch concrete building slab as well as paving, concrete sidewalks and a minimum two foot soil cap will serve as a composite cover system. In addition, as shown on Figure 8, a secant pile wall will be installed on the northern border to prevent recontamination from non-aqueous phase liquid (NAPL) observed in borings PWSB-27 and PWSB-31.

As further described below, the major components of the excavation remedial action include characterization for disposal, implementation of the SMMP and CAMP, excavation and off-Site disposal of impacted materials, closure of known and encountered USTs and end-point sampling.

7.1 Estimated Material Removal Quantities

The estimated quantity of soil/fill to be removed from the Site for remedial and redevelopment purposes is approximately 38,000 CY. The remedial volume across the entire Site, as calculated based on Figure 8 and summarized below, is approximately 17,600 CY. Of this amount, approximately 4,200 CY of remedial excavation volume is associated with the January 2022 IRM Work Plan; therefore, an additional 13,400 CY is added in this RAWP.

Remedial Excavation Area	Area (SF)	Depth (FT)	Volume (CY)	Target analytes
Site-wide top two feet	158,632	2	11,750	SVOCs, metals
BMW-2	1,450	10	450	Petroleum constituents
BSB-17	1,550	15	750	SVOCs (gross contamination), metals
BMW-6	3,900	21	2,750	SVOCs (gross contamination)
PWSB-16 and -17	1,100	9	300	SVOCs (gross contamination)
PWSB-21	1,650	10	500	SVOCs (gross contamination)
PWSB-45	1,650	10	500	SVOCs (gross contamination)
PWSB-27, -31 and -35	1,600	12	600	SVOCs (gross contamination), NAPL
		Total Volume	17,600	

Note the calculated volume for all remedial excavations excludes the top two feet included in the site-wide remedial excavation.

7.2 Soil Characterization

Soil characterization sampling will be completed at the Site prior to excavation. The majority of the Site has been characterized and the results provided to NYSDEC. Soil characterization results will be provided to the NYSDEC. Excavated materials will be disposed of off-Site in accordance with state and federal regulations. A sample will be collected from the soil and tested in a manner that is consistent with disposal facility requirements, which generally require the following:

- Total petroleum hydrocarbons (TPH) by gas chromatograph/photoionization device (GC/PID);
- Total VOCs via USEPA Method 8260C;
- Total SVOCs via USEPA Method 8270D;
- TAL Metals via USEPA Method 6010B/7470A;
- Total PCBs via USEPA Method 8082;
- Pesticides via USEPA Method 8081A;
- Total Cyanide via USEPA Method 9013A;
- Hexavalent Chromium via USEPA Method 3060A;
- Paint Filter via USEPA Method 9095B;
- SPLP for NJ IGW;
- RCRA Characteristics (ignitability (USEPA Method 1030), corrosivity (USEPA Method 1110A), and reactivity);
- Toxic Characteristics Leaching Procedure (TCLP) VOCs, SVOCs, metals, pesticides, and herbicides via USEPA Method 1311; and
- Diesel Range Organics (DRO) and Gasoline Range Organics (GRO) via USEPA Method 8015C.

Depending on the selected facility, additional analyses may be required. Characterization samples will be submitted to an ELAP-approved laboratory (also holding accreditation for the disposal facility state) for analysis. Analytical reports will be maintained, and copies will be available for inspection in the field and will be included in the FER (described in Section 11.0).

7.3 Soil/Materials Management Plan (SMMP)

Soil and materials management on-Site will be conducted in accordance with the SMMP and as described below. The main goal of the SMMP is to handle all potentially contaminated soil and manage activities associated with soil in a manner that prevents contamination from reaching the community, workers, future occupants and workers, and the environment. Contaminated soil must be managed in a manner that ensures removal, transport, and disposal such that it fulfills applicable regulatory requirements. The means and methods to meet this goal are included in the SMMP, included as Appendix C.

Dust control will be implemented through the use of a dedicated, timed sprinkler system and, as necessary, large diameter hoses connected to hydrants. Odor control will be managed initially through excavation methods (as detailed in the SMMP) with a contingency for Rusmar Incorporated AC-645 Long Duration Foam, as applied following the manufacturer's recommendations.

7.4 Community Air Monitoring Plan (CAMP)

The main goal of the CAMP is to keep objectionable odors, VOCs and/or particulates from reaching the surrounding community. The NYSDOH Generic CAMP, which includes monitoring and protocol for mitigative measures in the event of exceedances of VOCs and particulates, will be implemented.

Should objectionable odors be produced during excavation, the area to be disturbed at any one time will be limited and, if necessary, foam cover will be utilized (Rusmar Incorporated AC-645 Long Duration Foam or approved equivalent will be present at the Site), following the manufacturer's recommended application rate. In order to minimize the potential for dust, hoses and a timed sprinkler system will be operated.

The CAMP is included as Appendix A.

7.5 Materials Transport Off-Site

Soil will be excavated and live loaded or stockpiled on poly sheeting prior to off-site disposal. The stockpiles will be covered with a heavy duty tarp over night and during transportation.

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

Trucks will be loaded on-site on the truck pad at the entrance of the Site on Kent Avenue. All truck tires will be washed prior to trucks leaving the Site. Trucks will leave the Site heading north on Kent Avenue, make a right on South 9th Street, make a right on Driggs Avenue and another right onto Division Avenue. Trucks will continue on to Interstate 278 (The Brooklyn Queens Expressway).

Tight fitting covers will be used on all trucks hauling materials off-site. Trucks will be prohibited from stopping and idling in the neighborhood outside the project, to the extent practical.

7.6 Dewatering and Fluids Management

Due to the shallow water table, dewatering will be required during construction and will be implemented in accordance with a SPDES permit.

All liquids to be removed from the Site, including dewatering fluids, will be handled, transported, and disposed in accordance with applicable local, state, and federal regulations.

A SPDES construction dewatering permit and Long Island Well Permit are required prior to discharge.

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

7.7 UST Removal

Two known USTs have been removed as part of the IRM Work Plan implementation. Any encountered USTs will be registered and closed in conformance with all applicable federal, state and local regulations, including those defined in DER-10 and 6NYCRR Parts 612 and 613. USTs will be registered with NYSDEC. NYSDEC will be notified seven days prior to removal of any USTs. USTs will be removed by a contractor licensed by the New York City Fire Department (FDNY) in accordance with the procedures set forth in the American Petroleum Institute (API) Recommended Practice 1604 entitled "Removal and Disposal of Used Underground Storage Tanks".

7.8 Remedial Performance Evaluation

Post-Excavation End-Point Sampling

End-point samples will be collected from the completion depth at the base excavation. End-point samples will be analyzed for VOCs, SVOCs, pesticides, PCBs and metals. Figure 10 depicts a post-excavation end-point sampling location map.

End-point samples will be collected to document the condition of soils that will be left in-place and capped following the completion of excavation. End-point samples will be collected every 900 square feet from the bottom of the excavation and every 30 feet along the sidewalls of any hot spots. All samples will be analyzed for VOCs, SVOCs, PCBs, pesticides and metals. End-point sampling results will be compared to the proposed Track 4 SCOs, the Restricted-Residential Use SCOs and the Protection of Groundwater SCOs.

Chemical labs used for all end-point sample results and contingency sampling will be NYSDOH ELAP certified.

All post-excavation sample results will be compared with the Restricted-Residential Use SCOs, the Protection of Groundwater SCO and Track 4 SCOs. Any soils not meeting the applicable Track 4 SCOs within the excavation will be removed and the area backfilled with clean fill meeting the criteria outlined in this RAWP. The Restricted-Residential Use and Protection of Groundwater SCOs are listed in Table 1.

The remedial excavation depths outlined on Figure 10 may extend laterally or deeper based upon the end-point sample results.

Post-Remedial Groundwater Sampling

Post-remedial groundwater sampling will be completed in accordance with a Site Management Plan (SMP) to document any residual contamination. It is anticipated that groundwater samples will be collected quarterly for two years (i.e., eight quarters). Proposed post-remedial groundwater monitoring well locations are shown on Figure 13 and the construction detail is included in Appendix F. The purpose of each well is included below. Samples will be collected in accordance with the QAPP and results will be reported in the Periodic Review Report that will be required by the SMP, as detailed in Section 12.2.

All existing wells will be decommissioned and post-remedial monitoring wells will be installed in accordance with the SMP. For each new monitoring well, a seven-foot PVC screen will be installed in the top five feet of groundwater. The slot size will be determined based on the grain size of the soils encountered. A filter pack of sand will be placed in the annular space around the screens and will extend two feet above the screen. The annular area around the well casing will be sealed with bentonite pellets for an interval of two feet. A grout, consisting of a cement and bentonite mixture or an anti-shrink mixture, will then extend from the bentonite pellet seal to two ft-bg. The remaining annular space will be sealed with a concrete cap and well apron (expanding cement). A locking well cap will be installed upon completion of the well.

The purpose of the wells is as follows: one monitoring well along Kent Avenue to confirm upgradient conditions; one well on the northern portion of the Site where evidence of NAPL was previously noted (also in the area of the remedial excavation associated with PWSB-27, -31 and -35); one well within the area of the removed USTS; and four downgradient perimeter wells (including one in the remedial excavation associated with BSB-17, BMW-6 and PWSB-16 and -17) to confirm that residual impacts are not flowing to the bulkhead.

Groundwater samples will be analyzed for VOCs and SVOCs.

Post-remedial groundwater sampling will not be discontinued without prior NYSDEC approval.

Post-Remedial Soil Vapor and Indoor Air Evaluation

Before each building is occupied, a soil vapor intrusion evaluation will be completed under the Site Management Plan and provided to NYSDEC/NYSDOH for review. The evaluation will include a review of VOCs in post-remedial soil and groundwater results.

At least two indoor air samples will be collected in each new building constructed without an active sub-slab depressurization system (SSDS) prior to occupancy. The proposed sampling locations will be presented to NYSDEC and NYSDOH as a workplan for approval prior to conducting the actual sampling event. Samples will be collected in accordance with the NYSDOH Guidance for Evaluating Soil Vapor Intrusions in the State of New York (2006 with revisions) (Soil Vapor Guidance). Samples will be collected over a 24-hour period, consistent with the residential use of the building, and analyzed for TO-15 VOCs. One ambient air sample will be collected per event.

If indoor air sampling during the soil vapor intrusion evaluation indicates impacts in indoor air, actions must be implemented to reduce contaminant concentrations to below background levels. Any such mitigative measures and post implementation confirmatory sampling will be submitted as a work plan that will require approval by NYSDEC and NYSDOH. The work plan will include a written evaluation of the soil vapor intrusion exposure pathway, a proposed treatment system and a schedule for conducting additional indoor air sampling prior to building occupancy. **Acceptable measures the work plan would address are not limited exclusively to HVAC modifications or underground parking ventilation systems**. The current HVAC design is in accordance with NYCDOB requirements which includes ventilation based on carbon monoxide levels in the garage and introduction of tempered air in the amenity spaces. Of note, the garage venting system has smoke clearing mode that can completely change the air within two hours and the amenity space

makeup air is designed so that more air is delivered to areas most likely to have occupants. Any modifications would be proposed in a work plan for approval by NYSDEC and NYSDOH.

7.9.1 Quality Assurance / Quality Control (QA/QC)

A Quality Assurance Project Plan (QAPP) detailing the frequency of sample collection, analytical methods and the quality standards that must be achieved by the analytical laboratory is included as Appendix D.

The QAPP includes provisions for trip blanks, field blanks, duplicates, matrix spike and matrix spike duplicate (MS/MSD) samples. The QAPP also describes field sampling procedures.

7.9.2 Data Usability Summary Report (DUSR)

A qualified data validator will prepare a Data Usability Report (DUSR). The DUSR will be prepared according to the guidelines contained in Appendix 2B of DER-10.

7.9.3 Reporting of End-Point Data in FER

The FER will provide a tabular and map summary of all end-point sample results and any exceedances of SCOs.

7.10 Import of Materials

Approximately 2,000 cubic yards of soil will be required for backfill and cover after construction completion. Import of materials will be in compliance with: (1) the Part 375-6.7(d) and (2) all Federal, State and local rules and regulations for handling and transport of material, and is further discussed in Section 1.9 of the SMMP in Appendix C.

8.0 REMEDIAL ACTION IMPLEMENTATION: CONTINGENT IN-SITU CHEMICAL APPLICATION

As discussed in Section 5.1.2, the components of the remedial action to address residual groundwater impacts, if present following dewatering, include in-situ chemical treatment after dewatering. If petroleum-related constituents remain in groundwater that require remediation, a Design Document will be prepared for approved by NYSDEC. Specifications for the application of ORC® for advanced aerobic biodegradation are included in Appendix E.

8.1 ORC® Pellet Application

The goal of the in-situ chemical application for the Site is to promote an advanced aerobic biodegradation of petroleum-related constituents in groundwater. Implementation involves the application of an oxygen release compound (ORC®) manufactured by Regenesis. ORC® is a calcium oxy-hydroxide based material which produces a controlled-release of molecular oxygen for a period of up to 12 months.

The ORC application will promote advanced aerobic biodegradation of petroleum-related compounds. Aerobic biodegradation is achieved by the introduction of oxygen for use by microorganisms to transform petroleum hydrocarbons to carbon dioxide, water and microbial cell mass. The ORC® pellets are manufactured by Regenesis and the specifications are included in Appendix E.

The final dosing and injection rate will be included in a Design Document for review and approval by the Department. A single application of ORC® can support up to 12 months of aerobic biodegradation. No operation or maintenance is required but the long-term concentrations will be monitored. Figure 12 depicts the treatment locations and Figure 13 shows the location of the post-remedial groundwater wells.

The design goal is to decrease the concentrations of petroleum-related VOCs to below the Class GA Standards for benzene, toluene, ethylbenzene and xylenes (BTEX).

9.0 REMAINING CONTAMINATION TO REMAIN ON-SITE

The successful implementation of the Remedial Action will result in the following:

- All soil left on-Site will meet the Track 4 SCOs and will be managed under an SMP.
- Remaining contamination may remain in the soil vapor but the bulk of the VOC contaminant mass will be removed during excavation.. A soil vapor intrusion evaluation, including indoor air testing and, if necessary, mitigation will be submitted as a workplan and will require approval by NYSDEC and NYSDOH prior to building occupancy and for any future proposed change in use.
- Groundwater concentrations will be monitored to confirm residual concentrations.

Based on the necessity of EC and IC to complete the remedy, a Site-specific Management Plan (SMP) will be submitted with the FER for long-term management of the Site.

10.0 Engineering Controls

The Site will require a site cover system that will serve as a permanent, long-term engineering control for the Site to allow for restricted residential use. The secant pile wall along the northern border of the Site will serve as a permanent, long-term engineering control to prevent recontamination of the Site from potential NAPL. If additional measures are needed to address potential soil vapor impacts in indoor air following the soil vapor intrusion evaluation, these elements may warrant classification as a supplemental engineering control if it is determined that long-term use of these measures will be required to prevent exposures. A summary of the engineering controls is shown on Figure 14. The full specifications and design will be submitted as a remedial design work plan and approved by NYSDEC and NYSDOH.

A Soil Management Plan will be included in the SMP and will outline the procedures to be followed in the event that the cover system or underlying residual contamination are disturbed after the Remedial Action is complete. Maintenance of these engineering controls will be described in the Site Management Plan. Additionally, the ECs will be established in an Environmental Easement assigned to the property by the titleholder and will be implemented under a SMP.

10.1 Description of Engineering Control – Cover System

Exposure to residual contaminated soils on-site would be prevented by installation of an 18-inch concrete slab cover as well as paving, concrete sidewalks and a minimum two foot soil cap outside of the building basement area. The cover system will consist of imported material meeting the lower of the Protection of Groundwater and Restricted-Residential Use SCOs. Approximately 2,000 cubic yards of material will be imported to the Site for construction of this EC.

10.2 Description of Engineering Control – Secant Pile Wall

The secant pile wall along the northern border of the Site is required to prevent recontamination of Site soils following remediation. Specifically, NAPL was observed in borings PWSB-27 and PWSB-31, which, given the relation to the Site border, indicates that NAPL may be present off-site. The waterproofing and structure will limit the potential for NAPL to migrate on-Site. The location of the wall is shown on Figure 8 and the details are included in Appendix E. The full specifications and design will be submitted as a remedial design work plan and approved by NYSDEC and NYSDOH.

12.0 INSTITUTIONAL CONTROLS

Institutional Controls (ICs) will be required to manage residual contamination on Site and to ensure that the ECs remain protective of public health and the environment. The ICs consist of two elements designed to ensure continual and proper management of residual contamination in perpetuity: an Environmental Easement and a Site Management Plan.

An Environmental Easement, as defined in Article 71 Title 36 of the Environmental Conservation Law, will be recorded with Kings County for the Site to provide an enforceable means of ensuring the continual and proper management of residual contamination and protection of public health and the environment in perpetuity or until released in writing by NYSDEC. It requires that the grantor of the Environmental Easement and the grantor's successors and assigns adhere to all Engineering and Institutional Controls (ECs/ICs) placed on this Site by this NYSDEC-approved remedy. ICs provide restrictions on Site usage and mandate operation, maintenance, monitoring and reporting measures for all ECs and ICs. The Site Management Plan (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.

12.1 Environmental Easement

The Environmental Easement renders the Site and any property requiring mitigation as Controlled Properties. The Environmental Easements must be recorded with the Queens County Office of the City Register before the Certificate of Completion can be issued by NYSDEC. A series of Institutional Controls are required under this remedy to implement, maintain and monitor these Engineering Control systems, prevent future exposure to residual contamination by controlling disturbances of the subsurface soil and restricting the use of the Site to commercial or industrial use(s) only. These Institutional Controls are requirements or restrictions placed on the Site that are listed in, and required by, the Environmental Easement. Institutional Controls can, generally, be subdivided between controls that support Engineering Controls, and those that place general restrictions on Site usage or other requirements. Institutional Controls in both of these groups are closely integrated with the Site Management Plan, which provides all of the methods and procedures to be followed to comply with this remedy.

The Institutional Controls that support Engineering Controls are:

- Compliance with the Environmental Easement by the Grantee and the Grantee's successors and adherence of all elements of the SMP is required;
- All Engineering Controls must be operated and maintained as specified in the SMP;
- All Engineering Controls on the Controlled Property must be inspected and certified at a frequency and in a manner defined in the SMP;
- Groundwater and other environmental or public health monitoring must be performed as defined in the SMP;
- Data and information pertinent to Site Management for the Controlled Property must be reported at the frequency and in a manner defined in the SMP;

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

Adherence to these Institutional Controls for the Site and off-site properties requiring mitigation is mandated by the Environmental Easement and will be implemented under the Site Management Plan (discussed in the next section). The Controlled Property (Site) will also have a series of Institutional Controls in the form of Site restrictions and requirements. The Site restrictions that apply to the Controlled Property are:

- Use of groundwater underlying the Controlled Property is prohibited without treatment rendering it safe for intended purpose;
- All future activities on the Controlled Property that will disturb residual contaminated material are prohibited unless they are conducted in accordance with the soil management provisions in the Site Management Plan;
- The Controlled Property may be used for residential, commercial or industrial use only, provided the long-term Engineering and Institutional Controls included in the Site Management Plan are employed;
- The Controlled Property may not be used for a higher level of use, such as unrestricted use, without an amendment or extinguishment of the Environmental Easement;
- Grantor agrees to submit to NYSDEC a written statement that certifies, under penalty of perjury, that: (1) controls employed at the Controlled Property are unchanged from the previous certification or that any changes to the controls were approved by the NYSDEC; and, (2) nothing has occurred that impairs the ability of the controls to protect public health and environment or that constitute a violation or failure to comply with the SMP. NYSDEC retains the right to access such Controlled Property at any time in order to evaluate the continued maintenance of any and all controls. This certification shall be submitted annually, or an alternate period of time that NYSDEC may allow. This [time period] statement must be certified by an expert that the NYSDEC finds acceptable.

The Environmental Easement will incorporate the ICs required to implement, maintain and monitor the ECs, prevent future exposure to residual contamination by controlling disturbances of the subsurface soil and restrict the use of the Site to commercial uses only, unless discontinued or modified with the approval of NYSDEC.

The Environmental Easement for the controlled property will include the following requirements:

- requires the remedial party or Site owner to complete and submit to NYSDEC a periodic certification of institutional and engineering controls in accordance with Part 375-1.8 (h)(3);
- allows the use and development of the controlled property for residential, commercial and industrial uses as defined by Part 375-1.8(g), although land use is subject to local zoning laws;

- restricts the use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by the NYSDOH or the New York City Department of Health (NYCDOH); and
- requires compliance with the NYSDEC-approved SMP.

12.2 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 part of the FER but will be written as a complete and independent document. Site management requirements continue in perpetuity or until released in writing by NYSDEC. The property owner is responsible to ensure that all Site and off-site management responsibilities defined in the Environmental Easement and 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 and off-site properties requiring mitigation 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 of a plan to operate and maintain any treatment, collection, containment, or recovery systems (including, where appropriate, preparation of an Operation and Maintenance Manual); and (3) submittal of Site Management Reports, performance of inspections and certification of results, and demonstration of proper communication of Site information to NYSDEC.

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 (O&M) Plan for implementation of remedial containment systems; and (4) a Site Management Reporting Plan for submittal of data, information, recommendations, and certifications to NYSDEC.

Site management activities, reporting, and EC/IC certification will be scheduled on a certification period basis. The certification period will be annually. The Periodic Review Report (PRR) submitted under the SMP will be based on a calendar year. The first PRR will be submitted to the NYSDEC within 15 months after the date of COC issuance. Any lapses in the engineering or institutional controls noted in the PRR will be required to be corrected expeditiously and the NYSDEC notified of the correction. The SMP will include the following:

1. Introduction with purpose, summary of remediation and site conditions;
2. Institutional and Engineering Control Plan;
3. O&M Plan;
4. Site Monitoring Plan;
5. Site maintenance requirements;
6. Citizen Participation Plan;
7. Personnel organization and responsibilities;
8. Health and Safety Plan;
9. Records and forms;

10. Emergency Contingency Plan; and
11. Copies of Environmental Easement and applicable Site plans, including electronic versions.

The Institutional and Engineering Control Plan will include, but is not limited to:

- descriptions of the provisions of the environmental easement including any land use and groundwater use restrictions;
- a provision for evaluation of the potential for soil vapor intrusion (with indoor air sampling) for any buildings developed on the site, including a provision for implementing actions recommended to address exposures related to soil vapor intrusion;
- provisions for the management and inspection of the identified engineering controls; and,
- maintaining site access controls and NYSDEC notification; and the steps necessary for the periodic reviews and certification of the institutional and/or engineering controls.

The OM&M Plan will include, but is not limited to:

- compliance monitoring of treatment systems to ensure proper O&M as well as providing the data for any necessary permit or permit equivalent reporting;
- maintaining access controls and Department notification; and
- providing NYSDEC access to the site and O&M records.

The Site Monitoring Plan will include, but is not limited to:

- monitoring of groundwater to assess the performance and effectiveness of the remedy;
- a schedule of monitoring and frequency of submittals to NYSDEC; and,
- monitoring for soil vapor intrusion for any buildings developed on the site, as may be required by the Institutional and Engineering Control Plan discussed above.

The Site Management Reporting Plan will include, but is not limited to:

- Details regarding post-COC reporting requirements, including a schedule
- The contents of the annual report, including:
    - an evaluation of the EC/ICs, EC/IC certifications, results of period Site inspections and deliverables to be generated;
    - frequency and type of the EC/IC and Site inspections;
    - inspection forms, sampling data and maintenance reports;
    - an evaluation of records and reporting; and,
    - corrective measure plans.

13.0 FINAL ENGINEERING REPORT

A Final Engineering Report (FER) will be submitted to the NYSDEC Project Manager within 90 days of completing the remedial action. 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, calculation and manufacturer documentation for treatment systems, 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. 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.

The Final Engineering Report will include written and photographic documentation of all remedial work performed under this remedy. Photographs will be taken of all remedial activities and submitted to NYSDEC in digital format after completion of active Site remediation. 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 submitted to NYSDEC on CD or other acceptable electronic media and will be sent to NYSDEC's Project Manager (2 copies) and to NYSDOH's Project Manager (1 copy). Each CD will have a label and a general file inventory structure that separates photos into directories and sub-directories according to logical Remedial Measure components. A photo log keyed to photo file ID numbers will be prepared to provide explanation for all representative photos.

The FER will include an itemized tabular description of actual costs incurred during all aspects of the Remedial Action.

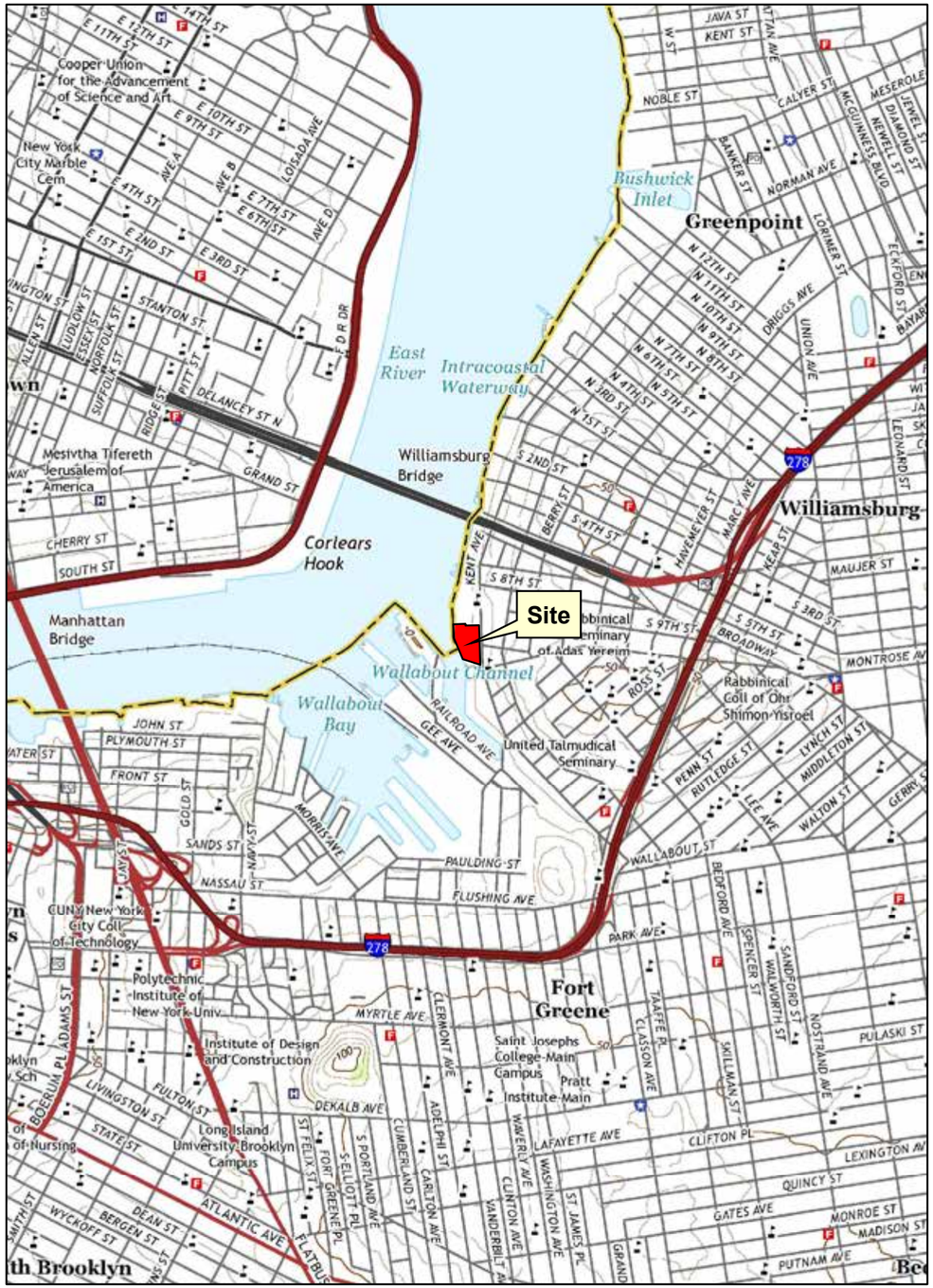
The FER will provide a thorough summary of all remaining contamination left on the Site after the remedy is complete. Remaining contamination includes all contamination that exceeds the Track 1 Unrestricted Use SCO in 6NYCRR Part 375-6. A table that shows exceedances from Track 1 Unrestricted SCOs for 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 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.
This FER will include the following:

1. Certification by the RE that the data generated is useable and meets the remedial requirements;
2. Certification by the RE that any financial assurance mechanisms required by the NYSDEC have been executed;
3. Certification by the RE that the remedial work conformed to the RAWP;
4. Certification by the RE that dust, odor, and vapor control measures were implemented during invasive work and conformed with the RAWP;
5. Certification by the RE that all the remedial waste was transported and disposed in accordance with the RAWP;
6. Certification by the RE that the source approval and sampling of imported acceptable fill was completed in a manner consistent with the methodology of the RAWP;
7. Summary of the remedy and all remedial actions completed;
8. Description of any problems encountered and their resolutions;
9. Description of the deviations from the approved RAWP;
10. Listing of waste streams, quantity of materials disposed, and where they were disposed;
11. Analytical QA/QC completed for the environmental media sampling during the remedial activities, including DUSR or other data validation;
12. List of the remediation standards applied to the remedial actions;
13. List of all applicable local, regional, and national governmental permits, certificates, or other approvals required for the remedial and development work;
14. Tables and figures containing all pre- and post-remedial data, including volumes of soil removed (as applicable);
15. Description of source and quality of fill (as applicable);
16. "As-built" drawings including remediation areas;
17. Air quality and dust monitoring data, including any supporting documentation on the decisions made based on the data;
18. Copies of all the submitted periodic reports; and
19. Copies of all manifests of off-site transport of waste material.

Before approval of a FER and issuance of a Certificate of Completion, all documents and reports will be submitted to the NYSDEC will be in both hard copy and in digital format on CD. These digital documents shall be in PDF form and, where appropriate, supplemented by photos and Microsoft Excel files. Laboratory analytical data will be submitted in an electronic data deliverable (EDD) format that complies with the NYSDEC's electronic data warehouse standards.

Figures



Basemap: USGS Topographic Map, 7.5 Minute Quadrangles, Brooklyn, NY, 2016

Site Location

0 1,000 2,000 4,000 Feet



http://gis.nyc.gov/taxmap/map.htm

Department of Finance Digital Tax Map

0 200 400 800 Feet



Service Layer Credits: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community
NYC Department of City Planning, Information Technology Division

Department of City Planning MapPLUTO - 2020 v6

0 200 400 800 Feet

Site

470 Kent Avenue
Brooklyn, New York
Block 2134, Lots 1 & 150

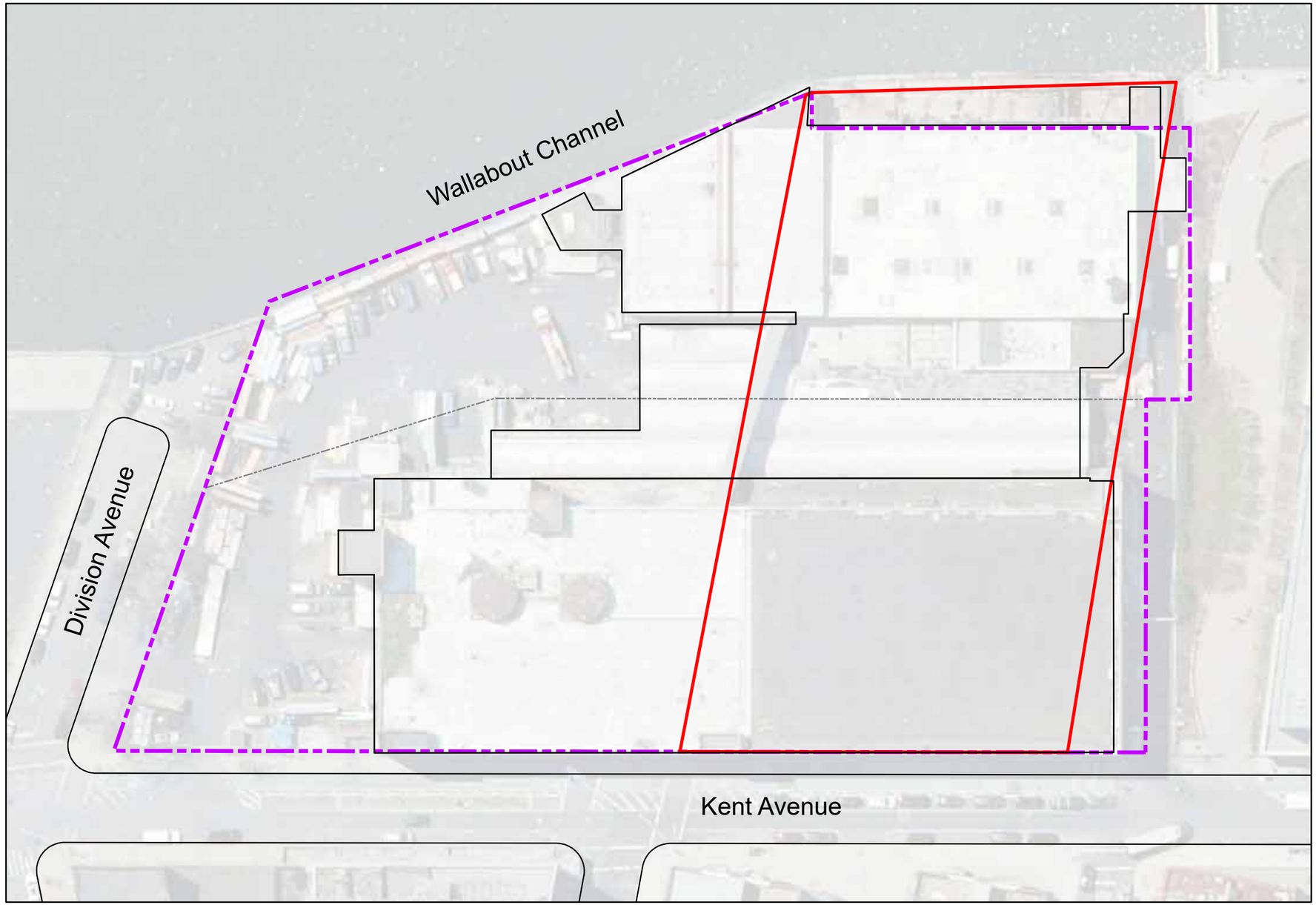
TENEN ENVIRONMENTAL

Tenen Environmental, LLC
121 West 27th Street
Suite 702
New York, NY 10001
O: (646) 606-2332
F: (646) 606-2379

Drawn By	Checked By	Date	Scale
LM	MC	Septmeber 2021	As Noted

Drawing Title: **Site Location Map**

Drawing No: **Figure 1**



Legend

- Approximate Former MGP Boundary
- Site Boundary
- Lot Line

Feet
0 30 60 120

Service Layer Credits: NYS ITS GIS Program Office

Site

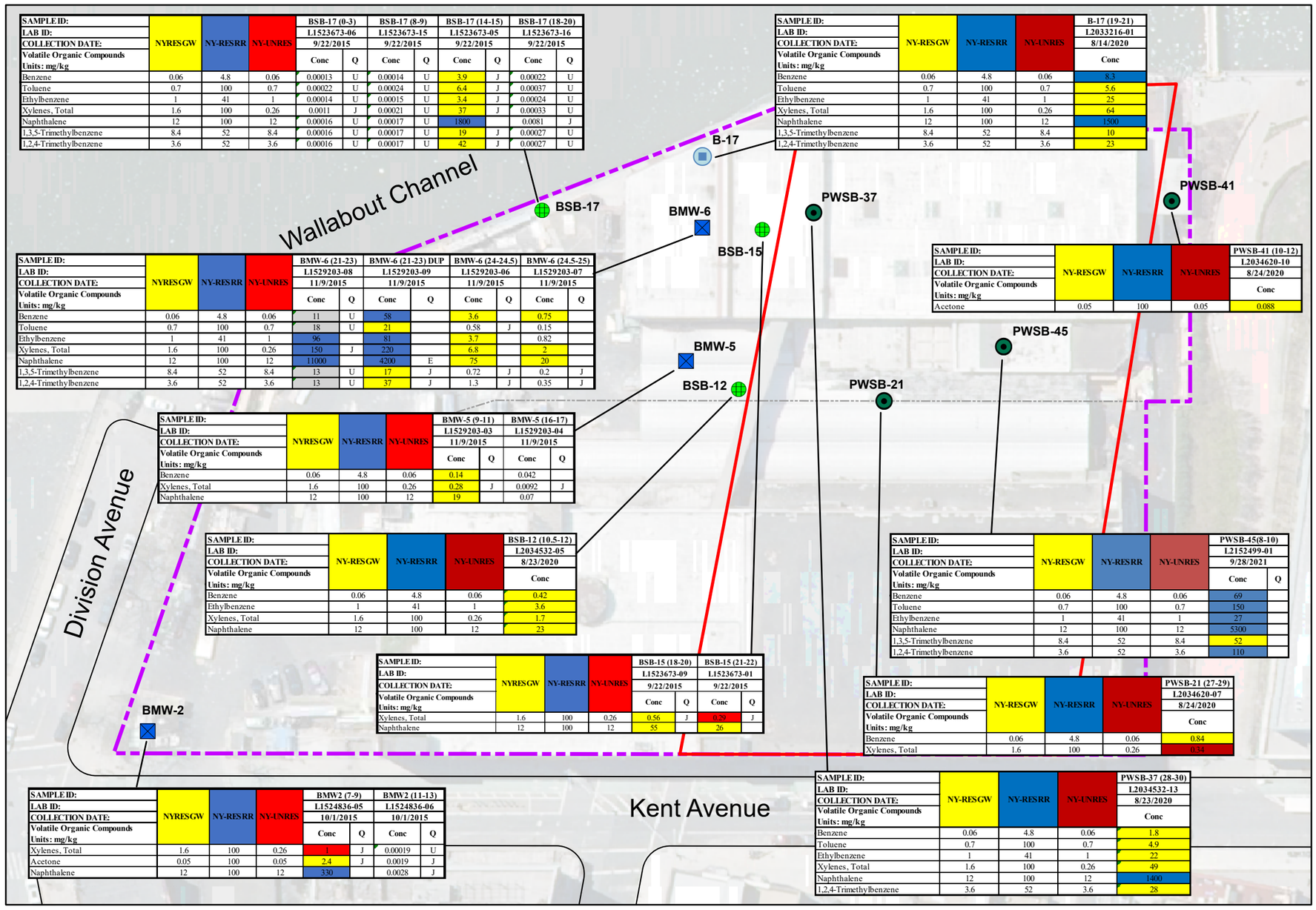
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Drawn By	Checked By	Date	Scale
LM	MC	September 2021	As Noted

Drawing Title: **Site Layout**

Drawing No: **Figure 2**



SAMPLE ID:	NYRESGW	NY-RESRR	NY-UNRES	BSB-17 (0-3)		BSB-17 (8-9)		BSB-17 (14-15)		BSB-17 (18-20)	
LAB ID:				L1523673-06		L1523673-15		L1523673-05		L1523673-16	
COLLECTION DATE:				9/22/2015		9/22/2015		9/22/2015		9/22/2015	
Volatile Organic Compounds Units: mg/kg				Conc	Q	Conc	Q	Conc	Q	Conc	Q
Benzene	0.06	4.8	0.06	0.00013	U	0.00014	U	3.9	J	0.00022	U
Toluene	0.7	100	0.7	0.00022	U	0.00024	U	6.4	J	0.00037	U
Ethylbenzene	1	41	1	0.00014	U	0.00015	U	3.4	J	0.00024	U
Xylenes, Total	1.6	100	0.26	0.0011	J	0.00021	U	37	J	0.00033	U
Naphthalene	12	100	12	0.00016	U	0.00017	U	1800		0.0081	J
1,3,5-Trimethylbenzene	8.4	52	8.4	0.00016	U	0.00017	U	19	J	0.00027	U
1,2,4-Trimethylbenzene	3.6	52	3.6	0.00016	U	0.00017	U	42	J	0.00027	U

SAMPLE ID:	NY-RESGW	NY-RESRR	NY-UNRES	B-17 (19-21)
LAB ID:				L2033216-01
COLLECTION DATE:				8/14/2020
Volatile Organic Compounds Units: mg/kg				Conc
Benzene	0.06	4.8	0.06	8.3
Toluene	0.7	100	0.7	5.6
Ethylbenzene	1	41	1	25
Xylenes, Total	1.6	100	0.26	64
Naphthalene	12	100	12	1500
1,3,5-Trimethylbenzene	8.4	52	8.4	10
1,2,4-Trimethylbenzene	3.6	52	3.6	23

SAMPLE ID:	NYRESGW	NY-RESRR	NY-UNRES	BMW-6 (21-23)		BMW-6 (21-23) DUP		BMW-6 (24-24.5)		BMW-6 (24.5-25)	
LAB ID:				L1529203-08		L1529203-09		L1529203-06		L1529203-07	
COLLECTION DATE:				11/9/2015		11/9/2015		11/9/2015		11/9/2015	
Volatile Organic Compounds Units: mg/kg				Conc	Q	Conc	Q	Conc	Q	Conc	Q
Benzene	0.06	4.8	0.06	11	U	58		3.6		0.75	
Toluene	0.7	100	0.7	18	U	21		0.58	J	0.15	
Ethylbenzene	1	41	1	96		81		3.7		0.82	
Xylenes, Total	1.6	100	0.26	150	J	220		6.8		2	
Naphthalene	12	100	12	11000		4200	E	75		20	
1,3,5-Trimethylbenzene	8.4	52	8.4	13	U	17	J	0.72	J	0.2	J
1,2,4-Trimethylbenzene	3.6	52	3.6	13	U	37	J	1.3	J	0.35	J

SAMPLE ID:	NY-RESGW	NY-RESRR	NY-UNRES	PWSB-41 (10-12)
LAB ID:				L2034620-10
COLLECTION DATE:				8/24/2020
Volatile Organic Compounds Units: mg/kg				Conc
Acetone	0.05	100	0.05	0.088

SAMPLE ID:	NYRESGW	NY-RESRR	NY-UNRES	BMW-5 (9-11)		BMW-5 (16-17)	
LAB ID:				L1529203-03		L1529203-04	
COLLECTION DATE:				11/9/2015		11/9/2015	
Volatile Organic Compounds Units: mg/kg				Conc	Q	Conc	Q
Benzene	0.06	4.8	0.06	0.14		0.042	
Xylenes, Total	1.6	100	0.26	0.28	J	0.0092	J
Naphthalene	12	100	12	19		0.07	

SAMPLE ID:	NY-RESGW	NY-RESRR	NY-UNRES	BSB-12 (10.5-12)
LAB ID:				L2034532-05
COLLECTION DATE:				8/23/2020
Volatile Organic Compounds Units: mg/kg				Conc
Benzene	0.06	4.8	0.06	0.42
Ethylbenzene	1	41	1	3.6
Xylenes, Total	1.6	100	0.26	1.7
Naphthalene	12	100	12	23

SAMPLE ID:	NY-RESGW	NY-RESRR	NY-UNRES	PWSB-45(8-10)
LAB ID:				L2152499-01
COLLECTION DATE:				9/28/2021
Volatile Organic Compounds Units: mg/kg				Conc
Benzene	0.06	4.8	0.06	69
Toluene	0.7	100	0.7	150
Ethylbenzene	1	41	1	27
Naphthalene	12	100	12	5300
1,3,5-Trimethylbenzene	8.4	52	8.4	52
1,2,4-Trimethylbenzene	3.6	52	3.6	110

SAMPLE ID:	NYRESGW	NY-RESRR	NY-UNRES	BSB-15 (18-20)		BSB-15 (21-22)	
LAB ID:				L1523673-09		L1523673-01	
COLLECTION DATE:				9/22/2015		9/22/2015	
Volatile Organic Compounds Units: mg/kg				Conc	Q	Conc	Q
Xylenes, Total	1.6	100	0.26	0.56	J	0.29	J
Naphthalene	12	100	12	55		26	

SAMPLE ID:	NY-RESGW	NY-RESRR	NY-UNRES	PWSB-21 (27-29)
LAB ID:				L2034620-07
COLLECTION DATE:				8/24/2020
Volatile Organic Compounds Units: mg/kg				Conc
Benzene	0.06	4.8	0.06	0.84
Xylenes, Total	1.6	100	0.26	0.34

SAMPLE ID:	NYRESGW	NY-RESRR	NY-UNRES	BMW2 (7-9)		BMW2 (11-13)	
LAB ID:				L1524836-05		L1524836-06	
COLLECTION DATE:				10/1/2015		10/1/2015	
Volatile Organic Compounds Units: mg/kg				Conc	Q	Conc	Q
Xylenes, Total	1.6	100	0.26	1	J	0.00019	U
Acetone	0.05	100	0.05	2.4	J	0.0019	J
Naphthalene	12	100	12	330		0.0028	J

SAMPLE ID:	NY-RESGW	NY-RESRR	NY-UNRES	PWSB-37 (28-30)
LAB ID:				L2034532-13
COLLECTION DATE:				8/23/2020
Volatile Organic Compounds Units: mg/kg				Conc
Benzene	0.06	4.8	0.06	1.8
Toluene	0.7	100	0.7	4.9
Ethylbenzene	1	41	1	22
Xylenes, Total	1.6	100	0.26	49
Naphthalene	12	100	12	1400
1,2,4-Trimethylbenzene	3.6	52	3.6	28

Notes:

NY-RESGW: New York NYCRR Part 375 Groundwater Criteria, New York Restricted use Criteria per 6 NYCRR Part 375 Environmental Remediation Programs, effective December 14, 2006.

NY-RESRR: New York NYCRR Part 375 Restricted-Residential Criteria, New York Restricted use Criteria per 6 NYCRR Part 375 Environmental Remediation Programs, effective December 14, 2006.

NY-UNRES: New York NYCRR Part 375 New York Unrestricted use Criteria Criteria per 6 NYCRR Part 375 Environmental Remediation Programs, effective December 14, 2006.

Cells highlighted in yellow indicate a concentration above the NY-RESGW

Cells highlighted in blue indicate a concentration above the NY-RESRR

Cells highlighted in red indicate a concentration aboe the NY-UNRES

All results are shown in milligrams per kilogram (mg/kg)

Legend

- Geotechnical Borings
- Tenen BCP Boring
- Groundwater Monitoring Well Location
- Soil Boring Location
- Approximate Former MGP Boundary
- Site Boundary
- Lot Line

0 30 60 120 Feet

Service Layer Credits: NYS ITS GIS Program Office

470 Kent Avenue
Brooklyn, New York
Block 2134, Lots 1 & 150

Site

Tenen Environmental, LLC
121 West 27th Street
Suite 702
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O: (646) 606-2332
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Drawn By	Checked By	Date	Scale
LM	MC	May 2023	As Noted

Drawing Title: **Volatile Organic Compounds in Soil**

Drawing No: **Figure 3**

SAMPLE ID:	NY-RESGW	NY-RESRR	NY-UNRES	B-19 (5-7)
LAB ID:				L2031428-01
COLLECTION DATE:				7/30/2020
Semivolatile Organic Compounds Units: mg/kg				Conc
Benzo(a)anthracene	1	1	1	9.2
Benzo(a)pyrene	22	1	1	7.8
Benzo(b)fluoranthene	1.7	1	1	11
Benzo(k)fluoranthene	1.7	3.9	0.8	1.4
Chrysene	1	3.9	1	5.6
Dibenzo(a,h)anthracene	1000	0.33	0.33	1.3
Indeno(1,2,3-cd)pyrene	8.2	0.5	0.5	6.7

SAMPLE ID:	NY-RESGW	NY-RESRR	NY-UNRES	PWSB-42 (5-7)
LAB ID:				L2034620-08
COLLECTION DATE:				8/24/2020
Semivolatile Organic Compounds Units: mg/kg				Conc
Benzo(a)anthracene	1	1	1	3.6
Benzo(a)pyrene	22	1	1	3.5
Benzo(b)fluoranthene	1.7	1	1	4.1
Benzo(k)fluoranthene	1.7	3.9	0.8	1.4
Chrysene	1	3.9	1	3.3
Dibenzo(a,h)anthracene	1000	0.33	0.33	0.45
Indeno(1,2,3-cd)pyrene	8.2	0.5	0.5	2.3

SAMPLE ID:	NY-RESGW	NY-RESRR	NY-UNRES	PWSB-41 (16-18)
LAB ID:				L2034620-11
COLLECTION DATE:				8/24/2020
Semivolatile Organic Compounds Units: mg/kg				Conc
Benzo(a)anthracene	1	1	1	10
Benzo(a)pyrene	22	1	1	21
Benzo(b)fluoranthene	1.7	1	1	23
Benzo(k)fluoranthene	1.7	3.9	0.8	3.1
Chrysene	1	3.9	1	8.4
Dibenzo(a,h)anthracene	1000	0.33	0.33	2.5
Indeno(1,2,3-cd)pyrene	8.2	0.5	0.5	11

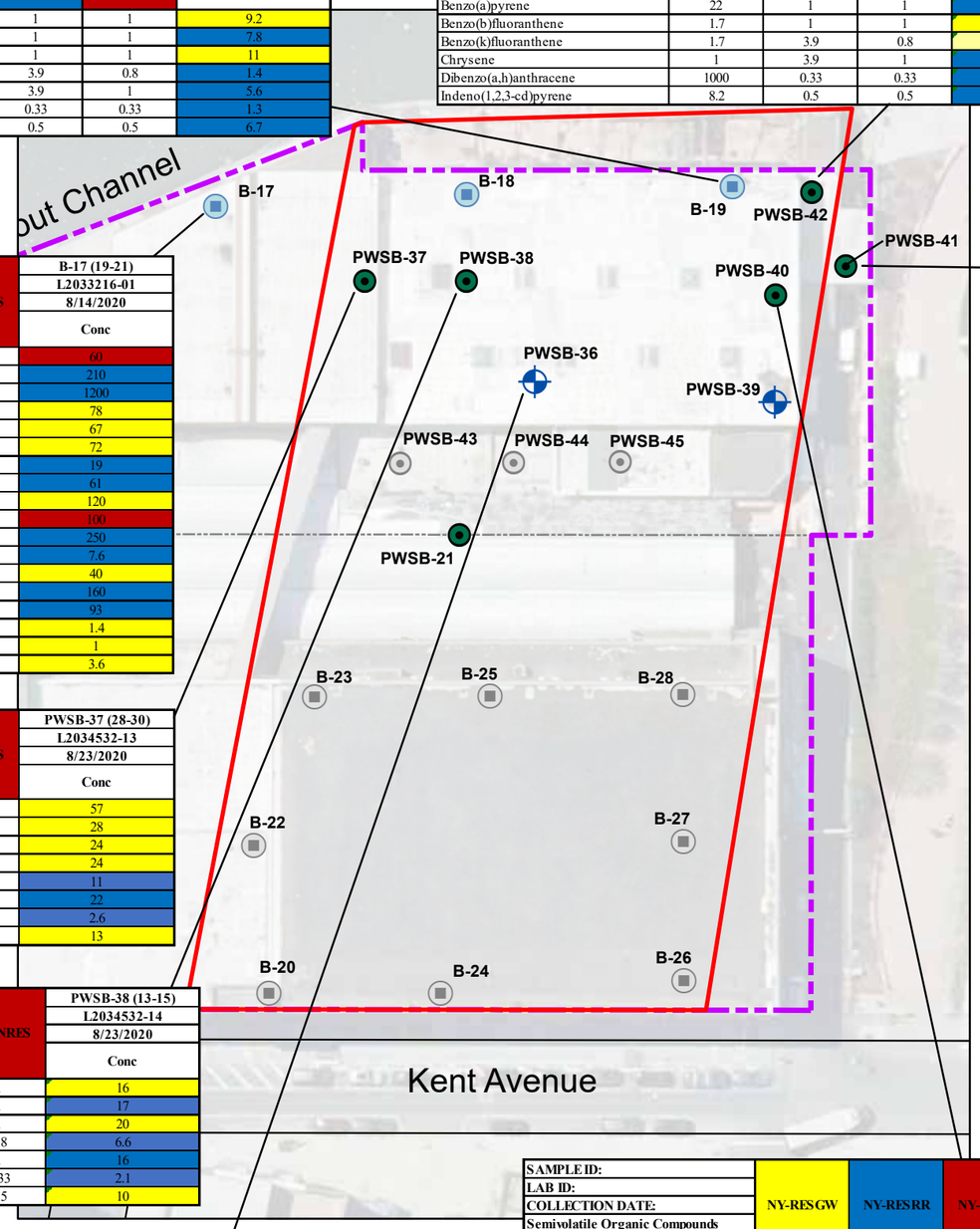
SAMPLE ID:	NY-RESGW	NY-RESRR	NY-UNRES	B-17 (19-21)
LAB ID:				L2033216-01
COLLECTION DATE:				8/14/2020
Semivolatile Organic Compounds Units: mg/kg				Conc
Acenaphthene	98	100	20	60
Fluoranthene	1000	100	100	210
Naphthalene	12	100	12	1200
Benzo(a)anthracene	1	1	1	78
Benzo(a)pyrene	22	1	1	67
Benzo(b)fluoranthene	1.7	1	1	72
Benzo(k)fluoranthene	1.7	3.9	0.8	19
Chrysene	1	3.9	1	61
Anthracene	1000	100	100	120
Fluorene	386	100	30	100
Phenanthrene	1000	100	100	250
Dibenzo(a,h)anthracene	1000	0.33	0.33	7.6
Indeno(1,2,3-cd)pyrene	8.2	0.5	0.5	40
Pyrene	1000	100	100	160
Dibenzofuran	210	59	7	93
Phenol	0.33	100	0.33	1.4
2-Methylphenol	0.33	100	0.33	1
3-Methylphenol/4-Methylphenol	0.33	100	0.33	3.6

SAMPLE ID:	NY-RESGW	NY-RESRR	NY-UNRES	PWSB-37 (28-30)
LAB ID:				L2034532-13
COLLECTION DATE:				8/23/2020
Semivolatile Organic Compounds Units: mg/kg				Conc
Naphthalene	12	100	12	57
Benzo(a)anthracene	1	1	1	28
Benzo(a)pyrene	22	1	1	24
Benzo(b)fluoranthene	1.7	1	1	24
Benzo(k)fluoranthene	1.7	3.9	0.8	11
Chrysene	1	3.9	1	22
Dibenzo(a,h)anthracene	1000	0.33	0.33	2.6
Indeno(1,2,3-cd)pyrene	8.2	0.5	0.5	13

SAMPLE ID:	NY-RESGW	NY-RESRR	NY-UNRES	PWSB-38 (13-15)
LAB ID:				L2034532-14
COLLECTION DATE:				8/23/2020
Semivolatile Organic Compounds Units: mg/kg				Conc
Benzo(a)anthracene	1	1	1	16
Benzo(a)pyrene	22	1	1	17
Benzo(b)fluoranthene	1.7	1	1	20
Benzo(k)fluoranthene	1.7	3.9	0.8	6.6
Chrysene	1	3.9	1	16
Dibenzo(a,h)anthracene	1000	0.33	0.33	2.1
Indeno(1,2,3-cd)pyrene	8.2	0.5	0.5	10

SAMPLE ID:	NY-RESGW	NY-RESRR	NY-UNRES	PWSB-36 (5-7)
LAB ID:				L2034620-01
COLLECTION DATE:				8/24/2020
Semivolatile Organic Compounds Units: mg/kg				Conc
Indeno(1,2,3-cd)pyrene	8.2	0.5	0.5	0.52

SAMPLE ID:	NY-RESGW	NY-RESRR	NY-UNRES	PWSB-40 (2-4)
LAB ID:				L2034620-05
COLLECTION DATE:				8/24/2020
Semivolatile Organic Compounds Units: mg/kg				Conc
Benzo(a)anthracene	1	1	1	11
Benzo(a)pyrene	22	1	1	9.2
Benzo(b)fluoranthene	1.7	1	1	13
Benzo(k)fluoranthene	1.7	3.9	0.8	3.7
Chrysene	1	3.9	1	9
Dibenzo(a,h)anthracene	1000	0.33	0.33	1.5
Indeno(1,2,3-cd)pyrene	8.2	0.5	0.5	6.7



Notes:

NY-RESGW: New York NYCRR Part 375 Groundwater Criteria, New York Restricted use Criteria per 6 NYCRR Part 375 Environmental Remediation Programs, effective December 14, 2006.

NY-RESRR: New York NYCRR Part 375 Restricted-Residential Criteria, New York Restricted use Criteria per 6 NYCRR Part 375 Environmental Remediation Programs, effective December 14, 2006.

NY-UNRES: New York NYCRR Part 375 New York Unrestricted use Criteria per 6 NYCRR Part 375 Environmental Remediation Programs, effective December 14, 2006.

Cells highlighted in yellow indicate a concentration above the NY-RESGW

Cells highlighted in blue indicate a concentration above the NY-RESRR

Cells highlighted in red indicate a concentration aboe the NY-UNRES

All results are shown in milligrams per kilogram (mg/kg)

Legend

- Geotechnical Borings
- Soil Boring Location
- Soil Boring/Groundwater Grab Sample Location
- Approximate Former MGP Boundary
- Site Boundary
- Lot Line

0 30 60 120 Feet

Service Layer Credits: NYS ITS GIS Program Office

Site

470 Kent Avenue Brooklyn, New York Block 2134, Lots 1 & 150

Tenen Environmental, LLC
121 West 27th Street
Suite 702
New York, NY 10001
O: (646) 606-2332
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Drawn By: LM
Checked By: MC
Date: September 2021
Scale: As Noted

Drawing Title: **Semivolatile Organic Compounds in Soil - Former MGP Portion**

Drawing No: **Figure 4A**

SAMPLE ID:	NYRESGW	NY-RESRR	NY-UNRES	BSB-17 (0-3)		BSB-17 (0-3)		BSB-17 (8-9)		BSB-17 (14-15)		BSB-17 (18-20)	
LAB ID:				L1523673-06		L1523673-06 R1		L1523673-15		L1523673-05		L1523673-16	
COLLECTION DATE:				9/22/2015		9/22/2015		9/22/2015		9/22/2015		9/22/2015	
Semivolatile Organic Compounds Units: mg/kg				Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q
Acenaphthene	98	100	20	0.27		0.56	J	0.089	J	120		0.2	J
Fluoranthene	1000	100	100	6.4		8.9		3.8		1600		11	
Naphthalene	12	100	12	0.071	J	0.3	U	0.13	J	3400		0.53	
Benzo(a)anthracene	1	1	1	2.6		4.1		1.5		560		6.4	
Benzo(a)pyrene	22	1	1	2		3.6		1.6		440		4.4	
Benzo(b)fluoranthene	1.7	1	1	2.1		4.4		1.7		550		3	
Benzo(k)fluoranthene	1.7	3.9	0.8	1.4		1.6		1.8		290		3.9	
Chrysene	1	3.9	1	2.3		3.6		1.8		460		5.4	
Acenaphthylene	107	100	100	0.18		0.19	J	0.38		240		0.58	
Anthracene	1000	100	100	1.1		1.9		0.73		670		4.6	
Benzo(ghi)perylene	1000	100	100	1.4		2.3		1.1		270		2.2	
Fluorene	386	100	30	0.34		0.62	J	0.13	J	510		0.91	
Phenanthrene	1000	100	100	4.7		7.6		0.89		2200		8.6	
Dibenzo(a,h)anthracene	1000	0.33	0.33	0.34		0.57		0.43		80		0.81	
Indeno(1,2,3-cd)Pyrene	8.2	0.5	0.5	1.4		2.7		1.2		300		2.3	
Pyrene	1000	100	100	5.2		7.6		3.9		1200		10	
Dibenzofuran	210	59	7	0.2		0.4	J	0.091	J	520		0.18	J
3-Methylphenol/4-Methylphenol	0.33	100	0.33	0.061	U	0.3	U	0.065	U	3.9	J	0.31	J

SAMPLE ID:	NYRESGW	NY-RESRR	NY-UNRES	BMW-6 (24-24.5)		BMW-6 (21-23) DUP		BMW-6 (21-23)	
LAB ID:				L1529203-06		L1529203-09		L1529203-08	
COLLECTION DATE:				11/9/2015		11/9/2015		11/9/2015	
Semivolatile Organic Compounds Units: mg/kg				Conc	Q	Conc	Q	Conc	Q
Acenaphthene	98	100	20	120		62		0.34	
Fluoranthene	1000	100	100	250		140		1.7	
Naphthalene	12	100	12	1100		460		38	
Benzo(a)anthracene	1	1	1	80		46		0.86	
Benzo(a)pyrene	22	1	1	78		45		0.88	
Benzo(b)fluoranthene	1.7	1	1	85		47		1	
Benzo(k)fluoranthene	1.7	3.9	0.8	34		13		0.38	
Chrysene	1	3.9	1	68		55		1	
Fluorene	386	100	30	89		51		0.38	
Phenanthrene	1000	100	100	370		190		1.6	
Dibenzo(a,h)anthracene	1000	0.33	0.33	8.4	J	5.3		0.093	J
Indeno(1,2,3-cd)Pyrene	8.2	0.5	0.5	47		25		0.39	
Pyrene	1000	100	100	200		110		1.6	
Dibenzofuran	210	59	7	90		46		0.33	
Phenol	0.33	100	0.33	9	U	0.82		0.14	J
3-Methylphenol/4-Methylphenol	0.33	100	0.33	9.9	U	0.82	J	0.088	U

SAMPLE ID:	NY-RESGW	NY-RESRR	NY-UNRES	BTP-4 (0-2)	BTP-4 (2-3)
LAB ID:				L2034532-08	L2034532-09
COLLECTION DATE:				8/23/2020	8/23/2020
Semivolatile Organic Compounds Units: mg/kg				Conc	Conc
Benzo(a)anthracene	1	1	1	48	28
Benzo(a)pyrene	22	1	1	58	38
Benzo(b)fluoranthene	1.7	1	1	66	43
Benzo(k)fluoranthene	1.7	3.9	0.8	24	15
Chrysene	1	3.9	1	46	25
Dibenzo(a,h)anthracene	1000	0.33	0.33	9.2	6.1
Indeno(1,2,3-cd)pyrene	8.2	0.5	0.5	40	26

SAMPLE ID:	NYRESGW	NY-RESRR	NY-UNRES	BSB-15 (18-20)		BSB-15 (21-22)	
LAB ID:				L1523673-09		L1523673-01	
COLLECTION DATE:				9/22/2015		9/22/2015	
Semivolatile Organic Compounds Units: mg/kg				Conc	Q	Conc	Q
Naphthalene	12	100	12	7.9		36	
Benzo(a)anthracene	1	1	1	10	E	14	
Benzo(a)pyrene	22	1	1	7.9		8.4	
Benzo(b)fluoranthene	1.7	1	1	7.6		8	
Benzo(k)fluoranthene	1.7	3.9	0.8	5.6		5.6	
Chrysene	1	3.9	1	8.7		9	
Dibenzo(a,h)anthracene	1000	0.33	0.33	1.5		1.5	
Indeno(1,2,3-cd)Pyrene	8.2	0.5	0.5	4.2		4.8	
Dibenzofuran	210	59	7	4.5		10	
Phenol	0.33	100	0.33	0.23	J	0.42	U
3-Methylphenol/4-Methylphenol	0.33	100	0.33	0.46		0.46	U

SAMPLE ID:	NYRESGW	NY-RESRR	NY-UNRES	BMW7 (15-16)		BMW7 (16-17)		BMW7 (16-17)	
LAB ID:				L1524836-10		L1524836-09		L1524836-11	
COLLECTION DATE:				10/1/2015		10/1/2015		10/1/2015	
Semivolatile Organic Compounds Units: mg/kg				Conc	Q	Conc	Q	Conc	Q
Benzo(a)anthracene	1	1	1	2.4		3.9		0.21	
Benzo(a)pyrene	22	1	1	1.8		2.6		0.25	
Benzo(b)fluoranthene	1.7	1	1	2.3		3.6		0.26	
Benzo(k)fluoranthene	1.7	3.9	0.8	0.92		1.3		0.11	J
Chrysene	1	3.9	1	2.4		4.2		0.19	
Dibenzo(a,h)anthracene	1000	0.33	0.33	0.22		0.37		0.04	U
Indeno(1,2,3-cd)Pyrene	8.2	0.5	0.5	0.79		1.2		0.14	J

SAMPLE ID:	NY-RESGW	NY-RESRR	NY-UNRES	BSB-12 (10.5-12)
LAB ID:				L2034532-05
COLLECTION DATE:				8/23/2020
Semivolatile Organic Compounds Units: mg/kg				Conc
Naphthalene	12	100	12	54
Benzo(a)anthracene	1	1	1	4.3
Benzo(a)pyrene	22	1	1	4.3
Benzo(b)fluoranthene	1.7	1	1	4.3
Benzo(k)fluoranthene	1.7	3.9	0.8	1.6
Chrysene	1	3.9	1	3.4
Dibenzo(a,h)anthracene	1000	0.33	0.33	0.39
Indeno(1,2,3-cd)pyrene	8.2	0.5	0.5	2.3

SAMPLE ID:	NYRESGW	NY-RESRR	NY-UNRES	BSB8 (0-2)	
LAB ID:				L1523999-01	
COLLECTION DATE:				9/24/2015	
Semivolatile Organic Compounds Units: mg/kg				Conc	Q
Benzo(a)anthracene	1	1	1	2.4	
Benzo(a)pyrene	22	1	1	2.2	
Benzo(b)fluoranthene	1.7	1	1	2.9	
Benzo(k)fluoranthene	1.7	3.9	0.8	1.1	
Chrysene	1	3.9	1	2.4	
Dibenzo(a,h)anthracene	1000	0.33	0.33	0.34	
Indeno(1,2,3-cd)Pyrene	8.2	0.5	0.5	1.4	

SAMPLE ID:	NY-RESGW	NY-RESRR	NY-UNRES	BTP-3 (3-4)
LAB ID:				L2034532-07
COLLECTION DATE:				8/23/2020
Semivolatile Organic Compounds Units: mg/kg				Conc
Benzo(a)anthracene	1	1	1	13
Benzo(a)pyrene	22	1	1	14
Benzo(b)fluoranthene	1.7	1	1	16
Benzo(k)fluoranthene	1.7	3.9	0.8	5.8
Chrysene	1	3.9	1	13
Dibenzo(a,h)anthracene	1000	0.33	0.33	1.9
Indeno(1,2,3-cd)pyrene	8.2	0.5	0.5	8

SAMPLE ID:	NY-RESGW	NY-RESRR	NY-UNRES	BSB-10 (0-2)
LAB ID:				L2034532-01
COLLECTION DATE:				8/23/2020
Semivolatile Organic Compounds Units: mg/kg				Conc
Benzo(a)anthracene	1	1	1	3.5
Benzo(a)pyrene	22	1	1	3.9
Benzo(b)fluoranthene	1.7	1	1	4.5
Benzo(k)fluoranthene	1.7	3.9	0.8	1.5
Chrysene	1	3.9	1	3.6
Dibenzo(a,h)anthracene	1000	0.33	0.33	0.48
Indeno(1,2,3-cd)pyrene	8.2	0.5	0.5	2.3

SAMPLE ID:	NYRESGW	NY-RESRR	NY-UNRES	BMW2 (7-9)		BMW2 (11-13)	
LAB ID:				L1524836-05		L1524836-06	
COLLECTION DATE:				10/1/2015		10/1/2015	
Semivolatile Organic Compounds Units: mg/kg				Conc	Q	Conc	Q
Acenaphthene	98	100	20	340		0.091	J
Fluoranthene	1000	100	100	2200		0.64	
Naphthalene	12	100	12	630		0.24	
Benzo(a)anthracene	1	1	1	940		0.27	
Benzo(a)pyrene	22	1	1	780		0.21	
Benzo(b)fluoranthene	1.7	1	1	960		0.26	
Benzo(k)fluoranthene	1.7	3.9	0.8	380		0.092	J
Chrysene	1	3.9	1	920		0.26	
Anthracene	1000	100	100	770		0.21	
Benzo(ghi)perylene	1000	100	100	450		0.12	J
Fluorene	386	100	30	460		0.16	J
Phenanthrene	1000	100	100	2800		0.92	
Dibenzo(a,h)anthracene	1000	0.33	0.33	120		0.034	J
Indeno(1,2,3-cd)Pyrene	1000	0.5	0.5	450		0.12	J
Pyrene	1000	100	100	2000		0.56	
Dibenzofuran	210	59	7	310		0.097	J

SAMPLE ID:	NYRESGW	NY-RESRR	NY-UNRES	BSB-9 (0-2)		BSB9 (0-2)		8BSB9 (7-8)	
LAB ID:				L1523673-08		L1524836-01		L1524836-02	
COLLECTION DATE:				9/22/2015		9/30/2015		9/30/2015	
Semivolatile Organic Compounds Units: mg/kg				Conc	Q	Conc	Q	Conc	Q
Benzo(a)anthracene	1	1	1	6.2		0.91		0.27	
Benzo(a)pyrene	22	1	1	5.6		0.92		0.38	
Benzo(b)fluoranthene	1.7	1	1	7.3		1.2		0.44	
Benzo(k)fluoranthene	1.7	3.9	0.8	2.4		0.48		0.16	
Chrysene	1	3.9	1	5.2		0.86		0.26	
Dibenzo(a,h)anthracene	1000	0.33	0.33	0.8	J	0.15		0.07	J
Indeno(1,2,3-cd)Pyrene	8.2	0.5	0.5	4.4		0.6		0.28	

Notes:

NY-RESGW: New York NYCRR Part 375 Groundwater Criteria, New York Restricted use Criteria per 6 NYCRR Part 375 Environmental Remediation Programs, effective December 14, 2006.

NY-RESRR: New York NYCRR Part 375 Restricted-Residential Criteria, New York Restricted use Criteria per 6 NYCRR Part 375 Environmental Remediation Programs, effective December 14, 2006.

NY-UNRES: New York NYCRR Part 375 New York Unrestricted use Criteria Criteria per 6 NYCRR Part 375 Environmental Remediation Programs, effective December 14, 2006.

Cells highlighted in yellow indicate a concentration above the NY-RESGW

Cells highlighted in blue indicate a concentration above the NY-RESRR

Cells highlighted in red indicate a concentration aboe the NY-UNRES

All results are shown in milligrams per kilogram (mg/kg)

Legend

- BCP Test Pit
- Tenen BCP Boring
- Groundwater Monitoring Well Location
- Approximate Former MGP Boundary
- Site Boundary
- Lot Line
- 2018 Orthoimagery Boundary

0 30 60 120 Feet

Service Layer Credits: NYS ITS GIS

470 Kent Avenue
Brooklyn, New York
Block 2134, Lots 1 & 150

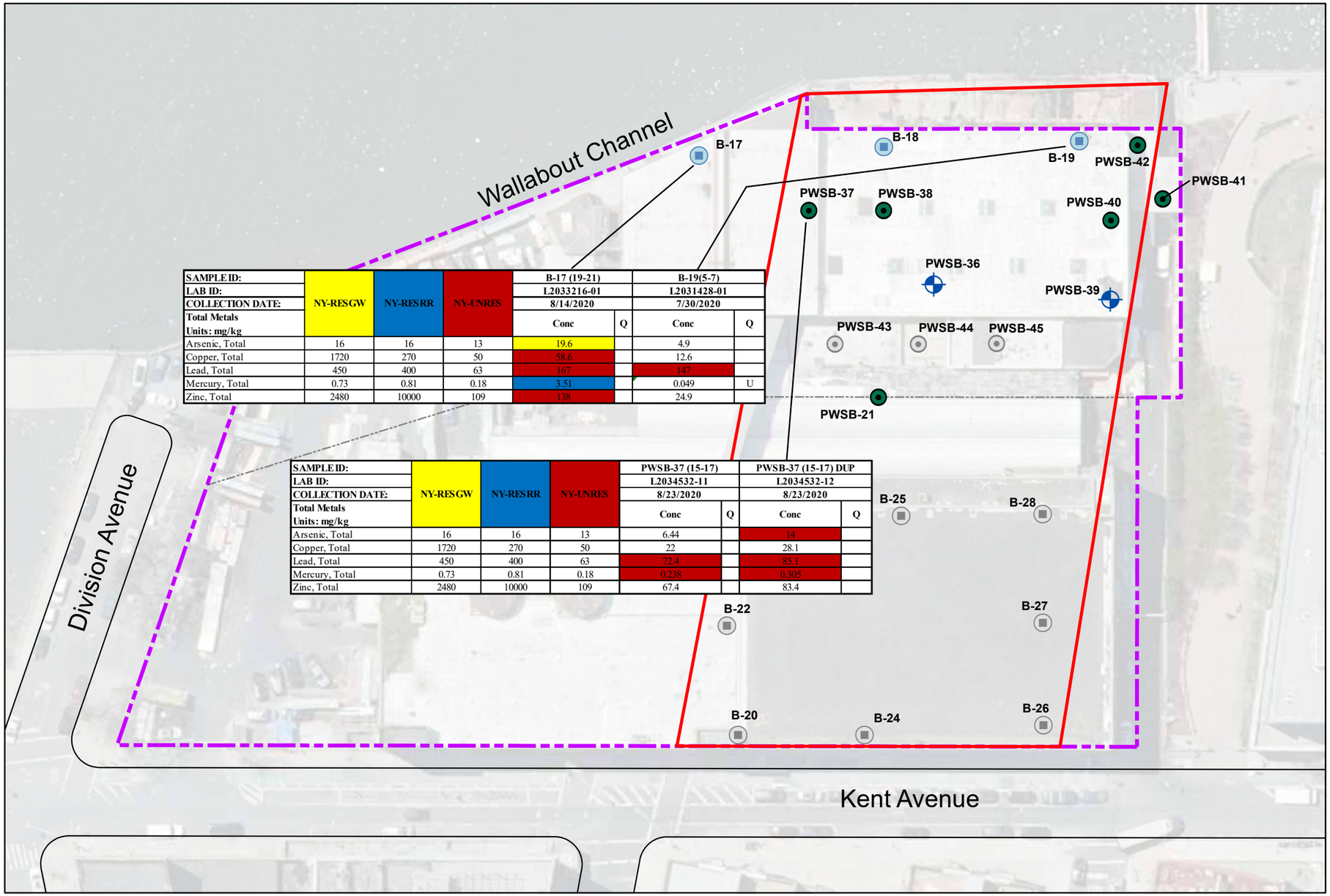
Site

Tenen Environmental, LLC
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Drawn By: LM
Checked By: MC
Date: July 2023
Scale: As Noted

Drawing Title: **Semivolatile Organic Compound Exceedances in Soil - BCP Portion**

Drawing No: **Figure 4**



SAMPLE ID:	NY-RESGW	NY-RESRR	NY-UNRES	B-17 (19-21)		B-19(5-7)	
LAB ID:				L2033216-01		L2031428-01	
COLLECTION DATE:				8/14/2020		7/30/2020	
Total Metals Units: mg/kg				Conc	Q	Conc	Q
Arsenic, Total	16	16	13	19.6		4.9	
Copper, Total	1720	270	50	58.6		12.6	
Lead, Total	450	400	63	167		147	
Mercury, Total	0.73	0.81	0.18	3.51		0.049	U
Zinc, Total	2480	10000	109	138		24.9	

SAMPLE ID:	NY-RESGW	NY-RESRR	NY-UNRES	PWSB-37 (15-17)		PWSB-37 (15-17) DUP	
LAB ID:				L2034532-11		L2034532-12	
COLLECTION DATE:				8/23/2020		8/23/2020	
Total Metals Units: mg/kg				Conc	Q	Conc	Q
Arsenic, Total	16	16	13	6.44		14	
Copper, Total	1720	270	50	22		28.1	
Lead, Total	450	400	63	72.4		85.1	
Mercury, Total	0.73	0.81	0.18	0.238		0.305	
Zinc, Total	2480	10000	109	67.4		83.4	

Notes:

NY-RESGW: New York NYCRR Part 375 Groundwater Criteria, New York Restricted use Criteria per 6 NYCRR Part 375 Environmental Remediation Programs, effective December 14, 2006.

NY-RESRR: New York NYCRR Part 375 Restricted-Residential Criteria, New York Restricted use Criteria per 6 NYCRR Part 375 Environmental Remediation Programs, effective December 14, 2006.

NY-UNRES: New York NYCRR Part 375 New York Unrestricted use Criteria Criteria per 6 NYCRR Part 375 Environmental Remediation Programs, effective December 14, 2006.

Cells highlighted in yellow indicate a concentration above the NY-RESGW

Cells highlighted in blue indicate a concentration above the NY-RESRR

Cells highlighted in red indicate a concentration aboe the NY-UNRES

Q = Laboratory Data Qualifier

MDL = Maximum Detection Limit

For U qualified entries, the MDL is shown

U = Not detected at or above the MDL

DUP = Designation for duplicate sample

All results and MDLs are shown in milligrams per kilogram (mg/kg)

Legend

- Geotechnical Borings
- Soil Boring Location
- Soil Boring/Groundwater Grab Sample Location
- Approximate Former MGP Boundary
- Site Boundary
- Lot Line

0 30 60 120 Feet

Service Layer Credits: NYS ITS GIS Program Office

Site

470 Kent Avenue
Brooklyn, New York
Block 2134, Lots 1 & 150

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Drawn By: LM
Checked By: MC
Date: September 2021
Scale: As Noted

Drawing Title: **Metals in Soil - Former MGP Portion**

Drawing No: **Figure 5A**

SAMPLE ID:	NYRESGW	NY-RESRR	NY-UNRES	BSB-17 (0-3)		BSB-17 (8-9)		BSB-17 (14-15)		BSB-17 (18-20)	
LAB ID:				L1523673-06		L1523673-15		L1523673-05		L1523673-16	
COLLECTION DATE:				9/22/2015		9/22/2015		9/22/2015		9/22/2015	
Pesticides Units: mg/kg				Conc	Q	Conc	Q	Conc	Q	Conc	Q
Delta-BHC	0.25	100	0.04	0.000348	U	0.000365	U	0.0926		0.00587	U
4,4'-DDD	14	13	0.0033	0.00891	PI	0.00642		0.0156	U	0.0107	U
4,4'-DDT	136	7.9	0.0033	0.00917		0.00348	JPI	1.36		0.0241	U
Metals											
Arsenic, Total	16	16	13	8.1		15		12		9.8	
Barium, Total	820	400	350	370		90		24		80	
Copper, Total	1720	270	50	32		59		24		44	
Lead, Total	450	400	63	370		130		44		110	
Mercury, Total	0.73	0.81	0.18	0.32		1.3		0.3		0.87	
Zinc, Total	2480	10000	109	240		100		36		120	

SAMPLE ID:	NYRESGW	NY-RESRR	NY-UNRES	BSB-16 (8-9)		BSB-16 (10-12)	
LAB ID:				L1523673-07		L1523673-13	
COLLECTION DATE:				9/22/2015		9/22/2015	
Metals Units: mg/kg				Conc	Q	Conc	Q
Lead, Total	450	400	63	78		59	
Nickel, Total	130	310	30	30		26	

SAMPLE ID:	NYRESGW	NY-RESRR	NY-UNRES	BMW-6 (21-23)		BMW-6 (21-23) DUP		BMW-6 (24-24.5)	
LAB ID:				L1529203-08		L1529203-09		L1529203-06	
COLLECTION DATE:				11/9/2015		11/9/2015		11/9/2015	
Pesticides Units: mg/kg				Conc	Q	Conc	Q	Conc	Q
Delta-BHC	0.25	100	0.04	0.00563	U	0.0803		0.0005	U
Lindane	0.1	1.3	0.1	0.0626		0.12	P	0.000476	U
Metals									
Arsenic, Total	16	16	13	18		20		17	
Copper, Total	1720	270	50	52		56		56	
Lead, Total	450	400	63	170		140		210	
Mercury, Total	0.73	0.81	0.18	1		2		0.98	
Zinc, Total	2480	10000	109	120		120		120	

SAMPLE ID:	NYRESGW	NY-RESRR	NY-UNRES	BMW7 (15-16)		BMW7 (16-17)	
LAB ID:				L1524836-10		L1524836-09	
COLLECTION DATE:				10/1/2015		10/1/2015	
Polychlorinated Biphenyls Units: mg/kg				Conc	Q	Conc	Q
Aroclor 1254	3.2	1	0.1	0.0102	J	0.164	
Metals							
Arsenic, Total	16	16	13	6.8		16	
Copper, Total	1720	270	50	42		84	
Lead, Total	450	400	63	80		90	
Mercury, Total	0.73	0.81	0.18	1.3		6.7	
Zinc, Total	2480	10000	109	82		180	

SAMPLE ID:	NYRESGW	NY-RESRR	NY-UNRES	BSB-15 (18-20)		BSB-15 (21-22)	
LAB ID:				L1523673-09		L1523673-01	
COLLECTION DATE:				9/22/2015		9/22/2015	
Metals Units: mg/kg				Conc	Q	Conc	Q
Arsenic, Total	16	16	13	12		14	
Copper, Total	1720	270	50	82		47	
Lead, Total	450	400	63	260		130	
Mercury, Total	0.73	0.81	0.18	3.8		1.6	
Zinc, Total	2480	10000	109	180		120	

SAMPLE ID:	NYRESGW	NY-RESRR	NY-UNRES	BSB-13 (15-16)		BSB-13 (19.5-20)	
LAB ID:				L1523673-10		L1523673-02	
COLLECTION DATE:				9/22/2015		9/22/2015	
Pesticides Units: mg/kg				Conc	Q	Conc	Q
4,4'-DDT	17	7.9	0.0033	0.00339	JPI	0.00174	U
Polychlorinated Biphenyls							
Aroclor 1260	3.2	1	0.1	0.102		0.00334	U
Metals							
Arsenic, Total	16	16	13	15		6.8	
Barium, Total	820	400	350	500		100	
Copper, Total	1720	270	50	130		28	
Lead, Total	450	400	63	540		210	
Mercury, Total	0.73	0.81	0.18	1.4		0.27	
Zinc, Total	2480	10000	109	460		91	

SAMPLE ID:	NYRESGW	NY-RESRR	NY-UNRES	BMW-5 (9-11)		BMW-5 (16-17)	
LAB ID:				L1529203-03		L1529203-04	
COLLECTION DATE:				11/9/2015		11/9/2015	
Metals Units: mg/kg				Conc	Q	Conc	Q
Arsenic, Total	16	16	13	18		9.7	
Copper, Total	1720	270	50	55		23	
Lead, Total	450	400	63	130		20	
Mercury, Total	0.73	0.81	0.18	4.4		0.09	

SAMPLE ID:	NYRESGW	NY-RESRR	NY-UNRES	BMW3 (8-10)		BMW3 (14-15)	
LAB ID:				L1524836-07		L1524836-08	
COLLECTION DATE:				10/1/2015		10/1/2015	
Metals Units: mg/kg				Conc	Q	Conc	Q
Arsenic, Total	16	16	13	7		16	
Copper, Total	1720	270	50	20		58	
Lead, Total	450	400	63	150		250	
Mercury, Total	0.73	0.81	0.18	0.24		0.47	
Zinc, Total	2480	10000	109	53		120	

SAMPLE ID:	NYRESGW	NY-RESRR	NY-UNRES	BMW-4 (11-14)		BMW-4 (14-15)	
LAB ID:				L1529203-01		L1529203-02	
COLLECTION DATE:				11/9/2015		11/9/2015	
Metals Units: mg/kg				Conc	Q	Conc	Q
Arsenic, Total	16	16	13	17		9.9	
Copper, Total	1720	270	50	76		36	
Lead, Total	450	400	63	320		31	
Mercury, Total	0.73	0.81	0.18	0.26		0.12	

SAMPLE ID:	NYRESGW	NY-RESRR	NY-UNRES	BSB8 (0-2)		BSB8 N1 (7-8)	
LAB ID:				L1523999-01		L1523999-02	
COLLECTION DATE:				9/24/2015		9/24/2015	
Pesticides Units: mg/kg				Conc	Q	Conc	Q
4,4'-DDE	17	8.9	0.0033	0.00474	P	0.000442	U
4,4'-DDT	136	7.9	0.0033	0.00694	P	0.00154	U
Metals							
Copper, Total	1720	270	50	140		9.9	
Lead, Total	450	400	63	260		22	
Mercury, Total	0.73	0.81	0.18	0.44		0.12	

SAMPLE ID:	NYRESGW	NY-RESRR	NY-UNRES	BMW2 (7-9)		BMW2 (11-13)	
LAB ID:				L1524836-05		L1524836-06	
COLLECTION DATE:				10/1/2015		10/1/2015	
Metals Units: mg/kg				Conc	Q	Conc	Q
Arsenic, Total	16	16	13	24		4	
Copper, Total	1720	270	50	270		13	
Lead, Total	450	400	63	1000		0.17	U
Mercury, Total	0.73	0.81	0.18	0.63		0.02	J
Zinc, Total	2480	10000	109	1700		22	

Wallabout Channel

Division Ave.

Kent Avenue

BSB-16

BSB-17

BSB-15

BSB-13

BSB-8

BMW-2

BMW-3

BMW-4

BMW-5

BMW-6

BMW-7

Notes:

NY-RESGW: New York NYCRR Part 375 Groundwater Criteria, New York Restricted use Criteria per 6 NYCRR Part 375 Environmental Remediation Programs, effective December 14, 2006.

NY-RESRR: New York NYCRR Part 375 Restricted-Residential Criteria, New York Restricted use Criteria per 6 NYCRR Part 375 Environmental Remediation Programs, effective December 14, 2006.

NY-UNRES: New York NYCRR Part 375 New York Unrestricted use Criteria Criteria per 6 NYCRR Part 375 Environmental Remediation Programs, effective December 14, 2006.

Cells highlighted in yellow indicate a concentration above the NY-RESGW

Cells highlighted in blue indicate a concentration above the NY-RESRR

Cells highlighted in red indicate a concentration aboe the NY-UNRES

All results are shown in milligrams per kilogram (mg/kg)

P=The RPD between the results for the two colmns exceeds the method-specified criteria.

E=Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

Legend

- Tenen BCP Boring
- Groundwater Monitoring Well Location
- Approximate Former MGP Boundary
- Site Boundary
- Lot Line

0 30 60 120 Feet

Service Layer Credits: NYS ITS GIS Program Office

Site

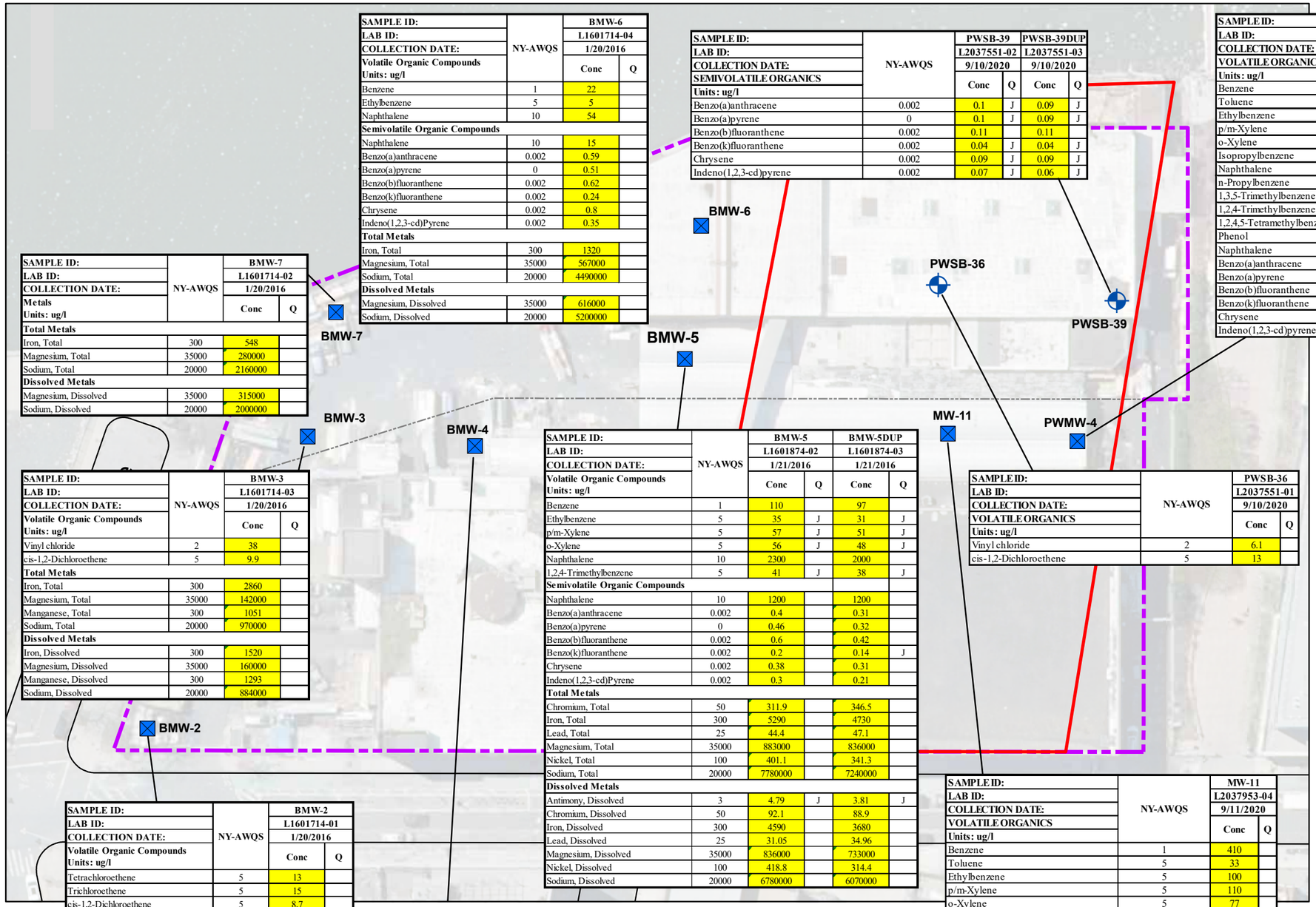
470 Kent Avenue
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Block 2134, Lots 1 & 150

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Drawn By	Checked By	Date	Scale
LM	MC	September 2021	As Noted

Drawing Title: **Metals in Soil**

Drawing No: **Figure 5**



SAMPLE ID:	NY-AWQS	BMW-6	
LAB ID:		L1601714-04	
COLLECTION DATE:		1/20/2016	
Volatile Organic Compounds Units: ug/l		Conc	Q
Benzene	1	22	
Ethylbenzene	5	5	
Naphthalene	10	54	
Semivolatile Organic Compounds			
Naphthalene	10	15	
Benzo(a)anthracene	0.002	0.59	
Benzo(a)pyrene	0	0.51	
Benzo(b)fluoranthene	0.002	0.62	
Benzo(k)fluoranthene	0.002	0.24	
Chrysene	0.002	0.8	
Indeno(1,2,3-cd)Pyrene	0.002	0.35	
Total Metals			
Iron, Total	300	1320	
Magnesium, Total	35000	567000	
Sodium, Total	20000	4490000	
Dissolved Metals			
Magnesium, Dissolved	35000	616000	
Sodium, Dissolved	20000	5200000	

SAMPLE ID:	NY-AWQS	PWSB-39		PWSB-39DUP	
LAB ID:		L2037551-02		L2037551-03	
COLLECTION DATE:		9/10/2020		9/10/2020	
SEMIVOLATILE ORGANICS					
Units: ug/l		Conc	Q	Conc	Q
Benzo(a)anthracene	0.002	0.1	J	0.09	J
Benzo(a)pyrene	0	0.1	J	0.09	J
Benzo(b)fluoranthene	0.002	0.11		0.11	
Benzo(k)fluoranthene	0.002	0.04	J	0.04	J
Chrysene	0.002	0.09	J	0.09	J
Indeno(1,2,3-cd)pyrene	0.002	0.07	J	0.06	J

SAMPLE ID:	NY-AWQS	PMW-04	
LAB ID:		L2037953-03	
COLLECTION DATE:		9/11/2020	
VOLATILE ORGANICS			
Units: ug/l		Conc	Q
Benzene	1	2500	
Toluene	5	140	
Ethylbenzene	5	490	
p/m-Xylene	5	1200	
o-Xylene	5	380	
Isopropylbenzene	5	22	J
Naphthalene	10	160	
n-Propylbenzene	5	62	
1,3,5-Trimethylbenzene	5	83	
1,2,4-Trimethylbenzene	5	370	
1,2,4,5-Tetramethylbenzene	5	26	J
Phenol	1	24	
Naphthalene	10	80	
Benzo(a)anthracene	0.002	0.16	
Benzo(a)pyrene	0	0.08	J
Benzo(b)fluoranthene	0.002	0.11	
Benzo(k)fluoranthene	0.002	0.04	J
Chrysene	0.002	0.14	
Indeno(1,2,3-cd)pyrene	0.002	0.05	J

SAMPLE ID:	NY-AWQS	BMW-7	
LAB ID:		L1601714-02	
COLLECTION DATE:		1/20/2016	
Metals Units: ug/l		Conc	Q
Total Metals			
Iron, Total	300	548	
Magnesium, Total	35000	280000	
Sodium, Total	20000	2160000	
Dissolved Metals			
Magnesium, Dissolved	35000	315000	
Sodium, Dissolved	20000	2000000	

SAMPLE ID:	NY-AWQS	BMW-3	
LAB ID:		L1601714-03	
COLLECTION DATE:		1/20/2016	
Volatile Organic Compounds Units: ug/l		Conc	Q
Vinyl chloride	2	38	
cis-1,2-Dichloroethene	5	9.9	
Total Metals			
Iron, Total	300	2860	
Magnesium, Total	35000	142000	
Manganese, Total	300	1051	
Sodium, Total	20000	970000	
Dissolved Metals			
Iron, Dissolved	300	1520	
Magnesium, Dissolved	35000	160000	
Manganese, Dissolved	300	1293	
Sodium, Dissolved	20000	884000	

SAMPLE ID:	NY-AWQS	BMW-5		BMW-5DUP	
LAB ID:		L1601874-02		L1601874-03	
COLLECTION DATE:		1/21/2016		1/21/2016	
Volatile Organic Compounds Units: ug/l		Conc	Q	Conc	Q
Benzene	1	110		97	
Ethylbenzene	5	35	J	31	J
p/m-Xylene	5	57	J	51	J
o-Xylene	5	56	J	48	J
Naphthalene	10	2300		2000	
1,2,4-Trimethylbenzene	5	41	J	38	J
Semivolatile Organic Compounds					
Naphthalene	10	1200		1200	
Benzo(a)anthracene	0.002	0.4		0.31	
Benzo(a)pyrene	0	0.46		0.32	
Benzo(b)fluoranthene	0.002	0.6		0.42	
Benzo(k)fluoranthene	0.002	0.2		0.14	J
Chrysene	0.002	0.38		0.31	
Indeno(1,2,3-cd)Pyrene	0.002	0.3		0.21	
Total Metals					
Chromium, Total	50	311.9		346.5	
Iron, Total	300	5290		4730	
Lead, Total	25	44.4		47.1	
Magnesium, Total	35000	883000		836000	
Nickel, Total	100	401.1		341.3	
Sodium, Total	20000	7780000		7240000	
Dissolved Metals					
Antimony, Dissolved	3	4.79	J	3.81	J
Chromium, Dissolved	50	92.1		88.9	
Iron, Dissolved	300	4590		3680	
Lead, Dissolved	25	31.05		34.96	
Magnesium, Dissolved	35000	836000		733000	
Nickel, Dissolved	100	418.8		314.4	
Sodium, Dissolved	20000	6780000		6070000	

SAMPLE ID:	NY-AWQS	PWSB-36	
LAB ID:		L2037551-01	
COLLECTION DATE:		9/10/2020	
VOLATILE ORGANICS			
Units: ug/l		Conc	Q
Vinyl chloride	2	6.1	
cis-1,2-Dichloroethene	5	13	

SAMPLE ID:	NY-AWQS	BMW-2	
LAB ID:		L1601714-01	
COLLECTION DATE:		1/20/2016	
Volatile Organic Compounds Units: ug/l		Conc	Q
Tetrachloroethene	5	13	
Trichloroethene	5	15	
cis-1,2-Dichloroethene	5	8.7	
Semivolatile Organic Compounds			
Benzo(a)anthracene	0.002	2.4	
Benzo(a)pyrene	0	2.4	
Benzo(b)fluoranthene	0.002	3.2	
Benzo(k)fluoranthene	0.002	1.2	
Chrysene	0.002	2.5	
Indeno(1,2,3-cd)Pyrene	0.002	1.8	
Total Metals			
Iron, Total	300	11600	
Lead, Total	25	165.3	
Sodium, Total	20000	63800	
Dissolved Metals			
Sodium, Dissolved	20000	89700	

SAMPLE ID:	NY-AWQS	BMW-4	
LAB ID:		L1601874-01	
COLLECTION DATE:		1/21/2016	
Volatile Organic Compounds Units: ug/l		Conc	Q
Benzene	1	2.5	
n-Propylbenzene	5	6.6	
Total Metals			
Iron, Total	300	12600	
Lead, Total	25	63.3	
Magnesium, Total	35000	266000	
Manganese, Total	300	333.7	
Sodium, Total	20000	2140000	
Dissolved Metals			
Magnesium, Dissolved	35000	342000	
Sodium, Dissolved	20000	1540000	

SAMPLE ID:	NY-AWQS	MW-11	
LAB ID:		L2037953-04	
COLLECTION DATE:		9/11/2020	
VOLATILE ORGANICS			
Units: ug/l		Conc	Q
Benzene	1	410	
Toluene	5	33	
Ethylbenzene	5	100	
p/m-Xylene	5	110	
o-Xylene	5	77	
Isopropylbenzene	5	12	
Naphthalene	10	920	E
1,3,5-Trimethylbenzene	5	9.2	
1,2,4-Trimethylbenzene	5	46	
Semivolatile Organic Compounds			
Phenol	1	2.8	J
Acenaphthene	20	23	
Naphthalene	10	480	
Benzo(a)anthracene	0.002	16	
Benzo(a)pyrene	0	24	
Benzo(b)fluoranthene	0.002	23	
Benzo(k)fluoranthene	0.002	7.5	
Chrysene	0.002	12	
Indeno(1,2,3-cd)pyrene	0.002	16	

Notes:
NY-AWQS = New York State Ambient Water Quality Standard
Cells highlighted in yellow indicate concentrations above the NY-AWQS
DUP = designation for duplicate sample
Q = Laboratory Data Qualifier
For U qualified entries, the MDL is shown
U = not detected at or above the MDL
For J qualified entries, the estimated concentration is shown
J = estimated value, indicating the detected value is below the RL, but above the MDL
E = Concentration of analyte exceeds the range of calibration curve and/or linear range of the instrument.
Results and MDL values are in micrograms per liter (µg/L)

Legend

- Groundwater Monitoring Well Location
- Soil Boring/Groundwater Grab Sample Location
- Lot Line
- Approximate Former MGP Boundary
- Site Boundary

0 30 60 120 Feet

Service Layer Credits: NYS ITS GIS Program Office

470 Kent Avenue Brooklyn, New York Block 2134, Lots 1 & 150

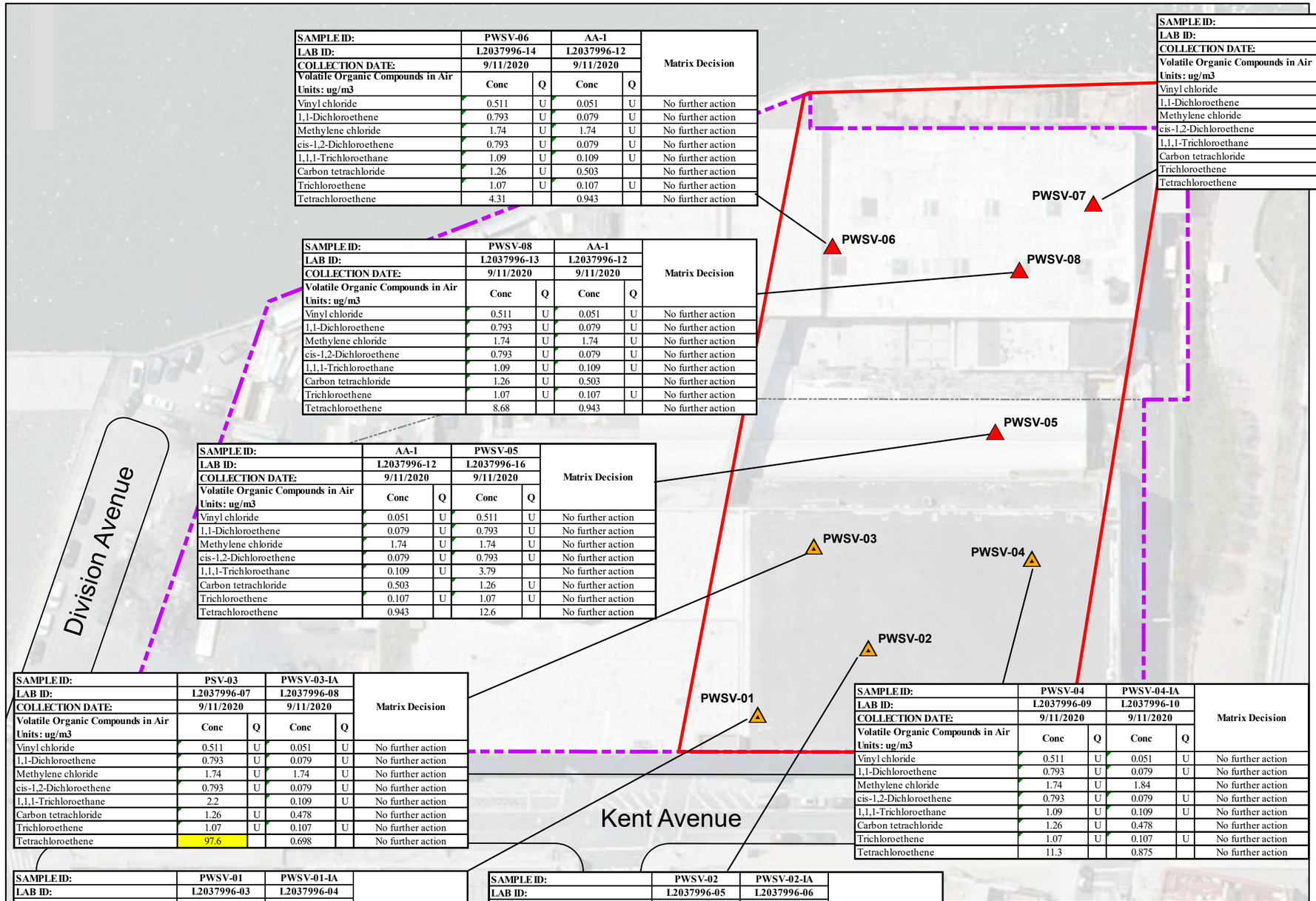
Site

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Drawn By: LM
Checked By: MC
Date: September 2021
Scale: As Noted

Drawing Title: **Previous Groundwater Sampling Results**

Drawing No: **Figure 6**



SAMPLE ID:	PWSV-06		AA-1		Matrix Decision
LAB ID:	L2037996-14		L2037996-12		
COLLECTION DATE:	9/11/2020		9/11/2020		
Volatile Organic Compounds in Air Units: ug/m3	Conc	Q	Conc	Q	
Vinyl chloride	0.511	U	0.051	U	No further action
1,1-Dichloroethene	0.793	U	0.079	U	No further action
Methylene chloride	1.74	U	1.74	U	No further action
cis-1,2-Dichloroethene	0.793	U	0.079	U	No further action
1,1,1-Trichloroethane	1.09	U	0.109	U	No further action
Carbon tetrachloride	1.26	U	0.503		No further action
Trichloroethene	1.07	U	0.107	U	No further action
Tetrachloroethene	4.31		0.943		No further action

SAMPLE ID:	PWSV-07		AA-1		Matrix Decision
LAB ID:	L2037996-15		L2037996-12		
COLLECTION DATE:	9/11/2020		9/11/2020		
Volatile Organic Compounds in Air Units: ug/m3	Conc	Q	Conc	Q	
Vinyl chloride	0.511	U	0.051	U	No further action
1,1-Dichloroethene	0.793	U	0.079	U	No further action
Methylene chloride	1.74	U	1.74	U	No further action
cis-1,2-Dichloroethene	0.793	U	0.079	U	No further action
1,1,1-Trichloroethane	1.09	U	0.109	U	No further action
Carbon tetrachloride	1.26	U	0.503		No further action
Trichloroethene	1.07	U	0.107	U	No further action
Tetrachloroethene	78		0.943		No further action

SAMPLE ID:	PWSV-08		AA-1		Matrix Decision
LAB ID:	L2037996-13		L2037996-12		
COLLECTION DATE:	9/11/2020		9/11/2020		
Volatile Organic Compounds in Air Units: ug/m3	Conc	Q	Conc	Q	
Vinyl chloride	0.511	U	0.051	U	No further action
1,1-Dichloroethene	0.793	U	0.079	U	No further action
Methylene chloride	1.74	U	1.74	U	No further action
cis-1,2-Dichloroethene	0.793	U	0.079	U	No further action
1,1,1-Trichloroethane	1.09	U	0.109	U	No further action
Carbon tetrachloride	1.26	U	0.503		No further action
Trichloroethene	1.07	U	0.107	U	No further action
Tetrachloroethene	8.68		0.943		No further action

SAMPLE ID:	AA-1		PWSV-05		Matrix Decision
LAB ID:	L2037996-12		L2037996-16		
COLLECTION DATE:	9/11/2020		9/11/2020		
Volatile Organic Compounds in Air Units: ug/m3	Conc	Q	Conc	Q	
Vinyl chloride	0.051	U	0.511	U	No further action
1,1-Dichloroethene	0.079	U	0.793	U	No further action
Methylene chloride	1.74	U	1.74	U	No further action
cis-1,2-Dichloroethene	0.079	U	0.793	U	No further action
1,1,1-Trichloroethane	0.109	U	3.79		No further action
Carbon tetrachloride	0.503		1.26	U	No further action
Trichloroethene	0.107	U	1.07	U	No further action
Tetrachloroethene	0.943		12.6		No further action

SAMPLE ID:	PSV-03		PWSV-03-IA		Matrix Decision
LAB ID:	L2037996-07		L2037996-08		
COLLECTION DATE:	9/11/2020		9/11/2020		
Volatile Organic Compounds in Air Units: ug/m3	Conc	Q	Conc	Q	
Vinyl chloride	0.511	U	0.051	U	No further action
1,1-Dichloroethene	0.793	U	0.079	U	No further action
Methylene chloride	1.74	U	1.74	U	No further action
cis-1,2-Dichloroethene	0.793	U	0.079	U	No further action
1,1,1-Trichloroethane	2.2		0.109	U	No further action
Carbon tetrachloride	1.26	U	0.478		No further action
Trichloroethene	1.07	U	0.107	U	No further action
Tetrachloroethene	97.6		0.698		No further action

SAMPLE ID:	PWSV-04		PWSV-04-IA		Matrix Decision
LAB ID:	L2037996-09		L2037996-10		
COLLECTION DATE:	9/11/2020		9/11/2020		
Volatile Organic Compounds in Air Units: ug/m3	Conc	Q	Conc	Q	
Vinyl chloride	0.511	U	0.051	U	No further action
1,1-Dichloroethene	0.793	U	0.079	U	No further action
Methylene chloride	1.74	U	1.84		No further action
cis-1,2-Dichloroethene	0.793	U	0.079	U	No further action
1,1,1-Trichloroethane	1.09	U	0.109	U	No further action
Carbon tetrachloride	1.26	U	0.478		No further action
Trichloroethene	1.07	U	0.107	U	No further action
Tetrachloroethene	11.3		0.875		No further action

SAMPLE ID:	PWSV-01		PWSV-01-IA		Matrix Decision
LAB ID:	L2037996-03		L2037996-04		
COLLECTION DATE:	9/11/2020		9/11/2020		
Volatile Organic Compounds in Air Units: ug/m3	Conc	Q	Conc	Q	
Vinyl chloride	0.511	U	0.051	U	No further action
1,1-Dichloroethene	0.793	U	0.079	U	No further action
Methylene chloride	1.74	U	1.74	U	No further action
cis-1,2-Dichloroethene	0.793	U	0.079	U	No further action
1,1,1-Trichloroethane	1.09	U	0.109	U	No further action
Carbon tetrachloride	1.26	U	0.434		No further action
Trichloroethene	102		0.107	U	Mitigate
Tetrachloroethene	29		0.536		No further action

SAMPLE ID:	PWSV-02		PWSV-02-IA		Matrix Decision
LAB ID:	L2037996-05		L2037996-06		
COLLECTION DATE:	9/11/2020		9/11/2020		
Volatile Organic Compounds in Air Units: ug/m3	Conc	Q	Conc	Q	
Vinyl chloride	0.511	U	0.051	U	No further action
1,1-Dichloroethene	0.793	U	0.079	U	No further action
Methylene chloride	1.99		1.74	U	No further action
cis-1,2-Dichloroethene	0.793	U	0.079	U	No further action
1,1,1-Trichloroethane	1.93		0.109	U	No further action
Carbon tetrachloride	1.26	U	0.472		No further action
Trichloroethene	1.07	U	0.107	U	No further action
Tetrachloroethene	19.7		0.658		No further action

Volatile Organic Compounds in Air Units: ug/m3	NYSDOH AGVs	Matrices
Vinyl chloride	--	C
1,1-Dichloroethene	--	A
Methylene chloride	60	B
cis-1,2-Dichloroethen	--	A
1,1,1-Trichloroethane	--	B
Carbon tetrachloride	--	A
Trichloroethene	2	A
Tetrachloroethene	30	B

Notes
NYSDOH AGVs = New York State Department of Health Air Guidance Values
Matrix actions are described in the report narrative and the NYSDOH Soil Vapor Guidance, May 2017
Cells highlighted in yellow indicate a concentration above the co-located indoor air concentration
Q = Laboratory Qualifier
U qualifier indicates the compound was not detected at or above the RL
RL = Reporting Limit
Results and RL values are shown in micrograms per cubic meter (ug/m3)

Legend

- Soil Vapor Sample Location
- Soil Vapor with Co-Located Indoor Air Sample
- Approximate Former MGP Boundary
- Site Boundary
- Lot Line

0 30 60 120 Feet

Service Layer Credits: NYS ITS GIS Program Office

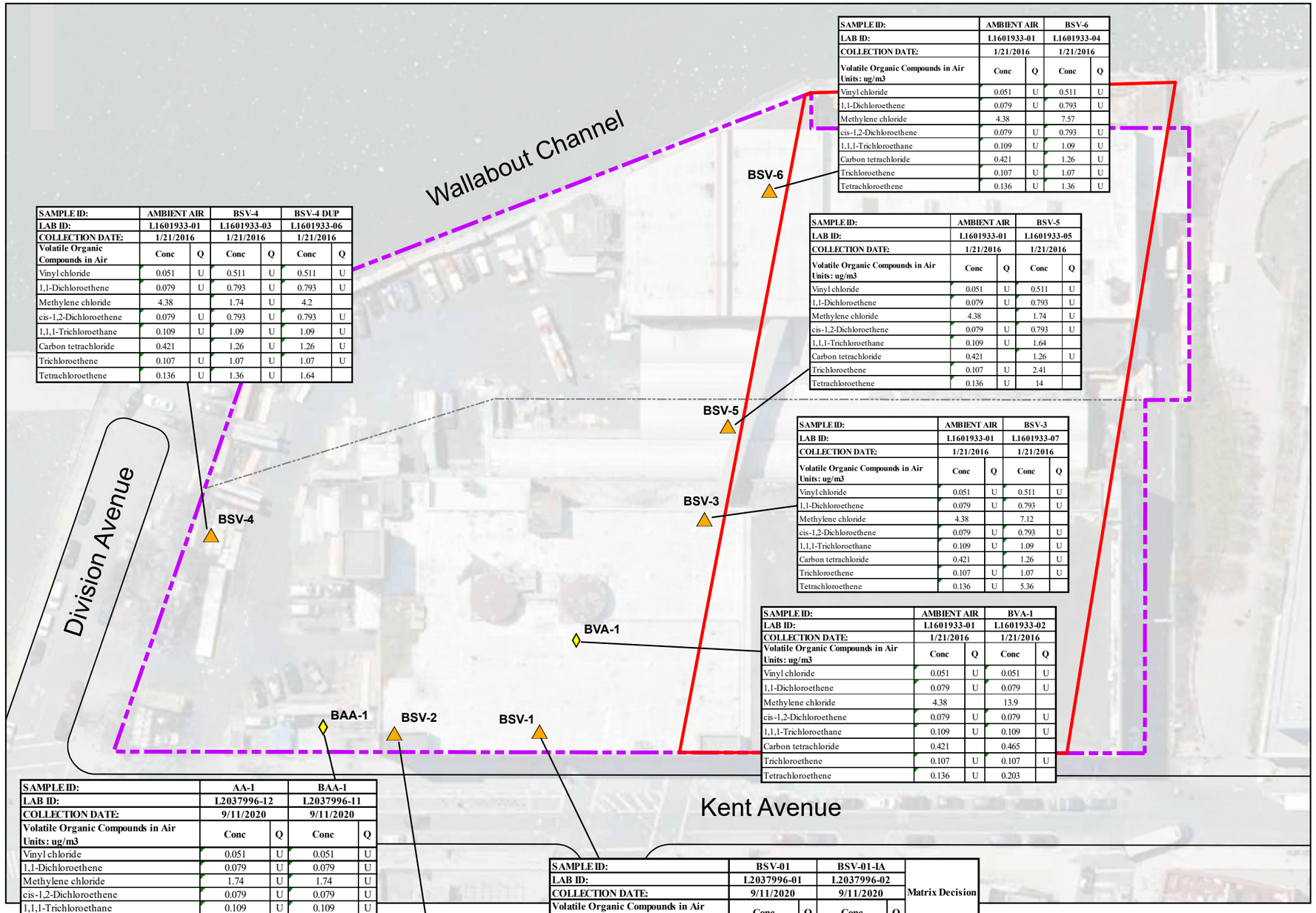
Site
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Brooklyn, New York
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F: (646) 606-2379

Drawn By: LM
Checked By: MC
Date: Septmeber 2021
Scale: As Noted

Title: Previous Soil Vapor and Indoor Air Sample Results - Former MGP Portion

Drawing No: Figure 7A



SAMPLE ID:	AMBIENT AIR		BSV-4		BSV-4 DUP	
LAB ID:	L1601933-01		L1601933-03		L1601933-06	
COLLECTION DATE:	1/21/2016		1/21/2016		1/21/2016	
Volatile Organic Compounds in Air Units: ug/m3	Conc	Q	Conc	Q	Conc	Q
Vinyl chloride	0.051	U	0.511	U	0.511	U
1,1-Dichloroethene	0.079	U	0.793	U	0.793	U
Methylene chloride	4.38		1.74	U	4.2	
cis-1,2-Dichloroethene	0.079	U	0.793	U	0.793	U
1,1,1-Trichloroethane	0.109	U	1.09	U	1.09	U
Carbon tetrachloride	0.421		1.26	U	1.26	U
Trichloroethene	0.107	U	1.07	U	1.07	U
Tetrachloroethene	0.136	U	1.36	U	1.64	

SAMPLE ID:	AMBIENT AIR		BSV-6	
LAB ID:	L1601933-01		L1601933-04	
COLLECTION DATE:	1/21/2016		1/21/2016	
Volatile Organic Compounds in Air Units: ug/m3	Conc	Q	Conc	Q
Vinyl chloride	0.051	U	0.511	U
1,1-Dichloroethene	0.079	U	0.793	U
Methylene chloride	4.38		7.57	
cis-1,2-Dichloroethene	0.079	U	0.793	U
1,1,1-Trichloroethane	0.109	U	1.09	U
Carbon tetrachloride	0.421		1.26	U
Trichloroethene	0.107	U	1.07	U
Tetrachloroethene	0.136	U	1.36	U

SAMPLE ID:	AMBIENT AIR		BSV-5	
LAB ID:	L1601933-01		L1601933-05	
COLLECTION DATE:	1/21/2016		1/21/2016	
Volatile Organic Compounds in Air Units: ug/m3	Conc	Q	Conc	Q
Vinyl chloride	0.051	U	0.511	U
1,1-Dichloroethene	0.079	U	0.793	U
Methylene chloride	4.38		1.74	U
cis-1,2-Dichloroethene	0.079	U	0.793	U
1,1,1-Trichloroethane	0.109	U	1.64	
Carbon tetrachloride	0.421		1.26	U
Trichloroethene	0.107	U	2.41	
Tetrachloroethene	0.136	U	14	

SAMPLE ID:	AMBIENT AIR		BSV-3	
LAB ID:	L1601933-01		L1601933-07	
COLLECTION DATE:	1/21/2016		1/21/2016	
Volatile Organic Compounds in Air Units: ug/m3	Conc	Q	Conc	Q
Vinyl chloride	0.051	U	0.511	U
1,1-Dichloroethene	0.079	U	0.793	U
Methylene chloride	4.38		7.12	
cis-1,2-Dichloroethene	0.079	U	0.793	U
1,1,1-Trichloroethane	0.109	U	1.09	U
Carbon tetrachloride	0.421		1.26	U
Trichloroethene	0.107	U	1.07	U
Tetrachloroethene	0.136	U	5.36	

SAMPLE ID:	AMBIENT AIR		BVA-1	
LAB ID:	L1601933-01		L1601933-02	
COLLECTION DATE:	1/21/2016		1/21/2016	
Volatile Organic Compounds in Air Units: ug/m3	Conc	Q	Conc	Q
Vinyl chloride	0.051	U	0.051	U
1,1-Dichloroethene	0.079	U	0.079	U
Methylene chloride	4.38		13.9	
cis-1,2-Dichloroethene	0.079	U	0.079	U
1,1,1-Trichloroethane	0.109	U	0.109	U
Carbon tetrachloride	0.421		0.465	
Trichloroethene	0.107	U	0.107	U
Tetrachloroethene	0.136	U	0.203	

SAMPLE ID:	AA-1		BAA-1	
LAB ID:	L2037996-12		L2037996-11	
COLLECTION DATE:	9/11/2020		9/11/2020	
Volatile Organic Compounds in Air Units: ug/m3	Conc	Q	Conc	Q
Vinyl chloride	0.051	U	0.051	U
1,1-Dichloroethene	0.079	U	0.079	U
Methylene chloride	1.74	U	1.74	U
cis-1,2-Dichloroethene	0.079	U	0.079	U
1,1,1-Trichloroethane	0.109	U	0.109	U
Trichloroethene	0.107	U	0.107	U
Tetrachloroethene	0.943		0.705	

SAMPLE ID:	AMBIENT AIR		BSV-2	
LAB ID:	L1601933-01		L1601933-08	
COLLECTION DATE:	1/21/2016		1/21/2016	
Volatile Organic Compounds in Air Units: ug/m3	Conc	Q	Conc	Q
Vinyl chloride	0.051	U	1.02	U
1,1-Dichloroethene	0.079	U	1.59	U
Methylene chloride	4.38		3.47	U
cis-1,2-Dichloroethene	0.079	U	14.1	
1,1,1-Trichloroethane	0.109	U	2.18	U
Carbon tetrachloride	0.421		2.52	U
Trichloroethene	0.107	U	881	
Tetrachloroethene	0.136	U	62.6	

SAMPLE ID:	BSV-01		BSV-01-IA		Matrix Decision
LAB ID:	L2037996-01		L2037996-02		
COLLECTION DATE:	9/11/2020		9/11/2020		
Volatile Organic Compounds in Air Units: ug/m3	Conc	Q	Conc	Q	
Vinyl chloride	3.2	U	0.051	U	No further action
1,1-Dichloroethene	4.96	U	0.079	U	No further action
Methylene chloride	10.8	U	1.74	U	No further action
cis-1,2-Dichloroethene	4.96	U	0.079	U	No further action
1,1,1-Trichloroethane	6.82	U	0.109	U	No further action
Trichloroethene	2160		0.134		Mitigate
Tetrachloroethene	219		0.644		No further action

Volatile Organic Compounds in Air Units: ug/m3	NYSDOH AGVs	Matrices
Vinyl chloride	--	C
1,1-Dichloroethene	--	A
Methylene chloride	60	B
cis-1,2-Dichloroethene	--	A
1,1,1-Trichloroethane	--	B
Carbon tetrachloride	--	A
Trichloroethene	2	A
Tetrachloroethene	30	B

Notes
NYSDOH AGVs = New York State Department of Health Air Guidance Values
Matrix actions are described in the report narrative and the NYSDOH Soil Vapor Guidance, May 2017
Cells highlighted in yellow indicate a concentration above the co-located indoor air concentration
Q = Laboratory Qualifier
U qualifier indicates the compound was not detected at or above the RL
RL = Reporting Limit
Results and RL values are shown in micrograms per cubic meter (ug/m3)
For U qualified entries, the RL is shown

Legend

- Ambient Air Sample
- BCP Soil Vapor Sample Location
- Approximate Former MGP Boundary
- Site Boundary
- Lot Line

0 30 60 120 Feet

Service Layer Credits: NYS ITS GIS Program

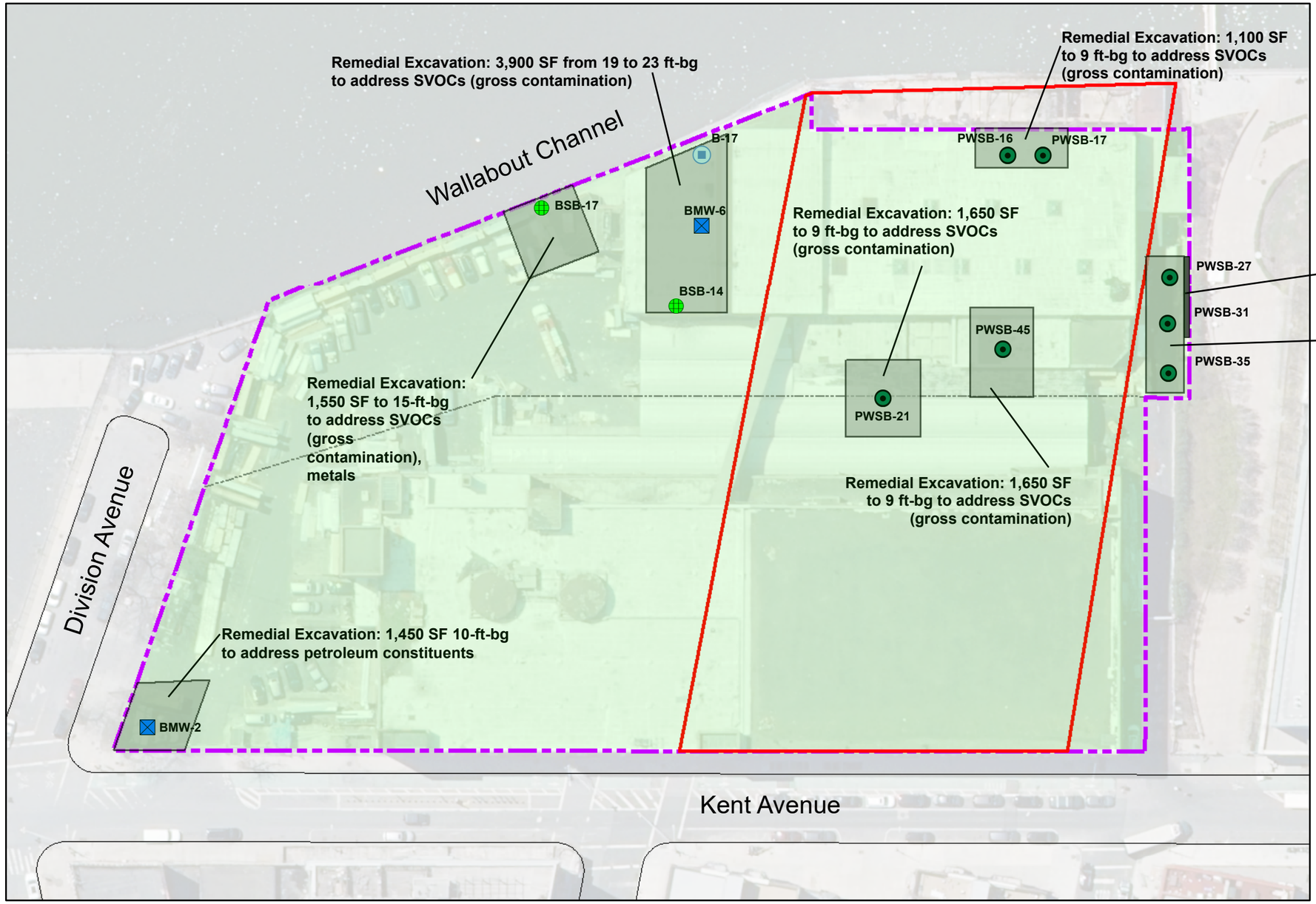
Site
470 Kent Avenue
Brooklyn, New York
Block 2134, Lots 1 & 150

TENEN ENVIRONMENTAL
Tenen Environmental, LLC
121 West 27th Street
Suite 702
New York, NY 10001
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Drawn By: LM
Checked By: MC
Date: September 2021
Scale: As Noted

Drawing Title: Previous Soil Vapor and Indoor Air Sample Results

Drawing No: Figure 7



Remedial Excavation:
2 ft-bg across the Site

Legend

- Geotechnical Borings
- Southern Soil Boring
- Groundwater Monitoring Well Location
- Northern MGP Boring
- Approximate Former MGP Boundary
- Site Boundary
- Lot Line
- Deep Remedial Excavation

Feet
0 30 60 120

Service Layer Credits: NYS ITS GIS Program Office

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Brooklyn, New York
Block 2134, Lots 1 & 150

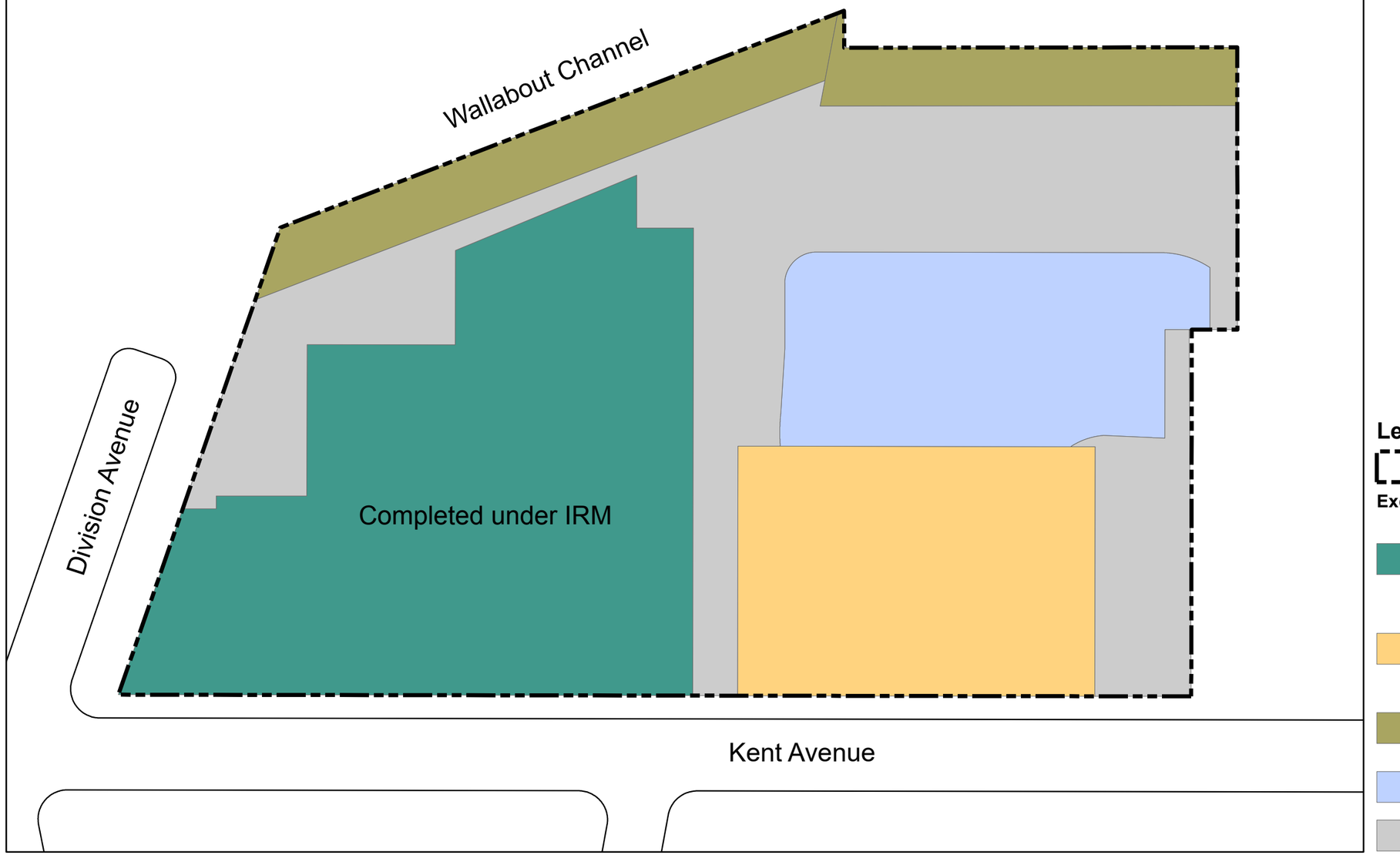
Site

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Drawn By	Checked By	Date	Scale
LM	MC	May 2023	As Noted

Drawing Title: **Extent of Remedial Excavation**

Drawing No: **Figure 8**



Legend

- Site Boundary

Excavation Areas

- First Phase: Excavation to approximate El +1 foot (9 to 19 feet below existing grade)
- Second Phase; Excavation to approximate El +1 foot (9 to 19 feet below existing grade)
- Excavation of Trenches to Install Tie-Backs for new Bulkhead under IRM Work Plan
- Temporary Excavation to 1 to 7 feet below existing grade.
- Minimal excavation to support installation of utilities

0 30 60 120 Feet

Service Layer Credits:

Site

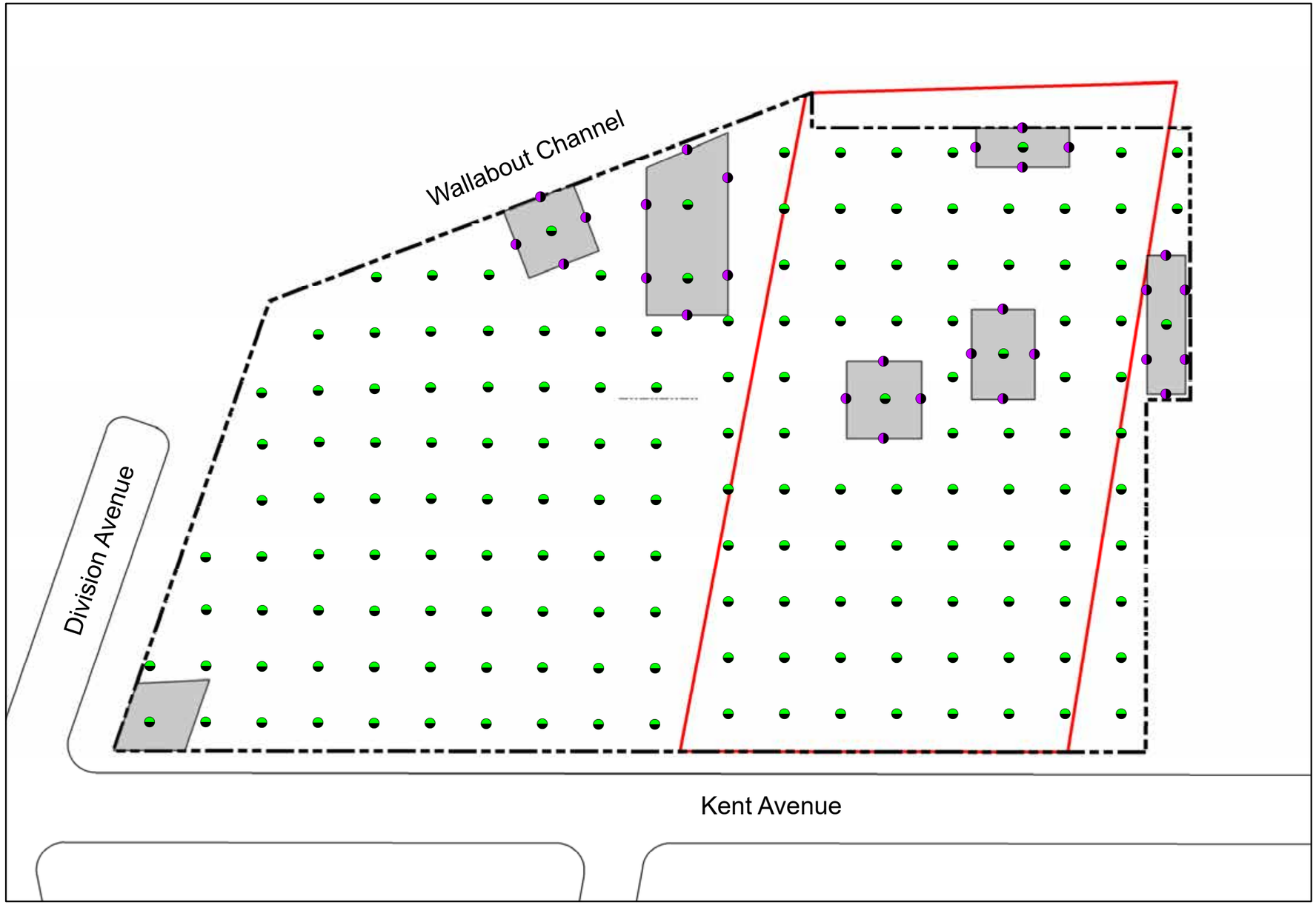
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Drawn By	Checked By	Date	Scale
LM	MC	September 2021	As Noted

Drawing Title: **Extent of Development Excavation**

Drawing No: **Figure 9**





Legend

- Sidewall Samples
- Bottom Endpoint Samples
- Site Boundary
- Approximate Former MGP Boundary
- Deep Remedial Excavation

0 30 60 120 Feet

Site

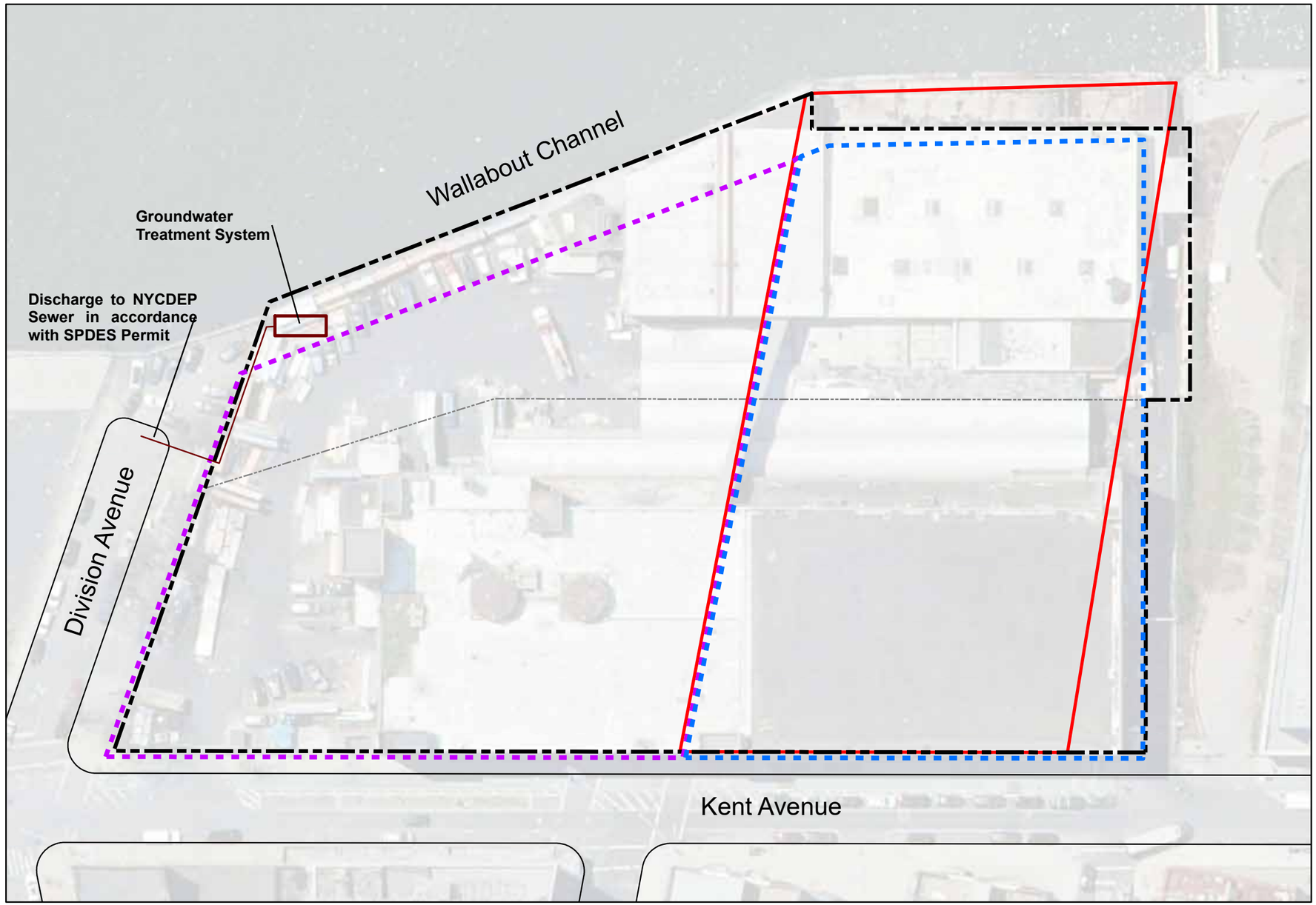
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Drawing Title: **End-point Sample Locations**

Drawing No: **Figure 10**



Legend

Description

- First Phase of Dewatering
- Second Phase of Dewatering
- Site Boundary
- Approximate Former MGP Boundary

Feet

0 30 60 120

Service Layer Credits: NYS ITS GIS Program Office

Site

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Brooklyn, New York
Block 2134, Lots 1 & 150

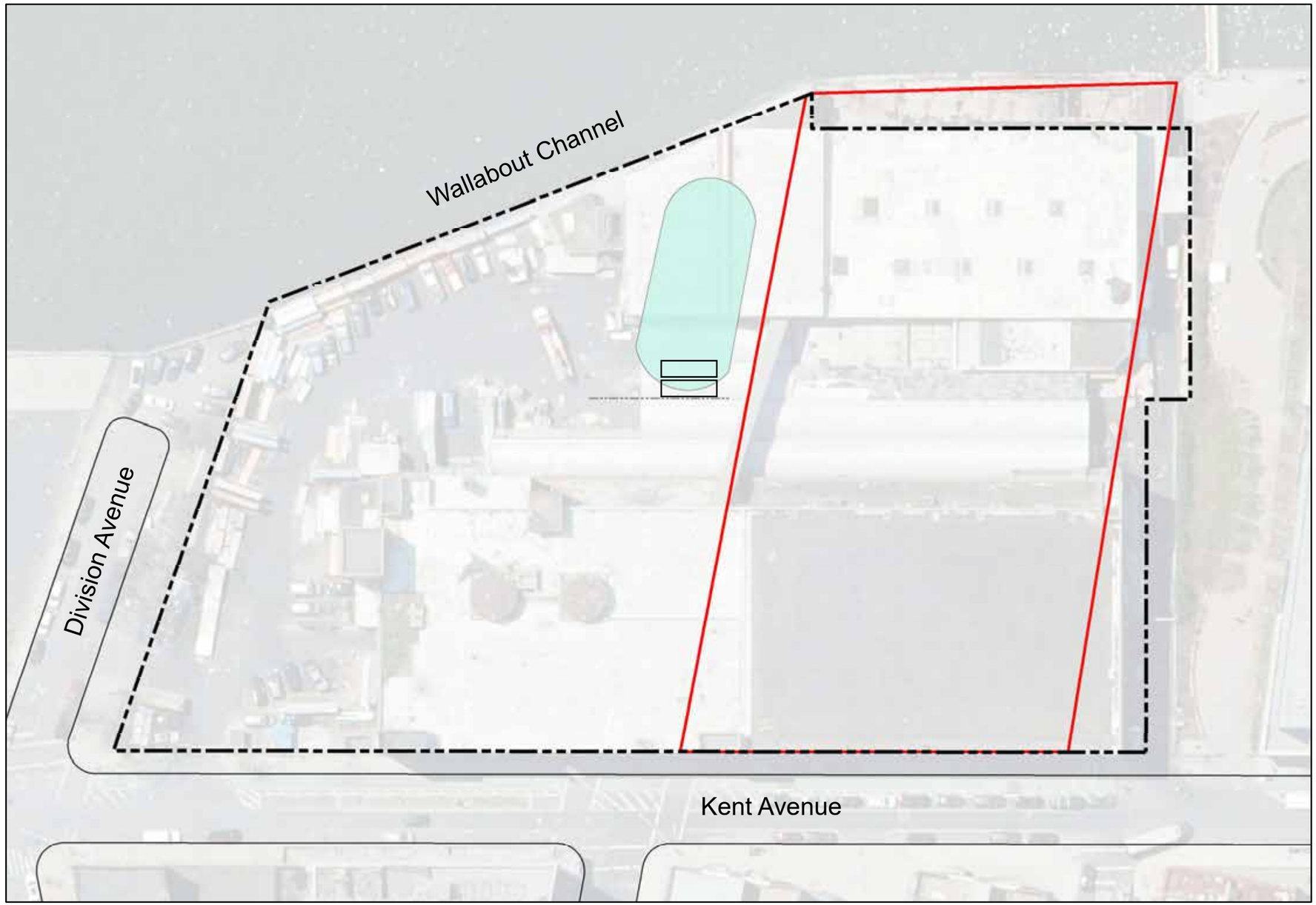
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Drawn By	Checked By	Date	Scale
LM	MC	September 2021	As Noted

Drawing Title: **Dewatering System Layout**

Drawing No: **Figure 11**



Note: If residual petroleum is encountered below development depth, groundwater treatment will be applied prior to releasing hydraulic control

Service Layer Credits: NYS ITS GIS Program Office

Legend

- Groundwater Treatment Area
- Site Boundary
- Approximate Former MGP Boundary
- Approximate UST Location

0 30 60 120 Feet

Site

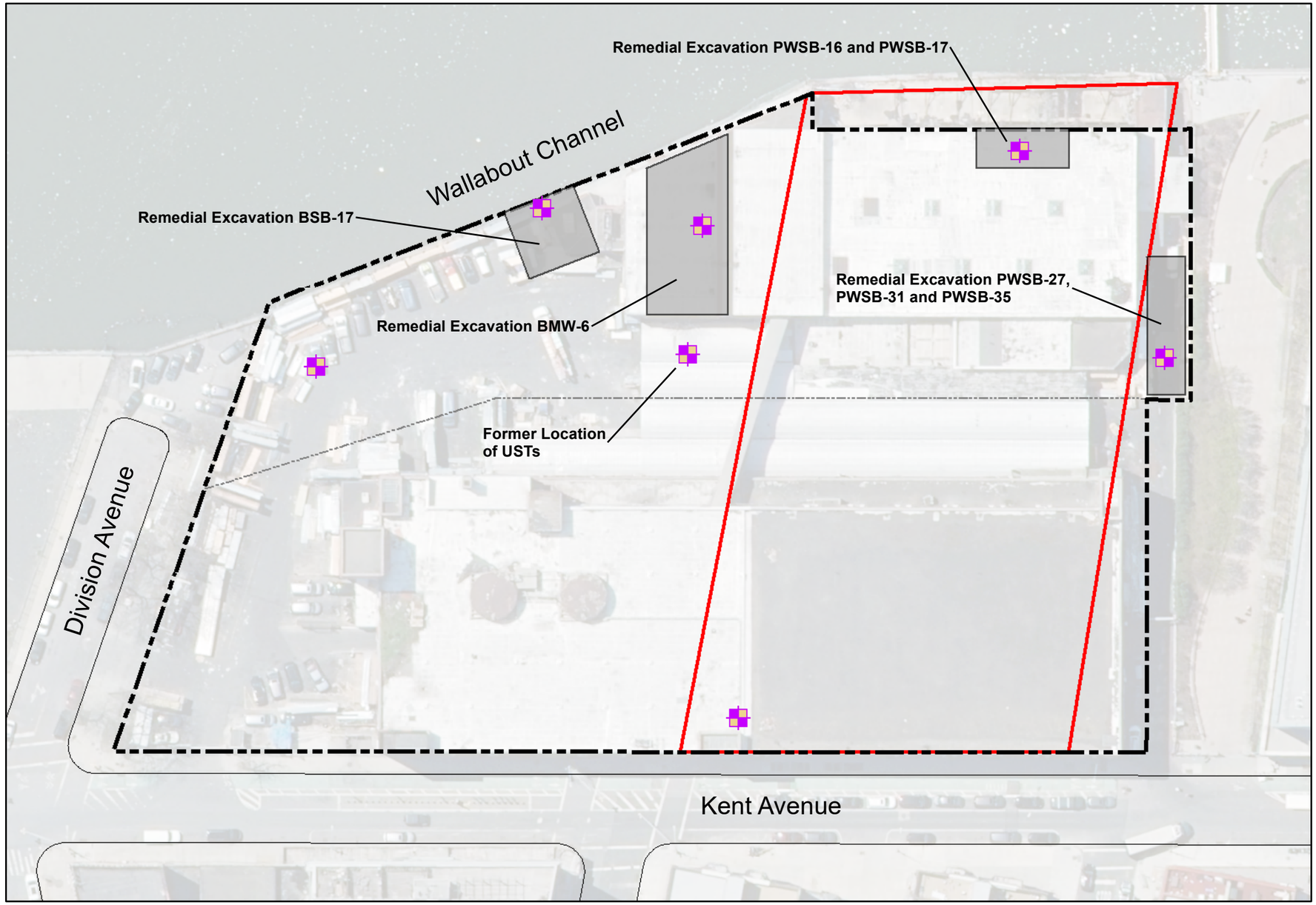
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Drawn By	Checked By	Date	Scale
LM	MC	September 2021	As Noted

Drawing Title: **Groundwater Treatment Areas**

Drawing No: **Figure 12**



Legend

- Post-Remedial Groundwater Monitoring Well Location
- Site Boundary
- Approximate Former MGP Boundary

Feet

0 30 60 120

Service Layer Credits: NYS ITS GIS Program Office

Site

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Brooklyn, New York
Block 2134, Lots 1 & 150

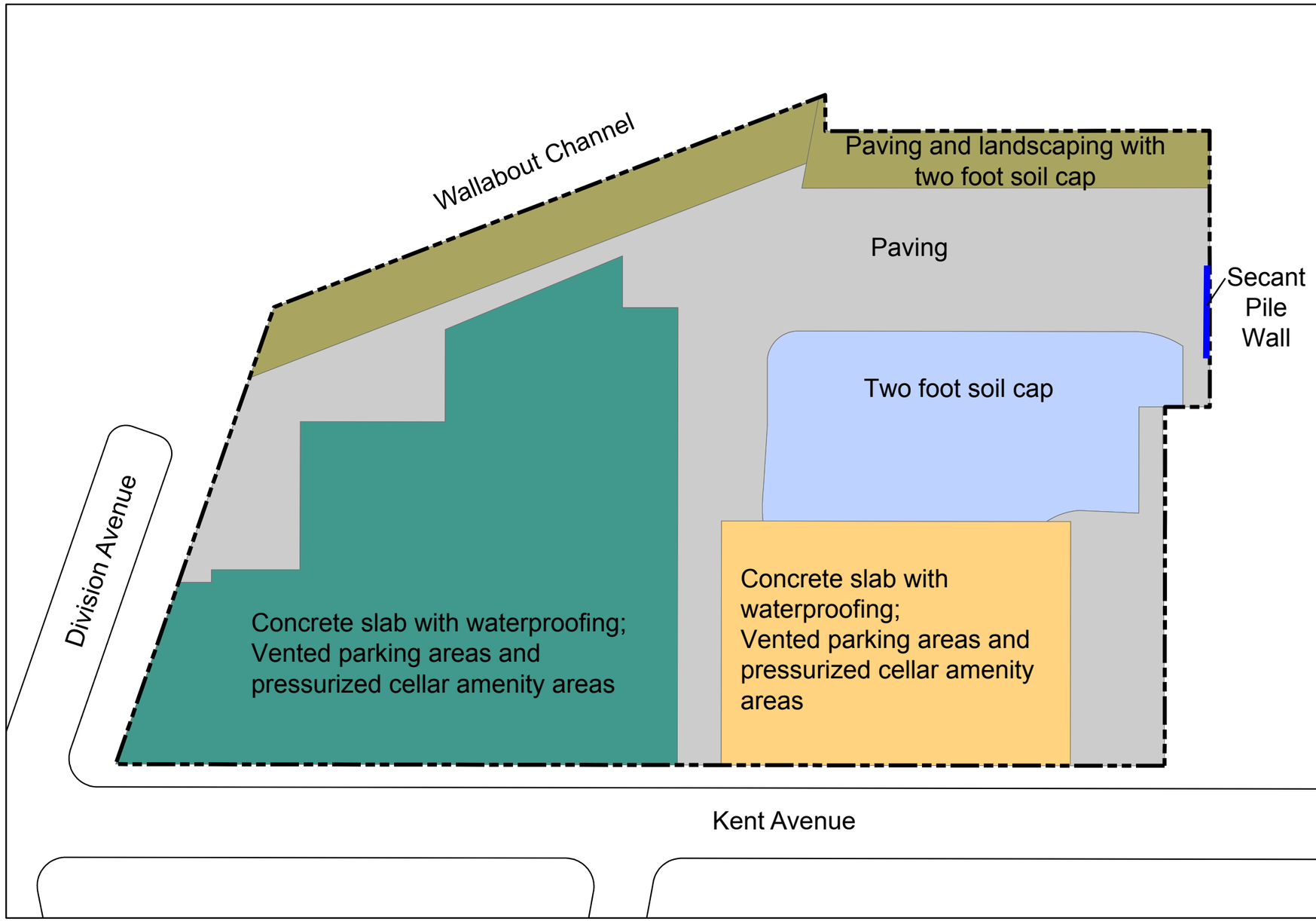
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Drawn By	Checked By	Date	Scale
LM	MC	May 2023	As Noted

Drawing Title
Post-Remedial Groundwater Monitoring Well Location

Drawing No
Figure 13



Legend

Site Boundary

0 30 60 120 Feet

Service Layer Credits:

Site

470 Kent Avenue
Brooklyn, New York
Block 2134, Lots 1 & 150

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Drawn By	Checked By	Date	Scale
LM	MC	July 2023	As Noted

Drawing Title: **Post-Remedial Engineering Controls**

Drawing No: **Figure 14**

Tables

Table 1
Restricted-Residential Use and Protection of Groundwater Soil Cleanup Objectives
Remedial Action Work Plan
470 Kent Avenue - Brooklyn, NY
BCP #C224053

From Table 375-6.8(b) or CP51 Table 1: Restricted Residential Use and Protection of Groundwater Soil Cleanup Objectives.

Contaminant	CAS Number	Restricted-Residential	Protection of GW
Metals			
Arsenic	7440-38-2	16[f]	16[f]
Barium	7440-39-3	400	820
Beryllium	7440-41-7	72	47
Cadmium	7440-43-9	4.3	7.5
Chromium, hexavalent[h]	18540-29-9	110	19
Chromium, trivalent[h]	16065-83-1	180	NS
Copper	7440-50-8	270	1720
Total Cyanide[h]		27	40
Lead	7439-92-1	400	450
Manganese	7439-96-5	2,000[f]	2,000[f]
Total Mercury		0.81[j]	0.73
Nickel	7440-02-0	310	130
Selenium	7782-49-2	180	4[f]
Silver	7440-22-4	180	8.3
Zinc	7440-66-6	10,000[d]	2,480
PCBs/Pesticides			
2,4,5-TP Acid (Silvex)	93-72-1	100[a]	3.8
4,4'-DDE	72-55-9	8.9	17
4,4'-DDT	50-29-3	7.9	136
4,4'-DDD	72-54-8	13	14
Aldrin	309-00-2	0.097	0.19
alpha-BHC	319-84-6	0.48	0.02
beta-BHC	319-85-7	0.36	0.09
Chlordane (alpha)	5103-71-9	4.2	2.9
delta-BHC	319-86-8	100[a]	0.25
Dibenzofuran	132-64-9	59	210
Dieldrin	60-57-1	0.2	0.1
Endosulfan I	959-98-8	24[i]	102
Endosulfan II	33213-65-9	24[i]	102
Endosulfan sulfate	1031-07-8	24[i]	1000[e]
Endrin	72-20-8	11	0.06
Heptachlor	76-44-8	2.1	0.38
Lindane	58-89-9	1.3	0.1
Polychlorinated biphenyls	1336-36-3	1	3.2

Contaminant	CAS Number	Restricted-Residential	Protection of GW
Semivolatiles			
Acenaphthene	83-32-9	100[a]	98
Acenapthylene	208-96-8	100[a]	107
Anthracene	120-12-7	100[a]	1000[c]
Aniline	62-53-3	100[a]	NS
Benz(a)anthracene	56-55-3	1[f]	1[f]
Benzo(a)pyrene	50-32-8	1[f]	22
Benzo(b)fluoranthene	205-99-2	1[f]	1.7
Benzo(g,h,i)perylene	191-24-2	100[a]	1000[c]
Benzo(k)fluoranthene	207-08-9	4	1.7
Chrysene	218-01-9	3.9	1[f]
Dibenz(a,h)anthracene	53-70-3	0.33[c]	1000[c]
Fluoranthene	206-44-0	100[a]	1000[c]
Fluorene	86-73-7	100[a]	386
Indeno(1,2,3-cd)pyrene	193-39-5	0.5[f]	8.2
m-Cresol	108-39-4	100[a]	0.33[c]
Naphthalene	91-20-3	100[a]	12
Nitrobenzene	98-95-3	15	NS
o-Cresol	95-48-7	100[a]	0.33[c]
p-Cresol	106-44-5	100[a]	0.33[c]
Pentachlorophenol	87-86-5	6.7	0.8[c]
Phenanthrene	85-01-8	100[a]	1000[c]
Phenol	108-95-2	100[a]	0.33[c]
Pyrene	129-00-0	100[a]	1000[c]
Volatiles			
1,1,1-Trichloroethane	71-55-6	100[a]	0.68
1,1-Dichloroethane	75-34-3	26	0.27
1,1-Dichloroethene	75-35-4	100[a]	0.33
1,2-Dichlorobenzene	95-50-1	100[a]	1.1
1,2-Dichloroethane	107-06-2	3.1	0.02[f]
cis-1,2-Dichloroethene	156-59-2	100[a]	0.25
trans-1,2-Dichloroethene	156-60-5	100[a]	0.19
1,3-Dichlorobenzene	541-73-1	49	2.4
1,4-Dichlorobenzene	106-46-7	13	1.8
1,4-Dioxane	123-91-1	13	0.1[c]
Acetone	67-64-1	100[b]	0.05
Benzene	71-43-2	4.8	0.06
Butylbenzene	104-51-8	100[a]	12
Carbon tetrachloride	56-23-5	2.4	0.76
Chlorobenzene	108-90-7	100[a]	1.1
Chloroform	67-66-3	49	0.37
Ethylbenzene	100-41-4	41	1
Hexachlorobenzene	118-74-1	1.2	3.2
Methyl ethyl ketone	78-93-3	100[a]	0.12
Methyl tert-butyl ether	1634-04-4	100[a]	0.93
Methylene chloride	75-09-2	100[a]	0.05
n-Propylbenzene	103-65-1	100[a]	3.9
sec-Butylbenzene	135-98-8	100[a]	11
tert-Butylbenzene	98-06-6	100[a]	5.9
Tetrachloroethene	127-18-4	19	1.3
Toluene	108-88-3	100[a]	0.7
Trichloroethene	79-01-6	21	0.47
1,2,4-Trimethylbenzene	95-63-6	52	3.6
1,3,5- Trimethylbenzene	108-67-8	52	8.4
Vinyl chloride	75-01-4	0.9	0.02
Xylene (mixed)	1330-20-7	100[a]	1.6

Notes:

All soil cleanup objectives (SCOs) are in parts per million (ppm). NS=Not specified.

Bolded and shaded values are proposed SCOs that are not the Restricted Residential Use SCOs.

Footnotes (designations are from Table in Part 375). See Technical Support Document (TSD).

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

b For constituents where the calculated SCO was lower than the contract required quantitation limit (CRQL), the CRQL is used as the Track 1 SCO value.

c For constituents where the calculated SCO was lower than the rural soil background concentration, as determined by the Department and Department of Health rural soil survey, the rural soil background concentration is used as the Track 1 SCO value for this use of the site.

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.

f For constituents where the calculated SCO was lower than the rural soil background concentration as determined by the Department and Department of Health rural soil survey, the rural soil background concentration is used as the Track 2 SCO value for this use of the site.

i This SCO is for the sum of endosulfan I, endosulfan II, and endosulfan sulfate.

j This SCO is the lower of the values for mercury (elemental) or mercury (inorganic salts). See TSD Table 5.6-1.

Table 2
NYSDEC Division of Water TOGS 1.1.1 Class GA Standards
Remedial Action Work Plan
470 Kent Avenue - Brooklyn, NY
BCP #C224053

From Table 1: New York State Ambient Water Quality Standards and Guidance Values
(Division of Water Technical and Operational Guidance Series (1.1.1), June 1998)

Contaminant	CAS Number	Class GA Standard
Volatiles		
1,1,1,2-Tetrachloroethane	630-20-6	5*
1,1,1-Trichloroethane	71-55-6	5*
1,1,2,2-Tetrachloroethane	79-34-5	5*
1,1,2-Trichloroethane	79-00-5	1
1,1-Dichloroethane	75-34-3	5*
1,1-Dichloroethene	75-35-4	5*
1,1-Dichloropropene	563-58-6	5*
1,2,3-Trichloropropane	96-18-4	0.04
1,2,4,5-Tetramethylbenzene	95-93-2	5*
1,2,4-Trimethylbenzene	95-63-6	5*
1,2-Dibromo-3-chloropropane	96-12-8	0.04
1,2-Dichlorobenzene	95-50-1	3
1,2-Dichloroethane	107-06-2	0.6
1,2-Dichloropropane	78-87-5	1
1,3,5-Trimethylbenzene	108-67-8	5*
1,3-Dichlorobenzene	541-73-1	3
1,3-Dichloropropane	142-28-9	5*
1,4-Dichlorobenzene	106-46-7	3
2,2-Dichloropropane	594-20-7	5*
2-Hexanone	591-78-6	50**
Acetone	67-64-1	50**
Acrylonitrile	107-13-1	5*
Benzene	71-43-2	1
Bromobenzene	108-86-1	5*
Bromochloromethane	74-97-5	5*
Bromodichloromethane	75-27-4	50**
Bromoform	75-25-2	50**
Bromomethane	74-83-9	5*
Butylbenzene	104-51-8	5*
Carbon tetrachloride	56-23-5	5
Chlorobenzene	108-90-7	5*
Chloroethane	75-00-3	5*
Chloroform	75-34-3	7
Chloromethane (Methyl Chloride)	74-87-3	5*
cis-1,2-Dichloroethene	156-59-2	5*
Dibromochloromethane	124-48-1	50**
Dibromomethane	74-95-3	5*
Dichlorodifluoromethane	75-71-8	5*
Ethylbenzene	100-41-4	5*
Hexachlorobenzene	87-68-3	0.04
Hexachlorobutadiene	87-68-3	0.5
Isopropylbenzene	98-82-8	5*
Methylene chloride	75-09-2	5*
m-Xylene (1,3-Xylene)	108-38-3	5*
Naphthalene	91-20-3	10**
n-Propylbenzene	103-65-1	5*
o-Chlorotoluene	95-49-8	5*
o-Xylene (1,2-Xylene)	95-47-6	5*
p-Chlorotoluene	106-43-4	5*
p-Isopropyltoluene	99-87-6	5*
p-Xylene (1,4-Xylene)	106-42-3	5*
sec-Butylbenzene	135-98-8	5*
Styrene	100-42-5	5*
tert-Butylbenzene	98-06-6	5*
Tetrachloroethene	127-18-4	5*
Toluene	108-88-3	5*

Contaminant	CAS Number	Class GA Standard
Volatiles		
Total 1,3-Dichloropropene	542-75-6	0.4 (1)
trans-1,2-Dichloroethene	156-60-5	5*
trans-1,4-Dichloro-2-butene	110-57-6	5*
Trichloroethene	79-01-6	5*
Trichlorofluoromethane	75-69-4	5*
Vinyl chloride	75-01-4	2
Semivolatiles		
1,2,4,5-Tetrachlorobenzene	95-94-3	5*
1,2-Dichlorobenzene	95-50-1	3
1,3-Dichlorobenzene	541-73-1	3
1,4-Dichlorobenzene	106-46-7	3
3,3'-Dichlorobenzidine	91-94-1	5*
2,4-Dichlorophenol	120-83-2	5*
2,4-Dimethylphenol	105-67-9	50**
2,4-dinitrophenol	51-28-5	10**
2,4-Dinitrotoluene	121-14-2	5*
2,6-Dinitrotoluene	606-20-2	5*
2-Chloronaphthalene	91-58-7	10**
2-Nitroaniline	88-74-4	5*
3-Nitroaniline	99-09-2	5*
4-Chloroaniline	106-47-8	5*
4-Nitroaniline	100-01-6	5*
Acenaphthene	83-32-9	20**
Aniline	62-53-3	5*
Anthracene	120-12-7	50**
Benzo(a)anthracene	56-55-3	0.002**
Benzo(a)pyrene	50-32-8	0
Benzo(b)fluoranthene	205-99-2	0.002**
Benzo(k)fluoranthene	207-08-9	0.002**
Biphenyl	92-52-4	5*
Bis(2-chloroethoxy)methane	111-91-1	5*
Bis(2-chloroethyl)ether	111-44-4	1.0
Bis(2-Ethylhexyl)phthalate	117-81-7	5
Butyl benzyl phthalate	85-68- 7	50**
Chrysene	218-01-9	0.002
Diethyl phthalate	84-66-2	50**
Dimethyl phthalate	131-11-3	50**
Di-n-butylphthalate	84-74-2	50
Di-n-octylphthalate	117-84-0	50**
Fluoranthene	206-44-0	50**
Fluorene	86-73-7	50**
Hexachlorobenzene	118-74-1	0.04
Hexachlorobutadiene	87-68-3	0.5
Hexachlorocyclopentadiene	77-47-4	5*
Hexachloroethane	67-72-1	5*
Indeno(1,2,3-cd)Pyrene	193-39-5	0.002
Isophorone	78-59-1	50**
Naphthalene	91-20-3	10**
Nitrobenzene	98-95-3	0.4
NitrosoDiPhenylAmine(NDPA)/DPA	86-30-6	50**
Pentachlorophenol	87-86-5	1(2)
Phenanthrene	85-01-8	50**
Phenol	108-95-2	1 (2)
Pyrene	129-00-0	50**

Notes:
All Class GA Standards are in micrograms per liter (ug/l). Compounds without standards or guideline values are not shown.
*The principal organic contaminant standard for groundwater of 5 ug/l applies to this substance.
** The value shown is a Guidance Value
(1) refers to sum of cis- and trans-1,3-dichloropropene.
(2) refers to the sum of Total Phenols (phenolic compounds)

Table 3
Estimated Remedial Costs
470 Kent Avenue - Brooklyn, NY
Remedial Action Work Plan
BCP #C224053

Alternative 1: Track 4 Soil Cleanup Objectives (SCOs) with Demolition, Bulkhead Installation, Track 4 Soil Excavation, Dewatering/Groundwater Treatment, Waterproofing/Cover System,		
Remedial Tasks		
Demolition	$6,000,000	Demolish building to implement remedial action
Pre-Design Soil and Groundwater Sampling	$150,000	Groundwater sampling and remedial excavation characterization
Install Bulkhead	$3,000,000	Installation of approximately 24 injection wells
Dewatering / Groundwater Treatment	$400,000	Dewatering system plus groundwater treatment
Remedial oversight	$325,000	Implementation of CAMP and daily reporting
End-point soil samples	$100,000	Laboratory analysis, data validation and preparation of EDDs
Engineering Controls	$1,300,000	Waterproofing and cover system
Post-Remedial Reporting and Long-term Groundwater Monitoring		
Reporting (FER, SMP)	$80,000	Reporting
Long-term Groundwater Monitoring	$80,000	Eight quarters of groundwater sampling for VOCs and SVOCs from six wells; annual reporting

Estimated Remedial Costs	$11,275,000
Estimated Reporting and Long-Term Monitoring Costs	$160,000
Total Estimated Remedial Costs	$11,435,000

Table 4
Remedial Action Construction Schedule
470 Kent Avenue - Brooklyn, NY
Remedial Action Work Plan
BCP #C224053

Milestone	Weeks from Remedial Action Start	Duration (weeks)
Approval of RAWP	--	0
Fact Sheet Announcing Start of Remedial Action	0	1
Mobilization	2	1
Remedial Action (Excavation and Foundation Installation, Sheet Pile Installation, Offsite SSDS, Groundwater Treatment)	58	52
Submittal of Draft Site Management Plan (SMP)	64	--
Submittal of Draft Final Engineering Report (FER)	64	--
Initial Groundwater Sampling	70	--
Second Round of Groundwater Sampling	82	--
Submit Final Engineering Report (FER)	84	--
Obtain Certificate of Completion (COC)	--	--

Table 5
Required Permits
470 Kent Avenue - Brooklyn, NY
Remedial Action Work Plan BCP
#C224053

Permit / Equivalency	Law, Statute or Code	Contact
SPDES Discharge Permit	40 CFR 144-147	NYSDEC Permits / Division of Water
Long Island Well Permit	6 NYCRR Part 602	NYSDEC Permits / Division of Water

Table 6 - Volatile Organic Compounds in Soil - BCP Portion
470 Kent Avenue - Brooklyn, NY
BCP#C224053

SAMPLE ID:				BSB-10 (0-2)		BSB-10 (8-10)		BTP-1 (0-2)		BTP-1 (2-4)		BSB-12 (10.5-12)		BTP-3 (1-2)		BTP-3 (3-4)		BTP-4 (0-2)		BTP-4 (2-3)	
LAB ID:				L2034532-01		L2034532-02		L2034532-03		L2034532-04		L2034532-05		L2034532-06		L2034532-07		L2034532-08		L2034532-09	
COLLECTION DATE:	NY-RESGW	NY-RESRR	NY-UNRES	8/23/2020		8/23/2020		8/23/2020		8/23/2020		8/23/2020		8/23/2020		8/23/2020		8/23/2020		8/23/2020	
Volatile Organic Compounds Units: mg/kg				Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q
Methylene chloride	0.05	100	0.05	0.0032	U	0.0024	U	0.0036	U	0.0033	U	0.21	U	0.0038	U	0.0034	U	0.0037	U	0.0033	U
1,1-Dichloroethane	0.27	26	0.27	0.0002	U	0.00015	U	0.00023	U	0.00021	U	0.013	U	0.00024	U	0.00021	U	0.00024	U	0.00021	U
Chloroform	0.37	49	0.37	0.00019	U	0.00015	U	0.00022	U	0.0002	U	0.013	U	0.00023	U	0.00021	U	0.00023	U	0.0002	U
Carbon tetrachloride	0.76	2.4	0.76	0.00032	U	0.00024	U	0.00036	U	0.00033	U	0.021	U	0.00038	U	0.00034	U	0.00037	U	0.00033	U
1,2-Dichloropropane	--	--	--	0.00017	U	0.00013	U	0.0002	U	0.00018	U	0.011	U	0.0002	U	0.00018	U	0.0002	U	0.00018	U
Dibromochloromethane	--	--	--	0.00019	U	0.00015	U	0.00022	U	0.0002	U	0.013	U	0.00023	U	0.00021	U	0.00023	U	0.0002	U
1,1,2-Trichloroethane	--	--	--	0.00037	U	0.00028	U	0.00042	U	0.00038	U	0.024	U	0.00044	U	0.00039	U	0.00043	U	0.00038	U
Tetrachloroethene	1.3	19	1.3	0.00053	J	0.00021	U	0.00031	U	0.00028	U	0.018	U	0.00032	U	0.00029	U	0.00078	J	0.00028	U
Chlorobenzene	1.1	100	1.1	0.00018	U	0.00014	U	0.0002	U	0.00018	U	0.026	J	0.00021	U	0.00019	U	0.00021	U	0.00018	U
Trichlorofluoromethane	--	--	--	0.00096	U	0.00074	U	0.0011	U	0.00099	U	0.064	U	0.0011	U	0.001	U	0.0011	U	0.001	U
1,2-Dichloroethane	0.02	3.1	0.02	0.00035	U	0.00027	U	0.00041	U	0.00037	U	0.023	U	0.00042	U	0.00038	U	0.00042	U	0.00037	U
1,1,1-Trichloroethane	0.68	100	0.68	0.00023	U	0.00018	U	0.00026	U	0.00024	U	0.015	U	0.00027	U	0.00024	U	0.00027	U	0.00024	U
Bromodichloromethane	--	--	--	0.00015	U	0.00012	U	0.00017	U	0.00016	U	0.01	U	0.00018	U	0.00016	U	0.00018	U	0.00016	U
trans-1,3-Dichloropropene	--	--	--	0.00038	U	0.00029	U	0.00043	U	0.00039	U	0.025	U	0.00045	U	0.0004	U	0.00044	U	0.00039	U
cis-1,3-Dichloropropene	--	--	--	0.00022	U	0.00017	U	0.00025	U	0.00022	U	0.014	U	0.00026	U	0.00023	U	0.00026	U	0.00023	U
1,3-Dichloropropene, Total	--	--	--	0.00022	U	0.00017	U	0.00025	U	0.00022	U	0.014	U	0.00026	U	0.00023	U	0.00026	U	0.00023	U
1,1-Dichloropropene	--	--	--	0.00022	U	0.00017	U	0.00025	U	0.00023	U	0.014	U	0.00026	U	0.00023	U	0.00026	U	0.00023	U
Bromoform	--	--	--	0.00034	U	0.00026	U	0.00039	U	0.00035	U	0.022	U	0.0004	U	0.00036	U	0.0004	U	0.00035	U
1,1,2,2-Tetrachloroethane	--	--	--	0.00023	U	0.00018	U	0.00026	U	0.00024	U	0.015	U	0.00027	U	0.00024	U	0.00027	U	0.00024	U
Benzene	0.06	4.8	0.06	0.00023	U	0.00018	U	0.00026	U	0.00024	U	0.42		0.00027	U	0.00024	U	0.00027	U	0.00024	U
Toluene	0.7	100	0.7	0.00075	U	0.00058	U	0.00086	U	0.00077	U	0.32		0.00089	U	0.0008	U	0.00088	U	0.00078	U
Ethylbenzene	1	41	1	0.00019	U	0.00015	U	0.00022	U	0.0002	U	3.6		0.00023	U	0.00021	U	0.00023	U	0.0002	U
Chloromethane	--	--	--	0.0013	U	0.001	U	0.0015	U	0.0013	U	0.085	U	0.0015	U	0.0014	U	0.0015	U	0.0013	U
Bromomethane	--	--	--	0.0008	U	0.00062	U	0.00092	U	0.00083	U	0.053	U	0.00095	U	0.00086	U	0.00095	U	0.00083	U
Vinyl chloride	0.02	0.9	0.02	0.00046	U	0.00036	U	0.00053	U	0.00048	U	0.031	U	0.00055	U	0.00049	U	0.00054	U	0.00048	U
Chloroethane	--	--	--	0.00062	U	0.00048	U	0.00072	U	0.00064	U	0.041	U	0.00074	U	0.00066	U	0.00074	U	0.00065	U
1,1-Dichloroethene	0.33	100	0.33	0.00033	U	0.00025	U	0.00038	U	0.00034	U	0.022	U	0.00039	U	0.00035	U	0.00039	U	0.00034	U
trans-1,2-Dichloroethene	0.19	100	0.19	0.00019	U	0.00015	U	0.00022	U	0.0002	U	0.012	U	0.00022	U	0.0002	U	0.00022	U	0.0002	U
Trichloroethene	0.47	21	0.47	0.00019	U	0.00015	U	0.00022	U	0.0002	U	0.012	U	0.00022	U	0.0002	U	0.00022	U	0.0002	U
1,2-Dichlorobenzene	1.1	100	1.1	0.0002	U	0.00015	U	0.00023	U	0.0002	U	0.013	U	0.00024	U	0.00021	U	0.00023	U	0.00021	U
1,3-Dichlorobenzene	2.4	49	2.4	0.0002	U	0.00016	U	0.00023	U	0.00021	U	0.014	U	0.00024	U	0.00022	U	0.00024	U	0.00021	U
1,4-Dichlorobenzene	1.8	13	1.8	0.00024	U	0.00018	U	0.00027	U	0.00024	U	0.016	U	0.00028	U	0.00025	U	0.00028	U	0.00024	U
Methyl tert butyl ether	0.93	100	0.93	0.00028	U	0.00021	U	0.00032	U	0.00029	U	0.018	U	0.00033	U	0.0003	U	0.00033	U	0.00029	U
p/m-Xylene	--	--	--	0.00077	U	0.0006	U	0.00089	U	0.0008	U	0.57		0.00092	U	0.00082	U	0.00091	U	0.0008	U
o-Xylene	--	--	--	0.0004	U	0.00031	U	0.00096	J	0.00042	U	1.1		0.00048	U	0.00043	U	0.00047	U	0.00042	U
Xylenes, Total	1.6	100	0.26	0.0004	U	0.00031	U	0.00096	J	0.00042	U	1.7		0.00048	U	0.00043	U	0.00047	U	0.00042	U
cis-1,2-Dichloroethene	0.25	100	0.25	0.00024	U	0.00019	U	0.00028	U	0.00025	U	0.016	U	0.00029	U	0.00026	U	0.00028	U	0.00025	U
1,2-Dichloroethene, Total	--	--	--	0.00019	U	0.00015	U	0.00022	U	0.0002	U	0.012	U	0.00022	U	0.0002	U	0.00022	U	0.0002	U
Dibromomethane	--	--	--	0.00033	U	0.00025	U	0.00038	U	0.00034	U	0.022	U	0.00039	U	0.00035	U	0.00039	U	0.00034	U
Styrene	--	--	--	0.00027	U	0.00021	U	0.00031	U	0.00028	U	0.018	U	0.00032	U	0.00029	U	0.00032	U	0.00028	U
Dichlorodifluoromethane	--	--	--	0.0013	U	0.00098	U	0.0014	U	0.0013	U	0.084	U	0.0015	U	0.0013	U	0.0015	U	0.0013	U
Acetone	0.05	100	0.05	0.0066	U	0.0051	U	0.034		0.0069	U	0.44	U	0.0079	U	0.0071	U	0.0078	U	0.01	J
Carbon disulfide	--	--	--	0.0063	U	0.0049	U	0.0072	U	0.0065	U	2.4		0.0075	U	0.0067	U	0.0074	U	0.0065	U
2-Butanone	0.12	100	0.12	0.0031	U	0.0024	U	0.0037	J	0.0032	U	0.2	U	0.0036	U	0.0033	U	0.0036	U	0.0032	U
Vinyl acetate	--	--	--	0.003	U	0.0023	U	0.0034	U	0.0031	U	0.2	U	0.0035	U	0.0032	U	0.0035	U	0.0031	U
4-Methyl-2-pentanone	--	--	--	0.0018	U	0.0014	U	0.0046	J	0.0018	U	0.12	U	0.0021	U	0.0019	U	0.0021	U	0.0018	U
1,2,3-Trichloropropane	--	--	--	0.00018	U	0.00014	U	0.0002	U	0.00018	U	0.012	U	0.00021	U	0.00019	U	0.00021	U	0.00018	U
2-Hexanone	--	--	--	0.0016	U	0.0013	U	0.0019	U	0.0017	U	0.11	U	0.0019	U	0.0017	U	0.0019	U	0.0017	U
Bromochloromethane	--	--	--	0.00028	U	0.00022	U	0.00032	U	0.00029	U	0.019	U	0.00034	U	0.0003	U	0.00033	U	0.00029	U
2,2-Dichloropropane	--	--	--	0.00028	U	0.00022	U	0.00032	U	0.00029	U	0.018	U	0.00033	U	0.0003	U	0.00033	U	0.00029	U
1,2-Dibromoethane	--	--	--	0.00038	U	0.0003	U	0.00044	U	0.0004	U	0.025	U	0.00046	U	0.00041	U	0.00045	U	0.0004	U
1,3-Dichloropropane	--	--	--	0.00023	U	0.00018	U	0.00026	U	0.00024	U	0.015	U	0.00027	U	0.00024	U	0.00027	U	0.00024	U
1,1,1,2-Tetrachloroethane	--	--	--	0.00018	U	0.00014	U	0.00021	U	0.00019	U	0.012	U	0.00022	U	0.00019	U	0.00021	U	0.00019	U
Bromobenzene	--	--	--	0.0002	U	0.00015	U	0.00023	U	0.00021	U	0.013	U	0.00024	U	0.00021	U	0.00024	U	0.00021	U
n-Butylbenzene	12	100	12	0.00023	U	0.00018	U	0.00038	J	0.00024	U	0.26		0.00027	U	0.00024	U	0.00027	U	0.00024	U
sec-Butylbenzene	11	100	11	0.0002	U	0.00016	U	0.00039	J	0.00021	U	0.14		0.00024	U	0.00022	U	0.00024	U	0.00021	U
tert-Butylbenzene	5.9	100	5.9	0.00016	U	0.00013	U	0.00019	U	0.00017	U	0.011	J	0.00019	U	0.00017	U	0.00019	U	0.00017	U
o-Chlorotoluene	--	--	--	0.00026	U	0.0002	U	0.0003	U	0.00027	U	0.017	U	0.00031	U	0.00028	U	0.00031	U	0.00027	U
p-Chlorotoluene	--	--	--	0.00015	U	0.00012	U	0.00017	U	0.00015	U	0.0099	U	0.00018	U	0.00016	U	0.00018	U	0.00015	U
1,2-Dibromo-3-chloropropane	--	--	--	0.0014	U	0.0011	U	0.0016	U	0.0014	U	0.091	U	0.0016	U	0.0015	U	0.0016	U	0.0014	U
Hexachlorobutadiene	--	--	--	0.00023	U	0.00018	U	0.00027	U	0.00024	U	0.015	U	0.00028	U	0.00025	U	0.00028	U	0.00024	U
Isopropylbenzene	--	--	--	0.00015	U	0.00012	U	0.00041	J	0.00016	U	0.7		0.00018	U	0.00016	U	0.00018	U	0.00016	U
p-Isopropyltoluene	--	--	--	0.00015	U	0.00012	U	0.00035	J	0.00016	U	0.18		0.00018	U	0.00016	U	0.00018	U	0.00016	U
Naphthalene	12	100	12	0.0009	U	0.00069	U	0.001	J	0.00093	U	23		0.0011	U	0.00096	U	0.001	U	0.00093	U
Acrylonitrile	--	--	--	0.0016	U	0.0012	U	0.0018	U	0.0016	U	0.1	U	0.0019	U	0.0017	U	0.0019	U	0.0016	U
n-Propylbenzene	3.9	100	3.9	0.00024	U	0.00018	U	0.0004	J	0.00024	U	1.2		0.00028	U	0.00025	U	0.00028	U	0.00024	U
1,2,3-Trichlorobenzene	--	--	--	0.00044	U	0.00034	U	0.00051	U	0.00046	U	0.029	U	0.00053	U	0.00047	U	0.00052	U	0.00046	U
1,2,4-Trichlorobenzene	--	--	--	0.00038	U	0.00029	U	0.00043	U	0.00039	U	0.025	U	0.00045	U	0.0004	U	0.00044	U	0.00039	U
1,3,5-Trimethylbenzene	8.4	52	8.4	0.00027	U	0.00021	U	0.0035		0.00028	U	0.051	J	0.00032	U	0.00028	U	0.00031	U	0.00028	U
1,2,4-Trimethylbenzene	3.6	52	3.6	0.00046	U	0.00036	U	0.0072		0.00048	U	0.35		0.00055	U	0.00049	U	0.00054	U	0.00048	U
1,4-Dioxane	0.1	13	0.1	0.048	U	0.037	U	0.056	U	0.05	U	3.2	U	0.058	U	0.052	U	0.057	U	0.05	U
n-Diethylbenzene	--	--	--	0.00024	U	0.00019	U	0.00028	U	0.00025	U	0.21		0.00029	U	0.00026	U	0.00029	J	0.00025	U
p-Ethyltoluene	--	--	--	0.00053	U	0.00041	U	0.0026	J	0.00055	U	0.2		0.00063	U	0.00056	U	0.00062	U	0.00055	U
1,2,4,5-Tetramethylbenzene	--	--	--	0.00026	U	0.0002	U	0.0035		0.00027	U	2.8		0.0022	J	0.00028	U	0.0004	J	0.00027	U
Ethyl ether	--	--	--	0.00047	U	0.00036	U	0.00054	U	0.00049	U	0.031	U	0.00056	U	0.0005	U	0.00056	U	0.00049	U
trans-1,4-Dichloro-2-butene	--	--	--	0.002	U	0.0015	U	0.0022	U	0.002	U	0.13	U	0.0023	U	0.0021	U	0.0023	U	0.002	U
Total VOCs	--	--	--	0.00053	-	-	-	0.06299	-	-	-	37.538	-	0.0022	-	-	-	0.00197	-	0.01	-

Notes:
NY-RESGW: New York NYCRR Part 375 Groundwater Criteria, New York Restricted use Criteria per 6 NYCRR Part 375 Environmental Remediation Programs, effective December 14, 2006.
NY-RESRR: New York NYCRR Part 375 Restricted-Residential Criteria, New York Restricted use Criteria per 6 NYCRR Part 375 Environmental Remediation Programs, effective December 14, 2006.
NY-UNRES: New York NYCRR Part 375 New York Unrestricted use Criteria Criteria per 6 NYCRR Part 375 Environmental Remediation Programs, effective December 14, 2006.
Cells highlighted in yellow indicate a concentration above the NY-RESGW
Cells highlighted in blue indicate a concentration above the NY-RESRR
Cells highlighted in red indicate a concentration aboe the NY-UNRES
Q = Laboratory Data Qualifier
MDL = Maximum Detection Limit
For U qualified entries, the MDL is shown
U = Not detected at or above the MDL
J = The concentration is estimated
DUP = Designation for duplicate sample
All results and MDLs are shown in milligrams per kilogram (mg/kg)

Table 6 -Volatile Organic Compounds in Soil - BCP Portion
470 Kent Avenue - Brooklyn, NY
BCP#C224053

SAMPLE ID:				BSB8 (0-2)		BSB8 N1 (7-8)		BSB-9 (0-2)		BSB9 (0-2)		8BSB9 (7-8)		BSB-13 (15-16)		BSB-13 (19.5-20)		BMW-14 (13-14)		BMW-14 (14-15)		BMW-14 (18-18.5)	
LAB ID:				L1523999-01		L1523999-02		L1523673-08		L1524836-01		L1524836-02		L1523673-10		L1523673-02		L1529203-10		L1529203-11		L1529203-12	
COLLECTION DATE:	NY-RESGW	NY-RESRR	NY-UNRES	9/24/2015		9/24/2015		9/22/2015		9/30/2015		9/30/2015		9/22/2015		9/22/2015		11/9/2015		11/9/2015		11/9/2015	
Volatile Organic Compounds Units: mg/kg				Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q
Methylene chloride	0.05	100	0.05	0.0013	U	0.0013	U	0.0012	U	0.0013	U	0.0013	U	0.004	U	0.0015	U	0.002	U	0.0014	U	88	U
1,1-Dichloroethane	0.27	26	0.27	0.0001	U	0.0001	U	0.0001	U	0.0001	U	0.0001	U	0.00031	U	0.00012	U	0.00015	U	0.00011	U	6.8	U
Chloroform	0.37	49	0.37	0.00043	U	0.00045	U	0.00041	U	0.00043	U	0.00044	U	0.0014	U	0.0005	U	0.00067	U	0.00048	U	29	U
Carbon tetrachloride	0.76	2.4	0.76	0.00024	U	0.00026	U	0.00023	U	0.00024	U	0.00025	U	0.00077	U	0.00028	U	0.00038	U	0.00027	U	17	U
1,2-Dichloropropane	--	--	--	0.00026	U	0.00028	U	0.00026	U	0.00027	U	0.00027	U	0.00084	U	0.00031	U	0.00041	U	0.0003	U	18	U
Dibromochloromethane	--	--	--	0.00018	U	0.00019	U	0.00017	U	0.00018	U	0.00018	U	0.00056	U	0.00021	U	0.00028	U	0.0002	U	12	U
1,1,2-Trichloroethane	--	--	--	0.00035	U	0.00037	U	0.00034	U	0.00035	U	0.00036	U	0.0011	U	0.00041	U	0.00055	U	0.00039	U	24	U
Tetrachloroethene	1.3	19	1.3	0.00016	U	0.00017	U	0.00016	U	0.00016	U	0.00016	U	0.00051	U	0.00019	U	0.00025	U	0.00018	U	11	U
Chlorobenzene	1.1	100	1.1	0.0004	U	0.00042	U	0.00039	U	0.00041	U	0.00041	U	0.0013	U	0.00047	U	0.0039		0.00045	U	28	U
Trichlorofluoromethane	--	--	--	0.00045	U	0.00047	U	0.00043	U	0.00045	U	0.00046	U	0.0014	U	0.00053	U	0.0007	U	0.0005	U	31	U
1,2-Dichloroethane	0.02	3.1	0.02	0.00013	U	0.00014	U	0.00013	U	0.00013	U	0.00013	U	0.00042	U	0.00015	U	0.0002	U	0.00015	U	9	U
1,1,1-Trichloroethane	0.68	100	0.68	0.00013	U	0.00013	U	0.00012	U	0.00013	U	0.00013	U	0.00041	U	0.00015	U	0.0002	U	0.00014	U	8.8	U
Bromodichloromethane	--	--	--	0.0002	U	0.00021	U	0.00019	U	0.0002	U	0.0002	U	0.00064	U	0.00024	U	0.00031	U	0.00022	U	14	U
trans-1,3-Dichloropropene	--	--	--	0.00014	U	0.00015	U	0.00014	U	0.00014	U	0.00014	U	0.00044	U	0.00016	U	0.00022	U	0.00016	U	9.6	U
cis-1,3-Dichloropropene	--	--	--	0.00014	U	0.00014	U	0.00013	U	0.00014	U	0.00014	U	0.00043	U	0.00016	U	0.00021	U	0.00015	U	9.4	U
1,3-Dichloropropene, Total	--	--	--	0.00014	U	0.00014	U	0.00013	U	0.00014	U	0.00015	U	0.00043	U	0.00016	U	0.00021	U	0.00015	U	9.4	U
1,1-Dichloropropene	--	--	--	0.00016	U	0.00017	U	0.00016	U	0.00016	U	0.00016	U	0.00052	U	0.00019	U	0.00026	U	0.00018	U	11	U
Bromoform	--	--	--	0.00027	U	0.00029	U	0.00026	U	0.00028	U	0.00017	U	0.00087	U	0.00032	U	0.00043	U	0.00031	U	19	U
1,1,2,2-Tetrachloroethane	--	--	--	0.00012	U	0.00012	U	0.00011	U	0.00012	U	0.00018	U	0.00037	U	0.00014	U	0.00018	U	0.00013	U	8	U
Benzene	0.06	4.8	0.06	0.00014	U	0.00014	U	0.00013	U	0.00014	U	0.00019	U	0.00043	U	0.00016	U	0.00021	U	0.0034		9.4	U
Toluene	0.7	100	0.7	0.00022	U	0.00024	U	0.00022	U	0.00023	U	0.00020	U	0.0034	J	0.00026	U	0.00035	U	0.0022		16	U
Ethylbenzene	1	41	1	0.00015	U	0.00016	U	0.00014	U	0.00015	U	0.00021	U	0.00047	U	0.00017	U	0.00023	U	0.0017		96	
Chloromethane	--	--	--	0.00034	U	0.00036	U	0.00033	U	0.00034	U	0.00022	U	0.0011	U	0.0004	U	0.00053	U	0.00038	U	23	U
Bromomethane	--	--	--	0.00039	U	0.00041	U	0.00038	U	0.00039	U	0.00023	U	0.0012	U	0.00046	U	0.00061	U	0.00044	U	27	U
Vinyl chloride	0.02	0.9	0.02	0.00014	U	0.00014	U	0.00013	U	0.00014	U	0.00024	U	0.00043	U	0.00016	U	0.00021	U	0.00015	U	9.3	U
Chloroethane	--	--	--	0.00036	U	0.00038	U	0.00035	U	0.00037	U	0.00025	U	0.0012	U	0.00043	U	0.00057	U	0.00041	U	25	U
1,1-Dichloroethene	0.33	100	0.33	0.0003	U	0.00032	U	0.00029	U	0.0003	U	0.00026	U	0.00096	U	0.00036	U	0.00047	U	0.00034	U	21	U
trans-1,2-Dichloroethene	0.19	100	0.19	0.00024	U	0.00026	U	0.00024	U	0.00025	U	0.00027	U	0.00078	U	0.00029	U	0.00038	U	0.00028	U	17	U
Trichloroethene	0.47	21	0.47	0.00014	U	0.00015	U	0.00014	U	0.00014	U	0.00028	U	0.00046	U	0.00017	U	0.00023	U	0.00016	U	10	U
1,2-Dichlorobenzene	1.1	100	1.1	0.00018	U	0.00019	U	0.00017	U	0.00018	U	0.00029	U	0.00056	U	0.00021	U	0.00028	U	0.0002	U	12	U
1,3-Dichlorobenzene	2.4	49	2.4	0.00016	U	0.00016	U	0.00015	U	0.00016	U	0.00030	U	0.0005	U	0.00018	U	0.00024	U	0.00018	U	11	U
1,4-Dichlorobenzene	1.8	13	1.8	0.00016	U	0.00017	U	0.00015	U	0.00016	U	0.00031	U	0.00051	U	0.00019	U	0.00025	U	0.00018	U	11	U
Methyl tert butyl ether	0.93	100	0.93	0.0001	U	0.0001	U	0.00009	U	0.0001	U	0.00032	U	0.00031	U	0.00011	U	0.00015	U	0.00011	U	6.7	U
p/m-Xylene	--	--	--	0.00023	U	0.00024	U	0.00022	U	0.00023	U	0.00033	U	0.0026	J	0.00027	U	0.00036	U	0.0015	J	69	J
o-Xylene	--	--	--	0.0002	U	0.00021	U	0.00019	U	0.0002	U	0.00034	U	0.00063	U	0.00023	U	0.00031	U	0.00022	U	63	J
Xylenes, Total	1.6	100	0.26	0.0002	U	0.00021	U	0.00019	U	0.0002	U	0.00035	U	0.0026	J	0.00023	U	0.00031	U	0.0015	J	130	J
cis-1,2-Dichloroethene	0.25	100	0.25	0.00016	U	0.00017	U	0.00016	U	0.00017	U	0.00036	U	0.00052	U	0.00019	U	0.00026	U	0.00018	U	11	U
1,2-Dichloroethene, Total	--	--	--	0.00016	U	0.00017	U	0.00016	U	0.00017	U	0.00037	U	0.00052	U	0.00019	U	0.00026	U	0.00018	U	11	U
Dibromomethane	--	--	--	0.00019	U	0.0002	U	0.00018	U	0.00019	U	0.00038	U	0.0006	U	0.00022	U	0.0003	U	0.00021	U	13	U
Styrene	--	--	--	0.00046	U	0.00049	U	0.00045	U	0.00047	U	0.00039	U	0.0015	U	0.00054	U	0.00073	U	0.00052	U	32	U
Dichlorodifluoromethane	--	--	--	0.00022	U	0.00023	U	0.00021	U	0.00022	U	0.00040	U	0.0007	U	0.00026	U	0.00034	U	0.00025	U	15	U
Acetone	0.05	100	0.05	0.0012	U	0.0079	J	0.0012	U	0.0028	J	0.00041		0.013	J	0.0014	U	0.039		0.019		82	U
Carbon disulfide	--	--	--	0.0013	U	0.0013	U	0.0012	U	0.0013	U	0.00042	U	0.004	U	0.0015	U	0.014	J	0.0053	J	88	U
2-Butanone	0.12	100	0.12	0.00031	U	0.00033	U	0.0003	U	0.00032	U	0.00043	U	0.001	U	0.00037	U	0.01	J	0.0031	J	22	U
Vinyl acetate	--	--	--	0.00015	U	0.00016	U	0.00015	U	0.00015	U	0.00044	U	0.00048	U	0.00018	U	0.00024	U	0.00017	U	10	U
4-Methyl-2-pentanone	--	--	--	0.00028	U	0.0003	U	0.00027	U	0.00028	U	0.00045	U	0.0009	U	0.00033	U	0.00044	U	0.00032	U	19	U
1,2,3-Trichloropropane	--	--	--	0.00019	U	0.0002	U	0.00018	U	0.00019	U	0.00046	U	0.0006	U	0.00022	U	0.00029	U	0.00021	U	13	U
2-Hexanone	--	--	--	0.00077	U	0.00081	U	0.00074	U	0.00078	U	0.00047	U	0.0024	U	0.0009	U	0.0012	U	0.00086	U	53	U
Bromochloromethane	--	--	--	0.00032	U	0.00034	U	0.00031	U	0.00032	U	0.00048	U	0.001	U	0.00037	U	0.0005	U	0.00036	U	22	U
2,2-Dichloropropane	--	--	--	0.00026	U	0.00028	U	0.00025	U	0.00026	U	0.00049	U	0.00083	U	0.00031	U	0.00041	U	0.00029	U	18	U
1,2-Dibromoethane	--	--	--	0.0002	U	0.00021	U	0.0002	U	0.0002	U	0.00050	U	0.00064	U	0.00024	U	0.00032	U	0.00023	U	14	U
1,3-Dichloropropane	--	--	--	0.00017	U	0.00018	U	0.00016	U	0.00017	U	0.00051	U	0.00053	U	0.0002	U	0.00026	U	0.00019	U	12	U
1,1,1,2-Tetrachloroethane	--	--	--	0.00037	U	0.00039	U	0.00036	U	0.00037	U	0.00052	U	0.0012	U	0.00043	U	0.00058	U	0.00041	U	25	U
Bromobenzene	--	--	--	0.00024	U	0.00025	U	0.00023	U	0.00024	U	0.00053	U	0.00076	U	0.00028	U	0.00038	U	0.00027	U	16	U
n-Butylbenzene	12	100	12	0.00013	U	0.00014	U	0.00013	U	0.00013	U	0.00054	U	0.00042	U	0.00016	U	0.00021	U	0.00015	U	9.1	U
sec-Butylbenzene	11	100	11	0.00014	U	0.00015	U	0.00014	U	0.00014	U	0.00055	U	0.00045	U	0.00016	U	0.00022	U	0.00016	U	9.7	U
tert-Butylbenzene	5.9	100	5.9	0.00016	U	0.00016	U	0.00015	U	0.00016	U	0.00056	U	0.0005	U	0.00018	U	0.00024	U	0.00018	U	11	U
o-Chlorotoluene	--	--	--	0.00018	U	0.00019	U	0.00018	U	0.00019	U	0.00057	U	0.00059	U	0.00022	U	0.00029	U	0.00021	U	13	U
p-Chlorotoluene	--	--	--	0.00015	U	0.00016	U	0.00015	U	0.00015	U	0.00058	U	0.00049	U	0.00018	U	0.00024	U	0.00017	U	10	U
1,2-Dibromo-3-chloropropane	--	--	--	0.00046	U	0.00048	U	0.00044	U	0.00046	U	0.00059	U	0.0014	U	0.00054	U	0.00072	U	0.00051	U	32	U
Hexachlorobutadiene	--	--	--	0.00026	U	0.00028	U	0.00026	U	0.00027	U	0.00060	U	0.00084	U	0.00031	U	0.00041	U	0.0003	U	18	U
Isopropylbenzene	--	--	--	0.00012	U	0.00013	U	0.00012	U	0.00012	U	0.00061	U	0.00038	U	0.00014	U	0.0025		0.0021		8.3	U
p-Isopropyltoluene	--	--	--	0.00014	U	0.00015	U	0.00014	U	0.00014	U	0.00062	U	0.00046	U	0.00017	U	0.00023	U	0.00016	U	10	U
Naphthalene	12	100	12	0.0012	J	0.00017	U	0.00015	U	0.00016	U	0.00063	U	0.011	J	0.00019	U	0.0054	J	0.1		2800	
Acrylonitrile	--	--	--	0.00059	U	0.00063	U	0.00057	U	0.0006	U	0.00064	U	0.0019	U	0.0007	U	0.00093	U	0.00067	U	41	U
n-Propylbenzene	3.9	100	3.9	0.00013	U	0.00013	U	0.00012	U	0.00013	U	0.00065	U	0.0004	U	0.00015	U	0.0002	U	0.0011	J	8.7	U
1,2,3-Trichlorobenzene	--	--	--	0.00017	U	0.00018	U	0.00016	U	0.00017	U	0.00066	U	0.00054	U	0.0002	U	0.00027	U	0.00019	U	12	U
1,2,4-Trichlorobenzene	--	--	--	0.00021	U	0.00022	U	0.0002	U	0.00021	U	0.00067	U	0.00067	U	0.00025	U	0.00033	U	0.00024	U	14	U
1,3,5-Trimethylbenzene	8.4	52	8.4	0.00016	U	0.00017	U	0.00016	U	0.00017	U	0.00068	U	0.00053	U	0.00019	U	0.00026	U	0.00019	U	11	U
1,2,4-Trimethylbenzene	3.6	52	3.6	0.00016	U	0.00017	U	0.00016	U	0.00016	U	0.00069	U	0.00052	U	0.00019	U	0.00026	U	0.00018	U	120	J
1,4-Dioxane	0.1	13	0.1	0.017	U	0.018	U	0.016	U	0.017	U	0.00070	U	0.053	U	0.02	U	0.026	U	0.019	U	1100	U
p-Diethylbenzene	--	--	--	0.00018	U	0.00019	U	0.00018	U	0.00019	U	0.00071	U	0.00059	U	0.00022	U	0.00029	U	0.00021	U	13	U
p-Ethyltoluene	--	--	--	0.00014	U	0.00015	U	0.00014	U	0.00014	U	0.00072	U	0.00046	U	0.00017	U	0.00022	U	0.00016	U	20	J
1,2,4,5-Tetramethylbenzene	--	--	--	0.00015	U	0.00016	U	0.00014	U	0.00015	U	0.00073	U	0.00048	U	0.00018	U	0.00024	U	0.0021	J	13	J
Ethyl ether	--	--	--	0.0003	U	0.00032	U	0.00029	U	0.0003	U	0.00074	U	0.00095	U	0.00035	U	0.00047	U	0.00034	U	21	U
trans-1,4-Dichloro-2-butene	--	--	--	0.00045	U	0.00048	U	0.00044	U	0.00046	U	0.00075	U	0.0014	U	0.00053	U	0.00071	U	0.00051	U	31	U
Total VOCs	--	--	--	0.0012	-	0.0079	-	-	-	0.0028	-	0.00076	-	0.03	-	-	-	0.0748	-	0.1415	-	9181	-

Notes:
NY-RESGW: New York NYCRR Part 375 Groundwater Criteria, New York Restricted use Criteria per 6 NYCRR Part 375 Environmental Remediation Programs, effective December 14, 2006.
NY-RESRR: New York NYCRR Part 375 Restricted-Residential Criteria, New York Restricted use Criteria per 6 NYCRR Part 375 Environmental Remediation Programs, effective December 14, 2006.
NY-UNRES: New York NYCRR Part 375 New York Unrestricted use Criteria Criteria per 6 NYCRR Part 375 Environmental Remediation Programs, effective December 14, 2006.
Cells highlighted in yellow indicate a concentration above the NY-RESGW
Cells highlighted in blue indicate a concentration above the NY-RESRR
Cells highlighted in red indicate a concentration aboe the NY-UNRES
Q = Laboratory Data Qualifier
MDL = Maximum Detection Limit
For U qualified entries, the MDL is shown
U = Not detected at or above the MDL
J = The concentration is estimated
DUP = Designation for duplicate sample
All results and MDLs are shown in milligrams per kilogram (mg/kg)

Table 6 - Volatile Organic Compounds in Soil - BCP Portion
470 Kent Avenue - Brooklyn, NY
BCP#C224053

SAMPLE ID:				BMW-14 (18.5-19)		BSB-15 (18-20)		BSB-15 (21-22)		BSB-16 (8-9)		BSB-16 (10-12)		BSB-16 (14-15)		BSB-17 (0-3)		BSB-17 (8-9)		BSB-17 (14-15)		BSB-17 (18-20)	
LAB ID:				L1529203-13		L1523673-09		L1523673-01		L1523673-07		L1523673-13		L1523673-14		L1523673-06		L1523673-15		L1523673-05		L1523673-16	
COLLECTION DATE:	NY-RESGW	NY-RESRR	NY-UNRES	11/9/2015		9/22/2015		9/22/2015		9/22/2015		9/22/2015		9/22/2015		9/22/2015		9/22/2015		9/22/2015		9/22/2015	
Volatile Organic Compounds Units: mg/kg				Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q
Methylene chloride	0.05	100	0.05	50	U	0.24	U	0.096	U	0.0013	U	0.0014	U	0.0013	U	0.0012	U	0.0013	U	14	U	0.0021	U
1,1-Dichloroethane	0.27	26	0.27	3.9	U	0.018	U	0.0075	U	0.0001	U	0.00011	U	0.0001	U	0.0001	U	0.0001	U	1.1	U	0.00016	U
Chloroform	0.37	49	0.37	17	U	0.08	U	0.032	U	0.00043	U	0.00046	U	0.00045	U	0.00042	U	0.00045	U	4.8	U	0.00071	U
Carbon tetrachloride	0.76	2.4	0.76	9.6	U	0.045	U	0.018	U	0.00024	U	0.00026	U	0.00025	U	0.00024	U	0.00025	U	2.7	U	0.0004	U
1,2-Dichloropropane	--	--	--	10	U	0.049	U	0.02	U	0.00026	U	0.00028	U	0.00028	U	0.00026	U	0.00028	U	2.9	U	0.00044	U
Dibromochloromethane	--	--	--	7	U	0.033	U	0.013	U	0.00018	U	0.00019	U	0.00018	U	0.00017	U	0.00019	U	2	U	0.00029	U
1,1,2-Trichloroethane	--	--	--	14	U	0.066	U	0.026	U	0.00035	U	0.00038	U	0.00037	U	0.00034	U	0.00037	U	3.9	U	0.00058	U
Tetrachloroethene	1.3	19	1.3	6.4	U	0.03	U	0.012	U	0.00016	U	0.00018	U	0.00017	U	0.00016	U	0.00017	U	1.8	U	0.00027	U
Chlorobenzene	1.1	100	1.1	16	U	0.075	U	0.03	U	0.0004	U	0.00044	U	0.00042	U	0.00039	U	0.00042	U	4.5	U	0.00066	U
Trichlorofluoromethane	--	--	--	18	U	0.084	U	0.034	U	0.00045	U	0.00049	U	0.00047	U	0.00044	U	0.00047	U	5	U	0.00074	U
1,2-Dichloroethane	0.02	3.1	0.02	5.2	U	0.024	U	0.0099	U	0.00013	U	0.00014	U	0.00014	U	0.00013	U	0.00014	U	1.5	U	0.00022	U
1,1,1-Trichloroethane	0.68	100	0.68	5.1	U	0.024	U	0.0097	U	0.00013	U	0.00014	U	0.00013	U	0.00012	U	0.00013	U	1.4	U	0.00021	U
Bromodichloromethane	--	--	--	7.9	U	0.037	U	0.015	U	0.0002	U	0.00022	U	0.00021	U	0.0002	U	0.00021	U	2.2	U	0.00033	U
trans-1,3-Dichloropropene	--	--	--	5.5	U	0.026	U	0.01	U	0.00014	U	0.00015	U	0.00015	U	0.00014	U	0.00015	U	1.6	U	0.00023	U
cis-1,3-Dichloropropene	--	--	--	5.4	U	0.025	U	0.01	U	0.00014	U	0.00015	U	0.00014	U	0.00013	U	0.00014	U	1.5	U	0.00022	U
1,3-Dichloropropene, Total	--	--	--	5.4	U	0.025	U	0.01	U	0.00014	U	0.00015	U	0.00014	U	0.00013	U	0.00014	U	1.5	U	0.00022	U
1,1-Dichloropropene	--	--	--	6.5	U	0.03	U	0.012	U	0.00016	U	0.00018	U	0.00017	U	0.00016	U	0.00017	U	1.8	U	0.00027	U
Bromoform	--	--	--	11	U	0.051	U	0.02	U	0.00027	U	0.0003	U	0.00028	U	0.00027	U	0.00029	U	3	U	0.00045	U
1,1,2,2-Tetrachloroethane	--	--	--	4.6	U	0.022	U	0.0088	U	0.00012	U	0.00013	U	0.00012	U	0.00011	U	0.00012	U	1.3	U	0.00019	U
Benzene	0.06	4.8	0.06	58		0.025	U	0.01	U	0.00014	U	0.00015	U	0.00014	U	0.00013	U	0.00014	U	3.9	J	0.00022	U
Toluene	0.7	100	0.7	39	J	0.042	U	0.017	U	0.00022	U	0.00024	U	0.00024	U	0.00022	U	0.00024	U	6.4	J	0.00037	U
Ethylbenzene	1	41	1	81		0.36		0.19		0.00015	U	0.00016	U	0.00015	U	0.00014	U	0.00015	U	3.4	J	0.00024	U
Chloromethane	--	--	--	13	U	0.063	U	0.026	U	0.00034	U	0.00037	U	0.00036	U	0.00033	U	0.00036	U	3.8	U	0.00056	U
Bromomethane	--	--	--	15	U	0.073	U	0.029	U	0.00039	U	0.00042	U	0.00041	U	0.00038	U	0.00041	U	4.4	U	0.00065	U
Vinyl chloride	0.02	0.9	0.02	5.4	U	0.025	U	0.01	U	0.00014	U	0.00015	U	0.00014	U	0.00013	U	0.00014	U	1.5	U	0.00022	U
Chloroethane	--	--	--	14	U	0.068	U	0.028	U	0.00036	U	0.0004	U	0.00038	U	0.00036	U	0.00038	U	4.1	U	0.0006	U
1,1-Dichloroethene	0.33	100	0.33	12	U	0.056	U	0.023	U	0.0003	U	0.00033	U	0.00032	U	0.0003	U	0.00032	U	3.4	U	0.0005	U
trans-1,2-Dichloroethene	0.19	100	0.19	9.7	U	0.046	U	0.018	U	0.00024	U	0.00026	U	0.00026	U	0.00024	U	0.00026	U	2.7	U	0.0004	U
Trichloroethene	0.47	21	0.47	5.7	U	0.027	U	0.011	U	0.00014	U	0.00016	U	0.00015	U	0.00014	U	0.00015	U	1.6	U	0.00024	U
1,2-Dichlorobenzene	1.1	100	1.1	7	U	0.033	U	0.013	U	0.00018	U	0.00019	U	0.00018	U	0.00017	U	0.00018	U	2	U	0.00029	U
1,3-Dichlorobenzene	2.4	49	2.4	6.2	U	0.029	U	0.012	U	0.00016	U	0.00017	U	0.00016	U	0.00015	U	0.00016	U	1.7	U	0.00026	U
1,4-Dichlorobenzene	1.8	13	1.8	6.3	U	0.03	U	0.012	U	0.00016	U	0.00017	U	0.00017	U	0.00016	U	0.00017	U	1.8	U	0.00026	U
Methyl tert butyl ether	0.93	100	0.93	3.9	U	0.018	U	0.0074	U	0.0001	U	0.0001	U	0.0001	U	0.0001	U	0.0001	U	1.1	U	0.00016	U
p/m-Xylene	--	--	--	160		0.34	J	0.15	J	0.00023	U	0.00025	U	0.00024	U	0.0011	J	0.00024	U	25	J	0.00038	U
o-Xylene	--	--	--	47	J	0.22	J	0.14	J	0.0002	U	0.00022	U	0.00021	U	0.00019	U	0.00021	U	12	J	0.00033	U
Xylenes, Total	1.6	100	0.26	210	J	0.56	J	0.29	J	0.0002	U	0.00022	U	0.00021	U	0.0011	J	0.00021	U	37	J	0.00033	U
cis-1,2-Dichloroethene	0.25	100	0.25	6.5	U	0.031	U	0.012	U	0.00016	U	0.00018	U	0.00017	U	0.00016	U	0.00017	U	1.8	U	0.00027	U
1,2-Dichloroethene, Total	--	--	--	6.5	U	0.031	U	0.012	U	0.00016	U	0.00018	U	0.00017	U	0.00016	U	0.00017	U	1.8	U	0.00027	U
Dibromomethane	--	--	--	7.5	U	0.035	U	0.014	U	0.00019	U	0.0002	U	0.0002	U	0.00018	U	0.0002	U	2.1	U	0.00031	U
Styrene	--	--	--	18	U	0.087	U	0.035	U	0.00046	U	0.0005	U	0.00049	U	0.00046	U	0.00049	U	5.2	U	0.00077	U
Dichlorodifluoromethane	--	--	--	8.7	U	0.041	U	0.017	U	0.00022	U	0.00024	U	0.00023	U	0.00022	U	0.00023	U	2.5	U	0.00036	U
Acetone	0.05	100	0.05	47	U	0.22	U	0.09	U	0.0012	U	0.0073	J	0.008	J	0.0018		0.0012	U	13	U	0.13	
Carbon disulfide	--	--	--	400	J	0.24	U	0.096	U	0.0013	U	0.0014	U	0.004	J	0.0012	U	0.0013	U	14	U	0.0043	J
2-Butanone	0.12	100	0.12	12	U	0.059	U	0.024	U	0.00031	U	0.00034	U	0.00033	U	0.0017	J	0.00033	U	3.5	U	0.022	
Vinyl acetate	--	--	--	6	U	0.028	U	0.012	U	0.00015	U	0.00016	U	0.00016	U	0.00015	U	0.00016	U	1.7	U	0.00025	U
4-Methyl-2-pentanone	--	--	--	11	U	0.053	U	0.021	U	0.00028	U	0.0003	U	0.0003	U	0.00028	U	0.0003	U	3.1	U	0.00047	U
1,2,3-Trichloropropane	--	--	--	7.4	U	0.035	U	0.014	U	0.00019	U	0.0002	U	0.0002	U	0.00018	U	0.0002	U	2.1	U	0.00031	U
2-Hexanone	--	--	--	30	U	0.14	U	0.058	U	0.00077	U	0.00083	U	0.00081	U	0.00075	U	0.00081	U	8.6	U	0.0013	U
Bromochloromethane	--	--	--	13	U	0.06	U	0.024	U	0.00032	U	0.00034	U	0.00033	U	0.00031	U	0.00033	U	3.6	U	0.00053	U
2,2-Dichloropropane	--	--	--	10	U	0.049	U	0.02	U	0.00026	U	0.00028	U	0.00027	U	0.00026	U	0.00027	U	2.9	U	0.00043	U
1,2-Dibromoethane	--	--	--	8	U	0.038	U	0.015	U	0.0002	U	0.00022	U	0.00021	U	0.0002	U	0.00021	U	2.2	U	0.00033	U
1,3-Dichloropropane	--	--	--	6.6	U	0.031	U	0.013	U	0.00017	U	0.00018	U	0.00018	U	0.00016	U	0.00018	U	1.9	U	0.00028	U
1,1,1,2-Tetrachloroethane	--	--	--	14	U	0.069	U	0.028	U	0.00037	U	0.0004	U	0.00038	U	0.00036	U	0.00038	U	4.1	U	0.00061	U
Bromobenzene	--	--	--	9.5	U	0.045	U	0.018	U	0.00024	U	0.00026	U	0.00025	U	0.00024	U	0.00025	U	2.7	U	0.0004	U
n-Butylbenzene	12	100	12	5.2	U	0.025	U	0.01	U	0.00013	U	0.00014	U	0.00014	U	0.00013	U	0.00014	U	1.5	U	0.00022	U
sec-Butylbenzene	11	100	11	5.6	U	0.026	U	0.011	U	0.00014	U	0.00015	U	0.00015	U	0.00014	U	0.00015	U	1.6	U	0.00023	U
tert-Butylbenzene	5.9	100	5.9	6.2	U	0.029	U	0.012	U	0.00016	U	0.00017	U	0.00016	U	0.00015	U	0.00016	U	1.7	U	0.00026	U
o-Chlorotoluene	--	--	--	7.3	U	0.034	U	0.014	U	0.00018	U	0.0002	U	0.00019	U	0.00018	U	0.00019	U	2.1	U	0.0003	U
p-Chlorotoluene	--	--	--	6.1	U	0.029	U	0.012	U	0.00015	U	0.00017	U	0.00016	U	0.00015	U	0.00016	U	1.7	U	0.00025	U
1,2-Dibromo-3-chloropropane	--	--	--	18	U	0.085	U	0.034	U	0.00046	U	0.0005	U	0.00048	U	0.00045	U	0.00048	U	5.1	U	0.00076	U
Hexachlorobutadiene	--	--	--	10	U	0.049	U	0.02	U	0.00026	U	0.00028	U	0.00028	U	0.00026	U	0.00028	U	2.9	U	0.00044	U
Isopropylbenzene	--	--	--	4.8	U	0.2	J	0.13		0.00012	U	0.00013	U	0.00012	U	0.00012	U	0.00012	U	1.3	U	0.0002	U
p-Isopropyltoluene	--	--	--	5.7	U	0.3		0.2		0.00014	U	0.00016	U	0.00015	U	0.00014	U	0.00015	U	1.6	U	0.00024	U
Naphthalene	12	100	12	630		55		26		0.00016	U	0.00017	U	0.00017	U	0.00016	U	0.00017	U	1200		0.0081	J
Acrylonitrile	--	--	--	24	U	0.11	U	0.045	U	0.00059	U	0.00064	U	0.00062	U	0.00058	U	0.00062	U	6.6	U	0.00098	U
n-Propylbenzene	3.9	100	3.9	5	U	0.024	U	0.0095	U	0.00013	U	0.00014	U	0.00013	U	0.00012	U	0.00013	U	1.4	U	0.00021	U
1,2,3-Trichlorobenzene	--	--	--	6.8	U	0.032	U	0.013	U	0.00017	U	0.00018	U	0.00017	U	0.00017	U	0.00018	U	1.9	U	0.00028	U
1,2,4-Trichlorobenzene	--	--	--	8.3	U	0.039	U	0.016	U	0.00021	U	0.00023	U	0.00022	U	0.0002	U	0.00022	U	2.3	U	0.00035	U
1,3,5-Trimethylbenzene	8.4	52	8.4	6.6	U	0.6	J	0.53		0.00016	U	0.00018	U	0.00017	U	0.00016	U	0.00017	U	19	J	0.00027	U
1,2,4-Trimethylbenzene	3.6	52	3.6	39	J	2.2		0.76		0.00016	U	0.00018	U	0.00017	U	0.00016	U	0.00017	U	42	J	0.00027	U
1,4-Dioxane	0.1	13	0.1	660	U	3.1	U	1.2	U	0.017	U	0.018	U	0.017	U	0.016	U	0.017	U	180	U	0.028	U
p-Diethylbenzene	--	--	--	7.3	U	0.53	J	0.62		0.00018	U	0.0002	U	0.00019	U	0.00018	U	0.00019	U	7.9	J	0.0003	U
p-Ethyltoluene	--	--	--	15	J	0.26	J	0.22	J	0.00014	U	0.00016	U	0.00015	U	0.0003	J	0.00015	U	6.8	J	0.00024	U
1,2,4,5-Tetramethylbenzene	--	--	--	6	U	0.39	J	0.69		0.00015	U	0.00016	U	0.00016	U	0.00015	U	0.00016	U	6.7	J	0.00025	U
Ethyl ether	--	--	--	12	U	0.056	U	0.023	U	0.0003	U	0.00032	U	0.00031	U	0.00029	U	0.00032	U	3.4	U	0.0005	U
trans-1,4-Dichloro-2-butene	--	--	--	18	U	0.085	U	0.034	U	0.00045	U	0.00049	U	0.00047	U	0.00044	U	0.00048	U	5	U	0.00075	U
Total VOCs	--	--	--	7135	-	60.4	-	29.63	-	-	-	0.0073	-	0.012	-	0.0211	-	-	-	1933.1	-	0.1644	-

Notes:
NY-RESGW: New York NYCRR Part 375 Groundwater Criteria, New York Restricted use Criteria per 6 NYCRR Part 375 Environmental Remediation Programs, effective December 14, 2006.
NY-RESRR: New York NYCRR Part 375 Restricted-Residential Criteria, New York Restricted use Criteria per 6 NYCRR Part 375 Environmental Remediation Programs, effective December 14, 2006.
NY-UNRES: New York NYCRR Part 375 New York Unrestricted use Criteria Criteria per 6 NYCRR Part 375 Environmental Remediation Programs, effective December 14, 2006.
Cells highlighted in yellow indicate a concentration above the NY-RESGW
Cells highlighted in blue indicate a concentration above the NY-RESRR
Cells highlighted in red indicate a concentration aboe the NY-UNRES
Q = Laboratory Data Qualifier
MDL = Maximum Detection Limit
For U qualified entries, the MDL is shown
U = Not detected at or above the MDL
J = The concentration is estimated
DUP = Designation for duplicate sample
All results and MDLs are shown in milligrams per kilogram (mg/kg)

Table 6 - Volatile Organic Compounds in Soil - BCP Portion
470 Kent Avenue - Brooklyn, NY
BCP#C224053

SAMPLE ID:				BMW1 (12-14)		BMW1 (14-15)		BMW2 (7-9)		BMW2 (11-13)		BMW3 (8-10)		BMW3 (14-15)		BMW-4 (11-14)		BMW-4 (14-15)		BMW-5 (9-11)		BMW-5 (16-17)	
LAB ID:				L1524836-03		L1524836-04		L1524836-05		L1524836-06		L1524836-07		L1524836-08		L1529203-01		L1529203-02		L1529203-03		L1529203-04	
COLLECTION DATE:	NY-RESGW	NY-RESRR	NY-UNRES	9/30/2015		9/30/2015		10/1/2015		10/1/2015		10/1/2015		10/1/2015		11/9/2015		11/9/2015		11/9/2015		11/9/2015	
Volatile Organic Compounds Units: mg/kg				Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q
Methylene chloride	0.05	100	0.05	0.0014	U	0.0013	U	1.3	U	0.0012	U	0.0014	U	0.0014	U	0.0014	U	0.0013	U	0.1	U	0.0015	U
1,1-Dichloroethane	0.27	26	0.27	0.00011	U	0.0001	U	0.1	U	0.00009	U	0.0001	U	0.00011	U	0.00011	U	0.0001	U	0.0082	U	0.00012	U
Chloroform	0.37	49	0.37	0.00048	U	0.00043	U	0.44	U	0.0004	U	0.00045	U	0.00048	U	0.00048	U	0.00044	U	0.035	U	0.0005	U
Carbon tetrachloride	0.76	2.4	0.76	0.00027	U	0.00025	U	0.25	U	0.00023	U	0.00026	U	0.00027	U	0.00027	U	0.00025	U	0.02	U	0.00028	U
1,2-Dichloropropane	--	--	--	0.0003	U	0.00027	U	0.27	U	0.00025	U	0.00028	U	0.0003	U	0.0003	U	0.00027	U	0.022	U	0.00031	U
Dibromochloromethane	--	--	--	0.0002	U	0.00018	U	0.18	U	0.00017	U	0.00019	U	0.0002	U	0.0002	U	0.00018	U	0.015	U	0.00021	U
1,1,2-Trichloroethane	--	--	--	0.0004	U	0.00036	U	0.36	U	0.00033	U	0.00037	U	0.0004	U	0.00039	U	0.00036	U	0.029	U	0.00041	U
Tetrachloroethene	1.3	19	1.3	0.00018	U	0.00016	U	0.17	U	0.00015	U	0.0008	J	0.00018	U	0.00018	U	0.00017	U	0.013	U	0.00019	U
Chlorobenzene	1.1	100	1.1	0.00045	U	0.00041	U	0.41	U	0.00038	U	0.00043	U	0.00045	U	0.00045	U	0.00042	U	0.033	U	0.00047	U
Trichlorofluoromethane	--	--	--	0.00051	U	0.00046	U	0.46	U	0.00042	U	0.00048	U	0.00051	U	0.0005	U	0.00047	U	0.037	U	0.00053	U
1,2-Dichloroethane	0.02	3.1	0.02	0.00015	U	0.00013	U	0.13	U	0.00012	U	0.00014	U	0.00015	U	0.00015	U	0.00014	U	0.011	U	0.00015	U
1,1,1-Trichloroethane	0.68	100	0.68	0.00014	U	0.00013	U	0.13	U	0.00012	U	0.00014	U	0.00014	U	0.00014	U	0.00013	U	0.01	U	0.00015	U
Bromodichloromethane	--	--	--	0.00023	U	0.0002	U	0.2	U	0.00019	U	0.00021	U	0.00023	U	0.00022	U	0.00021	U	0.016	U	0.00024	U
trans-1,3-Dichloropropene	--	--	--	0.00016	U	0.00014	U	0.14	U	0.00013	U	0.00015	U	0.00016	U	0.00016	U	0.00014	U	0.012	U	0.00016	U
cis-1,3-Dichloropropene	--	--	--	0.00015	U	0.00014	U	0.14	U	0.00013	U	0.00014	U	0.00015	U	0.00015	U	0.00014	U	0.011	U	0.00016	U
1,3-Dichloropropene, Total	--	--	--	0.00015	U	0.00014	U	0.14	U	0.00013	U	0.00014	U	0.00015	U	0.00015	U	0.00014	U	0.011	U	0.00016	U
1,1-Dichloropropene	--	--	--	0.00018	U	0.00017	U	0.17	U	0.00015	U	0.00017	U	0.00018	U	0.00018	U	0.00017	U	0.013	U	0.00019	U
Bromoform	--	--	--	0.00031	U	0.00028	U	0.28	U	0.00026	U	0.00029	U	0.00031	U	0.0003	U	0.00028	U	0.022	U	0.00032	U
1,1,2,2-Tetrachloroethane	--	--	--	0.00013	U	0.00012	U	0.12	U	0.00011	U	0.00012	U	0.00013	U	0.00013	U	0.00012	U	0.0096	U	0.00014	U
Benzene	0.06	4.8	0.06	0.00015	U	0.00014	U	0.14	U	0.00013	U	0.00014	U	0.00015	U	0.00015	U	0.00014	U	0.14		0.042	
Toluene	0.7	100	0.7	0.00025	U	0.00023	U	0.23	U	0.00021	U	0.00024	U	0.00025	U	0.00025	U	0.00023	U	0.018	U	0.00026	U
Ethylbenzene	1	41	1	0.00017	U	0.00015	U	0.15	U	0.00014	U	0.00016	U	0.00017	U	0.00016	U	0.00015	U	0.17		0.02	
Chloromethane	--	--	--	0.00038	U	0.00034	U	0.35	U	0.00032	U	0.00036	U	0.00038	U	0.00038	U	0.00035	U	0.028	U	0.0004	U
Bromomethane	--	--	--	0.00044	U	0.0004	U	0.4	U	0.00037	U	0.00041	U	0.00044	U	0.00044	U	0.00041	U	0.032	U	0.00046	U
Vinyl chloride	0.02	0.9	0.02	0.00015	U	0.00014	U	0.14	U	0.00013	U	0.00014	U	0.00015	U	0.00015	U	0.00014	U	0.011	U	0.00016	U
Chloroethane	--	--	--	0.00041	U	0.00037	U	0.37	U	0.00034	U	0.00039	U	0.00041	U	0.00041	U	0.00038	U	0.03	U	0.00043	U
1,1-Dichloroethene	0.33	100	0.33	0.00034	U	0.00031	U	0.31	U	0.00028	U	0.00032	U	0.00034	U	0.00034	U	0.00032	U	0.025	U	0.00036	U
trans-1,2-Dichloroethene	0.19	100	0.19	0.00028	U	0.00025	U	0.25	U	0.00023	U	0.00026	U	0.00028	U	0.00027	U	0.00026	U	0.02	U	0.00029	U
Trichloroethene	0.47	21	0.47	0.00016	U	0.00015	U	0.15	U	0.00014	U	0.00015	U	0.00016	U	0.00016	U	0.00015	U	0.012	U	0.00017	U
1,2-Dichlorobenzene	1.1	100	1.1	0.0002	U	0.00018	U	0.18	U	0.00017	U	0.00019	U	0.0002	U	0.0002	U	0.00018	U	0.015	U	0.00021	U
1,3-Dichlorobenzene	2.4	49	2.4	0.00018	U	0.00016	U	0.16	U	0.00015	U	0.00016	U	0.00018	U	0.00017	U	0.00016	U	0.013	U	0.00018	U
1,4-Dichlorobenzene	1.8	13	1.8	0.00018	U	0.00016	U	0.16	U	0.00015	U	0.00017	U	0.00018	U	0.00018	U	0.00017	U	0.013	U	0.00019	U
Methyl tert butyl ether	0.93	100	0.93	0.00011	U	0.0001	U	0.1	U	0.00009	U	0.0001	U	0.00011	U	0.00011	U	0.0001	U	0.008	U	0.00011	U
p/m-Xylene	--	--	--	0.00026	U	0.00023	U	1	J	0.00022	U	0.00024	U	0.00026	U	0.00026	U	0.00024	U	0.15	J	0.0011	J
o-Xylene	--	--	--	0.00022	U	0.0002	U	0.2	U	0.00019	U	0.00021	U	0.00022	U	0.00022	U	0.00021	U	0.13	J	0.0081	
Xylenes, Total	1.6	100	0.26	0.00022	U	0.0002	U	1	J	0.00019	U	0.00021	U	0.00022	U	0.00022	U	0.00021	U	0.28	J	0.0092	J
cis-1,2-Dichloroethene	0.25	100	0.25	0.00019	U	0.00017	U	0.17	U	0.00016	U	0.00018	U	0.00019	U	0.00018	U	0.00017	U	0.014	U	0.00019	U
1,2-Dichloroethene, Total	--	--	--	0.00019	U	0.00017	U	0.17	U	0.00016	U	0.00018	U	0.00019	U	0.00018	U	0.00017	U	0.014	U	0.00019	U
Dibromomethane	--	--	--	0.00021	U	0.00019	U	0.19	U	0.00018	U	0.0002	U	0.00021	U	0.00021	U	0.0002	U	0.016	U	0.00022	U
Styrene	--	--	--	0.00052	U	0.00047	U	0.48	U	0.00044	U	0.00049	U	0.00052	U	0.00052	U	0.00048	U	0.038	U	0.00055	U
Dichlorodifluoromethane	--	--	--	0.00025	U	0.00022	U	0.23	U	0.00021	U	0.00023	U	0.00025	U	0.00025	U	0.00023	U	0.018	U	0.00026	U
Acetone	0.05	100	0.05	0.0092	J	0.0012	U	2.4	J	0.0019	J	0.0013	U	0.011	J	0.0088	J	0.02		0.099	U	0.018	
Carbon disulfide	--	--	--	0.0014	U	0.0013	U	1.3	U	0.0012	U	0.0014	U	0.0014	U	0.0014	U	0.0013	U	0.22	J	0.0015	U
2-Butanone	0.12	100	0.12	0.00036	U	0.00032	U	0.32	U	0.0003	U	0.00033	U	0.00036	U	0.00035	U	0.0027	J	0.026	U	0.0032	J
Vinyl acetate	--	--	--	0.00017	U	0.00016	U	0.16	U	0.00014	U	0.00016	U	0.00017	U	0.00017	U	0.00016	U	0.013	U	0.00018	U
4-Methyl-2-pentanone	--	--	--	0.00032	U	0.00029	U	0.29	U	0.00026	U	0.0003	U	0.00032	U	0.00032	U	0.00029	U	0.023	U	0.00033	U
1,2,3-Trichloropropane	--	--	--	0.00021	U	0.00019	U	0.19	U	0.00018	U	0.0002	U	0.00021	U	0.00021	U	0.0002	U	0.016	U	0.00022	U
2-Hexanone	--	--	--	0.00087	U	0.00078	U	0.79	U	0.00072	U	0.00082	U	0.00087	U	0.00086	U	0.0008	U	0.064	U	0.0009	U
Bromochloromethane	--	--	--	0.00036	U	0.00032	U	0.33	U	0.0003	U	0.00034	U	0.00036	U	0.00036	U	0.00033	U	0.026	U	0.00038	U
2,2-Dichloropropane	--	--	--	0.0003	U	0.00026	U	0.27	U	0.00024	U	0.00028	U	0.0003	U	0.00029	U	0.00027	U	0.022	U	0.00031	U
1,2-Dibromoethane	--	--	--	0.00023	U	0.0002	U	0.21	U	0.00019	U	0.00021	U	0.00023	U	0.00022	U	0.00021	U	0.017	U	0.00024	U
1,3-Dichloropropane	--	--	--	0.00019	U	0.00017	U	0.17	U	0.00016	U	0.00018	U	0.00019	U	0.00019	U	0.00017	U	0.014	U	0.0002	U
1,1,1,2-Tetrachloroethane	--	--	--	0.00042	U	0.00037	U	0.38	U	0.00034	U	0.00039	U	0.00042	U	0.00041	U	0.00038	U	0.03	U	0.00043	U
Bromobenzene	--	--	--	0.00027	U	0.00024	U	0.25	U	0.00023	U	0.00025	U	0.00027	U	0.00027	U	0.00025	U	0.02	U	0.00028	U
n-Butylbenzene	12	100	12	0.00015	U	0.00013	U	0.14	U	0.00012	U	0.00014	U	0.00015	U	0.00015	U	0.00014	U	0.011	U	0.00016	U
sec-Butylbenzene	11	100	11	0.00016	U	0.00014	U	0.14	U	0.00013	U	0.00015	U	0.00016	U	0.00016	U	0.00015	U	0.012	U	0.00016	U
tert-Butylbenzene	5.9	100	5.9	0.00018	U	0.00016	U	0.16	U	0.00015	U	0.00016	U	0.00018	U	0.00018	U	0.00016	U	0.013	U	0.00018	U
o-Chlorotoluene	--	--	--	0.00021	U	0.00019	U	0.19	U	0.00017	U	0.0002	U	0.00021	U	0.00021	U	0.00019	U	0.015	U	0.00022	U
p-Chlorotoluene	--	--	--	0.00017	U	0.00016	U	0.16	U	0.00014	U	0.00016	U	0.00017	U	0.00017	U	0.00016	U	0.013	U	0.00018	U
1,2-Dibromo-3-chloropropane	--	--	--	0.00052	U	0.00046	U	0.47	U	0.00043	U	0.00048	U	0.00052	U	0.00051	U	0.00048	U	0.038	U	0.00054	U
Hexachlorobutadiene	--	--	--	0.0003	U	0.00027	U	0.27	U	0.00025	U	0.00028	U	0.0003	U	0.0003	U	0.00027	U	0.022	U	0.00031	U
Isopropylbenzene	--	--	--	0.00014	U	0.00012	U	0.12	U	0.00011	U	0.00013	U	0.00014	U	0.00013	U	0.00012	U	0.0099	U	0.005	
p-Isopropyltoluene	--	--	--	0.00016	U	0.00015	U	0.15	U	0.00014	U	0.00015	U	0.00016	U	0.00016	U	0.00015	U	0.012	U	0.00017	U
Naphthalene	12	100	12	0.00018	U	0.00016	U	3.9		0.0028	J	0.00017	U	0.00018	U	0.00018	U	0.00017	U	19		0.07	
Acrylonitrile	--	--	--	0.00067	U	0.0006	U	0.61	U	0.00056	U	0.00063	U	0.00067	U	0.00066	U	0.00062	U	0.049	U	0.0007	U
n-Propylbenzene	3.9	100	3.9	0.00014	U	0.00013	U	0.13	U	0.00012	U	0.00013	U	0.00014	U	0.00014	U	0.00013	U	0.01	U	0.00015	U
1,2,3-Trichlorobenzene	--	--	--	0.00019	U	0.00017	U	0.18	U	0.00016	U	0.00018	U	0.00019	U	0.00019	U	0.00018	U	0.014	U	0.0002	U
1,2,4-Trichlorobenzene	--	--	--	0.00024	U	0.00021	U	0.22	U	0.0002	U	0.00022	U	0.00024	U	0.00024	U	0.00022	U	0.017	U	0.00025	U
1,3,5-Trimethylbenzene	8.4	52	8.4	0.00019	U	0.00017	U	0.17	U	0.00016	U	0.00018	U	0.00019	U	0.00018	U	0.00017	U	0.078	J	0.00019	U
1,2,4-Trimethylbenzene	3.6	52	3.6	0.00018	U	0.00017	U	1.4	J	0.00015	U	0.00017	U	0.00018	U	0.00018	U	0.00017	U	0.27	J	0.0014	J
1,4-Dioxane	0.1	13	0.1	0.019	U	0.017	U	17	U	0.016	U	0.018	U	0.019	U	0.019	U	0.017	U	1.4	U	0.02	U
p-Diethylbenzene	--	--	--	0.00021	U	0.00019	U	0.97	J	0.00017	U	0.0002	U	0.00021	U	0.00021	U	0.00019	U	0.015	U	0.00022	U
p-Ethyltoluene	--	--	--	0.00016	U	0.00014	U	0.95	J	0.00013	U	0.00015	U	0.00016	U	0.00016	U	0.00015	U	0.02	J	0.00017	U
1,2,4,5-Tetramethylbenzene	--	--	--	0.00017	U	0.00015	U	0.28	J	0.00014	U	0.00016	U	0.00017	U	0.00017	U	0.00016	U	0.055	J	0.0007	J
Ethyl ether	--	--	--	0.00034	U	0.0003	U	0.31	U	0.00028	U	0.00032	U	0.00034	U	0.00034	U	0.00031	U	0.025	U	0.00035	U
trans-1,4-Dichloro-2-butene	--	--	--	0.00051	U	0.00046	U	0.46	U	0.00043	U	0.00048	U	0.00051	U	0.00051	U	0.00047	U	0.037	U	0.00053	U
Total VOCs	--	--	--	0.0092	-	-	-	337	-	0.0047	-	0.0008	-	0.011	-	0.0088	-	0.0227	-	20.233	-	0.1695	-

Notes:
NY-RESGW: New York NYCRR Part 375 Groundwater Criteria, New York Restricted use Criteria per 6 NYCRR Part 375 Environmental Remediation Programs, effective December 14, 2006.
NY-RESRR: New York NYCRR Part 375 Restricted-Residential Criteria, New York Restricted use Criteria per 6 NYCRR Part 375 Environmental Remediation Programs, effective December 14, 2006.
NY-UNRES: New York NYCRR Part 375 New York Unrestricted use Criteria Criteria per 6 NYCRR Part 375 Environmental Remediation Programs, effective December 14, 2006.
Cells highlighted in yellow indicate a concentration above the NY-RESGW
Cells highlighted in blue indicate a concentration above the NY-RESRR
Cells highlighted in red indicate a concentration aboe the NY-UNRES
Q = Laboratory Data Qualifier
MDL = Maximum Detection Limit
For U qualified entries, the MDL is shown
U = Not detected at or above the MDL
J = The concentration is estimated
DUP = Designation for duplicate sample
All results and MDLs are shown in milligrams per kilogram (mg/kg)

Table 6 - Volatile Organic Compounds in Soil - BCP Portion
470 Kent Avenue - Brooklyn, NY
BCP#C224053

SAMPLE ID:				BMW-6 (24-24.5)		BMW-6 (24.5-25)		BMW-6 (21-23)		BMW-6 (21-23) DUP		BMW7 (15-16)		BMW7 (16-17)		BMW7 (16-17)	
LAB ID:				L1529203-06		L1529203-07		L1529203-08		L1529203-09		L1524836-10		L1524836-09		L1524836-11	
COLLECTION DATE:	NY-RESGW	NY-RESRR	NY-UNRES	11/9/2015		11/9/2015		11/9/2015		11/9/2015		10/1/2015		10/1/2015		10/1/2015	
Volatile Organic Compounds Units: mg/kg				Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q
Methylene chloride	0.05	100	0.05	0.46	U	0.091	U	100	U	12	U	0.0014	U	0.0074	U	0.0014	U
1,1-Dichloroethane	0.27	26	0.27	0.036	U	0.0071	U	7.9	U	0.92	U	0.00011	U	0.00057	U	0.00011	U
Chloroform	0.37	49	0.37	0.15	U	0.03	U	34	U	4	U	0.00046	U	0.0025	U	0.00046	U
Carbon tetrachloride	0.76	2.4	0.76	0.088	U	0.017	U	19	U	2.2	U	0.00026	U	0.0014	U	0.00026	U
1,2-Dichloropropane	--	--	--	0.095	U	0.019	U	21	U	2.4	U	0.00028	U	0.0015	U	0.00029	U
Dibromochloromethane	--	--	--	0.064	U	0.013	U	14	U	1.6	U	0.00019	U	0.001	U	0.00019	U
1,1,2-Trichloroethane	--	--	--	0.13	U	0.025	U	28	U	3.3	U	0.00038	U	0.002	U	0.00038	U
Tetrachloroethene	1.3	19	1.3	0.058	U	0.012	U	13	U	1.5	U	0.00017	U	0.00094	U	0.00018	U
Chlorobenzene	1.1	100	1.1	0.14	U	0.029	U	32	U	3.7	U	0.00043	U	0.0023	U	0.00044	U
Trichlorofluoromethane	--	--	--	0.16	U	0.032	U	36	U	4.2	U	0.00048	U	0.0026	U	0.00049	U
1,2-Dichloroethane	0.02	3.1	0.02	0.047	U	0.0094	U	10	U	1.2	U	0.00014	U	0.00076	U	0.00014	U
1,1,1-Trichloroethane	0.68	100	0.68	0.046	U	0.0091	U	10	U	1.2	U	0.00014	U	0.00074	U	0.00014	U
Bromodichloromethane	--	--	--	0.072	U	0.014	U	16	U	1.9	U	0.00022	U	0.0012	U	0.00022	U
trans-1,3-Dichloropropene	--	--	--	0.05	U	0.01	U	11	U	1.3	U	0.00015	U	0.00081	U	0.00015	U
cis-1,3-Dichloropropene	--	--	--	0.049	U	0.0097	U	11	U	1.3	U	0.00015	U	0.00079	U	0.00015	U
1,3-Dichloropropene, Total	--	--	--	0.049	U	0.0097	U	11	U	1.3	U	0.00015	U	0.00079	U	0.00015	U
1,1-Dichloropropene	--	--	--	0.059	U	0.012	U	13	U	1.5	U	0.00018	U	0.00095	U	0.00018	U
Bromoform	--	--	--	0.098	U	0.019	U	22	U	2.5	U	0.00029	U	0.0016	U	0.0003	U
1,1,2,2-Tetrachloroethane	--	--	--	0.042	U	0.0083	U	9.3	U	1.1	U	0.00012	U	0.00067	U	0.00013	U
Benzene	0.06	4.8	0.06	3.6		0.75		11	U	58		0.00015	U	0.00079	U	0.00015	U
Toluene	0.7	100	0.7	0.58	J	0.15		18	U	21		0.00024	U	0.0013	U	0.00024	U
Ethylbenzene	1	41	1	3.7		0.82		96		81		0.00016	U	0.00085	U	0.00016	U
Chloromethane	--	--	--	0.12	U	0.024	U	27	U	3.2	U	0.00037	U	0.002	U	0.00037	U
Bromomethane	--	--	--	0.14	U	0.028	U	31	U	3.6	U	0.00042	U	0.0023	U	0.00042	U
Vinyl chloride	0.02	0.9	0.02	0.049	U	0.0097	U	11	U	1.3	U	0.00015	U	0.00078	U	0.00015	U
Chloroethane	--	--	--	0.13	U	0.026	U	29	U	3.4	U	0.00039	U	0.0021	U	0.0004	U
1,1-Dichloroethene	0.33	100	0.33	0.11	U	0.022	U	24	U	2.8	U	0.00033	U	0.0018	U	0.00033	U
trans-1,2-Dichloroethene	0.19	100	0.19	0.088	U	0.017	U	19	U	2.3	U	0.00026	U	0.0014	U	0.00027	U
Trichloroethene	0.47	21	0.47	0.052	U	0.01	U	11	U	1.3	U	0.00016	U	0.00084	U	0.00016	U
1,2-Dichlorobenzene	1.1	100	1.1	0.064	U	0.013	U	14	U	1.6	U	0.00019	U	0.001	U	0.00019	U
1,3-Dichlorobenzene	2.4	49	2.4	0.056	U	0.011	U	12	U	1.4	U	0.00017	U	0.0009	U	0.00017	U
1,4-Dichlorobenzene	1.8	13	1.8	0.058	U	0.011	U	13	U	1.5	U	0.00017	U	0.00093	U	0.00017	U
Methyl tert butyl ether	0.93	100	0.93	0.035	U	0.007	U	7.8	U	0.91	U	0.0001	U	0.00056	U	0.00011	U
p/m-Xylene	--	--	--	4.6		1		150	J	170		0.00025	U	0.0013	U	0.00025	U
o-Xylene	--	--	--	2.2		0.97		16	U	53		0.00021	U	0.0011	U	0.00022	U
Xylenes, Total	1.6	100	0.26	6.8		2		150	J	220		0.00021	U	0.0011	U	0.00022	U
cis-1,2-Dichloroethene	0.25	100	0.25	0.06	U	0.012	U	13	U	1.5	U	0.00018	U	0.00096	U	0.00018	U
1,2-Dichloroethene, Total	--	--	--	0.06	U	0.012	U	13	U	1.5	U	0.00018	U	0.00096	U	0.00018	U
Dibromomethane	--	--	--	0.068	U	0.013	U	15	U	1.8	U	0.0002	U	0.0011	U	0.0002	U
Styrene	--	--	--	0.17	U	0.033	U	37	U	4.3	U	0.0005	U	0.0027	U	0.0005	U
Dichlorodifluoromethane	--	--	--	0.08	U	0.016	U	18	U	2	U	0.00024	U	0.0013	U	0.00024	U
Acetone	0.05	100	0.05	0.74	J	0.36	J	95	U	11	U	0.0056	J	0.022	J	0.0093	J
Carbon disulfide	--	--	--	0.46	U	0.091	U	1500		12	U	0.003	J	0.0074	U	0.0058	J
2-Butanone	0.12	100	0.12	0.11	U	0.022	U	25	U	2.9	U	0.00034	U	0.0018	U	0.00034	U
Vinyl acetate	--	--	--	0.055	U	0.011	U	12	U	1.4	U	0.00016	U	0.00088	U	0.00017	U
4-Methyl-2-pentanone	--	--	--	0.1	U	0.02	U	22	U	2.6	U	0.0003	U	0.0016	U	0.00031	U
1,2,3-Trichloropropane	--	--	--	0.068	U	0.013	U	15	U	1.7	U	0.0002	U	0.0011	U	0.0002	U
2-Hexanone	--	--	--	0.28	U	0.055	U	61	U	7.2	U	0.00083	U	0.0044	U	0.00084	U
Bromochloromethane	--	--	--	0.12	U	0.023	U	25	U	3	U	0.00034	U	0.0018	U	0.00035	U
2,2-Dichloropropane	--	--	--	0.094	U	0.019	U	21	U	2.4	U	0.00028	U	0.0015	U	0.00028	U
1,2-Dibromoethane	--	--	--	0.073	U	0.014	U	16	U	1.9	U	0.00022	U	0.0012	U	0.00022	U
1,3-Dichloropropane	--	--	--	0.061	U	0.012	U	13	U	1.6	U	0.00018	U	0.00097	U	0.00018	U
1,1,1,2-Tetrachloroethane	--	--	--	0.13	U	0.026	U	29	U	3.4	U	0.0004	U	0.0021	U	0.0004	U
Bromobenzene	--	--	--	0.087	U	0.017	U	19	U	2.2	U	0.00026	U	0.0014	U	0.00026	U
n-Butylbenzene	12	100	12	0.048	U	0.0095	U	10	U	1.2	U	0.00014	U	0.00077	U	0.00014	U
sec-Butylbenzene	11	100	11	0.051	U	0.01	U	11	U	1.3	U	0.00015	U	0.00082	U	0.00015	U
tert-Butylbenzene	5.9	100	5.9	0.056	U	0.011	U	12	U	1.4	U	0.00017	U	0.00091	U	0.00017	U
o-Chlorotoluene	--	--	--	0.067	U	0.013	U	15	U	1.7	U	0.0002	U	0.0011	U	0.0002	U
p-Chlorotoluene	--	--	--	0.055	U	0.011	U	12	U	1.4	U	0.00016	U	0.00089	U	0.00017	U
1,2-Dibromo-3-chloropropane	--	--	--	0.16	U	0.033	U	36	U	4.2	U	0.00049	U	0.0026	U	0.0005	U
Hexachlorobutadiene	--	--	--	0.095	U	0.019	U	21	U	2.4	U	0.00028	U	0.0015	U	0.00029	U
Isopropylbenzene	--	--	--	0.043	U	0.064	J	9.5	U	1.1	U	0.00013	U	0.00069	U	0.00013	U
p-Isopropyltoluene	--	--	--	0.052	U	0.01	U	11	U	13		0.00016	U	0.00084	U	0.00016	U
Naphthalene	12	100	12	75		20		11000		4200	E	0.00017	U	0.00093	U	0.00017	U
Acrylonitrile	--	--	--	0.21	U	0.042	U	47	U	5.5	U	0.00064	U	0.0034	U	0.00064	U
n-Propylbenzene	3.9	100	3.9	0.046	U	0.009	U	10	U	1.2	U	0.00014	U	0.00073	U	0.00014	U
1,2,3-Trichlorobenzene	--	--	--	0.062	U	0.012	U	14	U	1.6	U	0.00018	U	0.00099	U	0.00018	U
1,2,4-Trichlorobenzene	--	--	--	0.076	U	0.015	U	17	U	2	U	0.00023	U	0.0012	U	0.00023	U
1,3,5-Trimethylbenzene	8.4	52	8.4	0.72	J	0.2	J	13	U	17	J	0.00018	U	0.00096	U	0.00018	U
1,2,4-Trimethylbenzene	3.6	52	3.6	1.3	J	0.35	J	13	U	37	J	0.00018	U	0.00095	U	0.00018	U
1,4-Dioxane	0.1	13	0.1	6	U	1.2	U	1300	U	160	U	0.018	U	0.096	U	0.018	U
p-Diethylbenzene	--	--	--	0.14	J	0.038	J	15	U	4.4	J	0.0002	U	0.0011	U	0.0002	U
p-Ethyltoluene	--	--	--	0.42	J	0.083	J	11	U	12	J	0.00015	U	0.00083	U	0.00016	U
1,2,4,5-Tetramethylbenzene	--	--	--	0.054	U	0.024	J	12	U	1.4	U	0.00016	U	0.00087	U	0.00016	U
Ethyl ether	--	--	--	0.11	U	0.021	U	24	U	2.8	U	0.00032	U	0.0017	U	0.00033	U
trans-1,4-Dichloro-2-butene	--	--	--	0.16	U	0.032	U	36	U	4.2	U	0.00049	U	0.0026	U	0.00049	U
Total VOCs	--	--	--	93	-	24.809	-	12746	-	4666.4	-	0.0086	-	0.022	-	0.0151	-

Notes:
NY-RESGW: New York NYCRR Part 375 Groundwater Criteria, New York Restricted use Criteria per 6 NYCRR Part 375 Environmental Remediation Programs, effective December 14, 2006.
NY-RESRR: New York NYCRR Part 375 Restricted-Residential Criteria, New York Restricted use Criteria per 6 NYCRR Part 375 Environmental Remediation Programs, effective December 14, 2006.
NY-UNRES: New York NYCRR Part 375 New York Unrestricted use Criteria Criteria per 6 NYCRR Part 375 Environmental Remediation Programs, effective December 14, 2006.
Cells highlighted in yellow indicate a concentration above the NY-RESGW
Cells highlighted in blue indicate a concentration above the NY-RESRR
Cells highlighted in red indicate a concentration aboe the NY-UNRES
Q = Laboratory Data Qualifier
MDL = Maximum Detection Limit
For U qualified entries, the MDL is shown
U = Not detected at or above the MDL
J = The concentration is estimated
DUP = Designation for duplicate sample
All results and MDLs are shown in milligrams per kilogram (mg/kg)

Table 6A - Violatile Organic Compounds In Soil - Former MGP Portion
470 Kent Avenue, Brooklyn, NY
BCP#C224053

SAMPLE ID:				PWSB-37 (15-17)		PWSB-37 (15-17) DUP		PWSB-37 (28-30)		PWSB-38 (13-15)		PWSB-38 (25-27)		PWSB-36 (5-7)		PWSB-36 (25-27)		PWSB-39 (7-9)		PWSB-39 (28-30)		PWSB-40 (2-4)	
LAB ID:				L2034532-11		L2034532-12		L2034532-13		L2034532-14		L2034532-15		L2034620-01		L2034620-02		L2034620-03		L2034620-04		L2034620-05	
COLLECTION DATE:	NY-RESGW	NY-RESRR	NY-UNRES	8/23/2020		8/23/2020		8/23/2020		8/23/2020		8/23/2020		8/24/2020		8/24/2020		8/24/2020		8/24/2020		8/24/2020	
Volatile Organic Compounds Units: mg/kg				Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q
Methylene chloride	0.05	100	0.05	0.0044	U	0.0041	U	7.1	U	0.0025	U	0.0035	U	0.0025	U	0.0022	U	0.003	U	0.0025	U	0.0021	U
1,1-Dichloroethane	0.27	26	0.27	0.00028	U	0.00026	U	0.45	U	0.00016	U	0.00022	U	0.00016	U	0.00014	U	0.00019	U	0.00016	U	0.00013	U
Chloroform	0.37	49	0.37	0.00027	U	0.00025	U	0.44	U	0.00015	U	0.00021	U	0.00026	J	0.00014	U	0.00018	U	0.00015	U	0.00013	U
Carbon tetrachloride	0.76	2.4	0.76	0.00044	U	0.00041	U	0.72	U	0.00025	U	0.00035	U	0.00025	U	0.00022	U	0.0003	U	0.00025	U	0.00021	U
1,2-Dichloropropane	--	--	--	0.00024	U	0.00022	U	0.39	U	0.00014	U	0.00019	U	0.00013	U	0.00012	U	0.00016	U	0.00014	U	0.00011	U
Dibromochloromethane	--	--	--	0.00027	U	0.00025	U	0.44	U	0.00015	U	0.00021	U	0.00015	U	0.00014	U	0.00018	U	0.00015	U	0.00013	U
1,1,2-Trichloroethane	--	--	--	0.00051	U	0.00047	U	0.83	U	0.00029	U	0.0004	U	0.00029	U	0.00026	U	0.00034	U	0.00029	U	0.00024	U
Tetrachloroethene	1.3	19	1.3	0.00038	U	0.00035	U	0.61	U	0.00021	U	0.0003	U	0.00021	U	0.00019	U	0.00025	U	0.00021	U	0.00018	U
Chlorobenzene	1.1	100	1.1	0.00024	U	0.00022	U	0.4	U	0.00014	U	0.00019	U	0.00014	U	0.00012	U	0.00016	U	0.00014	U	0.00012	U
Trichlorofluoromethane	--	--	--	0.0013	U	0.0012	U	2.2	U	0.00075	U	0.001	U	0.00075	U	0.00067	U	0.0009	U	0.00076	U	0.00063	U
1,2-Dichloroethane	0.02	3.1	0.02	0.00049	U	0.00046	U	0.8	U	0.00028	U	0.00039	U	0.00028	U	0.00025	U	0.00033	U	0.00028	U	0.00023	U
1,1,1-Trichloroethane	0.68	100	0.68	0.00032	U	0.0003	U	0.52	U	0.00018	U	0.00025	U	0.00018	U	0.00016	U	0.00022	U	0.00018	U	0.00015	U
Bromodichloromethane	--	--	--	0.00021	U	0.00019	U	0.34	U	0.00012	U	0.00016	U	0.00012	U	0.0001	U	0.00014	U	0.00012	U	0.0001	U
trans-1,3-Dichloropropene	--	--	--	0.00052	U	0.00048	U	0.85	U	0.0003	U	0.00041	U	0.00029	U	0.00026	U	0.00035	U	0.0003	U	0.00025	U
cis-1,3-Dichloropropene	--	--	--	0.0003	U	0.00028	U	0.49	U	0.00017	U	0.00024	U	0.00017	U	0.00015	U	0.0002	U	0.00017	U	0.00014	U
1,3-Dichloropropene, Total	--	--	--	0.0003	U	0.00028	U	0.49	U	0.00017	U	0.00024	U	0.00017	U	0.00015	U	0.0002	U	0.00017	U	0.00014	U
1,1-Dichloropropene	--	--	--	0.0003	U	0.00028	U	0.5	U	0.00017	U	0.00024	U	0.00017	U	0.00015	U	0.0002	U	0.00017	U	0.00014	U
Bromoform	--	--	--	0.00047	U	0.00044	U	0.76	U	0.00027	U	0.00037	U	0.00026	U	0.00024	U	0.00032	U	0.00027	U	0.00022	U
1,1,2,2-Tetrachloroethane	--	--	--	0.00032	U	0.00029	U	0.52	U	0.00018	U	0.00025	U	0.00018	U	0.00016	U	0.00021	U	0.00018	U	0.00015	U
Benzene	0.06	4.8	0.06	0.00032	U	0.00029	U	1.8		0.0002	J	0.0003	J	0.00018	U	0.00079		0.00021	U	0.0046		0.00015	U
Toluene	0.7	100	0.7	0.001	U	0.00096	U	4.9		0.00059	U	0.00082	U	0.00058	U	0.00053	U	0.0007	U	0.00059	U	0.00049	U
Ethylbenzene	1	41	1	0.00046	J	0.00025	U	22		0.00015	U	0.00021	U	0.00015	U	0.00014	U	0.00018	U	0.00022	J	0.00013	U
Chloromethane	--	--	--	0.0018	U	0.0016	U	2.9	U	0.001	U	0.0014	U	0.001	U	0.0009	U	0.0012	U	0.001	U	0.00085	U
Bromomethane	--	--	--	0.0011	U	0.001	U	1.8	U	0.00063	U	0.00088	U	0.00063	U	0.00056	U	0.00075	U	0.00064	U	0.00053	U
Vinyl chloride	0.02	0.9	0.02	0.00064	U	0.00059	U	1	U	0.00036	U	0.00051	U	0.00036	U	0.00032	U	0.00043	U	0.00037	U	0.0003	U
Chloroethane	--	--	--	0.00087	U	0.0008	U	1.4	U	0.00049	U	0.00068	U	0.00049	U	0.00044	U	0.00058	U	0.00049	U	0.00041	U
1,1-Dichloroethene	0.33	100	0.33	0.00046	U	0.00042	U	0.74	U	0.00026	U	0.00036	U	0.00026	U	0.00023	U	0.00031	U	0.00026	U	0.00022	U
trans-1,2-Dichloroethene	0.19	100	0.19	0.00026	U	0.00024	U	0.43	U	0.00015	U	0.00021	U	0.00015	U	0.00013	U	0.00018	U	0.00015	U	0.00012	U
Trichloroethene	0.47	21	0.47	0.00026	U	0.00024	U	0.43	U	0.00015	U	0.00021	U	0.00015	U	0.00013	U	0.00018	U	0.00015	U	0.00012	U
1,2-Dichlorobenzene	1.1	100	1.1	0.00028	U	0.00026	U	0.45	U	0.00016	U	0.00022	U	0.00016	U	0.00014	U	0.00018	U	0.00016	U	0.00013	U
1,3-Dichlorobenzene	2.4	49	2.4	0.00028	U	0.00026	U	0.46	U	0.00016	U	0.00022	U	0.00016	U	0.00014	U	0.00019	U	0.00016	U	0.00013	U
1,4-Dichlorobenzene	1.8	13	1.8	0.00033	U	0.0003	U	0.53	U	0.00018	U	0.00026	U	0.00018	U	0.00016	U	0.00022	U	0.00019	U	0.00016	U
Methyl tert butyl ether	0.93	100	0.93	0.00039	U	0.00036	U	0.62	U	0.00022	U	0.0003	U	0.00022	U	0.00019	U	0.00026	U	0.00022	U	0.00018	U
p/m-Xylene	--	--	--	0.0011	U	0.00099	U	30		0.00061	U	0.00085	U	0.0006	U	0.00054	U	0.00072	U	0.00061	U	0.00051	U
o-Xylene	--	--	--	0.00056	U	0.00052	U	19		0.00032	U	0.00044	U	0.00031	U	0.00028	U	0.00037	U	0.00032	U	0.00026	U
Xylenes, Total	1.6	100	0.26	0.00056	U	0.00052	U	49		0.00032	U	0.00044	U	0.00031	U	0.00028	U	0.00037	U	0.00032	U	0.00026	U
cis-1,2-Dichloroethene	0.25	100	0.25	0.00034	U	0.00031	U	0.54	U	0.00019	U	0.00026	U	0.00019	U	0.00017	U	0.00022	U	0.00019	U	0.00016	U
1,2-Dichloroethene, Total	--	--	--	0.00026	U	0.00024	U	0.43	U	0.00015	U	0.00021	U	0.00015	U	0.00013	U	0.00018	U	0.00015	U	0.00012	U
Dibromomethane	--	--	--	0.00046	U	0.00042	U	0.74	U	0.00026	U	0.00036	U	0.00026	U	0.00023	U	0.00031	U	0.00026	U	0.00022	U
Styrene	--	--	--	0.00038	U	0.00035	U	0.61	U	0.00021	U	0.0003	U	0.00021	U	0.00019	U	0.00025	U	0.00021	U	0.00018	U
Dichlorodifluoromethane	--	--	--	0.0018	U	0.0016	U	2.8	U	0.00099	U	0.0014	U	0.00099	U	0.00089	U	0.0012	U	0.001	U	0.00083	U
Acetone	0.05	100	0.05	0.014	J	0.0089	J	15	U	0.0089	J	0.015		0.031		0.025		0.02		0.02		0.0044	U
Carbon disulfide	--	--	--	0.0087	U	0.0081	U	14	U	0.0049	U	0.0069	U	0.0049	U	0.0044	U	0.0059	U	0.005	U	0.0041	U
2-Butanone	0.12	100	0.12	0.0043	U	0.0039	U	6.9	U	0.0024	U	0.0034	U	0.0024	U	0.0022	U	0.0028	U	0.0024	U	0.002	U
Vinyl acetate	--	--	--	0.0041	U	0.0038	U	6.7	U	0.0023	U	0.0033	U	0.0023	U	0.0021	U	0.0028	U	0.0024	U	0.002	U
4-Methyl-2-pentanone	--	--	--	0.0025	U	0.0023	U	4	U	0.0014	U	0.0019	U	0.0014	U	0.0012	U	0.0016	U	0.0014	U	0.0012	U
1,2,3-Trichloropropane	--	--	--	0.00024	U	0.00022	U	0.4	U	0.00014	U	0.00019	U	0.00014	U	0.00012	U	0.00016	U	0.00014	U	0.00012	U
2-Hexanone	--	--	--	0.0023	U	0.0021	U	3.7	U	0.0013	U	0.0018	U	0.0013	U	0.0011	U	0.0015	U	0.0013	U	0.0011	U
Bromochloromethane	--	--	--	0.00039	U	0.00036	U	0.64	U	0.00022	U	0.00031	U	0.00022	U	0.0002	U	0.00026	U	0.00022	U	0.00019	U
2,2-Dichloropropane	--	--	--	0.00039	U	0.00036	U	0.63	U	0.00022	U	0.00031	U	0.00022	U	0.0002	U	0.00026	U	0.00022	U	0.00018	U
1,2-Dibromoethane	--	--	--	0.00054	U	0.0005	U	0.87	U	0.0003	U	0.00042	U	0.0003	U	0.00027	U	0.00036	U	0.0003	U	0.00025	U
1,3-Dichloropropane	--	--	--	0.00032	U	0.0003	U	0.52	U	0.00018	U	0.00025	U	0.00018	U	0.00016	U	0.00022	U	0.00018	U	0.00015	U
1,1,1,2-Tetrachloroethane	--	--	--	0.00025	U	0.00023	U	0.41	U	0.00014	U	0.0002	U	0.00014	U	0.00013	U	0.00017	U	0.00014	U	0.00012	U
Bromobenzene	--	--	--	0.00028	U	0.00026	U	0.45	U	0.00016	U	0.00022	U	0.00016	U	0.00014	U	0.00019	U	0.00016	U	0.00013	U
n-Butylbenzene	12	100	12	0.00032	U	0.0003	U	0.52	U	0.00018	U	0.00025	U	0.00018	U	0.00025	J	0.00022	U	0.00018	U	0.00015	U
sec-Butylbenzene	11	100	11	0.00028	U	0.00026	U	0.45	U	0.00016	U	0.0011	J	0.00016	U	0.00043	J	0.00019	U	0.00016	U	0.00013	U
tert-Butylbenzene	5.9	100	5.9	0.00023	U	0.00021	U	0.37	U	0.00013	U	0.0014	J	0.00013	U	0.00011	U	0.00015	U	0.00013	U	0.00011	U
o-Chlorotoluene	--	--	--	0.00037	U	0.00034	U	0.59	U	0.00021	U	0.00029	U	0.00021	U	0.00018	U	0.00025	U	0.00021	U	0.00017	U
p-Chlorotoluene	--	--	--	0.00021	U	0.00019	U	0.34	U	0.00012	U	0.00016	U	0.00012	U	0.0001	U	0.00014	U	0.00012	U	0.0001	U
1,2-Dibromo-3-chloropropane	--	--	--	0.0019	U	0.0018	U	3.1	U	0.0011	U	0.0015	U	0.0011	U	0.00097	U	0.0013	U	0.0011	U	0.00091	U
Hexachlorobutadiene	--	--	--	0.00032	U	0.0003	U	0.53	U	0.00018	U	0.00026	U	0.00018	U	0.00016	U	0.00022	U	0.00018	U	0.00015	U
Isopropylbenzene	--	--	--	0.00021	U	0.00019	U	3.2		0.00012	U	0.00016	U	0.00012	U	0.00066	J	0.00014	U	0.00012	U	0.0001	U
p-Isopropyltoluene	--	--	--	0.077		0.011		1.4	J	0.00012	U	0.00016	U	0.00012	U	0.0001	U	0.00014	U	0.00012	U	0.0001	U
Naphthalene	12	100	12	0.0012	J	0.0012	U	1400		0.0031	J	0.0053	J	0.0007	U	0.0016	J	0.00084	U	0.00071	U	0.00059	U
Acrylonitrile	--	--	--	0.0022	U	0.002	U	3.6	U	0.0012	U	0.0017	U	0.0012	U	0.0011	U	0.0015	U	0.0012	U	0.001	U
n-Propylbenzene	3.9	100	3.9	0.00033	U	0.0003	U	0.67	J	0.00018	U	0.00026	U	0.00018	U	0.0013		0.00022	U	0.00019	U	0.00016	U
1,2,3-Trichlorobenzene	--	--	--	0.00062	U	0.00057	U	1	U	0.00035	U	0.00049	U	0.00035	U	0.00031	U	0.00041	U	0.00035	U	0.00029	U
1,2,4-Trichlorobenzene	--	--	--	0.00052	U	0.00048	U	0.85	U	0.0003	U	0.00041	U	0.00029	U	0.00026	U	0.00035	U	0.0003	U	0.00025	U
1,3,5-Trimethylbenzene	8.4	52	8.4	0.00037	U	0.00034	U	8.4		0.00021	U	0.00032	J	0.00021	U	0.00019	U	0.00025	U	0.00021	U	0.00018	U
1,2,4-Trimethylbenzene	3.6	52	3.6	0.00064	U	0.00059	U	28		0.00036	U	0.00086	J	0.00036	U	0.00032	U	0.00043	U	0.00036	U	0.0003	U
1,4-Dioxane	0.1	13	0.1	0.067	U	0.062	U	110	U	0.038	U	0.053	U	0.038	U	0.034	U	0.045	U	0.038	U	0.032	U
p-Diethylbenzene	--	--	--	0.00034	U	0.00031	U	1.7	J	0.00019	U	0.00029	U	0.00019	U	0.00029	J	0.00023	U	0.00019	U	0.00016	U
p-Ethyltoluene	--	--	--	0.00074	U	0.00068	U	13		0.00042	U	0.00058	U	0.00041	U	0.00037	U	0.00049	U	0.00042	U	0.00035	U
1,2,4,5-Tetramethylbenzene	--	--	--	0.00037	U	0.00034	U	4.7	J	0.00021	U	0.011		0.00021	U	0.0015	J	0.00025	U	0.00021	U	0.00017	U
Ethyl ether	--	--	--	0.00066	U	0.0006	U	1.1	U	0.00037	U	0.00052	U	0.00037	U	0.00033	U	0.00044	U	0.00037	U	0.00031	U
trans-1,4-Dichloro-2-butene	--	--	--	0.0027	U	0.0025	U	4.4	U	0.0015	U	0.0022	U	0.0015	U	0.0014	U	0.0018	U	0.0016	U	0.0013	U
Total VOCs	--	--	--	0.09266	-	0.0199	-	1400	-	0.0122	-	0.03607	-	0.03126	-	0.03182	-	0.02	-	0.02482	-	-	-

Notes:
NY-RESGW: New York NYCRR Part 375 Groundwater Criteria, New York Restricted use Criteria per 6 NYCRR Part 375 Environmental Remediation Programs, effective December 14, 2006.
NY-RESRR: New York NYCRR Part 375 Restricted-Residential Criteria, New York Restricted use Criteria per 6 NYCRR Part 375 Environmental Remediation Programs, effective December 14, 2006.
NY-UNRES: New York NYCRR Part 375 New York Unrestricted use Criteria Criteria per 6 NYCRR Part 375 Environmental Remediation Programs, effective December 14, 2006.
Cells highlighted in yellow indicate a concentration above the NY-RESGW
Cells highlighted in blue indicate a concentration above the NY-RESRR
Cells highlighted in red indicate a concentration aboe the NY-UNRES
Q = Laboratory Data Qualifier
MDL = Maximum Detection Limit
For U qualified entries, the MDL is shown
U = Not detected at or above the MDL
J = The concentration is estimated
DUP = Designation for duplicate sample
All results and MDLs are shown in milligrams per kilogram (mg/kg)

Table 6A - Violatile Organic Compounds In Soil - Former MGP Portion
470 Kent Avenue, Brooklyn, NY
BCP#C224053

SAMPLE ID:				PWSB-40 (18-20)		PWSB-21 (27-29)		PWSB-42 (5-7)		PWSB-42 (15-17)		PWSB-41 (10-12)		PWSB-41 (16-18)		B-17 (19-21)		B-17 (47-49)		B-18 (37-39')		B-18 (39-41')	
LAB ID:				L2034620-06		L2034620-07		L2034620-08		L2034620-09		L2034620-10		L2034620-11		L2033216-01		L2033512-01		L2032144-01		L2032144-02	
COLLECTION DATE:	NY-RESGW	NY-RESRR	NY-UNRES	8/24/2020		8/24/2020		8/24/2020		8/24/2020		8/24/2020		8/24/2020		8/14/2020		8/17/2020		8/7/2020		8/7/2020	
Volatile Organic Compounds Units: mg/kg				Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q
Methylene chloride	0.05	100	0.05	0.0025	U	0.14	U	0.0062	U	0.0025	U	0.0067	U	0.0049	U	8.8	U	0.0026	U	0.0023	U	0.14	U
1,1-Dichloroethane	0.27	26	0.27	0.00016	U	0.0086	U	0.00039	U	0.00016	U	0.00042	U	0.00031	U	0.56	U	0.00016	U	0.00015	U	0.0088	U
Chloroform	0.37	49	0.37	0.00015	U	0.0083	U	0.00038	U	0.00015	U	0.00041	U	0.0003	U	0.54	U	0.00016	U	0.00055	J	0.0084	U
Carbon tetrachloride	0.76	2.4	0.76	0.00025	U	0.014	U	0.00063	U	0.00025	U	0.00067	U	0.00049	U	0.89	U	0.00026	U	0.00023	U	0.014	U
1,2-Dichloropropane	--	--	--	0.00014	U	0.0074	U	0.00034	U	0.00014	U	0.00036	U	0.00027	U	0.48	U	0.00014	U	0.00013	U	0.0075	U
Dibromochloromethane	--	--	--	0.00015	U	0.0083	U	0.00038	U	0.00015	U	0.00041	U	0.0003	U	0.54	U	0.00016	U	0.00014	U	0.0084	U
1,1,2-Trichloroethane	--	--	--	0.00029	U	0.016	U	0.00073	U	0.00029	U	0.00078	U	0.00057	U	1	U	0.0003	U	0.00027	U	0.016	U
Tetrachloroethene	1.3	19	1.3	0.00022	U	0.012	U	0.00053	U	0.00021	U	0.00057	U	0.00042	U	0.76	U	0.0014		0.0002	U	0.012	U
Chlorobenzene	1.1	100	1.1	0.00014	U	0.0075	U	0.00034	U	0.00014	U	0.00037	U	0.00027	U	0.49	U	0.00014	U	0.00013	U	0.0077	U
Trichlorofluoromethane	--	--	--	0.00077	U	0.041	U	0.0019	U	0.00075	U	0.002	U	0.0015	U	2.7	U	0.00078	U	0.00071	U	0.042	U
1,2-Dichloroethane	0.02	3.1	0.02	0.00028	U	0.015	U	0.0007	U	0.00028	U	0.00075	U	0.00055	U	0.99	U	0.00029	U	0.00026	U	0.016	U
1,1,1-Trichloroethane	0.68	100	0.68	0.00018	U	0.0099	U	0.00045	U	0.00018	U	0.00049	U	0.00036	U	0.64	U	0.00019	U	0.00017	U	0.01	U
Bromodichloromethane	--	--	--	0.00012	U	0.0064	U	0.0003	U	0.00012	U	0.00032	U	0.00023	U	0.42	U	0.00012	U	0.00011	U	0.0066	U
trans-1,3-Dichloropropene	--	--	--	0.0003	U	0.016	U	0.00074	U	0.0003	U	0.0008	U	0.00059	U	1	U	0.00031	U	0.00028	U	0.016	U
cis-1,3-Dichloropropene	--	--	--	0.00017	U	0.0093	U	0.00043	U	0.00017	U	0.00046	U	0.00034	U	0.61	U	0.00018	U	0.00016	U	0.0095	U
1,3-Dichloropropene, Total	--	--	--	0.00017	U	0.0093	U	0.00043	U	0.00017	U	0.00046	U	0.00034	U	0.61	U	0.00018	U	0.00016	U	0.0095	U
1,1-Dichloropropene	--	--	--	0.00018	U	0.0094	U	0.00043	U	0.00017	U	0.00046	U	0.00034	U	0.61	U	0.00018	U	0.00016	U	0.0096	U
Bromoform	--	--	--	0.00027	U	0.014	U	0.00067	U	0.00027	U	0.00072	J	0.00053	U	0.95	U	0.00028	U	0.00025	U	0.015	U
1,1,2,2-Tetrachloroethane	--	--	--	0.00018	U	0.0098	U	0.00045	U	0.00018	U	0.00048	U	0.00036	U	0.64	U	0.00019	U	0.00017	U	0.01	U
Benzene	0.06	4.8	0.06	0.00018	U	0.84		0.00045	U	0.00018	U	0.00048	U	0.00036	U	8.8		0.00019	U	0.00017	U	0.01	U
Toluene	0.7	100	0.7	0.0006	U	0.13		0.0015	U	0.00059	U	0.0016	U	0.0012	U	5.6		0.00061	U	0.00055	U	0.033	U
Ethylbenzene	1	41	1	0.00016	U	0.15		0.00038	U	0.00015	U	0.00093	J	0.0003	U	25		0.00047	J	0.00014	U	0.0087	J
Chloromethane	--	--	--	0.001	U	0.055	U	0.0025	U	0.001	U	0.0027	U	0.002	U	3.6	U	0.001	U	0.00095	U	0.056	U
Bromomethane	--	--	--	0.00064	U	0.034	U	0.0016	U	0.00063	U	0.0017	U	0.0012	U	2.2	U	0.00066	U	0.00059	U	0.046	J
Vinyl chloride	0.02	0.9	0.02	0.00037	U	0.02	U	0.00091	U	0.00036	U	0.00098	U	0.00072	U	1.3	U	0.00038	U	0.00034	U	0.02	U
Chloroethane	--	--	--	0.0005	U	0.027	U	0.0012	U	0.00049	U	0.0013	U	0.00097	U	1.7	U	0.00051	U	0.00046	U	0.027	U
1,1-Dichloroethene	0.33	100	0.33	0.00026	U	0.014	U	0.00065	U	0.00026	U	0.00069	U	0.00051	U	0.92	U	0.00027	U	0.00024	U	0.014	U
trans-1,2-Dichloroethene	0.19	100	0.19	0.00015	U	0.0081	U	0.00037	U	0.00015	U	0.0004	U	0.00029	U	0.53	U	0.00015	U	0.00014	U	0.0083	U
Trichloroethene	0.47	21	0.47	0.00015	U	0.0081	U	0.00037	U	0.00015	U	0.0004	U	0.00029	U	0.53	U	0.00015	U	0.00014	U	0.0083	U
1,2-Dichlorobenzene	1.1	100	1.1	0.00016	U	0.0085	U	0.00039	U	0.00016	U	0.00042	U	0.00031	U	0.56	U	0.00016	U	0.00015	U	0.0087	U
1,3-Dichlorobenzene	2.4	49	2.4	0.00016	U	0.0087	U	0.0004	U	0.00016	U	0.00043	U	0.00032	U	0.57	U	0.00017	U	0.00015	U	0.0089	U
1,4-Dichlorobenzene	1.8	13	1.8	0.00019	U	0.01	U	0.00046	U	0.00018	U	0.0005	U	0.00037	U	0.66	U	0.00019	U	0.00017	U	0.01	U
Methyl tert butyl ether	0.93	100	0.93	0.00022	U	0.012	U	0.00055	U	0.00022	U	0.00059	U	0.00043	U	0.78	U	0.00023	U	0.0002	U	0.012	U
p/m-Xylene	--	--	--	0.00062	U	0.22		0.0015	U	0.00061	U	0.0016	J	0.0012	U	47		0.00063	U	0.00057	U	0.034	U
o-Xylene	--	--	--	0.00032	U	0.12		0.00079	U	0.00032	U	0.00085	U	0.00062	U	17		0.00033	U	0.0003	U	0.018	U
Xylenes, Total	1.6	100	0.26	0.00032	U	0.34		0.00079	U	0.00032	U	0.0016	J	0.00062	U	64		0.00033	U	0.0003	U	0.018	U
cis-1,2-Dichloroethene	0.25	100	0.25	0.00019	U	0.01	U	0.00048	U	0.00019	U	0.00051	U	0.00038	U	0.68	U	0.0002	U	0.00018	U	0.01	U
1,2-Dichloroethene, Total	--	--	--	0.00015	U	0.0081	U	0.00037	U	0.00015	U	0.0004	U	0.00029	U	0.53	U	0.00015	U	0.00014	U	0.0083	U
Dibromomethane	--	--	--	0.00026	U	0.014	U	0.00065	U	0.00026	U	0.00069	U	0.00051	U	0.92	U	0.00027	U	0.00024	U	0.014	U
Styrene	--	--	--	0.00022	U	0.012	U	0.00053	U	0.00021	U	0.00057	U	0.00042	U	0.76	U	0.00032	J	0.0002	U	0.012	U
Dichlorodifluoromethane	--	--	--	0.001	U	0.054	U	0.0025	U	0.00099	U	0.0027	U	0.002	U	3.5	U	0.001	U	0.00093	U	0.055	U
Acetone	0.05	100	0.05	0.0053	U	0.28	U	0.013	U	0.011		0.088		0.03		18	U	0.006	J	0.011		0.29	U
Carbon disulfide	--	--	--	0.005	U	0.27	U	0.012	U	0.0081	J	0.019	J	0.026		18	U	0.0051	U	0.0046	U	0.27	U
2-Butanone	0.12	100	0.12	0.0024	U	0.13	U	0.006	U	0.0024	U	0.0065	U	0.0048	U	8.6	U	0.0025	U	0.0022	U	0.13	U
Vinyl acetate	--	--	--	0.0024	U	0.13	U	0.0058	U	0.0023	U	0.0063	U	0.0046	U	8.3	U	0.0024	U	0.0022	U	0.13	U
4-Methyl-2-pentanone	--	--	--	0.0014	U	0.076	U	0.0035	U	0.0014	U	0.0037	U	0.0027	U	4.9	U	0.0014	U	0.0013	U	0.077	U
1,2,3-Trichloropropane	--	--	--	0.00014	U	0.0075	U	0.00034	U	0.00014	U	0.00037	U	0.00027	U	0.49	U	0.00014	U	0.00013	U	0.0077	U
2-Hexanone	--	--	--	0.0013	U	0.07	U	0.0032	U	0.0013	U	0.0034	U	0.0025	U	4.6	U	0.0013	U	0.0012	U	0.071	U
Bromochloromethane	--	--	--	0.00023	U	0.012	U	0.00056	U	0.00022	U	0.0006	U	0.00044	U	0.79	U	0.00023	U	0.00021	U	0.012	U
2,2-Dichloropropane	--	--	--	0.00022	U	0.012	U	0.00055	U	0.00022	U	0.00059	U	0.00043	U	0.78	U	0.00023	U	0.0002	U	0.012	U
1,2-Dibromoethane	--	--	--	0.00031	U	0.016	U	0.00076	U	0.0003	U	0.00081	U	0.0006	U	1.1	U	0.00031	U	0.00028	U	0.017	U
1,3-Dichloropropane	--	--	--	0.00018	U	0.0099	U	0.00045	U	0.00018	U	0.00049	U	0.00036	U	0.64	U	0.00019	U	0.00017	U	0.01	U
1,1,1,2-Tetrachloroethane	--	--	--	0.00014	U	0.0078	U	0.00036	U	0.00014	U	0.00038	U	0.00028	U	0.51	U	0.00015	U	0.00013	U	0.008	U
Bromobenzene	--	--	--	0.00016	U	0.0086	U	0.00039	U	0.00016	U	0.00042	U	0.00031	U	0.56	U	0.00016	U	0.00015	U	0.0088	U
n-Butylbenzene	12	100	12	0.00018	U	0.0099	U	0.00045	U	0.00018	U	0.00049	U	0.00036	U	0.64	U	0.00019	U	0.00017	U	0.01	U
sec-Butylbenzene	11	100	11	0.00016	U	0.0086	U	0.0004	U	0.00016	U	0.00043	U	0.00031	U	0.56	U	0.00016	U	0.00015	U	0.0088	U
tert-Butylbenzene	5.9	100	5.9	0.00013	U	0.007	U	0.00032	U	0.00013	U	0.00034	U	0.00025	U	0.46	U	0.00013	U	0.00012	U	0.0071	U
o-Chlorotoluene	--	--	--	0.00021	U	0.011	U	0.00052	U	0.00021	U	0.00056	U	0.00041	U	0.74	U	0.00022	U	0.00019	U	0.012	U
p-Chlorotoluene	--	--	--	0.00012	U	0.0064	U	0.00029	U	0.00012	U	0.00032	U	0.00023	U	0.42	U	0.00012	U	0.00011	U	0.0065	U
1,2-Dibromo-3-chloropropane	--	--	--	0.0011	U	0.059	U	0.0027	U	0.0011	U	0.0029	U	0.0021	U	3.8	U	0.0011	U	0.001	U	0.06	U
Hexachlorobutadiene	--	--	--	0.00019	U	0.01	U	0.00046	U	0.00018	U	0.00049	U	0.00036	U	0.65	U	0.00019	U	0.00017	U	0.01	U
Isopropylbenzene	--	--	--	0.00012	U	0.0064	U	0.0003	U	0.00012	U	0.00032	U	0.00023	U	3	J	0.0046		0.00011	U	0.0066	U
p-Isopropyltoluene	--	--	--	0.00012	U	0.0064	U	0.0003	U	0.00012	U	0.024		0.00023	U	1.4	J	0.00083	J	0.00011	U	0.0066	U
Naphthalene	12	100	12	0.00072	U	1.8		0.0031	J	0.0007	U	0.0033	J	0.0014	U	1500		0.0019	J	0.0012	J	0.039	U
Acrylonitrile	--	--	--	0.0013	U	0.068	U	0.0031	U	0.0012	U	0.0034	U	0.0025	U	4.4	U	0.0013	U	0.0012	U	0.069	U
n-Propylbenzene	3.9	100	3.9	0.00019	U	0.01	U	0.00046	U	0.00018	U	0.0005	U	0.00037	U	0.66	U	0.00019	U	0.00017	U	0.01	U
1,2,3-Trichlorobenzene	--	--	--	0.00036	U	0.019	U	0.00088	U	0.00035	U	0.00094	U	0.00069	U	1.2	U	0.00036	U	0.00033	U	0.019	U
1,2,4-Trichlorobenzene	--	--	--	0.0003	U	0.016	U	0.00074	U	0.00029	U	0.00079	U	0.00058	U	1	U	0.00031	U	0.00028	U	0.016	U
1,3,5-Trimethylbenzene	8.4	52	8.4	0.00021	U	0.032	J	0.00052	U	0.00021	U	0.00056	U	0.00041	U	10		0.002	J	0.0002	U	0.012	U
1,2,4-Trimethylbenzene	3.6	52	3.6	0.00037	U	0.093	J	0.00091	U	0.00036	U	0.00097	U	0.00072	U	23		0.00078	J	0.00034	U	0.02	U
1,4-Dioxane	0.1	13	0.1	0.039	U	2.1	U	0.096	U	0.038	U	0.1	U	0.075	U	140	U	0.04	U	0.036	U	2.1	U
p-Diethylbenzene	--	--	--	0.0002	U	0.01	U	0.00048	U	0.00019	U	0.00065	J	0.00038	U	0.68	U	0.0002	U	0.00018	U	0.011	U
p-Ethyltoluene	--	--	--	0.00042	U	0.026	J	0.001	U	0.00042	U	0.0013	J	0.00082	U	10		0.0009	J	0.00039	U	0.023	U
1,2,4,5-Tetramethylbenzene	--	--	--	0.00021	U	0.011	U	0.00052	U	0.00021	U	0.00056	U	0.00041	U	2	J	0.002	J	0.00019	U	0.012	U
Ethyl ether	--	--	--	0.00038	U	0.02	U	0.00093	U	0.00037	U	0.00099	U	0.00073	U	1.3	U	0.00038	U	0.00035	U	0.02	U
trans-1,4-Dichloro-2-butene	--	--	--	0.0016	U	0.084	U	0.0039	U	0.0015	U	0.0041	U	0.003	U	5.5	U	0.0016	U	0.0014	U	0.086	U
Total VOCs	--	--	--	-	-	3.411	-	0.0031	-	0.0191	-	0.13878	-	0.056	-	1352.3	-	0.0212	-	0.01275	-	0.0547	-

Notes:
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Q = Laboratory Data Qualifier
MDL = Maximum Detection Limit
For U qualified entries, the MDL is shown
U = Not detected at or above the MDL
J = The concentration is estimated
DUP = Designation for duplicate sample
All results and MDLs are shown in milligrams per kilogram (mg/kg)

Table 6A - Violatile Organic Compounds In Soil - Former MGP Portion
470 Kent Avenue, Brooklyn, NY
BCP#C224053

SAMPLE ID:				PWSB-44 (13-15)		PWSB-43 (13-15)		PWSB-44 (15-17)		PWSB-45(8-10)		PWSB-45(28-30)	
LAB ID:				L2152245-01		L2152245-03		L2152245-02		L2152499-01		L2152499-02	
COLLECTION DATE:	NY-RESGW	NY-RESRR	NY-UNRES	9/27/2021		9/27/2021		9/27/2021		9/28/2021		9/28/2021	
Volatile Organic Compounds Units: mg/kg				Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q
Methylene chloride	0.05	100	0.05	0.15	U	0.14	U	0.0029	U	3	U	0.0027	U
1,1-Dichloroethane	0.27	26	0.27	0.0097	U	0.0086	U	0.00018	U	0.19	U	0.00017	U
Chloroform	0.37	49	0.37	0.0094	U	0.0083	U	0.00018	U	0.18	U	0.00016	U
Carbon tetrachloride	0.76	2.4	0.76	0.015	U	0.014	U	0.00029	U	0.3	U	0.00027	U
1,2-Dichloropropane	--	--	--	0.0084	U	0.0074	U	0.00016	U	0.16	U	0.00015	U
Dibromochloromethane	--	--	--	0.0094	U	0.0083	U	0.00018	U	0.18	U	0.00016	U
1,1,2-Trichloroethane	--	--	--	0.018	U	0.016	U	0.00033	U	0.34	U	0.00032	U
Tetrachloroethene	1.3	19	1.3	0.013	U	0.012	U	0.00024	U	0.25	U	0.00023	U
Chlorobenzene	1.1	100	1.1	0.0085	U	0.0076	U	0.00016	U	0.16	U	0.00015	U
Trichlorofluoromethane	--	--	--	0.046	U	0.041	U	0.00087	U	0.9	U	0.00082	U
1,2-Dichloroethane	0.02	3.1	0.02	0.017	U	0.015	U	0.00032	U	0.33	U	0.0003	U
1,1,1-Trichloroethane	0.68	100	0.68	0.011	U	0.0099	U	0.00021	U	0.22	U	0.0002	U
Bromodichloromethane	--	--	--	0.0073	U	0.0065	U	0.00014	U	0.14	U	0.00013	U
trans-1,3-Dichloropropene	--	--	--	0.018	U	0.016	U	0.00034	U	0.35	U	0.00032	U
cis-1,3-Dichloropropene	--	--	--	0.01	U	0.0094	U	0.0002	U	0.2	U	0.00019	U
1,3-Dichloropropene, Total	--	--	--	0.01	U	0.0094	U	0.0002	U	0.2	U	0.00019	U
1,1-Dichloropropene	--	--	--	0.011	U	0.0095	U	0.0002	U	0.2	U	0.00019	U
Bromoform	--	--	--	0.016	U	0.015	U	0.00031	U	0.32	U	0.00029	U
1,1,2,2-Tetrachloroethane	--	--	--	0.011	U	0.0099	U	0.00021	U	0.21	U	0.0002	U
Benzene	0.06	4.8	0.06	0.011	U	0.036		0.00028	J	69		0.00027	J
Toluene	0.7	100	0.7	0.036	U	0.032	U	0.00068	U	150		0.00064	U
Ethylbenzene	1	41	1	0.014	J	0.084		0.00058	J	27		0.00017	U
Chloromethane	--	--	--	0.062	U	0.055	U	0.0012	U	1.2	U	0.0011	U
Bromomethane	--	--	--	0.039	U	0.034	U	0.00073	U	0.75	U	0.00068	U
Vinyl chloride	0.02	0.9	0.02	0.022	U	0.02	U	0.00042	U	0.43	U	0.0004	U
Chloroethane	--	--	--	0.03	U	0.027	U	0.00056	U	0.58	U	0.00053	U
1,1-Dichloroethene	0.33	100	0.33	0.016	U	0.014	U	0.0003	U	0.31	U	0.00028	U
trans-1,2-Dichloroethene	0.19	100	0.19	0.0092	U	0.0082	U	0.00017	U	0.18	U	0.00016	U
Trichloroethene	0.47	21	0.47	0.0092	U	0.0082	U	0.00017	U	0.18	U	0.00036	J
1,2-Dichlorobenzene	1.1	100	1.1	0.0096	U	0.0086	U	0.00018	U	0.18	U	0.00017	U
1,3-Dichlorobenzene	2.4	49	2.4	0.0099	U	0.0088	U	0.00018	U	0.19	U	0.00017	U
1,4-Dichlorobenzene	1.8	13	1.8	0.011	U	0.01	U	0.00021	U	0.22	U	0.0002	U
Methyl tert butyl ether	0.93	100	0.93	0.013	U	0.012	U	0.00025	U	0.26	U	0.00024	U
p/m-Xylene	--	--	--	0.041	J	0.054	J	0.0011	J	220		0.00066	U
o-Xylene	--	--	--	0.023	J	0.023	J	0.0011	J	80		0.00034	U
Xylenes, Total	1.6	100	0.26	0.064	J	0.077	J	0.0022	J	300		0.00034	U
cis-1,2-Dichloroethene	0.25	100	0.25	0.012	U	0.01	U	0.00022	U	0.22	U	0.00021	U
1,2-Dichloroethene, Total	--	--	--	0.0092	U	0.0082	U	0.00017	U	0.18	U	0.00016	U
Dibromomethane	--	--	--	0.016	U	0.014	U	0.0003	U	0.31	U	0.00028	U
Styrene	--	--	--	0.013	U	0.012	U	0.00024	U	35		0.00023	U
Dichlorodifluoromethane	--	--	--	0.061	U	0.054	U	0.0011	U	1.2	U	0.0011	U
Acetone	0.05	100	0.05	0.32	U	0.29	U	0.02		6.2	U	0.0057	U
Carbon disulfide	--	--	--	0.3	U	0.27	U	0.0057	U	5.9	U	0.0054	U
2-Butanone	0.12	100	0.12	0.15	U	0.13	U	0.0039	J	2.9	U	0.0026	U
Vinyl acetate	--	--	--	0.14	U	0.13	U	0.0027	U	2.8	U	0.0025	U
4-Methyl-2-pentanone	--	--	--	0.086	U	0.076	U	0.0016	U	1.6	U	0.0015	U
1,2,3-Trichloropropane	--	--	--	0.0085	U	0.0076	U	0.00016	U	0.16	U	0.00015	U
2-Hexanone	--	--	--	0.079	U	0.07	U	0.0015	U	1.5	U	0.0014	U
Bromochloromethane	--	--	--	0.014	U	0.012	U	0.00026	U	0.26	U	0.00024	U
2,2-Dichloropropane	--	--	--	0.014	U	0.012	U	0.00025	U	0.26	U	0.00024	U
1,2-Dibromoethane	--	--	--	0.019	U	0.017	U	0.00035	U	0.36	U	0.00033	U
1,3-Dichloropropane	--	--	--	0.011	U	0.0099	U	0.00021	U	0.22	U	0.0002	U
1,1,1,2-Tetrachloroethane	--	--	--	0.0088	U	0.0078	U	0.00016	U	0.17	U	0.00016	U
Bromobenzene	--	--	--	0.0097	U	0.0086	U	0.00018	U	0.19	U	0.00017	U
n-Butylbenzene	12	100	12	0.011	U	0.0099	U	0.00027	J	0.94	J	0.0002	U
sec-Butylbenzene	11	100	11	0.0098	U	0.0087	U	0.00018	U	0.19	U	0.00017	U
tert-Butylbenzene	5.9	100	5.9	0.019	J	0.007	U	0.00015	U	0.15	U	0.00014	U
o-Chlorotoluene	--	--	--	0.013	U	0.011	U	0.00024	U	0.25	U	0.00022	U
p-Chlorotoluene	--	--	--	0.0072	U	0.0064	U	0.00014	U	0.14	U	0.00013	U
1,2-Dibromo-3-chloropropane	--	--	--	0.067	U	0.059	U	0.0012	U	1.3	U	0.0012	U
Hexachlorobutadiene	--	--	--	0.011	U	0.01	U	0.00021	U	0.22	U	0.0002	U
Isopropylbenzene	--	--	--	0.0081	J	0.014	J	0.0005	J	1.6		0.00013	U
p-Isopropyltoluene	--	--	--	0.013	J	0.033	J	0.00034	J	1	J	0.00013	U
Naphthalene	12	100	12	5.5		3.1		0.19		5300		0.022	
Acrylonitrile	--	--	--	0.077	U	0.068	U	0.0014	U	1.5	U	0.0014	U
n-Propylbenzene	3.9	100	3.9	0.011	U	0.01	U	0.00027	J	3		0.0002	U
1,2,3-Trichlorobenzene	--	--	--	0.022	U	0.019	U	0.0004	U	0.42	U	0.00038	U
1,2,4-Trichlorobenzene	--	--	--	0.018	U	0.016	U	0.00034	U	0.35	U	0.00032	U
1,3,5-Trimethylbenzene	8.4	52	8.4	0.02	J	0.012	J	0.00061	J	52		0.00023	U
1,2,4-Trimethylbenzene	3.6	52	3.6	0.13		0.032	J	0.0035		110		0.00039	U
1,4-Dioxane	0.1	13	0.1	2.3	U	2.1	U	0.044	U	45	U	0.041	U
p-Diethylbenzene	--	--	--	0.019	J	0.01	U	0.0007	J	17		0.00021	U
p-Ethyltoluene	--	--	--	0.026	U	0.023	U	0.0006	J	32		0.00045	U
1,2,4,5-Tetramethylbenzene	--	--	--	0.05	J	0.011	U	0.0027		12		0.00022	U
Ethyl ether	--	--	--	0.023	U	0.02	U	0.00043	U	0.44	U	0.0004	U
trans-1,4-Dichloro-2-butene	--	--	--	0.095	U	0.084	U	0.0018	U	1.8	U	0.0017	U
Total VOCs	--	--	--	5.8371	-	3.388	-	0.22645	-	4410.54	-	0.02263	-

Notes:
NY-RESGW: New York NYCRR Part 375 Groundwater Criteria, New York Restricted use Criteria per 6 NYCRR Part 375 Environmental Remediation Programs, effective December 14, 2006.
NY-RESRR: New York NYCRR Part 375 Restricted-Residential Criteria, New York Restricted use Criteria per 6 NYCRR Part 375 Environmental Remediation Programs, effective December 14, 2006.
NY-UNRES: New York NYCRR Part 375 New York Unrestricted use Criteria Criteria per 6 NYCRR Part 375 Environmental Remediation Programs, effective December 14, 2006.
Cells highlighted in yellow indicate a concentration above the NY-RESGW
Cells highlighted in blue indicate a concentration aboe the NY-RESRR
Cells highlighted in red indicate a concentration aboe the NY-UNRES
Q = Laboratory Data Qualifier
MDL = Maximum Detection Limit
For U qualified entries, the MDL is shown
U = Not detected at or above the MDL
J = The concentration is estimated
DUP = Designation for duplicate sample
All results and MDLs are shown in milligrams per kilogram (mg/kg)

Table 7 - Semivolatile Organic Compounds in Soil - BCP Portion
470 Kent Avenue - Brooklyn, NY
BCP#C224053

SAMPLE ID:				BSB-10 (0-2)		BSB-10 (8-10)		BTP-1 (0-2)		BTP-1 (2-4)		BSB-12 (10.5-12)		BTP-3 (1-2)		BTP-3 (3-4)		BTP-4 (0-2)		BTP-4 (2-3)	
LAB ID:				L2034532-01		L2034532-02		L2034532-03		L2034532-04		L2034532-05		L2034532-06		L2034532-07		L2034532-08		L2034532-09	
COLLECTION DATE:	NY-RESGW	NY-RESRR	NY-UNRES	8/23/2020		8/23/2020		8/23/2020		8/23/2020		8/23/2020		8/23/2020		8/23/2020		8/23/2020		8/23/2020	
Semivolatile Organic Compounds Units: mg/kg				Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q
Acenaphthene	98	100	20	1.2		0.02	U	0.024	J	0.02	U	1.1		0.025	U	1.3		10		2.2	
1,2,4-Trichlorobenzene	--	--	--	0.021	U	0.022	U	0.021	U	0.022	U	0.023	U	0.027	U	0.11	U	0.41	U	0.21	U
Hexachlorobenzene	3.2	1.2	0.33	0.02	U	0.021	U	0.021	U	0.021	U	0.023	U	0.027	U	0.1	U	0.4	U	0.2	U
Bis(2-chloroethyl)ether	--	--	--	0.025	U	0.026	U	0.025	U	0.026	U	0.028	U	0.032	U	0.13	U	0.49	U	0.25	U
2-Chloronaphthalene	--	--	--	0.018	U	0.019	U	0.018	U	0.019	U	0.02	U	0.024	U	0.093	U	0.36	U	0.18	U
1,2-Dichlorobenzene	1.1	100	1.1	0.033	U	0.034	U	0.034	U	0.034	U	0.037	U	0.043	U	0.17	U	0.65	U	0.33	U
1,3-Dichlorobenzene	2.4	49	2.4	0.031	U	0.033	U	0.032	U	0.032	U	0.035	U	0.041	U	0.16	U	0.62	U	0.31	U
1,4-Dichlorobenzene	1.8	13	1.8	0.032	U	0.033	U	0.033	U	0.033	U	0.036	U	0.042	U	0.16	U	0.63	U	0.32	U
3,3'-Dichlorobenzidine	--	--	--	0.048	U	0.05	U	0.05	U	0.05	U	0.054	U	0.063	U	0.25	U	0.96	U	0.48	U
2,4-Dinitrotoluene	--	--	--	0.036	U	0.038	U	0.037	U	0.038	U	0.041	U	0.048	U	0.19	U	0.72	U	0.36	U
2,6-Dinitrotoluene	--	--	--	0.031	U	0.032	U	0.032	U	0.032	U	0.035	U	0.041	U	0.16	U	0.62	U	0.31	U
Fluoranthene	1000	100	100	8.4		0.022	U	0.29		0.45		14		0.28		21		84		38	
4-Chlorophenyl phenyl ether	--	--	--	0.02	U	0.02	U	0.02	U	0.02	U	0.022	U	0.025	U	0.1	U	0.38	U	0.2	U
4-Bromophenyl phenyl ether	--	--	--	0.028	U	0.029	U	0.028	U	0.029	U	0.031	U	0.036	U	0.14	U	0.55	U	0.28	U
Bis(2-chloroisopropyl)ether	--	--	--	0.031	U	0.032	U	0.032	U	0.032	U	0.035	U	0.041	U	0.16	U	0.62	U	0.31	U
Bis(2-chloroethoxy)methane	--	--	--	0.018	U	0.019	U	0.019	U	0.019	U	0.02	U	0.024	U	0.094	U	0.36	U	0.18	U
Hexachlorobutadiene	--	--	--	0.027	U	0.028	U	0.027	U	0.028	U	0.03	U	0.035	U	0.14	U	0.53	U	0.27	U
Hexachlorocyclopentadiene	--	--	--	0.16	U	0.17	U	0.17	U	0.17	U	0.18	U	0.22	U	0.85	U	3.3	U	1.6	U
Hexachloroethane	--	--	--	0.03	U	0.031	U	0.03	U	0.031	U	0.033	U	0.038	U	0.15	U	0.58	U	0.3	U
Isophorone	--	--	--	0.024	U	0.025	U	0.024	U	0.024	U	0.027	U	0.031	U	0.12	U	0.47	U	0.24	U
Naphthalene	12	100	12	1.1		0.023	U	0.023	U	0.023	U	54		0.029	U	0.91	J	7.4		1.5	J
Nitrobenzene	--	--	--	0.027	U	0.028	U	0.028	U	0.028	U	0.03	U	0.035	U	0.14	U	0.53	U	0.27	U
NDPA/DPA	--	--	--	0.021	U	0.022	U	0.021	U	0.022	U	0.023	U	0.027	U	0.11	U	0.41	U	0.21	U
n-Nitrosodi-n-propylamine	--	--	--	0.028	U	0.029	U	0.029	U	0.029	U	0.032	U	0.037	U	0.14	U	0.56	U	0.28	U
Bis(2-ethylhexyl)phthalate	--	--	--	0.063	U	0.066	U	0.64		0.093	J	0.071	U	0.082	U	0.32	U	1.2	U	0.63	U
Butyl benzyl phthalate	--	--	--	0.046	U	0.048	U	0.047	U	0.048	U	0.052	U	0.06	U	0.24	U	0.91	U	0.46	U
Di-n-butylphthalate	--	--	--	0.035	U	0.036	U	0.036	U	0.036	U	0.039	U	0.045	U	0.18	U	0.68	U	0.35	U
Di-n-octylphthalate	--	--	--	0.062	U	0.064	U	0.064	U	0.064	U	0.07	U	0.081	U	0.32	U	1.2	U	0.62	U
Diethyl phthalate	--	--	--	0.017	U	0.018	U	0.017	U	0.018	U	0.019	U	0.022	U	0.086	U	0.33	U	0.17	U
Dimethyl phthalate	--	--	--	0.038	U	0.04	U	0.039	U	0.04	U	0.043	U	0.05	U	0.2	U	0.76	U	0.38	U
Benzo(a)anthracene	1	1	1	3.5		0.021	U	0.14		0.23		4.3		0.3		13		48		28	
Benzo(a)pyrene	22	1	1	3.9		0.046	U	0.13	J	0.22		4.3		0.51		14		58		38	
Benzo(b)fluoranthene	1.7	1	1	4.5		0.032	U	0.2		0.29		4.3		0.62		16		66		43	
Benzo(k)fluoranthene	1.7	3.9	0.8	1.5		0.03	U	0.053	J	0.11		1.6		0.21		5.8		24		15	
Chrysene	1	3.9	1	3.6		0.02	U	0.2		0.24		3.4		0.34		13		46		25	
Acenaphthylene	107	100	100	0.29		0.029	U	0.029	U	0.029	U	4.2		0.037	U	0.38	J	2.5	J	0.8	J
Anthracene	1000	100	100	1.1		0.037	U	0.045	J	0.053	J	5.2		0.046	U	3.8		13		5.5	
Benzo(ghi)perylene	1000	100	100	2.1		0.022	U	0.098	J	0.15		2		0.42		8.3		38		22	
Fluorene	386	100	30	0.6		0.018	U	0.024	J	0.018	U	4.1		0.023	U	1.1		4.5		1.2	J
Phenanthrene	1000	100	100	7.9		0.023	U	0.26		0.26		20		0.11	J	16		68		23	
Dibenzo(a,h)anthracene	1000	0.33	0.33	0.48		0.022	U	0.029	J	0.038	J	0.39		0.084	J	1.9		9.2		6.1	
Indeno(1,2,3-cd)pyrene	8.2	0.5	0.5	2.3		0.026	U	0.089	J	0.16		2.3		0.45		8		40		26	
Pyrene	1000	100	100	7.2		0.019	U	0.27		0.42		11		0.3		21		78		33	
Biphenyl	--	--	--	0.14	J	0.044	U	0.043	U	0.044	U	1.1		0.055	U	0.22	U	1.2	J	0.42	U
4-Chloroaniline	--	--	--	0.033	U	0.034	U	0.034	U	0.034	U	0.037	U	0.043	U	0.17	U	0.66	U	0.33	U
2-Nitroaniline	--	--	--	0.035	U	0.037	U	0.036	U	0.036	U	0.04	U	0.046	U	0.18	U	0.7	U	0.35	U
3-Nitroaniline	--	--	--	0.034	U	0.036	U	0.035	U	0.036	U	0.039	U	0.045	U	0.18	U	0.68	U	0.34	U
4-Nitroaniline	--	--	--	0.076	U	0.079	U	0.078	U	0.078	U	0.085	U	0.099	U	0.39	U	1.5	U	0.76	U
Dibenzofuran	210	59	7	0.84		0.018	U	0.018	U	0.018	U	3.8		0.022	U	0.87	J	6.7		1.4	J
2-Methylnaphthalene	--	--	--	0.46		0.023	U	0.036	J	0.023	U	4.3		0.029	U	0.37	J	3.7	J	0.72	J
1,2,4,5-Tetrachlorobenzene	--	--	--	0.019	U	0.02	U	0.02	U	0.02	U	0.021	U	0.025	U	0.098	U	0.38	U	0.19	U
Acetophenone	--	--	--	0.023	U	0.024	U	0.023	U	0.023	U	0.025	U	0.029	U	0.12	U	0.45	U	0.23	U
2,4,6-Trichlorophenol	--	--	--	0.035	U	0.036	U	0.036	U	0.036	U	0.039	U	0.045	U	0.18	U	0.68	U	0.35	U
p-Chloro-m-cresol	--	--	--	0.027	U	0.028	U	0.028	U	0.028	U	0.03	U	0.035	U	0.14	U	0.54	U	0.27	U
2-Chlorophenol	--	--	--	0.022	U	0.022	U	0.022	U	0.022	U	0.024	U	0.028	U	0.11	U	0.43	U	0.22	U
2,4-Dichlorophenol	--	--	--	0.029	U	0.03	U	0.03	U	0.03	U	0.033	U	0.038	U	0.15	U	0.58	U	0.29	U
2,4-Dimethylphenol	--	--	--	0.06	U	0.063	U	0.062	U	0.062	U	0.068	U	0.079	U	0.31	U	1.2	U	0.6	U
2-Nitrophenol	--	--	--	0.069	U	0.071	U	0.07	U	0.071	U	0.077	U	0.09	U	0.35	U	1.4	U	0.69	U
4-Nitrophenol	--	--	--	0.074	U	0.077	U	0.076	U	0.077	U	0.084	U	0.097	U	0.38	U	1.5	U	0.74	U
2,4-Dinitrophenol	--	--	--	0.085	U	0.088	U	0.087	U	0.088	U	0.096	U	0.11	U	0.44	U	1.7	U	0.85	U
4,6-Dinitro-o-cresol	--	--	--	0.088	U	0.091	U	0.09	U	0.091	U	0.098	U	0.11	U	0.45	U	1.7	U	0.88	U
Pentachlorophenol	0.8	6.7	0.8	0.04	U	0.042	U	0.041	U	0.042	U	0.045	U	0.052	U	0.2	U	0.79	U	0.4	U
Phenol	0.33	100	0.33	0.028	U	0.029	U	0.028	U	0.028	U	0.031	U	0.036	U	0.14	U	0.54	U	0.28	U
2-Methylphenol	0.33	100	0.33	0.028	U	0.029	U	0.029	U	0.029	U	0.032	U	0.037	U	0.14	U	0.56	U	0.28	U
3-Methylphenol/4-Methylphenol	0.33	100	0.33	0.058	J	0.03	U	0.029	U	0.03	U	0.032	U	0.037	U	0.15	U	0.56	U	0.28	U
2,4,5-Trichlorophenol	--	--	--	0.035	U	0.036	U	0.036	U	0.036	U	0.039	U	0.046	U	0.18	U	0.69	U	0.35	U
Benzoic Acid	--	--	--	0.18	U	0.19	U	0.19	U	0.19	U	0.21	U	0.24	U	0.95	U	3.6	U	1.8	U
Benzyl Alcohol	--	--	--	0.056	U	0.058	U	0.057	U	0.058	U	0.063	U	0.073	U	0.29	U	1.1	U	0.56	U
Carbazole	--	--	--	0.6		0.018	U	0.029	J	0.022	J	2.4		0.023	U	1.4		7.8		3.4	
1,4-Dioxane	0.1	13	0.1	0.0084	U	0.0087	U	0.0086	U	0.0087	U	0.0094	U	0.011	U	0.043	U	0.16	U	0.084	U
Total SVOCs	--	--	--	50.768	-	-	-	2.557	-	2.736	-	126.79	-	3.624	-	148.13	-	616	-	313.82	-

Notes:
NY-RESGW: New York NYCRR Part 375 Groundwater Criteria, New York Restricted use Criteria per 6 NYCRR Part 375 Environmental Remediation Programs, effective December 14, 2006.
NY-RESRR: New York NYCRR Part 375 Restricted-Residential Criteria, New York Restricted use Criteria per 6 NYCRR Part 375 Environmental Remediation Programs, effective December 14, 2006.
NY-UNRES: New York NYCRR Part 375 New York Unrestricted use Criteria Criteria per 6 NYCRR Part 375 Environmental Remediation Programs, effective December 14, 2006.
Cells highlighted in yellow indicate a concentration above the NY-RESGW
Cells highlighted in blue indicate a concentration above the NY-RESRR
Cells highlighted in red indicate a concentration aboe the NY-UNRES
Q = Laboratory Data Qualifier
MDL = Maximum Detection Limit
For U qualified entries, the MDL is shown
U = Not detected at or above the MDL
J = The concentration is estimated
DUP = Designation for duplicate sample
All results and MDLs are shown in milligrams per kilogram (mg/kg)

Table 7 - Semivolatile Organic Compounds in Soil - BCP Portion
470 Kent Avenue - Brooklyn, NY
BCP#C224053

SAMPLE ID:				BSB8 (0-2)		BSB8 N1 (7-8)		BSB-9 (0-2)		BSB-9 (0-2)		BSB9 (0-2)		8BSB9 (7-8)		BSB-13 (8-10)		BSB-13 (19.5-20)		BMW-14 (13-14)		BMW-14 (14-15)	
LAB ID:				L1523999-01		L1523999-02		L1523673-08		L1523673-08 R1		L1524836-01		L1524836-02		L1523673-04		L1523673-02		L1529203-10		L1529203-11	
COLLECTION DATE:	NY-RESGW	NY-RESRR	NY-UNRES	9/24/2015		9/24/2015		9/22/2015		9/22/2015		9/30/2015		9/30/2015		9/22/2015		9/22/2015		11/9/2015		11/9/2015	
Semivolatile Organic Compounds Units: mg/kg				Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q
Acenaphthene	98	100	20	0.73		0.041	U	0.38	U	0.063	J	0.062	J	0.04	U	0.054	U	0.046	U	0.77	J	34	
1,2,4-Trichlorobenzene	--	--	--	0.063	U	0.066	U	0.6	U	0.06	U	0.064	U	0.063	U	0.085	U	0.073	U	0.49	U	0.35	U
Hexachlorobenzene	3.2	1.2	0.33	0.036	U	0.037	U	0.34	U	0.034	U	0.036	U	0.036	U	0.048	U	0.042	U	0.28	U	0.2	U
Bis(2-chloroethyl)ether	--	--	--	0.054	U	0.056	U	0.52	U	0.052	U	0.054	U	0.054	U	0.073	U	0.062	U	0.42	U	0.3	U
2-Chloronaphthalene	--	--	--	0.062	U	0.065	U	0.6	U	0.06	U	0.063	U	0.063	U	0.085	U	0.073	U	0.49	U	0.35	U
1,2-Dichlorobenzene	1.1	100	1.1	0.063	U	0.066	U	0.61	U	0.06	U	0.064	U	0.063	U	0.085	U	0.073	U	0.49	U	0.35	U
1,3-Dichlorobenzene	2.4	49	2.4	0.06	U	0.063	U	0.58	U	0.058	U	0.061	U	0.061	U	0.082	U	0.07	U	0.47	U	0.34	U
1,4-Dichlorobenzene	1.8	13	1.8	0.058	U	0.061	U	0.56	U	0.056	U	0.059	U	0.059	U	0.079	U	0.068	U	0.45	U	0.32	U
3,3'-Dichlorobenzidine	--	--	--	0.051	U	0.053	U	0.49	U	0.049	U	0.052	U	0.051	U	0.069	U	0.059	U	0.4	U	0.28	U
2,4-Dinitrotoluene	--	--	--	0.041	U	0.043	U	0.4	U	0.04	U	0.042	U	0.042	U	0.056	U	0.048	U	0.32	U	0.23	U
2,6-Dinitrotoluene	--	--	--	0.049	U	0.051	U	0.47	U	0.047	U	0.05	U	0.049	U	0.066	U	0.057	U	0.38	U	0.27	U
Fluoranthene	1000	100	100	5.9		0.13		13		4.7		1.6		0.36		0.048	U	0.068	J	31		380	
4-Chlorophenyl phenyl ether	--	--	--	0.058	U	0.061	U	0.56	U	0.056	U	0.059	U	0.059	U	0.079	U	0.068	U	0.45	U	0.32	U
4-Bromophenyl phenyl ether	--	--	--	0.044	U	0.046	U	0.42	U	0.042	U	0.045	U	0.044	U	0.06	U	0.051	U	0.34	U	0.24	U
Bis(2-chloroisopropyl)ether	--	--	--	0.068	U	0.07	U	0.65	U	0.065	U	0.068	U	0.068	U	0.092	U	0.078	U	0.53	U	0.37	U
Bis(2-chloroethoxy)methane	--	--	--	0.058	U	0.061	U	0.56	U	0.056	U	0.059	U	0.058	U	0.079	U	0.067	U	0.45	U	0.32	U
Hexachlorobutadiene	--	--	--	0.054	U	0.056	U	0.52	U	0.052	U	0.055	U	0.054	U	0.073	U	0.063	U	0.42	U	0.3	U
Hexachlorocyclopentadiene	--	--	--	0.12	U	0.13	U	1.2	U	0.12	U	0.12	U	0.12	U	0.17	U	0.14	U	0.96	U	0.68	U
Hexachloroethane	--	--	--	0.035	U	0.036	U	0.34	U	0.033	U	0.035	U	0.035	U	0.047	U	0.04	U	0.27	U	0.19	U
Isophorone	--	--	--	0.051	U	0.053	U	0.49	U	0.049	U	0.052	U	0.051	U	0.069	U	0.059	U	0.4	U	0.28	U
Naphthalene	12	100	12	0.82		0.066	U	1.2	J	0.3		0.064	U	0.064	U	0.086	U	0.074	U	1.1	J	60	
Nitrobenzene	--	--	--	0.046	U	0.048	U	0.44	U	0.044	U	0.046	U	0.046	U	0.062	U	0.053	U	0.36	U	0.25	U
NitrosoDiPhenylAmine(NDPA)/DPA	--	--	--	0.04	U	0.042	U	0.39	U	0.038	U	0.041	U	0.04	U	0.055	U	0.047	U	0.31	U	0.22	U
n-Nitrosodi-n-propylamine	--	--	--	0.057	U	0.06	U	0.55	U	0.055	U	0.058	U	0.057	U	0.078	U	0.066	U	0.44	U	0.32	U
Bis(2-Ethylhexyl)phthalate	--	--	--	0.35		0.22		0.48	U	0.26		0.051	U	0.05	U	0.068	U	0.13	J	0.39	U	0.28	U
Butyl benzyl phthalate	--	--	--	0.086	J	19		0.36	U	0.036	U	0.038	U	0.038	U	0.051	U	0.044	U	0.29	U	0.21	U
Di-n-butylphthalate	--	--	--	0.037	U	0.059	J	0.36	U	0.035	U	0.037	U	0.037	U	0.05	U	0.043	U	0.29	U	0.2	U
Di-n-octylphthalate	--	--	--	0.047	U	0.049	U	0.45	U	0.045	U	0.048	U	0.047	U	0.064	U	0.055	U	0.37	U	0.26	U
Diethyl phthalate	--	--	--	0.04	U	0.042	U	0.39	U	0.039	U	0.041	U	0.041	U	0.055	U	0.047	U	0.32	U	0.22	U
Dimethyl phthalate	--	--	--	0.049	U	0.051	U	0.47	U	0.047	U	0.049	U	0.049	U	0.066	U	0.056	U	0.38	U	0.27	U
Benzo(a)anthracene	1	1	1	2.4		0.058	J	6.2		2.3		0.91		0.27		0.051	U	0.044	U	14		140	
Benzo(a)pyrene	22	1	1	2.2		0.049	U	5.6		2.2		0.92		0.38		0.064	U	0.061	J	15		130	
Benzo(b)fluoranthene	1.7	1	1	2.9		0.064	J	7.3		2.8		1.2		0.44		0.052	U	0.049	J	17		140	
Benzo(k)fluoranthene	1.7	3.9	0.8	1.1		0.038	U	2.4		1.1		0.48		0.16		0.05	U	0.042	U	5.7		22	
Chrysene	1	3.9	1	2.4		0.062	J	5.2		2.1		0.86		0.26		0.051	U	0.044	U	12		120	
Acenaphthylene	107	100	100	0.13	J	0.037	U	1.4	J	0.52		0.12	J	0.036	U	0.049	U	0.042	U	2.8		120	
Anthracene	1000	100	100	1.3		0.033	U	2.1		0.74		0.22		0.055	J	0.043	U	0.037	U	5.1		160	
Benzo(ghi)perylene	1000	100	100	1.3		0.042	U	3.6		1.4		0.54		0.25		0.054	U	0.046	U	8.3		73	
Fluorene	386	100	30	0.6		0.057	U	0.64	J	0.23		0.068	J	0.055	U	0.074	U	0.064	U	0.86	J	99	
Phenanthrene	1000	100	100	5.3		0.088	J	6		2.2		0.67		0.13		0.051	U	0.056	J	10		440	
Dibenzo(a,h)anthracene	1000	0.33	0.33	0.34		0.039	U	0.8	J	0.32		0.15		0.07	J	0.05	U	0.043	U	1.5		12	
Indeno(1,2,3-cd)Pyrene	8.2	0.5	0.5	1.4		0.044	U	4.4		1.7		0.6		0.28		0.058	U	0.071	J	9.5		78	
Pyrene	1000	100	100	4.9		0.1	J	12		4.3		1.4		0.36		0.05	U	0.051	J	27		300	
Biphenyl	--	--	--	0.095	J	0.066	U	0.61	U	0.061	U	0.064	U	0.064	U	0.086	U	0.073	U	0.49	U	7.3	
4-Chloroaniline	--	--	--	0.051	U	0.053	U	0.49	U	0.048	U	0.051	U	0.051	U	0.069	U	0.059	U	0.39	U	0.28	U
2-Nitroaniline	--	--	--	0.054	U	0.056	U	0.52	U	0.052	U	0.055	U	0.054	U	0.073	U	0.063	U	0.42	U	0.3	U
3-Nitroaniline	--	--	--	0.053	U	0.055	U	0.51	U	0.051	U	0.054	U	0.053	U	0.072	U	0.061	U	0.41	U	0.29	U
4-Nitroaniline	--	--	--	0.052	U	0.054	U	0.5	U	0.05	U	0.052	U	0.052	U	0.07	U	0.06	U	0.4	U	0.29	U
Dibenzofuran	210	59	7	0.45		0.067	U	0.69	J	0.24		0.065	U	0.064	U	0.087	U	0.074	U	0.5	U	93	
2-Methylnaphthalene	--	--	--	0.59		0.064	U	0.59	U	0.086	J	0.062	U	0.062	U	0.083	U	0.071	U	0.48	U	5.9	
1,2,4,5-Tetrachlorobenzene	--	--	--	0.059	U	0.062	U	0.57	U	0.057	U	0.06	U	0.06	U	0.08	U	0.069	U	0.46	U	0.33	U
Acetophenone	--	--	--	0.059	U	0.062	U	0.57	U	0.057	U	0.06	U	0.06	U	0.081	U	0.069	U	0.46	U	0.36	J
2,4,6-Trichlorophenol	--	--	--	0.036	U	0.038	U	0.35	U	0.035	U	0.037	U	0.036	U	0.049	U	0.042	U	0.28	U	0.2	U
P-Chloro-M-Cresol	--	--	--	0.056	U	0.058	U	0.54	U	0.053	U	0.056	U	0.056	U	0.075	U	0.065	U	0.43	U	0.31	U
2-Chlorophenol	--	--	--	0.058	U	0.06	U	0.56	U	0.056	U	0.059	U	0.058	U	0.078	U	0.067	U	0.45	U	0.32	U
2,4-Dichlorophenol	--	--	--	0.062	U	0.065	U	0.6	U	0.06	U	0.063	U	0.062	U	0.084	U	0.072	U	0.48	U	0.34	U
2,4-Dimethylphenol	--	--	--	0.057	U	0.06	U	0.55	U	0.055	U	0.058	U	0.057	U	0.078	U	0.066	U	0.44	U	0.32	U
2-Nitrophenol	--	--	--	0.06	U	0.062	U	0.58	U	0.057	U	0.061	U	0.06	U	0.081	U	0.07	U	0.47	U	0.33	U
4-Nitrophenol	--	--	--	0.062	U	0.065	U	0.6	U	0.06	U	0.063	U	0.062	U	0.084	U	0.072	U	0.48	U	0.34	U
2,4-Dinitrophenol	--	--	--	0.26	U	0.27	U	2.5	U	0.25	U	0.26	U	0.26	U	0.36	U	0.3	U	2	U	1.4	U
4,6-Dinitro-o-cresol	--	--	--	0.07	U	0.073	U	0.68	U	0.067	U	0.071	U	0.07	U	0.095	U	0.082	U	0.55	U	0.39	U
Pentachlorophenol	0.8	6.7	0.8	0.041	U	0.043	U	0.4	U	0.039	U	0.042	U	0.041	U	0.056	U	0.048	U	0.32	U	0.23	U
Phenol	0.33	100	0.33	0.057	U	0.059	U	0.55	U	0.054	U	0.058	U	0.057	U	0.077	U	0.066	U	0.44	U	0.64	J
2-Methylphenol	0.33	100	0.33	0.062	U	0.064	U	0.59	U	0.059	U	0.062	U	0.062	U	0.084	U	0.072	U	0.48	U	0.34	U
3-Methylphenol/4-Methylpheno	0.33	100	0.33	0.076	J	0.066	U	0.61	U	0.06	U	0.064	U	0.063	U	0.085	U	0.13	J	0.49	U	0.77	J
2,4,5-Trichlorophenol	--	--	--	0.062	U	0.065	U	0.6	U	0.06	U	0.063	U	0.062	U	0.084	U	0.072	U	0.48	U	0.34	U
Benzoic Acid	--	--	--	0.19	U	0.2	U	1.9	U	0.18	U	0.2	U	0.2	U	0.26	U	0.22	U	1.5	U	1.1	U
Benzyl Alcohol	--	--	--	0.059	U	0.065	J	0.57	U	0.057	U	0.06	U	0.059	U	0.08	U	0.069	U	0.46	U	0.33	U
Carbazole	--	--	--	0.68		0.043	U	0.4	U	0.14	J	0.067	J	0.041	U	0.056	U	0.048	U	0.48	J	27	
Total SVOCs	--	--	--	36.047	-	22.846	-	72.53	-	27.699	-	9.867	-	3.015	-	-	-	0.616	-	162.11	-	2333	-

Notes:
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Cells highlighted in yellow indicate a concentration above the NY-RESGW
Cells highlighted in blue indicate a concentration above the NY-RESRR
Cells highlighted in red indicate a concentration aboe the NY-UNRES
Q = Laboratory Data Qualifier
MDL = Maximum Detection Limit
For U qualified entries, the MDL is shown
U = Not detected at or above the MDL
DUP = Designation for duplicate sample
J = The concentration is estimated
All results and MDLs are shown in milligrams per kilogram (mg/kg)

Table 7 - Semivolatile Organic Compounds in Soil - BCP Portion
470 Kent Avenue - Brooklyn, NY
BCP#C224053

SAMPLE ID:				BMW-14 (18-18.5)		BMW-14 (18.5-19)		BSB-15 (18-20)		BSB-15 (21-22)		BSB-16 (8-9)		BSB-16 (10-12)		BSB-17 (0-3)		BSB-17 (0-3)		BSB-17 (8-9)		BSB-17 (14-15)	
LAB ID:				L1529203-12		L1529203-13		L1523673-09		L1523673-01		L1523673-07		L1523673-13		L1523673-06		L1523673-06 R1		L1523673-15		L1523673-05	
COLLECTION DATE:	NY-RESGW	NY-RESRR	NY-UNRES	11/9/2015		11/9/2015		9/22/2015		9/22/2015		9/22/2015		9/22/2015		9/22/2015		9/22/2015		9/22/2015		9/22/2015	
Semivolatile Organic Compounds Units: mg/kg				Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q
Acenaphthene	98	100	20	47		140		2.1		3.4		0.039	U	0.043	U	0.27		0.56	J	0.089	J	120	
1,2,4-Trichlorobenzene	--	--	--	0.43	U	4.9	U	0.092	U	0.46	U	0.062	U	0.068	U	0.061	U	0.3	U	0.065	U	3	U
Hexachlorobenzene	3.2	1.2	0.33	0.24	U	2.8	U	0.052	U	0.26	U	0.036	U	0.039	U	0.034	U	0.17	U	0.037	U	1.7	U
Bis(2-chloroethyl)ether	--	--	--	0.36	U	4.2	U	0.079	U	0.4	U	0.054	U	0.058	U	0.052	U	0.26	U	0.056	U	2.6	U
2-Chloronaphthalene	--	--	--	0.42	U	4.9	U	0.092	U	0.46	U	0.062	U	0.068	U	0.06	U	0.3	U	0.065	U	3	U
1,2-Dichlorobenzene	1.1	100	1.1	0.43	U	4.9	U	0.092	U	0.46	U	0.063	U	0.068	U	0.061	U	0.3	U	0.065	U	3	U
1,3-Dichlorobenzene	2.4	49	2.4	0.41	U	4.7	U	0.088	U	0.44	U	0.06	U	0.065	U	0.058	U	0.29	U	0.063	U	2.9	U
1,4-Dichlorobenzene	1.8	13	1.8	0.4	U	4.6	U	0.085	U	0.43	U	0.058	U	0.063	U	0.056	U	0.28	U	0.06	U	2.8	U
3,3'-Dichlorobenzidine	--	--	--	0.35	U	4	U	0.075	U	0.38	U	0.051	U	0.055	U	0.049	U	0.24	U	0.053	U	2.4	U
2,4-Dinitrotoluene	--	--	--	0.28	U	3.2	U	0.06	U	0.3	U	0.041	U	0.045	U	0.04	U	0.2	U	0.043	U	2	U
2,6-Dinitrotoluene	--	--	--	0.33	U	3.8	U	0.072	U	0.36	U	0.049	U	0.053	U	0.048	U	0.24	U	0.051	U	2.3	U
Fluoranthene	1000	100	100	470		430		20		29		0.054	J	0.082	J	6.4		8.9		3.8		1600	
4-Chlorophenyl phenyl ether	--	--	--	0.4	U	4.6	U	0.085	U	0.43	U	0.058	U	0.063	U	0.056	U	0.28	U	0.061	U	2.8	U
4-Bromophenyl phenyl ether	--	--	--	0.3	U	3.4	U	0.064	U	0.32	U	0.044	U	0.048	U	0.043	U	0.21	U	0.046	U	2.1	U
Bis(2-chloroisopropyl)ether	--	--	--	0.46	U	5.3	U	0.099	U	0.5	U	0.067	U	0.073	U	0.065	U	0.32	U	0.07	U	3.2	U
Bis(2-chloroethoxy)methane	--	--	--	0.39	U	4.5	U	0.085	U	0.43	U	0.058	U	0.063	U	0.056	U	0.28	U	0.06	U	2.8	U
Hexachlorobutadiene	--	--	--	0.37	U	4.2	U	0.079	U	0.4	U	0.054	U	0.058	U	0.052	U	0.26	U	0.056	U	2.6	U
Hexachlorocyclopentadiene	--	--	--	0.84	U	9.6	U	0.18	U	0.91	U	0.12	U	0.13	U	0.12	U	0.59	U	0.13	U	5.9	U
Hexachloroethane	--	--	--	0.24	U	2.7	U	0.051	U	0.26	U	0.035	U	0.038	U	0.034	U	0.17	U	0.036	U	1.7	U
Isophorone	--	--	--	0.35	U	4	U	0.075	U	0.38	U	0.051	U	0.055	U	0.049	U	0.24	U	0.053	U	2.4	U
Naphthalene	12	100	12	920		2200		7.9		36		0.063	U	0.069	U	0.071	J	0.3	U	0.13	J	3400	
Nitrobenzene	--	--	--	0.31	U	3.6	U	0.067	U	0.34	U	0.045	U	0.049	U	0.044	U	0.22	U	0.047	U	2.2	U
NitrosoDiPhenylAmine(NDPA)/DPA	--	--	--	0.27	U	3.1	U	0.059	U	0.3	U	0.04	U	0.044	U	0.039	U	0.19	U	0.042	U	1.9	U
n-Nitrosodi-n-propylamine	--	--	--	0.39	U	4.5	U	0.084	U	0.42	U	0.057	U	0.062	U	0.055	U	0.27	U	0.059	U	2.7	U
Bis(2-Ethylhexyl)phthalate	--	--	--	0.34	U	3.9	U	0.074	U	0.37	U	0.084	J	0.083	J	0.25		0.24	U	0.3		2.4	U
Butyl benzyl phthalate	--	--	--	0.25	U	2.9	U	0.055	U	0.28	U	0.037	U	0.04	U	0.036	U	0.18	U	0.039	U	1.8	U
Di-n-butylphthalate	--	--	--	0.25	U	2.9	U	0.054	U	0.27	U	0.037	U	0.04	U	0.036	U	0.18	U	0.038	U	1.8	U
Di-n-octylphthalate	--	--	--	0.32	U	3.7	U	0.069	U	0.35	U	0.047	U	0.051	U	0.046	U	0.23	U	0.049	U	2.2	U
Diethyl phthalate	--	--	--	0.28	U	3.2	U	0.059	U	0.3	U	0.04	U	0.044	U	0.039	U	0.19	U	0.042	U	1.9	U
Dimethyl phthalate	--	--	--	0.33	U	3.8	U	0.071	U	0.36	U	0.048	U	0.053	U	0.047	U	0.23	U	0.051	U	2.3	U
Benzo(a)anthracene	1	1	1	180		150		10	E	14		0.037	U	0.06	J	2.6		4.1		1.5		560	
Benzo(a)pyrene	22	1	1	170		150		7.9		8.4		0.055	J	0.072	J	2		3.6		1.6		440	
Benzo(b)fluoranthene	1.7	1	1	180		170		7.6		8		0.044	J	0.065	J	2.1		4.4		1.7		550	
Benzo(k)fluoranthene	1.7	3.9	0.8	29		58		5.6		5.6		0.036	U	0.04	U	1.4		1.6		1.8		290	
Chrysene	1	3.9	1	160		140		8.7		9		0.037	U	0.056	J	2.3		3.6		1.8		460	
Acenaphthylene	107	100	100	200		150		4.9		9.6		0.036	U	0.039	U	0.18		0.19	J	0.38		240	
Anthracene	1000	100	100	230		200		10		15		0.032	U	0.034	U	1.1		1.9		0.73		670	
Benzo(ghi)perylene	1000	100	100	66		77		3.3		3.5		0.04	U	0.043	U	1.4		2.3		1.1		270	
Fluorene	386	100	30	200		180		8.2		14		0.055	U	0.06	U	0.34		0.62	J	0.13	J	510	
Phenanthrene	1000	100	100	590		570		24		44		0.037	U	0.041	U	4.7		7.6		0.89		2200	
Dibenzo(a,h)anthracene	1000	0.33	0.33	19		15		1.5		1.5		0.037	U	0.04	U	0.34		0.57		0.43		80	
Indeno(1,2,3-cd)Pyrene	8.2	0.5	0.5	110		89		4.2		4.8		0.063	J	0.077	J	1.4		2.7		1.2		300	
Pyrene	1000	100	100	400		350		16		20		0.045	J	0.072	J	5.2		7.6		3.9		1200	
Biphenyl	--	--	--	49		80		1.2		2.7	J	0.063	U	0.068	U	0.061	U	0.3	U	0.066	U	160	
4-Chloroaniline	--	--	--	0.34	U	4	U	0.074	U	0.37	U	0.05	U	0.055	U	0.049	U	0.24	U	0.053	U	2.4	U
2-Nitroaniline	--	--	--	0.37	U	4.2	U	0.079	U	0.4	U	0.054	U	0.058	U	0.052	U	0.26	U	0.056	U	2.6	U
3-Nitroaniline	--	--	--	0.36	U	4.1	U	0.077	U	0.39	U	0.053	U	0.057	U	0.051	U	0.25	U	0.055	U	2.5	U
4-Nitroaniline	--	--	--	0.35	U	4	U	0.076	U	0.38	U	0.052	U	0.056	U	0.05	U	0.25	U	0.054	U	2.5	U
Dibenzofuran	210	59	7	190		160		4.5		10		0.064	U	0.069	U	0.2		0.4	J	0.091	J	520	
2-Methylnaphthalene	--	--	--	120		250		0.71		7.4		0.061	U	0.066	U	0.059	J	0.29	U	0.064	U	610	
1,2,4,5-Tetrachlorobenzene	--	--	--	0.4	U	4.6	U	0.087	U	0.44	U	0.059	U	0.064	U	0.057	U	0.28	U	0.062	U	2.8	U
Acetophenone	--	--	--	0.4	U	4.6	U	0.087	U	0.44	U	0.059	U	0.064	U	0.058	U	0.28	U	0.062	U	2.8	U
2,4,6-Trichlorophenol	--	--	--	0.24	U	2.8	U	0.053	U	0.27	U	0.036	U	0.039	U	0.035	U	0.17	U	0.038	U	1.7	U
P-Chloro-M-Cresol	--	--	--	0.38	U	4.3	U	0.081	U	0.41	U	0.055	U	0.06	U	0.054	U	0.27	U	0.058	U	2.6	U
2-Chlorophenol	--	--	--	0.39	U	4.5	U	0.085	U	0.43	U	0.058	U	0.063	U	0.056	U	0.28	U	0.06	U	2.8	U
2,4-Dichlorophenol	--	--	--	0.42	U	4.8	U	0.091	U	0.46	U	0.062	U	0.067	U	0.06	U	0.3	U	0.064	U	3	U
2,4-Dimethylphenol	--	--	--	0.81	J	4.5	U	0.084	U	0.42	U	0.057	U	0.062	U	0.055	U	0.27	U	0.059	U	2.7	U
2-Nitrophenol	--	--	--	0.41	U	4.7	U	0.088	U	0.44	U	0.06	U	0.065	U	0.058	U	0.29	U	0.062	U	2.8	U
4-Nitrophenol	--	--	--	0.42	U	4.8	U	0.091	U	0.46	U	0.062	U	0.067	U	0.06	U	0.3	U	0.064	U	3	U
2,4-Dinitrophenol	--	--	--	1.8	U	20	U	0.38	U	1.9	U	0.26	U	0.28	U	0.25	U	1.3	U	0.27	U	12	U
4,6-Dinitro-o-cresol	--	--	--	0.48	U	5.5	U	0.1	U	0.52	U	0.07	U	0.076	U	0.068	U	0.34	U	0.073	U	3.3	U
Pentachlorophenol	0.8	6.7	0.8	0.28	U	3.2	U	0.06	U	0.3	U	0.041	U	0.044	U	0.04	U	0.2	U	0.043	U	2	U
Phenol	0.33	100	0.33	1.4		4.4	U	0.23	J	0.42	U	0.056	U	0.061	U	0.055	U	0.27	U	0.059	U	2.7	U
2-Methylphenol	0.33	100	0.33	0.42	U	4.8	U	0.14	J	0.45	U	0.061	U	0.067	U	0.06	U	0.3	U	0.064	U	2.9	U
3-Methylphenol/4-Methylpheno	0.33	100	0.33	1.8	J	4.9	U	0.46		0.46	U	0.062	U	0.068	U	0.061	U	0.3	U	0.065	U	3.9	J
2,4,5-Trichlorophenol	--	--	--	0.42	U	4.8	U	0.091	U	0.46	U	0.062	U	0.067	U	0.06	U	0.3	U	0.064	U	3	U
Benzoic Acid	--	--	--	1.3	U	15	U	0.28	U	1.4	U	0.19	U	0.21	U	0.19	U	0.93	U	0.2	U	9.2	U
Benzyl Alcohol	--	--	--	0.4	U	4.6	U	0.086	U	0.43	U	0.059	U	0.064	U	0.057	U	0.28	U	0.061	U	2.8	U
Carbazole	--	--	--	58	E	80		0.94		1.9		0.041	U	0.045	U	0.29		0.57	J	0.21		210	
Total SVOCs	--	--	--	1804.01	-	2200	-	157.08	-	247.8	-	0.345	-	0.567	-	32.6	-	51.21	-	21.78	-	10003.9	-

Notes:
NY-RESGW: New York NYCRR Part 375 Groundwater Criteria, New York Restricted use Criteria per 6 NYCRR Part 375 Environmental Remediation Programs, effective December 14, 2006.
NY-RESRR: New York NYCRR Part 375 Restricted-Residential Criteria, New York Restricted use Criteria per 6 NYCRR Part 375 Environmental Remediation Programs, effective December 14, 2006.
NY-UNRES: New York NYCRR Part 375 New York Unrestricted use Criteria Criteria per 6 NYCRR Part 375 Environmental Remediation Programs, effective December 14, 2006.
Cells highlighted in yellow indicate a concentration above the NY-RESGW
Cells highlighted in blue indicate a concentration above the NY-RESRR
Cells highlighted in red indicate a concentration aboe the NY-UNRES
Q = Laboratory Data Qualifier
MDL = Maximum Detection Limit
For U qualified entries, the MDL is shown
U = Not detected at or above the MDL
DUP = Designation for duplicate sample
J = The concentration is estimated
All results and MDLs are shown in milligrams per kilogram (mg/kg)

Table 7 - Semivolatile Organic Compounds in Soil - BCP Portion
470 Kent Avenue - Brooklyn, NY
BCP#C224053

SAMPLE ID:				BSB-17 (18-20)		BMW1 (12-14)		BMW1 (14-15)		BMW2 (7-9)		BMW2 (11-13)		BMW3 (8-10)		BMW3 (14-15)		BMW-4 (11-14)		BMW-4 (14-15)	
LAB ID:				L1523673-16		L1524836-03		L1524836-04		L1524836-05		L1524836-06		L1524836-07		L1524836-08		L1529203-01		L1529203-02	
COLLECTION DATE:	NY-RESGW	NY-RESRR	NY-UNRES	9/22/2015		9/30/2015		9/30/2015		10/1/2015		10/1/2015		10/1/2015		10/1/2015		11/9/2015		11/9/2015	
Semivolatile Organic Compounds Units: mg/kg				Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q
Acenaphthene	98	100	20	0.2	J	0.044	U	0.04	U	340		0.091	J	0.041	U	0.044	U	0.044	U	0.041	U
1,2,4-Trichlorobenzene	--	--	--	0.1	U	0.07	U	0.064	U	51	U	0.058	U	0.066	U	0.07	U	0.07	U	0.065	U
Hexachlorobenzene	3.2	1.2	0.33	0.059	U	0.04	U	0.036	U	29	U	0.033	U	0.037	U	0.04	U	0.04	U	0.037	U
Bis(2-chloroethyl)ether	--	--	--	0.089	U	0.06	U	0.054	U	44	U	0.05	U	0.056	U	0.06	U	0.06	U	0.055	U
2-Chloronaphthalene	--	--	--	0.1	U	0.069	U	0.063	U	51	U	0.058	U	0.065	U	0.07	U	0.07	U	0.064	U
1,2-Dichlorobenzene	1.1	100	1.1	0.1	U	0.07	U	0.064	U	52	U	0.058	U	0.066	U	0.07	U	0.07	U	0.065	U
1,3-Dichlorobenzene	2.4	49	2.4	0.1	U	0.067	U	0.061	U	49	U	0.056	U	0.063	U	0.067	U	0.067	U	0.062	U
1,4-Dichlorobenzene	1.8	13	1.8	0.097	U	0.065	U	0.059	U	48	U	0.054	U	0.061	U	0.065	U	0.065	U	0.06	U
3,3'-Dichlorobenzidine	--	--	--	0.084	U	0.057	U	0.052	U	42	U	0.047	U	0.053	U	0.057	U	0.057	U	0.052	U
2,4-Dinitrotoluene	--	--	--	0.069	U	0.046	U	0.042	U	34	U	0.038	U	0.043	U	0.046	U	0.046	U	0.042	U
2,6-Dinitrotoluene	--	--	--	0.081	U	0.054	U	0.05	U	40	U	0.046	U	0.051	U	0.054	U	0.055	U	0.05	U
Fluoranthene	1000	100	100	11		0.039	U	0.036	U	2200		0.64		0.064	J	0.039	U	0.055	J	0.036	U
4-Chlorophenyl phenyl ether	--	--	--	0.097	U	0.065	U	0.059	U	48	U	0.054	U	0.061	U	0.065	U	0.065	U	0.06	U
4-Bromophenyl phenyl ether	--	--	--	0.073	U	0.049	U	0.044	U	36	U	0.041	U	0.046	U	0.049	U	0.049	U	0.045	U
Bis(2-chloroisopropyl)ether	--	--	--	0.11	U	0.075	U	0.068	U	55	U	0.063	U	0.071	U	0.075	U	0.075	U	0.069	U
Bis(2-chloroethoxy)methane	--	--	--	0.096	U	0.064	U	0.059	U	48	U	0.054	U	0.061	U	0.064	U	0.065	U	0.06	U
Hexachlorobutadiene	--	--	--	0.09	U	0.06	U	0.055	U	44	U	0.05	U	0.057	U	0.06	U	0.06	U	0.056	U
Hexachlorocyclopentadiene	--	--	--	0.2	U	0.14	U	0.12	U	100	U	0.11	U	0.13	U	0.14	U	0.14	U	0.13	U
Hexachloroethane	--	--	--	0.058	U	0.039	U	0.035	U	28	U	0.032	U	0.036	U	0.039	U	0.039	U	0.036	U
Isophorone	--	--	--	0.084	U	0.057	U	0.052	U	42	U	0.047	U	0.053	U	0.057	U	0.057	U	0.052	U
Naphthalene	12	100	12	0.53		0.071	U	0.064	U	630		0.24		0.067	U	0.071	U	0.071	U	0.066	U
Nitrobenzene	--	--	--	0.076	U	0.051	U	0.046	U	37	U	0.042	U	0.048	U	0.051	U	0.051	U	0.047	U
NitrosoDiPhenylAmine(NDPA)/DPA	--	--	--	0.067	U	0.045	U	0.041	U	33	U	0.037	U	0.042	U	0.045	U	0.045	U	0.041	U
n-Nitrosodi-n-propylamine	--	--	--	0.095	U	0.064	U	0.058	U	47	U	0.053	U	0.06	U	0.064	U	0.064	U	0.059	U
Bis(2-Ethylhexyl)phthalate	--	--	--	0.26	J	0.056	U	0.051	U	41	U	0.071	J	0.088	J	0.056	U	0.056	U	0.052	U
Butyl benzyl phthalate	--	--	--	0.062	U	0.042	U	0.038	U	31	U	0.035	U	0.039	U	0.042	U	0.042	U	0.038	U
Di-n-butylphthalate	--	--	--	0.061	U	0.041	U	0.037	U	30	U	0.034	U	0.039	U	0.041	U	0.041	U	0.038	U
Di-n-octylphthalate	--	--	--	0.078	U	0.052	U	0.048	U	39	U	0.044	U	0.049	U	0.052	U	0.052	U	0.048	U
Diethyl phthalate	--	--	--	0.067	U	0.045	U	0.041	U	33	U	0.038	U	0.042	U	0.045	U	0.045	U	0.042	U
Dimethyl phthalate	--	--	--	0.081	U	0.054	U	0.049	U	40	U	0.045	U	0.051	U	0.054	U	0.054	U	0.05	U
Benzo(a)anthracene	1	1	1	6.4		0.042	U	0.038	U	940		0.27		0.04	J	0.042	U	0.042	U	0.039	U
Benzo(a)pyrene	22	1	1	4.4		0.052	U	0.047	U	780		0.21		0.049	U	0.052	U	0.052	U	0.048	U
Benzo(b)fluoranthene	1.7	1	1	2		0.043	U	0.039	U	960		0.26		0.052	J	0.043	U	0.056	J	0.04	U
Benzo(k)fluoranthene	1.7	3.9	0.8	3.9		0.041	U	0.037	U	380		0.092	J	0.038	U	0.041	U	0.041	U	0.038	U
Chrysene	1	3.9	1	5.4		0.042	U	0.038	U	920		0.26		0.046	J	0.042	U	0.042	U	0.039	U
Acenaphthylene	107	100	100	0.58		0.04	U	0.036	U	99	J	0.046	J	0.038	U	0.04	U	0.04	U	0.037	U
Anthracene	1000	100	100	4.6		0.035	U	0.032	U	770		0.21		0.033	U	0.035	U	0.036	U	0.033	U
Benzo(ghi)perylene	1000	100	100	2.2		0.044	U	0.04	U	450		0.12	J	0.042	U	0.044	U	0.044	U	0.041	U
Fluorene	386	100	30	0.91		0.061	U	0.056	U	460		0.16	J	0.058	U	0.061	U	0.061	U	0.056	U
Phenanthrene	1000	100	100	8.6		0.042	U	0.038	U	2800		0.92		0.05	J	0.042	U	0.063	J	0.039	U
Dibenzo(a,h)anthracene	1000	0.33	0.33	0.81		0.041	U	0.038	U	120		0.034	J	0.039	U	0.041	U	0.041	U	0.038	U
Indeno(1,2,3-cd)Pyrene	8.2	0.5	0.5	2.3		0.047	U	0.043	U	450		0.12	J	0.044	U	0.047	U	0.047	U	0.044	U
Pyrene	1000	100	100	10		0.041	U	0.038	U	2000		0.56		0.063	J	0.041	U	0.056	J	0.038	U
Biphenyl	--	--	--	0.1	U	0.07	U	0.064	U	67	J	0.059	U	0.066	U	0.07	U	0.07	U	0.065	U
4-Chloroaniline	--	--	--	0.084	U	0.056	U	0.051	U	41	U	0.047	U	0.053	U	0.056	U	0.056	U	0.052	U
2-Nitroaniline	--	--	--	0.09	U	0.06	U	0.055	U	44	U	0.05	U	0.057	U	0.06	U	0.06	U	0.056	U
3-Nitroaniline	--	--	--	0.088	U	0.059	U	0.053	U	43	U	0.049	U	0.055	U	0.059	U	0.059	U	0.054	U
4-Nitroaniline	--	--	--	0.086	U	0.058	U	0.052	U	42	U	0.048	U	0.054	U	0.058	U	0.058	U	0.053	U
Dibenzofuran	210	59	7	0.18	J	0.071	U	0.065	U	310		0.097	J	0.067	U	0.071	U	0.071	U	0.066	U
2-Methylnaphthalene	--	--	--	0.13	J	0.068	U	0.062	U	230		0.097	J	0.064	U	0.068	U	0.068	U	0.063	U
1,2,4,5-Tetrachlorobenzene	--	--	--	0.098	U	0.066	U	0.06	U	49	U	0.055	U	0.062	U	0.066	U	0.066	U	0.061	U
Acetophenone	--	--	--	0.098	U	0.066	U	0.06	U	49	U	0.055	U	0.062	U	0.066	U	0.066	U	0.061	U
2,4,6-Trichlorophenol	--	--	--	0.06	U	0.04	U	0.036	U	30	U	0.034	U	0.038	U	0.04	U	0.04	U	0.037	U
P-Chloro-M-Cresol	--	--	--	0.092	U	0.062	U	0.056	U	46	U	0.052	U	0.058	U	0.062	U	0.062	U	0.057	U
2-Chlorophenol	--	--	--	0.096	U	0.064	U	0.058	U	47	U	0.054	U	0.061	U	0.064	U	0.064	U	0.06	U
2,4-Dichlorophenol	--	--	--	0.1	U	0.069	U	0.063	U	51	U	0.058	U	0.065	U	0.069	U	0.069	U	0.064	U
2,4-Dimethylphenol	--	--	--	0.095	U	0.064	U	0.058	U	47	U	0.053	U	0.06	U	0.064	U	0.064	U	0.059	U
2-Nitrophenol	--	--	--	0.099	U	0.066	U	0.06	U	49	U	0.056	U	0.063	U	0.066	U	0.067	U	0.062	U
4-Nitrophenol	--	--	--	0.1	U	0.069	U	0.063	U	51	U	0.058	U	0.065	U	0.069	U	0.069	U	0.064	U
2,4-Dinitrophenol	--	--	--	0.44	U	0.29	U	0.26	U	210	U	0.24	U	0.27	U	0.29	U	0.29	U	0.27	U
4,6-Dinitro-o-cresol	--	--	--	0.12	U	0.078	U	0.071	U	57	U	0.065	U	0.074	U	0.078	U	0.078	U	0.072	U
Pentachlorophenol	0.8	6.7	0.8	0.068	U	0.046	U	0.041	U	34	U	0.038	U	0.043	U	0.046	U	0.046	U	0.042	U
Phenol	0.33	100	0.33	0.25	J	0.063	U	0.057	U	46	U	0.053	U	0.059	U	0.063	U	0.063	U	0.058	U
2-Methylphenol	0.33	100	0.33	0.1	U	0.069	U	0.062	U	50	U	0.057	U	0.065	U	0.069	U	0.069	U	0.064	U
3-Methylphenol/4-Methylpheno	0.33	100	0.33	0.31	J	0.07	U	0.064	U	52	U	0.058	U	0.066	U	0.07	U	0.07	U	0.065	U
2,4,5-Trichlorophenol	--	--	--	0.1	U	0.069	U	0.063	U	51	U	0.058	U	0.065	U	0.069	U	0.069	U	0.064	U
Benzoic Acid	--	--	--	0.32	U	0.22	U	0.2	U	160	U	0.18	U	0.2	U	0.22	U	0.22	U	0.2	U
Benzyl Alcohol	--	--	--	0.098	U	0.066	U	0.06	U	48	U	0.055	U	0.062	U	0.066	U	0.066	U	0.061	U
Carbazole	--	--	--	0.11	J	0.046	U	0.042	U	280		0.094	J	0.043	U	0.046	U	0.046	U	0.042	U
Total SVOCs	--	--	--	66.07	-	-	-	-	-	15186	-	4.592	-	0.403	-	-	-	0.23	-	-	-

Notes:
NY-RESGW: New York NYCRR Part 375 Groundwater Criteria, New York Restricted use Criteria per 6 NYCRR Part 375 Environmental Remediation Programs, effective December 14, 2006.
NY-RESRR: New York NYCRR Part 375 Restricted-Residential Criteria, New York Restricted use Criteria per 6 NYCRR Part 375 Environmental Remediation Programs, effective December 14, 2006.
NY-UNRES: New York NYCRR Part 375 New York Unrestricted use Criteria Criteria per 6 NYCRR Part 375 Environmental Remediation Programs, effective December 14, 2006.
Cells highlighted in yellow indicate a concentration above the NY-RESGW
Cells highlighted in blue indicate a concentration above the NY-RESRR
Cells highlighted in red indicate a concentration aboe the NY-UNRES
Q = Laboratory Data Qualifier
MDL = Maximum Detection Limit
For U qualified entries, the MDL is shown
U = Not detected at or above the MDL
DUP = Designation for duplicate sample
J = The concentration is estimated
All results and MDLs are shown in milligrams per kilogram (mg/kg)

Table 7 - Semivolatile Organic Compounds in Soil - BCP Portion
470 Kent Avenue - Brooklyn, NY
BCP#C224053

SAMPLE ID:				BMW-5 (9-11)		BMW-5 (16-17)		BMW-6 (24-24.5)		BMW-6 (21-23)		BMW-6 (21-23) DUI		BMW7 (15-16)		BMW7 (16-17)		BMW7 (16-17)	
LAB ID:				L1529203-03		L1529203-04		L1529203-06		L1529203-08		L1529203-09		L1524836-10		L1524836-09		L1524836-11	
COLLECTION DATE:	NY-RESGW	NY-RESRR	NY-UNRES	11/9/2015		11/9/2015		11/9/2015		11/9/2015		11/9/2015		10/1/2015		10/1/2015		10/1/2015	
Semivolatile Organic Compounds Units: mg/kg				Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q
Acenaphthene	98	100	20	0.92		0.046	U	0.34		120		62		0.65		1.3		0.043	U
1,2,4-Trichlorobenzene	--	--	--	0.1	U	0.073	U	0.088	U	9.9	U	0.23	U	0.067	U	0.073	U	0.068	U
Hexachlorobenzene	3.2	1.2	0.33	0.058	U	0.042	U	0.05	U	5.6	U	0.13	U	0.038	U	0.041	U	0.039	U
Bis(2-chloroethyl)ether	--	--	--	0.088	U	0.063	U	0.076	U	8.5	U	0.2	U	0.058	U	0.062	U	0.058	U
2-Chloronaphthalene	--	--	--	0.1	U	0.073	U	0.088	U	9.9	U	0.23	U	0.067	U	0.072	U	0.068	U
1,2-Dichlorobenzene	1.1	100	1.1	0.1	U	0.073	U	0.088	U	9.9	U	0.23	U	0.067	U	0.073	U	0.068	U
1,3-Dichlorobenzene	2.4	49	2.4	0.098	U	0.07	U	0.085	U	9.5	U	0.22	U	0.065	U	0.07	U	0.066	U
1,4-Dichlorobenzene	1.8	13	1.8	0.095	U	0.068	U	0.082	U	9.2	U	0.21	U	0.062	U	0.068	U	0.063	U
3,3'-Dichlorobenzidine	--	--	--	0.083	U	0.059	U	0.072	U	8	U	0.19	U	0.054	U	0.059	U	0.055	U
2,4-Dinitrotoluene	--	--	--	0.067	U	0.048	U	0.058	U	6.5	U	0.15	U	0.044	U	0.048	U	0.045	U
2,6-Dinitrotoluene	--	--	--	0.08	U	0.057	U	0.069	U	7.7	U	0.18	U	0.052	U	0.057	U	0.053	U
Fluoranthene	1000	100	100	13	E	0.072	J	1.7		250		140		4.7		7.4		0.4	
4-Chlorophenyl phenyl ether	--	--	--	0.095	U	0.068	U	0.082	U	9.2	U	0.21	U	0.062	U	0.068	U	0.063	U
4-Bromophenyl phenyl ether	--	--	--	0.072	U	0.051	U	0.062	U	7	U	0.16	U	0.047	U	0.051	U	0.048	U
Bis(2-chloroisopropyl)ether	--	--	--	0.11	U	0.079	U	0.095	U	11	U	0.25	U	0.072	U	0.078	U	0.073	U
Bis(2-chloroethoxy)methane	--	--	--	0.095	U	0.068	U	0.082	U	9.2	U	0.21	U	0.062	U	0.067	U	0.063	U
Hexachlorobutadiene	--	--	--	0.088	U	0.063	U	0.076	U	8.5	U	0.2	U	0.058	U	0.063	U	0.059	U
Hexachlorocyclopentadiene	--	--	--	0.2	U	0.14	U	0.17	U	19	U	0.45	U	0.13	U	0.14	U	0.13	U
Hexachloroethane	--	--	--	0.057	U	0.041	U	0.049	U	5.5	U	0.13	U	0.037	U	0.04	U	0.038	U
Isophorone	--	--	--	0.083	U	0.059	U	0.072	U	8	U	0.19	U	0.054	U	0.059	U	0.055	U
Naphthalene	12	100	12	12		0.31		38		1100		460		0.073	J	0.32		0.069	U
Nitrobenzene	--	--	--	0.074	U	0.053	U	0.064	U	7.2	U	0.17	U	0.049	U	0.053	U	0.049	U
NitrosoDiPhenylAmine(NDPA)/DPA	--	--	--	0.066	U	0.047	U	0.057	U	6.4	U	0.15	U	0.043	U	0.047	U	0.044	U
n-Nitrosodi-n-propylamine	--	--	--	0.093	U	0.066	U	0.08	U	9	U	0.21	U	0.061	U	0.066	U	0.062	U
Bis(2-Ethylhexyl)phthalate	--	--	--	0.082	U	0.058	U	0.071	U	7.9	U	0.18	U	0.054	U	0.058	U	0.054	U
Butyl benzyl phthalate	--	--	--	0.061	U	0.044	U	0.053	U	5.9	U	0.14	U	0.04	U	0.043	U	0.041	U
Di-n-butylphthalate	--	--	--	0.06	U	0.043	U	0.052	U	5.8	U	0.14	U	0.04	U	0.043	U	0.04	U
Di-n-octylphthalate	--	--	--	0.077	U	0.055	U	0.066	U	7.4	U	0.17	U	0.05	U	0.055	U	0.051	U
Diethyl phthalate	--	--	--	0.066	U	0.047	U	0.057	U	6.4	U	0.15	U	0.043	U	0.047	U	0.044	U
Dimethyl phthalate	--	--	--	0.079	U	0.057	U	0.068	U	7.7	U	0.18	U	0.052	U	0.056	U	0.053	U
Benzo(a)anthracene	1	1	1	12		0.044	U	0.86		80		46		2.4		3.9		0.21	
Benzo(a)pyrene	22	1	1	18		0.055	U	0.88		78		45		1.8		2.6		0.25	
Benzo(b)fluoranthene	1.7	1	1	20		0.045	U	1		85		47		2.3		3.6		0.26	
Benzo(k)fluoranthene	1.7	3.9	0.8	7.2		0.043	U	0.38		34		13		0.92		1.3		0.11	J
Chrysene	1	3.9	1	11		0.044	U	1		68		55		2.4		4.2		0.19	
Acenaphthylene	107	100	100	1.1		0.042	U	0.23		30		27		0.041	J	0.076	J	0.039	U
Anthracene	1000	100	100	2		0.062	J	0.88		97		85		1.3		2.3		0.093	J
Benzo(ghi)perylene	1000	100	100	13		0.046	U	0.35		41		20		0.76		1.1		0.14	J
Fluorene	386	100	30	0.76		0.064	U	0.38		89		51		0.52		0.95		0.06	U
Phenanthrene	1000	100	100	6.3		0.08	J	1.6		370		190		4.2		6.7		0.26	
Dibenzo(a,h)anthracene	1000	0.33	0.33	2.9		0.043	U	0.093	J	8.4	J	5.3		0.22		0.37		0.04	U
Indeno(1,2,3-cd)Pyrene	8.2	0.5	0.5	15		0.05	U	0.39		47		25		0.79		1.2		0.14	J
Pyrene	1000	100	100	12		0.059	J	1.6		200		110		4.1		6.5		0.44	
Biphenyl	--	--	--	0.31	J	0.074	U	0.15	J	38	J	16		0.068	U	0.073	U	0.068	U
4-Chloroaniline	--	--	--	0.082	U	0.059	U	0.071	U	8	U	0.19	U	0.054	U	0.059	U	0.055	U
2-Nitroaniline	--	--	--	0.088	U	0.063	U	0.076	U	8.5	U	0.2	U	0.058	U	0.063	U	0.059	U
3-Nitroaniline	--	--	--	0.086	U	0.062	U	0.074	U	8.4	U	0.2	U	0.057	U	0.061	U	0.057	U
4-Nitroaniline	--	--	--	0.084	U	0.06	U	0.073	U	8.2	U	0.19	U	0.055	U	0.06	U	0.056	U
Dibenzofuran	210	59	7	0.91		0.074	U	0.33		90		46		0.23		0.43		0.069	U
2-Methylnaphthalene	--	--	--	0.81		0.071	U	0.71		140		69		0.066	U	0.18	J	0.066	U
1,2,4,5-Tetrachlorobenzene	--	--	--	0.097	U	0.069	U	0.084	U	9.4	U	0.22	U	0.064	U	0.069	U	0.064	U
Acetophenone	--	--	--	0.097	U	0.069	U	0.084	U	9.4	U	0.22	U	0.064	U	0.069	U	0.064	U
2,4,6-Trichlorophenol	--	--	--	0.059	U	0.042	U	0.051	U	5.7	U	0.13	U	0.039	U	0.042	U	0.039	U
P-Chloro-M-Cresol	--	--	--	0.091	U	0.065	U	0.078	U	8.8	U	0.2	U	0.059	U	0.064	U	0.06	U
2-Chlorophenol	--	--	--	0.094	U	0.067	U	0.081	U	9.1	U	0.21	U	0.062	U	0.067	U	0.063	U
2,4-Dichlorophenol	--	--	--	0.1	U	0.072	U	0.087	U	9.8	U	0.23	U	0.066	U	0.072	U	0.067	U
2,4-Dimethylphenol	--	--	--	0.093	U	0.066	U	0.08	U	9	U	1		0.061	U	0.066	U	0.062	U
2-Nitrophenol	--	--	--	0.098	U	0.07	U	0.084	U	9.4	U	0.22	U	0.064	U	0.069	U	0.065	U
4-Nitrophenol	--	--	--	0.1	U	0.072	U	0.087	U	9.8	U	0.23	U	0.066	U	0.072	U	0.067	U
2,4-Dinitrophenol	--	--	--	0.43	U	0.3	U	0.37	U	41	U	0.97	U	0.28	U	0.3	U	0.28	U
4,6-Dinitro-o-cresol	--	--	--	0.11	U	0.082	U	0.099	U	11	U	0.26	U	0.075	U	0.081	U	0.076	U
Pentachlorophenol	0.8	6.7	0.8	0.067	U	0.048	U	0.058	U	6.5	U	0.15	U	0.044	U	0.048	U	0.044	U
Phenol	0.33	100	0.33	0.092	U	0.066	U	0.14	J	9	U	0.82		0.061	U	0.066	U	0.062	U
2-Methylphenol	0.33	100	0.33	0.1	U	0.072	U	0.087	U	9.7	U	0.23	U	0.066	U	0.072	U	0.067	U
3-Methylphenol/4-Methylpheno	0.33	100	0.33	0.1	J	0.073	U	0.088	U	9.9	U	0.82	J	0.067	U	0.073	U	0.068	U
2,4,5-Trichlorophenol	--	--	--	0.1	U	0.072	U	0.087	U	9.8	U	0.23	U	0.066	U	0.072	U	0.067	U
Benzoic Acid	--	--	--	0.32	U	0.23	U	0.27	U	31	U	0.72	U	0.21	U	0.22	U	0.21	U
Benzyl Alcohol	--	--	--	0.096	U	0.069	U	0.083	U	9.3	U	0.22	U	0.063	U	0.068	U	0.064	U
Carbazole	--	--	--	1.2		0.048	U	0.35		43		16		0.37		0.96		0.045	U
Total SVOCs	--	--	--	164.51	-	0.583	-	33.363	-	3008.4	-	1406	-	27.774	-	45.386	-	2.493	-

Notes:
NY-RESGW: New York NYCRR Part 375 Groundwater Criteria, New York Restricted use Criteria per 6 NYCRR Part 375 Environmental Remediation Programs, effective December 14, 2006.
NY-RESRR: New York NYCRR Part 375 Restricted-Residential Criteria, New York Restricted use Criteria per 6 NYCRR Part 375 Environmental Remediation Programs, effective December 14, 2006.
NY-UNRES: New York NYCRR Part 375 New York Unrestricted use Criteria Criteria per 6 NYCRR Part 375 Environmental Remediation Programs, effective December 14, 2006.
Cells highlighted in yellow indicate a concentration above the NY-RESGW
Cells highlighted in blue indicate a concentration above the NY-RESRR
Cells highlighted in red indicate a concentration aboe the NY-UNRES
Q = Laboratory Data Qualifier
MDL = Maximum Detection Limit
For U qualified entries, the MDL is shown
U = Not detected at or above the MDL
DUP = Designation for duplicate sample
J = The concentration is estimated
All results and MDLs are shown in milligrams per kilogram (mg/kg)

Table 7A - Semivolatile Organic Compounds in Soil - Fomer MGP
470 Kent Avenue, Brooklyn, NY
BCP#C224053

SAMPLE ID:				PWSB-37 (15-17)		PWSB-37 (15-17) DUP		PWSB-37 (28-30)		PWSB-38 (13-15)		PWSB-38 (25-27)		PWSB-36 (5-7)		PWSB-36 (25-27)	
LAB ID:				L2034532-11		L2034532-12		L2034532-13		L2034532-14		L2034532-15		L2034620-01		L2034620-02	
COLLECTION DATE:	NY-RESGW	NY-RESRR	NY-UNRES	8/23/2020		8/23/2020		8/23/2020		8/23/2020		8/23/2020		8/24/2020		8/24/2020	
Semivolatile Organic Compounds Units: mg/kg				Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q
Acenaphthene	98	100	20	0.029	U	0.028	U	9.1		1.4	J	0.022	U	0.021	J	0.02	U
1,2,4-Trichlorobenzene	--	--	--	0.032	U	0.031	U	0.21	U	0.41	U	0.024	U	0.021	U	0.022	U
Hexachlorobenzene	3.2	1.2	0.33	0.031	U	0.03	U	0.2	U	0.4	U	0.023	U	0.021	U	0.022	U
Bis(2-chloroethyl)ether	--	--	--	0.038	U	0.036	U	0.25	U	0.48	U	0.028	U	0.025	U	0.026	U
2-Chloronaphthalene	--	--	--	0.028	U	0.027	U	0.18	U	0.35	U	0.021	U	0.018	U	0.019	U
1,2-Dichlorobenzene	1.1	100	1.1	0.05	U	0.048	U	0.33	U	0.64	U	0.037	U	0.034	U	0.035	U
1,3-Dichlorobenzene	2.4	49	2.4	0.048	U	0.046	U	0.32	U	0.61	U	0.036	U	0.032	U	0.033	U
1,4-Dichlorobenzene	1.8	13	1.8	0.048	U	0.047	U	0.32	U	0.62	U	0.036	U	0.033	U	0.034	U
3,3'-Dichlorobenzidine	--	--	--	0.074	U	0.072	U	0.49	U	0.94	U	0.055	U	0.05	U	0.052	U
2,4-Dinitrotoluene	--	--	--	0.056	U	0.054	U	0.37	U	0.71	U	0.042	U	0.037	U	0.039	U
2,6-Dinitrotoluene	--	--	--	0.048	U	0.046	U	0.32	U	0.61	U	0.036	U	0.032	U	0.033	U
Fluoranthene	1000	100	100	0.034	J	0.052	J	68		40		0.024	U	2.9		0.19	
4-Chlorophenyl phenyl ether	--	--	--	0.03	U	0.029	U	0.2	U	0.38	U	0.022	U	0.02	U	0.021	U
4-Bromophenyl phenyl ether	--	--	--	0.042	U	0.041	U	0.28	U	0.54	U	0.032	U	0.028	U	0.03	U
Bis(2-chloroisopropyl)ether	--	--	--	0.048	U	0.046	U	0.31	U	0.61	U	0.036	U	0.032	U	0.033	U
Bis(2-chloroethoxy)methane	--	--	--	0.028	U	0.027	U	0.18	U	0.36	U	0.021	U	0.019	U	0.019	U
Hexachlorobutadiene	--	--	--	0.041	U	0.039	U	0.27	U	0.52	U	0.03	U	0.027	U	0.028	U
Hexachlorocyclopentadiene	--	--	--	0.25	U	0.24	U	1.7	U	3.2	U	0.19	U	0.17	U	0.18	U
Hexachloroethane	--	--	--	0.045	U	0.044	U	0.3	U	0.57	U	0.034	U	0.03	U	0.031	U
Isophorone	--	--	--	0.036	U	0.035	U	0.24	U	0.46	U	0.027	U	0.024	U	0.025	U
Naphthalene	12	100	12	0.076	J	0.077	J	57		1.4	J	0.025	U	0.13	J	0.032	J
Nitrobenzene	--	--	--	0.041	U	0.04	U	0.27	U	0.52	U	0.031	U	0.028	U	0.029	U
NDPA/DPA	--	--	--	0.032	U	0.031	U	0.21	U	0.4	U	0.024	U	0.021	U	0.022	U
n-Nitrosodi-n-propylamine	--	--	--	0.043	U	0.042	U	0.28	U	0.55	U	0.032	U	0.029	U	0.03	U
Bis(2-ethylhexyl)phthalate	--	--	--	0.096	U	0.093	U	0.64	U	1.2	U	0.072	U	0.065	U	0.067	U
Butyl benzyl phthalate	--	--	--	0.07	U	0.068	U	0.46	U	0.89	U	0.052	U	0.047	U	0.049	U
Di-n-butylphthalate	--	--	--	0.053	U	0.051	U	0.35	U	0.67	U	0.039	U	0.036	U	0.037	U
Di-n-octylphthalate	--	--	--	0.095	U	0.092	U	0.62	U	1.2	U	0.071	U	0.064	U	0.066	U
Diethyl phthalate	--	--	--	0.026	U	0.025	U	0.17	U	0.33	U	0.019	U	0.017	U	0.018	U
Dimethyl phthalate	--	--	--	0.058	U	0.057	U	0.39	U	0.74	U	0.044	U	0.039	U	0.041	U
Benzo(a)anthracene	1	1	1	0.038	J	0.057	J	28		16		0.023	U	0.92		0.057	J
Benzo(a)pyrene	22	1	1	0.068	U	0.066	U	24		17		0.051	U	0.81		0.053	J
Benzo(b)fluoranthene	1.7	1	1	0.047	U	0.048	J	24		20		0.035	U	0.91		0.061	J
Benzo(k)fluoranthene	1.7	3.9	0.8	0.044	U	0.043	U	11		6.6		0.033	U	0.4		0.031	U
Chrysene	1	3.9	1	0.033	J	0.041	J	22		16		0.022	U	0.84		0.054	J
Acenaphthylene	107	100	100	0.043	U	0.042	U	6.5		1.6	J	0.032	U	0.029	U	0.03	U
Anthracene	1000	100	100	0.054	U	0.052	U	33		4.4		0.04	U	0.54		0.038	U
Benzo(ghi)perylene	1000	100	100	0.033	U	0.032	U	12		10		0.024	U	0.48		0.037	J
Fluorene	386	100	30	0.027	U	0.026	U	3.7		2	J	0.02	U	0.018	U	0.019	U
Phenanthrene	1000	100	100	0.034	U	0.033	U	45		29		0.025	U	3.9		0.2	
Dibenzo(a,h)anthracene	1000	0.33	0.33	0.032	U	0.031	U	2.6		2.1		0.024	U	0.094	J	0.022	U
Indeno(1,2,3-cd)pyrene	8.2	0.5	0.5	0.039	U	0.038	U	13		10		0.029	U	0.52		0.037	J
Pyrene	1000	100	100	0.041	J	0.069	J	55		36		0.022	J	2.4		0.16	
Biphenyl	--	--	--	0.064	U	0.062	U	1.1	J	0.82	U	0.048	U	0.043	U	0.045	U
4-Chloroaniline	--	--	--	0.051	U	0.049	U	0.33	U	0.65	U	0.038	U	0.034	U	0.035	U
2-Nitroaniline	--	--	--	0.054	U	0.052	U	0.35	U	0.68	U	0.04	U	0.036	U	0.037	U
3-Nitroaniline	--	--	--	0.052	U	0.051	U	0.35	U	0.67	U	0.039	U	0.035	U	0.037	U
4-Nitroaniline	--	--	--	0.12	U	0.11	U	0.76	U	1.5	U	0.086	U	0.078	U	0.08	U
Dibenzofuran	210	59	7	0.026	U	0.026	U	6.1		1.4	J	0.02	U	0.27		0.022	J
2-Methylnaphthalene	--	--	--	0.034	U	0.032	U	3.8		0.61	J	0.025	U	0.041	J	0.023	U
1,2,4,5-Tetrachlorobenzene	--	--	--	0.029	U	0.028	U	0.19	U	0.37	U	0.022	U	0.02	U	0.02	U
Acetophenone	--	--	--	0.034	U	0.033	U	0.23	U	0.44	U	0.026	U	0.023	U	0.024	U
2,4,6-Trichlorophenol	--	--	--	0.053	U	0.051	U	0.35	U	0.67	U	0.039	U	0.036	U	0.037	U
p-Chloro-m-cresol	--	--	--	0.041	U	0.04	U	0.27	U	0.53	U	0.031	U	0.028	U	0.029	U
2-Chlorophenol	--	--	--	0.033	U	0.032	U	0.22	U	0.42	U	0.024	U	0.022	U	0.023	U
2,4-Dichlorophenol	--	--	--	0.045	U	0.043	U	0.3	U	0.57	U	0.033	U	0.03	U	0.031	U
2,4-Dimethylphenol	--	--	--	0.092	U	0.089	U	0.61	U	1.2	U	0.069	U	0.062	U	0.064	U
2-Nitrophenol	--	--	--	0.1	U	0.1	U	0.69	U	1.3	U	0.078	U	0.07	U	0.073	U
4-Nitrophenol	--	--	--	0.11	U	0.11	U	0.75	U	1.4	U	0.085	U	0.076	U	0.079	U
2,4-Dinitrophenol	--	--	--	0.13	U	0.12	U	0.86	U	1.6	U	0.097	U	0.087	U	0.09	U
4,6-Dinitro-o-cresol	--	--	--	0.13	U	0.13	U	0.88	U	1.7	U	0.1	U	0.09	U	0.093	U
Pentachlorophenol	0.8	6.7	0.8	0.061	U	0.059	U	0.4	U	0.78	U	0.046	U	0.041	U	0.043	U
Phenol	0.33	100	0.33	0.042	U	0.041	U	0.28	U	0.54	U	0.031	U	0.028	U	0.029	U
2-Methylphenol	0.33	100	0.33	0.043	U	0.042	U	0.28	U	0.55	U	0.032	U	0.029	U	0.03	U
3-Methylphenol/4-Methylphenol	0.33	100	0.33	0.044	U	0.042	U	0.29	U	0.56	U	0.032	U	0.029	U	0.03	U
2,4,5-Trichlorophenol	--	--	--	0.053	U	0.052	U	0.35	U	0.68	U	0.04	U	0.036	U	0.037	U
Benzoic Acid	--	--	--	0.28	U	0.27	U	1.9	U	3.6	U	0.21	U	0.19	U	0.2	U
Benzyl Alcohol	--	--	--	0.085	U	0.082	U	0.56	U	1.1	U	0.064	U	0.057	U	0.059	U
Carbazole	--	--	--	0.027	U	0.026	U	5.4		3.1	J	0.02	U	0.41		0.019	U
1,4-Dioxane	0.1	13	0.1	0.013	U	0.012	U	0.084	U	0.16	U	0.0096	U	0.0086	U	0.0089	U
Total SVOCs	--	--	--	0.222	-	0.344	-	430.3	-	218.61	-	0.022	-	15.586	-	0.903	-

Notes:
NY-RESGW: New York NYCRR Part 375 Groundwater Criteria, New York Restricted use Criteria per 6 NYCRR Part 375 Environmental Remediation Programs, effective December 14, 2006.
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NY-UNRES: New York NYCRR Part 375 New York Unrestricted use Criteria Criteria per 6 NYCRR Part 375 Environmental Remediation Programs, effective December 14, 2006.
Cells highlighted in yellow indicate a concentration above the NY-RESGW
Cells highlighted in blue indicate a concentration above the NY-RESRR
Cells highlighted in red indicate a concentration aboe the NY-UNRES
Q = Laboratory Data Qualifier
MDL = Maximum Detection Limit
For U qualified entries, the MDL is shown
U = Not detected at or above the MDL
J = The concentration is estimated
DUP = Designation for duplicate sample
All results and MDLs are shown in milligrams per kilogram (mg/kg)

Table 7A - Semivolatile Organic Compounds in Soil - Fomer MGP
470 Kent Avenue, Brooklyn, NY
BCP#C224053

SAMPLE ID:				PWSB-39 (7-9)		PWSB-39 (28-30)		PWSB-40 (2-4)		PWSB-40 (18-20)		PWSB-21 (27-29)		PWSB-42 (5-7)		PWSB-42 (15-17)	
LAB ID:				L2034620-03		L2034620-04		L2034620-05		L2034620-06		L2034620-07		L2034620-08		L2034620-09	
COLLECTION DATE:	NY-RESGW	NY-RESRR	NY-UNRES	8/24/2020		8/24/2020		8/24/2020		8/24/2020		8/24/2020		8/24/2020		8/24/2020	
Semivolatile Organic Compounds Units: mg/kg				Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q
Acenaphthene	98	100	20	0.02	U	0.021	U	0.8		0.02	U	0.02	U	0.063	J	0.075	J
1,2,4-Trichlorobenzene	--	--	--	0.022	U	0.024	U	0.022	U	0.022	U	0.022	U	0.024	U	0.022	U
Hexachlorobenzene	3.2	1.2	0.33	0.022	U	0.023	U	0.021	U	0.022	U	0.022	U	0.023	U	0.022	U
Bis(2-chloroethyl)ether	--	--	--	0.026	U	0.028	U	0.026	U	0.026	U	0.026	U	0.028	U	0.026	U
2-Chloronaphthalene	--	--	--	0.019	U	0.02	U	0.019	U	0.019	U	0.019	U	0.02	U	0.019	U
1,2-Dichlorobenzene	1.1	100	1.1	0.035	U	0.037	U	0.034	U	0.034	U	0.035	U	0.037	U	0.035	U
1,3-Dichlorobenzene	2.4	49	2.4	0.033	U	0.036	U	0.033	U	0.033	U	0.034	U	0.036	U	0.034	U
1,4-Dichlorobenzene	1.8	13	1.8	0.034	U	0.036	U	0.033	U	0.034	U	0.034	U	0.036	U	0.034	U
3,3'-Dichlorobenzidine	--	--	--	0.051	U	0.055	U	0.05	U	0.051	U	0.052	U	0.055	U	0.052	U
2,4-Dinitrotoluene	--	--	--	0.039	U	0.041	U	0.038	U	0.038	U	0.039	U	0.041	U	0.039	U
2,6-Dinitrotoluene	--	--	--	0.033	U	0.035	U	0.032	U	0.033	U	0.034	U	0.036	U	0.034	U
Fluoranthene	1000	100	100	0.022	U	0.024	U	18		0.022	U	0.022	U	7.4		0.048	J
4-Chlorophenyl phenyl ether	--	--	--	0.021	U	0.022	U	0.02	U	0.02	U	0.021	U	0.022	U	0.021	U
4-Bromophenyl phenyl ether	--	--	--	0.029	U	0.032	U	0.029	U	0.029	U	0.03	U	0.032	U	0.03	U
Bis(2-chloroisopropyl)ether	--	--	--	0.033	U	0.035	U	0.032	U	0.033	U	0.033	U	0.035	U	0.033	U
Bis(2-chloroethoxy)methane	--	--	--	0.019	U	0.021	U	0.019	U	0.019	U	0.02	U	0.021	U	0.02	U
Hexachlorobutadiene	--	--	--	0.028	U	0.03	U	0.028	U	0.028	U	0.029	U	0.03	U	0.029	U
Hexachlorocyclopentadiene	--	--	--	0.17	U	0.19	U	0.17	U	0.17	U	0.18	U	0.19	U	0.18	U
Hexachloroethane	--	--	--	0.031	U	0.033	U	0.031	U	0.031	U	0.032	U	0.034	U	0.032	U
Isophorone	--	--	--	0.025	U	0.027	U	0.025	U	0.025	U	0.025	U	0.027	U	0.025	U
Naphthalene	12	100	12	0.024	U	0.025	U	1.5		0.023	U	0.46		0.19	J	2.2	
Nitrobenzene	--	--	--	0.028	U	0.031	U	0.028	U	0.028	U	0.029	U	0.031	U	0.029	U
NDPA/DPA	--	--	--	0.022	U	0.024	U	0.022	U	0.022	U	0.022	U	0.024	U	0.022	U
n-Nitrosodi-n-propylamine	--	--	--	0.03	U	0.032	U	0.029	U	0.03	U	0.03	U	0.032	U	0.03	U
Bis(2-ethylhexyl)phthalate	--	--	--	0.067	U	0.072	U	0.066	U	0.066	U	0.068	U	0.18	J	0.068	U
Butyl benzyl phthalate	--	--	--	0.049	U	0.052	U	0.048	U	0.048	U	0.049	U	0.052	U	0.049	U
Di-n-butylphthalate	--	--	--	0.037	U	0.039	U	0.036	U	0.036	U	0.037	U	0.039	U	0.037	U
Di-n-octylphthalate	--	--	--	0.066	U	0.07	U	0.064	U	0.065	U	0.066	U	0.07	U	0.066	U
Diethyl phthalate	--	--	--	0.018	U	0.019	U	0.018	U	0.018	U	0.018	U	0.019	U	0.018	U
Dimethyl phthalate	--	--	--	0.04	U	0.043	U	0.04	U	0.04	U	0.041	U	0.043	U	0.041	U
Benzo(a)anthracene	1	1	1	0.022	U	0.023	U	11		0.022	U	0.022	U	3.6		0.03	J
Benzo(a)pyrene	22	1	1	0.047	U	0.05	U	9.2		0.047	U	0.048	U	3.5		0.048	U
Benzo(b)fluoranthene	1.7	1	1	0.032	U	0.035	U	13		0.032	U	0.033	U	4.1		0.033	U
Benzo(k)fluoranthene	1.7	3.9	0.8	0.031	U	0.033	U	3.7		0.031	U	0.031	U	1.4		0.031	U
Chrysene	1	3.9	1	0.02	U	0.022	U	9		0.02	U	0.02	U	3.3		0.02	J
Acenaphthylene	107	100	100	0.03	U	0.032	U	2		0.03	U	0.03	U	0.65		0.3	
Anthracene	1000	100	100	0.038	U	0.04	U	2.6		0.037	U	0.038	U	1.4		0.038	J
Benzo(ghi)perylene	1000	100	100	0.023	U	0.024	U	5.9		0.022	U	0.023	U	2.1		0.023	U
Fluorene	386	100	30	0.019	U	0.02	U	0.86		0.019	U	0.019	U	0.21		0.087	J
Phenanthrene	1000	100	100	0.023	U	0.025	U	12		0.023	U	0.024	U	2.7		0.11	J
Dibenzo(a,h)anthracene	1000	0.33	0.33	0.022	U	0.024	U	1.5		0.022	U	0.022	U	0.45		0.023	U
Indeno(1,2,3-cd)pyrene	8.2	0.5	0.5	0.027	U	0.029	U	6.7		0.027	U	0.027	U	2.3		0.027	U
Pyrene	1000	100	100	0.019	U	0.02	U	16		0.019	U	0.019	U	6.7		0.12	
Biphenyl	--	--	--	0.045	U	0.048	U	0.17	J	0.044	U	0.045	U	0.048	U	0.14	J
4-Chloroaniline	--	--	--	0.035	U	0.038	U	0.034	U	0.035	U	0.036	U	0.038	U	0.036	U
2-Nitroaniline	--	--	--	0.037	U	0.04	U	0.037	U	0.037	U	0.038	U	0.04	U	0.038	U
3-Nitroaniline	--	--	--	0.036	U	0.039	U	0.036	U	0.036	U	0.037	U	0.039	U	0.037	U
4-Nitroaniline	--	--	--	0.08	U	0.086	U	0.079	U	0.08	U	0.081	U	0.086	U	0.081	U
Dibenzofuran	210	59	7	0.018	U	0.02	U	1.1		0.018	U	0.018	U	0.095	J	0.1	J
2-Methylnaphthalene	--	--	--	0.023	U	0.025	U	0.54		0.023	U	0.024	U	0.06	J	0.051	J
1,2,4,5-Tetrachlorobenzene	--	--	--	0.02	U	0.022	U	0.02	U	0.02	U	0.02	U	0.022	U	0.02	U
Acetophenone	--	--	--	0.024	U	0.026	U	0.024	U	0.024	U	0.024	U	0.027	J	0.024	U
2,4,6-Trichlorophenol	--	--	--	0.037	U	0.039	U	0.036	U	0.036	U	0.037	U	0.039	U	0.037	U
p-Chloro-m-cresol	--	--	--	0.029	U	0.031	U	0.028	U	0.029	U	0.029	U	0.031	U	0.029	U
2-Chlorophenol	--	--	--	0.023	U	0.024	U	0.022	U	0.023	U	0.023	U	0.024	U	0.023	U
2,4-Dichlorophenol	--	--	--	0.031	U	0.033	U	0.03	U	0.031	U	0.031	U	0.033	U	0.031	U
2,4-Dimethylphenol	--	--	--	0.064	U	0.068	U	0.063	U	0.063	U	0.064	U	0.068	U	0.064	U
2-Nitrophenol	--	--	--	0.072	U	0.078	U	0.071	U	0.072	U	0.073	U	0.078	U	0.074	U
4-Nitrophenol	--	--	--	0.079	U	0.084	U	0.078	U	0.078	U	0.08	U	0.084	U	0.08	U
2,4-Dinitrophenol	--	--	--	0.09	U	0.096	U	0.088	U	0.09	U	0.091	U	0.096	U	0.091	U
4,6-Dinitro-o-cresol	--	--	--	0.093	U	0.099	U	0.091	U	0.092	U	0.094	U	0.099	U	0.094	U
Pentachlorophenol	0.8	6.7	0.8	0.042	U	0.046	U	0.042	U	0.042	U	0.043	U	0.046	U	0.043	U
Phenol	0.33	100	0.33	0.029	U	0.031	U	0.11	J	0.029	U	0.03	U	0.039	J	0.03	U
2-Methylphenol	0.33	100	0.33	0.03	U	0.032	U	0.054	J	0.03	U	0.03	U	0.032	U	0.03	U
3-Methylphenol/4-Methylphenol	0.33	100	0.33	0.03	U	0.032	U	0.16	J	0.03	U	0.03	U	0.032	U	0.031	U
2,4,5-Trichlorophenol	--	--	--	0.037	U	0.04	U	0.036	U	0.037	U	0.037	U	0.04	U	0.038	U
Benzoic Acid	--	--	--	0.2	U	0.21	U	0.19	U	0.19	U	0.2	U	0.21	U	0.2	U
Benzyl Alcohol	--	--	--	0.059	U	0.063	U	0.058	U	0.059	U	0.06	U	0.063	U	0.06	U
Carbazole	--	--	--	0.019	U	0.02	U	0.9		0.019	U	0.019	U	0.11	J	0.11	J
1,4-Dioxane	0.1	13	0.1	0.0089	U	0.0095	U	0.0087	U	0.0088	U	0.009	U	0.0095	U	0.009	U
Total SVOCs	--	--	--	-	-	-	U	124.094	-	-	-	0.46	-	40.574	-	3.429	-

Notes:
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Cells highlighted in yellow indicate a concentration above the NY-RESGW
Cells highlighted in blue indicate a concentration above the NY-RESRR
Cells highlighted in red indicate a concentration aboe the NY-UNRES
Q = Laboratory Data Qualifier
MDL = Maximum Detection Limit
For U qualified entries, the MDL is shown
U = Not detected at or above the MDL
J = The concentration is estimated
DUP = Designation for duplicate sample
All results and MDLs are shown in milligrams per kilogram (mg/kg)

Table 7A - Semivolatile Organic Compounds in Soil - Fomer MGP
470 Kent Avenue, Brooklyn, NY
BCP#C224053

SAMPLE ID:				PWSB-41 (10-12)		PWSB-41 (16-18)		B-17 (19-21)		B-17 (47-49)		B-18 (37-39')		B-18 (39-41')		B-19(5-7)	
LAB ID:				L2034620-10		L2034620-11		L2033216-01		L2033512-01		L2032144-01		L2032144-02		L2031428-01	
COLLECTION DATE:	NY-RESGW	NY-RESRR	NY-UNRES	8/24/2020		8/24/2020		8/14/2020		8/17/2020		8/7/2020		8/7/2020		7/30/2020	
Semivolatile Organic Compounds Units: mg/kg				Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q
Acenaphthene	98	100	20	0.049	U	0.47		60		1.3		0.02	U	0.02	U	0.7	
1,2,4-Trichlorobenzene	--	--	--	0.054	U	0.035	U	0.38	U	0.023	U	0.022	U	0.023	U	0.022	U
Hexachlorobenzene	3.2	1.2	0.33	0.053	U	0.034	U	0.37	U	0.022	U	0.021	U	0.022	U	0.022	U
Bis(2-chloroethyl)ether	--	--	--	0.064	U	0.042	U	0.45	U	0.027	U	0.026	U	0.027	U	0.026	U
2-Chloronaphthalene	--	--	--	0.047	U	0.03	U	0.33	U	0.02	U	0.019	U	0.02	U	0.019	U
1,2-Dichlorobenzene	1.1	100	1.1	0.085	U	0.055	U	0.59	U	0.036	U	0.034	U	0.036	U	0.035	U
1,3-Dichlorobenzene	2.4	49	2.4	0.082	U	0.053	U	0.57	U	0.034	U	0.033	U	0.034	U	0.034	U
1,4-Dichlorobenzene	1.8	13	1.8	0.083	U	0.054	U	0.58	U	0.035	U	0.033	U	0.034	U	0.034	U
3,3'-Dichlorobenzidine	--	--	--	0.13	U	0.082	U	0.88	U	0.053	U	0.051	U	0.052	U	0.052	U
2,4-Dinitrotoluene	--	--	--	0.095	U	0.061	U	0.66	U	0.04	U	0.038	U	0.04	U	0.039	U
2,6-Dinitrotoluene	--	--	--	0.082	U	0.053	U	0.56	U	0.034	U	0.033	U	0.034	U	0.033	U
Fluoranthene	1000	100	100	0.94		11		210		0.94		0.022	U	0.023	U	15	
4-Chlorophenyl phenyl ether	--	--	--	0.051	U	0.033	U	0.35	U	0.021	U	0.02	U	0.021	U	0.021	U
4-Bromophenyl phenyl ether	--	--	--	0.072	U	0.047	U	0.5	U	0.031	U	0.029	U	0.03	U	0.03	U
Bis(2-chloroisopropyl)ether	--	--	--	0.081	U	0.052	U	0.56	U	0.034	U	0.033	U	0.034	U	0.033	U
Bis(2-chloroethoxy)methane	--	--	--	0.048	U	0.031	U	0.33	U	0.02	U	0.019	U	0.02	U	0.02	U
Hexachlorobutadiene	--	--	--	0.07	U	0.045	U	0.48	U	0.029	U	0.028	U	0.029	U	0.028	U
Hexachlorocyclopentadiene	--	--	--	0.43	U	0.28	U	3	U	0.18	U	0.17	U	0.18	U	0.18	U
Hexachloroethane	--	--	--	0.077	U	0.05	U	0.53	U	0.032	U	0.031	U	0.032	U	0.032	U
Isophorone	--	--	--	0.062	U	0.04	U	0.43	U	0.026	U	0.025	U	0.026	U	0.025	U
Naphthalene	12	100	12	0.18	J	1.5		1200		3.9		0.023	U	0.024	U	1.9	
Nitrobenzene	--	--	--	0.07	U	0.045	U	0.49	U	0.03	U	0.028	U	0.029	U	0.029	U
NDPA/DPA	--	--	--	0.054	U	0.035	U	0.38	U	0.023	U	0.022	U	0.022	U	0.022	U
n-Nitrosodi-n-propylamine	--	--	--	0.073	U	0.047	U	0.51	U	0.031	U	0.03	U	0.03	U	0.03	U
Bis(2-ethylhexyl)phthalate	--	--	--	0.2	J	0.11	U	1.1	U	0.069	U	0.066	U	0.068	U	0.067	U
Butyl benzyl phthalate	--	--	--	0.12	U	0.077	U	0.83	U	0.05	U	0.048	U	0.05	U	0.049	U
Di-n-butylphthalate	--	--	--	0.09	U	0.058	U	0.62	U	0.038	U	0.036	U	0.037	U	0.037	U
Di-n-octylphthalate	--	--	--	0.16	U	0.1	U	1.1	U	0.068	U	0.065	U	0.067	U	0.066	U
Diethyl phthalate	--	--	--	0.044	U	0.028	U	0.3	U	0.018	U	0.018	U	0.018	U	0.018	U
Dimethyl phthalate	--	--	--	0.1	U	0.064	U	0.69	U	0.042	U	0.04	U	0.042	U	0.041	U
Benzo(a)anthracene	1	1	1	0.56		10		78		0.17		0.022	U	0.022	U	9.2	
Benzo(a)pyrene	22	1	1	0.63		21		67		0.097	J	0.047	U	0.048	U	7.8	
Benzo(b)fluoranthene	1.7	1	1	0.7		23		72		0.12		0.032	U	0.033	U	11	
Benzo(k)fluoranthene	1.7	3.9	0.8	0.25	J	3.1		19		0.037	J	0.03	U	0.032	U	1.4	
Chrysene	1	3.9	1	0.53		8.4		61		0.16		0.02	U	0.02	U	5.6	
Acenaphthylene	107	100	100	0.16	J	0.73		77		0.067	J	0.03	U	0.03	U	2.4	
Anthracene	1000	100	100	0.17	J	2.8		120		0.63		0.037	U	0.038	U	2.6	
Benzo(ghi)perylene	1000	100	100	0.46		11		37		0.044	J	0.022	U	0.023	U	5.6	
Fluorene	386	100	30	0.049	J	0.65		100		1.2		0.018	U	0.019	U	1.3	
Phenanthrene	1000	100	100	0.46		5.7		250		2.7		0.023	U	0.024	U	7.4	
Dibenzo(a,h)anthracene	1000	0.33	0.33	0.09	J	2.5		7.6		0.023	U	0.022	U	0.023	U	1.3	
Indeno(1,2,3-cd)pyrene	8.2	0.5	0.5	0.41		11		40		0.042	J	0.027	U	0.028	U	6.7	
Pyrene	1000	100	100	0.95		18		160		0.64		0.019	U	0.02	U	13	
Biphenyl	--	--	--	0.11	U	0.1	J	34		0.31	J	0.044	U	0.046	U	0.3	J
4-Chloroaniline	--	--	--	0.086	U	0.056	U	0.6	U	0.036	U	0.035	U	0.036	U	0.035	U
2-Nitroaniline	--	--	--	0.092	U	0.059	U	0.64	U	0.039	U	0.037	U	0.038	U	0.038	U
3-Nitroaniline	--	--	--	0.09	U	0.058	U	0.62	U	0.038	U	0.036	U	0.037	U	0.037	U
4-Nitroaniline	--	--	--	0.2	U	0.13	U	1.4	U	0.083	U	0.079	U	0.082	U	0.081	U
Dibenzofuran	210	59	7	0.045	U	0.42		93		1		0.018	U	0.019	U	1.2	
2-Methylnaphthalene	--	--	--	0.088	J	0.22	J	170		1.4		0.023	U	0.024	U	1.1	
1,2,4,5-Tetrachlorobenzene	--	--	--	0.05	U	0.032	U	0.34	U	0.021	U	0.02	U	0.021	U	0.02	U
Acetophenone	--	--	--	0.059	U	0.038	U	0.41	U	0.025	U	0.024	U	0.024	U	0.024	U
2,4,6-Trichlorophenol	--	--	--	0.09	U	0.058	U	0.62	U	0.038	U	0.036	U	0.037	U	0.037	U
p-Chloro-m-cresol	--	--	--	0.071	U	0.046	U	0.49	U	0.03	U	0.028	U	0.029	U	0.029	U
2-Chlorophenol	--	--	--	0.056	U	0.036	U	0.39	U	0.024	U	0.022	U	0.023	U	0.023	U
2,4-Dichlorophenol	--	--	--	0.076	U	0.049	U	0.53	U	0.032	U	0.031	U	0.032	U	0.031	U
2,4-Dimethylphenol	--	--	--	0.16	U	0.1	U	5.3		0.066	U	0.063	U	0.065	U	0.064	U
2-Nitrophenol	--	--	--	0.18	U	0.12	U	1.2	U	0.075	U	0.072	U	0.074	U	0.073	U
4-Nitrophenol	--	--	--	0.19	U	0.12	U	1.3	U	0.082	U	0.078	U	0.081	U	0.08	U
2,4-Dinitrophenol	--	--	--	0.22	U	0.14	U	1.5	U	0.093	U	0.089	U	0.092	U	0.091	U
4,6-Dinitro-o-cresol	--	--	--	0.23	U	0.15	U	1.6	U	0.096	U	0.092	U	0.095	U	0.094	U
Pentachlorophenol	0.8	6.7	0.8	0.1	U	0.068	U	0.72	U	0.044	U	0.042	U	0.043	U	0.043	U
Phenol	0.33	100	0.33	0.072	U	0.15	J	1.4	J	0.03	U	0.029	U	0.03	U	0.15	J
2-Methylphenol	0.33	100	0.33	0.074	U	0.048	U	1	J	0.031	U	0.03	U	0.031	U	0.067	J
3-Methylphenol/4-Methylphenol	0.33	100	0.33	0.074	U	0.24	J	3.6	J	0.031	U	0.03	U	0.031	U	0.24	J
2,4,5-Trichlorophenol	--	--	--	0.091	U	0.059	U	0.63	U	0.038	U	0.037	U	0.038	U	0.037	U
Benzoic Acid	--	--	--	0.48	U	0.31	U	3.3	U	0.2	U	0.19	U	0.2	U	0.2	U
Benzyl Alcohol	--	--	--	0.14	U	0.094	U	1	U	0.061	U	0.058	U	0.06	U	0.06	U
Carbazole	--	--	--	0.046	U	0.69		68		0.78		0.018	U	0.019	U	0.8	
1,4-Dioxane	0.1	13	0.1	0.022	U	0.014	U	0.15	U	0.0092	U	0.0088	U	0.0091	U	0.009	U
Total SVOCs	--	--	--	6.827	-	116.67	-	2444.9	-	15.537	-	-	-	-	-	90.957	-

Notes:
NY-RESGW: New York NYCRR Part 375 Groundwater Criteria, New York Restricted use Criteria per 6 NYCRR Part 375 Environmental Remediation Programs, effective December 14, 2006.
NY-RESRR: New York NYCRR Part 375 Restricted-Residential Criteria, New York Restricted use Criteria per 6 NYCRR Part 375 Environmental Remediation Programs, effective December 14, 2006.
NY-UNRES: New York NYCRR Part 375 New York Unrestricted use Criteria Criteria per 6 NYCRR Part 375 Environmental Remediation Programs, effective December 14, 2006.
Cells highlighted in yellow indicate a concentration above the NY-RESGW
Cells highlighted in blue indicate a concentration above the NY-RESRR
Cells highlighted in red indicate a concentration aboe the NY-UNRES
Q = Laboratory Data Qualifier
MDL = Maximum Detection Limit
For U qualified entries, the MDL is shown
U = Not detected at or above the MDL
J = The concentration is estimated
DUP = Designation for duplicate sample
All results and MDLs are shown in milligrams per kilogram (mg/kg)

Table 7A - Semivolatile Organic Compounds in Soil - Fomer MGP
470 Kent Avenue, Brooklyn, NY
BCP#C224053

SAMPLE ID:	NY-RESGW	NY-RESRR	NY-UNRES	PWSB-44 (13-15)		PWSB-43 (13-15)		PWSB-44 (15-17)		PWSB-45(8-10)		PWSB-45(28-30)	
LAB ID:				L2152245-01		L2152245-03		L2152245-02		L2152499-01		L2152499-02	
COLLECTION DATE:				9/27/2021		9/27/2021		9/27/2021		9/28/2021		9/28/2021	
Semivolatile Organic Compounds Units: mg/kg				Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q
Acenaphthene	98	100	20	0.36		0.27		0.33		12		0.02	U
1,2,4-Trichlorobenzene	--	--	--	0.022	U	0.022	U	0.023	U	0.44	U	0.022	U
Hexachlorobenzene	3.2	1.2	0.33	0.022	U	0.021	U	0.023	U	0.43	U	0.022	U
Bis(2-chloroethyl)ether	--	--	--	0.026	U	0.026	U	0.028	U	0.52	U	0.027	U
2-Chloronaphthalene	--	--	--	0.019	U	0.019	U	0.02	U	0.38	U	0.02	U
1,2-Dichlorobenzene	1.1	100	1.1	0.034	U	0.034	U	0.037	U	0.69	U	0.035	U
1,3-Dichlorobenzene	2.4	49	2.4	0.033	U	0.033	U	0.035	U	0.66	U	0.034	U
1,4-Dichlorobenzene	1.8	13	1.8	0.034	U	0.033	U	0.036	U	0.67	U	0.034	U
3,3'-Dichlorobenzidine	--	--	--	0.051	U	0.05	U	0.054	U	1	U	0.052	U
2,4-Dinitrotoluene	--	--	--	0.038	U	0.038	U	0.041	U	0.77	U	0.039	U
2,6-Dinitrotoluene	--	--	--	0.033	U	0.033	U	0.035	U	0.66	U	0.034	U
Fluoranthene	1000	100	100	0.022	U	3		0.023	U	100		0.046	J
4-Chlorophenyl phenyl ether	--	--	--	0.02	U	0.02	U	0.022	U	0.41	U	0.021	U
4-Bromophenyl phenyl ether	--	--	--	0.029	U	0.029	U	0.031	U	0.59	U	0.03	U
Bis(2-chloroisopropyl)ether	--	--	--	0.033	U	0.032	U	0.035	U	0.66	U	0.034	U
Bis(2-chloroethoxy)methane	--	--	--	0.019	U	0.019	U	0.02	U	0.39	U	0.02	U
Hexachlorobutadiene	--	--	--	0.028	U	0.028	U	0.03	U	0.56	U	0.029	U
Hexachlorocyclopentadiene	--	--	--	0.17	U	0.17	U	0.18	U	3.5	U	0.18	U
Hexachloroethane	--	--	--	0.031	U	0.031	U	0.033	U	0.62	U	0.032	U
Isophorone	--	--	--	0.025	U	0.025	U	0.026	U	0.5	U	0.026	U
Naphthalene	12	100	12	1.2		0.1	J	0.41		470		0.044	J
Nitrobenzene	--	--	--	0.028	U	0.028	U	0.03	U	0.57	U	0.029	U
NDPA/DPA	--	--	--	0.022	U	0.022	U	0.023	U	0.44	U	0.022	U
n-Nitrosodi-n-propylamine	--	--	--	0.03	U	0.029	U	0.032	U	0.6	U	0.03	U
Bis(2-ethylhexyl)phthalate	--	--	--	0.066	U	0.066	U	0.071	U	1.3	U	0.068	U
Butyl benzyl phthalate	--	--	--	0.048	U	0.048	U	0.051	U	0.97	U	0.05	U
Di-n-butylphthalate	--	--	--	0.036	U	0.046	J	0.039	U	0.73	U	0.037	U
Di-n-octylphthalate	--	--	--	0.065	U	0.065	U	0.069	U	1.3	U	0.067	U
Diethyl phthalate	--	--	--	0.018	U	0.018	U	0.019	U	0.36	U	0.018	U
Dimethyl phthalate	--	--	--	0.04	U	0.04	U	0.043	U	0.81	U	0.041	U
Benzo(a)anthracene	1	1	1	0.022	U	1.5		0.023	U	44		0.022	J
Benzo(a)pyrene	22	1	1	0.047	U	1.3		0.05	U	32		0.048	U
Benzo(b)fluoranthene	1.7	1	1	0.032	U	1.6		0.034	U	37		0.033	U
Benzo(k)fluoranthene	1.7	3.9	0.8	0.031	U	0.48		0.033	U	14		0.031	U
Chrysene	1	3.9	1	0.02	U	1.2		0.021	U	31		0.02	U
Acenaphthylene	107	100	100	0.03	U	0.033	J	0.032	U	59		0.03	U
Anthracene	1000	100	100	0.037	U	0.72		0.04	U	44		0.038	U
Benzo(ghi)perylene	1000	100	100	0.023	U	0.68		0.024	U	14		0.023	U
Fluorene	386	100	30	0.16	J	0.3		0.067	J	54		0.019	U
Phenanthrene	1000	100	100	0.028	J	2.5		0.025	U	160		0.063	J
Dibenzo(a,h)anthracene	1000	0.33	0.33	0.022	U	0.19		0.024	U	3.9		0.023	U
Indeno(1,2,3-cd)pyrene	8.2	0.5	0.5	0.027	U	0.88		0.028	U	18		0.027	U
Pyrene	1000	100	100	0.019	U	2.4		0.02	U	80		0.037	J
Biphenyl	--	--	--	0.045	U	0.078	J	0.047	U	16		0.046	U
4-Chloroaniline	--	--	--	0.035	U	0.035	U	0.037	U	0.7	U	0.036	U
2-Nitroaniline	--	--	--	0.037	U	0.037	U	0.039	U	0.74	U	0.038	U
3-Nitroaniline	--	--	--	0.036	U	0.036	U	0.038	U	0.73	U	0.037	U
4-Nitroaniline	--	--	--	0.08	U	0.079	U	0.084	U	1.6	U	0.081	U
Dibenzofuran	210	59	7	0.32		0.16	J	0.14	J	51		0.018	U
2-Methylnaphthalene	--	--	--	0.029	J	0.059	J	0.025	U	81		0.024	U
1,2,4,5-Tetrachlorobenzene	--	--	--	0.02	U	0.02	U	0.021	U	0.4	U	0.02	U
Acetophenone	--	--	--	0.024	U	0.024	U	0.025	U	0.48	U	0.024	U
2,4,6-Trichlorophenol	--	--	--	0.036	U	0.036	U	0.039	U	0.73	U	0.037	U
p-Chloro-m-cresol	--	--	--	0.029	U	0.028	U	0.03	U	0.58	U	0.029	U
2-Chlorophenol	--	--	--	0.023	U	0.022	U	0.024	U	0.46	U	0.023	U
2,4-Dichlorophenol	--	--	--	0.031	U	0.03	U	0.033	U	0.62	U	0.032	U
2,4-Dimethylphenol	--	--	--	0.063	U	0.063	U	0.067	U	3.9		0.065	U
2-Nitrophenol	--	--	--	0.072	U	0.071	U	0.077	U	1.4	U	0.074	U
4-Nitrophenol	--	--	--	0.078	U	0.078	U	0.083	U	1.6	U	0.08	U
2,4-Dinitrophenol	--	--	--	0.09	U	0.089	U	0.095	U	1.8	U	0.092	U
4,6-Dinitro-o-cresol	--	--	--	0.092	U	0.091	U	0.098	U	1.8	U	0.094	U
Pentachlorophenol	0.8	6.7	0.8	0.042	U	0.042	U	0.045	U	0.85	U	0.043	U
Phenol	0.33	100	0.33	0.029	U	0.029	U	0.031	U	1.2	J	0.03	U
2-Methylphenol	0.33	100	0.33	0.03	U	0.029	U	0.032	U	3.4	J	0.03	U
3-Methylphenol/4-Methylphenol	0.33	100	0.33	0.03	U	0.03	U	0.032	U	1.6	J	0.031	U
2,4,5-Trichlorophenol	--	--	--	0.037	U	0.036	U	0.039	U	0.74	U	0.038	U
Benzoic Acid	--	--	--	0.19	U	0.19	U	0.21	U	3.9	U	0.2	U
Benzyl Alcohol	--	--	--	0.059	U	0.058	U	0.062	U	1.2	U	0.06	U
Carbazole	--	--	--	0.31		0.28		0.22		27		0.019	U
1,4-Dioxane	0.1	13	0.1	0.0088	U	0.0087	U	0.0094	U	0.18	U	0.009	U
Total SVOCs	--	--	--	2.407	-	17.776	-	1.167	-	1308	-	0.212	-

Notes:
NY-RESGW: New York NYCRR Part 375 Groundwater Criteria, New York Restricted use Criteria per 6 NYCRR Part 375 Environmental Remediation Programs, effective December 14, 2006.
NY-RESRR: New York NYCRR Part 375 Restricted-Residential Criteria, New York Restricted use Criteria per 6 NYCRR Part 375 Environmental Remediation Programs, effective December 14, 2006.
NY-UNRES: New York NYCRR Part 375 New York Unrestricted use Criteria Criteria per 6 NYCRR Part 375 Environmental Remediation Programs, effective December 14, 2006.
Cells highlighted in yellow indicate a concentration above the NY-RESGW
Cells highlighted in blue indicate a concentration above the NY-RESRR
Cells highlighted in red indicate a concentration aboe the NY-UNRES
Q = Laboratory Data Qualifier
MDL = Maximum Detection Limit
For U qualified entries, the MDL is shown
U = Not detected at or above the MDL
J = The concentration is estimated
DUP = Designation for duplicate sample
All results and MDLs are shown in milligrams per kilogram (mg/kg)

Table 7B - Polyaromatic Hydrocarbons in Soil - Fomer MGP
470 Kent Avenue - Brooklyn, NY
BCP#C224053

SAMPLE ID:				PWSB-37 (15-17)		PWSB-37 (15-17) DUP		PWSB-37 (28-30)		PWSB-38 (13-15)		PWSB-38 (25-27)		PWSB-36 (5-7)		PWSB-36 (25-27)	
LAB ID:				L2034532-11		L2034532-12		L2034532-13		L2034532-14		L2034532-15		L2034620-01		L2034620-02	
COLLECTION DATE:	NY-RESGW	NY-RESRR	NY-UNRES	8/23/2020		8/23/2020		8/23/2020		8/23/2020		8/23/2020		8/24/2020		8/24/2020	
PAHs Units: mg/kg				Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q
Naphthalene	12	100	12	0.254		0.12		61.1		0.155		0.0734		0.392		0.0243	
C1-Naphthalenes	--	--	--	0.0292		0.0225		6.28		0.0306		0.0133		0.177		0.0072	
C2-Naphthalenes	--	--	--	0.045		0.0521		6.83		0.0335		0.0191		0.284		0.0107	
C3-Naphthalenes	--	--	--	0.0347		0.0582		5.61		0.0364		0.0397		0.278		0.0131	
C4-Naphthalenes	--	--	--	0.0229		0.0381		1.97		0.0339		0.0663		0.134		0.00886	
2-Methylnaphthalene	--	--	--	0.0224		0.0219		2.83		0.0297		0.00948		0.151		0.00702	
1-Methylnaphthalene	--	--	--	0.0225		0.0126		6.8		0.017		0.00909		0.111		0.00397	
Dibenzofuran	210	59	7	0.0379		0.0506		7.22		0.0221		0.0077		1.36		0.0215	
Acenaphthylene	107	100	100	0.0153		0.0256		6.08		0.0178		0.0147		0.44		0.00735	
Acenaphthene	98	100	20	0.0489		0.0273		11.6		0.027		0.0144		0.108		0.0128	
Fluorene	386	100	30	0.0506		0.0654		2.86		0.0158		0.00847		0.0724		0.0143	
C1-Fluorenes	--	--	--	0.03		0.0577		4.98		0.0112		0.0121		0.0277		0.00466	
C2-Fluorenes	--	--	--	0.0349		0.058		2.35		0.0287		0.0316		0.238	G	0.0104	
C3-Fluorenes	--	--	--	0.0238	G	0.0351		0.987		0.0403		0.0331		0.306	G	0.0138	
Dibenzothiophene	--	--	--	0.022		0.0558		5.4		0.0114		0.00768		1.1		0.0145	
C1-Dibenzothiophenes BS	--	--	--	0.0164		0.0291		1.88		0.0104		0.00546		0.187		0.00576	
C2-Dibenzothiophenes	--	--	--	0.0175		0.0258		1.06		0.0158		0.00786		0.085		0.00441	
C3-Dibenzothiophenes	--	--	--	0.0088		0.0134		0.564		0.0133		0.0077		0.0356		0.00254	
C4-Dibenzothiophenes	--	--	--	0.00764	G	0.0143	G	0.17		0.00826		0.0049		0.0108		0.00486	G
Phenanthrene	1000	100	100	0.103		0.12		70.1		0.13		0.0918		22.6		0.226	
C1-Phenanthrenes/Anthracenes	--	--	--	0.136		0.199		18.3		0.067		0.0352		1.76		0.0552	
C2-Phenanthrenes/Anthr BS	--	--	--	0.107		0.155		8.98		0.0713		0.0414		0.673		0.0365	
C3-Phenanthrenes/Anthracenes	--	--	--	0.246		0.0843		3.17		0.04		0.0325		0.238		0.0212	
C4-Phenanthrenes/Anthracenes	--	--	--	0.734		0.0694		1.08		0.0194		0.0234		0.0734		0.0311	
Anthracene	1000	100	100	0.109		0.232		49.6		0.0614		0.0511		2.01		0.0497	
Fluoranthene	1000	100	100	0.257		0.381		90.4		0.137		0.125		15		0.163	
Pyrene	1000	100	100	0.305		0.565		69.5		0.118		0.112		12.3		0.141	
C1-Fluoranthenes/Pyrenes	--	--	--	0.264		0.423		26.3		0.0562		0.0596		1.1		0.0441	
C2-Fluoranthenes/Pyrenes	--	--	--	0.105		0.168		6.65		0.0396		0.0267		1.16	G	0.0316	
C3-Fluoranthenes/Pyrenes	--	--	--	0.0453		0.069		2.96		0.0332		0.0177		0.36		0.0194	
C4-Fluoranthenes/Pyrenes	--	--	--	0.0249		0.0374		1.76		0.026		0.0139		0.214		0.0142	
Benz(a)anthracene	--	--	--	0.297		0.453		47.3		0.0838		0.0717		6.07		0.0799	
Chrysene/Triphenylene	--	--	--	0.222		0.342		36.3		0.0818		0.061		5.2		0.0764	
C1-Chrysenes	--	--	--	0.179		0.273		12.4		0.0452		0.034		1.35		0.037	
C2-Chrysenes BS	--	--	--	0.0873		0.131		5.25		0.0288		0.0217		0.528		0.0187	
C3-Chrysenes	--	--	--	0.0681		0.1		4.08		0.027		0.0223		0.398		0.0148	
C4-Chrysenes	--	--	--	0.0241		0.0349		1.49		0.0175		0.0149		0.195		0.0101	
Benzo(b)fluoranthene	1.7	1	1	0.195		0.266		31.3		0.0604		0.054		4.03		0.0632	
Benzo(j)+(k)fluoranthene	--	--	--	0.235		0.354		30.8		0.0638		0.0634		4.74		0.0517	
Benzo(e)pyrene	--	--	--	0.173		0.249		21.1		0.0489		0.0467		3.23		0.0468	
Benzo(a)pyrene	22	1	1	0.288		0.421		43		0.0764		0.0798		5.44		0.075	
Perylene	--	--	--	0.262		0.361		9.81		0.0221		0.0384		1.35		0.0214	
Indeno(1,2,3-cd)pyrene	8.2	0.5	0.5	0.141		0.212		24.5		0.0568		0.0531		3.53		0.0508	
Dibenz(a,h)+(a,c)anthracene	--	--	--	0.0541		0.0811		8.2		0.0158		0.0135		1.19		0.0134	
Benzo(g,h,i)perylene	1000	100	100	0.138		0.194		20.3		0.0542		0.0484		3.36		0.0473	

Notes:
NY-RESGW: New York NYCRR Part 375 Groundwater Criteria, New York Restricted use Criteria per 6 NYCRR Part 375 Environmental Remediation Programs, effective December 14, 2006.
NY-RESRR: New York NYCRR Part 375 Restricted-Residential Criteria, New York Restricted use Criteria per 6 NYCRR Part 375 Environmental Remediation Programs, effective December 14, 2006.
NY-UNRES: New York NYCRR Part 375 New York Unrestricted use Criteria Criteria per 6 NYCRR Part 375 Environmental Remediation Programs, effective December 14, 2006.
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Cells highlighted in blue indicate a concentration above the NY-RESRR
Cells highlighted in red indicate a concentration aboe the NY-UNRES
Q = Laboratory Data Qualifier
MDL = Maximum Detection Limit
For U qualified entries, the MDL is shown
U = Not detected at or above the MDL
G = The concentration may be biased due to high matrix interferences with non-target compounds. The concentration may be considered estimated.
J = The concentration is estimated
DUP = Designation for duplicate sample
All results and MDLs are shown in milligrams per kilogram (mg/kg)

Table 7B - Polyaromatic Hydrocarbons in Soil - Fomer MGP
470 Kent Avenue - Brooklyn, NY
BCP#C224053

SAMPLE ID:				PWSB-39 (7-9)		PWSB-39 (28-30)		PWSB-40 (2-4)		PWSB-40 (18-20)		PWSB-21 (27-29)		PWSB-42 (5-7)		PWSB-42 (15-17)	
LAB ID:				L2034620-03		L2034620-04		L2034620-05		L2034620-06		L2034620-07		L2034620-08		L2034620-09	
COLLECTION DATE:	NY-RESGW	NY-RESRR	NY-UNRES	8/24/2020		8/24/2020		8/24/2020		8/24/2020		8/24/2020		8/24/2020		8/24/2020	
PAHs Units: mg/kg				Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q
Naphthalene	12	100	12	0.0252		0.00172		0.912		0.0014		0.302		1.37		1.4	
C1-Naphthalenes	--	--	--	0.00303		0.000364	U	0.629		0.000624	J	0.0142		1.27		0.109	
C2-Naphthalenes	--	--	--	0.00228		0.00084	J	1.31		0.00136		0.00194	J	1.26		0.0873	
C3-Naphthalenes	--	--	--	0.00181		0.000732	J	1.14		0.00137		0.00187	J	0.677		0.0436	
C4-Naphthalenes	--	--	--	0.00289	G	0.000364	U	0.56		0.00111	J	0.00206	J	0.24		0.0197	
2-Methylnaphthalene	--	--	--	0.0025		0.000327	U	0.509		0.000348	J	0.01		1.08		0.0345	
1-Methylnaphthalene	--	--	--	0.00225		0.000399	U	0.453		0.000639	J	0.0122		0.861		0.137	
Dibenzofuran	210	59	7	0.003		0.000406	J	1.15		0.0015		0.0019	J	1.8		0.0981	
Acenaphthylene	107	100	100	0.0025		0.000242	U	1.22		0.00151		0.00191	J	1.09		0.214	
Acenaphthene	98	100	20	0.0015		0.000329	J	0.912		0.00103	J	0.00407		0.64		0.0656	
Fluorene	386	100	30	0.0035		0.000499	J	0.98		0.00166		0.00169	J	1.31		0.0918	
C1-Fluorenes	--	--	--	0.00107	J	0.000425	J	0.418		0.000886	J	0.00124	J	0.305		0.0333	
C2-Fluorenes	--	--	--	0.00125		0.00105	J	0.5		0.00108	J	0.00146	J	0.275	G	0.0204	
C3-Fluorenes	--	--	--	0.000304	U	0.000338	U	0.529	G	0.000305	U	0.000632	U	0.301	G	0.00989	
Dibenzothiophene	--	--	--	0.0022		0.000349	U	0.689		0.00118		0.00122	J	0.815		0.0419	
C1-Dibenzothiophenes BS	--	--	--	0.000894	J	0.000349	U	0.356		0.000541	J	0.000653	U	0.212		0.00854	
C2-Dibenzothiophenes	--	--	--	0.000822	J	0.000411	J	0.259		0.000652	J	0.000741	J	0.122		0.00522	
C3-Dibenzothiophenes	--	--	--	0.000315	U	0.000349	U	0.148		0.000316	U	0.000653	U	0.0706		0.00391	
C4-Dibenzothiophenes	--	--	--	0.000315	U	0.000349	U	0.0526		0.000316	U	0.000653	U	0.0354	G	0.00065	U
Phenanthrene	1000	100	100	0.0404		0.00149		14.3		0.0163		0.0108		19.1		0.148	
C1-Phenanthrenes/Anthracenes	--	--	--	0.00939		0.00144		2.59		0.00481		0.00243		1.88		0.0428	
C2-Phenanthrenes/Anthr BS	--	--	--	0.00418		0.00181		1.67		0.00215		0.00158	J	0.953		0.0308	
C3-Phenanthrenes/Anthracenes	--	--	--	0.00237		0.00108	J	0.712		0.00134		0.00125	J	0.368		0.0184	
C4-Phenanthrenes/Anthracenes	--	--	--	0.00118		0.00157		0.259		0.00105	J	0.00126	J	0.143		0.0145	
Anthracene	1000	100	100	0.00711		0.000546	J	1.91		0.00802		0.00353		1.96		0.0673	
Fluoranthene	1000	100	100	0.0467		0.00157		14.1		0.0137		0.0088		13.9		0.0735	
Pyrene	1000	100	100	0.0421		0.00148		12		0.012		0.0113		11.5		0.211	
C1-Fluoranthenes/Pyrenes	--	--	--	0.0114		0.00127		3.22		0.00595		0.00332		2.1		0.0901	
C2-Fluoranthenes/Pyrenes	--	--	--	0.0063		0.000942	J	2.52		0.00298		0.00201	J	1.53		0.0341	
C3-Fluoranthenes/Pyrenes	--	--	--	0.00272		0.000687	J	1.13		0.00193		0.000623	U	0.606		0.0164	
C4-Fluoranthenes/Pyrenes	--	--	--	0.00255		0.000333	U	0.622		0.0019		0.000623	U	0.352		0.0108	
Benz(a)anthracene	--	--	--	0.0268		0.000737	J	8.98		0.00863		0.00417		7.44		0.0902	
Chrysene/Triphenylene	--	--	--	0.0238		0.000927	J	7.99		0.00754		0.00349		6.31		0.0685	
C1-Chrysenes	--	--	--	0.00966		0.000686	J	3.07		0.00378		0.00237		1.95		0.0615	
C2-Chrysenes BS	--	--	--	0.00503		0.000901	J	1.59		0.00182		0.00218	J	0.897		0.0292	
C3-Chrysenes	--	--	--	0.00611		0.000256	U	1.18		0.000231	U	0.000479	U	0.647		0.0282	
C4-Chrysenes	--	--	--	0.000231	U	0.000256	U	0.59		0.000231	U	0.000479	U	0.313		0.0126	
Benzo(b)fluoranthene	1.7	1	1	0.0325		0.000969	J	7.38		0.00605		0.00372		6.15		0.0597	
Benzo(j)+(k)fluoranthene	--	--	--	0.0294		0.00068	J	6.31		0.00697		0.004		4.43		0.0741	
Benzo(e)pyrene	--	--	--	0.0232		0.000624	J	4.5		0.00488		0.00292		3.83		0.055	
Benzo(a)pyrene	22	1	1	0.0394		0.000707	J	7.65		0.00931		0.00492		6.19		0.0896	
Perylene	--	--	--	0.0111		0.0415		1.75		0.00254		0.0114		1.7		0.132	
Indeno(1,2,3-cd)pyrene	8.2	0.5	0.5	0.0268		0.000675	J	5.81		0.00547		0.0033		4.76		0.0473	
Dibenz(a,h)+(a,c)anthracene	--	--	--	0.00734		0.000342	U	1.92		0.00154		0.000941	J	1.54		0.0178	
Benzo(g,h,i)perylene	1000	100	100	0.0189		0.000783	J	4.83	E	0.00493		0.00298		4.05		0.0434	

Notes:
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Cells highlighted in yellow indicate a concentration above the NY-RESGW
Cells highlighted in blue indicate a concentration above the NY-RESRR
Cells highlighted in red indicate a concentration aboe the NY-UNRES
Q = Laboratory Data Qualifier
MDL = Maximum Detection Limit
For U qualified entries, the MDL is shown
U = Not detected at or above the MDL
G = The concentration may be biased due to high matrix interferences with non-target compounds. The concentration may be considered estimated.
J = The concentration is estimated
DUP = Designation for duplicate sample
All results and MDLs are shown in milligrams per kilogram (mg/kg)

Table 7B - Polyaromatic Hydrocarbons in Soil - Fomer MGP
470 Kent Avenue - Brooklyn, NY
BCP#C224053

SAMPLE ID:				PWSB-41 (10-12)		PWSB-41 (16-18)		B-17 (19-21)		B-17 (47-49)		B-18 (37-39')		B-18 (39-41')		B-19(5-7)	
LAB ID:				L2034620-10		L2034620-11		L2033216-01		L2033512-01		L2032144-01		L2032144-02		L2031428-01	
COLLECTION DATE:	NY-RESGW	NY-RESRR	NY-UNRES	8/24/2020		8/24/2020		8/14/2020		8/17/2020		8/7/2020		8/7/2020		7/30/2020	
PAHs Units: mg/kg				Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q
Naphthalene	12	100	12	0.347		1.33		461		0.665		0.00377		0.00149		0.905	
C1-Naphthalenes	--	--	--	0.263		0.32		53.8	E	0.513		0.00196		0.00244	G	0.395	
C2-Naphthalenes	--	--	--	0.261		0.486		16.1		0.269		0.00639		0.00723	G	0.58	
C3-Naphthalenes	--	--	--	0.324		0.464		4.53		0.0867		0.012		0.0104	G	0.722	
C4-Naphthalenes	--	--	--	0.287		0.283		1.09		0.0253		0.011		0.0168	G	0.575	
2-Methylnaphthalene	--	--	--	0.223		0.273		53.9	E	0.46		0.00161		0.00111	J	0.343	
1-Methylnaphthalene	--	--	--	0.18		0.216		26.8	E	0.314		0.00126		0.000562	J	0.261	
Dibenzofuran	210	59	7	0.119		0.548		32		0.709		0.0021		0.00122		0.502	
Acenaphthylene	107	100	100	0.467		0.91		9.63		0.0588		0.0018		0.0022		1.88	
Acenaphthene	98	100	20	0.129		0.375		41.2		0.906		0.00179		0.00148		0.582	
Fluorene	386	100	30	0.14		0.543		27		0.977		0.00338		0.00106	J	0.57	
C1-Fluorenes	--	--	--	0.126		0.274		2.76		0.0817		0.00266		0.00171		0.362	
C2-Fluorenes	--	--	--	0.258		0.365		0.876		0.0248		0.00616		0.000314	U	0.482	
C3-Fluorenes	--	--	--	0.286	G	0.253		0.373		0.0189		0.00781		0.000314	U	0.549	G
Dibenzothiophene	--	--	--	0.0845		0.285		4.71		0.161		0.00156		0.000774	J	0.33	
C1-Dibenzothiophenes BS	--	--	--	0.0805		0.152		0.776		0.0254		0.00068	J	0.000324	U	0.35	
C2-Dibenzothiophenes	--	--	--	0.178		0.148		0.326		0.00947		0.000888	J	0.000545	J	0.394	
C3-Dibenzothiophenes	--	--	--	0.179		0.141		0.153		0.00452		0.000691	J	0.000324	U	0.262	
C4-Dibenzothiophenes	--	--	--	0.252	G	0.0735		0.136	G	0.00277		0.000318	U	0.000324	U	0.0921	
Phenanthrene	1000	100	100	1.33		3.77		61.6		2.69		0.024		0.00558		6.81	
C1-Phenanthrenes/Anthracenes	--	--	--	0.736		1.33		7		0.244		0.0117		0.00205		2.92	
C2-Phenanthrenes/Anthr BS	--	--	--	0.987		1.1		2.15		0.0849		0.0087		0.00171		2.6	
C3-Phenanthrenes/Anthracenes	--	--	--	1.16		0.601		1.28		0.0332		0.00708		0.00125		1.25	
C4-Phenanthrenes/Anthracenes	--	--	--	1.92		0.313		2.41		0.0435		0.00518		0.000781	J	0.429	
Anthracene	1000	100	100	0.466		2.14		11.8		0.701		0.00686		0.00161		2.31	
Fluoranthene	1000	100	100	1.39		7.55	E	14.2		0.96		0.0204		0.00603		15.3	
Pyrene	1000	100	100	1.75		16.6	E	10.1		0.673		0.022		0.00688		13.8	
C1-Fluoranthenes/Pyrenes	--	--	--	1.22		4.46		3.84		0.256		0.0122		0.00345		5.09	
C2-Fluoranthenes/Pyrenes	--	--	--	0.786		1.5		1.09		0.0458		0.00692		0.00188		4.2	
C3-Fluoranthenes/Pyrenes	--	--	--	0.541		0.754		0.537		0.0166		0.00293		0.00115	J	2.03	
C4-Fluoranthenes/Pyrenes	--	--	--	0.405		0.542		0.324		0.011		0.00163		0.000309	U	1.04	
Benz(a)anthracene	--	--	--	1.51		10.6	E	3.19		0.261		0.0109		0.00263		11.8	
Chrysene/Triphenylene	--	--	--	1.39		6.86		2.81		0.226		0.0101		0.00244		9.28	
C1-Chrysenes	--	--	--	1.3		3.32		1.16		0.06		0.00439		0.00111	J	4.11	
C2-Chrysenes BS	--	--	--	1.06		1.7		0.63		0.0226		0.00229		0.000582	J	2.22	
C3-Chrysenes	--	--	--	0.857		1.27		0.488		0.0168		0.00326		0.000238	U	1.71	
C4-Chrysenes	--	--	--	0.459		0.495		0.229		0.000464	U	0.000233	U	0.000238	U	1.03	
Benzo(b)fluoranthene	1.7	1	1	1.93		13.2		1.8		0.134		0.00776		0.00165		8.16	
Benzo(j)+(k)fluoranthene	--	--	--	1.49		10.6		2.01		0.159		0.00966		0.00246		8.66	
Benzo(e)pyrene	--	--	--	1.52		10		1.4		0.102		0.00658		0.00174		5.74	
Benzo(a)pyrene	22	1	1	2.26		15.2		2.46		0.187		0.011		0.00271		10.5	
Perylene	--	--	--	0.584		3.85		0.801		0.051		0.033		0.00388		2.46	
Indeno(1,2,3-cd)pyrene	8.2	0.5	0.5	1.8		13.2		1.3		0.0917		0.00599		0.00134		6.27	
Dibenz(a,h)+(a,c)anthracene	--	--	--	0.539		3.49		0.35		0.0253		0.00149		0.000381	J	2.39	
Benzo(g,h,i)perylene	1000	100	100	1.91		12.9		1.19		0.0902		0.00662		0.00168		5.39	

Notes:
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NY-UNRES: New York NYCRR Part 375 New York Unrestricted use Criteria Criteria per 6 NYCRR Part 375 Environmental Remediation Programs, effective December 14, 2006.
Cells highlighted in yellow indicate a concentration above the NY-RESGW
Cells highlighted in blue indicate a concentration above the NY-RESRR
Cells highlighted in red indicate a concentration aboe the NY-UNRES
Q = Laboratory Data Qualifier
MDL = Maximum Detection Limit
For U qualified entries, the MDL is shown
U = Not detected at or above the MDL
G = The concentration may be biased due to high matrix interferences with non-target compounds. The concentration may be considered estimated.
J = The concentration is estimated
DUP = Designation for duplicate sample
All results and MDLs are shown in milligrams per kilogram (mg/kg)

Table 8 - Pesticides and Polychlorinated Biphenyls in Soil - BCP Portion
470 Kent Avenue - Brooklyn, NY
BCP#C224053

SAMPLE ID:				BSB8 (0-2)		BSB8 N1 (7-8)		BSB-9 (0-2)		BSB9 (0-2)		8BSB9 (7-8)		BSB-13 (8-10)		BSB-13 (19.5-20)		BMW-14 (13-14)		BMW-14 (14-15)		BSB-15 (18-20)	
LAB ID:				L1523999-01		L1523999-02		L1523673-08		L1524836-01		L1524836-02		L1523673-04		L1523673-02		L1529203-10		L1529203-11		L1523673-09	
COLLECTION DATE:	NY-RESGW	NY-RESRR	NY-UNRES	9/24/2015		9/24/2015		9/22/2015		9/30/2015		9/30/2015		9/22/2015		9/22/2015		11/9/2015		11/9/2015		9/22/2015	
Pesticides Units: mg/kg				Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q
Delta-BHC	0.25	100	0.04	0.000357	U	0.000374	U	0.000348	U	0.00035	U	0.000356	U	0.000476	U	0.000424	U	0.000559	U	0.000392	U	0.00527	U
Lindane	0.1	1.3	0.1	0.00034	U	0.000356	U	0.000331	U	0.000333	U	0.000338	U	0.000452	U	0.000404	U	0.000532	U	0.000373	U	0.00501	U
Alpha-BHC	0.02	0.48	0.02	0.000216	U	0.000226	U	0.00021	U	0.000211	U	0.000215	U	0.000287	U	0.000256	U	0.000338	U	0.000237	U	0.00318	U
Beta-BHC	0.09	0.36	0.036	0.000691	U	0.000724	U	0.000673	U	0.000677	U	0.000689	U	0.000921	U	0.000822	U	0.00108	U	0.000758	U	0.0102	U
Heptachlor	0.38	2.1	0.042	0.000409	U	0.000428	U	0.000398	U	0.0004	U	0.000407	U	0.000544	U	0.000486	U	0.00064	U	0.000448	U	0.00603	U
Aldrin	0.19	0.097	0.005	0.000642	U	0.000673	U	0.000625	U	0.000629	U	0.00064	U	0.000855	U	0.000763	U	0.001	U	0.000704	U	0.00948	U
Heptachlor epoxide	--	--	--	0.00102	U	0.00107	U	0.000999	U	0.001	U	0.00102	U	0.00136	U	0.00122	U	0.00161	U	0.00112	U	0.0151	U
Endrin	0.06	11	0.014	0.000311	U	0.000326	U	0.000303	U	0.000305	U	0.00031	U	0.00192		0.00037	U	0.000488	U	0.000342	U	0.0046	U
Endrin ketone	--	--	--	0.000469	U	0.000492	U	0.000457	U	0.00046	U	0.000468	U	0.000625	U	0.000558	U	0.000735	U	0.000515	U	0.00693	U
Dieldrin	0.1	0.2	0.005	0.00057	U	0.000597	U	0.000555	U	0.000558	U	0.000568	U	0.000759	U	0.000677	U	0.000892	U	0.000625	U	0.00841	U
4,4'-DDE	17	8.9	0.0033	0.00474	P	0.000442	U	0.00041	U	0.000413	U	0.00042	U	0.000562	U	0.000501	U	0.00066	U	0.000463	U	0.00622	U
4,4'-DDD	14	13	0.0033	0.00065	U	0.000681	U	0.000633	U	0.000637	U	0.000648	U	0.000866	U	0.000773	U	0.00102	U	0.000714	U	0.0096	U
4,4'-DDT	136	7.9	0.0033	0.00694	P	0.00154	U	0.00143	U	0.00144	U	0.00146	U	0.00339	JPI	0.00174	U	0.0023	U	0.00161	U	0.0216	U
Endosulfan I	102	24	2.4	0.000431	U	0.000451	U	0.000419	U	0.000422	U	0.000429	U	0.000574	U	0.000512	U	0.000674	U	0.000473	U	0.00636	U
Endosulfan II	102	24	2.4	0.000609	U	0.000638	U	0.000593	U	0.00115	J	0.000607	U	0.000992	JPI	0.000724	U	0.000954	U	0.000668	U	0.00899	U
Endosulfan sulfate	1000	24	2.4	0.000362	U	0.000379	U	0.000352	U	0.000354	U	0.00036	U	0.000482	U	0.00043	U	0.000566	U	0.000397	U	0.00534	U
Methoxychlor	--	--	--	0.00106	U	0.00111	U	0.00104	U	0.00104	U	0.00106	U	0.00142	U	0.00126	U	0.00166	U	0.00117	U	0.0157	U
Toxaphene	--	--	--	0.00957	U	0.01	U	0.00932	U	0.00938	U	0.00954	U	0.0127	U	0.0114	U	0.015	U	0.0105	U	0.141	U
cis-Chlordane	2.9	4.2	0.094	0.00115	JPI	0.000666	U	0.000618	U	0.000622	U	0.000633	U	0.000846	U	0.000755	U	0.000994	U	0.00571	PI	0.00938	U
trans-Chlordane	--	--	--	0.00136	JPI	0.00063	U	0.000586	U	0.000589	U	0.0006	U	0.000801	U	0.000715	U	0.000942	U	0.00066	U	0.00888	U
Chlordane	--	--	--	0.0295	PI	0.00633	U	0.00588	U	0.00592	U	0.00602	U	0.00804	U	0.00718	U	0.00946	U	0.00663	U	0.0892	U
Polychlorinated Biphenyls																							
Aroclor 1016	3.2	1	0.1	0.00299	U	0.00315	U	0.00289	U	0.003	U	0.0031	U	0.004	U	0.00347	U	0.00471	U	0.00336	U	0.00432	U
Aroclor 1221	3.2	1	0.1	0.00349	U	0.00368	U	0.00337	U	0.00351	U	0.00362	U	0.00467	U	0.00404	U	0.0055	U	0.00392	U	0.00504	U
Aroclor 1232	3.2	1	0.1	0.00444	U	0.00467	U	0.00428	U	0.00446	U	0.0046	U	0.00594	U	0.00514	U	0.00699	U	0.00498	U	0.00641	U
Aroclor 1242	3.2	1	0.1	0.00464	U	0.00488	U	0.00447	U	0.00466	U	0.0048	U	0.0062	U	0.00537	U	0.0073	U	0.0052	U	0.0067	U
Aroclor 1248	3.2	1	0.1	0.0032	U	0.00337	U	0.00308	U	0.00321	U	0.00331	U	0.00428	U	0.0037	U	0.00503	U	0.00359	U	0.00462	U
Aroclor 1254	3.2	1	0.1	0.0218	J	0.00328	U	0.003	U	0.00313	U	0.0147	J	0.00416	U	0.00361	U	0.0049	U	0.0035	U	0.0045	U
Aroclor 1260	3.2	1	0.1	0.0285	J	0.00304	U	0.00278	U	0.098		0.00299	U	0.102		0.00334	U	0.00454	U	0.00324	U	0.00417	U
Aroclor 1262	3.2	1	0.1	0.00188	U	0.00198	U	0.00181	U	0.00189	U	0.00195	U	0.00251	U	0.00218	U	0.00296	U	0.00211	U	0.00271	U
Aroclor 1268	3.2	1	0.1	0.00549	U	0.00578	U	0.0053	U	0.00551	U	0.00569	U	0.00734	U	0.00636	U	0.00865	U	0.00617	U	0.00794	U
PCBs, Total	3.2	1	0.1	0.0503	J	0.00198	U	0.00181	U	0.098		0.0147	J	0.102		0.00218	U	0.00296	U	0.00211	U	0.00271	U

Notes:
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P = The RPD between the results for the two columns exceeds the method-specified criteria
I = The lower value for the two columns has been reported due to obvious interference
DUP = Designation for duplicate sample
All results and MDLs are shown in milligrams per kilogram (mg/kg)

Table 8 - Pesticides and Polychlorinated Biphenyls in Soil - BCP Portion
470 Kent Avenue - Brooklyn, NY
BCP#C224053

SAMPLE ID:				BSB-10 (0-2)		BSB-10 (8-10)		BTP-1 (0-2)		BTP-1 (2-4)		BSB-12 (10.5-12)		BTP-3 (1-2)		BTP-3 (3-4)		BTP-4 (0-2)		BTP-4 (2-3)	
LAB ID:				L2034532-01		L2034532-02		L2034532-03		L2034532-04		L2034532-05		L2034532-06		L2034532-07		L2034532-08		L2034532-09	
COLLECTION DATE:	NY-RESGW	NY-RESRR	NY-UNRES	8/23/2020		8/23/2020		8/23/2020		8/23/2020		8/23/2020		8/23/2020		8/23/2020		8/23/2020		8/23/2020	
Chlorinated Herbicides **Units: mg/kg**				Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q
2,4-D	--	--	--	0.0114	U	0.0119	U	0.0118	U	0.0118	U	0.0129	U	0.0146	U	0.0117	U	0.0113	U	0.0114	U
2,4,5-T	--	--	--	0.00564	U	0.00588	U	0.00579	U	0.0058	U	0.00633	U	0.00721	U	0.00576	U	0.00557	U	0.00561	U
2,4,5-TP (Silvex)	3.8	100	3.8	0.00484	U	0.00504	U	0.00496	U	0.00498	U	0.00544	U	0.00618	U	0.00494	U	0.00478	U	0.00481	U
Pesticides																					
Delta-BHC	0.25	100	0.04	0.00034	U	0.000347	U	0.000349	U	0.000354	U	0.00037	U	0.00044	U	0.000347	U	0.000339	U	0.000332	U
Lindane	0.1	1.3	0.1	0.000323	U	0.00033	U	0.000332	U	0.000337	U	0.000352	U	0.000418	U	0.00033	U	0.000323	U	0.000316	U
Alpha-BHC	0.02	0.48	0.02	0.000205	U	0.00021	U	0.000211	U	0.000214	U	0.000223	U	0.000266	U	0.00021	U	0.000205	U	0.000201	U
Beta-BHC	0.09	0.36	0.036	0.000658	U	0.000672	U	0.000676	U	0.000686	U	0.000716	U	0.000852	U	0.000672	U	0.000657	U	0.000644	U
Heptachlor	0.38	2.1	0.042	0.000389	U	0.000397	U	0.0004	U	0.000406	U	0.000423	U	0.000504	U	0.000397	U	0.000388	U	0.000381	U
Aldrin	0.19	0.097	0.005	0.000611	U	0.000624	U	0.000628	U	0.000637	U	0.000665	U	0.000791	U	0.000624	U	0.00061	U	0.000598	U
Heptachlor epoxide	--	--	--	0.000976	U	0.000996	U	0.001	U	0.00102	U	0.00106	U	0.00126	U	0.000997	U	0.000975	U	0.000955	U
Endrin	0.06	11	0.014	0.000296	U	0.000302	U	0.000305	U	0.000309	U	0.000322	U	0.000384	U	0.000303	U	0.000296	U	0.00029	U
Endrin aldehyde	--	--	--	0.000759	U	0.000775	U	0.00078	U	0.000791	U	0.000826	U	0.000983	U	0.000775	U	0.000758	U	0.000743	U
Endrin ketone	--	--	--	0.000447	U	0.000456	U	0.000459	U	0.000466	U	0.000486	U	0.000578	U	0.000456	U	0.000446	U	0.000437	U
Dieldrin	0.1	0.2	0.005	0.000542	U	0.000553	U	0.000558	U	0.000565	U	0.00059	U	0.000702	U	0.000554	U	0.000542	U	0.000531	U
4,4'-DDE	17	8.9	0.0033	0.000401	U	0.00041	U	0.000412	U	0.000418	U	0.000437	U	0.000519	U	0.00041	U	0.000401	U	0.000393	U
4,4'-DDD	14	13	0.0033	0.000619	U	0.000632	U	0.000636	U	0.000645	U	0.000673	U	0.000801	U	0.000632	U	0.000618	U	0.000606	U
4,4'-DDT	136	7.9	0.0033	0.00139	U	0.00142	U	0.00143	U	0.00145	U	0.00152	U	0.00181	U	0.00142	U	0.00139	U	0.00136	U
Endosulfan I	102	24	2.4	0.00041	U	0.000418	U	0.000421	U	0.000427	U	0.000446	U	0.000531	U	0.000419	U	0.000409	U	0.000401	U
Endosulfan II	102	24	2.4	0.00058	U	0.000592	U	0.000596	U	0.000604	U	0.000631	U	0.00075	U	0.000592	U	0.000579	U	0.000567	U
Endosulfan sulfate	1000	24	2.4	0.000344	U	0.000351	U	0.000354	U	0.000359	U	0.000374	U	0.000445	U	0.000351	U	0.000344	U	0.000337	U
Methoxychlor	--	--	--	0.00101	U	0.00103	U	0.00104	U	0.00106	U	0.0011	U	0.00131	U	0.00103	U	0.00101	U	0.00099	U
Toxaphene	--	--	--	0.0091	U	0.0093	U	0.00937	U	0.0095	U	0.00991	U	0.0118	U	0.0093	U	0.0091	U	0.00891	U
cis-Chlordane	2.9	4.2	0.094	0.000604	U	0.000617	U	0.000621	U	0.00063	U	0.000658	U	0.000782	U	0.000617	U	0.000604	U	0.000591	U
trans-Chlordane	--	--	--	0.000572	U	0.000584	U	0.000589	U	0.000597	U	0.000623	U	0.000741	U	0.000585	U	0.000572	U	0.00056	U
Chlordane	--	--	--	0.00574	U	0.00587	U	0.00591	U	0.00599	U	0.00625	U	0.00744	U	0.00587	U	0.00574	U	0.00562	U
Polychlorinated Biphenyls																					
Aroclor 1016	3.2	1	0.1	0.00319	U	0.0033	U	0.00332	U	0.00332	U	0.00357	U	0.0041	U	0.00328	U	0.00317	U	0.00319	U
Aroclor 1221	3.2	1	0.1	0.0036	U	0.00372	U	0.00375	U	0.00374	U	0.00403	U	0.00462	U	0.0037	U	0.00357	U	0.0036	U
Aroclor 1232	3.2	1	0.1	0.00762	U	0.00787	U	0.00794	U	0.00792	U	0.00852	U	0.00979	U	0.00782	U	0.00756	U	0.00762	U
Aroclor 1242	3.2	1	0.1	0.00484	U	0.005	U	0.00505	U	0.00503	U	0.00542	U	0.00622	U	0.00497	U	0.00481	U	0.00484	U
Aroclor 1248	3.2	1	0.1	0.00539	U	0.00557	U	0.00562	U	0.0056	U	0.00603	U	0.00692	U	0.00553	U	0.00535	U	0.00539	U
Aroclor 1254	3.2	1	0.1	0.00393	U	0.00406	U	0.0109	J	0.00408	U	0.0044	U	0.00505	U	0.00404	U	0.019	J	0.00393	U
Aroclor 1260	3.2	1	0.1	0.00664	U	0.00686	U	0.00692	U	0.0069	U	0.00742	U	0.00853	U	0.00682	U	0.0111	J	0.00664	U
Aroclor 1262	3.2	1	0.1	0.00456	U	0.00471	U	0.00475	U	0.00474	U	0.0051	U	0.00586	U	0.00468	U	0.00453	U	0.00456	U
Aroclor 1268	3.2	1	0.1	0.00372	U	0.00384	U	0.00388	U	0.00387	U	0.00416	U	0.00478	U	0.00382	U	0.00369	U	0.00372	U
PCBs, Total	3.2	1	0.1	0.00319	U	0.0033	U	0.0109	J	0.00332	U	0.00357	U	0.0041	U	0.00328	U	0.0301	J	0.00319	U

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I = The lower value for the two columns has been reported due to obvious interference
DUP = Designation for duplicate sample
All results and MDLs are shown in milligrams per kilogram (mg/kg)

Table 8 - Pesticides and Polychlorinated Biphenyls in Soil - BCP Portion
470 Kent Avenue - Brooklyn, NY
BCP#C224053

SAMPLE ID:				BSB-15 (21-22)		BSB-16 (8-9)		BSB-16 (10-12)		BSB-17 (0-3)		BSB-17 (8-9)		BSB-17 (14-15)		BSB-17 (18-20)		BMW1 (12-14)		BMW1 (14-15)		BMW2 (7-9)	
LAB ID:				L1523673-01		L1523673-07		L1523673-13		L1523673-06		L1523673-15		L1523673-05		L1523673-16		L1524836-03		L1524836-04		L1524836-05	
COLLECTION DATE:	NY-RESGW	NY-RESRR	NY-UNRES	9/22/2015		9/22/2015		9/22/2015		9/22/2015		9/22/2015		9/22/2015		9/22/2015		9/30/2015		9/30/2015		10/1/2015	
Pesticides Units: mg/kg				Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q
Delta-BHC	0.25	100	0.04	0.00532	U	0.000358	U	0.00039	U	0.000348	U	0.000365	U	0.0926		0.00587	U	0.0004	U	0.000365	U	0.000369	U
Lindane	0.1	1.3	0.1	0.00506	U	0.000341	U	0.000371	U	0.000331	U	0.000347	U	0.00814	U	0.00558	U	0.00038	U	0.000347	U	0.000351	U
Alpha-BHC	0.02	0.48	0.02	0.00321	U	0.000216	U	0.000236	U	0.00021	U	0.000221	U	0.00517	U	0.00355	U	0.000242	U	0.000221	U	0.000223	U
Beta-BHC	0.09	0.36	0.036	0.0103	U	0.000694	U	0.000756	U	0.000674	U	0.000707	U	0.0166	U	0.0114	U	0.000774	U	0.000707	U	0.000714	U
Heptachlor	0.38	2.1	0.042	0.00608	U	0.00041	U	0.000447	U	0.000398	U	0.000418	U	0.0098	U	0.00672	U	0.000458	U	0.000418	U	0.000422	U
Aldrin	0.19	0.097	0.005	0.00956	U	0.000644	U	0.000702	U	0.000625	U	0.000656	U	0.0154	U	0.0106	U	0.000719	U	0.000657	U	0.000663	U
Heptachlor epoxide	--	--	--	0.0153	U	0.00103	U	0.00112	U	0.000999	U	0.00239	J	0.0246	U	0.0168	U	0.00115	U	0.00105	U	0.00106	U
Endrin	0.06	11	0.014	0.00464	U	0.000312	U	0.00034	U	0.000303	U	0.000318	U	0.00747	U	0.00512	U	0.000349	U	0.000319	U	0.000322	U
Endrin ketone	--	--	--	0.00699	U	0.000471	U	0.000513	U	0.000457	U	0.00048	U	0.0112	U	0.00772	U	0.000526	U	0.00048	U	0.000485	U
Dieldrin	0.1	0.2	0.005	0.00848	U	0.000572	U	0.000623	U	0.000555	U	0.0033	PI	0.0137	U	0.00937	U	0.000638	U	0.000583	U	0.000589	U
4,4'-DDE	17	8.9	0.0033	0.00628	U	0.000423	U	0.000461	U	0.000411	U	0.000431	U	0.0101	U	0.00693	U	0.000472	U	0.000431	U	0.000436	U
4,4'-DDD	14	13	0.0033	0.00968	U	0.000652	U	0.000711	U	0.00891	PI	0.00642		0.0156	U	0.0107	U	0.000728	U	0.000665	U	0.000672	U
4,4'-DDT	136	7.9	0.0033	0.0218	U	0.00147	U	0.0016	U	0.00917		0.00348	JPI	1.36		0.0241	U	0.00164	U	0.0015	U	0.00152	U
Endosulfan I	102	24	2.4	0.00641	U	0.000432	U	0.000471	U	0.00042	U	0.00044	U	0.0103	U	0.00708	U	0.000482	U	0.000441	U	0.000445	U
Endosulfan II	102	24	2.4	0.00907	U	0.000611	U	0.000666	U	0.000594	U	0.000623	U	0.0146	U	0.01	U	0.000682	U	0.000623	U	0.00063	U
Endosulfan sulfate	1000	24	2.4	0.00538	U	0.000363	U	0.000395	U	0.000352	U	0.00037	U	0.00867	U	0.00594	U	0.000405	U	0.00037	U	0.000374	U
Methoxychlor	--	--	--	0.0158	U	0.00107	U	0.00116	U	0.00104	U	0.00109	U	0.0255	U	0.0175	U	0.00119	U	0.00109	U	0.0011	U
Toxaphene	--	--	--	0.142	U	0.0096	U	0.0105	U	0.00933	U	0.00979	U	0.23	U	0.157	U	0.0107	U	0.00979	U	0.00989	U
cis-Chlordane	2.9	4.2	0.094	0.00946	U	0.000637	U	0.00362	PI	0.000619	U	0.00118	JPI	0.0152	U	0.0104	U	0.000711	U	0.00065	U	0.000656	U
trans-Chlordane	--	--	--	0.00896	U	0.000604	U	0.00355	PI	0.000586	U	0.00174	JPI	0.0144	U	0.00989	U	0.000674	U	0.000616	U	0.000622	U
Chlordane	--	--	--	0.0899	U	0.00606	U	0.0229	PI	0.00588	U	0.0107	JPI	0.145	U	0.0993	U	0.00676	U	0.00618	U	0.00624	U
Polychlorinated Biphenyls																							
Aroclor 1016	3.2	1	0.1	0.00437	U	0.00303	U	0.00313	U	0.00294	U	0.00304	U	0.00354	U	0.00491	U	0.0033	U	0.00293	U	0.00302	U
Aroclor 1221	3.2	1	0.1	0.0051	U	0.00354	U	0.00365	U	0.00342	U	0.00355	U	0.00413	U	0.00573	U	0.00386	U	0.00342	U	0.00352	U
Aroclor 1232	3.2	1	0.1	0.00649	U	0.0045	U	0.00464	U	0.00435	U	0.00451	U	0.00525	U	0.00728	U	0.0049	U	0.00435	U	0.00448	U
Aroclor 1242	3.2	1	0.1	0.00678	U	0.0047	U	0.00485	U	0.00455	U	0.00471	U	0.00548	U	0.00761	U	0.00512	U	0.00454	U	0.00467	U
Aroclor 1248	3.2	1	0.1	0.00467	U	0.00324	U	0.00334	U	0.00314	U	0.00325	U	0.00378	U	0.00525	U	0.00353	U	0.00313	U	0.00322	U
Aroclor 1254	3.2	1	0.1	0.00455	U	0.00316	U	0.00326	U	0.00305	U	0.0492		0.00368	U	0.00511	U	0.00344	U	0.0512		0.00314	U
Aroclor 1260	3.2	1	0.1	0.00422	U	0.00292	U	0.00302	U	0.00283	U	0.0191	J	0.00341	U	0.00474	U	0.00319	U	0.00283	U	0.00291	U
Aroclor 1262	3.2	1	0.1	0.00275	U	0.0019	U	0.00196	U	0.00184	U	0.00191	U	0.00222	U	0.00308	U	0.00208	U	0.00184	U	0.00189	U
Aroclor 1268	3.2	1	0.1	0.00803	U	0.00557	U	0.00575	U	0.00539	U	0.00558	U	0.00649	U	0.00901	U	0.00607	U	0.00538	U	0.00554	U
PCBs, Total	3.2	1	0.1	0.00275	U	0.0019	U	0.00196	U	0.00184	U	0.0683	J	0.00222	U	0.00308	U	0.00208	U	0.0512		0.00189	U

Notes:
NY-RESGW: New York NYCRR Part 375 Groundwater Criteria, New York Restricted use Criteria per 6 NYCRR Part 375 Environmental Remediation Programs, effective December 14, 2006.
NY-RESRR: New York NYCRR Part 375 Restricted-Residential Criteria, New York Restricted use Criteria per 6 NYCRR Part 375 Environmental Remediation Programs, effective December 14, 2006.
NY-UNRES: New York NYCRR Part 375 New York Unrestricted use Criteria Criteria per 6 NYCRR Part 375 Environmental Remediation Programs, effective December 14, 2006.
Cells highlighted in yellow indicate a concentration above the NY-RESGW
Cells highlighted in blue indicate a concentration above the NY-RESRR
Cells highlighted in red indicate a concentration aboe the NY-UNRES
Q = Laboratory Data Qualifier
MDL = Maximum Detection Limit
For U qualified entries, the MDL is shown
U = Not detected at or above the MDL
J = The concentration is estimated
P = The RPD between the results for the two columns exceeds the method-specified criteria
I = The lower value for the two columns has been reported due to obvious interference
DUP = Designation for duplicate sample
All results and MDLs are shown in milligrams per kilogram (mg/kg)

Table 8 - Pesticides and Polychlorinated Biphenyls in Soil - BCP Portion
470 Kent Avenue - Brooklyn, NY
BCP#C224053

SAMPLE ID:				BMW2 (11-13)		BMW3 (8-10)		BMW3 (14-15)		BMW-4 (11-14)		BMW-4 (14-15)		BMW-5 (9-11)		BMW-5 (16-17)		MW-6 (24-24.5		BMW-6 (21-23)		W-6 (21-23) D		BMW7 (15-16)		BMW7 (16-17)	
LAB ID:				L1524836-06		L1524836-07		L1524836-08		L1529203-01		L1529203-02		L1529203-03		L1529203-04		L1529203-06		L1529203-08		L1529203-09		L1524836-10		L1524836-09	
COLLECTION DATE:	NY-RESGW	NY-RESRR	NY-UNRES	10/1/2015		10/1/2015		10/1/2015		11/9/2015		11/9/2015		11/9/2015		11/9/2015		11/9/2015		11/9/2015		11/9/2015		10/1/2015		10/1/2015	
Pesticides **Units: mg/kg**				Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q
Delta-BHC	0.25	100	0.04	0.000332	U	0.000367	U	0.000402	U	0.000389	U	0.000368	U	0.000564	U	0.000402	U	0.0005	U	0.00563	U	0.0803		0.000389	U	0.000407	U
Lindane	0.1	1.3	0.1	0.000316	U	0.000349	U	0.000382	U	0.00037	U	0.00035	U	0.000536	U	0.000382	U	0.000476	U	0.0626		0.12	P	0.00037	U	0.000387	U
Alpha-BHC	0.02	0.48	0.02	0.0002	U	0.000222	U	0.000243	U	0.000235	U	0.000222	U	0.000341	U	0.000243	U	0.000302	U	0.0034	U	0.00395	U	0.000235	U	0.000246	U
Beta-BHC	0.09	0.36	0.036	0.000643	U	0.000711	U	0.000777	U	0.000753	U	0.000712	U	0.00109	U	0.000778	U	0.000969	U	0.0109	U	0.0126	U	0.000754	U	0.000788	U
Heptachlor	0.38	2.1	0.042	0.00038	U	0.00042	U	0.00046	U	0.000445	U	0.000421	U	0.000645	U	0.00046	U	0.000573	U	0.00644	U	0.00748	U	0.000446	U	0.000466	U
Aldrin	0.19	0.097	0.005	0.000597	U	0.00066	U	0.000722	U	0.000699	U	0.000661	U	0.00101	U	0.000723	U	0.0009	U	0.0101	U	0.0118	U	0.0007	U	0.000732	U
Heptachlor epoxide	--	--	--	0.000953	U	0.00106	U	0.00115	U	0.00112	U	0.00106	U	0.00162	U	0.00116	U	0.00144	U	0.0162	U	0.0188	U	0.00112	U	0.00117	U
Endrin	0.06	11	0.014	0.00029	U	0.00032	U	0.00035	U	0.000339	U	0.000321	U	0.000492	U	0.000351	U	0.000436	U	0.00491	U	0.0057	U	0.00034	U	0.000355	U
Endrin ketone	--	--	--	0.000436	U	0.000483	U	0.000528	U	0.000511	U	0.000484	U	0.000741	U	0.000529	U	0.000658	U	0.0074	U	0.0086	U	0.000512	U	0.000535	U
Dieldrin	0.1	0.2	0.005	0.00053	U	0.000586	U	0.000641	U	0.00062	U	0.000587	U	0.0009	U	0.000642	U	0.000798	U	0.00898	U	0.0104	U	0.000621	U	0.00065	U
4,4'-DDE	17	8.9	0.0033	0.000392	U	0.000434	U	0.000474	U	0.000459	U	0.000434	U	0.000666	U	0.000475	U	0.000591	U	0.00665	U	0.00772	U	0.00046	U	0.00323	
4,4'-DDD	14	13	0.0033	0.000604	U	0.000669	U	0.000731	U	0.000708	U	0.00067	U	0.00103	U	0.000732	U	0.000911	U	0.0102	U	0.0119	U	0.00104	J	0.000742	U
4,4'-DDT	136	7.9	0.0033	0.00136	U	0.00151	U	0.00165	U	0.0016	U	0.00151	U	0.00232	U	0.00165	U	0.00205	U	0.0231	U	0.0268	U	0.0016	U	0.00252	J
Endosulfan I	102	24	2.4	0.0004	U	0.000443	U	0.000484	U	0.000469	U	0.000444	U	0.00068	U	0.000485	U	0.000604	U	0.00679	U	0.00789	U	0.00047	U	0.000491	U
Endosulfan II	102	24	2.4	0.000566	U	0.000627	U	0.000685	U	0.000663	U	0.000628	U	0.000962	U	0.000686	U	0.000854	U	0.0096	U	0.0112	U	0.000664	U	0.000695	U
Endosulfan sulfate	1000	24	2.4	0.000336	U	0.000372	U	0.000407	U	0.000394	U	0.000372	U	0.000571	U	0.000407	U	0.000507	U	0.0057	U	0.00662	U	0.000394	U	0.000412	U
Methoxychlor	--	--	--	0.000989	U	0.00109	U	0.0012	U	0.00116	U	0.0011	U	0.00168	U	0.0012	U	0.00149	U	0.0168	U	0.0195	U	0.00116	U	0.00121	U
Toxaphene	--	--	--	0.0089	U	0.00985	U	0.0108	U	0.0104	U	0.00986	U	0.0151	U	0.0108	U	0.0134	U	0.151	U	0.175	U	0.0104	U	0.0109	U
cis-Chlordane	2.9	4.2	0.094	0.00059	U	0.000653	U	0.000714	U	0.000692	U	0.000654	U	0.001	U	0.000715	U	0.00089	U	0.01	U	0.0116	U	0.000693	U	0.000724	U
trans-Chlordane	--	--	--	0.000559	U	0.000619	U	0.000677	U	0.000655	U	0.00062	U	0.00095	U	0.000678	U	0.000843	U	0.00948	U	0.011	U	0.000656	U	0.000686	U
Chlordane	--	--	--	0.00561	U	0.00621	U	0.00679	U	0.00658	U	0.00622	U	0.00954	U	0.0068	U	0.00846	U	0.0952	U	0.11	U	0.00659	U	0.00689	U
Polychlorinated Biphenyls																											
Aroclor 1016	3.2	1	0.1	0.00284	U	0.00314	U	0.00336	U	0.00334	U	0.00309	U	0.00477	U	0.00336	U	0.00435	U	0.00458	U	0.00538	U	0.00316	U	0.00341	U
Aroclor 1221	3.2	1	0.1	0.00332	U	0.00366	U	0.00392	U	0.00389	U	0.00361	U	0.00557	U	0.00393	U	0.00508	U	0.00534	U	0.00628	U	0.00368	U	0.00398	U
Aroclor 1232	3.2	1	0.1	0.00422	U	0.00465	U	0.00498	U	0.00495	U	0.00459	U	0.00708	U	0.00499	U	0.00645	U	0.00679	U	0.00798	U	0.00468	U	0.00505	U
Aroclor 1242	3.2	1	0.1	0.0044	U	0.00486	U	0.0052	U	0.00517	U	0.00479	U	0.0074	U	0.00521	U	0.00674	U	0.00709	U	0.00834	U	0.00489	U	0.00528	U
Aroclor 1248	3.2	1	0.1	0.00304	U	0.00335	U	0.00359	U	0.00356	U	0.00331	U	0.0051	U	0.00359	U	0.00465	U	0.00489	U	0.00575	U	0.00337	U	0.00364	U
Aroclor 1254	3.2	1	0.1	0.00296	U	0.0216	J	0.0035	U	0.00347	U	0.00322	U	0.00497	U	0.0035	U	0.00453	U	0.00476	U	0.0056	U	0.0102	J	0.164	
Aroclor 1260	3.2	1	0.1	0.00274	U	0.00302	U	0.00324	U	0.00322	U	0.00298	U	0.062		0.00324	U	0.0042	U	0.00441	U	0.00519	U	0.00304	U	0.0672	
Aroclor 1262	3.2	1	0.1	0.00178	U	0.00197	U	0.00211	U	0.00209	U	0.00194	U	0.003	U	0.00211	U	0.00273	U	0.00287	U	0.00338	U	0.00198	U	0.00214	U
Aroclor 1268	3.2	1	0.1	0.00522	U	0.00576	U	0.00616	U	0.00612	U	0.00568	U	0.00876	U	0.00618	U	0.00798	U	0.0084	U	0.00987	U	0.00579	U	0.0453	
PCBs, Total	3.2	1	0.1	0.00178	U	0.0216	J	0.00211	U	0.00209	U	0.00194	U	0.062		0.00211	U	0.00273	U	0.00287	U	0.00338	U	0.0102	J	0.277	

Notes:
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NY-RESRR: New York NYCRR Part 375 Restricted-Residential Criteria, New York Restricted use Criteria per 6 NYCRR Part 375 Environmental Remediation Programs, effective December 14, 2006
NY-UNRES: New York NYCRR Part 375 New York Unrestricted use Criteria Criteria per 6 NYCRR Part 375 Environmental Remediation Programs, effective December 14, 2006
Cells highlighted in yellow indicate a concentration above the NY-RESGW
Cells highlighted in blue indicate a concentration above the NY-RESRR
Cells highlighted in red indicate a concentration aboe the NY-UNRES
Q = Laboratory Data Qualifier
MDL = Maximum Detection Limit
For U qualified entries, the MDL is shown
U = Not detected at or above the MDL
J = The concentration is estimated
P = The RPD between the results for the two columns exceeds the method-specified criteria
I = The lower value for the two columns has been reported due to obvious interference
DUP = Designation for duplicate sample
All results and MDLs are shown in milligrams per kilogram (mg/kg

Table 8A - Pesticides and Polychlorinated Biphenyls in Soil - Former MGP
470 Kent Avenue - Brooklyn, NY
BCP#C224053

SAMPLE ID:				B-17 (47-49)		B-18 (37-39')		B-18 (39-41')	
LAB ID:				L2033512-01		L2032144-01		L2032144-02	
COLLECTION DATE:	NY-RESGW	NY-RESRR	NY-UNRES	8/17/2020		8/7/2020		8/7/2020	
Chlorinated Herbicides Units: mg/kg				Conc	Q	Conc	Q	Conc	Q
2,4-D	--	--	--	0.0127	U	0.0119	U	0.0122	U
2,4,5-T	--	--	--	0.00624	U	0.00584	U	0.00601	U
2,4,5-TP (Silvex)	3.8	100	3.8	0.00535	U	0.00501	U	0.00516	U
Pesticides									
Delta-BHC	0.25	100	0.04	0.000372	U	0.000353	U	0.000369	U
Lindane	0.1	1.3	0.1	0.000354	U	0.000336	U	0.000351	U
Alpha-BHC	0.02	0.48	0.02	0.0164		0.000213	U	0.000223	U
Beta-BHC	0.09	0.36	0.036	0.000721	U	0.000683	U	0.000714	U
Heptachlor	0.38	2.1	0.042	0.000426	U	0.000404	U	0.000422	U
Aldrin	0.19	0.097	0.005	0.000669	U	0.000634	U	0.000663	U
Heptachlor epoxide	--	--	--	0.00107	U	0.00101	U	0.00106	U
Endrin	0.06	11	0.014	0.000325	U	0.000308	U	0.000322	U
Endrin aldehyde	--	--	--	0.000832	U	0.000788	U	0.00238	
Endrin ketone	--	--	--	0.00049	U	0.000464	U	0.000485	U
Dieldrin	0.1	0.2	0.005	0.000594	U	0.000563	U	0.000588	U
4,4'-DDE	17	8.9	0.0033	0.00044	U	0.000416	U	0.000435	U
4,4'-DDD	14	13	0.0033	0.000678	U	0.000642	U	0.000672	U
4,4'-DDT	136	7.9	0.0033	0.00153	U	0.00145	U	0.00151	U
Endosulfan I	102	24	2.4	0.000449	U	0.000426	U	0.000445	U
Endosulfan II	102	24	2.4	0.000635	U	0.000602	U	0.000629	U
Endosulfan sulfate	1000	24	2.4	0.000377	U	0.000357	U	0.000373	U
Methoxychlor	--	--	--	0.00111	U	0.00105	U	0.0011	U
Toxaphene	--	--	--	0.00998	U	0.00946	U	0.00988	U
cis-Chlordane	2.9	4.2	0.094	0.000662	U	0.000627	U	0.000656	U
trans-Chlordane	--	--	--	0.000627	U	0.000594	U	0.000621	U
Chlordane	--	--	--	0.0063	U	0.00597	U	0.00624	U
Polychlorinated Biphenyls									
Aroclor 1016	3.2	1	0.1	0.0035	U	0.00324	U	0.00337	U
Aroclor 1221	3.2	1	0.1	0.00395	U	0.00366	U	0.00381	U
Aroclor 1232	3.2	1	0.1	0.00836	U	0.00774	U	0.00806	U
Aroclor 1242	3.2	1	0.1	0.00532	U	0.00492	U	0.00512	U
Aroclor 1248	3.2	1	0.1	0.00592	U	0.00548	U	0.0057	U
Aroclor 1254	3.2	1	0.1	0.00432	U	0.004	U	0.00416	U
Aroclor 1260	3.2	1	0.1	0.00729	U	0.00675	U	0.00702	U
Aroclor 1262	3.2	1	0.1	0.00501	U	0.00464	U	0.00483	U
Aroclor 1268	3.2	1	0.1	0.00409	U	0.00378	U	0.00394	U
PCBs, Total	3.2	1	0.1	0.0035	U	0.00324	U	0.00337	U

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Table 9 - Metals in Soil - BCP Portion
470 Kent Avenue - Brooklyn, NY
BCP#C224053

SAMPLE ID:	NY-RESGW	NY-RESRR	NY-UNRES	BSB-10 (0-2)		BSB-10 (8-10)		BTP-1 (0-2)		BTP-1 (2-4)		BSB-12 (10.5-12)		BTP-3 (1-2)		BTP-3 (3-4)		BTP-4 (0-2)		BTP-4 (2-3)	
LAB ID:				L2034532-01		L2034532-02		L2034532-03		L2034532-04		L2034532-05		L2034532-06		L2034532-07		L2034532-08		L2034532-09	
COLLECTION DATE:				8/23/2020		8/23/2020		8/23/2020		8/23/2020		8/23/2020		8/23/2020		8/23/2020		8/23/2020		8/23/2020	
Total Metals Units: mg/kg				Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q
Aluminum, Total	--	--	--	2490		7960		5550		5800		18700		6590		5180		4530		5430	
Antimony, Total	--	--	--	0.32	U	0.342	U	0.333	U	0.337	U	0.354	U	1020		44.9		2.36	J	2.1	J
Arsenic, Total	16	16	13	2.7		1.69		10.4		8.33		0.401	J	66.2		22.4		7.89		5.98	
Barium, Total	820	400	350	220		38.8		49.2		41.9		255		626		487		50.5		59.6	
Beryllium, Total	47	72	7.2	0.135	J	0.03	U	0.053	J	0.029	U	0.031	U	0.045	J	0.053	J	0.028	U	0.029	U
Cadmium, Total	7.5	4.3	2.5	0.261	J	0.836	J	0.702	J	0.381	J	0.932		12.6		3.53		0.666	J	0.832	J
Calcium, Total	--	--	--	8970		697		34500		50600		1250		23200		36200		17000		9520	
Chromium, Total	--	--	--	6.71		21.3		10.1		7.61		65.7		42.5		26.8		11.4		12.9	
Cobalt, Total	--	--	--	3.87		7.7		4.99		3.84		21.6		16.2		9.06		4.83		5.28	
Copper, Total	1720	270	50	46		11.2		23.1		11.5		49.9		13000		1220		47.7		18.8	
Chromium, Trivalent	--	180	30	6.7		21		10		7.6		66		42		27		11		13	
Cyanide, Total	40	27	27	2.1		0.24	U	0.23	U	0.22	U	0.33	J	0.29	U	0.22	U	3.8		13	
Chromium, Hexavalent	19	110	1	0.177	U	0.186	U	0.182	U	0.183	U	0.198	U	0.23	U	0.181	U	0.176	U	0.177	U
Iron, Total	--	--	--	5660		28400		17800		9580		29400		103000		51600		17700		24800	
Lead, Total	450	400	63	27.2		7.87		89.1		37.2		16.5		21900		6580		159		74.6	
Magnesium, Total	--	--	--	613		2290		4540		7860		12000		1930		4190		2550		1720	
Manganese, Total	2000	2000	1600	35.2		302		228		310		263		693		488		205		193	
Mercury, Total	0.73	0.81	0.18	0.136		0.048	U	0.078		0.072	J	0.223		0.327		0.17		1.33		0.416	
Nickel, Total	130	310	30	10.4		16.5		10.3		8.12		45.3		35.6		21.5		10.8		11.7	
Potassium, Total	--	--	--	369		877		883		848		13800		2220		1500		924		1120	
Selenium, Total	4	180	3.9	0.217	U	0.232	U	2.23		1.33	J	0.24	U	0.794	J	1.21	J	0.691	J	0.398	J
Silver, Total	8.3	180	2	0.238	U	0.254	U	0.248	U	0.251	U	0.264	U	8.26		1.75		0.242	U	0.245	U
Sodium, Total	--	--	--	847		51	J	551		532		1660		2110		986		941		1040	
Thallium, Total	--	--	--	0.265	U	0.283	U	0.276	U	0.279	U	0.293	U	0.352	U	0.277	U	0.269	U	0.273	U
Vanadium, Total	--	--	--	11		33.4		26.2		35		80.5		42.4		31.8		20.4		28.6	
Zinc, Total	2480	10000	109	33.4		36.6		129		32.8		88.5		5110		1760		108		67.4	

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Table 9 - Metals in Soil - BCP Portion
470 Kent Avenue - Brooklyn, NY
BCP#C224053

SAMPLE ID:	NY-RESGW	NY-RESRR	NY-UNRES	BSB8 (0-2)		BSB8 N1 (7-8)		BSB-9 (0-2)		BSB9 (0-2)		8BSB9 (7-8)		BSB-13 (8-10)		BSB-13 (19.5-20)		BMW-14 (13-14)		BMW-14 (14-15)	
LAB ID:				L1523999-01		L1523999-02		L1523673-08		L1524836-01		L1524836-02		L1523673-04		L1523673-02		L1529203-10		L1529203-11	
COLLECTION DATE:				9/24/2015		9/24/2015		9/22/2015		9/30/2015		9/30/2015		9/22/2015		9/22/2015		11/9/2015		11/9/2015	
Total Metals Units: mg/kg				Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q
Aluminum, Total	--	--	--	7600		3000		5100		9600		7400		5500		5300		11000		19000	
Antimony, Total	--	--	--	2.3	J	0.77	U	0.7	U	1.2	J	0.75	U	2.6	J	0.81	U	1.1	U	0.81	U
Arsenic, Total	16	16	13	6.9		2.7		8.6		8.3		7.5		15		6.8		41		20	
Barium, Total	820	400	350	65		11		62		36		42		500		100		100		110	
Beryllium, Total	47	72	7.2	0.31	J	0.18	J	0.38	J	0.42	J	0.37	J	0.39	J	0.32	J	0.42	J	0.47	J
Cadmium, Total	7.5	4.3	2.5	0.06	U	0.07	U	0.06	U	0.06	U	0.07	U	0.09	J	0.07	U	0.8	J	0.07	U
Calcium, Total	--	--	--	20000		800		11000		2500		2500		8800		2700		1600		2600	
Chromium, Total	--	--	--	16		7.1		11		18		16		12		13		75		51	
Cobalt, Total	--	--	--	5.3		3.3		5		6.4		7.3		6.6		11		11		13	
Copper, Total	1720	270	50	140		9.9		29		41		17		130		28		170		54	
Iron, Total	--	--	--	31000		10000		12000		24000		27000		12000		21000		25000		43000	
Lead, Total	450	400	63	260		22		40		12		7.2		540		210		280		41	
Magnesium, Total	--	--	--	3100		1200		1900		3400		2200		940		2200		5400		8200	
Manganese, Total	2000	2000	1600	300		160		180		290		520		140		250		240		890	
Mercury, Total	0.73	0.81	0.18	0.44		0.12		0.09		0.11		0.15		1.4		0.27		8.3		1.6	
Nickel, Total	130	310	30	13		6.4		14		13		12		13		14		43		30	
Potassium, Total	--	--	--	1500		370		670		1100		1000		810		1200		4600		11000	
Selenium, Total	4	180	3.9	0.5	J	0.29	U	0.47	J	0.28	U	0.28	U	1.5	J	0.78	J	2.4	J	0.3	U
Silver, Total	8.3	180	2	0.18	U	0.19	U	0.18	U	0.18	U	0.19	U	0.27	J	0.2	U	1.1	J	0.33	J
Sodium, Total	--	--	--	1700		160	J	380		140	J	68	J	1100		2900		5600		2200	
Thallium, Total	--	--	--	0.37	U	0.38	U	0.35	U	0.37	U	0.37	U	0.49	U	0.4	U	0.56	U	0.4	U
Vanadium, Total	--	--	--	24		13		17		28		26		28		22		38		52	
Zinc, Total	2480	10000	109	95		19		67		66		47		460		91		330		100	

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Table 9 - Metals in Soil - BCP Portion
470 Kent Avenue - Brooklyn, NY
BCP#C224053

SAMPLE ID:	NY-RESGW	NY-RESRR	NY-UNRES	BSB-15 (18-20)		BSB-15 (21-22)		BSB-16 (8-9)		BSB-16 (10-12)		BSB-17 (0-3)		BSB-17 (8-9)		BSB-17 (14-15)		BSB-17 (18-20)		BMW1 (12-14)	
LAB ID:				L1523673-09		L1523673-01		L1523673-07		L1523673-13		L1523673-06		L1523673-15		L1523673-05		L1523673-16		L1524836-03	
COLLECTION DATE:				9/22/2015		9/22/2015		9/22/2015		9/22/2015		9/22/2015		9/22/2015		9/22/2015		9/22/2015		9/30/2015	
Total Metals Units: mg/kg				Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q
Aluminum, Total	--	--	--	15000		15000		9200		8400		9100		4100		3000		18000		6500	
Antimony, Total	--	--	--	1.2	J	1.1	U	0.7	U	0.76	U	0.98	J	0.76	J	0.95	J	1.2	U	0.81	U
Arsenic, Total	16	16	13	12		14		4.5		2.8		8.1		15		12		9.8		6	
Barium, Total	820	400	350	100		86		54		51		370		90		24		80		53	
Beryllium, Total	47	72	7.2	0.69		0.68		0.39	J	0.32	J	0.36	J	0.15	J	0.17	J	0.83		0.33	J
Cadmium, Total	7.5	4.3	2.5	0.09	U	0.1	U	0.06	U	0.07	U	0.06	U	0.06	U	0.07	U	0.1	U	0.07	U
Calcium, Total	--	--	--	6000		21000		980		760		42000		64000		1200		2600		720	
Chromium, Total	--	--	--	44		40		17		17		21		31		8.4		29		20	
Cobalt, Total	--	--	--	9.6		9.7		7.2		5		5.9		8.2		5.8		11		7.2	
Copper, Total	1720	270	50	82		47		26		24		32		59		24		44		15	
Iron, Total	--	--	--	29000		26000		15000		13000		14000		29000		29000		35000		26000	
Lead, Total	450	400	63	260		130		78		59		370		130		44		110		0.2	U
Magnesium, Total	--	--	--	6200		6600		3100		3000		3600		37000		1200		6600		2500	
Manganese, Total	2000	2000	1600	460		370		300		100		220		540		160		390		270	
Mercury, Total	0.73	0.81	0.18	3.8		1.6		0.16		0.4		0.32		1.3		0.3		0.87		0.03	J
Nickel, Total	130	310	30	24		23		30		26		22		26		12		26		15	
Potassium, Total	--	--	--	2800		2600		1200		1200		1200		1200		530		3000		1400	
Selenium, Total	4	180	3.9	0.44	J	0.41	J	0.26	U	0.28	U	0.74	J	1.2	J	0.44	J	0.82	J	0.3	U
Silver, Total	8.3	180	2	0.33	J	0.27	U	0.18	U	0.19	U	0.17	U	0.18	U	0.21	U	0.3	U	0.2	U
Sodium, Total	--	--	--	5000		5400		1600		2300		580		1200		2900		3300		180	J
Thallium, Total	--	--	--	0.53	U	0.54	U	0.35	U	0.38	U	0.34	U	0.36	U	0.42	U	0.59	U	0.4	U
Vanadium, Total	--	--	--	34		31		25		29		20		33		13		42		30	
Zinc, Total	2480	10000	109	180		120		67		53		240		100		36		120		42	

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470 Kent Avenue - Brooklyn, NY
BCP#C224053

SAMPLE ID:	NY-RESGW	NY-RESRR	NY-UNRES	BMW1 (14-15)		BMW2 (7-9)		BMW2 (11-13)		BMW3 (8-10)		BMW3 (14-15)		BMW-4 (11-14)		BMW-4 (14-15)		BMW-5 (9-11)		BMW-5 (16-17)	
LAB ID:				L1524836-04		L1524836-05		L1524836-06		L1524836-07		L1524836-08		L1529203-01		L1529203-02		L1529203-03		L1529203-04	
COLLECTION DATE:				9/30/2015		10/1/2015		10/1/2015		10/1/2015		10/1/2015		11/9/2015		11/9/2015		11/9/2015		11/9/2015	
Total Metals Units: mg/kg				Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q
Aluminum, Total	--	--	--	4800		4600		4400		830		8100		2200		4600		4400		8500	
Antimony, Total	--	--	--	0.73	U	3.7	U	0.69	U	0.76	U	1.8	J	0.93	J	0.76	U	8.8		0.87	U
Arsenic, Total	16	16	13	4.5		24		4		7		16		17		9.9		18		9.7	
Barium, Total	820	400	350	39		180		29		16		39		78		24		64		44	
Beryllium, Total	47	72	7.2	0.24	J	0.46	U	0.24	J	0.11	J	0.38	J	0.3	J	0.26	J	0.22	J	0.41	J
Cadmium, Total	7.5	4.3	2.5	0.06	U	2.1	J	0.06	U	0.07	U	0.07	U	0.07	U	0.07	U	0.1	U	0.08	U
Calcium, Total	--	--	--	430		18000		550		1600		910		1400		22000		37000		1500	
Chromium, Total	--	--	--	20		27		13		3.9		18		13		24		31		21	
Cobalt, Total	--	--	--	6.6		5.6	J	4.1		3.6		6.9		1.9	J	4		2.4	J	9.5	
Copper, Total	1720	270	50	10		270		13		20		58		76		36		55		23	
Iron, Total	--	--	--	21000		49000		13000		3300		17000		7100		21000		9800		21000	
Lead, Total	450	400	63	0.18	U	1000		0.17	U	150		250		320		31		130		20	
Magnesium, Total	--	--	--	2100		5000		2100		280		2300		560		1800		8700		3700	
Manganese, Total	2000	2000	1600	200		340		210		38		82		19		240		130		320	
Mercury, Total	0.73	0.81	0.18	0.03	J	0.63		0.02	J	0.24		0.47		0.26		0.12		4.4		0.09	
Nickel, Total	130	310	30	14		8.4	J	10		11		20		6.4		8.3		9		21	
Potassium, Total	--	--	--	1400		520	J	780		140	J	930		250		620		660		2000	
Selenium, Total	4	180	3.9	0.27	U	1.4	U	0.26	U	0.39	J	0.31	U	1.9	J	0.28	U	0.46	J	0.32	U
Silver, Total	8.3	180	2	0.18	U	0.92	U	0.17	U	0.19	U	0.21	U	0.2	U	0.19	U	0.3	U	0.22	U
Sodium, Total	--	--	--	160	J	550	J	110	J	600		170	J	1200		260		2200		2100	
Thallium, Total	--	--	--	0.37	U	1.8	U	0.34	U	0.38	U	0.42	U	0.4	U	0.38	U	0.6	U	0.43	U
Vanadium, Total	--	--	--	26		11		19		6.9		27		8.2		28		12		27	
Zinc, Total	2480	10000	109	32		1700		22		53		120		24		78		92		63	

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NY-UNRES: New York NYCRR Part 375 New York Unrestricted use Criteria Criteria per 6 NYCRR Part 375 Environmental Remediation Programs, effective December 14, 2006.
Cells highlighted in yellow indicate a concentration above the NY-RESGW
Cells highlighted in blue indicate a concentration above the NY-RESRR
Cells highlighted in red indicate a concentration aboe the NY-UNRES
Q = Laboratory Data Qualifier
MDL = Maximum Detection Limit
For U qualified entries, the MDL is shown
U = Not detected at or above the MDL
J = The concentration is estimated
DUP = Designation for duplicate sample
All results and MDLs are shown in milligrams per kilogram (mg/kg)

Table 9 - Metals in Soil - BCP Portion
470 Kent Avenue - Brooklyn, NY
BCP#C224053

SAMPLE ID:	NY-RESGW	NY-RESRR	NY-UNRES	BMW-6 (21-23)		BMW-6 (21-23) DUP		BMW-6 (24-24.5)		BMW7 (15-16)		BMW7 (16-17)	
LAB ID:				L1529203-08		L1529203-09		L1529203-06		L1524836-10		L1524836-09	
COLLECTION DATE:				11/9/2015		11/9/2015		11/9/2015		10/1/2015		10/1/2015	
Total Metals Units: mg/kg				Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q
Aluminum, Total	--	--	--	13000		15000		16000		4800		9700	
Antimony, Total	--	--	--	1.2	U	1.3	U	1	U	1.4	J	2.8	J
Arsenic, Total	16	16	13	17		18		20		6.8		16	
Barium, Total	820	400	350	96		82		61		53		110	
Beryllium, Total	47	72	7.2	0.68	J	0.77	J	0.8		0.16	J	0.32	J
Cadmium, Total	7.5	4.3	2.5	0.1	U	0.12	U	0.09	U	0.07	U	0.45	J
Calcium, Total	--	--	--	2700		2600		5800		6300		5000	
Chromium, Total	--	--	--	27		28		29		24		52	
Cobalt, Total	--	--	--	9.7		12		11		5.1		5.8	
Copper, Total	1720	270	50	56		52		56		42		84	
Iron, Total	--	--	--	26000		29000		32000		13000		22000	
Lead, Total	450	400	63	210		170		140		80		90	
Magnesium, Total	--	--	--	5400		6200		6300		4800		4900	
Manganese, Total	2000	2000	1600	280		310		410		110		260	
Mercury, Total	0.73	0.81	0.18	0.98		1		2		1.3		6.7	
Nickel, Total	130	310	30	23		27		27		13		19	
Potassium, Total	--	--	--	2800		3100		2800		2200		3800	
Selenium, Total	4	180	3.9	0.54	J	0.5	J	0.4	U	0.3	U	0.32	U
Silver, Total	8.3	180	2	0.32	J	0.34	U	0.26	U	0.3	J	0.92	J
Sodium, Total	--	--	--	5900		6500		5100		1200		2200	
Thallium, Total	--	--	--	0.59	U	0.67	U	0.53	U	0.4	U	0.42	U
Vanadium, Total	--	--	--	33		33		35		20		36	
Zinc, Total	2480	10000	109	120		120		120		82		180	

Notes:
NY-RESGW: New York NYCRR Part 375 Groundwater Criteria, New York Restricted use Criteria per 6 NYCRR Part 375 Environmental Remediation Programs, effective December 14, 2006.
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DUP = Designation for duplicate sample
All results and MDLs are shown in milligrams per kilogram (mg/kg)

Table 9A - Metals In Soil - Former MGP
470 Kent Avenue, Brooklyn, NY
BCP#C224053

SAMPLE ID:				PWSB-37 (15-17)		PWSB-37 (15-17) DUP		PWSB-37 (28-30)		PWSB-38 (13-15)		PWSB-38 (25-27)		B-17 (19-21)		B-17 (47-49)	
LAB ID:				L2034532-11		L2034532-12		L2034532-13		L2034532-14		L2034532-15		L2033216-01		L2033512-01	
COLLECTION DATE:	NY-RESGW	NY-RESRR	NY-UNRES	8/23/2020		8/23/2020		8/23/2020		8/23/2020		8/23/2020		8/14/2020		8/17/2020	
Total Metals Units: mg/kg				Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q
Aluminum, Total	--	--	--	11900		15800		1440		5920		8390		13500		2130	
Antimony, Total	--	--	--	0.485	U	0.498	U	0.321	U	0.322	U	0.376	U	0.757	J	0.364	U
Arsenic, Total	16	16	13	6.44		14		0.853		4.74		1.86		19.6		0.824	J
Barium, Total	820	400	350	38.3		52.1		5.3		40		48.7		75.7		21.9	
Beryllium, Total	47	72	7.2	0.128	J	0.354	J	0.028	U	0.028	U	0.033	U	0.741	J	0.124	J
Cadmium, Total	7.5	4.3	2.5	0.677	J	0.866	J	0.085	J	0.331	J	0.682	J	0.154	U	0.094	U
Calcium, Total	--	--	--	3320		1720		1970		47000		3450		3980		5950	
Chromium, Total	--	--	--	22.5		29.3		2.17		19.8		23.2		33.4		5.95	
Cobalt, Total	--	--	--	9.5		12.6		1.06	J	4.34		7.83		10.7		2.62	
Copper, Total	1720	270	50	22		28.1		2.2		16		15.1		58.6		6.64	
Iron, Total	--	--	--	25700		34900		3000		13000		27300		29900		8740	
Lead, Total	450	400	63	72.4		85.1		4.26		6.16		12		167		2.3	J
Magnesium, Total	--	--	--	4920		6050		863		2470		2400		6450		2360	
Manganese, Total	2000	2000	1600	304		401		65.9		169		448		563		190	
Mercury, Total	0.73	0.81	0.18	0.238		0.305		0.046	U	0.045	U	0.066	J	3.51		0.05	U
Nickel, Total	130	310	30	19.2		24.9		1.61	J	8.76		13.4		24.8		5.39	
Potassium, Total	--	--	--	2480		3110		482		1260		1410		2770		331	
Selenium, Total	4	180	3.9	0.329	U	0.338	U	0.218	U	0.219	U	0.255	U	0.407	U	0.247	U
Silver, Total	8.3	180	2	0.361	U	0.371	U	0.239	U	0.24	U	0.28	U	0.473	J	0.271	U
Sodium, Total	--	--	--	3740		4890		665		642		360		4770		110	J
Thallium, Total	--	--	--	0.402	U	0.413	U	0.266	U	0.267	U	0.311	U	0.497	U	0.302	U
Vanadium, Total	--	--	--	31.9		42.9		3.64		21.9		37.7		31.8		8.17	
Zinc, Total	2480	10000	109	67.4		83.4		7.26		27		35.7		138		12	

Notes:
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Table 9A - Metals In Soil - Former MGP
470 Kent Avenue, Brooklyn, NY
BCP#C224053

SAMPLE ID:				B-18 (37-39')		B-18 (39-41')		B-19(5-7)		PWSB-44 (13-15)		PWSB-43 (13-15)		PWSB-44 (15-17)		PWSB-45(8-10)		PWSB-45(28-30)	
LAB ID:				L2032144-01		L2032144-02		L2031428-01		L2152245-01		L2152245-03		L2152245-02		L2152499-01		L2152499-02	
COLLECTION DATE:	NY-RESGW	NY-RESRR	NY-UNRES	8/7/2020		8/7/2020		7/30/2020		9/27/2021		9/27/2021		9/27/2021		9/28/2021		9/28/2021	
Total Metals Units: mg/kg				Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q
Aluminum, Total	--	--	--	2460		1870		6780		9600		7350		7450		7190		2380	
Antimony, Total	--	--	--	0.348	U	0.34	U	0.353	U	0.362	J	0.345	U	0.361	U	0.34	U	0.362	U
Arsenic, Total	16	16	13	1.02		0.358	J	4.9		4.45		1.85		2.41		3.08		0.657	J
Barium, Total	820	400	350	15.3		13		37.7		36.7		40.4		31.1		35.3		18.8	
Beryllium, Total	47	72	7.2	0.156	J	0.116	J	0.325	J	0.317	J	0.427	J	0.352	J	0.429	J	0.133	J
Cadmium, Total	7.5	4.3	2.5	0.09	U	0.088	U	0.214	J	0.281	J	0.309	J	0.238	J	0.34	J	0.093	U
Calcium, Total	--	--	--	711		577		19200		679		856		552		2560		401	
Chromium, Total	--	--	--	7.27		5.57		11.4		15.4		20		12.2		19.6		6.34	
Cobalt, Total	--	--	--	2.96		2.5		4.41		5.68		6.92		5.88		6.82		2.7	
Copper, Total	1720	270	50	8.34		8.48		12.6		9.17		15		9.32		17.4		6.02	
Iron, Total	--	--	--	8490		5950		13000		19400		19900		15100		20900		6220	
Lead, Total	450	400	63	8.14		2.7	J	147		9.54		14.8		9.74		14.9		2.29	J
Magnesium, Total	--	--	--	1410		1120		6850		2060		2270		2350		2330		1220	
Manganese, Total	2000	2000	1600	125		85.1		316		354		238		288		353		59.4	
Mercury, Total	0.73	0.81	0.18	0.053	U	0.055	U	0.049	U	0.048	U	0.047	U	0.052	U	0.061	U	0.051	U
Nickel, Total	130	310	30	6.31		5.11		7.7		10.9		11.5		12.4		12.2		5.8	
Potassium, Total	--	--	--	329		425		914		555		1120		435		1010		410	
Selenium, Total	4	180	3.9	0.236	U	0.231	U	0.446	J	0.234	U	0.234	U	0.245	U	0.23	U	0.246	U
Silver, Total	8.3	180	2	0.259	U	0.253	U	0.263	U	0.256	U	0.257	U	0.269	U	0.253	U	0.269	U
Sodium, Total	--	--	--	132	J	106	J	1200		190		1060		109	J	121	J	108	J
Thallium, Total	--	--	--	0.288	U	0.282	U	0.292	U	0.286	U	0.286	U	0.299	U	0.281	U	0.3	U
Vanadium, Total	--	--	--	8.57		7.84		22.1		23.2		32.9		16.2		31.7		7.83	
Zinc, Total	2480	10000	109	16.6		10.6		24.9		31.9		36.2		35.2		30.4		12.3	

Notes:
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DUP = Designation for duplicate sample
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Table 10 - PFAAs in Soil - BCP Portion
470 Kent Avenue - Brooklyn, NY
BCP#C224053

SAMPLE ID:	NY-PGW	NY-RESRR	NY-UNRES	BSB-10 (0-2)		BSB-10 (8-10)		BSB-12 (10.5-12)	
LAB ID:				L2034532-01		L2034532-02		L2034532-05	
COLLECTION DATE:				8/23/2020		8/23/2020		8/23/2020	
Perfluorinated Alkyl Acids (PFAAs) Units: mg/kg				Conc	Q	Conc	Q	Conc	Q
Perfluorobutanoic Acid (PFBA)	--	--	--	0.000023	U	0.000023	U	0.000026	U
Perfluoropentanoic Acid (PFPeA)	--	--	--	0.000046	U	0.000047	U	0.000053	U
Perfluorobutanesulfonic Acid (PFBS)	--	--	--	0.000039	U	0.00004	U	0.000045	U
Perfluorohexanoic Acid (PFHxA)	--	--	--	0.000052	U	0.000054	U	0.00006	U
Perfluoroheptanoic Acid (PFHpA)	--	--	--	0.000045	U	0.000046	U	0.000052	U
Perfluorohexanesulfonic Acid (PFHxS)	--	--	--	0.00006	U	0.000062	U	0.00007	U
Perfluorooctanoic Acid (PFOA)	0.0011	0.033	0.00066	0.000042	U	0.000043	U	0.000048	U
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	--	--	--	0.000178	U	0.000184	U	0.000206	U
Perfluoroheptanesulfonic Acid (PFHpS)	--	--	--	0.000135	U	0.00014	U	0.000157	U
Perfluorononanoic Acid (PFNA)	--	--	--	0.000074	U	0.000077	U	0.000086	U
Perfluorooctanesulfonic Acid (PFOS)	0.0037	0.044	0.00088	0.000129	U	0.000133	U	0.00015	U
Perfluorodecanoic Acid (PFDA)	--	--	--	0.000066	U	0.000069	U	0.000077	U
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	--	--	--	0.000284	U	0.000294	U	0.00033	U
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	--	--	--	0.0002	U	0.000206	U	0.000232	U
Perfluoroundecanoic Acid (PFUnA)	--	--	--	0.000046	U	0.000048	U	0.000054	U
Perfluorodecanesulfonic Acid (PFDS)	--	--	--	0.000152	U	0.000157	U	0.000176	U
Perfluorooctanesulfonamide (FOSA)	--	--	--	0.000097	U	0.0001	U	0.000113	U
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	--	--	--	0.000084	U	0.000087	U	0.000097	U
Perfluorododecanoic Acid (PFDoA)	--	--	--	0.000069	U	0.000072	U	0.000081	U
Perfluorotridecanoic Acid (PFTrDA)	--	--	--	0.000203	U	0.000209	U	0.000235	U
Perfluorotetradecanoic Acid (PFTA)	--	--	--	0.000054	U	0.000055	U	0.000062	U
PFOA/PFOS, Total	--	--	--	0.000042	U	0.000043	U	0.000048	U

Notes:
NY-PGW: NYSDEC Protection of Groundwater Guidance Value for PFOA and PFOS, October 2020
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Table 10A - PFAAs in Soil - Former MGP
470 Kent Avenue - Brooklyn, NY
BCP#C224053

SAMPLE ID:	NY-PGW	NY-RESRR	NY-UNRES	PWSB-38 (13-15)		PWSB-38 (25-27)		PWSB-36 (5-7)		PWSB-36 (25-27)		PWSB-40 (2-4)		PWSB-40 (18-20)	
LAB ID:				L2034532-14		L2034532-15		L2034620-01		L2034620-02		L2034620-05		L2034620-06	
COLLECTION DATE:				8/23/2020		8/23/2020		8/24/2020		8/24/2020		8/24/2020		8/24/2020	
Perfluorinated Alkyl Acids (PFAAs) **Units: mg/kg**				Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q
Perfluorobutanoic Acid (PFBA)	--	--	--	0.000023	U	0.000026	U	0.000024	U	0.000024	U	0.000024	U	0.000024	U
Perfluoropentanoic Acid (PFPeA)	--	--	--	0.000048	U	0.000052	U	0.000049	U	0.000048	U	0.000049	U	0.000049	U
Perfluorobutanesulfonic Acid (PFBS)	--	--	--	0.00004	U	0.000044	U	0.000042	U	0.000041	U	0.000042	U	0.000041	U
Perfluorohexanoic Acid (PFHxA)	--	--	--	0.000056	J	0.000059	U	0.000056	U	0.000055	U	0.000056	U	0.000056	U
Perfluoroheptanoic Acid (PFHpA)	--	--	--	0.000047	U	0.000051	U	0.000048	U	0.000047	U	0.000048	U	0.000048	U
Perfluorohexanesulfonic Acid (PFHxS)	--	--	--	0.000063	U	0.000068	U	0.000065	U	0.000063	U	0.000065	U	0.000064	U
Perfluorooctanoic Acid (PFOA)	0.0011	0.033	0.00066	0.000043	U	0.000047	U	0.000045	U	0.000044	U	0.000045	U	0.000044	U
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	--	--	--	0.000185	U	0.000202	U	0.000192	U	0.000186	U	0.000192	U	0.00019	U
Perfluoroheptanesulfonic Acid (PFHpS)	--	--	--	0.000141	U	0.000153	U	0.000146	U	0.000142	U	0.000146	U	0.000144	U
Perfluorononanoic Acid (PFNA)	--	--	--	0.000078	U	0.000084	U	0.00008	U	0.000078	U	0.00008	U	0.000079	U
Perfluorooctanesulfonic Acid (PFOS)	0.0037	0.044	0.00088	0.000134	U	0.000146	U	0.000139	U	0.000135	U	0.000139	U	0.000138	U
Perfluorodecanoic Acid (PFDA)	--	--	--	0.000069	U	0.000075	U	0.000072	U	0.00007	U	0.000072	U	0.000071	U
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	--	--	--	0.000296	U	0.000322	U	0.000306	U	0.000298	U	0.000308	U	0.000304	U
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	--	--	--	0.000208	U	0.000226	U	0.000215	U	0.000209	U	0.000216	U	0.000213	U
Perfluoroundecanoic Acid (PFUnA)	--	--	--	0.000048	U	0.000053	U	0.00005	U	0.000049	U	0.00005	U	0.00005	U
Perfluorodecanesulfonic Acid (PFDS)	--	--	--	0.000158	U	0.000172	U	0.000163	U	0.000159	U	0.000164	U	0.000162	U
Perfluorooctanesulfonamide (FOSA)	--	--	--	0.000101	U	0.00011	U	0.000104	U	0.000102	U	0.000105	U	0.000104	U
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	--	--	--	0.000087	U	0.000095	U	0.00009	U	0.000088	U	0.000091	U	0.000089	U
Perfluorododecanoic Acid (PFDoA)	--	--	--	0.000072	U	0.000079	U	0.000075	U	0.000073	U	0.000075	U	0.000074	U
Perfluorotridecanoic Acid (PFTrDA)	--	--	--	0.000211	U	0.00023	U	0.000218	U	0.000212	U	0.000219	U	0.000216	U
Perfluorotetradecanoic Acid (PFTA)	--	--	--	0.000056	U	0.000061	U	0.000058	U	0.000056	U	0.000058	U	0.000057	U
PFOA/PFOS, Total	--	--	--	0.000043	U	0.000047	U	0.000045	U	0.000044	U	0.000045	U	0.000044	U

Notes:
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Table 10A - PFAAs in Soil - Former MGP
470 Kent Avenue - Brooklyn, NY
BCP#C224053

SAMPLE ID:	NY-PGW	NY-RESRR	NY-UNRES	PWSB-42 (5-7)		PWSB-42 (15-17)		B-17 (19-21)		B-17 (47-49)		B-18 (37-39')		B-18 (39-41')	
LAB ID:				L2034620-08		L2034620-09		L2033216-01		L2033512-01		L2032144-01		L2032144-02	
COLLECTION DATE:				8/24/2020		8/24/2020		8/14/2020		8/17/2020		8/7/2020		8/7/2020	
Perfluorinated Alkyl Acids (PFAAs) Units: mg/kg				Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q
Perfluorobutanoic Acid (PFBA)	--	--	--	0.000025	U	0.000024	U	0.000043	U	0.000025	U	0.000024	U	0.000025	U
Perfluoropentanoic Acid (PFPeA)	--	--	--	0.000152	J	0.000048	U	0.000087	U	0.000051	U	0.000048	U	0.000052	U
Perfluorobutanesulfonic Acid (PFBS)	--	--	--	0.000044	U	0.000041	U	0.000074	U	0.000043	U	0.000041	U	0.000044	U
Perfluorohexanoic Acid (PFHxA)	--	--	--	0.000185	JF	0.000055	U	0.0001	U	0.000058	U	0.000055	U	0.000059	U
Perfluoroheptanoic Acid (PFHpA)	--	--	--	0.000071	J	0.000048	U	0.000086	U	0.00005	U	0.000047	U	0.000051	U
Perfluorohexanesulfonic Acid (PFHxS)	--	--	--	0.000068	U	0.000064	U	0.000115	U	0.000067	U	0.000064	U	0.000068	U
Perfluorooctanoic Acid (PFOA)	0.0011	0.033	0.00066	0.000266	J	0.000044	U	0.000079	U	0.000047	U	0.000044	U	0.000047	U
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	--	--	--	0.000201	U	0.000189	U	0.00034	U	0.000199	U	0.000188	U	0.000201	U
Perfluoroheptanesulfonic Acid (PFHpS)	--	--	--	0.000153	U	0.000144	U	0.000259	U	0.000151	U	0.000143	U	0.000153	U
Perfluorononanoic Acid (PFNA)	--	--	--	0.000084	U	0.000079	U	0.000142	U	0.000083	U	0.000079	U	0.000084	U
Perfluorooctanesulfonic Acid (PFOS)	0.0037	0.044	0.00088	0.000429	J	0.000137	U	0.000246	U	0.000144	U	0.000136	U	0.000145	U
Perfluorodecanoic Acid (PFDA)	--	--	--	0.000131	J	0.000071	U	0.000127	U	0.000074	U	0.00007	U	0.000075	U
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	--	--	--	0.000322	U	0.000302	U	0.000544	U	0.000318	U	0.000301	U	0.000321	U
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	--	--	--	0.000226	U	0.000212	U	0.000382	U	0.000223	U	0.000212	U	0.000226	U
Perfluoroundecanoic Acid (PFUnA)	--	--	--	0.000136	J	0.000049	U	0.000089	U	0.000052	U	0.000049	U	0.000052	U
Perfluorodecanesulfonic Acid (PFDS)	--	--	--	0.000171	U	0.000161	U	0.00029	U	0.00017	U	0.000161	U	0.000171	U
Perfluorooctanesulfonamide (FOSA)	--	--	--	0.00011	U	0.000103	U	0.000186	U	0.000109	U	0.000103	U	0.00011	U
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	--	--	--	0.000095	U	0.000089	U	0.00016	U	0.000094	U	0.0001	JF	0.000095	U
Perfluorododecanoic Acid (PFDoA)	--	--	--	0.000078	U	0.000074	U	0.000133	U	0.000078	U	0.000074	U	0.000078	U
Perfluorotridecanoic Acid (PFTrDA)	--	--	--	0.000229	U	0.000215	U	0.000388	U	0.000227	U	0.000215	U	0.000229	U
Perfluorotetradecanoic Acid (PFTA)	--	--	--	0.000061	U	0.000057	U	0.000102	U	0.00006	U	0.000057	U	0.00006	U
PFOA/PFOS, Total	--	--	--	0.000695	J	0.000044	U	0.000079	U	0.000047	U	0.000044	U	0.000047	U

Notes:
NY-PGW: NYSDEC Protection of Groundwater Guidance Value for PFOA and PFOS, October 2020
NY-RESRR: NYSDEC Restricted Residential Use Guidance Value for PFOA and PFOS, October 2020
NY-UNRES: NYSDEC Unrestricted Use Guidance Value for PFOA and PFOS, October 2020
Q = Laboratory Data Qualifier
MDL = Maximum Detection Limit
For U qualified entries, the MDL is shown
U = Not detected at or above the MDL
All results and MDLs are shown in milligrams per kilogram (mg/kg)

Table 11 - VOCs in Groundwater - BCP Portion
470 Kent Avenue - Brooklyn, NY
BCP Site No.: C224053/224053

SAMPLE ID:	NY-AWQS	BMW-1		BMW-2		BMW-3		BMW-4		BMW-5		BMW-5DUP		BMW-6		BMW-7		FIELD BLANK		TRIP BLANK	
LAB ID:		L2133773-01		L1601714-01		L1601714-03		L1601874-01		L1601874-02		L1601874-03		L1601714-04		L1601714-02		L1601714-05		L1601714-06	
COLLECTION DATE:		6/22/2021		1/20/2016		1/20/2016		1/21/2016		1/21/2016		1/21/2016		1/20/2016		1/20/2016		1/20/2016		1/20/2016	
Volatile Organic Compounds Units: ug/l		Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q
Methylene chloride	5	0.7	U	0.7	U	0.7	U	0.7	U	28	U	28	U	0.7	U	0.7	U	0.7	U	0.7	U
1,1-Dichloroethane	5	0.7	U	0.7	U	0.7	U	0.7	U	28	U	28	U	0.7	U	0.7	U	0.7	U	0.7	U
Chloroform	7	0.7	U	0.7	U	0.7	U	0.7	U	28	U	28	U	0.7	U	0.7	U	0.7	U	0.7	U
Carbon tetrachloride	5	0.13	U	0.13	U	0.13	U	0.13	U	5.4	U	5.4	U	0.13	U	0.13	U	0.13	U	0.13	U
1,2-Dichloropropane	1	0.14	U	0.13	U	0.13	U	0.13	U	5.3	U	5.3	U	0.13	U	0.13	U	0.13	U	0.13	U
Dibromochloromethane	50	0.15	U	0.15	U	0.15	U	0.15	U	6	U	6	U	0.15	U	0.15	U	0.15	U	0.15	U
1,1,2-Trichloroethane	1	0.5	U	0.5	U	0.5	U	0.5	U	20	U	20	U	0.5	U	0.5	U	0.5	U	0.5	U
Tetrachloroethene	5	0.91		13		0.18	U	0.18	U	7.2	U	7.2	U	0.18	U	0.18	U	0.18	U	0.18	U
Chlorobenzene	5	0.7	U	0.7	U	0.7	U	0.7	U	28	U	28	U	0.7	U	0.7	U	0.7	U	0.7	U
Trichlorofluoromethane	5	0.7	U	0.7	U	0.7	U	0.7	U	28	U	28	U	0.7	U	0.7	U	0.7	U	0.7	U
1,2-Dichloroethane	0.6	0.13	U	0.13	U	0.13	U	0.3	J	5.3	U	5.3	U	0.13	U	0.13	U	0.13	U	0.13	U
1,1,1-Trichloroethane	5	0.7	U	0.7	U	0.7	U	0.7	U	28	U	28	U	0.7	U	0.7	U	0.7	U	0.7	U
Bromodichloromethane	50	0.19	U	0.19	U	0.19	U	0.19	U	7.7	U	7.7	U	0.19	U	0.19	U	0.19	U	0.19	U
trans-1,3-Dichloropropene	0.4	0.16	U	0.16	U	0.16	U	0.16	U	6.6	U	6.6	U	0.16	U	0.16	U	0.16	U	0.16	U
cis-1,3-Dichloropropene	0.4	0.14	U	0.14	U	0.14	U	0.14	U	5.8	U	5.8	U	0.14	U	0.14	U	0.14	U	0.14	U
1,3-Dichloropropene, Total	--	0.14	U	0.14	U	0.14	U	0.14	U	5.8	U	5.8	U	0.14	U	0.14	U	0.14	U	0.14	U
1,1-Dichloropropene	5	0.7	U	0.7	U	0.7	U	0.7	U	28	U	28	U	0.7	U	0.7	U	0.7	U	0.7	U
Bromoform	50	0.65	U	0.65	U	0.65	U	0.65	U	26	U	26	U	0.65	U	0.65	U	0.65	U	0.65	U
1,1,2,2-Tetrachloroethane	5	0.17	U	0.14	U	0.14	U	0.14	U	5.8	U	5.8	U	0.14	U	0.14	U	0.14	U	0.14	U
Benzene	1	0.16	U	0.16	U	0.16	U	2.5		110		97		22		0.16	U	0.16	U	0.16	U
Toluene	5	0.7	U	0.7	U	0.7	U	0.7	U	28	U	28	U	1.7	J	0.7	U	0.7	U	0.7	U
Ethylbenzene	5	0.7	U	0.7	U	0.7	U	0.7	U	35	J	31	J	5		0.7	U	0.7	U	0.7	U
Chloromethane	--	0.7	U	0.7	U	0.7	U	0.7	U	28	U	28	U	0.7	U	0.7	U	0.7	U	0.7	U
Bromomethane	5	0.7	U	0.7	U	0.7	U	0.7	U	28	U	28	U	0.7	U	0.7	U	0.7	U	0.7	U
Vinyl chloride	2	0.07	U	0.37	J	38		0.07	U	2.8	U	2.8	U	0.07	U	0.07	U	0.07	U	0.07	U
Chloroethane	5	0.7	U	0.7	U	0.7	U	0.7	U	28	U	28	U	0.7	U	0.7	U	0.7	U	0.7	U
1,1-Dichloroethene	5	0.17	U	0.14	U	0.14	U	0.14	U	5.7	U	5.7	U	0.14	U	0.14	U	0.14	U	0.14	U
trans-1,2-Dichloroethene	5	0.7	U	1.8	J	0.7	U	0.7	U	28	U	28	U	0.7	U	0.7	U	0.7	U	0.7	U
Trichloroethene	5	0.18	U	15		0.18	U	0.51		7	U	7	U	0.18	U	0.18	U	0.18	U	0.18	U
1,2-Dichlorobenzene	3	0.7	U	0.7	U	0.7	U	0.7	U	28	U	28	U	0.7	U	0.7	U	0.7	U	0.7	U
1,3-Dichlorobenzene	3	0.7	U	0.7	U	0.7	U	0.7	U	28	U	28	U	0.7	U	0.7	U	0.7	U	0.7	U
1,4-Dichlorobenzene	3	0.7	U	0.7	U	0.7	U	0.7	U	28	U	28	U	0.7	U	0.7	U	0.7	U	0.7	U
Methyl tert butyl ether	10	0.7	U	0.7	U	0.7	U	0.7	U	28	U	28	U	0.7	U	0.7	U	0.7	U	0.7	U
p/m-Xylene	5	0.7	U	0.7	U	0.7	U	0.7	U	57	J	51	J	4.3		0.7	U	0.7	U	0.7	U
o-Xylene	5	0.7	U	0.7	U	0.7	U	0.7	U	56	J	48	J	2.6		0.7	U	0.7	U	0.7	U
Xylenes, Total	--	0.7	U	0.7	U	0.7	U	0.7	U	110	J	99	J	6.9		0.7	U	0.7	U	0.7	U
cis-1,2-Dichloroethene	5	0.7	U	8.7		9.9		0.7	U	28	U	28	U	0.7	U	0.7	U	0.7	U	0.7	U
1,2-Dichloroethene, Total	--	0.7	U	11	J	9.9		0.7	U	28	U	28	U	0.7	U	0.7	U	0.7	U	0.7	U
Dibromomethane	5	1	U	1	U	1	U	1	U	40	U	40	U	1	U	1	U	1	U	1	U
1,2,3-Trichloropropane	0.04	0.7	U	0.7	U	0.7	U	0.7	U	28	U	28	U	0.7	U	0.7	U	0.7	U	0.7	U
Acrylonitrile	5	1.5	U	1.5	U	1.5	U	1.5	U	60	U	60	U	1.5	U	1.5	U	1.5	U	1.5	U
Styrene	5	0.7	U	0.7	U	0.7	U	0.7	U	28	U	28	U	0.7	U	0.7	U	0.7	U	0.7	U
Dichlorodifluoromethane	5	1	U	1	U	1	U	1	U	40	U	40	U	1	U	1	U	1	U	1	U
Acetone	50	1.5	U	1.5	U	1.5	U	2.5	J	58	U	58	U	2.3	J	2.1	J	2.5	J	2.1	J
Carbon disulfide	60	1	U	1	U	1	U	1	U	40	U	40	U	1	U	1	U	1	U	1	U
2-Butanone	50	1.9	U	1.9	U	1.9	U	1.9	U	78	U	78	U	1.9	U	1.9	U	1.9	U	1.9	U
Vinyl acetate	--	1	U	1	U	1	U	1	U	40	U	40	U	1	U	1	U	1	U	1	U
4-Methyl-2-pentanone	--	1	U	1	U	1	U	1	U	40	U	40	U	1	U	1	U	1	U	1	U
2-Hexanone	50	1	U	1	U	1	U	1	U	40	U	40	U	1	U	1	U	1	U	1	U
Bromochloromethane	5	0.7	U	0.7	U	0.7	U	0.7	U	28	U	28	U	0.7	U	0.7	U	0.7	U	0.7	U
2,2-Dichloropropane	5	0.7	U	0.7	U	0.7	U	0.7	U	28	U	28	U	0.7	U	0.7	U	0.7	U	0.7	U
1,2-Dibromoethane	0.0006	0.65	U	0.65	U	0.65	U	0.65	U	26	U	26	U	0.65	U	0.65	U	0.65	U	0.65	U
1,3-Dichloropropane	5	0.7	U	0.7	U	0.7	U	0.7	U	28	U	28	U	0.7	U	0.7	U	0.7	U	0.7	U
1,1,1,2-Tetrachloroethane	5	0.7	U	0.7	U	0.7	U	0.7	U	28	U	28	U	0.7	U	0.7	U	0.7	U	0.7	U
Bromobenzene	5	0.7	U	0.7	U	0.7	U	0.7	U	28	U	28	U	0.7	U	0.7	U	0.7	U	0.7	U
n-Butylbenzene	5	0.7	U	0.7	U	0.7	U	0.7	U	28	U	28	U	0.7	U	0.7	U	0.7	U	0.7	U
sec-Butylbenzene	5	0.7	U	0.7	U	0.7	U	0.7	U	28	U	28	U	0.7	U	0.7	U	0.7	U	0.7	U
tert-Butylbenzene	5	0.7	U	0.7	U	0.7	U	0.7	U	28	U	28	U	0.7	U	0.7	U	0.7	U	0.7	U
o-Chlorotoluene	5	0.7	U	0.7	U	0.7	U	0.7	U	28	U	28	U	0.7	U	0.7	U	0.7	U	0.7	U
p-Chlorotoluene	5	0.7	U	0.7	U	0.7	U	0.7	U	28	U	28	U	0.7	U	0.7	U	0.7	U	0.7	U
1,2-Dibromo-3-chloropropane	0.04	0.7	U	0.7	U	0.7	U	0.7	U	28	U	28	U	0.7	U	0.7	U	0.7	U	0.7	U
Hexachlorobutadiene	0.5	0.7	U	0.7	U	0.7	U	0.7	U	28	U	28	U	0.7	U	0.7	U	0.7	U	0.7	U
Isopropylbenzene	5	0.7	U	0.7	U	0.7	U	3.8		28	U	28	U	0.7	U	0.7	U	0.7	U	0.7	U
p-Isopropyltoluene	5	0.7	U	0.7	U	0.7	U	0.7	U	28	U	28	U	0.7	U	0.7	U	0.7	U	0.7	U
Naphthalene	10	0.7	U	4.2		0.7	U	4.8		2300		2000		54		0.7	U	0.7	U	0.7	U
n-Propylbenzene	5	0.7	U	0.7	U	0.7	U	6.6		28	U	28	U	0.7	U	0.7	U	0.7	U	0.7	U
1,2,3-Trichlorobenzene	5	0.7	U	0.7	U	0.7	U	0.7	U	28	U	28	U	0.7	U	0.7	U	0.7	U	0.7	U
1,2,4-Trichlorobenzene	5	0.7	U	0.7	U	0.7	U	0.7	U	28	U	28	U	0.7	U	0.7	U	0.7	U	0.7	U
1,3,5-Trimethylbenzene	5	0.7	U	0.7	U	0.7	U	0.7	U	28	U	28	U	0.7	U	0.7	U	0.7	U	0.7	U
1,2,4-Trimethylbenzene	5	0.7	U	0.7	U	0.7	U	0.7	U	41	J	38	J	0.8	J	0.7	U	0.7	U	0.7	U
1,4-Dioxane	--	61	U	41	U	41	U	41	U	1600	U	1600	U	41	U	41	U	41	U	41	U
p-Diethylbenzene	--	0.7	U	0.7	U	0.7	U	0.7	U	28	U	28	U	0.7	U	0.7	U	0.7	U	0.7	U
p-Ethyltoluene	--	0.7	U	0.7	U	0.7	U	0.7	U	28	U	28	U	0.7	U	0.7	U	0.7	U	0.7	U
1,2,4,5-Tetramethylbenzene	5	0.54	U	0.65	U	0.65	U	4.9		26	U	26	U	0.65	U	0.65	U	0.65	U	0.65	U
Ethyl ether	--	0.7	U	0.7	U	0.7	U	0.7	U	28	U	28	U	0.7	U	0.7	U	0.7	U	0.7	U
trans-1,4-Dichloro-2-butene	5	0.7	U	0.7	U	0.7	U	0.7	U	28	U	28	U	0.7	U	0.7	U	0.7	U	0.7	U

Notes:
NY-AWQS: New York TOGS 111 Ambient Water Quality Standards criteria reflects all addendum to criteria through June 2004.
Q - Laboratory Qualifier
U - The MDL is shown
F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
J - Estimated value
ug/l - Micrograms per liter

Table 11 - VOCs in Groundwater - Former MGP
470 Kent Avenue - Brooklyn, NY
BCP Site No.: C224053/224053

SAMPLE ID:	NY-AWQS	PWSB-36		PWSB-39		PWSB-39DUP		MW-9		PMW-04		MW-11		FIELDBLANK_20200911		TRIP BLANK	
LAB ID:		L2037551-01		L2037551-02		L2037551-03		L2037551-04		L2037953-03		L2037953-04		L2037953-05		L2037551-07	
COLLECTION DATE:		9/10/2020		9/10/2020		9/10/2020		9/10/2020		9/11/2020		9/11/2020		9/11/2020		9/10/2020	
VOLATILE ORGANICS Units: ug/l		Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q
Methylene chloride	5	0.7	U	0.7	U	0.7	U	0.7	U	14	U	1.8	U	0.7	U	0.7	U
1,1-Dichloroethane	5	0.7	U	0.7	U	0.7	U	0.7	U	14	U	1.8	U	0.7	U	0.7	U
Chloroform	7	0.7	U	0.7	U	0.7	U	0.7	U	14	U	1.8	U	0.7	U	0.7	U
Carbon tetrachloride	5	0.13	U	0.13	U	0.13	U	0.13	U	2.7	U	0.34	U	0.13	U	0.13	U
1,2-Dichloropropane	1	0.14	U	0.14	U	0.14	U	0.14	U	2.7	U	0.34	U	0.14	U	0.14	U
Dibromochloromethane	50	0.15	U	0.15	U	0.15	U	0.15	U	3	U	0.37	U	0.15	U	0.15	U
1,1,2-Trichloroethane	1	0.5	U	0.5	U	0.5	U	0.5	U	10	U	1.2	U	0.5	U	0.5	U
Tetrachloroethene	5	0.18	U	0.18	U	0.18	U	0.18	U	3.6	U	0.45	U	0.18	U	0.18	U
Chlorobenzene	5	0.7	U	0.7	U	0.7	U	0.7	U	14	U	1.8	U	0.7	U	0.7	U
Trichlorofluoromethane	5	0.7	U	0.7	U	0.7	U	0.7	U	14	U	1.8	U	0.7	U	0.7	U
1,2-Dichloroethane	0.6	0.13	U	0.13	U	0.13	U	0.13	U	2.6	U	0.33	U	0.13	U	0.13	U
1,1,1-Trichloroethane	5	0.7	U	0.7	U	0.7	U	0.7	U	14	U	1.8	U	0.7	U	0.7	U
Bromodichloromethane	50	0.19	U	0.19	U	0.19	U	0.19	U	3.8	U	0.48	U	0.19	U	0.19	U
trans-1,3-Dichloropropene	0.4	0.16	U	0.16	U	0.16	U	0.16	U	3.3	U	0.41	U	0.16	U	0.16	U
cis-1,3-Dichloropropene	0.4	0.14	U	0.14	U	0.14	U	0.14	U	2.9	U	0.36	U	0.14	U	0.14	U
1,3-Dichloropropene, Total	--	0.14	U	0.14	U	0.14	U	0.14	U	2.9	U	0.36	U	0.14	U	0.14	U
1,1-Dichloropropene	5	0.7	U	0.7	U	0.7	U	0.7	U	14	U	1.8	U	0.7	U	0.7	U
Bromoform	50	0.65	U	0.65	U	0.65	U	0.65	U	13	U	1.6	U	0.65	U	0.65	U
1,1,2,2-Tetrachloroethane	5	0.17	U	0.17	U	0.17	U	0.17	U	3.3	U	0.42	U	0.17	U	0.17	U
Benzene	1	0.76		0.16	U	0.16	U	0.16	U	2500		410		0.16	U	0.16	U
Toluene	5	0.7	U	0.7	U	0.7	U	0.7	U	140		33		0.7	U	0.7	U
Ethylbenzene	5	0.7	U	0.7	U	0.7	U	0.7	U	490		100		0.7	U	0.7	U
Chloromethane	--	0.7	U	0.7	U	0.7	U	0.7	U	14	U	1.8	U	0.7	U	0.7	U
Bromomethane	5	0.7	U	0.7	U	0.7	U	0.7	U	14	U	1.8	U	0.7	U	0.7	U
Vinyl chloride	2	6.1		0.07	U	0.07	U	0.07	U	1.4	U	0.18	U	0.07	U	0.07	U
Chloroethane	5	0.7	U	0.7	U	0.7	U	0.7	U	14	U	1.8	U	0.7	U	0.7	U
1,1-Dichloroethene	5	0.17	U	0.17	U	0.17	U	0.17	U	3.4	U	0.42	U	0.17	U	0.17	U
trans-1,2-Dichloroethene	5	0.7	U	0.7	U	0.7	U	0.7	U	14	U	1.8	U	0.7	U	0.7	U
Trichloroethene	5	0.63		0.18	U	0.18	U	0.18	U	3.5	U	0.44	U	0.18	U	0.18	U
1,2-Dichlorobenzene	3	0.7	U	0.7	U	0.7	U	0.7	U	14	U	1.8	U	0.7	U	0.7	U
1,3-Dichlorobenzene	3	0.7	U	0.7	U	0.7	U	0.7	U	14	U	1.8	U	0.7	U	0.7	U
1,4-Dichlorobenzene	3	0.7	U	0.7	U	0.7	U	0.7	U	14	U	1.8	U	0.7	U	0.7	U
Methyl tert butyl ether	10	0.7	U	0.7	U	0.7	U	0.7	U	14	U	1.8	U	0.7	U	0.7	U
p/m-Xylene	5	0.7	U	0.7	U	0.7	U	0.7	U	1200		110		0.7	U	0.7	U
o-Xylene	5	0.7	U	0.7	U	0.7	U	0.7	U	380		77		0.7	U	0.7	U
Xylenes, Total	--	0.7	U	0.7	U	0.7	U	0.7	U	1600		190		0.7	U	0.7	U
cis-1,2-Dichloroethene	5	13		0.7	U	0.7	U	0.7	U	14	U	1.8	U	0.7	U	0.7	U
1,2-Dichloroethene, Total	--	13		0.7	U	0.7	U	0.7	U	14	U	1.8	U	0.7	U	0.7	U
Dibromomethane	5	1	U	1	U	1	U	1	U	20	U	2.5	U	1	U	1	U
1,2,3-Trichloropropane	0.04	0.7	U	0.7	U	0.7	U	0.7	U	14	U	1.8	U	0.7	U	0.7	U
Acrylonitrile	5	1.5	U	1.5	U	1.5	U	1.5	U	30	U	3.8	U	1.5	U	1.5	U
Styrene	5	0.7	U	0.7	U	0.7	U	0.7	U	14	U	1.8	U	0.7	U	0.7	U
Dichlorodifluoromethane	5	1	U	1	U	1	U	1	U	20	U	2.5	U	1	U	1	U
Acetone	50	1.5	U	2.2	J	2.5	J	1.5	U	29	U	3.6	U	1.6	J	1.5	U
Carbon disulfide	60	1	U	1	U	1	U	1	U	20	U	2.5	U	1	U	1	U
2-Butanone	50	1.9	U	1.9	U	1.9	U	1.9	U	39	U	4.8	U	1.9	U	1.9	U
Vinyl acetate	--	1	U	1	U	1	U	1	U	20	U	2.5	U	1	U	1	U
4-Methyl-2-pentanone	--	1	U	1	U	1	U	1	U	20	U	2.5	U	1	U	1	U
2-Hexanone	50	1	U	1	U	1	U	1	U	20	U	2.5	U	1	U	1	U
Bromochloromethane	5	0.7	U	0.7	U	0.7	U	0.7	U	14	U	1.8	U	0.7	U	0.7	U
2,2-Dichloropropane	5	0.7	U	0.7	U	0.7	U	0.7	U	14	U	1.8	U	0.7	U	0.7	U
1,2-Dibromoethane	0.0006	0.65	U	0.65	U	0.65	U	0.65	U	13	U	1.6	U	0.65	U	0.65	U
1,3-Dichloropropane	5	0.7	U	0.7	U	0.7	U	0.7	U	14	U	1.8	U	0.7	U	0.7	U
1,1,1,2-Tetrachloroethane	5	0.7	U	0.7	U	0.7	U	0.7	U	14	U	1.8	U	0.7	U	0.7	U
Bromobenzene	5	0.7	U	0.7	U	0.7	U	0.7	U	14	U	1.8	U	0.7	U	0.7	U
n-Butylbenzene	5	0.7	U	0.7	U	0.7	U	0.7	U	14	U	1.8	U	0.7	U	0.7	U
sec-Butylbenzene	5	0.7	U	0.7	U	0.7	U	0.7	U	14	U	1.8	U	0.7	U	0.7	U
tert-Butylbenzene	5	0.7	U	0.7	U	0.7	U	0.7	U	14	U	1.8	U	0.7	U	0.7	U
o-Chlorotoluene	5	0.7	U	0.7	U	0.7	U	0.7	U	14	U	1.8	U	0.7	U	0.7	U
p-Chlorotoluene	5	0.7	U	0.7	U	0.7	U	0.7	U	14	U	1.8	U	0.7	U	0.7	U
1,2-Dibromo-3-chloropropane	0.04	0.7	U	0.7	U	0.7	U	0.7	U	14	U	1.8	U	0.7	U	0.7	U
Hexachlorobutadiene	0.5	0.7	U	0.7	U	0.7	U	0.7	U	14	U	1.8	U	0.7	U	0.7	U
Isopropylbenzene	5	0.7	U	0.7	U	0.7	U	0.7	U	22	J	12		0.7	U	0.7	U
p-Isopropyltoluene	5	0.7	U	0.7	U	0.7	U	0.7	U	14	U	1.8	U	0.7	U	0.7	U
Naphthalene	10	0.7	U	0.7	U	0.7	U	0.7	U	160		920	E	0.7	U	0.7	U
n-Propylbenzene	5	0.7	U	0.7	U	0.7	U	0.7	U	62		3.9	J	0.7	U	0.7	U
1,2,3-Trichlorobenzene	5	0.7	U	0.7	U	0.7	U	0.7	U	14	U	1.8	U	0.7	U	0.7	U
1,2,4-Trichlorobenzene	5	0.7	U	0.7	U	0.7	U	0.7	U	14	U	1.8	U	0.7	U	0.7	U
1,3,5-Trimethylbenzene	5	0.7	U	0.7	U	0.7	U	0.7	U	83		9.2		0.7	U	0.7	U
1,2,4-Trimethylbenzene	5	0.7	U	0.7	U	0.7	U	0.7	U	370		46		0.7	U	0.7	U
1,4-Dioxane	--	61	U	61	U	61	U	61	U	1200	U	150	U	61	U	61	U
p-Diethylbenzene	--	0.7	U	0.7	U	0.7	U	0.7	U	40		1.8	U	0.7	U	0.7	U
p-Ethyltoluene	--	0.7	U	0.7	U	0.7	U	0.7	U	280		12		0.7	U	0.7	U
1,2,4,5-Tetramethylbenzene	5	0.54	U	0.54	U	0.54	U	0.54	U	26	J	3.4	J	0.54	U	0.54	U
Ethyl ether	--	0.7	U	0.7	U	0.7	U	0.7	U	14	U	1.8	U	0.7	U	0.7	U
trans-1,4-Dichloro-2-butene	5	0.7	U	0.7	U	0.7	U	0.7	U	14	U	1.8	U	0.7	U	0.7	U

Notes:
NY-AWQS: New York TOGS 111 Ambient Water Quality Standards criteria reflects all addendum to criteria through June 2004.
Q - Laboratory Qualifier
U - The MDL is shown
F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
J - Estimated value
ug/l - Micrograms per liter

Table 12 - SVOCs in Groundwater - BCP Portion
470 Kent Avenue - Brooklyn, NY
BCP Site No.: C224053/224053

SAMPLE ID:	NY-AWQS	BMW-1		BMW-2		BMW-3		BMW-4		BMW-5		BMW-5DUP		BMW-6		BMW-7		FIELD BLANK	
LAB ID:		L2133773-01		L1601714-01		L1601714-03		L1601874-01		L1601874-02		L1601874-03		L1601714-04		L1601714-02		L1601714-05	
COLLECTION DATE:		6/22/2021		1/20/2016		1/20/2016		1/21/2016		1/21/2016		1/21/2016		1/20/2016		1/20/2016		1/20/2016	
Semivolatile Organic Compounds Units: ug/l		Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q
Acenaphthene	20	0.01	U	0.68		0.04	U	0.04	U	9.8		8.5		2.2		0.04	U	0.04	U
1,2,4-Trichlorobenzene	5	0.5	U	0.66	U	0.66	U	0.66	U	0.66	U	0.66	U	0.66	U	0.66	U	0.66	U
Hexachlorobenzene	0.04	0.01	U	0.03	U	0.03	U	0.03	U	0.03	U	0.03	U	0.03	U	0.03	U	0.03	U
Bis(2-chloroethyl)ether	1	0.5	U	0.67	U	0.67	U	0.67	U	0.67	U	0.67	U	0.67	U	0.67	U	0.67	U
2-Chloronaphthalene	10	0.02	U	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U
1,2-Dichlorobenzene	3	0.45	U	0.73	U	0.73	U	0.73	U	0.73	U	0.73	U	0.73	U	0.73	U	0.73	U
1,3-Dichlorobenzene	3	0.4	U	0.73	U	0.73	U	0.73	U	0.73	U	0.73	U	0.73	U	0.73	U	0.73	U
1,4-Dichlorobenzene	3	0.43	U	0.71	U	0.71	U	0.71	U	0.71	U	0.71	U	0.71	U	0.71	U	0.71	U
3,3'-Dichlorobenzidine	5	1.6	U	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U
2,4-Dinitrotoluene	5	1.2	U	0.84	U	0.84	U	0.84	U	0.84	U	0.84	U	0.84	U	0.84	U	0.84	U
2,6-Dinitrotoluene	5	0.93	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U
Fluoranthene	50	0.02	J	5.9		0.1	J	0.04	U	3.7		3.1		2.3		0.1	J	0.04	U
4-Chlorophenyl phenyl ether	--	0.49	U	0.62	U	0.62	U	0.62	U	0.62	U	0.62	U	0.62	U	0.62	U	0.62	U
4-Bromophenyl phenyl ether	--	0.38	U	0.73	U	0.73	U	0.73	U	0.73	U	0.73	U	0.73	U	0.73	U	0.73	U
Bis(2-chloroisopropyl)ether	5	0.53	U	0.7	U	0.7	U	0.7	U	0.7	U	0.7	U	0.7	U	0.7	U	0.7	U
Bis(2-chloroethoxy)methane	5	0.5	U	0.63	U	0.63	U	0.63	U	0.63	U	0.63	U	0.63	U	0.63	U	0.63	U
Hexachlorobutadiene	0.5	0.05	U	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U	0.04	U
Hexachlorocyclopentadiene	5	0.69	U	7.8	U	7.8	U	7.8	U	7.8	U	7.8	U	7.8	U	7.8	U	7.8	U
Hexachloroethane	5	0.06	U	0.03	U	0.03	U	0.03	U	0.03	U	0.03	U	0.03	U	0.03	U	0.03	U
Isophorone	50	1.2	U	0.6	U	0.6	U	0.6	U	0.6	U	0.6	U	0.6	U	0.6	U	0.6	U
Naphthalene	10	0.05	U	0.43		0.04	U	3		1200		1200		15		0.04	U	0.04	U
Nitrobenzene	0.4	0.77	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U
NitrosoDiPhenylAmine(NDPA)/DPA	50	0.42	U	0.64	U	0.64	U	0.64	U	0.64	U	0.64	U	0.64	U	0.64	U	0.64	U
n-Nitrosodi-n-propylamine	--	0.64	U	0.7	U	0.7	U	0.7	U	0.7	U	0.7	U	0.7	U	0.7	U	0.7	U
Bis(2-Ethylhexyl)phthalate	5	1.5	U	2.9	J	0.91	U	0.91	U	0.91	U	2.3	J	0.91	U	0.91	U	0.91	U
Butyl benzyl phthalate	50	1.2	U	1.3	U	1.3	U	1.3	U	1.3	U	1.3	U	1.3	U	1.3	U	1.3	U
Di-n-butylphthalate	50	0.39	U	0.69	U	0.69	U	0.69	U	0.69	U	0.69	U	0.69	U	0.69	U	0.69	U
Di-n-octylphthalate	50	1.3	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U
Diethyl phthalate	50	0.38	U	0.63	U	0.63	U	0.63	U	0.63	U	0.63	U	0.63	U	0.63	U	0.63	U
Dimethyl phthalate	50	1.8	U	0.65	U	0.65	U	0.65	U	0.65	U	0.65	U	0.65	U	0.65	U	0.65	U
Benzo(a)anthracene	0.002	0.02	J	2.4		0.02	U	0.02	U	0.4		0.31		0.59		0.02	U	0.02	U
Benzo(a)pyrene	0	0.02	U	2.4		0.04	U	0.04	U	0.46		0.32		0.51		0.04	U	0.04	U
Benzo(b)fluoranthene	0.002	0.02	J	3.2		0.02	U	0.02	U	0.6		0.42		0.62		0.02	U	0.02	U
Benzo(k)fluoranthene	0.002	0.01	U	1.2		0.04	U	0.04	U	0.2		0.14	J	0.24		0.04	U	0.04	U
Chrysene	0.002	0.01	U	2.5		0.04	U	0.04	U	0.38		0.31		0.8		0.04	U	0.04	U
Acenaphthylene	--	0.01	U	0.31		0.04	U	0.04	U	20		19		1.5		0.04	U	0.04	U
Anthracene	50	0.01	U	0.96		0.04	U	0.04	U	4		4		3.3		0.04	U	0.04	U
Benzo(ghi)perylene	--	0.01	U	1.7		0.04	U	0.04	U	0.34		0.23		0.32		0.04	U	0.04	U
Fluorene	50	0.01	U	0.62		0.04	U	0.04	U	16		15		0.99		0.04	U	0.04	U
Phenanthrene	50	0.02	U	3.4		0.08	J	0.02	U	30		20		3.8		0.02	U	0.02	U
Dibenzo(a,h)anthracene	--	0.01	U	0.4		0.04	U	0.04	U	0.09	J	0.06	J	0.07	J	0.04	U	0.04	U
Indeno(1,2,3-cd)Pyrene	0.002	0.01	J	1.8		0.04	U	0.04	U	0.3		0.21		0.35		0.04	U	0.04	U
Pyrene	50	0.03	J	5.1		0.09	J	0.04	U	2.3		1.9		3.3		0.1	J	0.04	U
Biphenyl	--	0.46	U	0.76	U	0.76	U	0.76	U	14		14		0.76	U	0.76	U	0.76	U
4-Chloroaniline	5	1.1	U	0.63	U	0.63	U	0.63	U	0.63	U	0.63	U	0.63	U	0.63	U	0.63	U
2-Nitroaniline	5	0.5	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U
3-Nitroaniline	5	0.81	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U
4-Nitroaniline	5	0.8	U	1.3	U	1.3	U	1.3	U	1.3	U	1.3	U	1.3	U	1.3	U	1.3	U
Dibenzofuran	--	0.5	U	0.66	U	0.66	U	0.66	U	34		35		1.5	J	0.66	U	0.66	U
2-Methylnaphthalene	--	0.02	U	0.1	J	0.05	U	0.25		85		38		0.37		0.05	U	0.05	U
1,2,4,5-Tetrachlorobenzene	5	0.44	U	0.67	U	0.67	U	0.67	U	0.67	U	0.67	U	0.67	U	0.67	U	0.67	U
Acetophenone	--	0.53	U	0.85	U	0.85	U	0.85	U	0.85	U	0.85	U	0.85	U	0.85	U	0.85	U
2,4,6-Trichlorophenol	--	0.61	U	0.68	U	0.68	U	0.68	U	0.68	U	0.68	U	0.68	U	0.68	U	0.68	U
P-Chloro-M-Cresol	--	0.35	U	0.62	U	0.62	U	0.62	U	0.62	U	0.62	U	0.62	U	0.62	U	0.62	U
2-Chlorophenol	--	0.48	U	0.63	U	0.63	U	0.63	U	0.63	U	0.63	U	0.63	U	0.63	U	0.63	U
2,4-Dichlorophenol	1	0.41	U	0.77	U	0.77	U	0.77	U	0.77	U	0.77	U	0.77	U	0.77	U	0.77	U
2,4-Dimethylphenol	50	1.8	U	1.6	U	1.6	U	1.6	U	1.6	J	1.7	J	1.6	U	1.6	U	1.6	U
2-Nitrophenol	--	0.85	U	1.5	U	1.5	U	1.5	U	1.5	U	1.5	U	1.5	U	1.5	U	1.5	U
4-Nitrophenol	--	0.67	U	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U
2,4-Dinitrophenol	10	6.6	U	5.5	U	5.5	U	5.5	U	5.5	U	5.5	U	5.5	U	5.5	U	5.5	U
4,6-Dinitro-o-cresol	--	1.8	U	2.1	U	2.1	U	2.1	U	2.1	U	2.1	U	2.1	U	2.1	U	2.1	U
Pentachlorophenol	1	0.01	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
Phenol	1	0.57	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U	1.9	U
2-Methylphenol	--	0.49	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
3-Methylphenol/4-Methylphenol	--	0.48	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U
2,4,5-Trichlorophenol	--	0.77	U	0.72	U	0.72	U	0.72	U	0.72	U	0.72	U	0.72	U	0.72	U	0.72	U
Benzoic Acid	--	6.1	J	13	U	13	U	13	U	13	U	13	U	13	U	13	U	13	U
Benzyl Alcohol	--	0.59	U	0.72	U	0.72	U	0.72	U	0.72	U	0.72	U	0.72	U	0.72	U	0.72	U
Carbazole	--	0.49	U	0.7	J	0.63	U	0.63	U	40		41		3.2		0.63	U	0.63	U

Notes:
NY-AWQS: New York TOGS 111 Ambient Water Quality Standards criteria reflects all addendum to criteria through June 2004.
Cells highlighted in yellow indicate concentrations above the NY-AWQS
Cells shaded in grey indicate MDL values above the NY-AWQS
DUP = designation for duplicate sample
MDL = Maximum Detection Limit
Q = Laboratory Data Qualifier
For U qualified entries, the MDL is shown
U = not detected at or above the MDL
For J qualified entries, the estimated concentration is shown
J = estimated value, indicating the detected value is below the RL, but above the MDL
-- = No standard
Results and MDL values are in micrograms per liter (µg/L)

Table 12A - SVOCs in Groundwater - Former MGP
470 Kent Avenue - Brooklyn, NY
BCP Site No.: C224053/224053

SAMPLE ID:		PWSB-36		PWSB-39		PWSB-39DUP		MW-9		PMW-04		MW-11		FIELDBLANK_20200911	
LAB ID:		L2037551-01		L2037551-02		L2037551-03		L2037551-04		L2037953-03		L2037953-04		L2037953-05	
COLLECTION DATE:	NY-AWQS	9/10/2020		9/10/2020		9/10/2020		9/10/2020		9/11/2020		9/11/2020		9/11/2020	
Semivolatile Organic Compounds Units: ug/l		Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q
1,2,4-Trichlorobenzene	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Bis(2-chloroethyl)ether	1	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,2-Dichlorobenzene	3	0.45	U	0.45	U	0.45	U	0.45	U	0.45	U	0.45	U	0.45	U
1,3-Dichlorobenzene	3	0.4	U	0.4	U	0.4	U	0.4	U	0.4	U	0.4	U	0.4	U
1,4-Dichlorobenzene	3	0.43	U	0.43	U	0.43	U	0.43	U	0.43	U	0.43	U	0.43	U
3,3'-Dichlorobenzidine	5	1.6	U	1.6	U	1.6	U	1.6	U	1.6	U	1.6	U	1.6	U
2,4-Dinitrotoluene	5	1.2	U	1.2	U	1.2	U	1.2	U	1.2	U	1.2	U	1.2	U
2,6-Dinitrotoluene	5	0.93	U	0.93	U	0.93	U	0.93	U	0.93	U	0.93	U	0.93	U
4-Chlorophenyl phenyl ether	-	0.49	U	0.49	U	0.49	U	0.49	U	0.49	U	0.49	U	0.49	U
4-Bromophenyl phenyl ether	-	0.38	U	0.38	U	0.38	U	0.38	U	0.38	U	0.38	U	0.38	U
Bis(2-chloroisopropyl)ether	5	0.53	U	0.53	U	0.53	U	0.53	U	0.53	U	0.53	U	0.53	U
Bis(2-chloroethoxy)methane	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Hexachlorocyclopentadiene	5	0.69	U	0.69	U	0.69	U	0.69	U	0.69	U	0.69	U	0.69	U
Isophorone	50	1.2	U	1.2	U	1.2	U	1.2	U	1.2	U	1.2	U	1.2	U
Nitrobenzene	0.4	0.77	U	0.77	U	0.77	U	0.77	U	0.77	U	0.77	U	0.77	U
NDPA/DPA	50	0.42	U	0.42	U	0.42	U	0.42	U	0.42	U	0.42	U	0.42	U
n-Nitrosodi-n-propylamine	-	0.64	U	0.64	U	0.64	U	0.64	U	0.64	U	0.64	U	0.64	U
Bis(2-ethylhexyl)phthalate	5	1.5	U	1.5	U	1.5	U	1.5	U	1.5	U	1.5	U	1.5	U
Butyl benzyl phthalate	50	1.2	U	1.2	U	1.2	U	1.2	U	1.2	U	1.2	U	1.2	U
Di-n-butylphthalate	50	0.4	J	0.39	U	0.39	U	0.39	U	0.39	U	0.39	U	0.66	J
Di-n-octylphthalate	50	1.3	U	1.3	U	1.3	U	1.3	U	1.3	U	1.3	U	1.3	U
Diethyl phthalate	50	0.38	U	0.38	U	0.38	U	0.38	U	0.38	U	0.38	U	0.38	U
Dimethyl phthalate	50	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U
Biphenyl	-	0.46	U	0.46	U	0.46	U	0.46	U	0.46	U	6		0.46	U
4-Chloroaniline	5	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U	1.1	U
2-Nitroaniline	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
3-Nitroaniline	5	0.81	U	0.81	U	0.81	U	0.81	U	0.81	U	0.81	U	0.81	U
4-Nitroaniline	5	0.8	U	0.8	U	0.8	U	0.8	U	0.8	U	0.8	U	0.8	U
Dibenzofuran	-	0.5	U	0.5	U	0.5	U	0.5	U	1.6	J	14		0.5	U
1,2,4,5-Tetrachlorobenzene	5	0.44	U	0.44	U	0.44	U	0.44	U	0.44	U	0.44	U	0.44	U
Acetophenone	-	0.53	U	0.53	U	0.53	U	0.53	U	0.53	U	0.53	U	0.53	U
2,4,6-Trichlorophenol	-	0.61	U	0.61	U	0.61	U	0.61	U	0.61	U	0.61	U	0.61	U
p-Chloro-m-cresol	-	0.35	U	0.35	U	0.35	U	0.35	U	0.35	U	0.35	U	0.35	U
2-Chlorophenol	-	0.48	U	0.48	U	0.48	U	0.48	U	0.48	U	0.48	U	0.48	U
2,4-Dichlorophenol	1	0.41	U	0.41	U	0.41	U	0.41	U	0.41	U	0.41	U	0.41	U
2,4-Dimethylphenol	50	1.8	U	1.8	U	1.8	U	1.8	U	8.9		2.4	J	1.8	U
2-Nitrophenol	-	0.85	U	0.85	U	0.85	U	0.85	U	0.85	U	0.85	U	0.85	U
4-Nitrophenol	-	0.67	U	0.67	U	0.67	U	0.67	U	0.67	U	0.67	U	0.67	U
2,4-Dinitrophenol	10	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U	6.6	U
4,6-Dinitro-o-cresol	-	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U
Phenol	1	0.57	U	0.57	U	0.57	U	0.57	U	24		2.8	J	0.57	U
2-Methylphenol	-	0.49	U	0.49	U	0.49	U	0.49	U	1.7	J	1.1	J	0.49	U
3-Methylphenol/4-Methylphenol	-	0.48	U	0.48	U	0.48	U	0.48	U	2.3	J	0.48	U	0.48	U
2,4,5-Trichlorophenol	-	0.77	U	0.77	U	0.77	U	0.77	U	0.77	U	0.77	U	0.77	U
Benzoic Acid	-	2.6	U	2.6	U	2.6	U	2.6	U	2.6	U	2.6	U	2.6	U
Benzyl Alcohol	-	0.59	U	0.59	U	0.59	U	0.59	U	0.59	U	0.59	U	0.59	U
Carbazole	-	0.49	U	0.49	U	0.49	U	0.49	U	3.8		34		0.49	U
Total SVOCs	-	0.4	-	-	-	-	-	-	-	42.3	-	60.3	-	0.66	-
Acenaphthene	20	1.3		0.02	J	0.02	J	0.01	U	4.9		23		0.01	U
2-Chloronaphthalene	10	0.02	U	0.02	U	0.02	U	0.02	U	0.02	U	0.02	U	0.02	U
Fluoranthene	50	0.03	J	0.23		0.21		0.02	J	2.1		32		0.02	U
Hexachlorobutadiene	0.5	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U	0.05	U
Naphthalene	10	0.05	U	0.11		0.1	J	0.05	U	80		480		0.05	U
Benzo(a)anthracene	0.002	0.02	U	0.1	J	0.09	J	0.02	U	0.16		16		0.02	U
Benzo(a)pyrene	0	0.02	U	0.1	J	0.09	J	0.02	U	0.08	J	24		0.02	U
Benzo(b)fluoranthene	0.002	0.01	U	0.11		0.11		0.01	U	0.11		23		0.01	U
Benzo(k)fluoranthene	0.002	0.01	U	0.04	J	0.04	J	0.01	U	0.04	J	7.5		0.01	U
Chrysene	0.002	0.01	U	0.09	J	0.09	J	0.01	U	0.14		12		0.01	U
Acenaphthylene	-	0.02	J	0.04	J	0.03	J	0.01	U	0.23		46		0.01	U
Anthracene	50	0.02	J	0.04	J	0.04	J	0.01	U	1.3		3.8		0.01	U
Benzo(ghi)perylene	-	0.01	U	0.06	J	0.06	J	0.01	U	0.04	J	14		0.01	U
Fluorene	50	0.03	J	0.04	J	0.04	J	0.01	U	1.6		11		0.01	U
Phenanthrene	50	0.04	J	0.14		0.13		0.03	J	2.3		12		0.02	U
Dibenzo(a,h)anthracene	-	0.01	U	0.02	J	0.02	J	0.01	U	0.01	U	3		0.01	U
Indeno(1,2,3-cd)pyrene	0.002	0.01	U	0.07	J	0.06	J	0.01	U	0.05	J	16		0.01	U
Pyrene	50	0.24		0.19		0.17		0.03	J	1.6		32		0.02	U
2-Methylnaphthalene	-	0.02	U	0.03	J	0.02	J	0.02	U	12		2.7		0.02	U
Pentachlorophenol	1	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U
Hexachlorobenzene	0.04	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U	0.01	U
Hexachloroethane	5	0.06	U	0.06	U	0.06	U	0.06	U	0.06	U	0.06	U	0.06	U
Total SVOCs	-	1.68	-	1.43	-	1.32	-	0.08	-	103.65	-	658	-	-	-

Notes:
NY-AWQS: New York TOGS 111 Ambient Water Quality Standards criteria reflects all addendum to criteria through June 2004.
Q - Laboratory Qualifier
U - The MDL is shown
F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
J - Estimated value
ug/l - Micrograms per liter

Table 13 - Pesticides and PCBs in Groundwater - BCP Portion
470 Kent Avenue - Brooklyn, NY
BCP Site No.: C224053/224053

SAMPLE ID:	NY-AWQS	BMW-1		BMW-2		BMW-3		BMW-4		BMW-5		BMW-5DUP		BMW-6		BMW-7		FIELD BLANK	
LAB ID:		L2133773-01		L1601714-01		L1601714-03		L1601874-01		L1601874-02		L1601874-03		L1601714-04		L1601714-02		L1601714-05	
COLLECTION DATE:		6/22/2021		1/20/2016		1/20/2016		1/21/2016		1/21/2016		1/21/2016		1/20/2016		1/20/2016		1/20/2016	
Pesticides **Units: ug/l**		Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q
Delta-BHC	0.04	0.003	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U
Lindane	0.05	0.003	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U
Alpha-BHC	0.01	0.003	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U
Beta-BHC	0.04	0.004	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U
Heptachlor	0.04	0.002	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U
Aldrin	0	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U	0.002	U
Heptachlor epoxide	0.03	0.003	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U
Endrin	0	0.003	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U
Endrin ketone	5	0.003	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U
Dieldrin	0.004	0.003	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U
4,4'-DDE	0.2	0.003	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U
4,4'-DDD	0.3	0.003	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U
4,4'-DDT	0.2	0.003	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U	0.004	U
Endosulfan I	--	0.002	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U	0.003	U
Endosulfan II	--	0.004	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U
Endosulfan sulfate	--	0.003	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U	0.005	U
Methoxychlor	35	0.005	U	0.007	U	0.007	U	0.007	U	0.007	U	0.007	U	0.007	U	0.007	U	0.007	U
Toxaphene	0.06	0.045	U	0.063	U	0.063	U	0.063	U	0.063	U	0.063	U	0.063	U	0.063	U	0.063	U
cis-Chlordane	--	0.005	U	0.007	U	0.007	U	0.007	U	0.007	U	0.007	U	0.007	U	0.007	U	0.007	U
trans-Chlordane	--	0.004	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U	0.006	U
Chlordane	0.05	0.033	U	0.046	U	0.046	U	0.046	U	0.046	U	0.046	U	0.046	U	0.046	U	0.046	U
Polychlorinated Biphenyls																			
Aroclor 1016	0.09	0.061	U	0.055	U	0.055	U	0.055	U	0.055	U	0.055	U	0.055	U	0.055	U	0.055	U
Aroclor 1221	0.09	0.061	U	0.053	U	0.053	U	0.053	U	0.053	U	0.053	U	0.053	U	0.053	U	0.053	U
Aroclor 1232	0.09	0.061	U	0.031	U	0.031	U	0.031	U	0.031	U	0.031	U	0.031	U	0.031	U	0.031	U
Aroclor 1242	0.09	0.061	U	0.06	U	0.06	U	0.06	U	0.06	U	0.06	U	0.06	U	0.06	U	0.06	U
Aroclor 1248	0.09	0.061	U	0.051	U	0.051	U	0.051	U	0.051	U	0.051	U	0.051	U	0.051	U	0.051	U
Aroclor 1254	0.09	0.061	U	0.034	U	0.034	U	0.034	U	0.034	U	0.034	U	0.034	U	0.034	U	0.034	U
Aroclor 1260	0.09	0.061	U	0.032	U	0.032	U	0.032	U	0.032	U	0.032	U	0.032	U	0.032	U	0.032	U
Aroclor 1262	0.09	0.061	U	0.029	U	0.029	U	0.029	U	0.029	U	0.029	U	0.029	U	0.029	U	0.029	U
Aroclor 1268	0.09	0.061	U	0.038	U	0.038	U	0.038	U	0.038	U	0.038	U	0.038	U	0.038	U	0.038	U
PCBs, Total	--	0.061	U	0.029	U	0.029	U	0.029	U	0.029	U	0.029	U	0.029	U	0.029	U	0.029	U

Notes:
NY-AWQS: New York TOGS 111 Ambient Water Quality Standards criteria reflects all addendum to criteria through June 2004.
Cells highlighted in yellow indicate concentrations above the NY-AWQS
Cells shaded in grey indicate MDL values above the NY-AWQS
DUP = designation for duplicate sample
MDL = Maximum Detection Limit
RL = Reporting limit
Q = Laboratory Data Qualifier
For U qualified entries, the MDL is shown
U = not detected at or above the MDL
For J qualified entries, the estimated concentration is shown
J = estimated value, indicating the detected value is below the RL, but above the MDL
-- = No standard
Results and MDL values are in micrograms per liter (µg/L)

Table 14 - Total and Dissolved Metals in Groundwater - BCP Portion
470 Kent Avenue - Brooklyn, NY
BCP Site No.: C224053/224053

SAMPLE ID:	NY-AWQS	BMW-1		BMW-2		BMW-3		BMW-4		BMW-5		BMW-5DUP		BMW-6		BMW-7		FIELD BLANK	
LAB ID:		L2133773-01		L1601714-01		L1601714-03		L1601874-01		L1601874-02		L1601874-03		L1601714-04		L1601714-02		L1601714-05	
COLLECTION DATE:		6/22/2021		1/20/2016		1/20/2016		1/21/2016		1/21/2016		1/21/2016		1/20/2016		1/20/2016		1/20/2016	
Metals Units: ug/l		Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q
Total Metals																			
Aluminum, Total	--	110		5150		214		5400		3980		3950		880		226		2	U
Antimony, Total	3	0.42	U	0.3	J	0.2	J	1.2	J	3	J	2.8	J	0.4	J	1	J	0.1	U
Arsenic, Total	25	5.12		6.2		15.9		9.3		4.8		6		2.9		2.1		0.1	U
Barium, Total	1000	182		129.8		67.1		222.4		71.1		73.4		199.6		34.5		0.2	J
Beryllium, Total	3	0.1	U	0.4	J	0.2	U	0.3	U	0.8	U	0.8	U	0.2	U	0.2	U	0.2	U
Cadmium, Total	5	0.14	J	0.18	J	0.1	U	0.1	U	0.7	J	0.7	J	0.1	U	0.18	J	0.1	U
Calcium, Total	--	80800		62700		96700		153000		327000		306000		408000		140000		39	J
Chromium, Total	50	0.7	J	25.1		6.8		25.7		311.9		346.5		4		4		0.7	J
Cobalt, Total	--	5		8.3		0.9		6		10.9		9.8		0.8		0.5		0.1	U
Copper, Total	200	2.57		30.8		8.6		33.9		14.1		18.3		8		3.9		0.3	U
Iron, Total	300	8070		11600		2860		12600		5290		4730		1320		548		12	U
Lead, Total	25	0.52	J	165.3		12.3		63.3		44.4		47.1		13.8		5.3		0.1	U
Magnesium, Total	35000	17200		13800		142000		266000		883000		836000		567000		280000		22	U
Manganese, Total	300	6157		212		1051		333.7		260.7		233.6		209.5		122.2		0.3	JB
Mercury, Total	0.7	0.09	J	0.22		0.26		0.17	J	0.14	J	0.13	J	0.28		0.06	U	0.06	U
Nickel, Total	100	8.15		17.9		20.4		62.1		401.1		341.3		4.9		11.3		1.7	J
Potassium, Total	--	9060		5340		37800		90700		270000		269000		261000		87600		19	U
Selenium, Total	10	1.73	U	4.6	J	1	U	4	J	5	U	5	U	1	U	1	U	1	J
Silver, Total	50	0.16	U	0.1	U	0.1	U	0.2	U	0.4	U	0.4	U	0.1	U	0.1	U	0.1	U
Sodium, Total	20000	118000		63800		970000		2140000		7780000		7240000		4490000		2160000		195	
Thallium, Total	0.5	0.14	U	0.1	J	0.1	U	0.2	J	0.3	U	0.3	U	0.1	U	0.1	U	0.1	U
Vanadium, Total	--	1.57	U	20.8		1.3	J	18		3.4	J	4.2	J	3.1	J	2.1	J	0.6	U
Zinc, Total	2000	3.41	U	85.4		19.9		42.8		195		208		18.5		14.7		2.6	U
Dissolved Metals																			
Aluminum, Dissolved	--	3.27	U	6	J	8	J	16.7	J	3890		4600		8	U	6	J	--	
Antimony, Dissolved	3	0.42	U	0.3	J	0.4	J	1.94	J	4.79	J	3.81	J	0.4	J	1.8	J	--	
Arsenic, Dissolved	25	2.21		0.6		11.6		2.8		3.49		3.73		1.9	J	1.3		--	
Barium, Dissolved	1000	151.9		68.4		55.8		171.7		69.75		69.55		161		24.2		--	
Beryllium, Dissolved	3	0.1	U	0.2	U	0.2	U	0.75	U	0.75	U	0.75	U	0.8	U	0.2	U	--	
Cadmium, Dissolved	5	0.08	J	0.1	U	0.1	U	0.25	U	0.41	J	0.66	J	0.3	U	0.1	U	--	
Calcium, Dissolved	--	79200		67000		117000		146000		392000		386000		246000		164000		--	
Chromium, Dissolved	50	0.17	U	0.9	J	1	J	1.26	U	92.1		88.9		1.3	U	0.8	J	--	
Cobalt, Dissolved	--	4.72		0.5		0.7		1.76	U	10.27		8.74		0.3	U	0.3	J	--	
Copper, Dissolved	200	0.38	U	0.7	J	0.3	J	1.61	U	7.56	J	8.59	J	1.3	U	0.4	J	--	
Iron, Dissolved	300	4370		12	U	1520		60	U	4590		3680		66	J	88		--	
Lead, Dissolved	25	0.34	U	0.6	J	0.1	U	0.78	U	31.05		34.96		0.6	U	0.1	U	--	
Magnesium, Dissolved	35000	16400		11400		160000		342000		836000		733000		616000		315000		--	
Manganese, Dissolved	300	5222		52.5		1293		166.4		267.5		219.2		178		115.6		--	
Mercury, Dissolved	0.7	0.09	U	0.06	U	0.06	U	0.06	U	0.06	U	0.06	U	0.06	U	0.06	U	--	
Nickel, Dissolved	100	6.91		4.1		20.6		52.7		418.8		314.4		1.3	J	8.8		--	
Potassium, Dissolved	--	11700		5100		40500		86300		233000		232000		209000		101000		--	
Selenium, Dissolved	10	1.73	U	1	U	1	U	5	U	5	U	5	U	5	U	1	U	--	
Silver, Dissolved	50	0.16	U	0.1	U	0.1	U	0.38	U	0.38	U	0.38	U	0.4	U	0.1	U	--	
Sodium, Dissolved	20000	108000		89700		884000		1540000		6780000		6070000		5200000		2000000		--	
Thallium, Dissolved	0.5	0.21	J	0.1	U	0.1	U	0.28	U	0.28	U	0.28	U	0.3	U	0.1	U	--	
Vanadium, Dissolved	--	1.57	U	1.4	J	0.6	U	2.75	U	2.75	U	2.75	U	2.8	U	1.6	J	--	
Zinc, Dissolved	2000	3.41	U	4.3	J	8.7	J	12.8	U	162.2		153.4		12.8	U	6.2	J	--	

Notes:
NY-AWQS: New York TOGS 111 Ambient Water Quality Standards criteria reflects all addendum to criteria through June 2004.
Cells highlighted in yellow indicate concentrations above the NY-AWQS
Cells shaded in grey indicate MDL values above the NY-AWQS
DUP = designation for duplicate sample
MDL = Maximum Detection Limit
Q = Laboratory Data Qualifier
For U qualified entries, the MDL is shown
U = not detected at or above the MDL
For J qualified entries, the estimated concentration is shown
J = estimated value, indicating the detected value is below the RL, but above the MDL
-- = No standard
Results and MDL values are in micrograms per liter (µg/L)

Table 15 - PFAS in Groundwater - BCP Portion
470 Kent Avenue - Brooklyn, NY
BCP Site No.: C224053/224053

SAMPLE ID:	NYSDEC Screening Level	BMW-1		BMW-2		BMW-4		BMW-6		FIELDBLANK-5		FIELD BLANK-4	
LAB ID:		L2133773-01		L2037953-02		L2037551-05		L2037953-01		L2037953-06 R1		L2037551-06	
COLLECTION DATE:		6/22/2021		9/11/2020		9/10/2020		9/11/2020		9/11/2020		9/10/2020	
PERFLUORINATED ALKYL ACIDS Units: ug/l		Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q
Perfluorobutanoic Acid (PFBA)	--	0.00235		0.0114		0.00732		0.00581		0.00039	U	0.00039	U
Perfluoropentanoic Acid (PFPeA)	--	0.00389		0.0124		0.00509		0.00885		0.000378	U	0.000379	U
Perfluorobutanesulfonic Acid (PFBS)	--	0.00118	J	0.00437		0.00201		0.00219		0.000228	U	0.000228	U
Perfluorohexanoic Acid (PFHxA)	--	0.00386		0.012		0.00441		0.00734		0.000371	J	0.000375	J
Perfluoroheptanoic Acid (PFHpA)	--	0.00182	J	0.0127		0.0059		0.00577		0.000215	U	0.000215	U
Perfluorohexanesulfonic Acid (PFHxS)	--	0.00135	J	0.00429	F	0.00144	JF	0.00248	F	0.000359	U	0.00036	U
Perfluorooctanoic Acid (PFOA)	0.01	0.0106		0.0634		0.04		0.0281		0.000226	U	0.000226	U
1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2FTS)	--	0.00131	U	0.00208	F	0.00124	U	0.0021	F	0.00127	U	0.00127	U
Perfluoroheptanesulfonic Acid (PFHpS)	--	0.000678	U	0.000636	U	0.00064	U	0.00067	U	0.000658	U	0.000658	U
Perfluorononanoic Acid (PFNA)	--	0.00128	J	0.00077	J	0.000647	J	0.000752	J	0.000298	U	0.000298	U
Perfluorooctanesulfonic Acid (PFOS)	0.01	0.00758		0.00756	F	0.00285	F	0.00441	F	0.000482	U	0.000482	U
Perfluorodecanoic Acid (PFDA)	--	0.000319	J	0.000281	U	0.000282	U	0.000296	U	0.00029	U	0.000291	U
1H,1H,2H,2H-Perfluorodecanesulfonic Acid (8:2FTS)	--	0.00119	U	0.00112	U	0.00113	U	0.00118	U	0.00116	U	0.00116	U
N-Methyl Perfluorooctanesulfonamidoacetic Acid (NMeFOSAA)	--	0.000638	U	0.000599	U	0.000602	U	0.000631	U	0.000619	U	0.00062	U
Perfluoroundecanoic Acid (PFUnA)	--	0.000256	U	0.00024	U	0.000242	U	0.000253	U	0.000248	U	0.000249	U
Perfluorodecanesulfonic Acid (PFDS)	--	0.000965	U	0.000906	U	0.000911	U	0.000955	U	0.000937	U	0.000938	U
Perfluorooctanesulfonamide (FOSA)	--	0.000571	U	0.000536	U	0.000539	U	0.000565	U	0.000554	U	0.000555	U
N-Ethyl Perfluorooctanesulfonamidoacetic Acid (NEtFOSAA)	--	0.000792	U	0.000744	U	0.000747	U	0.000822	J	0.000768	U	0.000769	U
Perfluorododecanoic Acid (PFDoA)	--	0.000366	U	0.000344	U	0.000346	U	0.000362	U	0.000356	U	0.000356	U
Perfluorotridecanoic Acid (PFTrDA)	--	0.000322	U	0.000303	U	0.000304	U	0.000319	U	0.000313	U	0.000313	U
Perfluorotetradecanoic Acid (PFTA)	--	0.000244	U	0.000229	U	0.00023	U	0.000242	U	0.000237	U	0.000237	U

Notes:
NYSDEC Screening Level = Guidance for Sampling and Analysis of PFAS Under NYSDEC's Part 375 Remedial Programs (January 2021) screening level
Concentrations above the NYSDEC Screening Level are highlighted in yellow.
Q - Laboratory Qualifier
U - The MDL is shown
F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.
J - Estimated value
ug/l - Micrograms per liter

Table 16 - Volatile Organic Compounds in Air - BCP Portion
470 Kent Avenue, Brooklyn, NY
BCP#C224053

SAMPLE ID:	NYSDOH AGVs	Matrices	AA-1		BAA-1		BSV-01-IA		BSV-01		Matrix Decision
LAB ID:			L2037996-12		L2037996-11		L2037996-02		L2037996-01		
COLLECTION DATE:			9/11/2020		9/11/2020		9/11/2020		9/11/2020		
Volatile Organic Compounds in Air Units: ug/m3			Conc	Q	Conc	Q	Conc	Q	Conc	Q	
Dichlorodifluoromethane	--	--	1.96		2.02		1.98		6.18	U	--
Chloromethane	--	--	0.985		1.05		1		2.58	U	--
Freon-114	--	--	1.4	U	1.4	U	1.4	U	8.74	U	--
Vinyl chloride	--	C	0.051	U	0.051	U	0.051	U	3.2	U	No further action
1,3-Butadiene	--	--	0.442	U	0.533		0.445		2.77	U	--
Bromomethane	--	--	0.777	U	0.777	U	0.777	U	4.85	U	--
Chloroethane	--	--	0.528	U	0.528	U	0.528	U	3.3	U	--
Ethanol	--	--	20		37.3		22.4		58.8	U	--
Vinyl bromide	--	--	0.874	U	0.874	U	0.874	U	5.47	U	--
Acetone	--	--	12.2		30.2		13.4		14.8	U	--
Trichlorofluoromethane	--	--	1.12	U	1.12	U	1.12	U	7.02	U	--
Isopropanol	--	--	1.42		2.51		1.66		7.67	U	--
1,1-Dichloroethene	--	A	0.079	U	0.079	U	0.079	U	4.96	U	No further action
Tertiary butyl Alcohol	--	--	1.52	U	1.52	U	1.52	U	9.46	U	--
Methylene chloride	60	B	1.74	U	1.74	U	1.74	U	10.8	U	No further action
3-Chloropropene	--	--	0.626	U	0.626	U	0.626	U	3.91	U	--
Carbon disulfide	--	--	0.623	U	0.623	U	0.623	U	3.89	U	
Freon-113	--	--	1.53	U	1.53	U	1.53	U	9.58	U	
trans-1,2-Dichloroethene	--	--	0.793	U	0.793	U	0.793	U	4.96	U	
1,1-Dichloroethane	--	--	0.809	U	0.809	U	0.809	U	5.06	U	
Methyl tert butyl ether	--	--	0.721	U	0.721	U	0.721	U	4.51	U	
2-Butanone	--	--	1.47	U	1.47	U	1.47	U	9.2	U	
cis-1,2-Dichloroethene	--	A	0.079	U	0.079	U	0.079	U	4.96	U	No further action
Ethyl Acetate	--	--	1.88		1.8	U	1.8	U	11.2	U	--
Chloroform	--	--	0.977	U	0.977	U	0.977	U	107		
Tetrahydrofuran	--	--	1.47	U	1.47	U	1.47	U	9.2	U	
1,2-Dichloroethane	--	--	0.809	U	0.809	U	0.809	U	5.06	U	
n-Hexane	--	--	0.772		1.02		0.874		4.41	U	
1,1,1-Trichloroethane	--	B	0.109	U	0.109	U	0.109	U	6.82	U	No further action
Benzene	--	--	0.706		1.42		1.26		3.99	U	--
Carbon tetrachloride	--	A	0.503		0.447		0.415		7.86	U	
Cyclohexane	--	--	0.688	U	0.688	U	0.688	U	4.3	U	
1,2-Dichloropropane	--	--	0.924	U	0.924	U	0.924	U	5.78	U	
Bromodichloromethane	--	--	1.34	U	1.34	U	1.34	U	8.37	U	
1,4-Dioxane	--	--	0.721	U	0.721	U	0.721	U	4.5	U	
Trichloroethene	2	A	0.107	U	0.107	U	0.134		2160		Mitigate BSV-01
2,2,4-Trimethylpentane	--	--	0.943		0.934	U	1.5		5.84	U	--
Heptane	--	--	0.82	U	0.873		0.82	U	5.12	U	
cis-1,3-Dichloropropene	--	--	0.908	U	0.908	U	0.908	U	5.67	U	
4-Methyl-2-pentanone	--	--	2.05	U	2.05	U	2.05	U	12.8	U	
trans-1,3-Dichloropropene	--	--	0.908	U	0.908	U	0.908	U	5.67	U	
1,1,2-Trichloroethane	--	--	1.09	U	1.09	U	1.09	U	6.82	U	
Toluene	--	--	1.57		2.65		2.28		4.71	U	
2-Hexanone	--	--	0.82	U	0.82	U	0.82	U	5.12	U	
Dibromochloromethane	--	--	1.7	U	1.7	U	1.7	U	10.6	U	
1,2-Dibromoethane	--	--	1.54	U	1.54	U	1.54	U	9.61	U	
Tetrachloroethene	30	B	0.943		0.705		0.644		219		No further action
Chlorobenzene	--	--	0.921	U	0.921	U	0.921	U	5.76	U	
Ethylbenzene	--	--	0.869	U	0.869	U	0.869	U	5.43	U	
p/m-Xylene	--	--	1.74	U	2.32		2.17		10.9	U	
Bromoform	--	--	2.07	U	2.07	U	2.07	U	12.9	U	
Styrene	--	--	0.852	U	0.852	U	0.852	U	5.32	U	
1,1,2,2-Tetrachloroethane	--	--	1.37	U	1.37	U	1.37	U	8.58	U	
o-Xylene	--	--	0.869	U	0.93		0.916		5.43	U	
4-Ethyltoluene	--	--	0.983	U	0.983	U	0.983	U	6.15	U	
1,3,5-Trimethylbenzene	--	--	0.983	U	0.983	U	0.983	U	6.15	U	
1,2,4-Trimethylbenzene	--	--	0.983	U	2.63		2.67		6.15	U	
Benzyl chloride	--	--	1.04	U	1.04	U	1.04	U	6.47	U	
1,3-Dichlorobenzene	--	--	1.2	U	1.2	U	1.2	U	7.52	U	
1,4-Dichlorobenzene	--	--	1.2	U	1.2	U	1.2	U	7.52	U	
1,2-Dichlorobenzene	--	--	1.2	U	1.2	U	1.2	U	7.52	U	
1,2,4-Trichlorobenzene	--	--	1.48	U	1.48	U	1.48	U	9.28	U	
Hexachlorobutadiene	--	--	2.13	U	2.13	U	2.13	U	13.3	U	

Notes
NYSDOH AGVs = New York State Department of Health Air Guidance Values
Matrix actions are described in the report narrative and the NYSDOH Soil Vapor Guidance, May 2017
Cells highlighted in yellow indicate a concentration above the co-located indoor air or ambient air concentration
Q = Laboratory Qualifier
U qualifier indicates the compound was not detected at or above the RL
RL = Reporting Limit
Results and RL values are shown in micrograms per cubic meter (ug/m3)

Table 16 - Volatile Organic Compounds in Air - BCP Portion
470 Kent Avenue, Brooklyn, NY
BCP#C224053

SAMPLE ID:	AMBIENT AIR		BVA-1		BSV-2		BSV-3		BSV-4		BSV-4 DUP		BSV-5		BSV-6	
LAB ID:	L1601933-01		L1601933-02		L1601933-08		L1601933-07		L1601933-03		L1601933-06		L1601933-05		L1601933-04	
COLLECTION DATE:	1/21/2016		1/21/2016		1/21/2016		1/21/2016		1/21/2016		1/21/2016		1/21/2016		1/21/2016	
Volatile Organic Compounds in Air Units: ug/m3	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q
Dichlorodifluoromethane	1.63		1.85		1.98	U	1.57		1.92		1.74		1.93		2.19	
Chloromethane	1.07		1.1		0.826	U	0.413	U	0.413	U	0.413	U	0.413	U	0.413	U
Freon-114	1.4	U	1.4	U	2.8	U	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U
Vinyl chloride	0.051	U	0.051	U	1.02	U	0.511	U	0.511	U	0.511	U	0.511	U	0.511	U
1,3-Butadiene	0.442	U	0.719		0.885	U	0.442	U	0.442	U	0.442	U	0.442	U	0.442	U
Bromomethane	0.777	U	0.777	U	1.55	U	0.777	U	0.777	U	0.777	U	0.777	U	0.777	U
Chloroethane	0.528	U	0.528	U	1.06	U	0.528	U	0.528	U	0.528	U	0.528	U	0.528	U
Ethanol	14.4		15.6		68.8		448		28.6		29		144		475	
Vinyl bromide	0.874	U	0.874	U	1.75	U	0.874	U	0.874	U	0.874	U	0.874	U	0.874	U
Acetone	3.09		19.6		4.75	U	168		12.6		19.1		86.7		11.8	
Trichlorofluoromethane	1.12	U	1.12	U	2.25	U	1.12	U	1.12	U	1.12	U	1.12	U	8.77	
Isopropanol	1.23	U	1.24		138		760		1.76		2		237		784	
1,1-Dichloroethene	0.079	U	0.079	U	1.59	U	0.793	U	0.793	U	0.793	U	0.793	U	0.793	U
Tertiary butyl Alcohol	1.52	U	1.52	U	3.03	U	3.64		1.52	U	1.52	U	1.52	U	1.52	U
Methylene chloride	4.38		13.9		3.47	U	7.12		1.74	U	4.2		1.74	U	7.57	
3-Chloropropene	0.626	U	0.626	U	1.25	U	0.626	U	0.626	U	0.626	U	0.626	U	0.626	U
Carbon disulfide	0.623	U	0.623	U	1.25	U	15.2		1.49		1.42		1.68		0.623	U
Freon-113	1.53	U	1.53	U	3.07	U	1.53	U	1.53	U	1.53	U	1.53	U	1.53	U
trans-1,2-Dichloroethene	0.793	U	0.793	U	1.59	U	0.793	U	0.793	U	0.793	U	0.793	U	0.793	U
1,1-Dichloroethane	0.809	U	0.809	U	1.62	U	0.809	U	0.809	U	0.809	U	0.809	U	0.809	U
Methyl tert butyl ether	0.721	U	0.721	U	1.44	U	0.721	U	0.721	U	0.721	U	0.721	U	0.721	U
2-Butanone	1.47	U	1.47	U	2.95	U	8.05		1.47	U	2.35		5.6		2.81	
cis-1,2-Dichloroethene	0.079	U	0.079	U	14.1		0.793	U	0.793	U	0.793	U	0.793	U	0.793	U
Ethyl Acetate	1.8	U	1.8	U	3.6	U	1.8	U	1.8	U	1.8	U	1.93		1.8	U
Chloroform	0.977	U	0.977	U	52.7		0.977	U	2.92		3.33		3.2		0.977	U
Tetrahydrofuran	1.47	U	1.47	U	2.95	U	1.47	U	1.47	U	1.47	U	1.47	U	1.47	U
1,2-Dichloroethane	0.809	U	0.809	U	1.62	U	7.37		0.809	U	0.809	U	0.809	U	0.809	U
n-Hexane	0.705	U	1.03		1.41	U	99		4.02		3.48		0.807		0.708	
1,1,1-Trichloroethane	0.109	U	0.109	U	2.18	U	1.09	U	1.09	U	1.09	U	1.64		1.09	U
Benzene	0.639	U	3.1		1.28	U	53		2.84		2.46		2.95		1.24	
Carbon tetrachloride	0.421		0.465		2.52	U	1.26	U	1.26	U	1.26	U	1.26	U	1.26	U
Cyclohexane	0.688	U	0.688	U	1.38	U	18.4		2.22		2.46		1.97		0.688	U
1,2-Dichloropropane	0.924	U	0.924	U	1.85	U	0.924	U	0.924	U	0.924	U	0.924	U	0.924	U
Bromodichloromethane	1.34	U	1.34	U	2.68	U	1.34	U	1.34	U	1.34	U	1.34	U	1.34	U
1,4-Dioxane	0.721	U	0.721	U	1.44	U	0.721	U	0.721	U	0.721	U	0.721	U	0.721	U
Trichloroethene	0.107	U	0.107	U	881		1.07	U	1.07	U	1.07	U	2.41		1.07	U
2,2,4-Trimethylpentane	0.934	U	0.934	U	1.87	U	0.934	U	1.18		0.934	U	0.934	U	0.981	
Heptane	0.82	U	0.947		1.64	U	29.8		1.55		2		1.85		1.12	
cis-1,3-Dichloropropene	0.908	U	0.908	U	1.82	U	0.908	U	0.908	U	0.908	U	0.908	U	0.908	U
4-Methyl-2-pentanone	2.05	U	2.05	U	4.1	U	2.05	U	2.05	U	2.05	U	2.05	U	2.05	U
trans-1,3-Dichloropropene	0.908	U	0.908	U	1.82	U	0.908	U	0.908	U	0.908	U	0.908	U	0.908	U
1,1,2-Trichloroethane	1.09	U	1.09	U	2.18	U	1.09	U	1.09	U	1.09	U	1.09	U	1.09	U
Toluene	0.754		3.69		1.51	U	15.5		3.28		2.78		4.18		3.92	
2-Hexanone	0.82	U	0.82	U	1.64	U	0.82	U	0.82	U	0.82	U	0.82	U	0.82	U
Dibromochloromethane	1.7	U	1.7	U	3.41	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U
1,2-Dibromoethane	1.54	U	1.54	U	3.07	U	1.54	U	1.54	U	1.54	U	1.54	U	1.54	U
Tetrachloroethene	0.136	U	0.203		62.6		5.36		1.36	U	1.64		14		1.36	U
Chlorobenzene	0.921	U	0.921	U	1.84	U	0.921	U	0.921	U	0.921	U	0.921	U	0.921	U
Ethylbenzene	0.869	U	0.869	U	1.74	U	3.47		0.869	U	0.869	U	1.42		1.77	
p/m-Xylene	1.74	U	2.25		5.99		15.2		3.31		2.91		6.12		7.21	
Bromoform	2.07	U	2.07	U	4.14	U	2.07	U	2.07	U	2.07	U	2.07	U	2.07	U
Styrene	0.852	U	0.852	U	1.7	U	0.852	U	0.852	U	0.852	U	0.852	U	0.852	U
1,1,2,2-Tetrachloroethane	1.37	U	1.37	U	2.75	U	1.37	U	1.37	U	1.37	U	1.37	U	1.37	U
o-Xylene	0.869	U	0.895		2.25		5.43		1.09		1.01		2.29		2.47	
4-Ethyltoluene	0.983	U	0.983	U	1.97	U	0.983	U	0.983	U	0.983	U	0.983	U	0.983	U
1,3,5-Trimethylbenzene	0.983	U	0.983	U	1.97	U	0.983	U	0.983	U	0.983	U	0.983	U	0.983	U
1,2,4-Trimethylbenzene	0.983	U	1.52		1.97	U	3.49		0.983	U	0.983	U	1.01		1.06	
Benzyl chloride	1.04	U	1.04	U	2.07	U	1.04	U	1.04	U	1.04	U	1.04	U	1.04	U
1,3-Dichlorobenzene	1.2	U	1.2	U	2.4	U	6.97		1.2	U	1.2	U	1.2	U	1.42	
1,4-Dichlorobenzene	1.2	U	1.2	U	2.4	U	1.2	U	1.2	U	1.2	U	1.2	U	1.2	U
1,2-Dichlorobenzene	1.2	U	1.2	U	2.4	U	1.2	U	1.2	U	1.2	U	1.2	U	1.2	U
1,2,4-Trichlorobenzene	1.48	U	1.48	U	2.97	U	1.48	U	1.48	U	1.48	U	1.48	U	1.48	U
Hexachlorobutadiene	2.13	U	2.13	U	4.27	U	2.13	U	2.13	U	2.13	U	2.13	U	2.13	U

Notes
NYSDOH AGVs = New York State Department of Health Air Guidance Values
Matrix actions are described in the report narrative and the NYSDOH Soil Vapor Guidance, May 2017
Cells highlighted in yellow indicate a concentration above the co-located indoor air or ambient air concentration
Q = Laboratory Qualifier
U qualifier indicates the compound was not detected at or above the RL
RL = Reporting Limit
Results and RL values are shown in micrograms per cubic meter (ug/m3)

Table 16A - Volatile Organic Compounds in Air - Former MGP Portion
470 Kent Avenue, Brooklyn, NY
BCP#C224053

SAMPLE ID:	NYSDOH AGVs	Matrices	AA-1		PWSV-01		PWSV-01-IA		PWSV-02		PWSV-02-IA		PWSV-03		PWSV-03-IA		PWSV-04		PWSV-04-IA		PWSV-05		PWSV-06		PWSV-07		PWSV-08		Matrix Decision
LAB ID:			L2037996-12		L2037996-03		L2037996-04		L2037996-05		L2037996-06		L2037996-07		L2037996-08		L2037996-09		L2037996-10		L2037996-16		L2037996-14		L2037996-15		L2037996-13		
COLLECTION DATE:			9/11/2020		9/11/2020		9/11/2020		9/11/2020		9/11/2020		9/11/2020		9/11/2020		9/11/2020		9/11/2020		9/11/2020		9/11/2020		9/11/2020		9/11/2020		
Volatile Organic Compounds in A Units: ug/m3			Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	Conc	Q	
Dichlorodifluoromethane	--	--	1.96		2.02		1.88		1.57		1.88		1.49		1.91		1.18		1.84		1.73		2.77		1.51		1.68		--
Chloromethane	--	--	0.985		0.413	U	0.935		0.847		1.08		0.413	U	1.02		0.413	U	1.21		0.413	U	1.03		0.413	U	0.413	U	--
Freon-114	--	--	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	--
Vinyl chloride	--	C	0.051	U	0.511	U	0.051	U	0.511	U	0.051	U	0.511	U	0.051	U	0.511	U	0.051	U	0.511	U	0.511	U	0.511	U	0.511	U	No further action
1,3-Butadiene	--	--	0.442	U	0.442	U	0.5		0.445		0.697		0.442	U	0.88		0.442	U	0.799		0.442	U	1.55		0.442	U	0.442	U	--
Bromomethane	--	--	0.777	U	0.777	U	0.777	U	0.777	U	0.777	U	0.777	U	0.777	U	0.777	U	0.777	U	0.777	U	0.777	U	0.777	U	0.777	U	--
Chloroethane	--	--	0.528	U	0.528	U	0.528	U	0.528	U	0.528	U	0.528	U	0.528	U	0.528	U	0.528	U	0.528	U	0.528	U	0.528	U	0.528	U	--
Ethanol	--	--	20		9.42	U	29.6		9.42	U	53.7		9.42	U	55.4		9.42	U	63.5		44.8		35.6		13		91.6		--
Vinyl bromide	--	--	0.874	U	0.874	U	0.874	U	0.874	U	0.874	U	0.874	U	0.874	U	0.874	U	0.874	U	0.874	U	0.874	U	0.874	U	0.874	U	--
Acetone	--	--	12.2		2.76		14.9		9.48		48.7		4.89		40.9		6.25		82.4		19.2		51.1		3.71		107		--
Trichlorofluoromethane	--	--	1.12	U	1.17		1.12	U	1.12	U	1.12	U	1.48		1.12	U	1.43		1.12	U	1.73		1.19		1.47		1.65		--
Isopropanol	--	--	1.42		1.23	U	1.96		1.23	U	4.6		1.23	U	3.79		1.23	U	7.03		19.6		19.5		2.34		19.1		--
1,1-Dichloroethene	--	A	0.079	U	0.793	U	0.079	U	0.793	U	0.079	U	0.793	U	0.079	U	0.793	U	0.079	U	0.793	U	0.793	U	0.793	U	0.793	U	No further action
Tertiary butyl Alcohol	--	--	1.52	U	1.52	U	1.52	U	1.52	U	1.52	U	1.52	U	1.52	U	1.52	U	1.52	U	241		162		1.52	U	108		--
Methylene chloride	60	B	1.74	U	1.74	U	1.74	U	1.99		1.74	U	1.74	U	1.74	U	1.74	U	1.84		1.74	U	1.74	U	1.74	U	1.74	U	No further action
3-Chloropropene	--	--	0.626	U	0.626	U	0.626	U	0.626	U	0.626	U	0.626	U	0.626	U	0.626	U	0.626	U	0.626	U	0.626	U	0.626	U	0.626	U	--
Carbon disulfide	--	--	0.623	U	2.45		0.623	U	0.623	U	0.623	U	2.8		0.623	U	3.33		0.623	U	1.42		2.01		2.21		18.2		--
Freon-113	--	--	1.53	U	1.53	U	1.53	U	1.53	U	1.53	U	1.53	U	1.53	U	1.53	U	1.53	U	1.53	U	1.53	U	1.53	U	1.53	U	--
trans-1,2-Dichloroethene	--	--	0.793	U	0.793	U	0.793	U	0.793	U	0.793	U	0.793	U	0.793	U	0.793	U	0.793	U	0.793	U	0.793	U	0.793	U	0.793	U	--
1,1-Dichloroethane	--	--	0.809	U	0.809	U	0.809	U	0.809	U	0.809	U	0.809	U	0.809	U	0.809	U	0.809	U	0.809	U	0.809	U	0.809	U	0.809	U	--
Methyl tert butyl ether	--	--	0.721	U	0.721	U	0.721	U	0.721	U	0.721	U	0.721	U	0.721	U	0.721	U	0.721	U	0.721	U	0.721	U	0.721	U	0.721	U	--
2-Butanone	--	--	1.47	U	1.47	U	1.47	U	1.47	U	2.23		1.47	U	1.83		1.91		5.46		4.69		11.8		1.47	U	21.3		--
cis-1,2-Dichloroethene	--	A	0.079	U	0.793	U	0.079	U	0.793	U	0.079	U	0.793	U	0.079	U	0.793	U	0.079	U	0.793	U	0.793	U	0.793	U	0.793	U	No further action
Ethyl Acetate	--	--	1.88		1.8	U	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U	1.8	U	2.76		1.98		1.8	U	2.1		--
Chloroform	--	--	0.977	U	91.3		0.977	U	1.47		0.977	U	0.977	U	0.977	U	3.49		1.9		1.4		0.977		1.1		1.51		--
Tetrahydrofuran	--	--	1.47	U	1.47	U	1.67		1.47	U	1.47	U	1.47	U	1.47	U	1.47	U	1.47	U	1.94		1.52		2		1.47	U	--
1,2-Dichloroethane	--	--	0.809	U	0.809	U	0.809	U	0.809	U	0.809	U	0.809	U	0.809	U	0.809	U	0.809	U	0.809	U	0.809	U	0.809	U	0.809	U	--
n-Hexane	--	--	0.772		0.705	U	1.32		1.25		1.62		0.705	U	1.49		3.7		1.89		17.7		13.1		0.705	U	14		--
1,1,1-Trichloroethane	--	B	0.109	U	1.09	U	0.109	U	1.93		0.109	U	2.2		0.109	U	1.09	U	0.109	U	3.79		1.09	U	1.09	U	1.09	U	No further action
Benzene	--	--	0.706		0.639	U	1.54		1.58		2.39		0.639	U	2.31		1.05		2.29		2.82		3.8		0.639	U	11.1		--
Carbon tetrachloride	--	A	0.503		1.26	U	0.434		1.26	U	0.472		1.26	U	0.478		1.26	U	0.478		1.26	U	1.26	U	1.26	U	1.26	U	No further action
Cyclohexane	--	--	0.688	U	0.688	U	1.03		0.688	U	0.688	U	0.688	U	1.02		0.688	U	0.823		3.36		2.9		0.922		4.68		--
1,2-Dichloropropane	--	--	0.924	U	0.924	U	0.924	U	0.924	U	0.924	U	0.924	U	0.924	U	0.924	U	0.924	U	0.924	U	0.924	U	0.924	U	0.924	U	--
Bromodichloromethane	--	--	1.34	U	8.84		1.34	U	1.34	U	1.34	U	1.34	U	1.34	U	1.34	U	1.34	U	1.34	U	1.34	U	1.34	U	1.34	U	--
1,4-Dioxane	--	--	0.721	U	0.721	U	0.721	U	0.721	U	0.721	U	0.721	U	0.721	U	0.721	U	0.721	U	0.721	U	0.721	U	0.721	U	0.721	U	--
Trichloroethene	2	A	0.107	U	102		0.107	U	1.07	U	0.107	U	1.07	U	0.107	U	1.07	U	0.107	U	1.07	U	1.07	U	1.07	U	1.07	U	Mitigate PWSV-01
2,2,4-Trimethylpentane	--	--	0.943		0.934	U	1.83		1.71		2.46		0.934	U	2.34		0.934	U	2.11		0.934	U	0.934	U	0.934	U	0.934	U	--
Heptane	--	--	0.82	U	0.82	U	0.947		2.64		2.59		0.82	U	1.82		1.66		6.07		38.2		26.7		0.82	U	31		--
cis-1,3-Dichloropropene	--	--	0.908	U	0.908	U	0.908	U	0.908	U	0.908	U	0.908	U	0.908	U	0.908	U	0.908	U	0.908	U	0.908	U	0.908	U	0.908	U	--
4-Methyl-2-pentanone	--	--	2.05	U	2.05	U	2.05	U	2.05	U	2.05	U	2.05	U	2.05	U	2.05	U	2.27		4.01		20.7		2.05	U	2.05	U	--
trans-1,3-Dichloropropene	--	--	0.908	U	0.908	U	0.908	U	0.908	U	0.908	U	0.908	U	0.908	U	0.908	U	0.908	U	0.908	U	0.908	U	0.908	U	0.908	U	--
1,1,2-Trichloroethane	--	--	1.09	U	1.09	U	1.09	U	1.09	U	1.09	U	1.09	U	1.09	U	1.09	U	1.09	U	1.09	U	1.09	U	1.09	U	1.09	U	--
Toluene	--	--	1.57		0.957	U	2.8		2.84		3.68		1.69		3.96		2.72		4.22		42.2		32		1.06		31.2		--
2-Hexanone	--	--	0.82	U	0.82	U	0.82	U	0.82	U	0.82	U	0.82	U	0.82	U	0.82	U	0.82	U	3.78		2.79		0.82	U	0.82	U	--
Dibromochloromethane	--	--	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	1.7	U	--
1,2-Dibromoethane	--	--	1.54	U	1.54	U	1.54	U	1.54	U	1.54	U	1.54	U	1.54	U	1.54	U	1.54	U	1.54	U	1.54	U	1.54	U	1.54	U	--
Tetrachloroethene	30	B	0.943		29		0.536		19.7		0.658		97.6		0.698		11.3		0.875		12.6		4.31		78		8.68		No further action
Chlorobenzene	--	--	0.921	U	0.921	U	0.921	U	0.921	U	0.921	U	0.921	U	0.921	U	0.921	U	0.921	U	0.921	U	0.921	U	0.921	U	0.921	U	--
Ethylbenzene	--	--	0.869	U	0.869	U	0.869	U	0.869	U	0.951		0.869	U	0.995		0.89		1.21		4.04		4.11		0.869	U	5.91		--
p/m-Xylene	--	--	1.74	U	2.11		2.47		3.18		3.44		2.09		3.59		3.4		4.2		14.1		14.8		1.74	U	19.6		--
Bromoform	--	--	2.07	U	2.07	U	2.07	U	2.07	U	2.07	U	2.07	U	2.07	U	2.07	U	2.07	U	2.07	U	2.07	U	2.07	U	2.07	U	--
Styrene	--	--	0.852	U	0.852	U	0.852	U	1.01		0.852	U	0.852	U	0.852	U	1.14		1.29		2.66		2.57		0.852	U	2.53		--
1,1,2,2-Tetrachloroethane	--	--	1.37	U	1.37	U	1.37	U	1.37	U	1.37	U	1.37	U	1.37	U	1.37	U	1.37	U	1.37	U	1.37	U	1.37	U	1.37	U	--
o-Xylene	--	--	0.869	U	0.869	U	1.03		1.56		1.64		0.908		1.65		1.69		2.25		5.13		5.3		0.869	U	7.56		--
4-Ethyltoluene	--	--	0.983	U	0.983	U	0.983	U	0.983	U	0.983	U	0.983	U	0.983	U	0.983	U	1.05		0.983	U	0.983	U	0.983	U	1.39		--
1,3,5-Trimethylbenzene	--	--	0.983	U	0.983	U	0.983	U	1.2		1.14		0.983	U	1.09		1.11		1.29		0.983	U	0.983	U	0.983	U	0.983	U	--
1,2,4-Trimethylbenzene	--	--	0.983	U	2.9		3.05		4.57		4.11		4.1		4.55		4.4		4.97		2.38		1.84		2.19		2.97		--
Benzyl chloride	--	--	1.04	U	1.04	U	1.04	U	1.04	U	1.04	U	1.04	U	1.04	U	1.04	U	1.04	U	1.04	U	1.04	U	1.04	U	1.04	U	--
1,3-Dichlorobenzene	--	--	1.2	U	1.2	U	1.2	U	1.2	U	1.2	U	1.2	U	1.2	U	1.2	U	1.2	U	1.2	U	1.2	U	1.2	U	1.2	U	--
1,4-Dichlorobenzene	--	--	1.2	U	1.2	U	1.2	U	1.2	U	1.2	U	1.2	U	1.2	U	1.2	U	1.2	U	1.2	U	1.2	U	1.2	U	1.2	U	--
1,2-Dichlorobenzene	--	--	1.2	U	1.2	U	1.2	U	1.2	U	1.2	U	1.2	U	1.2	U	1.2	U	1.2	U	1.2	U	1.2	U	1.2	U	1.2	U	--
1,2,4-Trichlorobenzene	--	--	1.48	U	1.48	U	1.48	U	1.48	U	1.48	U	1.48	U	1.48	U	1.48	U	1.48	U	1.48	U	1.48	U	1.48	U	1.48	U	--
Hexachlorobutadiene	--	--	2.13	U	2.13	U	2.13	U	2.13	U	2.13	U	2.13	U	2.13	U	2.13	U	2.13	U	2.13	U	2.13	U	2.13	U	2.13	U	--

Notes
NYSDOH AGVs = New York State Department of Health Air Guidance Values
Matrix actions are described in the report narrative and the NYSDOH Soil Vapor Guidance, May 2017
Cells highlighted in yellow indicate a concentration above the co-located indoor air or ambient air concentration
Q = Laboratory Qualifier
U qualifier indicates the compound was not detected at or above the RL
RL = Reporting Limit
Results and RL values are shown in micrograms per cubic meter (ug/m3)

Table 17 - 1,4-Dioxane in Groundwater
470 Kent Avenue, Brooklyn, NY
BCP# C224053

SAMPLE ID:	NYSDEC Proposed Guidance Value	TMW2		TMW2-DUP		TMW3		FIELD BLANK	
LAB ID:		L2221172-01		L2221172-02		L2221172-03		L2221172-04	
COLLECTION DATE:		4/22/2022		4/22/2022		4/22/2022		4/22/2022	
1,4-Dioxane Units: ug/l		Conc	Q	Conc	Q	Conc	Q	Conc	Q
1,4-Dioxane	0.35	0.0414	J	0.0464	J	0.276		0.0326	U

Notes:

NYSDEC Proposed Guidance Value - New York State Department of Environmental Conservation Draft Guidance Values to Advance New York's Regulation of Emerging Contaminants, revised October 6, 2021.

Q - Laboratory Qualifier

U - The MDL is shown

MDL - Method of Detection Limit

J - Estimated value

ug/l - Micrograms per liter

Appendix A

NYSDOH Generic Community Air Monitoring Plan (CAMP)

New York State Department of Health
Generic Community Air Monitoring Plan

Overview

A Community Air Monitoring Plan (CAMP) requires real-time monitoring for volatile organic compounds (VOCs) and particulates (i.e., dust) at the downwind perimeter of each designated work area when certain activities are in progress at contaminated sites. The CAMP is not intended for use in establishing action levels for worker respiratory protection. Rather, its intent is to provide a measure of protection for the downwind community (i.e., off-site receptors including residences and businesses and on-site workers not directly involved with the subject work activities) from potential airborne contaminant releases as a direct result of investigative and remedial work activities. The action levels specified herein require increased monitoring, corrective actions to abate emissions, and/or work shutdown. Additionally, the CAMP helps to confirm that work activities did not spread contamination off-site through the air.

The generic CAMP presented below will be sufficient to cover many, if not most, sites. Specific requirements should be reviewed for each situation in consultation with NYSDOH to ensure proper applicability. In some cases, a separate site-specific CAMP or supplement may be required. Depending upon the nature of contamination, chemical- specific monitoring with appropriately-sensitive methods may be required. Depending upon the proximity of potentially exposed individuals, more stringent monitoring or response levels than those presented below may be required. Special requirements will be necessary for work within 20 feet of potentially exposed individuals or structures and for indoor work with co-located residences or facilities. These requirements should be determined in consultation with NYSDOH.

Reliance on the CAMP should not preclude simple, common-sense measures to keep VOCs, dust, and odors at a minimum around the work areas.

Community Air Monitoring Plan

Depending upon the nature of known or potential contaminants at each site, real-time air monitoring for VOCs and/or particulate levels at the perimeter of the exclusion zone or work area will be necessary. Most sites will involve VOC and particulate monitoring; sites known to be contaminated with heavy metals alone may only require particulate monitoring. If radiological contamination is a concern, additional monitoring requirements may be necessary per consultation with appropriate DEC/NYSDOH staff.

Continuous monitoring will be required for all ground intrusive activities and during the demolition of contaminated or potentially contaminated structures. Ground intrusive activities include, but are not limited to, soil/waste excavation and handling, test pitting or trenching, and the installation of soil borings or monitoring wells.

Periodic monitoring for VOCs will be required during non-intrusive activities such as the collection of soil and sediment samples or the collection of groundwater samples from existing monitoring wells. “Periodic” monitoring during sample collection might reasonably consist of taking a reading upon arrival at a sample location, monitoring while opening a well cap or

overturning soil, monitoring during well baling/purging, and taking a reading prior to leaving a sample location. In some instances, depending upon the proximity of potentially exposed individuals, continuous monitoring may be required during sampling activities. Examples of such situations include groundwater sampling at wells on the curb of a busy urban street, in the midst of a public park, or adjacent to a school or residence.

VOC Monitoring, Response Levels, and Actions

Volatile organic compounds (VOCs) must be monitored at the downwind perimeter of the immediate work area (i.e., the exclusion zone) on a continuous basis or as otherwise specified. Upwind concentrations should be measured at the start of each workday and periodically thereafter to establish background conditions, particularly if wind direction changes. The monitoring work should be performed using equipment appropriate to measure the types of contaminants known or suspected to be present. The equipment should be calibrated at least daily for the contaminant(s) of concern or for an appropriate surrogate. The equipment should be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below.

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

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

3. If the organic vapor level is above 25 ppm at the perimeter of the work area, activities must be shutdown.

4. All 15-minute readings must be recorded and be available for State (DEC and NYSDOH) personnel to review. Instantaneous readings, if any, used for decision purposes should also be recorded.

Particulate Monitoring, Response Levels, and Actions

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

1. If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/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 mcg/m^3 above the upwind level and provided that no visible dust is migrating from the work area.

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

3. All readings must be recorded and be available for State (DEC and NYSDOH) and County Health personnel to review.

December 2009

Appendix B

Construction Health and Safety Plan (HASP)

Health and Safety Plan

for
470 Kent Avenue
Remedial Action Work Plan

470 Kent Avenue
Brooklyn, NY 11249
Kings County
Block 2134, Lots 1 and 150 (portion)
Site No. C224053

Submitted to:
New York State Department of Environmental Conservation
Division of Environmental Remediation
Remedial Bureau C, Section A
625 Broadway, 12th Floor
Albany, NY 12233-7016

Prepared for:
470 Kent Ave Associates LLC
157 West 57th Street, 45th Floor
New York, NY 10019

Prepared by:
TENEN ENVIRONMENTAL
121 West 27th Street, Suite 702
New York, NY 10001

August 2021

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1.0 INTRODUCTION

This Health and Safety Plan (HASP) has been prepared in conformance with the Occupational Safety and Health Administration (OSHA) standards and guidance that govern site investigation activities, other applicable regulations, and Tenen Environmental LLC (Tenen) health and safety policies and procedures. The purpose of this HASP is the protection of Tenen field personnel and others during the implementation of the Remedial Action Work Plan (RAWP).

The Site is located at 470 Kent Avenue in the Williamsburg neighborhood of Brooklyn, New York. The property is approximately 3.7 acres. The western boundary of the Site is the Wallabout Channel. The Site is located in Community Board 1 and is generally identified as Block 2134, Lots 1 and 150 (portion), as shown in Figure 1. A map of the current Site layout is included as Figure 2.

The Site consists of two buildings with a covered area between them. The buildings are two and three stories, respectively. Alternate addresses include 462-490 Kent Avenue and 1-19 Division Avenue. A lumberyard currently operates at the Site. Adjoining and surrounding properties are a mix of residential, industrial and park land.

Two 1,000-gallon gasoline underground storage tanks (USTs) were installed in approximately 1945. Currently, the USTs are registered with the NYSDEC Petroleum Bulk Storage (PBS) program under Site No. 2-612201 as one 2,000 gallon UST.

1.1 Scope of HASP

This HASP includes safety procedures to be used by Tenen staff during the following activities:

- Implementation of remedial oversight and air monitoring activities;
- Collection of soil samples from grab samples; and
- Collection of post-remedial groundwater samples from permanent monitoring wells.

Contractors performing remedial construction work will ensure that performance of the work is in compliance with this HASP and applicable laws and regulations. The HASP pertains to remedial and invasive work performed at the Site.

2.0 PROJECT SAFETY AUTHORITY

The following personnel are responsible for project health and safety under this HASP.

- Project Manager – Matthew Carroll
- Health and Safety Officer (HSO) – Claire Zaccheo

In addition, each individual working at the Site will be responsible for compliance with this HASP and general safe working practices. All Site workers will have the authority to stop work if a potentially hazardous situation or event is observed.

2.1 Designated Personnel

The Project Manager is responsible for the overall operation of the project, including compliance with the HASP and general safe work practices. The Project Manager may also act as the Health and Safety Officer (HSO) for this project.

Tenen will appoint one of its on-site personnel as the on-site HSO. This individual will be responsible for the implementation of the HASP. The HSO will have a 4-year college degree in occupational safety or a related science/engineering field, and at least two (2) years of experience in implementation of air monitoring and hazardous materials sampling programs. The HSO will have completed a 40-hour training course that meets OSHA requirements of 29 CFR Part 1910, Occupational Safety and Health Standards.

The HSO will be present on-site during all field operations involving drilling or other subsurface disturbance, and will be responsible for all health and safety activities and the delegation of duties to the field crew. The HSO has stop-work authorization, which he/she will execute on his/her determination of an imminent safety hazard, emergency situation, or other potentially dangerous situation. If the HSO must be absent from the field, a replacement who is familiar with the Construction Health and Safety Plan, air monitoring and personnel protective equipment (PPE) will be designated.

3.0 HAZARD ASSESSMENT AND CONTROL MEASURES

The Site is currently utilized as a lumberyard. The northern portion of the Site was historically utilized as an MGP site. Other prior uses include industrial uses, including: molasses storage, sugar refining, warehousing, brewery bottling and case storage, and a lumberyard.

The findings of the Remedial Investigation (RI) conducted in 2020 indicate the following:

Site History

- The Site has historically been utilized for industrial operations spanning over approximately 100 years.
- Past uses include: molasses storage, sugar refining, warehousing, brewery bottling and case storage, and a lumberyard.
- The northern portion of the Site was formerly utilized as an MGP.
- Previous reports and the RI identified the presence of petroleum-related compounds and chlorinated solvents and their breakdown products in the soil, soil vapor and groundwater that is attributable to historic operations.

Geology/Hydrogeology

- The Site is covered by four to 15 feet of soil classified as historic fill material consisting of asphalt, concrete, rock fragments and fine-to-medium grain silty sand. The fill material is underlain by layers of sand and silt with increasing silty clay to clay toward Wallabout Channel.
- Groundwater was encountered at approximately 8.11 feet below grade (ft-bg) to 17.43 ft-bg and generally flows in a southwest direction.

Soil

- The results of the RI indicate that there are petroleum-related volatile organic compounds (VOCs) and semivolatile organic compounds (SVOCs), specifically polyaromatic hydrocarbons (PAHs), above regulatory standards in the soil located across the Site.
- Petroleum-related compounds are likely attributed to the historic storage of petroleum products at the Site.
- SVOCs are common constituents of historic fill material.

Groundwater

- Petroleum-related VOCs were detected above the Class GA Standards in two groundwater samples within the former MGP portion of the Site.
- SVOCs were detected above the Class GA Standards in four groundwater samples within the former MGP portion of the Site.
- PFCs were detected at low concentrations in all three groundwater samples collected on the BCP portion of the Site. PFOS and PFOA were not detected in groundwater samples above the USEPA Drinking Water Health Advisory levels.

Soil Vapor

- Tetrachloroethene (PCE) was detected in three sub-slab soil vapor sample locations at a

maximum concentration of 219 ug/m3.
- Comparison of PCE concentrations in sub-slab soil vapor samples to Decision Matrix B of the NYSDOH SVI Guidelines indicate that no further action is necessary.
- Trichloroethene (TCE) was detected in two sub-slab soil vapor sample locations at a maximum concentration of 2,160 ug/m3.
- Comparison of TCE concentrations in sub-slab soil vapor samples to Decision Matrix A of the NYSDOH SVI Guidelines indicate that mitigation is required in both sample locations (PWSV-01 and BSV-01).
- Several petroleum-related compounds, including benzene, toluene, ethylbenzene, xylenes, and trimethylbenzene, were detected in sub-slab soil vapor and indoor air.

No wetlands or surface water bodies are present at the Site. The nearest surface water body is the Wallabout Channel, directly abutting the Site.

3.1 Human Exposure Pathways

The media of concern at the Site include potentially-impacted soil, groundwater, and soil vapor. Potential exposure pathways include dermal contact, incidental ingestion and inhalation of vapors. The risk of dermal contact and incidental ingestion will be minimized through general safe work practices, a personal hygiene program and the use of PPE. The risk of inhalation will be minimized through the use of an air monitoring program for VOCs and particulates.

3.2 Chemical Hazards

Based on historic uses, the following contaminants of concern may be present at the Site and encountered during the implementation of the Remedial Action:

Petroleum-Related Compounds
- Benzene
- Toluene
- Ethylbenzene
- Xylenes
- Naphthalene
- 1,3,5-Trimethylbenzene
- 1,2,4-Trimethylbenzene
- n-Propylbenzene
- n-Butylbenzene

Semivolatile Organic Compounds
- Polyaromatic Hydrocarbons (PAHs)

Metals
- Arsenic
- Barium

- Lead
- Mercury

Material Safety Data Sheets (MSDSs) for each contaminant of concern are included in Appendix C. All personnel are required to review the MSDSs included in this HASP.

3.3 Physical Hazards

The physical hazards associated with the field activities likely present a greater risk of injury than the chemical constituents at the Site. Activities within the scope of this project shall comply with New York State and Federal OSHA construction safety standards.

Head Trauma
To minimize the potential for head injuries, field personnel will be required to wear National Institutes of Occupational Safety and Health (NIOSH)-approved hard hats during field activities. Hats must be worn properly and not altered in any way that would decrease the degree of protection provided.

Foot Trauma
To avoid foot injuries, field personnel will be required to wear steel-toed safety shoes while field activities are being performed. To afford maximum protection, all safety shoes must meet American National Standards Institute (ANSI) standards.

Eye Trauma
Field personnel will be required to wear eye protection (safety glasses with side shields) while field activities are being performed to prevent eye injuries caused by contact with chemical or physical agents.

Noise Exposure
Field personnel will be required to wear hearing protection (ear plugs or muffs) in high noise areas (noise from heavy equipment) while field activities are being performed.

Buried Utilities and Overhead Power Lines
Boring locations will be cleared by an underground utility locator service. In addition, prior to intrusive activities, the drilling subcontractor will contact the One Call Center to arrange for a utility mark-out, in accordance with New York State requirements. Protection from overhead power lines will be accomplished by maintaining safe distances of at least 15 feet at all times.

Thermal Stress
The effects of ambient temperature can cause physical discomfort, personal injury, and increase the probability of accidents. In addition, heat stress due to lack of body ventilation caused by protective clothing is an important consideration. Heat-related illnesses commonly consist of heat stroke and heat exhaustion.

The symptoms of heat stroke include: sudden onset; change in behavior; confusion; dry, hot and flushed skin; dilated pupils; fast pulse rate; body temperature reaching 105° or more; and/or, deep breathing later followed by shallow breathing.

The symptoms of heat exhaustion include: weak pulse; general weakness and fatigue; rapid shallow breathing; cold, pale and clammy skin; nausea or headache; profuse perspiration; unconsciousness; and/or, appearance of having fainted.

Heat-stress monitoring will be conducted if air temperatures exceed 70 degrees Fahrenheit. The initial work period will be set at 2 hours. Each worker will check his/her pulse at the wrist for 30 seconds early in each rest period. If the pulse rate exceeds 110 beats per minute, the next work period will be shortened by one-third.

One or more of the following precautions will reduce the risk of heat stress on the Site:

- Provide plenty of liquids to replace lost body fluids; water, electrolytic drinks, or both will be made available to minimize the risk of dehydration and heat stress
- Establish a work schedule that will provide appropriate rest periods
- Establish work regimens consistent with the American Conference of Governmental Industrial Hygienists (ACGIH) guidelines
- Provide adequate employee training on the causes of heat stress and preventive measures

In the highly unlikely event of extreme low temperatures, reasonable precautions will be made to avoid risks associated with low temperature exposure.

Traffic

Field activities will occur near public roadways. As a result, vehicular traffic will be a potential hazard during these activities and control of these areas will be established using barricades or traffic cones. Additional staff will be assigned, as warranted, for the sole purpose of coordinating traffic. Personnel will also be required to wear high-visibility traffic vests while working in the vicinity of the public roadways and local requirements for lane closure will be observed as needed. All work in public rights-of-way will be coordinated with local authorities and will adhere to their requirements for working in traffic zones.

Hazardous Weather Conditions

All Site workers will be made aware of hazardous weather conditions, specifically including extreme heat, and will be requested to take the precautions described herein to avoid adverse health risks. All workers are encouraged to take reasonable, common sense precautions to avoid potential injury associated with possible rain or high wind, sleet, snow or freezing.

Slip, Trip and Fall

Areas at the Site may be slippery from mud or water. Care should be taken by all Site workers to avoid slip, trip, and fall hazards. Workers shall not enter areas that do not have adequate lighting. Additional portable lighting will be provided at the discretion of the HSO.

Biological Hazards
Drugs and alcohol are prohibited from the Site. Any on-site personnel violating this requirement will be immediately expelled from the site.

Any worker or oversight personnel with a medical condition that may require attention must inform the HSO of such condition. The HSO will describe appropriate measures to be taken if the individual should become symptomatic.

Due to the Site location in an urban area, it is highly unlikely that poisonous snakes, spiders, plants and insects will be encountered. However, other animals (dogs, cats, etc.) may be encountered and care should be taken to avoid contact.

4.0 AIR MONITORING

The NYSDOH Generic Community Air Monitoring Plan (CAMP), included as Appendix 1A of DER-10 (and Appendix A of the Remedial Action Work Plan), will be implemented during all ground-intrusive sampling and remedial activities. Continuous monitoring will be implemented during all soil handling activities, boring installation (soil boring, monitoring wells, and soil vapor points) and periodic monitoring will be implemented during sampling (groundwater and soil vapor samples).

VOC Monitoring, Response Levels, and Actions
Volatile organic compounds (VOCs) must be monitored at the downwind perimeter of the immediate work area (i.e., the exclusion zone) on a continuous basis or as otherwise specified. Upwind concentrations should be measured at the start of each workday and periodically thereafter to establish background conditions, particularly if wind direction changes. The monitoring should be performed using equipment appropriate for the types of contaminants known or suspected to be present. The equipment should be calibrated at least daily for the contaminant(s) of concern or for an appropriate surrogate. The equipment should be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below.

1. If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 parts per million (ppm) above the 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 without continued monitoring.
2. If total organic vapor levels at the downwind perimeter of the work area or exclusion zone persists at levels in excess of 5 ppm over background but less than 25 ppm, work activities must be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities can resume provided that the total organic vapor level 200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less – but in no case less than 20 feet, is below 5 ppm over background for the 15-minute average.

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

Particulate Monitoring, Response Levels, and Actions

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

1. If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/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 mcg/m^3 above the upwind level and provided that no visible dust is migrating from the work area.
2. If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 mcg/m^3 above the upwind level, work must be stopped and a reevaluation of activities initiated. Work can resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 mcg/m^3 of the upwind level and in preventing visible dust migration.
3. All readings must be recorded and available for State (NYSDEC and NYSDOH) personnel to review.

5.0 PERSONAL PROTECTIVE EQUIPMENT

The personal protection equipment required for various kinds of site investigation tasks is based on 29 CFR 1910.120, Hazardous Waste Operations and Emergency Response, "General Description and Discussion of the Levels of Protection and Protective Gear."

Tenen field personnel and other site personnel will wear Level D personal protective equipment. During activities such as drilling, well installation, or sampling, where there is a chance of contact with contaminated materials, modified Level D equipment will be worn. The protection will be upgraded to Level C if warranted by the results of the air monitoring. A description of the personnel protective equipment for Levels D and C is provided below.

Level D
Respiratory Protection: None
Protective Clothing: Hard hat, steel-toed shoes, long pants, nitrile gloves

Modified Level D
Respiratory Protection: None
Protective Clothing: Hard hat, steel-toed shoes, coveralls/tyvek, nitrile gloves

Level C
Respiratory Protection: Air purifying respirator with organic vapor cartridges and filters.
Protective Clothing: Same as modified Level D

6.0 EXPOSURE MONITORING

Selective monitoring of workers in the exclusion area may be conducted, as determined by the HSO, if sources of hazardous materials are identified. Personal monitoring may be conducted in the breathing zone at the discretion of the Project Manager or HSO and, if workers are wearing respiratory protective equipment, outside the face-piece.

7.0 SITE ACCESS

Access to the Site during the investigation will be controlled by the Project Manager or HSO. Unauthorized personnel will not be allowed access to the sampling areas.

8.0 WORK AREAS

During any activities involving drilling or other subsurface disturbance, the work area must be divided into various zones to prevent the spread of contamination, clarify the type of protective equipment needed, and provide an area for decontamination.

The Exclusion Zone is defined as the area where potentially contaminated materials are generated as the result of drilling, sampling, or similar activities. The Contamination Reduction Zone (CRZ) is the area where decontamination procedures take place and is located adjacent to the Exclusion Zone. The Support Zone is the area where support facilities such as vehicles, a field phone, fire extinguisher and/or first aid supplies are located. The emergency staging area (part of the Support Zone) is the area where all Site workers will assemble in the event of an emergency. These zones shall be designated daily, depending on that day's activities. All field personnel will be informed of the location of these zones before work begins.

Control measures such as "Caution" tape and traffic cones will be placed around the perimeter of the work area when work is being done in the areas of concern (i.e., areas with exposed soil) to prevent unnecessary access.

9.0 DECONTAMINATION PROCEDURES

Personnel Decontamination
Personnel decontamination (decon), if deemed necessary by the HSO, will take place in the designated decontamination area delineated for each sampling location. Personnel decontamination will consist of the following steps:

- Soap and potable water wash and potable water rinse of gloves;
- Tyvek removal;
- Glove removal;
- Disposable clothing removal; and
- Field wash of hands and face.

Equipment Decontamination
Sampling equipment, such as split-spoons and bailers, will be decontaminated in accordance with U.S. Environmental Protection Agency methodologies, as described in the work plan.

Disposal of Materials
Purged well water, water used to decontaminate any equipment and well cuttings will be containerized and disposed off-site in accordance with federal, state and local regulations.

10.0 GENERAL SAFE WORK PRACTICES

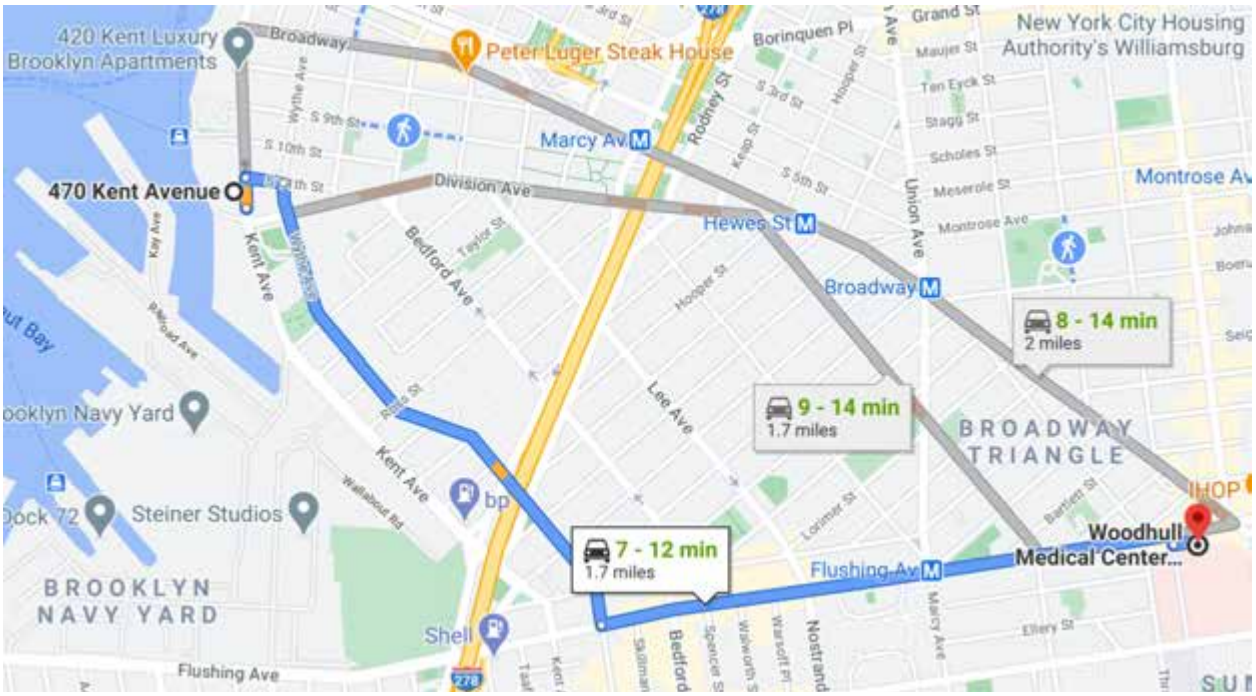
To protect the health and safety of the field personnel, all field personnel will adhere to the guidelines listed below during activities involving subsurface disturbance.

- Eating, drinking, chewing gum or tobacco, and smoking are prohibited, except in designated areas on the site. These areas will be designated by the HSO.
- Workers must wash their hands and face thoroughly on leaving the work area and before eating, drinking, or any other such activity. The workers should shower as soon as possible after leaving the site.
- Removal of potential contamination from PPE and equipment by blowing, shaking or any means that may disperse materials into the air is prohibited.
- Contact with contaminated or suspected surfaces should be avoided.
- The buddy system should always be used; each buddy should watch for signs of fatigue, exposure, and heat stress.
- Personnel will be cautioned to inform each other of symptoms of chemical exposure such as headache, dizziness, nausea, and irritation of the respiratory tract and heat stress.
- No excessive facial hair that interferes with a satisfactory fit of the face-piece of the respirator to the face will be allowed on personnel required to wear respiratory protective equipment.
- On-site personnel will be thoroughly briefed about the anticipated hazards, equipment requirements, safety practices, emergency procedures, and communications methods.

11.0 EMERGENCY PROCEDURES

The field crew will be equipped with emergency equipment, such as a first aid kit and disposable eye washes. In the case of a medical emergency, the HSO will determine the nature of the emergency and will have someone call for an ambulance, if needed. If the nature of the injury is not serious—i.e., the person can be moved without expert emergency medical personnel—onsite personnel should drive him to a hospital. **The nearest emergency room is at the Woodhull Medical Center located at 760 Broadway, Brooklyn, NY 11206. The emergency room entrance is on Flushing Avenue between Throop Avenue and Broadway. The phone number is (718) 963-8000.** The route to the hospital is shown and detailed on the next page.

11.1 Route to Hospital



Driving directions to **Woodhull Medical Center Emergency Room** from **470 Kent Avenue, Brooklyn, New York.**

Driving Directions

1. Head north on Kent Avenue towards South 11th Street.
2. Turn right onto South 11th Street.
3. Turn right at the next light onto Wythe Avenue.
4. Turn left onto Flushing Avenue. The destination will be on the right past Throop Avenue.

EMERGENCY CONTACTS
There will be an on-site field phone. Emergency and contact telephone numbers are listed below:

Table 1 – Emergency Contacts

Ambulance	911
Emergency Room	(718) 485-6000
NYSDEC Spill Hotline	(800) 457-7362
NYSDEC Manager, Gerald Pratt	(518) 402-9667
Tenen RE, Matthew Carroll, PE	(917) 510-6767
Tenen QEP, Alana Carroll, PG	(917) 428-2094
On-site Field Phone, Claire Zaccheo	(917) 744-5421
Client representative	(212) 759-9777

12.0 TRAINING

All personnel performing the field activities described in this HASP will have received the initial safety training required by 29 CFR, 1910.120. Current refresher training status also will be required for all personnel engaged in field activities.

All those who enter the work area while intrusive activities are being performed must recognize and understand the potential hazards to health and safety. All field personnel must attend a training program covering the following areas:

- potential hazards that may be encountered;
- the knowledge and skills necessary for them to perform the work with minimal risk to health and safety;
- the purpose and limitations of safety equipment; and
- protocols to enable field personnel to safely avoid or escape from emergencies.

Each member of the field crew will be instructed in the above objectives before he/she goes onto the site. The HSO will be responsible for conducting the training program.

13.0 MEDICAL SURVEILLANCE

All Tenen and subcontractor personnel performing field work involving subsurface disturbance at the site are required to have passed a complete medical surveillance examination in accordance with 29 CFR 1910.120 (f). The medical examination for Tenen employees will, at a minimum, be provided annually and upon termination of hazardous waste site work.

Appendix A

Acknowledgement of HASP

ACKNOWLEDGMENT OF HASP

Below is an affidavit that must be signed by all Tenen Environmental employees who enter the site. A copy of the HASP must be on-site at all times and will be kept by the HSO.

AFFIDAVIT

I have read the Construction Health and Safety Plan (HASP) for the 470 Kent Avenue site in Brooklyn, NY. I agree to conduct all on-site work in accordance with the requirements set forth in this HASP and understand that failure to comply with this HASP could lead to my removal from the site.

Signature: _____ Date: _____
Signature: _____ Date: _____
Signature: _____ Date: _____
Signature: _____ Date: _____
Signature: _____ Date: _____

Appendix B

Injury Reporting Form (OSHA Form 300)

OSHA's Form 300 (Rev. 01/2004)

Log of Work-Related Injuries and Illnesses

Attention: This form contains information relating to employee health and must be used in a manner that protects the confidentiality of employees to the extent possible while the information is being used for occupational safety and health purposes.

Year 20__ __

U.S. Department of Labor
Occupational Safety and Health Administration

Form approved OMB no. 1218-0176

You must record information about every work-related death and about every work-related injury or illness that involves loss of consciousness, restricted work activity or job transfer, days away from work, or medical treatment beyond first aid. You must also record significant work-related injuries and illnesses that are diagnosed by a physician or licensed health care professional. You must also record work-related injuries and illnesses that meet any of the specific recording criteria listed in 29 CFR Part 1904.8 through 1904.12. Feel free to use two lines for a single case if you need to. You must complete an Injury and Illness Incident Report (OSHA Form 301) or equivalent form for each injury or illness recorded on this form. If you're not sure whether a case is recordable, call your local OSHA office for help.

Establishment name _____

City _____ State _____

Identify the person			Describe the case			Classify the case (CHECK ONLY ONE box for each case based on the most serious outcome for that case:)				Enter the number of days the injured or ill worker was:		Check the "Injury" column or choose one type of illness:					
								Remained at Work				(M)					
(A) Case no.	(B) Employee's name	(C) Job title (*e.g., Welder*)	(D) Date of injury or onset of illness	(E) Where the event occurred (*e.g., Loading dock north end*)	(F) Describe injury or illness, parts of body affected, and object/substance that directly injured or made person ill (*e.g., Second degree burns on right forearm from acetylene torch*)	Death (G)	Days away from work (H)	Job transfer or restriction (I)	Other record-able cases (J)	Away from work (K)	On job transfer or restriction (L)	Injury (1)	Skin disorder (2)	Respiratory condition (3)	Poisoning (4)	Hearing loss (5)	All other illnesses (6)
			/ month/day			☐	☐	☐	☐	____ days	____ days	☐	☐	☐	☐	☐	☐

Appendix C

Material Safety Data Sheets (MSDS)

Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH)

1,2,4-trimethylbenzene

Version number: GHS 2.0
Replaces version of: 25.02.2016 (GHS 1)

Revision: 13.10.2017

SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1 Product identifier

Identification of the substance	**1,2,4-trimethylbenzene**
Registration number (REACH)	01-2119472135-42-xxxx
EC number	202-436-9
Index No	-
CAS number	95-63-6
Additional relevant and available information	Pseudocumene

1.2 Relevant identified uses of the substance or mixture and uses advised against

Relevant identified uses	industrial use (SCC)

1.3 Details of the supplier of the safety data sheet

DHC Solvent Chemie GmbH
Timmerhellstraße 28
D-45478 Mülheim an der Ruhr
Germany

Telephone: +49 (208) 9940-0
Telefax: +49 (208) 9940-150

Competent person responsible for the safety data sheet	Vanessa Manz
e-mail (competent person)	productsafety@dhc-solvent.de

1.4 Emergency telephone number

Emergency information service

Poison centre	
Country	**Telephone**
United Kingdom	+44 1235 239670

SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008 (CLP)

Hazard class	Category	Hazard class and category	Hazard statement
flammable liquid	Cat. 3	(Flam. Liq. 3)	H226
acute toxicity (inhal.)	Cat. 4	(Acute Tox. 4)	H332
skin corrosion/irritation	Cat. 2	(Skin Irrit. 2)	H315
serious eye damage/eye irritation	Cat. 2	(Eye Irrit. 2)	H319
specific target organ toxicity - single exposure (respiratory tract irritation)	Cat. 3	(STOT SE 3)	H335
aspiration hazard	Cat. 1	(Asp. Tox. 1)	H304
hazardous to the aquatic environment - chronic hazard	Cat. 2	(Aquatic Chronic 2)	H411

Remarks

For full text of H-phrases: see SECTION 16.
Substance with a community indicative occupational exposure limit value.

The most important adverse physicochemical, human health and environmental effects

May be fatal if swallowed and enters airways.
The product is combustible and can be ignited by potential ignition sources.

2.2 Label elements

Labelling according to Regulation (EC) No 1272/2008 (CLP)

Signal word **Danger**

Pictograms

GHS02, GHS07, GHS08, GHS09



Hazard statements

H226	Flammable liquid and vapour.
H304	May be fatal if swallowed and enters airways.
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H332	Harmful if inhaled.
H335	May cause respiratory irritation.
H411	Toxic to aquatic life with long lasting effects.

Precautionary statements

Precautionary statements - prevention

P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P243	Take action to prevent static discharges.
P273	Avoid release to the environment.
P280	Wear protective gloves/protective clothing/eye protection/face protection.

Precautionary statements - response

P301+P310	IF SWALLOWED: Immediately call a POISON CENTER/doctor/physician.
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P331	Do NOT induce vomiting.
P370+P378	In case of fire: Use sand, carbon dioxide or powder extinguisher to extinguish.

Precautionary statements - storage

P403+P233	Store in a well-ventilated place. Keep container tightly closed.
P403+P235	Store in a well-ventilated place. Keep cool.

Precautionary statements - disposal

P501	Dispose of contents/container in accordance with local/regional/national/international regulations.

2.3 Other hazards

According to the results of its assessment, this substance is not a PBT or a vPvB.
Vapour heavier than air, may form an explosive mixture in air: it may be ignited at some distance away from the spill resulting in flashbacks. Flowing product can create electrostatic charge, resulting sparks may ignite or cause an explosion.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

Name of substance	1,2,4-trimethylbenzene
Registration number (REACH)	01-2119472135-42-xxxx
EC number	202-436-9
CAS number	95-63-6
Index No	-
Molecular formula	C9H12

SECTION 4: FIRST AID MEASURES

4.1 Description of first aid measures

General notes

Do not leave affected person unattended. Remove victim out of the danger area. Keep affected person warm, still and covered. Take off immediately all contaminated clothing. In all cases of doubt, or when symptoms persist, seek medical advice. In case of unconsciousness place person in the recovery position. Never give anything by mouth.

Following inhalation

If breathing is irregular or stopped, immediately seek medical assistance and start first aid actions. Provide fresh air.

Following skin contact

Wash with plenty of soap and water.

Following eye contact

Irrigate copiously with clean, fresh water, holding the eyelids apart. Remove contact lenses, if present and easy to do. Continue rinsing. In all cases of doubt, or when symptoms persist, seek medical advice.

Following ingestion

Do NOT induce vomiting. Rinse mouth with water (only if the person is conscious).

4.2 Most important symptoms and effects, both acute and delayed

Choking and suffocation risks. Deficits in perception and coordination, reaction time, or sleepiness.

4.3 Indication of any immediate medical attention and special treatment needed

none

SECTION 5: FIREFIGHTING MEASURES

5.1 Extinguishing media

Suitable extinguishing media

carbon dioxide (CO2), BC-powder, foam, alcohol resistant foam, water mist

Unsuitable extinguishing media

water jet

5.2 Special hazards arising from the substance or mixture

Solvent vapours are heavier than air and may spread along floors. In case of insufficient ventilation and/or in use, may form flammable/explosive vapour-air mixture. May produce toxic fumes of carbon monoxide if burning.

Hazardous combustion products

carbon monoxide (CO), carbon dioxide (CO2)

5.3 Advice for firefighters

Wear breathing apparatus if exposed to vapours/dust/spray/gases. Co-ordinate firefighting measures to the fire surroundings. Do not allow firefighting water to enter drains or water courses. Collect contaminated firefighting water separately. Fight fire with normal precautions from a reasonable distance. Keep containers cool with water spray.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

For non-emergency personnel

Remove persons to safety. Avoid inhaling sprayed product. Wearing of suitable protective equipment (including personal protective equipment referred to under Section 8 of the safety data sheet) to prevent any contamination of skin, eyes and personal clothing. Remove/take off immediately all contaminated clothing and wash it before reuse.

For emergency responders

Wear breathing apparatus if exposed to vapours/dust/spray/gases.

6.2 Environmental precautions

Keep away from drains, surface and ground water. Retain contaminated washing water and dispose of it. If substance has entered a water course or sewer, inform the responsible authority.

6.3 Methods and material for containment and cleaning up

Advices on how to contain a spill

Covering of drains.

Advices on how to clean up a spill

Wipe up with absorbent material (e.g. cloth, fleece). Collect spillage (sawdust. , kieselgur (diatomite), sand, universal binder).

Appropriate containment techniques

Use of adsorbent materials. - covering of drains

Other information relating to spills and releases

Place in appropriate containers for disposal. Ventilate affected area.

6.4 Reference to other sections

Hazardous combustion products: see section 5. Personal protective equipment: see section 8. Incompatible materials: see section 10. Disposal considerations: see section 13.

SECTION 7: HANDLING AND STORAGE

7.1 Precautions for safe handling

Recommendations

• Measures to prevent fire as well as aerosol and dust generation

Use only in well-ventilated areas. Use local and general ventilation. Ground/bond container and receiving equipment. Use explosion-proof electrical/ventilating/lighting equipment. Use only non-sparking tools.

• Warning

Vapours are heavier than air, spread along floors and form explosive mixtures with air.

Advice on general occupational hygiene

Wash hands after use. Do not eat, drink and smoke in work areas. Remove contaminated clothing and protective equipment before entering eating areas. Never keep food or drink in the vicinity of chemicals. Never place chemicals in containers that are normally used for food or drink. Keep away from food, drink and animal feedingstuffs.

7.2 Conditions for safe storage, including any incompatibilities

Managing of associated risks

• Explosive atmospheres

Keep container tightly closed and in a well-ventilated place. Use local and general ventilation. Keep cool. Protect from sunlight.

• Flammability hazards

Keep away from sources of ignition - No smoking. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Take precautionary measures against static discharge. Protect from sunlight.

Incompatible substances or mixtures

Observe hints for combined storage.

Consideration of other advice

• Ventilation requirements

Keep any substance that emits harmful vapours or gases in a place that allows these to be permanently extracted. Use local and general ventilation. Ground/bond container and receiving equipment.

• Packaging compatibilities

Only packagings which are approved (e.g. acc. to ADR) may be used.
Suitable materials and coatings for container/equipment: Carbon Steel, Stainless Steel, Polyester, Polytetrafluoroethylene (PTFE), Polyvinyl Alcohol (PVA)
Unsuitable Materials and Coatings for container/equipment: Butyl Rubber, Natural Rubber, Ethylene-propylene-diene monomer (EPDM), Polystyrene, Polyethylene, Polyacrylonetrile.

7.3 Specific end use(s)

See attached exposure scenarios

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

National limit values

Occupational exposure limit values (Workplace Exposure Limits)

Country	Name of agent	CAS No	Identifier	TWA [ppm]	TWA [mg/m³]	STEL [ppm]	STEL [mg/m³]	Source
DE	1,2,4-trimethylbenzene	95-63-6	AGW	20	100	40	200	TRGS 900
EU	1,2,4-trimethylbenzene	95-63-6	IOELV	20	100			2017/164/EU
GB	aromatics	95-63-6	WEL		500			EH40/2005
IE	1,2,4-trimethylbenzene	95-63-6	OELV	20	100			S.I. No. 619 of 2001

Notation

STEL Short-term exposure limit: a limit value above which exposure should not occur and which is related to a 15-minute period unless otherwise specified.

TWA Time-weighted average (long-term exposure limit): measured or calculated in relation to a reference period of 8 hours time-weighted average.

Relevant DNELs/DMELs/PNECs and other threshold levels

• human health values

Endpoint	Threshold level	Protection goal, route of exposure	Used in	Exposure time
DNEL	100 mg/m³	human, inhalatory	worker (industry)	acute - local effects
DNEL	100 mg/m³	human, inhalatory	worker (industry)	acute - systemic effects
DNEL	100 mg/m³	human, inhalatory	worker (industry)	chronic - local effects
DNEL	16,171 mg/kg	human, dermal	worker (industry)	chronic - systemic effects
DNEL	100 mg/m³	human, inhalatory	worker (industry)	chronic - systemic effects
DNEL	29.4 mg/m³	human, inhalatory	consumer (private households)	acute - systemic effects
DNEL	29.4 mg/m³	human, inhalatory	consumer (private households)	chronic - local effects
DNEL	15 mg/kg	human, oral	consumer (private households)	chronic - systemic effects
DNEL	9,512 mg/kg	human, dermal	consumer (private households)	chronic - systemic effects
DNEL	29.4 mg/m³	human, inhalatory	consumer (private households)	chronic - systemic effects

• environmental values

End-point	Threshold level	Organism	Environmental compart-ment	Exposure time
PNEC	0.12 mg/l	aquatic organisms	freshwater	short-term (single instance)
PNEC	0.12 mg/l	aquatic organisms	marine water	short-term (single instance)
PNEC	2.41 mg/l	microorganisms	sewage treatment plant (STP)	short-term (single instance)
PNEC	13.56 mg/kg	benthic organisms	sediments	short-term (single instance)
PNEC	13.56 mg/kg	pelagic organisms	sediments	short-term (single instance)
PNEC	2.34 mg/kg	terrestrial organisms	soil	short-term (single instance)
PNEC	0.12 mg/l	aquatic organisms	water	intermittent release

8.2 Exposure controls

Appropriate engineering controls

Technical measures and the appliance of appropriate working methods take priority over the use of personal protective equipment.
Safety and necessary control measures vary according to exposure conditions. Appropriate measures are:
Open windows, door, to allow sufficient ventilation. If this is not possible employ a fan to increase air exchange (see attached exposure scenarios).

Individual protection measures (personal protective equipment)

Eye/face protection

Use safety goggle with side protection.

Skin protection

• hand protection

Wear suitable gloves. Chemical protection gloves are suitable, which are tested according to EN 374.
Short-term contact with the skin: Disposable gloves
Long-term contact with the skin: Gloves with long cuffs
Check leak-tightness/impermeability prior to use.

• type of material

NBR: acrylonitrile-butadiene rubber, FKM: fluoro-elastomer

• material thickness

0,40 mm.

• breakthrough times of the glove material

>480 minutes (permeation: level 6)

• other protection measures

Take recovery periods for skin regeneration. Preventive skin protection (barrier creams/ointments) is recommended. Wash hands thoroughly after handling.
Body protection:
Suitable protective clothing: Flame resistant clothing
Suitable safety shoes: Anti static safety shoes according to EN 345 S3

Respiratory protection

For activities in enclosed areas at elevated temperatures of the substance, local extraction or explosion protected ventilation equipment is recommended. In case this is not sufficient for the intended use, then apply a suitable respiratory protection according to EN 140 type A or better (see exposure scenarios). .

Environmental exposure controls

Do not empty into drains.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance	
Physical state	liquid
Colour	colourless
Odour	characteristic
Other physical and chemical parameters	
pH (value)	not determined
Melting point/freezing point	-43.77 °C
Initial boiling point and boiling range	169.4 °C at 101.3 kPa
Flash point	44 °C at 101.3 kPa
Explosive limits	
• lower explosion limit (LEL)	0.9 vol%
• upper explosion limit (UEL)	6.4 vol%
Vapour pressure	0.3 kPa at 25 °C
Density	0.88 $^{g}/_{cm^3}$ at 20 °C
Solubility(ies)	
Water solubility	57 $^{mg}/_{l}$ at 25 °C
Partition coefficient	
n-octanol/water (log KOW)	This information is not available.
Auto-ignition temperature	500 °C
Viscosity	
• kinematic viscosity	0.843 $^{mm^2}/_{s}$ at 20 °C

Explosive properties

in use, may form flammable/explosive vapour-air mixture

Oxidising properties none

9.2 Other information

SECTION 10: STABILITY AND REACTIVITY

10.1 Reactivity

risk of ignition

• if heated

risk of ignition

10.2 Chemical stability

The material is stable under normal ambient and anticipated storage and handling conditions of temperature and pressure (see below "Conditions to avoid").

10.3 Possibility of hazardous reactions

No known hazardous reactions.

10.4 Conditions to avoid

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

Hints to prevent fire or explosion

Use only non-sparking tools.

10.5 Incompatible materials

oxidisers

10.6 Hazardous decomposition products

No known hazardous decomposition products.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Classification according to GHS (1272/2008/EC, CLP)

Acute toxicity

Harmful if inhaled.

• Acute toxicity estimate (ATE)

inhalation: vapour 11 $^{mg}/_{l}$/4h

Exposure route	Endpoint	Value	Species
oral	LD50	6,000 $^{mg}/_{kg}$	rat

Skin corrosion/irritation

Causes skin irritation.

Serious eye damage/eye irritation

Causes serious eye irritation.

Respiratory or skin sensitisation

Shall not be classified as a respiratory or skin sensitiser.

Summary of evaluation of the CMR properties

Shall not be classified as germ cell mutagenic, carcinogenic nor as a reproductive toxicant.

Specific target organ toxicity (STOT)

• Specific target organ toxicity - single exposure

May cause respiratory irritation.

• Specific target organ toxicity - repeated exposure

Shall not be classified as a specific target organ toxicant (repeated exposure).

Aspiration hazard

May be fatal if swallowed and enters airways.

Information on likely routes of exposure

If on skin. If inhaled.

SECTION 12: ECOLOGICAL INFORMATION

12.1 Toxicity

Aquatic toxicity (acute)

Endpoint	Value	Species	Exposure time
LC50	7.72 $^{mg}/_{l}$	fish	96 h
EC50	2.356 $^{mg}/_{l}$	algae	96 h

Aquatic toxicity (chronic)

May cause long-term adverse effects in the aquatic environment.

12.2 Persistence and degradability

Data are not available.

12.3 Bioaccumulative potential

Data are not available.

BCF 243

12.4 Mobility in soil

Data are not available.

12.5 Results of PBT and vPvB assessment

According to the results of its assessment, this substance is not a PBT or a vPvB.

12.6 Other adverse effects

Data are not available.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Waste treatment-relevant information

Solvent reclamation/regeneration.

Sewage disposal-relevant information

Do not empty into drains.

Waste treatment of containers/packagings

Empty containers may contain residue and can be dangerous. Do not attempt to refill or clean containers without proper instructions. Empty drums should be completely drained and safely stored until appropriately re-conditioned or disposed. Empty containers should be taken for recycling, recovery, or disposal through suitably qualified or licensed contractor and in accordance with governmental regulations. DO NOT PRESSURISE, CUT, WELD, BRAZE, SOLDER, DRILL, GRIND, OR EXPOSE SUCH CONTAINERS TO HEAT, FLAME, SPARKS, STATIC ELECTRICITY, OR OTHER SOURCES OF IGNITION. THEY MAY EXPLODE AND CAUSE INJURY OR DEATH.

List of wastes

Proposed waste code(s) for the used product:
07 01 04x Other organic solvents, washing liquids and mother liquors

Remarks

Please consider the relevant national or regional provisions. Waste shall be separated into the categories that can be handled separately by the local or national waste management facilities.

SECTION 14: TRANSPORT INFORMATION

14.1	UN number	**1993**
14.2	UN proper shipping name	**FLAMMABLE LIQUID, N.O.S.**
	Technical name	1,2,4-trimethylbenzene
14.3	Transport hazard class(es)	
	Class	3 (flammable liquids)
14.4	Packing group	III (substance presenting low danger)
14.5	Environmental hazards	hazardous to the aquatic environment

14.6 Special precautions for user

Provisions for dangerous goods (ADR) should be complied within the premises.

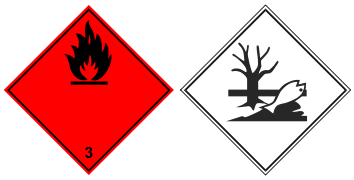
14.7 Transport in bulk according to Annex II of MARPOL and the IBC Code

The cargo is not intended to be carried in bulk.

Information for each of the UN Model Regulations

• Transport of dangerous goods by road, rail and inland waterway (ADR/RID/ADN)

UN number	1993
Proper shipping name	FLAMMABLE LIQUID, N.O.S.
Technical name (hazardous constituents)	1,2,4-trimethylbenzene
Class	3
Classification code	F1
Packing group	III
Danger label(s)	3 + "fish and tree"

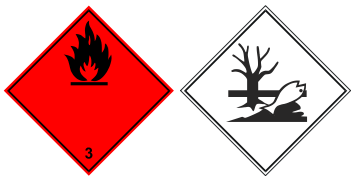


Environmental hazards	yes (hazardous to the aquatic environment)
Special provisions (SP)	274, 601
Excepted quantities (EQ)	E1
Limited quantities (LQ)	5 L
Transport category (TC)	3
Tunnel restriction code (TRC)	D/E
Hazard identification No	30
Emergency Action Code	3YE

• International Maritime Dangerous Goods Code (IMDG)

UN number	1993
Proper shipping name	FLAMMABLE LIQUID, N.O.S.
Particulars in the shipper's declaration	UN1993, FLAMMABLE LIQUID, N.O.S., (1,2,4-trimethylbenzene), 3, III, 44 °C c.c., MARINE POLLUTANT
Class	3

Marine pollutant	yes (hazardous to the aquatic environment)
Packing group	III
Danger label(s)	3 + "fish and tree"



Special provisions (SP)	223, 274, 955
Excepted quantities (EQ)	E1
Limited quantities (LQ)	5 L
EmS	F-E, S-E
Stowage category	A

• International Civil Aviation Organization (ICAO-IATA/DGR)

UN number	1993
Proper shipping name	Flammable liquid, n.o.s.
Class	3
Environmental hazards	yes (hazardous to the aquatic environment)
Packing group	III
Danger label(s)	3



Special provisions (SP)	A3
Excepted quantities (EQ)	E1
Limited quantities (LQ)	10 L

SECTION 15: REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

Relevant provisions of the European Union (EU)

• Restrictions according to REACH, Annex XVII

Name of substance	CAS No	Wt%	Type of registration	No
1,2,4-trimethylbenzene		100	1907/2006/EC annex XVII	3
1,2,4-trimethylbenzene		100	1907/2006/EC annex XVII	40

• List of substances subject to authorisation (REACH, Annex XIV)

not listed

• 2012/18/EU (Seveso III)

No	Dangerous substance/hazard categories	Qualifying quantity (tonnes) for the application of lower and upper-tier requirements		Notes
E2	environmental hazards (hazardous to the aquatic environment, cat. 2)	200	500	57)

Notation

57) Hazardous to the Aquatic Environment in category Chronic 2.

• Limitation of emissions of volatile organic compounds due to the use of organic solvents in certain paints and varnishes and vehicle refinishing products (2004/42/EC, Deco-Paint Directive)

VOC content 100 %

• Directive on industrial emissions (VOCs, 2010/75/EU)

VOC content 100 %

• Directive 2011/65/EU on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS) - Annex II

not listed

• Regulation 166/2006/EC concerning the establishment of a European Pollutant Release and Transfer Register (PRTR)

not listed

• Directive 2000/60/EC establishing a framework for Community action in the field of water policy (WFD)

not listed

National inventories

Country	Inventory	Status
AU	AICS	substance is listed
CA	DSL	substance is listed
CN	IECSC	substance is listed
EU	ECSI	substance is listed
EU	REACH Reg.	substance is listed
JP	CSCL-ENCS	substance is listed
KR	KECI	substance is listed
MX	INSQ	substance is listed
NZ	NZIoC	substance is listed
PH	PICCS	substance is listed
TR	CICR	substance is listed
TW	TCSI	substance is listed
US	TSCA	substance is listed

Legend

AICS Australian Inventory of Chemical Substances.
CICR Chemical Inventory and Control Regulation.
CSCL-ENCS List of Existing and New Chemical Substances (CSCL-ENCS).
DSL Domestic Substances List (DSL).
ECSI EC Substance Inventory (EINECS, ELINCS, NLP).
IECSC Inventory of Existing Chemical Substances Produced or Imported in China.
INSQ National Inventory of Chemical Substances.
KECI Korea Existing Chemicals Inventory.
NZIoC New Zealand Inventory of Chemicals.
PICCS Philippine Inventory of Chemicals and Chemical Substances.
REACH Reg. REACH registered substances.
TCSI Taiwan Chemical Substance Inventory.
TSCA Toxic Substance Control Act.

15.2 Chemical Safety Assessment

For this substance a chemical safety assessment has been carried out.

SECTION 16: OTHER INFORMATION

16.1 Indication of changes (revised safety data sheet)

Section	Former entry (text/value)	Actual entry (text/value)
1.3	Competent person responsible for the safety data sheet: Christian Knappe	Competent person responsible for the safety data sheet: Vanessa Manz
1.4		Poison centre: change in the listing (table)
2.2		Precautionary statements - prevention: change in the listing (table)
2.2		Precautionary statements - disposal: change in the listing (table)
6.2	Environmental precautions: Keep away from drains, surface and ground water. Retain contaminated washing water and dispose of it.	Environmental precautions: Keep away from drains, surface and ground water. Retain contaminated washing water and dispose of it. If substance has entered a water course or sewer, inform the responsible authority.
8.1		Occupational exposure limit values (Workplace Exposure Limits): change in the listing (table)
11.1		Information on likely routes of exposure: If on skin. If inhaled.
15.1		• Restrictions according to REACH, Annex XVII: change in the listing (table)
15.1		National inventories: change in the listing (table)
16		Abbreviations and acronyms: change in the listing (table)
16	Key literature references and sources for data: - Regulation (EC) No. 1907/2006 (REACH), amended by 2015/830/EU - Regulation (EC) No. 1272/2008 (CLP, EU GHS) - See attached exposure scenarios http://www.dhc-solvent.de/dhc_sdbreach.html http://www.dhc-solvent.de/en/dhc_sdbreach.html Transport of dangerous goods by road, rail and inland waterway (ADR/RID/ADN). International Maritime Dangerous Goods Code (IMDG). International Air Transport Association (IATA).	Key literature references and sources for data: - Regulation (EC) No. 1907/2006 (REACH), amended by 2015/830/EU - Regulation (EC) No. 1272/2008 (CLP, EU GHS) - The exposure scenarios are available at www.dhc-solvent.de in the Service section. Transport of dangerous goods by road, rail and inland waterway (ADR/RID/ADN). International Maritime Dangerous Goods Code (IMDG). International Air Transport Association (IATA).
16		Disclaimer: This information is based upon the present state of our knowledge. This SDS has been compiled and is solely intended for this product. The information concerning legal regulations can lay no claim to completeness. In addition to this, other provisions may also apply to the product.

Abbreviations and acronyms

Abbr.	Descriptions of used abbreviations
2017/164/EU	Comission Directive establishing a fourth list of indicative occupational exposure limit values pursuant to Council Directive 98/24/EC, and amending Commission Directives 91/322/EEC, 2000/39/EC and 2009/161/EU
ADN	Accord européen relatif au transport international des marchandises dangereuses par voies de navigation intérieures (European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways)
ADR	Accord européen relatif au transport international des marchandises dangereuses par route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
AGW	Workplace exposure limit

Abbr.	Descriptions of used abbreviations
BCF	Bioconcentration factor
CAS	Chemical Abstracts Service (service that maintains the most comprehensive list of chemical substances)
CLP	Regulation (EC) No 1272/2008 on classification, labelling and packaging of substances and mixtures
CMR	Carcinogenic, Mutagenic or toxic for Reproduction
DGR	Dangerous Goods Regulations (see IATA/DGR)
DMEL	Derived Minimal Effect Level
DNEL	Derived No-Effect Level
EH40/2005	EH40/2005 Workplace exposure limits (http://www.nationalarchives.gov.uk/doc/open-government-licence/)
EINECS	European Inventory of Existing Commercial Chemical Substances
ELINCS	European List of Notified Chemical Substances
EmS	Emergency Schedule
GHS	"Globally Harmonized System of Classification and Labelling of Chemicals" developed by the United Nations
IATA	International Air Transport Association
IATA/DGR	Dangerous Goods Regulations (DGR) for the air transport (IATA)
ICAO	International Civil Aviation Organization
IMDG	International Maritime Dangerous Goods Code
index No	The Index number is the identification code given to the substance in Part 3 of Annex VI to Regulation (EC) No 1272/2008
IOELV	Indicative occupational exposure limit value
MARPOL	International Convention for the Prevention of Pollution from Ships (abbr. of "Marine Pollutant")
NLP	No-Longer Polymer
PBT	Persistent, Bioaccumulative and Toxic
PNEC	Predicted No-Effect Concentration
ppm	Parts per million
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals
RID	Règlement concernant le transport International ferroviaire des marchandises Dangereuses (Regulations concerning the International carriage of Dangerous goods by Rail)
S.I. No. 619 of 2001	Safety, Health and Welfare at Work (Chemical Agents) Regulations 2001
STEL	Short-term exposure limit
TRGS 900	Arbeitsplatzgrenzwerte (TRGS 900)
TWA	Time-weighted average
VOC	Volatile Organic Compounds
vPvB	Very Persistent and very Bioaccumulative
WEL	Workplace exposure limit

Key literature references and sources for data

- Regulation (EC) No. 1907/2006 (REACH), amended by 2015/830/EU
- Regulation (EC) No. 1272/2008 (CLP, EU GHS)
- The exposure scenarios are available at www.dhc-solvent.de in the Service section.

Transport of dangerous goods by road, rail and inland waterway (ADR/RID/ADN).
International Maritime Dangerous Goods Code (IMDG).
International Air Transport Association (IATA).

List of relevant phrases (code and full text as stated in chapter 2 and 3)

Code	Text
H226	Flammable liquid and vapour.
H304	May be fatal if swallowed and enters airways.
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H332	Harmful if inhaled.
H335	May cause respiratory irritation.
H411	Toxic to aquatic life with long lasting effects.

Disclaimer

This information is based upon the present state of our knowledge. This SDS has been compiled and is solely intended for this product. The information concerning legal regulations can lay no claim to completeness. In addition to this, other provisions may also apply to the product.

SAFETY DATA SHEET

Creation Date 26-Sep-2009 **Revision Date** 18-Jan-2018 **Revision Number** 4

1. Identification

Product Name **Mesitylene**

Cat No. : **AC161320000; AC161320010; AC161320025; AC161320050; AC161322500**

CAS-No 108-67-8
Synonyms 1,3,5-Trimethylbenzene

Recommended Use Laboratory chemicals.
Uses advised against Not for food, drug, pesticide or biocidal product use

Details of the supplier of the safety data sheet

Company

Fisher Scientific
One Reagent Lane
Fair Lawn, NJ 07410
Tel: (201) 796-7100

Acros Organics
One Reagent Lane
Fair Lawn, NJ 07410

Emergency Telephone Number
For information **US** call: 001-800-ACROS-01 / **Europe** call: +32 14 57 52 11
Emergency Number **US:**001-201-796-7100 / **Europe:** +32 14 57 52 99
CHEMTREC Tel. No.**US:**001-800-424-9300 / **Europe:**001-703-527-3887

2. Hazard(s) identification

Classification

This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Flammable liquids	Category 3
Skin Corrosion/irritation	Category 2
Serious Eye Damage/Eye Irritation	Category 2
Specific target organ toxicity (single exposure)	Category 3
Target Organs - Respiratory system, Central nervous system (CNS).	
Aspiration Toxicity	Category 1

Label Elements

Signal Word
Danger

Hazard Statements
Flammable liquid and vapor
May be fatal if swallowed and enters airways
Causes skin irritation
Causes serious eye irritation
May cause respiratory irritation
May cause drowsiness or dizziness



Precautionary Statements
Prevention
Wash face, hands and any exposed skin thoroughly after handling
Wear protective gloves/protective clothing/eye protection/face protection
Do not breathe dust/fume/gas/mist/vapors/spray
Use only outdoors or in a well-ventilated area
Keep away from heat/sparks/open flames/hot surfaces. - No smoking
Keep container tightly closed
Ground/bond container and receiving equipment
Use explosion-proof electrical/ventilating/lighting/equipment
Use only non-sparking tools
Take precautionary measures against static discharge
Keep cool
Response
Get medical attention/advice if you feel unwell
Inhalation
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
Call a POISON CENTER or doctor/physician if you feel unwell
Skin
If skin irritation occurs: Get medical advice/attention
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower
Wash contaminated clothing before reuse
Eyes
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
If eye irritation persists: Get medical advice/attention
Ingestion
IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician
Do NOT induce vomiting
Fire
In case of fire: Use CO2, dry chemical, or foam for extinction
Storage
Store locked up
Store in a well-ventilated place. Keep container tightly closed
Disposal
Dispose of contents/container to an approved waste disposal plant
Hazards not otherwise classified (HNOC)
Toxic to aquatic life with long lasting effects

3. Composition/Information on Ingredients

Component	CAS-No	Weight %
1,3,5-Trimethylbenzene	108-67-8	97-99

4. First-aid measures

General Advice If symptoms persist, call a physician.

Eye Contact Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Get

	medical attention.
Skin Contact	Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. Obtain medical attention.
Inhalation	Move to fresh air. If breathing is difficult, give oxygen. Obtain medical attention. Risk of serious damage to the lungs.
Ingestion	Clean mouth with water and drink afterwards plenty of water. Do not induce vomiting. Call a physician or Poison Control Center immediately. If vomiting occurs naturally, have victim lean forward.
Most important symptoms and effects	. Breathing difficulties. Vapors may cause drowsiness and dizziness: Symptoms may be delayed: Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting
Notes to Physician	Treat symptomatically

5. Fire-fighting measures

Suitable Extinguishing Media	Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide. Cool closed containers exposed to fire with water spray.
Unsuitable Extinguishing Media	No information available
Flash Point	44 °C / 111.2 °F
Method -	No information available
Autoignition Temperature	550 °C / 1022 °F
Explosion Limits	
Upper	6.00%
Lower	1.00%
Sensitivity to Mechanical Impact	No information available
Sensitivity to Static Discharge	No information available

Specific Hazards Arising from the Chemical
Flammable. Containers may explode when heated. Vapors may form explosive mixtures with air. Vapors may travel to source of ignition and flash back.

Hazardous Combustion Products
Carbon monoxide (CO) Carbon dioxide (CO_2)
Protective Equipment and Precautions for Firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

NFPA

Health	Flammability	Instability	Physical hazards
3	2	0	N/A

6. Accidental release measures

Personal Precautions	Ensure adequate ventilation. Use personal protective equipment. Remove all sources of ignition. Take precautionary measures against static discharges.
Environmental Precautions	Do not flush into surface water or sanitary sewer system. See Section 12 for additional ecological information. Avoid release to the environment. Collect spillage.
Methods for Containment and Clean Up	Soak up with inert absorbent material. Keep in suitable, closed containers for disposal. Remove all sources of ignition. Use spark-proof tools and explosion-proof equipment. Take precautionary measures against static discharges.

7. Handling and storage

Handling Wear personal protective equipment. Ensure adequate ventilation. Do not get in eyes, on skin, or on clothing. Avoid ingestion and inhalation. Keep away from open flames, hot surfaces and sources of ignition. Use only non-sparking tools. Take precautionary measures against static discharges. Use explosion-proof equipment.

Storage Keep containers tightly closed in a dry, cool and well-ventilated place. Keep away from heat and sources of ignition. Flammables area.

8. Exposure controls / personal protection

Exposure Guidelines

Component	ACGIH TLV	OSHA PEL	NIOSH IDLH	Mexico OEL (TWA)
1,3,5-Trimethylbenzene			TWA: 25 ppm TWA: 125 mg/m³	

Legend

NIOSH IDLH: The National Institute for Occupational Safety and Health Immediately Dangerous to Life or Health

Engineering Measures Ensure adequate ventilation, especially in confined areas. Ensure that eyewash stations and safety showers are close to the workstation location. Use explosion-proof electrical/ventilating/lighting/equipment.

Personal Protective Equipment

Eye/face Protection Tightly fitting safety goggles. Face-shield.

Skin and body protection Long sleeved clothing.

Respiratory Protection Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Hygiene Measures Handle in accordance with good industrial hygiene and safety practice.

9. Physical and chemical properties

Physical State	Liquid
Appearance	Colorless
Odor	aromatic
Odor Threshold	No information available
pH	No information available
Melting Point/Range	-45 °C / -49 °F
Boiling Point/Range	163 - 166 °C / 325.4 - 330.8 °F @ 760 mmHg
Flash Point	44 °C / 111.2 °F
Evaporation Rate	No information available
Flammability (solid,gas)	Not applicable
Flammability or explosive limits	
Upper	6.00%
Lower	1.00%
Vapor Pressure	2.5 mbar @ 20 °C
Vapor Density	4.1 (Air = 1.0)
Specific Gravity	0.868
Solubility	slightly soluble
Partition coefficient; n-octanol/water	No data available
Autoignition Temperature	550 °C / 1022 °F
Decomposition Temperature	No information available

Viscosity	No information available
Molecular Formula	C9 H12
Molecular Weight	120.19

10. Stability and reactivity

Reactive Hazard None known, based on information available

Stability Stable under normal conditions.

Conditions to Avoid Incompatible products. Excess heat. Keep away from open flames, hot surfaces and sources of ignition.

Incompatible Materials Strong oxidizing agents, Nitric acid

Hazardous Decomposition Products Carbon monoxide (CO), Carbon dioxide (CO_2)

Hazardous Polymerization Hazardous polymerization does not occur.

Hazardous Reactions None under normal processing.

11. Toxicological information

Acute Toxicity

Product Information No acute toxicity information is available for this product

Component Information

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
1,3,5-Trimethylbenzene	LD50 = 5000 mg/kg (Rat)	Not listed	LC50 = 24 g/m³ (Rat) 4 h

Toxicologically Synergistic Products No information available

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Irritation Irritating to eyes, respiratory system and skin

Sensitization No information available

Carcinogenicity The table below indicates whether each agency has listed any ingredient as a carcinogen.

Component	CAS-No	IARC	NTP	ACGIH	OSHA	Mexico
1,3,5-Trimethylbenzene	108-67-8	Not listed	Not listed	Not listed	Not listed	Not listed

Mutagenic Effects Not mutagenic in AMES Test

Reproductive Effects No information available.

Developmental Effects No information available.

Teratogenicity No information available.

STOT - single exposure Respiratory system Central nervous system (CNS)

STOT - repeated exposure None known

Aspiration hazard Category 1

Symptoms / effects,both acute and delayed Vapors may cause drowsiness and dizziness: Symptoms may be delayed: Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting

Endocrine Disruptor Information No information available

Other Adverse Effects The toxicological properties have not been fully investigated.

12. Ecological information

Ecotoxicity

Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment. The product contains following substances which are hazardous for the environment.

Component	Freshwater Algae	Freshwater Fish	Microtox	Water Flea
1,3,5-Trimethylbenzene	Not listed	LC50: = 3.48 mg/L, 96h (Pimephales promelas)	Not listed	EC50: = 50 mg/L, 24h (Daphnia magna)

Persistence and Degradability Soluble in water Persistence is unlikely based on information available.

Bioaccumulation/ Accumulation No information available.

Mobility Will likely be mobile in the environment due to its water solubility.

13. Disposal considerations

Waste Disposal Methods Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

14. Transport information

DOT

- **UN-No** UN2325
- **Proper Shipping Name** 1,3,5-TRIMETHYLBENZENE
- **Hazard Class** 3
- **Packing Group** III

TDG

- **UN-No** UN2325
- **Proper Shipping Name** 1,3,5-TRIMETHYLBENZENE
- **Hazard Class** 3
- **Packing Group** III

IATA

- **UN-No** UN2325
- **Proper Shipping Name** 1,3,5-TRIMETHYLBENZENE
- **Hazard Class** 3
- **Packing Group** III

IMDG/IMO

- **UN-No** UN2325
- **Proper Shipping Name** 1,3,5-TRIMETHYLBENZENE
- **Hazard Class** 3
- **Packing Group** III

15. Regulatory information

All of the components in the product are on the following Inventory lists: Australia Complete Regulatory Information contained in following SDS's X = listed China Canada The product is classified and labeled according to EC directives or corresponding national laws The product is classified and labeled in accordance with Directive 1999/45/EC Europe TSCA Korea Philippines Japan U.S.A. (TSCA) Canada (DSL/NDSL) Europe (EINECS/ELINCS/NLP) Australia (AICS) Korea (ECL) China (IECSC) Japan (ENCS) Philippines (PICCS)

International Inventories

Component	TSCA	DSL	NDSL	EINECS	ELINCS	NLP	PICCS	ENCS	AICS	IECSC	KECL
1,3,5-Trimethylbenzene	X	X	-	203-604-4	-		X	X	X	X	X

Legend:
X - Listed
E - Indicates a substance that is the subject of a Section 5(e) Consent order under TSCA.

F - Indicates a substance that is the subject of a Section 5(f) Rule under TSCA.
N - Indicates a polymeric substance containing no free-radical initiator in its inventory name but is considered to cover the designated polymer made with any free-radical initiator regardless of the amount used.
P - Indicates a commenced PMN substance
R - Indicates a substance that is the subject of a Section 6 risk management rule under TSCA.
S - Indicates a substance that is identified in a proposed or final Significant New Use Rule
T - Indicates a substance that is the subject of a Section 4 test rule under TSCA.
XU - Indicates a substance exempt from reporting under the Inventory Update Rule, i.e. Partial Updating of the TSCA Inventory Data Base Production and Site Reports (40 CFR 710(B).
Y1 - Indicates an exempt polymer that has a number-average molecular weight of 1,000 or greater.
Y2 - Indicates an exempt polymer that is a polyester and is made only from reactants included in a specified list of low concern reactants that comprises one of the eligibility criteria for the exemption rule.

U.S. Federal Regulations

TSCA 12(b) Not applicable

SARA 313 Not applicable

SARA 311/312 Hazard Categories See section 2 for more information

CWA (Clean Water Act) Not applicable

Clean Air Act Not applicable

OSHA Occupational Safety and Health Administration
Not applicable

CERCLA Not applicable

California Proposition 65 This product does not contain any Proposition 65 chemicals

U.S. State Right-to-Know Regulations

Component	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island
1,3,5-Trimethylbenzene	X	-	-	-	-

U.S. Department of Transportation

Reportable Quantity (RQ): N
DOT Marine Pollutant N
DOT Severe Marine Pollutant N

U.S. Department of Homeland Security
This product does not contain any DHS chemicals.

Other International Regulations

Mexico - Grade Moderate risk, Grade 2

16. Other information

Prepared By Regulatory Affairs
Thermo Fisher Scientific
Email: EMSDS.RA@thermofisher.com

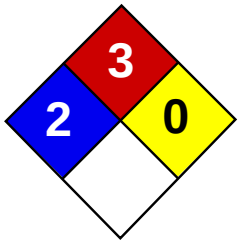
Creation Date 26-Sep-2009
Revision Date 18-Jan-2018
Print Date 18-Jan-2018
Revision Summary This document has been updated to comply with the US OSHA HazCom 2012 Standard replacing the current legislation under 29 CFR 1910.1200 to align with the Globally Harmonized System of Classification and Labeling of Chemicals (GHS).

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text

End of SDS







Material Safety Data Sheet
Benzene MSDS

Section 1: Chemical Product and Company Identification

Product Name: Benzene

Catalog Codes: SLB1564, SLB3055, SLB2881

CAS#: 71-43-2

RTECS: CY1400000

TSCA: TSCA 8(b) inventory: Benzene

CI#: Not available.

Synonym: Benzol; Benzine

Chemical Name: Benzene

Chemical Formula: C6-H6

Contact Information:

Sciencelab.com, Inc.
14025 Smith Rd.
Houston, Texas 77396

US Sales: **1-800-901-7247**
International Sales: **1-281-441-4400**

Order Online: ScienceLab.com

CHEMTREC (24HR Emergency Telephone), call:
1-800-424-9300

International CHEMTREC, call: 1-703-527-3887

For non-emergency assistance, call: 1-281-441-4400

Section 2: Composition and Information on Ingredients

Composition:

Name	CAS #	% by Weight
Benzene	71-43-2	100

Toxicological Data on Ingredients: Benzene: ORAL (LD50): Acute: 930 mg/kg [Rat]. 4700 mg/kg [Mouse]. DERMAL (LD50): Acute: >9400 mg/kg [Rabbit]. VAPOR (LC50): Acute: 10000 ppm 7 hours [Rat].

Section 3: Hazards Identification

Potential Acute Health Effects:
Very hazardous in case of eye contact (irritant), of inhalation. Hazardous in case of skin contact (irritant, permeator), of ingestion. Inflammation of the eye is characterized by redness, watering, and itching.

Potential Chronic Health Effects:
CARCINOGENIC EFFECTS: Classified A1 (Confirmed for human.) by ACGIH, 1 (Proven for human.) by IARC. MUTAGENIC EFFECTS: Classified POSSIBLE for human. Mutagenic for mammalian somatic cells. Mutagenic for bacteria and/or yeast. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Classified Reproductive system/toxin/female [POSSIBLE]. The substance is toxic to blood, bone marrow, central nervous system (CNS). The substance may be toxic to liver, Urinary System. Repeated or prolonged exposure to the substance can produce target organs damage.

Section 4: First Aid Measures

Eye Contact:
Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Cold water may be used. WARM water MUST be used. Get medical attention immediately.

Skin Contact:
In case of contact, immediately flush skin with plenty of water. Cover the irritated skin with an emollient. Remove contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention.

Serious Skin Contact:
Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek immediate medical attention.

Inhalation:
If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention if symptoms appear.

Serious Inhalation:
Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek medical attention.

Ingestion:
Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If large quantities of this material are swallowed, call a physician immediately. Loosen tight clothing such as a collar, tie, belt or waistband.

Serious Ingestion: Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: Flammable.

Auto-Ignition Temperature: 497.78°C (928°F)

Flash Points: CLOSED CUP: -11.1°C (12°F). (Setaflash)

Flammable Limits: LOWER: 1.2% UPPER: 7.8%

Products of Combustion: These products are carbon oxides (CO, CO2).

Fire Hazards in Presence of Various Substances:
Highly flammable in presence of open flames and sparks, of heat. Slightly flammable to flammable in presence of oxidizing materials. Non-flammable in presence of shocks.

Explosion Hazards in Presence of Various Substances:
Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available. Explosive in presence of oxidizing materials, of acids.

Fire Fighting Media and Instructions:
Flammable liquid, soluble or dispersed in water. SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use alcohol foam, water spray or fog.

Special Remarks on Fire Hazards:
Extremely flammable liquid and vapor. Vapor may cause flash fire. Reacts on contact with iodine heptafluoride gas. Dioxygenyl tetrafluoroborate is as very powferful oxidant. The addition of a small particle to small samples of benzene, at ambient temperature, causes ignition. Contact with sodium peroxide with benzene causes ignition. Benzene ignites in contact with powdered chromic anhydride. Virgorous or incandescent reaction with hydrogen + Raney nickel (above 210 C) and bromine trifluoride.

Special Remarks on Explosion Hazards:
Benzene vapors + chlorine and light causes explosion. Reacts explosively with bromine pentafluoride, chlorine, chlorine trifluoride, diborane, nitric acid, nitryl perchlorate, liquid oxygen, ozone, silver perchlorate. Benzene + pentafluoride and methoxide (from arsenic pentafluoride and potassium methoxide) in trichlorotrifluoroethane causes explosion. Interaction

of nitryl perchlorate with benzene gave a slight explosion and flash. The solution of permanganic acid (or its explosive anhydride, dimaganese heptoxide) produced by interaction of permanganates and sulfuric acid will explode on contact with benzene. Peroxodisulfuric acid is a very powferful oxidant. Uncontrolled contact with benzene may cause explosion. Mixtures of peroxomonsulfuric acid with benzene explodes.

Section 6: Accidental Release Measures

Small Spill: Absorb with an inert material and put the spilled material in an appropriate waste disposal.

Large Spill:
Flammable liquid. Keep away from heat. Keep away from sources of ignition. Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. Do not touch spilled material. Prevent entry into sewers, basements or confined areas; dike if needed. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

Section 7: Handling and Storage

Precautions:
Keep locked up.. Keep away from heat. Keep away from sources of ignition. Ground all equipment containing material. Do not ingest. Do not breathe gas/fumes/ vapor/spray. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes. Keep away from incompatibles such as oxidizing agents, acids.

Storage:
Store in a segregated and approved area. Keep container in a cool, well-ventilated area. Keep container tightly closed and sealed until ready for use. Avoid all possible sources of ignition (spark or flame).

Section 8: Exposure Controls/Personal Protection

Engineering Controls:
Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location.

Personal Protection:
Splash goggles. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

Personal Protection in Case of a Large Spill:
Splash goggles. Full suit. Vapor respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits:
TWA: 0.5 STEL: 2.5 (ppm) from ACGIH (TLV) [United States] TWA: 1.6 STEL: 8 (mg/m3) from ACGIH (TLV) [United States] TWA: 0.1 STEL: 1 from NIOSH TWA: 1 STEL: 5 (ppm) from OSHA (PEL) [United States] TWA: 10 (ppm) from OSHA (PEL) [United States] TWA: 3 (ppm) [United Kingdom (UK)] TWA: 1.6 (mg/m3) [United Kingdom (UK)] TWA: 1 (ppm) [Canada] TWA: 3.2 (mg/m3) [Canada] TWA: 0.5 (ppm) [Canada]Consult local authorities for acceptable exposure limits.

Section 9: Physical and Chemical Properties

Physical state and appearance: Liquid.

Odor:
Aromatic. Gasoline-like, rather pleasant. (Strong.)

Taste: Not available.

Molecular Weight: 78.11 g/mole

Color: Clear Colorless. Colorless to light yellow.

pH (1% soln/water): Not available.

Boiling Point: 80.1 (176.2°F)

Melting Point: 5.5°C (41.9°F)

Critical Temperature: 288.9°C (552°F)

Specific Gravity: 0.8787 @ 15 C (Water = 1)

Vapor Pressure: 10 kPa (@ 20°C)

Vapor Density: 2.8 (Air = 1)

Volatility: Not available.

Odor Threshold: 4.68 ppm

Water/Oil Dist. Coeff.: The product is more soluble in oil; log(oil/water) = 2.1

Ionicity (in Water): Not available.

Dispersion Properties: See solubility in water, diethyl ether, acetone.

Solubility:
Miscible in alcohol, chloroform, carbon disulfide oils, carbon tetrachloride, glacial acetic acid, diethyl ether, acetone. Very slightly soluble in cold water.

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Heat, ignition sources, incompatibles.

Incompatibility with various substances: Highly reactive with oxidizing agents, acids.

Corrosivity: Non-corrosive in presence of glass.

Special Remarks on Reactivity:
Benzene vapors + chlorine and light causes explosion. Reacts explosively with bromine pentafluoride, chlorine, chlorine trifluoride, diborane, nitric acid, nitryl perchlorate, liquid oxygen, ozone, silver perchlorate. Benzene + pentafluoride and methoxide (from arsenic pentafluoride and potassium methoxide) in trichlorotrifluoroethane causes explosion. Interaction of nitryl perchlorate with benzene gave a slight explosion and flash. The solution of permanganic acid (or its explosive anhydride, dimaganese heptoxide) produced by interaction of permanganates and sulfuric acid will explode on contact with benzene. Peroxodisulfuric acid is a very powferful oxidant. Uncontrolled contact with benzene may cause explosion. Mixtures of peroxomonsulfuric acid with benzene explodes.

Special Remarks on Corrosivity: Not available.

Polymerization: Will not occur.

Section 11: Toxicological Information

Routes of Entry: Absorbed through skin. Dermal contact. Eye contact. Inhalation.

Toxicity to Animals:
WARNING: THE LC50 VALUES HEREUNDER ARE ESTIMATED ON THE BASIS OF A 4-HOUR EXPOSURE. Acute oral toxicity (LD50): 930 mg/kg [Rat]. Acute dermal toxicity (LD50): >9400 mg/kg [Rabbit]. Acute toxicity of the vapor (LC50): 10000 7 hours [Rat].

Chronic Effects on Humans:

CARCINOGENIC EFFECTS: Classified A1 (Confirmed for human.) by ACGIH, 1 (Proven for human.) by IARC. MUTAGENIC EFFECTS: Classified POSSIBLE for human. Mutagenic for mammalian somatic cells. Mutagenic for bacteria and/or yeast. DEVELOPMENTAL TOXICITY: Classified Reproductive system/toxin/female [POSSIBLE]. Causes damage to the following organs: blood, bone marrow, central nervous system (CNS). May cause damage to the following organs: liver, Urinary System.

Other Toxic Effects on Humans:
Very hazardous in case of inhalation. Hazardous in case of skin contact (irritant, permeator), of ingestion.

Special Remarks on Toxicity to Animals: Not available.

Special Remarks on Chronic Effects on Humans:
May cause adverse reproductive effects (female fertility, Embryotoxic and/or foetotoxic in animal) and birth defects. May affect genetic material (mutagenic). May cause cancer (tumorigenic, leukemia)) Human: passes the placental barrier, detected in maternal milk.

Special Remarks on other Toxic Effects on Humans:
Acute Potential Health Effects: Skin: Causes skin irritation. It can be absorbed through intact skin and affect the liver, blood, metabolism,and urinary system. Eyes: Causes eye irritation. Inhalation: Causes respiratory tract and mucous membrane irritation. Can be absorbed through the lungs. May affect behavior/Central and Peripheral nervous systems (somnolence, muscle weakness, general anesthetic, and other symptoms similar to ingestion), gastrointestinal tract (nausea), blood metabolism, urinary system. Ingestion: May be harmful if swallowed. May cause gastrointestinal tract irritation including vomiting. May affect behavior/Central and Peripheral nervous systems (convulsions, seizures, tremor, irritability, initial CNS stimulation followed by depression, loss of coordination, dizziness, headache, weakness, pallor, flushing), respiration (breathlessness and chest constriction), cardiovascular system, (shallow/rapid pulse), and blood.

Section 12: Ecological Information

Ecotoxicity: Not available.

BOD5 and COD: Not available.

Products of Biodegradation:
Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The products of degradation are less toxic than the product itself.

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations

Waste Disposal:
Waste must be disposed of in accordance with federal, state and local environmental control regulations.

Section 14: Transport Information

DOT Classification: CLASS 3: Flammable liquid.

Identification: : Benzene UNNA: 1114 PG: II

Special Provisions for Transport: Not available.

Section 15: Other Regulatory Information

Federal and State Regulations:
California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer, birth defects or other reproductive harm, which would require a warning under the statute: Benzene California prop. 65 (no significant risk level): Benzene: 0.007 mg/day (value) California prop. 65: This product contains the following ingredients

for which the State of California has found to cause cancer which would require a warning under the statute: Benzene Connecticut carcinogen reporting list.: Benzene Connecticut hazardous material survey.: Benzene Illinois toxic substances disclosure to employee act: Benzene Illinois chemical safety act: Benzene New York release reporting list: Benzene Rhode Island RTK hazardous substances: Benzene Pennsylvania RTK: Benzene Minnesota: Benzene Michigan critical material: Benzene Massachusetts RTK: Benzene Massachusetts spill list: Benzene New Jersey: Benzene New Jersey spill list: Benzene Louisiana spill reporting: Benzene California Director's list of Hazardous Substances: Benzene TSCA 8(b) inventory: Benzene SARA 313 toxic chemical notification and release reporting: Benzene CERCLA: Hazardous substances.: Benzene: 10 lbs. (4.536 kg)

Other Regulations:
OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200). EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances.

Other Classifications:

WHMIS (Canada):
CLASS B-2: Flammable liquid with a flash point lower than 37.8°C (100°F). CLASS D-2A: Material causing other toxic effects (VERY TOXIC).

DSCL (EEC):
R11- Highly flammable. R22- Harmful if swallowed. R38- Irritating to skin. R41- Risk of serious damage to eyes. R45- May cause cancer. R62- Possible risk of impaired fertility. S2- Keep out of the reach of children. S26- In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. S39- Wear eye/face protection. S46- If swallowed, seek medical advice immediately and show this container or label. S53- Avoid exposure - obtain special instructions before use.

HMIS (U.S.A.):

Health Hazard: 2

Fire Hazard: 3

Reactivity: 0

Personal Protection: h

National Fire Protection Association (U.S.A.):

Health: 2

Flammability: 3

Reactivity: 0

Specific hazard:

Protective Equipment:
Gloves. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Splash goggles.

Section 16: Other Information

References: Not available.

Other Special Considerations: Not available.

Created: 10/10/2005 08:35 PM

Last Updated: 05/21/2013 12:00 PM

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Safety Data Sheet

Prepared in accordance with Commission Regulation (EU) 2015/830

Stock Number: 31270
Revision Date: 13-08-2018
This document replaces SDS dated: 08-12-2016
2 Letter ISO country code/language code: UK/EN

Benzo(a)anthracene Standard

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifier: **Benzo(a)anthracene Standard**

Stock Number: 31270

Other means of identification:

Synonyms: None Known

REACH Registration No.: None Known

Molecular formula: CH3OH

1.2 Relevant identified uses of the substance or mixture and uses advised against:

Relevant identified uses: For Laboratory use only

Uses advised against: Uses other than recommended use.

1.3 Details of the Supplier of the Safety Data Sheet:	**Manufacturer**	**Supplier**
	Restek Corporation 110 Benner Circle Bellefonte, Pa. 16823 USA 00 1 814-353-1300 00 1 814-353-1309 sds@restek.com	Thames Restek UK LTD Units 8-16, Ministry Wharf Wycombe Road, Saunderton Buckinghamshire United Kingdom HP14 4HW 01494 563377 sales@thamesrestek.co.uk
1.4 Emergency telephone number:	00 1 800-424-9300 (CHEMTREC within the US) 00 1 703-741-5970 (Outside USA)	0870-8200418 (CHEMTREC within the UK) +1 703-741-5970 (CHEMTREC International)

Poison Centre contact information: National Poisons Information Service (NPIS)
Email: director.birmingham.unit@npis.org
Website: http://www.npis.org/

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture:

Classification according to Regulation (EC) No 1272/2008 [CLP]: Carcinogenicity Category 1B
Specific Target Organ Systemic Toxicity (STOT) - Single Exposure Category 1

Flammable Liquid Category 2
Hazardous to the aquatic environment - Chronic Category 2
Acute Toxicity - Dermal Category 3
Acute Toxicity - Oral Category 3

2.2 Label elements:

Labelling according to Regulation (EC) No 1272/2008 [CLP]:

Hazard pictograms:



Signal Word: Danger

Hazard Statements:
H225 - Highly flammable liquid and vapour
H301+H311 - Toxic if swallowed or in contact with skin
H350 - May cause cancer.
H370 - Causes damage to organs
H411 - Toxic to aquatic life with long lasting effects

Precautionary Statements:
P201 - Obtain special instructions before use.
P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P233 - Keep container tightly closed.
P260 - Do not breathe dust/fume/gas/mist/vapours/spray.
P280 - Wear protective gloves/protective clothing/eye protection/face protection.
P301+P310 - IF SWALLOWED: Immediately call a POISON CENTER/doctor.

Supplemental Hazard information (EU): None Known

2.3 Other hazards: This substance does not meet the PBT or vPvB criteria of REACH, Annex XIII

SECTION 3: Composition/information on ingredients

3.1 Substances:
Not applicable

3.2 Mixtures:

Chemical Name	%	CAS #	EC No. REACH Registration No.	Classification (EC) No 1272/2008	M Factor	SCL	Acute Toxicity Estimates
benz (a) anthracene	0.1	56-55-3	200-280-6 None Known	Aquatic Acute 1; H400 Aquatic Chronic 1; H410 Carc. 1B; H350	AQUATIC CHRONIC 1: M = 100 AQUATIC ACUTE 1: M = 100	No data available	Not determined
methanol	99.9	67-56-1	200-659-6 None Known	Acute Tox. 3 (Dermal); H311 Acute Tox. 3 (Inh Dust/Mist); H331 Acute Tox. 3 (Oral); H301 Flam. Liq. 2; H225 STOT SE 1; H370	No data available	STOT SE 2: 3%<10% STOT SE 1: 10%	Not determined

For full text of H-statements see Section 16.

SECTION 4: First aid measures

4.1 Description of first aid measures:

Inhalation: Remove to fresh air. If breathing is difficult, have a trained individual administer oxygen. If not breathing, give artificial respiration and have a trained individual administer oxygen. Get medical attention immediately

Eye contact: Flush eyes with plenty of water for at least 20 minutes retracting eyelids often. Tilt the head to prevent chemical from transferring to the uncontaminated eye. Get immediate medical attention.

Skin Contact: Wash with soap and water. Remove contaminated clothing and launder. Get medical attention if irritation develops or persists.

Ingestion: Do not induce vomiting and seek medical attention immediately. Drink two glasses of water or milk to dilute. Provide medical care provider with this SDS.

Self protection of the first aider: No data available

4.2 Most important symptoms and Coma and death

effects, both acute and delayed:

4.3 Indication of any immediate medical attention and special treatment needed: IF exposed or concerned: Get medical advice/ attention. IF exposed or concerned: Call a POISON CENTER/doctor. Call a POISON CENTER/doctor if you feel unwell.

SECTION 5: Firefighting measures

5.1 Extinguishing media:

Suitable extinguishing media: Use alcohol resistant foam, carbon dioxide, or dry chemical extinguishing agents. Water may be ineffective but water spray can be used extinguish a fire if swept across the base of the flames. Water can absorb heat and keep exposed material from being damaged by fire.

Unsuitable extinguishing media: None Known

5.2 Special hazards arising from the substance or mixture: Vapors may be ignited by sparks, flames or other sources of ignition if material is above the flash point giving rise to a fire (Class B). Vapors are heavier than air and may travel to a source of ignition and flash back.

Hazardous Combustion Products: Carbon dioxide, Carbon monoxide

5.3 Advice for firefighters: Do not enter fire area without proper protection including self-contained breathing apparatus and full protective equipment. Fight fire from a safe distance and a protected location due to the potential of hazardous vapors and decomposition products. Flammable component(s) of this material may be lighter than water and burn while floating on the surface.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures:

Non-emergency personnel: Non-emergency personnel should be kept clear of the area

Emergency responders: Exposure to the spilled material may be severely irritating or toxic. Follow personal protective equipment recommendations found in Section 8 of this SDS. Personal protective equipment needs must be evaluated based on information provided on this sheet and the special circumstances created by the spill including; the material spilled, the quantity of the spill, the area in which the spill occurred, and the expertise of employees in the area responding to the spill. Never exceed any occupational exposure limits.

6.2 Environmental precautions: No data available

6.3 Methods and material for containment and cleaning up:

Small spills: Refer to information provided for large spills

Large spills: Prevent the spread of any spill to minimize harm to human health and the

environment if safe to do so. Wear complete and proper personal protective equipment following the recommendation of Section 8 at a minimum. Dike with suitable absorbent material like granulated clay. Gather and store in a sealed container pending a waste disposal evaluation.

6.4 Reference to other sections: Refer to section 13 for disposal information

SECTION 7: Handling and storage

7.1 Precautions for safe handling: Toxic or severely irritating material. Avoid contacting and avoid breathing the material. Use only in a well ventilated area. Use spark-proof tools and explosion-proof equipment

7.2 Conditions for safe storage, including any incompatibilities:

Conditions for safe storage: Store in a cool dry ventilated location. Isolate from incompatible materials and conditions. Keep container(s) closed. Keep away from sources of ignition

Materials to Avoid/Chemical Incompatibility: Strong oxidizing agents

7.3 Specific end use(s): For Laboratory use only

SECTION 8: Exposure controls/personal protection

8.1 Control parameters:

Occupational Exposure limit values:

Chemical Name	United Kingdom - Workplace Exposure Limits (WELs) - TWAs	United Kingdom - Workplace Exposure Limits (WELs) - STELs	United Kingdom - Biological Monitoring Guidance Values
methanol	200 ppm TWA; 266 mg/m3 TWA	250 ppm STEL; 333 mg/m3 STEL	No data available

DNEL: None Known

PNEC: None Known

8.2 Exposure controls:

Appropriate engineering controls: Local exhaust ventilation is recommended when generating excessive levels of vapours from handling or thermal processing.

Individual protection measures, such as personal protective equipment:

Eye and face protection: Wear chemically resistant safety glasses with side shields when handling this product. Do not wear contact lenses.

Skin Protection:

Hand protection: No information available

Other skin protection:	Wear protective gloves. Inspect gloves for chemical break-through and replace at regular intervals. Clean protective equipment regularly. Wash hands and other exposed areas with mild soap and water before eating, drinking, and when leaving work
Respiratory Protection:	If an exposure limit is exceeded or if an operator is experiencing symptoms of inhalation overexposure as explained in Section 3, provide respiratory protection. Respiratory protection may be required to avoid overexposure when handling this product. General or local exhaust ventilation is the preferred means of protection. Use a respirator if general room ventilation is not available or sufficient to eliminate symptoms.
Respirator Type(s):	None required where adequate ventilation is provided. If airborne concentrations are above the applicable exposure limits, use NIOSH/MSHA approved respiratory protection.
Thermal Hazards:	Not applicable
Environmental exposure controls:	No data available

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties:

Appearance:	No data available
Colour:	No data available
Odour:	Mild
Odour threshold:	No data available
pH:	Not applicable
Melting Point/Freezing Point (°C):	
Melting point (°C):	No data available
Freezing point (°C):	No data available
Initial boiling point and boiling range (°C):	65
Flash point (°C):	11
Evaporation Rate (water = 1):	No data available
Flammability (solid, gas):	No data available
Upper/lower flammability or explosive limits:	
Upper flammable or explosive limit, % in air:	36
Lower flammable or explosive limit, %	6

in air:

Vapour pressure:	No data available
Vapor Density (Air=1):	1.1
Relative density (water = 1):	0.800
Solubility(ies):	Moderate; 50-99%
Partition coefficient: n-octanol/water:	No data available
Auto-ignition temperature (°C):	464
Decomposition temperature (°C):	No data available
Viscosity:	No data available
Explosive properties:	No data available
Oxidizing properties:	No data available

9.2 Other information:

Volatile Organic Chemicals:	0
Bulk density:	6.676

SECTION 10: Stability and reactivity

10.1 Reactivity:	Not expected to be reactive
10.2 Chemical stability:	Stable under normal conditions.
10.3 Possibility of hazardous reactions:	None expected under standard conditions of storage
10.4 Conditions to avoid:	No data available
10.5 Incompatible materials:	Strong oxidizing agents
10.6 Hazardous decomposition products:	Carbon dioxide, Carbon monoxide

SECTION 11: Toxicological information

11.1 Information on toxicological effects:

Acute toxicity:

Chemical Name	ORAL LD50 (rat)	DERMAL LD50 (rabbit)	INHALATION LC50 (rat)
methanol	No data available	No data available	INHALATION LC50-8H Rat 22500 ppm

Classification has been based on toxicological information of the components in Section 3.

Skin corrosion/irritation:
Based on available data, the classification criteria are not met.

Serious eye damage/irritation:
Based on available data, the classification criteria are not met.

Respiratory or skin sensitisation:
Based on available data, the classification criteria are not met.

Germ cell mutagenicity:
Based on available data, the classification criteria are not met.

Carcinogenicity:
Classification has been based on toxicological information of the components in Section 3.

Reproductive toxicity:
Based on available data, the classification criteria are not met.

STOT-single exposure:
Classification has been based on toxicological information of the components in Section 3.

STOT-repeated exposure:
Based on available data, the classification criteria are not met.

Aspiration hazard:
Based on available data, the classification criteria are not met.

SECTION 12: Ecological information

12.1 Toxicity: Moderate ecological hazard. This product may be dangerous to plants and/or wildlife.

Ecological Toxicity Data:

Chemical Name	CAS #	Aquatic EC50 Crustacea	Aquatic ERC50 Algae	Aquatic LC50 Fish
No data available				

12.2 Persistence and degradability: Biodegrades slowly.
12.3 Bioaccumulative potential: No data available
12.4 Mobility in soil: No data available
12.5 Results of PBT and vPvB assessment: No data available

12.6 Other adverse effects: None Known

12.7 Additional information: No data available

SECTION 13: Disposal considerations

13.1 Waste treatment methods:

Disposal methods: Spent or discarded material is a hazardous waste.
Dispose of by incineration following Federal, State, Local, or Provincial regulations.

Waste codes / waste designations according to LoW: No data available

SECTION 14: Transport information

International carriage of dangerous goods by road (ADR), rail or inland waterways:

14.1 UN number: UN1230

14.2 UN proper shipping name: Methanol

14.3 Transport hazard class(es): 3(6.1)

14.4 Packing group: II

International carriage of dangerous goods by air (IATA):

14.1 UN number: UN1230

14.2 UN proper shipping name: Methanol

14.3 Transport hazard class(es): 3(6.1)

14.4 Packing group: II

14.5 Environmental hazards: Yes

14.6 Special precautions for user: No data available

14.7 Transport in bulk according to Annex II of MARPOL and the IBC Code: No data available

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture:

Chemical Name	EINECS	SVHC
methanol	Yes	No

benz (a) anthracene	Yes	No

15.2 Chemical Safety Assessment No Chemical Safety Assessment has been carried out for this substance/mixture by the supplier.

SECTION 16: Other information

Revision Date: 13-08-2018

Indication of changes: Any changes to the SDS compared to previous versions are marked by a vertical line in front of the concerned paragraph.

Abbreviations and acronyms:

CAS = Chemical Abstract Service
DNEL= Derivative No Effect Level
EC= European Community
EINECS = European Inventory of Existing Chemical Substances
MSHA = Mine Safety Health Administration
NIOSH = National Institute of Occupational Safety & Health
OEL = Occupational Exposure Limit
PBT= Persistent, Bioaccumulative, Toxic
PNEC= Predicted No Effect Concentration
SCOEL= Scientific Committee on Occupational Exposure Limits
TLV = Threshold Limit Value
TWA= Time Weighted Average
vPvB= Very Persistent, Very Bioaccumulative
Wt.% = Weight Percent

Key literature references and sources for data: No data available

Hazard phrase(s) referenced in section 3

H350 - May cause cancer.
H225 - Highly flammable liquid and vapour
H301+H311+H331 - Toxic if swallowed, in contact with skin or if inhaled
H370 - Causes damage to organs
H410 - Very toxic to aquatic life with long lasting effects

Precautionary Statements:

Prevention:

P201 - Obtain special instructions before use.
P202 - Do not handle until all safety precautions have been read and understood.

	P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
	P233 - Keep container tightly closed.
	P240 - Ground/bond container and receiving equipment.
	P241 - Use explosion-proof electrical/ventilating/lighting equipment.
	P242 - Use only non-sparking tools.
	P243 - Take precautionary measures against static discharge.
	P260 - Do not breathe dust/fume/gas/mist/vapours/spray.
	P264 - Wash thoroughly after handling.
	P270 - Do not eat, drink or smoke when using this product.
	P273 - Avoid release to the environment.
	P280 - Wear protective gloves/protective clothing/eye protection/face protection.
Response:	P301+P310 - IF SWALLOWED: Immediately call a POISON CENTER/doctor.
	P302+P352 - If on skin: Wash with plenty of water.
	P303+P361+P353 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
	P308+P311 - IF exposed or concerned: Call a POISON CENTER/doctor.
	P308+P313 - IF exposed or concerned: Get medical advice/ attention.
	P312 - Call a POISON CENTER/doctor if you feel unwell.
	P321 - Specific treatment (see Sections 4 to 8 on this SDS and any additional information on this label).
	P330 - Rinse mouth.
	P361+P364 - Take off immediately all contaminated clothing and wash it before reuse.
	P370+P378 - In case of fire: Use an appropriate extinguisher (see section 5) to extinguish.
	P391 - Collect spillage.
Storage:	P233 - Keep container tightly closed.
	P403+P235 - Store in a well-ventilated place. Keep cool.
	P405 - Store locked up.
Disposal:	P501 - Dispose of contents/container to a suitable disposal site in accordance with local/national/international regulations.

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Benzo[a]pyrene

sc-257130

Material Safety Data Sheet

Hazard Alert Code Key:	EXTREME	HIGH	MODERATE	LOW

Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

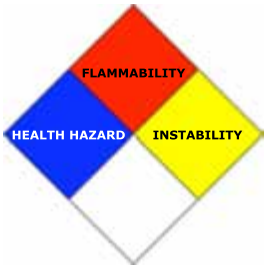
ODUCT NAME

Benzo[a]pyrene

STATEMENT OF HAZARDOUS NATURE

CONSIDERED A HAZARDOUS SUBSTANCE ACCORDING TO OSHA 29 CFR 1910.1200.

PA



SU

Company: Santa Cruz Biotechnology, Inc.

Address:

2145 Delaware Ave
Santa Cruz, CA 95060

Telephone: 800.457.3801 or 831.457.3800

Emergency Tel: **CHEMWATCH: From within the US and Canada: 877-715-9305**

Emergency Tel: **From outside the US and Canada: +800 2436 2255 (1-800-CHEMCALL) or call +613 9573 3112**

ODUCT USE

Available as a laboratory reference standard material only. Widely distributed in both work and domestic environments at trace levels. substance is a major polycyclic hydrocarbon carcinogen formed by the pyrolysis of hydrocarbons and thus occurs in industrial smo cigarette smoke and tar and in fried, broiled or smoked food. Benz[a]pyrene in its native state is harmless, but it is metabolized in mamma systems (including humans) through a number of complicated biochemical routes into active epoxide carcinogens. Thus 7,8-dihydrod 9,10-trans-epoxide is the carcinogenic form of benz[a]pyrene. {Principles of Environmental Toxicology - Zakrzewski} Intermediate

SYNONYMS

C20-H12, "benz-alpha-pyrene (sic)", benzo[a]pyrene, "benzo[d, e, f]chrysene", "6, 7-benzo[a]pyrene", "3, 4-benz[a]pyrene", BP, B[a]P, "3, 4-BP", "polycyclic aromatic hydrocarbon", PAH

Section 2 - HAZARDS IDENTIFICATION

CHEMWATCH HAZARD RATINGS

		Min	Max
Flammability:	1		
Toxicity:	2		
Body Contact:	2		
Reactivity:	1		
Chronic:	3		

Min/Nil=0
Low=1
Moderate=2
High=3
Extreme=4



CANADIAN WHMIS SYMBOLS



ERGENCY OVERVIEW

SK

May cause CANCER.
May cause SENSITIZATION by skin contact.
May cause heritable genetic damage.
May impair fertility.
May cause harm to the unborn child.
Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

POTENTIAL HEALTH EFFECTS

ACUTE HEALTH EFFECTS

SWALLOWED

■ Accidental ingestion of the material may be damaging to the health of the individual.

EY

■ Although the material is not thought to be an irritant, direct contact with the eye may cause transient discomfort characterized by tearing or conjunctival redness (as with windburn). Slight abrasive damage may also result. The material may produce foreign body irritation in cer individuals.

SK

■ The material is not thought to be a skin irritant (as classified using animal models). Abrasive damage however, may result from prolon exposures. Good hygiene practice requires that exposure be kept to a minimum and that suitable gloves be used in an occupational settin
■ Skin contact with the material may damage the health of the individual; systemic effects may result following absorption.
■ Open cuts, abraded or irritated skin should not be exposed to this material.
■ Entry into the blood-stream, through, for example, cuts, abrasions or lesions, may produce systemic injury with harmful effects. Exam the skin prior to the use of the material and ensure that any external damage is suitably protected.

HALED

■ The material is not thought to produce respiratory irritation (as classified using animal models). Nevertheless inhalation of dusts, or fu especially for prolonged periods, may produce respiratory discomfort and occasionally, distress.
■ Inhalation of dusts, generated by the material during the course of normal handling, may be damaging to the health of the individual.
■ Persons with impaired respiratory function, airway diseases and conditions such as emphysema or chronic bronchitis, may incur fur disability if excessive concentrations of particulate are inhaled.

CHRONIC HEALTH EFFECTS

■ Skin contact with the material is more likely to cause a sensitization reaction in some persons compared to the general population.
There is ample evidence that this material can be regarded as being able to cause cancer in humans based on experiments and o information.
Based on experiments and other information, there is ample evidence to presume that exposure to this material can cause genetic defe that can be inherited.
Ample evidence exists from experimentation that reduced human fertility is directly caused by exposure to the material.
Ample evidence exists, from results in experimentation, that developmental disorders are directly caused by human exposure to the mater
Long term exposure to high dust concentrations may cause changes in lung function i.e. pneumoconiosis; caused by particles less than 0.5 micron penetrating and remaining in the lung. Prime symptom is breathlessness; lung shadows show on X-ray.
Polycyclic aromatic hydrocarbons are found in a number of materials such as coal tar, tobacco smoke, petroleum and air pollution. So substituted derivatives have been identified as extremely liable to cause cancer, especially that of the lung and genito-urinary tract. So jurisdictions required that health surveillance be conducted on workers occupationally exposed to PHAs.
Cited in many publications and by a number of regulatory authorities as a suspected human carcinogen.

Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

NAME	CAS RN	%
benz[a]pyrene	50-32-8	>98

Section 4 - FIRST AID MEASURES

SWALLOWED

■

- If swallowed do NOT induce vomiting.
- If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration.

- Observe the patient carefully.
- Never give liquid to a person showing signs of being sleepy or with reduced awareness; i.e. becoming unconscious.
- Give water to rinse out mouth, then provide liquid slowly and as much as casualty can comfortably drink.
- Seek medical advice.

EY

■ If this product comes in contact with the eyes:
- Wash out immediately with fresh running water.
- Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the up and lower lids.
- If pain persists or recurs seek medical attention.
- Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.

SK

■ If skin contact occurs:
- Immediately remove all contaminated clothing, including footwear
- Flush skin and hair with running water (and soap if available).
- Seek medical attention in event of irritation.

HALED

■
- If fumes or combustion products are inhaled remove from contaminated area.
- Lay patient down. Keep warm and rested.
- Prostheses such as false teeth, which may block airway, should be removed, where possible, prior to initiating first aid procedures.
- Apply artificial respiration if not breathing, preferably with a demand valve resuscitator, bag-valve mask device, or pocket mask as train Perform CPR if necessary.
- Transport to hospital, or doctor.

NOTES TO PHYSICIAN

■ Treat symptomatically.
for poisons (where specific treatment regime is absent):

BASIC TREATMENT

- Establish a patent airway with suction where necessary.
- Watch for signs of respiratory insufficiency and assist ventilation as necessary.
- Administer oxygen by non-rebreather mask at 10 to 15 l/min.
- Monitor and treat, where necessary, for pulmonary edema .
- Monitor and treat, where necessary, for shock.
- Anticipate seizures .
- DO NOT use emetics. Where ingestion is suspected rinse mouth and give up to 200 ml water (5 ml/kg recommended) for dilution wh patient is able to swallow, has a strong gag reflex and does not drool.

ADVANCED TREATMENT

- Consider orotracheal or nasotracheal intubation for airway control in unconscious patient or where respiratory arrest has occurred.
- Positive-pressure ventilation using a bag-valve mask might be of use.
- Monitor and treat, where necessary, for arrhythmias.
- Start an IV D5W TKO. If signs of hypovolemia are present use lactated Ringers solution. Fluid overload might create complications.
- Drug therapy should be considered for pulmonary edema.
- Hypotension with signs of hypovolemia requires the cautious administration of fluids. Fluid overload might create complications.
- Treat seizures with diazepam.
- Proparacaine hydrochloride should be used to assist eye irrigation.

BRONSTEIN, A.C. and CURRANCE, P.L.
EMERGENCY CARE FOR HAZARDOUS MATERIALS EXPOSURE: 2nd Ed. 1994.

Section 5 - FIRE FIGHTING MEASURES

Vapour Pressure (mmHG):	Negligible
Upper Explosive Limit (%):	Not available
Specific Gravity (water=1):	Not available
Lower Explosive Limit (%):	Not available

EXTINGUISHING MEDIA

■
- Foam.
- Dry chemical powder.
- BCF (where regulations permit).
- Carbon dioxide.
- Water spray or fog - Large fires only.

FIRE FIGHTING

- Alert Emergency Responders and tell them location and nature of hazard.
- Wear breathing apparatus plus protective gloves.
- Prevent, by any means available, spillage from entering drains or water course.
- Use water delivered as a fine spray to control fire and cool adjacent area.
- DO NOT approach containers suspected to be hot.
- Cool fire exposed containers with water spray from a protected location.
- If safe to do so, remove containers from path of fire.
- Equipment should be thoroughly decontaminated after use.

GENERAL FIRE HAZARDS/HAZARDOUS COMBUSTIBLE PRODUCTS

■

- Combustible solid which burns but propagates flame with difficulty.
- Avoid generating dust, particularly clouds of dust in a confined or unventilated space as dusts may form an explosive mixture with air, any source of ignition, i.e. flame or spark, will cause fire or explosion. Dust clouds generated by the fine grinding of the solid are a particular hazard; accumulations of fine dust may burn rapidly and fiercely if ignited.
- Dry dust can be charged electrostatically by turbulence, pneumatic transport, pouring, in exhaust ducts and during transport.
- Build-up of electrostatic charge may be prevented by bonding and grounding.
- Powder handling equipment such as dust collectors, dryers and mills may require additional protection measures such as explos venting.

Combustion products include: carbon monoxide (CO), carbon dioxide (CO_2), other pyrolysis products typical of burning organic material.

RE INCOMPATIBILITY

■ Avoid contamination with oxidizing agents i.e. nitrates, oxidizing acids,chlorine bleaches, pool chlorine etc. as ignition may result.

RSONAL PROTECTION

Glasses:
Chemical goggles.
Gloves:
Respirator:
Particulate

Section 6 - ACCIDENTAL RELEASE MEASURES

MINOR SPILLS

■

- Clean up waste regularly and abnormal spills immediately.
- Avoid breathing dust and contact with skin and eyes.
- Wear protective clothing, gloves, safety glasses and dust respirator.
- Use dry clean up procedures and avoid generating dust.
- Vacuum up or sweep up. NOTE: Vacuum cleaner must be fitted with an exhaust micro filter (HEPA type) (consider explosion-p machines designed to be grounded during storage and use).
- Dampen with water to prevent dusting before sweeping.
- Place in suitable containers for disposal.

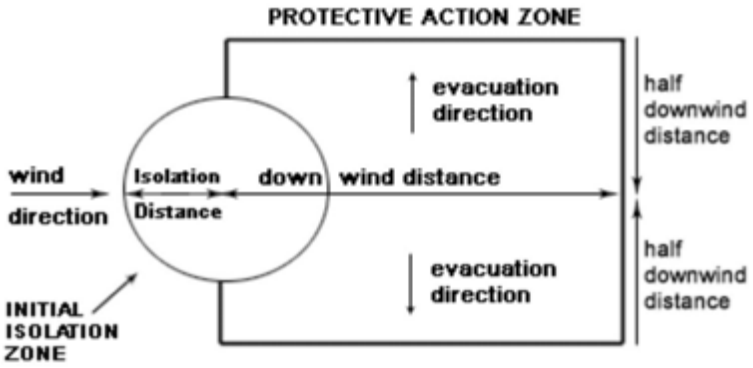
Environmental hazard - contain spillage.
MAJOR SPILLS

■

- Clear area of personnel and move upwind.
- Alert Emergency Responders and tell them location and nature of hazard.
- Wear full body protective clothing with breathing apparatus.
- Prevent, by all means available, spillage from entering drains or water courses.
- Consider evacuation (or protect in place).
- No smoking, naked lights or ignition sources.
- Increase ventilation.
- Stop leak if safe to do so.
- Water spray or fog may be used to disperse / absorb vapour.
- Contain or absorb spill with sand, earth or vermiculite.
- Collect recoverable product into labelled containers for recycling.
- Collect solid residues and seal in labelled drums for disposal.
- Wash area and prevent runoff into drains.
- After clean up operations, decontaminate and launder all protective clothing and equipment before storing and re-using.
- If contamination of drains or waterways occurs, advise emergency services.

Environmental hazard - contain spillage.

OTECTIVE ACTIONS FOR SPILL



From US Emergency Response Guide 2000 Guide 171

From IERG (Canada/Australia)	
Isolation Distance	-
Downwind Protection Distance	10 meters

FOOTNOTES

1 PROTECTIVE ACTION ZONE is defined as the area in which people are at risk of harmful exposure. This zone assumes that random changes in wind direction confines the vapour plume to an area within 30 degrees on either side of the predominant wind direction, resulting in a crosswind protective action distance equal to the downwind protective action distance.
2 PROTECTIVE ACTIONS should be initiated to the extent possible, beginning with those closest to the spill and working away from the site in the downwind direction. Within the protective action zone a level of vapour concentration may exist resulting in nearly all unprotected persons becoming incapacitated and unable to take protective action and/or incurring serious or irreversible health effects.
3 INITIAL ISOLATION ZONE is determined as an area, including upwind of the incident, within which a high probability of localised wind reversal may expose nearly all persons without appropriate protection to life-threatening concentrations of the material.
4 SMALL SPILLS involve a leaking package of 200 litres (55 US gallons) or less, such as a drum (jerrican or box with inner containers). Larger packages leaking less than 200 litres and compressed gas leaking from a small cylinder are also considered "small spills". LARGE SPILLS involve many small leaking packages or a leaking package of greater than 200 litres, such as a cargo tank, portable tank or a "one-tonne" compressed gas cylinder.
5 Guide 171 is taken from the US DOT emergency response guide book.
6 IERG information is derived from CANUTEC - Transport Canada.

ACUTE EXPOSURE GUIDELINE LEVELS (AEGL) (in ppm)

AEGL 1: The airborne concentration of a substance above which it is predicted that the general population, including susceptible individuals, could experience notable discomfort, irritation, or certain asymptomatic nonsensory effects. However, the effects are not disabling and are transient and reversible upon cessation of exposure.
AEGL 2: The airborne concentration of a substance above which it is predicted that the general population, including susceptible individuals, could experience irreversible or other serious, long-lasting adverse health effects or an impaired ability to escape.
AEGL 3: The airborne concentration of a substance above which it is predicted that the general population, including susceptible individuals, could experience life-threatening health effects or death.

Section 7 - HANDLING AND STORAGE

OCEDURE FOR HANDLING

- Avoid all personal contact, including inhalation.
- Wear protective clothing when risk of exposure occurs.
- Use in a well-ventilated area.
- Prevent concentration in hollows and sumps.
- DO NOT enter confined spaces until atmosphere has been checked.
- DO NOT allow material to contact humans, exposed food or food utensils.
- Avoid contact with incompatible materials.
- When handling, DO NOT eat, drink or smoke.
- Keep containers securely sealed when not in use.
- Avoid physical damage to containers.
- Always wash hands with soap and water after handling.
- Work clothes should be laundered separately.
- Launder contaminated clothing before re-use.
- Use good occupational work practice.
- Observe manufacturer's storing and handling recommendations.
- Atmosphere should be regularly checked against established exposure standards to ensure safe working conditions are maintained.

Empty containers may contain residual dust which has the potential to accumulate following settling. Such dusts may explode in the presence of an appropriate ignition source.

- Do NOT cut, drill, grind or weld such containers.
- In addition ensure such activity is not performed near full, partially empty or empty containers without appropriate workplace safety authorisation or permit.

COMMENDED STORAGE METHODS

■ Glass container.
- Polyethylene or polypropylene container.
- Check all containers are clearly labelled and free from leaks.

STORAGE REQUIREMENTS

■ Observe manufacturer's storing and handling recommendations.

SAFE STORAGE WITH OTHER CLASSIFIED CHEMICALS



X	X	+	X	X	+

X: Must not be stored together
O: May be stored together with specific preventions
+: May be stored together

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE CONTROLS

Source	Material	TWA ppm	TWA mg/m³	STEL ppm	STEL mg/m³	Peak ppm	Peak mg/m³	TWA F/CC	No
Canada - British Columbia Occupational Exposure Limits	benz[a]pyrene (Benzo[a]pyrene Revised 2006)		(L)						A2, 1
US - Tennessee Occupational Exposure Limits - Limits For Air Contaminants	benz[a]pyrene (Coal tar pitch volatiles (benzene soluble fraction), anthrancene, BaP, phenanthrene, acidine, chrysene, pyrene)		0.2						
Canada - Quebec Permissible Exposure Values for Airborne Contaminants (English)	benz[a]pyrene (Benzo(a)pyrene)		0.005						
US - Alaska Limits for Air Contaminants	benz[a]pyrene (Coal tar Pitch volatiles (benzene soluble fraction), BaP)		0.2						
Canada - Yukon Permissible Concentrations for Airborne Contaminant Substances	benz[a]pyrene (K Benz(a)pyrene)		(See Table 14)						
US - Wyoming Toxic and Hazardous Substances Table Z1 Limits for Air Contaminants	benz[a]pyrene (Coal tar pitch volatiles (benzene soluble fraction), anthracene, BaP,phenanthrene,acridine, chrysene,pyrene)		0.2						
Canada - Alberta Occupational Exposure Limits	benz[a]pyrene (Kerosene/Jet fuels, as total hydrocarbon vapour)		200						
Canada - Alberta Occupational Exposure Limits	benz[a]pyrene (Diesel fuel, as total hydrocarbons)		100						
Canada - Saskatchewan Occupational Health and Safety Regulations - Contamination Limits	benz[a]pyrene (Diesel fuel as total hydrocarbons, (vapour))		100		150				Sk
Canada - Northwest Territories Occupational Exposure Limits (English)	benz[a]pyrene (Particulate polycyclic aromatic hydrocarbons (PPAH) as benzene solubles)		0.2		0.6				

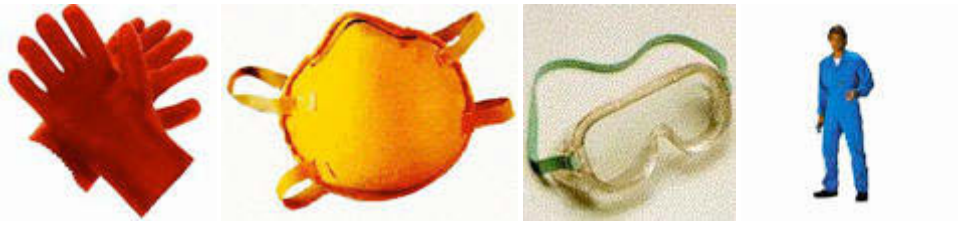
MATERIAL DATA

BENZ[A]PYRENE:

■ It is the goal of the ACGIH (and other Agencies) to recommend TLVs (or their equivalent) for all substances for which there is evidence of

health effects at airborne concentrations encountered in the workplace.
At this time no TLV has been established, even though this material may produce adverse health effects (as evidenced in animal experiments or clinical experience). Airborne concentrations must be maintained as low as is practically possible and occupational exposure must be k to a minimum.
NOTE: The ACGIH occupational exposure standard for Particles Not Otherwise Specified (P.N.O.S) does NOT apply.
Established occupational exposure limits frequently do not take into consideration reproductive end points that are clearly below the thresholds for other toxic effects. Occupational reproductive guidelines (ORGs) have been suggested as an additional standard. These h been established after a literature search for reproductive no-observed-adverse effect-level (NOAEL) and the lowest-observed-adve effect-level (LOAEL). In addition the US EPA's procedures for risk assessment for hazard identification and dose-response assessment as applied by NIOSH were used in the creation of such limits. Uncertainty factors (UFs) have also been incorporated.
CEL TWA: 0.005 mg/m3; STEL 0.03 mg/m3 (skin) [compare Swedish OEL]
NOTE: OEL-STEL (Russia): 0.00015 mg/m3
Epidemiological and animal studies indicate the need to establish rigorous control standards for B[a]P as increased exposures are harmful. As little as 0.05 mg can initiate tumours in experimental animals and 0.1uM (25 ug/l) is toxic to cultured human hepatocytes. It is estima that millions of people living near coke ovens are exposed to 100 ug B[a]P daily. Because small repeated doses are more effective in initiating tumours than single administrations and because people are probably exposed to other synergistically acting pollutants they are exceeding safe levels of exposure. The Russian legislation concedes that the OEL-STEL is not considered safe but, rather, unavoidable.

RSONAL PROTECTION



Consult your EHS staff for recommendations

EY

■

- Safety glasses with side shields.
- Chemical goggles.
- Contact lenses pose a special hazard; soft lenses may absorb irritants and all lenses concentrate them. DO NOT wear contact lenses.

HANDS/FEET

■ Wear chemical protective gloves, eg. PVC.
Wear safety footwear or safety gumboots, eg. Rubber.
NOTE: The material may produce skin sensitization in predisposed individuals. Care must be taken, when removing gloves and o protective equipment, to avoid all possible skin contact.
Suitability and durability of glove type is dependent on usage. Important factors in the selection of gloves include: such as:

- frequency and duration of contact,
- chemical resistance of glove material,
- glove thickness and
- dexterity

Select gloves tested to a relevant standard (e.g. Europe EN 374, US F739).

- When prolonged or frequently repeated contact may occur, a glove with a protection class of 5 or higher (breakthrough time greater t 240 minutes according to EN 374) is recommended.
- When only brief contact is expected, a glove with a protection class of 3 or higher (breakthrough time greater than 60 minutes accord to EN 374) is recommended.
- Contaminated gloves should be replaced.

Gloves must only be worn on clean hands. After using gloves, hands should be washed and dried thoroughly. Application of a non-perfum moisturiser is recommended.

OT

■

- Overalls.
- P.V.C. apron.
- Barrier cream.
- Skin cleansing cream.
- Eye wash unit.

SPIRATOR

■

- Respirators may be necessary when engineering and administrative controls do not adequately prevent exposures.
- The decision to use respiratory protection should be based on professional judgment that takes into account toxicity informat exposure measurement data, and frequency and likelihood of the worker's exposure - ensure users are not subject to high thermal lo which may result in heat stress or distress due to personal protective equipment (powered, positive flow, full face apparatus may be an option).
- Published occupational exposure limits, where they exist, will assist in determining the adequacy of the selected respiratory . These m be government mandated or vendor recommended.
- Certified respirators will be useful for protecting workers from inhalation of particulates when properly selected and fit tested as part of a complete respiratory protection program.
- Use approved positive flow mask if significant quantities of dust becomes airborne.

- Try to avoid creating dust conditions.

RESPIRATOR

■

Protection Factor	Half-Face Respirator	Full-Face Respirator	Powered Air Respirator
10 x PEL	P1	-	PAPR-P1
	Air-line*	-	-
50 x PEL	Air-line**	P2	PAPR-P2
100 x PEL	-	P3	-
		Air-line*	-
100+ x PEL	-	Air-line**	PAPR-P3

* - Negative pressure demand ** - Continuous flow
Explanation of Respirator Codes:
Class 1 low to medium absorption capacity filters.
Class 2 medium absorption capacity filters.
Class 3 high absorption capacity filters.
PAPR Powered Air Purifying Respirator (positive pressure) cartridge.
Type A for use against certain organic gases and vapors.
Type AX for use against low boiling point organic compounds (less than 65ºC).
Type B for use against certain inorganic gases and other acid gases and vapors.
Type E for use against sulfur dioxide and other acid gases and vapors.
Type K for use against ammonia and organic ammonia derivatives
Class P1 intended for use against mechanically generated particulates of sizes most commonly encountered in industry, e.g. asbestos, sil
Class P2 intended for use against both mechanically and thermally generated particulates, e.g. metal fume.
Class P3 intended for use against all particulates containing highly toxic materials, e.g. beryllium.
The local concentration of material, quantity and conditions of use determine the type of personal protective equipment required.
Use appropriate NIOSH-certified respirator based on informed professional judgement. In conditions where no reasonable estimate of exposure can be made, assume the exposure is in a concentration IDLH and use NIOSH-certified full face pressure demand SCBA with a minimum service life of 30 minutes, or a combination full facepiece pressure demand SAR with auxiliary self-contained air supply. Respira provided only for escape from IDLH atmospheres shall be NIOSH-certified for escape from the atmosphere in which they will be used.

GINEERING CONTROLS

■

- Employees exposed to confirmed human carcinogens should be authorized to do so by the employer, and work in a regulated area.
- Work should be undertaken in an isolated system such as a "glove-box" . Employees should wash their hands and arms upon comple of the assigned task and before engaging in other activities not associated with the isolated system.
- Within regulated areas, the carcinogen should be stored in sealed containers, or enclosed in a closed system, including piping syste with any sample ports or openings closed while the carcinogens are contained within.
- Open-vessel systems are prohibited.
- Each operation should be provided with continuous local exhaust ventilation so that air movement is always from ordinary work areas to the operation.
- Exhaust air should not be discharged to regulated areas, non-regulated areas or the external environment unless decontaminated. Cl make-up air should be introduced in sufficient volume to maintain correct operation of the local exhaust system.
- For maintenance and decontamination activities, authorized employees entering the area should be provided with and required to w clean, impervious garments, including gloves, boots and continuous-air supplied hood. Prior to removing protective garments employee should undergo decontamination and be required to shower upon removal of the garments and hood.
- Except for outdoor systems, regulated areas should be maintained under negative pressure (with respect to non-regulated areas).
- Local exhaust ventilation requires make-up air be supplied in equal volumes to replaced air.
- Laboratory hoods must be designed and maintained so as to draw air inward at an average linear face velocity of 150 feet/ min. with a minimum of 125 feet/ min. Design and construction of the fume hood requires that insertion of any portion of the employees body, o than hands and arms, be disallowed.

Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

YSICAL PROPERTIES

Solid.
Does not mix with water.

State	Divided solid	Molecular Weight	252.32
Melting Range (°F)	350.6- 356	Viscosity	Not Applicable
Boiling Range (°F)	923	Solubility in water (g/L)	Immiscible
Flash Point (°F)	Not available	pH (1% solution)	Not applicable
Decomposition Temp (°F)	Not Available	pH (as supplied)	Not applicable
Autoignition Temp (°F)	Not available	Vapour Pressure (mmHG)	Negligible
Upper Explosive Limit (%)	Not available	Specific Gravity (water=1)	Not available
Lower Explosive Limit (%)	Not available	Relative Vapor Density (air=1)	Not Applicable
Volatile Component (%vol)	Negligible	Evaporation Rate	Not available

a]pyren
■ log Kow (Sangster 1997): 6.35

APPEARANCE

Yellowish plate-like solid crystals when precipitated from benzene/methanol solvent. No odour. Practically insoluble in water. Soluble in benzene, toluene, xylene; sparingly soluble in ethanol, methanol.

Material	Value
■ log Kow (Sangster 1997)	6.35

Section 10 - CHEMICAL STABILITY

CONDITIONS CONTRIBUTING TO INSTABILITY

■

- Presence of incompatible materials.
- Product is considered stable.
- Hazardous polymerization will not occur.

STORAGE INCOMPATIBILITY

■ Avoid reaction with oxidizing agents.

For incompatible materials - refer to Section 7 - Handling and Storage.

Section 11 - TOXICOLOGICAL INFORMATION

a]pyren

TOXICITY AND IRRITATION

■ unless otherwise specified data extracted from RTECS - Register of Toxic Effects of Chemical Substances.

TOXICITY	IRRITATION
Subcutaneous (rat) LD50: 50 mg/kg	Skin (mouse): 0.014 mg - Mild
Intraperitoneal (Mouse) LD: 500 mg/kg	
Oral (Rat) TDLo: 100 mg/kg	
Intraperitoneal (Mouse) TDLo: 100 mg/kg	
Intraperitoneal (Rat) TDLo: 100 mg/kg	

■ Contact allergies quickly manifest themselves as contact eczema, more rarely as urticaria or Quincke's edema. The pathogenesis of contact eczema involves a cell-mediated (T lymphocytes) immune reaction of the delayed type. Other allergic skin reactions, e.g. con urticaria, involve antibody-mediated immune reactions. The significance of the contact allergen is not simply determined by its sensitiza potential: the distribution of the substance and the opportunities for contact with it are equally important. A weakly sensitizing substa which is widely distributed can be a more important allergen than one with stronger sensitizing potential with which few individuals come contact. From a clinical point of view, substances are noteworthy if they produce an allergic test reaction in more than 1% of the pers tested.
The material may cause skin irritation after prolonged or repeated exposure and may produce on contact skin redness, swelling, the production of vesicles, scaling and thickening of the skin.
Exposure to the material for prolonged periods may cause physical defects in the developing embryo (teratogenesis).
WARNING: This substance has been classified by the IARC as Group 2A: Probably Carcinogenic to Humans.
Tenth Annual Report on Carcinogens: Substance anticipated to be Carcinogen
[National Toxicology Program: U.S. Dep. of Health & Human Services 2002].

CARCINOGEN

Benzo[a]pyrene (NB: Overall evaluation upgraded from 2B to 1 based on mechanistic and other relevant data)	International Agency for Research on Cancer (IARC) - Agents Reviewed by the IARC Monographs	Group	1
Benzo[a]pyrene (BaP)	ND	Carcinogenicity	B2
Benzo[a]pyrene (BaP)	ND	Carcinogen Category	B2
Benzo[a]pyrene	ND	Carcinogen Category	A2
BENZO(A)PYRENE	US Environmental Defense Scorecard Recognized Carcinogens	Reference(s)	P65
BENZO(A)PYRENE	US Environmental Defense Scorecard Suspected Carcinogens	Reference(s)	P65
POLYCYCLIC ORGANIC MATTER (POM)	US Environmental Defense Scorecard Suspected Carcinogens	Reference(s)	EPA-HEN, P65-MC

Benzo[a]pyrene (inhalation)	US Air Toxics Hot Spots TSD for Describing Available Cancer Potency Factors	IARC Class	2A
Benzo[a]pyrene (oral)	US Air Toxics Hot Spots TSD for Describing Available Cancer Potency Factors	IARC Class	
Benzo[a]pyrene	ND	Carcinogen	Ca

SK

benz[a]pyrene	ND	Notes	Skin
benz[a]pyrene	ND	Notation	Skin
benz[a]pyrene	Canada - Alberta Occupational Exposure Limits - Skin	Substance Interaction	1

Section 12 - ECOLOGICAL INFORMATION

Refer to data for ingredients, which follows:
BENZ[A]PYRENE:

Marine Pollutant:	Yes
■ log Kow (Sangster 1997):	6.35
■ Half- life Soil - High (hours):	12720
■ Half- life Soil - Low (hours):	1368
■ Half- life Air - High (hours):	1.1
■ Half- life Air - Low (hours):	0.37
■ Half- life Surface water - High (hours):	1.1
■ Half- life Surface water - Low (hours):	0.37
■ Half- life Ground water - High (hours):	25440
■ Half- life Ground water - Low (hours):	2736
■ Aqueous biodegradation - Aerobic - High (hours):	12720
■ Aqueous biodegradation - Aerobic - Low (hours):	1368
■ Aqueous biodegradation - Anaerobic - High (hours):	50880
■ Aqueous biodegradation - Anaerobic - Low (hours):	5472
■ Aqueous photolysis half- life - High (hours):	1.1
■ Aqueous photolysis half- life - Low (hours):	0.37
■ Aqueous photolysis half- life - High (hours):	1.1
■ Aqueous photolysis half- life - Low (hours):	0.37
■ Photooxidation half- life water - High (hours):	10349
■ Photooxidation half- life water - Low (hours):	207
■ Photooxidation half- life air - High (hours):	4.28
■ Photooxidation half- life air - Low (hours):	0.428

■ Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
■ Do NOT allow product to come in contact with surface waters or to intertidal areas below the mean high water mark. Do not contamin water when cleaning equipment or disposing of equipment wash-waters.
Wastes resulting from use of the product must be disposed of on site or at approved waste sites.
■ PAHs travel through the atmosphere as a gas or attached to dust particles. They are carried by air currents and deposited by dry or wet (rain, dew, etc) deposition. When deposited in water they sink to the bottom of lakes and rivers. Some will move though the soil to contaminate groundwater.
Polycyclic aromatic hydrocarbons (PAHs) are ubiquitous in the marine environment, occurring at their highest environmental concentrati around urban centres.
Two factors, lipid and organic carbon, control to a large extent the partitioning behaviour of PAHs in sediment, water and tissue; the m hydrophobic a compound, the greater the partitioning to non-aqueous phases. These two factors, along with the octanol-water parti coefficient, are the best predictors of this partitioning and can be used to determine PAH behaviour and its bioavailability in the environme
The lipid (fat) phase, of all organisms, contains the highest levels of PAHs: organic carbon associated with sediment or dissolved in water a great influence on bioavailability resulting from its ability to adsorb.
Accumulation of PAHs occurs in all marine organisms; however there is a wide range in tissue concentrations resulting from varia environmental concentrations, level and time of exposure, and species ability to metabolize these compounds. PAHs generally partition in lipid-rich tissues and their metabolites are found in most tissues. In fish, bile and liver accumulate the highest levels of parent PAH metabolites. In invertebrates, the highest concentrations can be found in the internal organs, such as the liver and pancreas; tis concentrations appear to follow seasonal cycles which may be related to variations in lipid content or spawning cycles.
The primary mode of toxicity for PAHs in soil dwelling terrestrial invertebrates is non-specific non-polar narcosis. The uptake of PAHs by earthworms occurs primarily by direct contact with the soluble phase of soil solution (interstitial pore-water).
Microbial degradation of PAHs is a key process in soils. Biodegradation of PAHs may take place over a period of weeks to months. Mixed microbial populations in sediment/water systems may degrade some PAHs, with degradation progressively decreasing with increasing

molecular weight.The rate of degradation is dependent on nutrient content and the bacterial community in soil.
PAHs in soils undergo a weathering process such that the lighter chain fractions are removed (primarily by volatilisation). Heavier fractions bind to soil organic matter and remain behind in the top soil horizon. As the mixture of PAHs age, bioavailability changes as the frac remaining bind more tightly.
In general the more soluble a PAH, the higher the uptake by plants while the reverse is true for uptake by earthworms and uptake in the gastrointestinal tract of animals.
■ DO NOT discharge into sewer or waterways.
log Koc: 4-8.3
Koc: 18000-52000
Half-life (hr) air: 0.37-1.1
Half-life (hr) H2O surface water: 0.37-300
Half-life (hr) H2O ground: 2736-25440
Half-life (hr) soil: 48-50400
Henry's Pa m³ /mol: 0.0079-0.81
BCF: 920-13000
Log BCF: 1.14-6.95
Toxicity Fish: LD50(96)<1ppm
Bioacculmulation: sig
Degradation Biological: sig
processes Abiotic: fast photol & oxid, no hydrol

Ecotoxicity

Ingredient	Persistence: Water/Soil	Persistence: Air	Bioaccumulation	Mobility
benz[a]pyrene	LOW	LOW	HIGH	LOW

GESAMP/EHS COMPOSITE LIST - GESAMP Hazard Profiles

Name / Cas No / RTECS No	EHS	TRN	A1a	A1b	A1	A2	B1	B2	C1	C2	C3	D1	D2	D3	E1	E2	E3
E2~ / CAS:50-32- 8 /	224 6	574	4	4	4	NR	(4)	NI	(1)	(1)	(2)	(1)	(1)	CM		S	

Legend: EHS=EHS Number (EHS=GESAMP Working Group on the Evaluation of the Hazards of Harmful Substances Carried by Sh NRT=Net Register Tonnage, A1a=Bioaccumulation log Pow, A1b=Bioaccumulation BCF, A1=Bioaccumulation, A2=Biodegradat B1=Acuteaquatic toxicity LC/ECIC50 (mg/l), B2=Chronic aquatic toxicity NOEC (mg/l), C1=Acute mammalian oral toxicity LD50 (mg/ C2=Acutemammalian dermal toxicity LD50 (mg/kg), C3=Acute mammalian inhalation toxicity LC50 (mg/kg), D1=Skin irritation & corros D2=Eye irritation& corrosion, D3=Long-term health effects, E1=Tainting, E2=Physical effects on wildlife & benthic habitats, E3=Interfere with coastal amenities, For column A2: R=Readily biodegradable, NR=Not readily biodegradable. For column D3: C=Carcinog M=Mutagenic, R=Reprotoxic, S=Sensitising, A=Aspiration hazard, T=Target organ systemic toxicity, L=Lunginjury, N=Neurotoxic, I=Immunotoxic. For column E1: NT=Not tainting (tested), T=Tainting test positive. For column E2: Fp=Persistent floater, F=Floater, S=Sin substances. The numerical scales start from 0 (no hazard), while higher numbers reflect increasing hazard. (GESAMP/EHS Composite of Hazard Profiles - Hazard evaluation of substances transported by ships)

Section 13 - DISPOSAL CONSIDERATIONS

US EPA Waste Number & Descriptions

B. Component Waste Numbers
When benz[a]pyrene is present as a solid waste as a discarded commercial chemical product, off-specification species, as a conta residue, or a spill residue, use EPA waste number U022 (waste code T).

sposal Instructions

All waste must be handled in accordance with local, state and federal regulations.
¦ Puncture containers to prevent re-use and bury at an authorized landfill.
Legislation addressing waste disposal requirements may differ by country, state and/ or territory. Each user must refer to laws operating in their area. In some areas, certain wastes must be tracked.
A Hierarchy of Controls seems to be common - the user should investigate:

- Reduction
- Reuse
- Recycling
- Disposal (if all else fails)

This material may be recycled if unused, or if it has not been contaminated so as to make it unsuitable for its intended use. Shelf life considerations should also be applied in making decisions of this type. Note that properties of a material may change in use, and recycling or reuse may not always be appropriate.
DO NOT allow wash water from cleaning equipment to enter drains. Collect all wash water for treatment before disposal.

- Recycle wherever possible.
- Consult manufacturer for recycling options or consult Waste Management Authority for disposal if no suitable treatment or disposal fac can be identified.
- Dispose of by: Burial in a licensed land-fill or Incineration in a licensed apparatus (after admixture with suitable combustible material)
- Decontaminate empty containers. Observe all label safeguards until containers are cleaned and destroyed.

Section 14 - TRANSPORTATION INFORMATION





DOT:

Symbols:	G	Hazard class or Division:	9
Identification Numbers:	UN3077	PG:	III
Label Codes:	9	Special provisions:	8, 146, 335, B54, IB8, IP3, N20 T1, TP33
Packaging: Exceptions:	155	Packaging: Non-bulk:	213
Packaging: Exceptions:	155	Quantity limitations: Passenger aircraft/rail:	No limit
Quantity Limitations: Cargo aircraft only:	No limit	Vessel stowage: Location:	A
Vessel stowage: Other:	None		

Hazardous materials descriptions and proper shipping names:
Environmentally hazardous substance, solid, n.o.s

Air Transport IATA:

ICAO/IATA Class:	9	ICAO/IATA Subrisk:	None
UN/ID Number:	3077	Packing Group:	III
Special provisions:	A97		

Shipping Name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. *(CONTAINS BENZ[A]PYRENE)

aritime Transport IMDG:

IMDG Class:	9	IMDG Subrisk:	None
UN Number:	3077	Packing Group:	III
EMS Number:	F-A , S-F	Special provisions:	179 274 335 909
Limited Quantities:	5 kg	Marine Pollutant:	Yes

Shipping Name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.(contains benz[a]pyrene)

Section 15 - REGULATORY INFORMATION



GULATIONS

benz[a]pyrene (CAS: 50-32-8) is found on the following regulatory lists;

"Canada - British Columbia Occupational Exposure Limits","Canada - Nova Scotia Occupational Exposure Limits","Canada - Ont Occupational Exposure Limits","Canada - Prince Edward Island Occupational Exposure Limits","Canada - Prince Edward Isl Occupational Exposure Limits - Carcinogens","Canada - Quebec Permissible Exposure Values for Airborne Contaminants (English)","Can - Saskatchewan Environmental Persistent or Chronic Hazardous Substances","Canada - Yukon Permissible Concentrations for Airbo Contaminant Substances","Canada ARET (Accelerated Reduction / Elimination of Toxics) Substance List","Canada Domestic Substan List (DSL)","Canada Environmental Quality Guidelines (EQGs) Water: Aquatic life","Canada Environmental Quality Guidelines (EQGs) Wa Community","Canada Ingredient Disclosure List (SOR/88-64)","Canada National Pollutant Release Inventory (NPRI)","Canada Toxicolog Index Service - Workplace Hazardous Materials Information System - WHMIS (English)","Canada Toxicological Index Service - Workpl Hazardous Materials Information System - WHMIS (French)","International Agency for Research on Cancer (IARC) - Agents Reviewed by the IARC Monographs","International Chemical Secretariat (ChemSec) REACH SIN* List (*Substitute It Now!) 1.0","OSPAR List of Substances of Possible Concern","US - Alaska Limits for Air Contaminants","US - California Air Toxics ""Hot Spots"" List (Assembly Bill 2588) Substan for which emissions must be quantified","US - California Occupational Safety and Health Regulations (CAL/OSHA) - Hazardous Substan List","US - California Proposition 65 - Carcinogens","US - California Proposition 65 - No Significant Risk Levels (NSRLs) for Carcinogens","US - California Toxic Air Contaminant List Category II","US - Connecticut Hazardous Air Pollutants","US - Idaho - Limits for Air Contaminants","US - Maine Chemicals of High Concern List","US - Massachusetts Oil & Hazardous Material List","US - Minnes Hazardous Substance List","US - New Jersey Right to Know Hazardous Substances","US - Oregon Permissible Exposure Limits (Z-1)","US - Pennsylvania - Hazardous Substance List","US - Rhode Island Hazardous Substance List","US - Tennessee Occupational Exposure Limits - Limits For Air Contaminants","US - Texas Drinking Water Standards - Maximum Contaminant Levels (MCLs) for synthetic organic

contaminants","US - Vermont Hazardous Constituents","US - Vermont Hazardous wastes which are Discarded Commercial Chemical Products or Off-Specification Batches of Commercial Chemical Products or Spill Residues of Either","US - Vermont Permissible Exposure Limits Table Z-1-A Transitional Limits for Air Contaminants","US - Washington Class A toxic air pollutants: Known and Proba Carcinogens","US - Washington Dangerous waste constituents list","US - Washington Discarded Chemical Products List - ""U"" Chem Products","US - Wyoming Toxic and Hazardous Substances Table Z1 Limits for Air Contaminants","US ACGIH Threshold Limit Val (TLV)","US ACGIH Threshold Limit Values (TLV) - Carcinogens","US CERCLA Priority List of Hazardous Substances","US CERCLA Top 20 Priority List of Hazardous Substances","US CWA (Clean Water Act) - Priority Pollutants","US Department of Transportation (DOT) List of Hazardous Substances and Reportable Quantities - Hazardous Substances Other Than Radionuclides","US DOE Temporary Emerge Exposure Limits (TEELs)","US EPA Carcinogens Listing","US EPA National Priorities List - Superfund Chemical Data Matrix (SCDM) - Haz Ranking System - Hazardous Substance Benchmarks","US List of Lists - Consolidated List of Chemicals Subject to the Emergency Plann and Community Right-to-Know Act (EPCRA) and Section 112(r) of the Clean Air Act","US National Toxicology Program (NTP) 11th Re Part B. Reasonably Anticipated to be a Human Carcinogen","US RCRA (Resource Conservation & Recovery Act) - Appendix IX to Part Ground-Water Monitoring List 1","US RCRA (Resource Conservation & Recovery Act) - Hazardous Constituents - Appendix VIII to 40 C 261","US RCRA (Resource Conservation & Recovery Act) - List of Hazardous Inorganic and Organic Constituents 1","US RCRA (Resou Conservation & Recovery Act) - List of Hazardous Wastes","US RCRA (Resource Conservation & Recovery Act) - Phase 4 LDR Rule - Universal Treatment Standards","US Toxic Substances Control Act (TSCA) - Inventory","WHO Guidelines for Drinking-water Quality - Guideline values for chemicals that are of health significance in drinking-water"

Section 16 - OTHER INFORMATION

MITED EVIDENCE

■ Inhalation, skin contact and/or ingestion may produce health damage*.
* (limited evidence).

PRODUCTIVE HEALTH GUIDELINES

■ Established occupational exposure limits frequently do not take into consideration reproductive end points that are clearly below the thresholds for other toxic effects. Occupational reproductive guidelines (ORGs) have been suggested as an additional standard. These h been established after a literature search for reproductive no-observed-adverse effect-level (NOAEL) and the lowest-observed-adve effect-level (LOAEL). In addition the US EPA's procedures for risk assessment for hazard identification and dose-response assessment as applied by NIOSH were used in the creation of such limits. Uncertainty factors (UFs) have also been incorporated.

Ingredient	ORG	UF	Endpoint	CR	Adeq TLV
benz[a]pyrene	0.000175 mg/m3	NA	TC	1	-

■ These exposure guidelines have been derived from a screening level of risk assessment and should not be construed as unequivoc safe limits. ORGS represent an 8-hour time-weighted average unless specified otherwise. CR = Cancer Risk/10000; UF = Uncertainty fac TLV believed to be adequate to protect reproductive health: LOD: Limit of detection Toxic endpoints have also been identified as: D = Developmental; R = Reproductive; TC = Transplacental carcinogen Jankovic J., Drake F.: A Screening Method for Occupatio Reproductive Health Risk: American Industrial Hygiene Association Journal 57: 641-649 (1996).

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■ Classification of the mixture and its individual components has drawn on official and authoritative sources as well as independent review by the Chemwatch Classification committee using available literature references.
A list of reference resources used to assist the committee may be found at:
www.chemwatch.net/references.

■ The (M)SDS is a Hazard Communication tool and should be used to assist in the Risk Assessment. Many factors determine whether the reported Hazards are Risks in the workplace or other settings. Risks may be determined by reference to Exposures Scenarios. Scale of u frequency of use and current or available engineering controls must be considered.

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Section 1 - PRODUCT AND COMPANY IDENTIFICATION

Material Name
IMPREGNATION PITCH - LIQUID

Synonyms
Soderberg Pitch; Coal Tar-Petroleum Impregnation Pitch; Type B Pitch; Target Pitch Blend

Chemical Family
polynuclear aromatic hydrocarbons

Product Use
Binding agents; Impregnation Pitch; Soderberg Paste; process chemical

Restrictions on Use
None known.

Details of the supplier of the safety data sheet

KOPPERS INC.
436 Seventh Avenue
Pittsburgh, PA 15219-1800
Mfg Contact: 412-227-2001 (SDS Requests: 866-852-5239)

CHEMTREC: 800-424-9300 (Outside USA: +1 703-527-3887)
Emergencies: (Medical in USA): 877-737-9047
Emergencies: (Medical Outside of USA): 651-632-9269
E-mail: naorgmsds@koppers.com

Section 2 - HAZARDS IDENTIFICATION

Classification in accordance with paragraph (d) of 29 CFR 1910.1200.
Skin Sensitization - Category 1
Germ Cell Mutagenicity - Category 1B
Carcinogenicity - Category 1A
Reproductive Toxicity - Category 1B
Hazardous to the Aquatic Environment - Chronic - Category 4

GHS Label Elements

Symbol(s)



Signal Word
Danger

Hazard Statement(s)
May cause an allergic skin reaction.
May cause genetic defects.
May cause cancer.
May damage fertility or the unborn child.
May cause long lasting harmful effects to aquatic life.

Precautionary Statement(s)

Prevention
Avoid breathing vapor or mist.
Contaminated work clothing should not be allowed out of the workplace.
Wear protective gloves/clothing and eye/face protection.
Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Avoid release to the environment.

Response
IF exposed or concerned: Get medical advice/attention.
IF ON SKIN: Wash with plenty of soap and water.
If skin irritation or rash occurs: Get medical advice/attention.
Wash contaminated clothing before reuse.

Storage
Store locked up.

Disposal
Dispose of contents/container in accordance with local/regional/national/international regulations.

Other Hazards
Heated material may cause thermal burns.

Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

CAS	Component Name	Percent
65996-93-2	Coal tar pitches	20-80
68187-58-6	Petroleum pitch	20-80
-	The above listed complex substance contains the following constituents	-
194-59-2	7H-Dibenzo(c,g)carbazole	0.00-0.60
7704-34-9	SULFUR	0.29-0.47
50-32-8	Benzo[a]pyrene	0.23-0.45
192-65-4	Dibenzo(a,e)pyrene	0.00-0.40
192-97-2	Benzo(e)pyrene	0.20-0.40
217-59-4	Triphenylene	0.00-0.40
191-24-2	Benzo(ghi)perylene	0.21-0.39
129-00-0	Pyrene	0.04-0.35
206-44-0	Fluoranthene	0.02-0.34
205-82-3	Benzo(j)fluoranthene	0.05-0.31

189-64-0	Dibenzo(a,h)pyrene	0.00-0.30
218-01-9	Chrysene	0.14-0.27
226-36-8	Dibenz(a,h)acridine	0.00-0.25
56-55-3	Benz[a]anthracene	0.08-0.23
85-01-8	Phenanthrene	0.00-0.22
243-17-4	Benzo[b]fluorene	0.00-0.20
86-74-8	9H-Carbazole	0.00-0.20
205-99-2	Benzo(b)fluoranthene	0.00-0.20
224-42-0	Dibenz(a,j)acridine	0.08-0.18
53-70-3	Dibenzo(a,h)anthracene	0.03-0.18
207-08-9	Benzo(k)fluoranthene	0.00-0.17
193-39-5	Indeno(1,2,3-cd)pyrene	0.05-0.12
238-84-6	Benzo(a)fluorene	0.00-0.10
120-12-7	Anthracene	0.00-0.09

Component Related Regulatory Information

This product may be regulated, have exposure limits or other information identified as the following: Aromatic hydrocarbons, polycyclic (130489-29-2).

Section 4 - FIRST AID MEASURES

Inhalation

If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. If breathing is difficult, oxygen should be administered by qualified personnel. Get immediate medical attention.

Skin

For contact with molten product, do not remove contaminated clothing or solidified material from the skin. For thermal burns, cool affected areas as quickly as possible by drenching or immersing in water. Get medical attention. If dust or fumes from molten material contact the skin, remove contaminated clothing. Wash all affected skin areas with warm soapy water. Skin contact causes photosensitization which can last for 36-72 hours after exposure. Keep out of direct sunlight for the next two to three days to avoid sunburn to the photosensitized skin areas. Use a broad spectrum blockout cream to protect against UV alpha ray exposure. Get medical attention, if needed.

Eyes

Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Then get immediate medical attention.

Ingestion

Not a likely route of exposure. If burns occur, treat as thermal burns. Get immediate medical attention. Rinse mouth. Do NOT induce vomiting. If a large amount is swallowed, get medical attention. Do not give anything by mouth to unconscious or convulsive person. If vomiting occurs, keep head lower than hips to help prevent aspiration.

Most Important Symptoms/Effects

Acute
thermal burns from heated material, allergic reactions

Delayed
allergic reactions, mutagenic effects, reproductive effects, lung cancer, skin cancer, bladder cancer, scrotal cancer

Indication of any immediate medical attention and special treatment needed
Treat symptomatically and supportively.

Section 5 - FIRE FIGHTING MEASURES

Extinguishing Media

Suitable Extinguishing Media
regular dry chemical, carbon dioxide, regular foam, water spray, fog or mist

Unsuitable Extinguishing Media
Do not use high-pressure water streams.

Special Hazards Arising from the Chemical
During fire conditions, vapors and decomposition products may be released, forming flammable/explosive mixtures in air. Containers may rupture or explode if exposed to heat.

Hazardous Combustion Products
oxides of carbon, oxides of nitrogen, oxides of sulfur, polynuclear aromatic hydrocarbons

Advice for firefighters
During fire conditions, vapors and decomposition products may be released, forming flammable/explosive mixtures in air. Containers may rupture or explode if exposed to heat.

Fire Fighting Measures
Avoid inhalation of material or combustion by-products. Stay upwind and keep out of low areas. Use extinguishing agents appropriate for surrounding fire. Flood with fine water spray. Directly spraying water or foam onto hot burning product may cause frothing. For fires in cargo or storage area: Cool containers with water from unmanned hose holder or monitor nozzles until well after fire is out. If this is impossible then take the following precautions: Keep unnecessary people away, isolate hazard area and deny entry. Withdraw immediately in case of rising sound from venting safety device or any discoloration of tanks due to fire. When the solid material is heated (as in a fire) it will melt and begin to flow. The molten material may be chilled and solidified using a water fog or fine water spray.

Special Protective Equipment and Precautions for Firefighters
Wear full protective firefighting gear including self-contained breathing apparatus (SCBA) for protection against possible exposure.

Section 6 - ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment and Emergency Procedures
Wear personal protective clothing and equipment, see Section 8. Avoid release to the environment.

Methods and Materials for Containment and Cleaning Up
Stop leak if possible without personal risk. To prevent liquid from flowing into drains, completely contain spilled material with dikes, sandbags, etc. Allow spilled material to cool and solidify before attempting to clean up. Shovel solidified material into containers for recycle if clean or disposal if contaminated. The solid or solidified spillage should be cleaned up as quickly as possible. Spilled material in a traffic area will break down with mechanical contact (e.g. vehicle tires) and become a wind borne dust. Solid material spillage may be wet down with a fine water spray to suppress dust during cleanup. Collect spilled material in appropriate container for disposal. In Canada, report releases to provincial authorities, municipal authorities, or both, as required. Due to the concentration of Benzo(a)pyrene and the CERCLA (40 CFR 302.4) reportable quantity of 1 pound, the release of 20 gallons (222

pounds) of this product requires National Response Center notification. See Section 13 for waste disposal information.

Section 7 - HANDLING AND STORAGE

Precautions for Safe Handling

Avoid breathing vapor or mist. Avoid breathing vapors of heated materials. Avoid contact with eyes, skin and clothing. When using do not eat, drink or smoke. Wear protective gloves/clothing and eye/face protection. Wash exposed areas thoroughly with soap and water, or a waterless hand cleaner, after skin contact and before eating, drinking, using tobacco products, or restrooms. Use protective skin cream on exposed skin before and during work shift. To reduce sun sensitivity a sun-blocking lotion can also be applied prior to application of a protective cream. Contaminated clothing should be removed and laundered before reuse. Contaminated work clothing should not be allowed out of the workplace unless laundered or decontaminated. After working with the product use warm soapy water and a wash cloth to thoroughly wash all areas of skin that have been contacted with product. After washing, apply a broad spectrum UV blockout cream on exposed skin areas before going into sunlight. Keep out of strong sunlight for two to three days after being affected by the product. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood.

Conditions for Safe Storage, Including any Incompatibilities

Store locked up.
Store and handle in accordance with all current regulations and standards. Label all containers. Keep container in a well-ventilated place. Keep away from heat, sparks and flame. Protect from physical damage. Notify State Emergency Response Commission for storage or use at amounts greater than or equal to the TPQ (U.S. EPA SARA Section 302). SARA Section 303 requires facilities storing a material with a TPQ to participate in local emergency response planning (U.S. EPA 40 CFR 355 Part B).

Incompatible Materials

oxidizing materials

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

Component Exposure Limits

Coal tar pitches	**65996-93-2**
ACGIH:	0.2 mg/m3 TWA as benzene-soluble aerosol
NIOSH:	0.1 mg/m3 TWA (Cyclohexane-extractable fraction)
	80 mg/m3 IDLH
OSHA (US):	0.2 mg/m3 TWA (benzene soluble fraction)
Mexico:	0.002 mg/m3 TWA VLE-PPT ; 0.02 mg/m3 TWA VLE-PPT as Particulate polycyclic aromatic hydrocarbons
	0.015 ppm STEL [PPT-CT]; 0.03 mg/m3 STEL [PPT-CT]

ACGIH - Threshold Limit Values - Biological Exposure Indices (BEI)

Coal tar pitches (65996-93-2)
Medium: urine Time: end of shift at end of workweek Parameter: 1-Hydroxypyrene with hydrolysis (nonquantitative)

Engineering Controls

Provide local exhaust or process enclosure ventilation system. Ensure compliance with applicable exposure limits.

Individual Protection Measures, such as Personal Protective Equipment

Eye/face protection

ANSI Z87.1-1989 approved safety glasses with side shields. Provide an emergency eye wash fountain and quick drench shower in the immediate work area. At elevated temperatures: A face shield is recommended.

Skin Protection

Wear protective clothing to prevent contact. Wear long sleeved shirt or overalls fastened at wrists and neck, with long legged trousers with trouser legs worn outside over boot tops, boots, socks, and safety hat plus gloves. Use protective skin cream on exposed skin before and during work shift. Protective clothing must be changed when it shows signs of contamination. Remove and launder contaminated clothing separately from other laundry before reuse. When material is at an elevated temperature, wear appropriate heat resistant clothing.

Respiratory Protection

If the applicable TLVs and/or PELs are exceeded, use NIOSH-approved multipurpose air-purifying cartridge respirators, for organic vapors and P-100 particulate. Use a positive-pressure, air-supplied respirator if there is any potential for uncontrolled release, exposure levels are not known, or any other circumstance where air-purifying respirators may not provide adequate protection.

Glove Recommendations

Wear appropriate gloves. When material is at an elevated temperature, wear appropriate heat resistant gloves.

Protective Materials

Recommended materials include: protective skin creams, chemical resistant material, and heat resistant material.

Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

Appearance	black liquid	**Physical State**	liquid
Odor	tar odor	**Color**	black
Odor Threshold	Not available	**pH**	Not available
Melting Point	Not available	**Boiling Point**	Not available
Boiling Point Range	Not available	**Freezing point**	Not available
Evaporation Rate	Not available	**Flammability (solid, gas)**	Not applicable
Autoignition Temperature	Not available	**Flash Point**	>550 °F
Lower Explosive Limit	Not available	**Decomposition temperature**	Not available
Upper Explosive Limit	Not available	**Vapor Pressure**	Not available
Vapor Density (air=1)	Not available	**Specific Gravity (water=1)**	>1.24
Water Solubility	Not available	**Partition coefficient: n-octanol/water**	Not available

Viscosity	>20.5 mm2/s	**Kinematic viscosity**	Not available
Solubility (Other)	Not available	**Density**	Not available
Physical Form	liquid when loaded , changes from solid to liquid as temperature increases	**Molecular Weight**	Not available
OSHA Flammability Category	4		

Other Information
None known.

Section 10 - STABILITY AND REACTIVITY

Reactivity
No reactivity hazard is expected.

Chemical Stability
Stable at normal temperatures and pressure.

Possibility of Hazardous Reactions
Will not polymerize.

Conditions to Avoid
Avoid heat, flames, sparks and other sources of ignition. Avoid contact with incompatible materials. Contact with water at elevated temperatures may cause violent foaming or explosion. Keep out of water supplies and sewers.

Incompatible Materials
oxidizing materials

Hazardous decomposition products
oxides of carbon, oxides of nitrogen, oxides of sulfur, polynuclear aromatic hydrocarbons

Section 11 - TOXICOLOGICAL INFORMATION

Information on Likely Routes of Exposure

Inhalation
lung cancer, bladder cancer

Skin Contact
sensitivity to sunlight, allergic reactions, thermal burns from heated material, reproductive effects, skin cancer, scrotal cancer

Eye Contact
sensitivity to sunlight, thermal burns from heated material

Ingestion
thermal burns from heated material

Acute and Chronic Toxicity

Component Analysis - LD50/LC50
The components of this material have been reviewed in various sources and the following selected endpoints are published:

Coal tar pitches (65996-93-2)
Oral Rat >15000 mg/kg LD50
Dermal Rat >2000 mg/kg LD50
Petroleum pitch (68187-58-6)
Oral LD50 Rat 4320 mg/kg
Dermal LD50 Rabbit >2000 mg/kg
Fluoranthene (206-44-0)
Dermal LD50 Rabbit 3180 mg/kg

Product Toxicity Data

Acute Toxicity Estimate

Dermal	>2000 mg/kg
Inhalation - Vapor	> 20 mg/L
Oral	> 2000 mg/kg

Immediate Effects
thermal burns from heated material, allergic reactions.

Delayed Effects
allergic reactions, mutagenic effects, reproductive effects, lung cancer, skin cancer, bladder cancer, scrotal cancer

Irritation/Corrosivity Data
Erythema/eschar score: 0, Oedema score: 0

Respiratory Sensitization
No evidence that the material can lead to respiratory hypersensitivity.

Dermal Sensitization
Component data indicate the substance is sensitizing. May cause photosensitivity.

Component Carcinogenicity

Coal tar pitches	**65996-93-2**
ACGIH:	A1 - Confirmed Human Carcinogen
IARC:	Monograph 100F [2012] ; Supplement 7 [1987] ; Monograph 35 [1985] (Group 1 (carcinogenic to humans))
NTP:	Known Human Carcinogen
DFG:	Category 1 (causes cancer in man)
OSHA:	Present
NIOSH:	potential occupational carcinogen

An animal study may suggest an association between lung cancer and pulmonary deposition of particulate matter originating from coal tar pitches. It is not anticipated, however, that use of this product in liquid form will create a respirable dust.

Germ Cell Mutagenicity

Bacterial Reverse Mutation Test – positive. Available data characterizes this substance as mutagenic. May cause genetic defects.

Tumorigenic Data
No data available

Reproductive Toxicity
Available data characterizes this substance as a reproductive hazard. May cause harm to the unborn child. Possible risk of impaired fertility.

Specific Target Organ Toxicity - Single Exposure
No data available.

Specific Target Organ Toxicity - Repeated Exposure
NOAEL: 200-250 mg/kg Oral Mouse

Aspiration hazard
Not expected to be an aspiration hazard.

Medical Conditions Aggravated by Exposure
respiratory disorders, skin disorders

Additional Data
This product contains coal tar pitch. Volume 35 of the IARC monograph states that there is sufficient evidence that coal tar pitches are carcinogenic in humans. IARC's conclusion is based upon studies suggesting an association between skin cancer and chronic occupational dermal exposure to coal tar pitches and upon other historical studies and anecdotal reports showing an association between dermal exposure to coal tar pitch and scrotal cancer in the absence of good hygiene practices. Epidemiological studies of aluminum reduction workers showed an excess risk of developing bladder cancer for workers with chronic inhalation overexposure to coal tar pitch volatiles in excess of the recommended permissible exposure level. Studies also suggest an association between lung cancer and chronic inhalation overexposure to coal tar pitch volatiles in excess of the recommended permissible exposure level. A recent animal study may suggest an association between lung cancer and pulmonary deposition of particulate matter originating from coal tar pitches. It is not anticipated, however, that use of this product in liquid form will create a respirable dust.

Section 12 - ECOLOGICAL INFORMATION

Ecotoxicity
May cause long-term adverse effects in the aquatic environment.

Component Analysis - Aquatic Toxicity

Petroleum pitch	**68187-58-6**
Fish:	LC50 96 h Brachydanio rerio 48 mg/L [semi-static]

Fish Toxicity
HIGH-TEMP. COAL TAR PITCH: Not considered toxic to fish. Not toxic at limit of water solubility. PETROLEUM PITCH: 100-1000 mg/l 96 hours LL50 Oryzias latipes (Red killifish).

Invertebrate Toxicity
HIGH-TEMP. COAL TAR PITCH. >100 mg/l 48 hours EC50 Daphnia magna. EL50 96 hours ~100 mg/l Daphnia. EL50 48 hours >100 mg/l Algae. EL50 72 hours >100 mg/l Daphnia. ~100 mg/l Daphnia - NOELR 21 days. ~10 mg/l Algae - NOELR 72 hours. PETROLEUM PITCH: >1000 mg/l 48 hours EL50 Daphnia magna. 100 mg/l 21 days NOELR Daphnia magna (Chronic toxicity)

Algal Toxicity

HIGH-TEMP. COAL TAR PITCH: >8000 mg/l 72 hours EC50 Scenedesmus subspicatus. PETROLEUM PITCH: >100 mg/l 72 hours EL50 Scenedesmus subspicatus; 100 mg/l 72 hours NOELR Scenedesmus subspicatus.

Persistence and Degradability
This substance is not expected to biodegrade.

Bioaccumulative Potential
This product contains potentially bioaccumulating substances.

Mobility
This substance is expected to be immobile in soil. Insoluble in water.

Other Toxicity
No data available.

Section 13 - DISPOSAL CONSIDERATIONS

Disposal Methods
Dispose in accordance with all applicable regulations.

Component Waste Numbers
The U.S. EPA has not published waste numbers for this product's components.

Section 14 - TRANSPORT INFORMATION

US DOT Information:
Shipping Name: ELEVATED TEMPERATURE LIQUID, N.O.S. , (Contains: BENZO(A)PYRENE , BENZO(B)FLUORANTHENE) RQ
Hazard Class: 9
UN/NA #: UN3257
Packing Group: III
Required Label(s): 9
Further information: Applicable shipping classification depends on temperature of product. Product in Tank Car or Tank Truck is shipped as 'Elevated temperature liquid, n.o.s.' 'Environmentally hazardous substance, solid, n.o.s.' applies for DT and Super Sack.

IATA Information:
Further information: Air shipment is prohibited.

TDG Information:
Shipping Name: ELEVATED TEMPERATURE LIQUID, N.O.S. , (Contains: BENZO(A)PYRENE , BENZO(B)FLUORANTHENE) RQ
Hazard Class: 9
UN#: UN3257
Packing Group: III
Required Label(s): 9
Further information: Applicable shipping classification depends on temperature of product. Product in Tank Car or Tank Truck is shipped as 'Elevated temperature liquid, n.o.s.' 'Environmentally hazardous substance, solid, n.o.s.' applies for DT and Super Sack.

International Bulk Chemical Code
This material contains one or more of the following chemicals required by the IBC Code to be identified as dangerous chemicals in bulk.

Coal tar pitches	**65996-93-2**
IBC Code:	Category X (molten)

Further information

STCC Code (Liquid form): 2899868; 4966998, ERG: 128 US DOT Reportable Quantities BENZO(A)PYRENE (50-32-8) 1 lbs; 0.454 kg RQ Component Marine Pollutants This material does not contain any chemicals listed on the Hazardous Materials Table required by US DOT to be identified as a marine pollutant

Section 15 - REGULATORY INFORMATION

U.S. Federal Regulations

This material contains one or more of the following chemicals required to be identified under SARA Section 302 (40 CFR 355 Appendix A), SARA Section 313 (40 CFR 372.65), CERCLA (40 CFR 302.4), TSCA 12(b), and/or require an OSHA process safety plan.

7H-Dibenzo(c,g)carbazole	**194-59-2**
SARA 313:	0.1 % Supplier notification limit
Benzo[a]pyrene	**50-32-8**
SARA 313:	0.1 % Supplier notification limit
CERCLA:	1 lb final RQ ; 0.454 kg final RQ
Dibenzo(a,e)pyrene	**192-65-4**
SARA 313:	0.1 % Supplier notification limit
Benzo(ghi)perylene	**191-24-2**
SARA 313:	1 % Supplier notification limit
CERCLA:	5000 lb final RQ ; 2270 kg final RQ
Pyrene	**129-00-0**
SARA 302:	1000 lb lower TPQ ; 10000 lb upper TPQ
CERCLA:	5000 lb final RQ ; 2270 kg final RQ
SARA 304:	5000 lb EPCRA RQ
Fluoranthene	**206-44-0**
SARA 313:	1 % Supplier notification limit
CERCLA:	100 lb final RQ ; 45.4 kg final RQ
Benzo(j)fluoranthene	**205-82-3**
SARA 313:	0.1 % Supplier notification limit
Dibenzo(a,h)pyrene	**189-64-0**
SARA 313:	0.1 % Supplier notification limit
Chrysene	**218-01-9**

SARA 313:	1 % Supplier notification limit
CERCLA:	100 lb final RQ ; 45.4 kg final RQ
Dibenz(a,h)acridine	**226-36-8**
SARA 313:	0.1 % Supplier notification limit
Benz[a]anthracene	**56-55-3**
SARA 313:	0.1 % Supplier notification limit
CERCLA:	10 lb final RQ ; 4.54 kg final RQ
Phenanthrene	**85-01-8**
SARA 313:	1 % de minimis concentration
CERCLA:	5000 lb final RQ ; 2270 kg final RQ
Benzo(b)fluoranthene	**205-99-2**
SARA 313:	0.1 % Supplier notification limit
CERCLA:	1 lb final RQ ; 0.454 kg final RQ
Dibenz(a,j)acridine	**224-42-0**
SARA 313:	0.1 % Supplier notification limit
Dibenzo(a,h)anthracene	**53-70-3**
SARA 313:	0.1 % Supplier notification limit
CERCLA:	1 lb final RQ ; 0.454 kg final RQ
Benzo(k)fluoranthene	**207-08-9**
SARA 313:	0.1 % Supplier notification limit
CERCLA:	5000 lb final RQ ; 2270 kg final RQ
Indeno(1,2,3-cd)pyrene	**193-39-5**
SARA 313:	0.1 % Supplier notification limit
CERCLA:	100 lb final RQ ; 45.4 kg final RQ
Anthracene	**120-12-7**
SARA 313:	1 % de minimis concentration
CERCLA:	5000 lb final RQ ; 2270 kg final RQ

SARA Section 311/312 (40 CFR 370 Subparts B and C) reporting categories

Carcinogenicity; Reproductive Toxicity; Respiratory/Skin Sensitization; Germ Cell Mutagenicity

U.S. State Regulations

The following components appear on one or more of the following state hazardous substances lists:

Component	CAS	CA	MA	MN	NJ	PA
Coal tar pitches	**65996-93-2**	Yes	Yes	Yes	Yes	Yes

California Safe Drinking Water and Toxic Enforcement Act (Proposition 65)



WARNING

This product can expose you to chemicals including 7H-Dibenzo(c,g)carbazole, Dibenzo(a,e)pyrene, Benzo(j)fluoranthene, Dibenzo(a,h)pyrene, Chrysene, Dibenz(a,h)acridine, Benz[a]anthracene, Benzo(b)fluoranthene, Dibenz(a,j)acridine, Dibenzo(a,h)anthracene, Benzo(k)fluoranthene, Indeno(1,2,3-cd)pyrene , which are known to the State of California to cause cancer. For more information go to www.P65Warnings.ca.gov.

Canada Regulations

Canadian WHMIS Ingredient Disclosure List (IDL)

Components of this material have been checked against the Canadian WHMIS Ingredients Disclosure List. The List is composed of chemicals which must be identified on MSDSs if they are included in products which meet WHMIS criteria specified in the Controlled Products Regulations and are present above the threshold limits listed on the IDL

Coal tar pitches	**65996-93-2**
	0.1 %
7H-Dibenzo(c,g)carbazole	**194-59-2**
	0.1 %
Benzo[a]pyrene	**50-32-8**
	0.1 %
Pyrene	**129-00-0**
	1 %
Fluoranthene	**206-44-0**
	1 %
Dibenzo(a,h)pyrene	**189-64-0**
	0.1 %
Chrysene	**218-01-9**

	0.1 %
Dibenz(a,h)acridine	**226-36-8**
	0.1 %
Benz[a]anthracene	**56-55-3**
	0.1 %
Phenanthrene	**85-01-8**
	1 %
Benzo(b)fluoranthene	**205-99-2**
	0.1 %
Dibenz(a,j)acridine	**224-42-0**
	0.1 %
Dibenzo(a,h)anthracene	**53-70-3**
	0.1 %
Indeno(1,2,3-cd)pyrene	**193-39-5**
	0.1 %
Anthracene	**120-12-7**
	1 %

WHMIS Classification
D2A , D2B

Component Analysis - Inventory
Coal tar pitches (65996-93-2)

US	CA	EU	AU	PH	JP - ENCS	JP - ISHL	KR KECI - Annex 1	KR KECI - Annex 2	KR - REACH CCA	CN	NZ	MX	TW	VN (Draft)
Yes	DSL	EIN	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes	Yes

Petroleum pitch (68187-58-6)

US	CA	EU	AU	PH	JP - ENCS	JP - ISHL	KR KECI - Annex 1	KR KECI - Annex 2	KR - REACH CCA	CN	NZ	MX	TW	VN (Draft)
Yes	DSL	EIN	Yes	No	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No	Yes

7H-Dibenzo(c,g)carbazole (194-59-2)

US	CA	EU	AU	PH	JP - ENCS	JP - ISHL	KR KECI - Annex 1	KR KECI - Annex 2	KR - REACH CCA	CN	NZ	MX	TW	VN (Draft)
No	No	EIN	No	No	No	No	No	No	No	No	No	No	No	Yes

Benzo[a]pyrene (50-32-8)

US	CA	EU	AU	PH	JP - ENCS	JP - ISHL	KR KECI - Annex 1	KR KECI - Annex 2	KR - REACH CCA	CN	NZ	MX	TW	VN (Draft)
Yes	DSL	EIN	No	Yes	No	No	Yes	No	No	Yes	Yes	Yes	Yes	Yes

Dibenzo(a,e)pyrene (192-65-4)

US	CA	EU	AU	PH	JP - ENCS	JP - ISHL	KR KECI - Annex 1	KR KECI - Annex 2	KR - REACH CCA	CN	NZ	MX	TW	VN (Draft)
No	No	EIN	No	No	No	No	No	No	No	No	No	No	Yes	No

Benzo(ghi)perylene (191-24-2)

US	CA	EU	AU	PH	JP - ENCS	JP - ISHL	KR KECI - Annex 1	KR KECI - Annex 2	KR - REACH CCA	CN	NZ	MX	TW	VN (Draft)
No	No	EIN	No	No	No	No	No	No	No	No	Yes	Yes	Yes	Yes

Pyrene (129-00-0)

US	CA	EU	AU	PH	JP - ENCS	JP - ISHL	KR KECI -	KR KECI -	KR - REACH CCA	CN	NZ	MX	TW	VN (Draft)

							Annex 1	Annex 2						
Yes	DSL	EIN	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes	Yes

Fluoranthene (206-44-0)

US	CA	EU	AU	PH	JP - ENCS	JP - ISHL	KR KECI - Annex 1	KR KECI - Annex 2	KR - REACH CCA	CN	NZ	MX	TW	VN (Draft)
Yes	NSL	EIN	Yes	No	Yes	Yes	No	No	No	Yes	Yes	No	Yes	Yes

Benzo(j)fluoranthene (205-82-3)

US	CA	EU	AU	PH	JP - ENCS	JP - ISHL	KR KECI - Annex 1	KR KECI - Annex 2	KR - REACH CCA	CN	NZ	MX	TW	VN (Draft)
No	No	EIN	No	No	No	No	No	No	No	No	No	No	Yes	Yes

Dibenzo(a,h)pyrene (189-64-0)

US	CA	EU	AU	PH	JP - ENCS	JP - ISHL	KR KECI - Annex 1	KR KECI - Annex 2	KR - REACH CCA	CN	NZ	MX	TW	VN (Draft)
No	No	EIN	No	No	No	No	No	No	No	No	No	Yes	Yes	Yes

Chrysene (218-01-9)

US	CA	EU	AU	PH	JP - ENCS	JP - ISHL	KR KECI - Annex 1	KR KECI - Annex 2	KR - REACH CCA	CN	NZ	MX	TW	VN (Draft)
Yes	DSL	EIN	Yes	No	No	No	Yes	No	No	No	Yes	No	Yes	Yes

Dibenz(a,h)acridine (226-36-8)

US	CA	EU	AU	PH	JP - ENCS	JP - ISHL	KR KECI - Annex 1	KR KECI - Annex 2	KR - REACH CCA	CN	NZ	MX	TW	VN (Draft)

No	No	No	No	No	No	No	No	No	No	No	No	Yes	No	Yes

Benz[a]anthracene (56-55-3)

US	CA	EU	AU	PH	JP - ENCS	JP - ISHL	KR KECI - Annex 1	KR KECI - Annex 2	KR - REACH CCA	CN	NZ	MX	TW	VN (Draft)
Yes	NSL	EIN	No	No	No	No	No	No	No	Yes	Yes	No	Yes	Yes

Phenanthrene (85-01-8)

US	CA	EU	AU	PH	JP - ENCS	JP - ISHL	KR KECI - Annex 1	KR KECI - Annex 2	KR - REACH CCA	CN	NZ	MX	TW	VN (Draft)
Yes	DSL	EIN	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes	Yes

Benzo(b)fluoranthene (205-99-2)

US	CA	EU	AU	PH	JP - ENCS	JP - ISHL	KR KECI - Annex 1	KR KECI - Annex 2	KR - REACH CCA	CN	NZ	MX	TW	VN (Draft)
No	No	EIN	No	No	No	No	No	No	No	No	Yes	No	Yes	Yes

Dibenz(a,j)acridine (224-42-0)

US	CA	EU	AU	PH	JP - ENCS	JP - ISHL	KR KECI - Annex 1	KR KECI - Annex 2	KR - REACH CCA	CN	NZ	MX	TW	VN (Draft)
No	No	No	No	No	No	No	No	No	No	No	No	Yes	No	Yes

Dibenzo(a,h)anthracene (53-70-3)

US	CA	EU	AU	PH	JP - ENCS	JP - ISHL	KR KECI - Annex 1	KR KECI - Annex 2	KR - REACH CCA	CN	NZ	MX	TW	VN (Draft)
Yes	NSL	EIN	No	No	No	No	No	No	No	Yes	Yes	Yes	Yes	Yes

Benzo(k)fluoranthene (207-08-9)

US	CA	EU	AU	PH	JP - ENCS	JP - ISHL	KR KECI - Annex 1	KR KECI - Annex 2	KR - REACH CCA	CN	NZ	MX	TW	VN (Draft)
No	No	EIN	No	No	No	No	No	No	No	No	Yes	Yes	Yes	Yes

Indeno(1,2,3-cd)pyrene (193-39-5)

US	CA	EU	AU	PH	JP - ENCS	JP - ISHL	KR KECI - Annex 1	KR KECI - Annex 2	KR - REACH CCA	CN	NZ	MX	TW	VN (Draft)
Yes	NSL	EIN	No	No	No	No	No	No	No	No	Yes	Yes	Yes	Yes

Anthracene (120-12-7)

US	CA	EU	AU	PH	JP - ENCS	JP - ISHL	KR KECI - Annex 1	KR KECI - Annex 2	KR - REACH CCA	CN	NZ	MX	TW	VN (Draft)
Yes	DSL	EIN	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes	Yes

U.S. Inventory (TSCA)
Listed on inventory.

Section 16 - OTHER INFORMATION

NFPA Ratings
Health: 2 Fire: 1 Reactivity: 0
Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe

Summary of Changes
Updated: 7/20/2018; SDS SUMMARY OF CHANGES: SECTION 15 - CA Proposition 65

Key / Legend
ACGIH - American Conference of Governmental Industrial Hygienists; ADR - European Road Transport; AU - Australia; BOD - Biochemical Oxygen Demand; C - Celsius; CA - Canada; CA/MA/MN/NJ/PA - California/Massachusetts/Minnesota/New Jersey/Pennsylvania*; CAS - Chemical Abstracts Service; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CFR - Code of Federal Regulations (US); CLP - Classification, Labelling, and Packaging; CN - China; CPR - Controlled Products Regulations; DFG - Deutsche Forschungsgemeinschaft; DOT - Department of Transportation; DSD - Dangerous Substance Directive; DSL - Domestic Substances List; EC – European Commission; EEC - European Economic Community; EIN - European Inventory of (Existing Commercial Chemical Substances); EINECS - European Inventory of Existing Commercial Chemical Substances; ENCS - Japan Existing and New Chemical Substance Inventory; EPA - Environmental Protection Agency; EU - European Union; F - Fahrenheit; F - Background (for Venezuela Biological Exposure Indices); IARC - International Agency for Research on Cancer; IATA - International Air Transport

Association; ICAO - International Civil Aviation Organization; IDL - Ingredient Disclosure List; IDLH - Immediately Dangerous to Life and Health; IMDG - International Maritime Dangerous Goods; ISHL - Japan Industrial Safety and Health Law; IUCLID - International Uniform Chemical Information Database; JP - Japan; Kow - Octanol/water partition coefficient; KR KECI Annex 1 - Korea Existing Chemicals Inventory (KECI) / Korea Existing Chemicals List (KECL); KR KECI Annex 2 - Korea Existing Chemicals Inventory (KECI) / Korea Existing Chemicals List (KECL) , KR - Korea; LD50/LC50 - Lethal Dose/ Lethal Concentration; LEL - Lower Explosive Limit; LLV - Level Limit Value; LOLI - List Of LIsts™ - ChemADVISOR's Regulatory Database; MAK - Maximum Concentration Value in the Workplace; MEL - Maximum Exposure Limits; MX – Mexico; Ne- Non-specific; NFPA - National Fire Protection Agency; NIOSH - National Institute for Occupational Safety and Health; NJTSR - New Jersey Trade Secret Registry; Nq - Non-quantitative; NSL – Non-Domestic Substance List (Canada); NTP - National Toxicology Program; NZ - New Zealand; OSHA - Occupational Safety and Health Administration; PEL- Permissible Exposure Limit; PH - Philippines; RCRA - Resource Conservation and Recovery Act; REACH- Registration, Evaluation, Authorisation, and restriction of Chemicals; RID - European Rail Transport; SARA - Superfund Amendments and Reauthorization Act; Sc - Semi-quantitative; STEL - Short-term Exposure Limit; TCCA – Korea Toxic Chemicals Control Act; TDG - Transportation of Dangerous Goods; TLV - Threshold Limit Value; TSCA - Toxic Substances Control Act; TW – Taiwan; TWA - Time Weighted Average; UEL - Upper Explosive Limit; UN/NA - United Nations /North American; US - United States; VLE - Exposure Limit Value (Mexico); VN (Draft) - Vietnam (Draft); WHMIS - Workplace Hazardous Materials Information System (Canada).

Other Information

Disclaimer:

The information set forth in this Safety Data Sheet does not purport to be all-inclusive and should be used only as a guide. While the information and recommendations set forth herein are believed to be accurate, the company makes no warranty regarding such information and recommendations and disclaims all liability from reliance thereon.

Safety Data Sheet

Revision Date: 06/15/18
www.restek.com

2 Letter ISO country code/language code: US/EN

1. IDENTIFICATION

Catalog Number / Product Name:	**31274 / Benzo(k)fluoranthene Standard**
Company:	Restek Corporation
Address:	110 Benner Circle Bellefonte, Pa. 16823
Phone#:	814-353-1300
Fax#:	814-353-1309
Emergency#:	800-424-9300 (CHEMTREC) 703-527-3887 (Outside the US)
Email:	www.restek.com
Revision Number:	11
Intended use:	For Laboratory use only

2. HAZARD(S)IDENTIFICATION

Emergency Overview:

GHS Hazard Symbols:



GHS Classification:	Carcinogenicity Category 1B Flammable Liquid Category 2 Serious Eye Damage/Eye Irritation Category 2 Specific Target Organ Systemic Toxicity (STOT) - Single Exposure Category 3
GHS Signal Word:	Danger
GHS Hazard:	Highly flammable liquid and vapour. Causes serious eye irritation. May cause drowsiness or dizziness. May cause cancer.
GHS Precautions:	
Safety Precautions:	Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Keep away from heat/sparks/open flames/hot surfaces. – No smoking. Ground/bond container and receiving equipment. Use explosion-proof electrical/ventilation and lighting equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Avoid breathing dust/fume/gas/mist/vapours/spray. Wash hands and skin thoroughly after handling. Use only outdoors or in a well-ventilated area. Wear protective gloves/protective clothing/eye protection/face protection.
First Aid Measures:	IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower. IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. IF exposed or concerned: Get medical advice/attention. Call a POISON CENTER or doctor/physician if you feel unwell. If eye irritation persists: Get medical advice/attention. In case of fire: Use extinguishing media in section 5 for extinction.

Storage: Store in a well-ventilated place. Keep container tightly closed.
Store in a well-ventilated place. Keep cool.
Store locked up.

Disposal: Dispose of contents/container according to section 13 of the SDS.

Single Exposure Target Organs: Specific target organ toxicity - Single exposure - STOT SE 3: H336 May cause drowsiness or dizziness.

Repeated Exposure Target Organs: No data available

3. COMPOSITION / INFORMATION ON INGREDIENT

Chemical Name	CAS #	EINEC #	% Composition
Acetone	67-64-1	200-662-2	99.9
benzo (k) fluoranthene	207-08-9	205-916-6	0.1

4. FIRST-AID MEASURES

Inhalation: Remove to fresh air. If breathing is difficult, have a trained individual administer oxygen. If not breathing, give artificial respiration and have a trained individual administer oxygen. Get medical attention immediately

Eyes: Flush eyes with plenty of water for at least 20 minutes retracting eyelids often. Tilt the head to prevent chemical from transferring to the uncontaminated eye. Get immediate medical attention.

Skin Contact: Wash with soap and water. Remove contaminated clothing and launder. Get medical attention if irritation develops or persists.

Ingestion: Do not induce vomiting and seek medical attention immediately. Drink two glasses of water or milk to dilute. Provide medical care provider with this SDS.

5. FIRE- FIGHTING MEASURES

Extinguishing Media: Use alcohol resistant foam, carbon dioxide, or dry chemical extinguishing agents. Water spray or fog may also be effective for extinguishing if swept across the base of the fire. Water can also be used to absorb heat and keep exposed material from being damaged by fire. Flammable component(s) of this material may be lighter than water and burn while floating on the surface.

Fire and/or Explosion Hazards: Vapors may be ignited by heat, sparks, flames or other sources of ignition at or above the low flash point giving rise to a Class B fire. Vapors are heavier than air and may travel to a source of ignition and flash back

Fire Fighting Methods and Protection: Do not enter fire area without proper protection including self-contained toxic breathing apparatus and full protective equipment. Fight fire from a safe distance and a protected location due to the potential of hazardous vapors and decomposition products. Flammable component(s) of this material may be lighter than water and burn while floating on the surface. Use water spray/fog for cooling. Flammable component(s) of this material may be lighter than water and burn while floating on the surface.

Hazardous Combustion Products: Carbon dioxide, Carbon monoxide

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions and Equipment: Exposure to the spilled material may be irritating or harmful. Follow personal protective equipment recommendations found in Section 8 of this SDS. Additional precautions may be necessary based on special circumstances created by the spill including; the material spilled, the quantity of the spill, the area in which the spill occurred. Also consider the expertise of employees in the area responding to the spill.

Methods for Clean-up: Prevent the spread of any spill to minimize harm to human health and the environment if safe to do so. Wear complete and proper personal protective equipment following the recommendation of Section 8 at a minimum. Dike with suitable absorbent material like granulated clay. Gather and store in a sealed container pending a waste disposal

evaluation.

7. HANDLING AND STORAGE

Handling Technical Measures and Precautions:	Harmful or irritating material. Avoid contacting and avoid breathing the material. Use only in a well ventilated area. Use spark-proof tools and explosion-proof equipment
Storage Technical Measures and Conditions:	Store in a cool dry ventilated location. Isolate from incompatible materials and conditions. Keep container(s) closed. Keep away from sources of ignition

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

United States:

Chemical Name	CAS No.	IDLH	ACGIH STEL	ACGIH TLV-TWA	OSHA Exposure Limit
Acetone	67-64-1	2500 ppm IDLH (10% LEL)	750 ppm STEL; 1782 mg/m3 STEL	500 ppm TWA; 1188 mg/m3 TWA	1000 ppm TWA; 2400 mg/m3 TWA
benzo (k) fluoranthene	207-08-9	Not established	None Known	Not established	No data available

Personal Protection:

Engineering Measures:	Local exhaust ventilation is recommended when generating excessive levels of vapours from handling or thermal processing.
Respiratory Protection:	No respiratory protection required under normal conditions of use. Provide general room exhaust ventilation if symptoms of overexposure occur as explained Section 3. A respirator is not normally required.
Eye Protection:	Wear chemically resistant safety glasses with side shields when handling this product. Do not wear contact lenses.
Skin Protection:	Wear protective gloves. Inspect gloves for chemical break-through and replace at regular intervals. Clean protective equipment regularly. Wash hands and other exposed areas with mild soap and water before eating, drinking, and when leaving work
Medical Conditions Aggravated By Exposure:	Respiratory disease including asthma and bronchitis

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance, color:	Depends upon product selection
Odor:	Strong
Physical State:	No data available
pH:	Not applicable
Vapor Pressure:	No data available
Vapor Density:	2.0 (air = 1)
Boiling Point (°C):	480 °C 56.05 °C at 1013.25 hPa
Melting Point (°C):	-95.4 °C Melting Point
Flash Point (°F):	39
Flammability:	Highly Flammable
Upper Flammable/Explosive Limit, % in air:	No data available
Lower Flammable/Explosive Limit, % in air:	No data available
Autoignition Temperature (°C):	465 deg C
Decomposition Temperature (°C):	No data available
Specific Gravity:	0.7845 g/cm3 at 25 °C
Evaporation Rate:	No data available
Odor Threshold:	ND
Solubility:	Complete; 100%
Partition Coefficient: n-octanol in water:	No data available
VOC % by weight:	0
Molecular Weight:	58.08

10. STABILITY AND REACTIVITY

Stability:	Stable under normal conditions.
Conditions to Avoid:	None known.
Materials to Avoid / Chemical Incompatiability:	Strong oxidizing agents Strong acids
Hazardous Decomposition Products:	Carbon dioxide Carbon monoxide

11. TOXICOLOGICAL INFORMATION

Routes of Entry:	Inhalation, Skin Contact, Eye Contact, Ingestion

Target Organs Potentially Affected By Exposure: Eyes, Central nervous system stimulation, Respiratory Tract, Skin

Chemical Interactions That Change Toxicity: None Known

Immediate (Acute) Health Effects by Route of Exposure:

Inhalation Irritation: Can cause minor respiratory irritation, dizziness, weakness, fatigue, nausea, and headache.

Skin Contact: Can cause minor skin irritation, defatting, and dermatitis.

Eye Contact: Can cause minor irritation, tearing and reddening.

Ingestion Irritation: May be harmful if swallowed.

Ingestion Toxicity: Harmful if swallowed. May cause systemic poisoning.

Long-Term (Chronic) Health Effects:

Carcinogenicity: Contains a probable or known human carcinogen.

Reproductive and Developmental Toxicity: No data available to indicate product or any components present at greater than 0.1% may cause birth defects.

Inhalation: Upon prolonged and/or repeated exposure, can cause minor respiratory irritation, dizziness, weakness, fatigue, nausea, and headache.

Skin Contact: Upon prolonged or repeated contact, can cause minor skin irritation, defatting, and dermatitis.

Component Toxicological Data:

NIOSH:

Chemical Name	CAS No.	LD50/LC50
Acetone	67-64-1	Dermal LD50 Rabbit >15700 mg/kg; Inhalation LC50 Rat 50100 mg/m3 8 h; Oral LD50 Rat 5800 mg/kg

Component Carcinogenic Data:

OSHA:

Chemical Name	CAS No.	
Benzo(k)fluoranthene	207-08-9	Present

ACGIH:

Chemical Name	CAS No.	
Acetone	67-64-1	A4 - Not Classifiable as a Human Carcinogen

NIOSH:

Chemical Name	CAS No.
No data available	

NTP:

Chemical Name	CAS No.
No data available	

IARC:

Chemical Name	CAS No.	Group No.
Monograph 92 [2010]; Supplement 7 [1987]; Monograph 32 [1983]	207-08-9	Group 2B

12. ECOLOGICAL INFORMATION

Overview: This material is not expected to be harmful to the ecology.

Mobility: No data

Persistence: No data

Bioaccumulation: No data

Degradability: No data

Ecological Toxicity Data: No data available

13. DISPOSAL CONSIDERATIONS

Waste Description of Spent Product: Spent or discarded material is a hazardous waste.Mixing spent or discarded material with other materials may render the mixture hazardous. Perform a hazardous waste determination on mixtures.

Disposal Methods: Dispose of by incineration following Federal, State, Local,

or Provincial regulations.

Waste Disposal of Packaging: Comply with all Local, State, Federal, and Provincial Environmental Regulations.

14. TRANSPORTATION INFORMATION

United States:

DOT Proper Shipping Name: Acetone
UN Number: UN1090
Hazard Class: 3
Packing Group: II

International:

IATA Proper Shipping Name: Acetone
UN Number: UN1090
Hazard Class: 3
Packing Group: II

Marine Pollutant: No

Chemical Name	CAS#	Marine Pollutant	Severe Marine Pollutant
No data available			

15. REGULATORY INFORMATION

United States:

Chemical Name	CAS#	CERCLA	SARA 313	SARA EHS 313	TSCA
Acetone	67-64-1	X	-	-	X
benzo (k) fluoranthene	207-08-9	X	X	-	-

The following chemicals are listed on CA Prop 65:

Chemical Name	CAS #	Regulation
Benzo[k]fluoranthene	207-08-9	Prop 65 Cancer

State Right To Know Listing:

Chemical Name	CAS#	New Jersey	Massachusetts	Pennsylvania	California
Acetone	67-64-1	X	X	X	X
benzo (k) fluoranthene	207-08-9	X	X	X	X

16. OTHER INFORMATION

Prior Version Date: 12/30/16

Other Information: Any changes to the SDS compared to previous versions are marked by a vertical line in front of the concerned paragraph.

References: No data available

Disclaimer: Restek Corporation provides the descriptions, data and information contained herein in good faith but makes no representation as to its comprehensiveness or accuracy. It is provided for your guidance only. Because many factors may affect processing or application/use, Restek Corporation recommends you perform an assessment to determine the suitability of a product for your particular purpose prior to use. No warranties of any kind, either expressed or implied, including fitness for a particular purpose, are made regarding products described, data or information set forth. In no case shall the descriptions, information, or data provided be considered a part of our terms and conditions of sale. Further, the descriptions, data and information furnished hereunder are given gratis. No obligation or liability for the description, data and information given are assumed. All such being given and accepted at your risk.

Chrysene

sc-239555

Material Safety Data Sheet

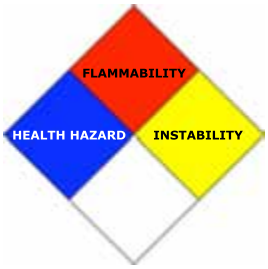
Hazard Alert Code Key:	EXTREME	HIGH	MODERATE	LOW

Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME
Chrysene

STATEMENT OF HAZARDOUS NATURE
CONSIDERED A HAZARDOUS SUBSTANCE ACCORDING TO OSHA 29 CFR 1910.1200.

NFPA



SUPPLIER
Santa Cruz Biotechnology, Inc.
2145 Delaware Avenue
Santa Cruz, California 95060
800.457.3801 or 831.457.3800
EMERGENCY:
ChemWatch
Within the US & Canada: 877-715-9305
Outside the US & Canada: +800 2436 2255
(1-800-CHEMCALL) or call +613 9573 3112

SYNONYMS
C18-H12, benz[a]phenanthrene, benz-(alpha)-phenanthrene, "1, 2-benzophenanthrene", "1, 2-benzphenanthrene", "1, 2, 6-dibenzonaphthalene", PAH, "polycyclic aromatic hydrocarbon"

Section 2 - HAZARDS IDENTIFICATION

CHEMWATCH HAZARD RATINGS

		Min	Max
Flammability:	1		
Toxicity:	2		
Body Contact:	2		
Reactivity:	1		
Chronic:	3		

Min/Nil=0
Low=1
Moderate=2
High=3
Extreme=4



CANADIAN WHMIS SYMBOLS



EMERGENCY OVERVIEW

RISK

May cause CANCER.
Possible risk of irreversible effects.
Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

POTENTIAL HEALTH EFFECTS

ACUTE HEALTH EFFECTS

SWALLOWED

■ Strong evidence exists that the substance may cause irreversible but non-lethal mutagenic effects following a single exposure.
■ The material has NOT been classified as "harmful by ingestion".
This is because of the lack of corroborating animal or human evidence.

EYE

■ Although the material is not thought to be an irritant, direct contact with the eye may cause transient discomfort characterized b tearing or conjunctival redness (as with windburn).
Slight abrasive damage may also result.

SKIN

■ The material is not thought to be a skin irritant (as classified using animal models).
Abrasive damage however, may result from prolonged exposures.
■ Skin contact with the material may damage the health of the individual; systemic effects may result following absorption.
■ Open cuts, abraded or irritated skin should not be exposed to this material.
■ Entry into the blood-stream, through, for example, cuts, abrasions or lesions, may produce systemic injury with harmful effects.
Examine the skin prior to the use of the material and ensure that any external damage is suitably protected.

INHALED

■ The material is not thought to produce either adverse health effects or irritation of the respiratory tract following inhalation (as classifie using animal models).
Nevertheless, adverse effects have been produced following exposure of animals by at least one other route and good hygiene practic requires that exposure be kept to a minimum and that suitable control measures be used in an occupational setting.
■ Persons with impaired respiratory function, airway diseases and conditions such as emphysema or chronic bronchitis, may inc further disability if excessive concentrations of particulate are inhaled.

CHRONIC HEALTH EFFECTS

■ There is ample evidence that this material can be regarded as being able to cause cancer in humans based on experiments and oth information.
Exposure to the material may result in a possible risk of irreversible effects. The material may produce mutagenic effects in man. Th concern is raised, generally, on the basis of
appropriate studies using mammalian somatic cells in vivo. Such findings are often supported by positive results from in vit mutagenicity studies.
Long term exposure to high dust concentrations may cause changes in lung function i.e. pneumoconiosis; caused by particles less tha 0.5 micron penetrating and remaining in the lung.
Polycyclic aromatic hydrocarbons are found in a number of materials such as coal tar, tobacco smoke, petroleum and air pollution. Som substituted derivatives have been identified as extremely liable to cause cancer, especially that of the lung and genito-urinary tract.

Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

NAME	CAS RN	%
chrysene	218-01-9	>98

Section 4 - FIRST AID MEASURES

SWALLOWED

· Immediately give a glass of water. · First aid is not generally required. If in doubt, contact a Poisons Information Center or a doctor.

EYE

■ If this product comes in contact with the eyes: · Wash out immediately with fresh running water. · Ensure complete irrigation of the ey by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids.

SKIN

■ If skin contact occurs: · Immediately remove all contaminated clothing, including footwear · Flush skin and hair with running water (and soap if available).

INHALED

· If dust is inhaled, remove from contaminated area. · Encourage patient to blow nose to ensure clear passage of breathing. · If irritatio or discomfort persists seek medical attention.

NOTES TO PHYSICIAN

■ Treat symptomatically.

Section 5 - FIRE FIGHTING MEASURES

Vapour Pressure (mmHG):	Negligible
Upper Explosive Limit (%):	Not available
Specific Gravity (water=1):	1.274
Lower Explosive Limit (%):	Not available

EXTINGUISHING MEDIA

· Foam.
· Dry chemical powder.

FIRE FIGHTING

· Alert Emergency Responders and tell them location and nature of hazard.
· Wear breathing apparatus plus protective gloves.
When any large container (including road and rail tankers) is involved in a fire,
consider evacuation by 100 metres in all directions.

GENERAL FIRE HAZARDS/HAZARDOUS COMBUSTIBLE PRODUCTS

· Combustible solid which burns but propagates flame with difficulty.
· Avoid generating dust, particularly clouds of dust in a confined or unventilated space as dusts may form an explosive mixture with a and any source of ignition, i.e. flame or spark, will cause fire or explosion. Dust clouds generated by the fine grinding of the solid are a particular hazard; accumulations of fine dust may burn rapidly and fiercely if ignited.
Combustion products include: carbon monoxide (CO), carbon dioxide (CO_2), other pyrolysis products typical of burning organic materia

FIRE INCOMPATIBILITY

■ Avoid contamination with oxidizing agents i.e. nitrates, oxidizing acids,chlorine bleaches, pool chlorine etc. as ignition may result.

PERSONAL PROTECTION

Glasses:
Chemical goggles.
Gloves:
Respirator:
Particulate

Section 6 - ACCIDENTAL RELEASE MEASURES

MINOR SPILLS
· Clean up waste regularly and abnormal spills immediately.
· Avoid breathing dust and contact with skin and eyes.
· Wear protective clothing, gloves, safety glasses and dust respirator.
· Use dry clean up procedures and avoid generating dust.
· Vacuum up or sweep up. NOTE: Vacuum cleaner must be fitted with an exhaust micro filter (HEPA type) (consider explosion-proof machines designed to be grounded during storage and use).
· Dampen with water to prevent dusting before sweeping.
· Place in suitable containers for disposal.
Environmental hazard - contain spillage.
MAJOR SPILLS
· Clear area of personnel and move upwind.
· Alert Emergency Responders and tell them location and nature of hazard.
Environmental hazard - contain spillage.

Section 7 - HANDLING AND STORAGE

PROCEDURE FOR HANDLING

· Avoid all personal contact, including inhalation.
· Wear protective clothing when risk of exposure occurs.
Empty containers may contain residual dust which has the potential to accumulate following settling. Such dusts may explode in th presence of an appropriate ignition source.

· Do NOT cut, drill, grind or weld such containers.
· In addition ensure such activity is not performed near full, partially empty or empty containers without appropriate workplace safety authorisation or permit.

RECOMMENDED STORAGE METHODS

■ Glass container.
· Polyethylene or polypropylene container.
· Check all containers are clearly labelled and free from leaks.

STORAGE REQUIREMENTS

■ Observe manufacturer's storing and handling recommendations.

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

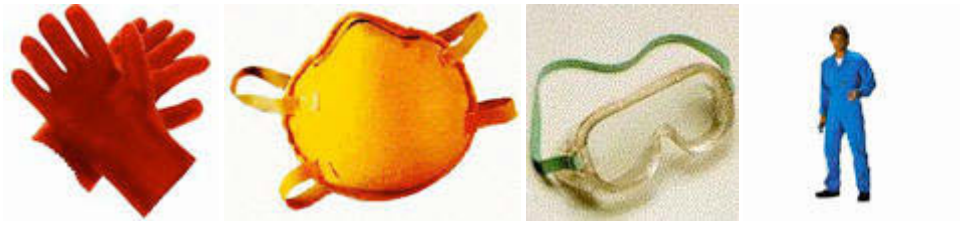
EXPOSURE CONTROLS

Source	Material	TWA ppm	TWA mg/m³	STEL ppm	STEL mg/m³	Peak ppm	Peak mg/m³	TWA F/CC	Notes
Canada - British Columbia Occupational Exposure Limits	chrysene (Chrysene Revised 2006)	(L)							2B
US - Tennessee Occupational Exposure Limits - Limits For Air Contaminants	chrysene (Coal tar pitch volatiles (benzene soluble fraction), anthrancene, BaP, phenanthrene, acidine, chrysene, pyrene)		0.2						
US - Alaska Limits for Air Contaminants	chrysene (Coal tar Pitch volatiles (benzene soluble fraction), chrysene)		0.2						
US - Wyoming Toxic and Hazardous Substances Table Z1 Limits for Air Contaminants	chrysene (Coal tar pitch volatiles (benzene soluble fraction), anthracene, BaP,phenanthrene,acridine, chrysene,pyrene)		0.2						
Canada - Alberta Occupational Exposure Limits	chrysene (Kerosene/Jet fuels, as total hydrocarbon vapour)		200						
Canada - Alberta Occupational Exposure Limits	chrysene (Diesel fuel, as total hydrocarbons)		100						
Canada - Saskatchewan Occupational Health and Safety Regulations - Contamination Limits	chrysene (Diesel fuel as total hydrocarbons, (vapour))		100		150				Skin
Canada - Northwest Territories Occupational Exposure Limits (English)	chrysene (Particulate polycyclic aromatic hydrocarbons (PPAH) as benzene solubles)		0.2		0.6				
Canada - Yukon Permissible Concentrations for Airborne Contaminant	chrysene (K Particulate polycyclic aromatic hydrocarbons (PPAH) (as benzene solubles))		(See Table 14)						

Substances

ENDOELTABLE

PERSONAL PROTECTION



RESPIRATOR

• particulate.

EYE

· Safety glasses with side shields
· Chemical goggles.

HANDS/FEET

■ Suitability and durability of glove type is dependent on usage. Important factors in the selection of gloves include: such as:
· frequency and duration of contact,
· chemical resistance of glove material,
· glove thickness and
· dexterity
Select gloves tested to a relevant standard (e.g. Europe EN 374, US F739).
· When prolonged or frequently repeated contact may occur, a glove with a protection class of 5 or higher (breakthrough time great than 240 minutes according to EN 374) is recommended.
· When only brief contact is expected, a glove with a protection class of 3 or higher (breakthrough time greater than 60 minute according to EN 374) is recommended.
· Contaminated gloves should be replaced.
Gloves must only be worn on clean hands. After using gloves, hands should be washed and dried thoroughly. Application of non-perfumed moisturiser is recommended.
Experience indicates that the following polymers are suitable as glove materials for protection against undissolved, dry solids, whe abrasive particles are not present.
· polychloroprene
· nitrile rubber
· butyl rubber
· fluorocaoutchouc
· polyvinyl chloride
Gloves should be examined for wear and/ or degradation constantly.

OTHER

· Employees working with confirmed human carcinogens should be provided with, and be required to wear, clean, full body protectiv clothing (smocks, coveralls, or long-sleeved shirt and pants), shoe covers and gloves prior to entering the regulated area.
· Employees engaged in handling operations involving carcinogens should be provided with, and required to wear and use half-fac filter-type respirators with filters for dusts, mists and fumes, or air purifying canisters or cartridges. A respirator affording higher levels of protection may be substituted.
· Emergency deluge showers and eyewash fountains, supplied with potable water, should be located near, within sight of, and on th same level with locations where direct exposure is likely.
· Prior to each exit from an area containing confirmed human carcinogens, employees should be required to remove and leave protectiv clothing and equipment at the point of exit and at the last exit of the day, to place used clothing and equipment in impervious containe at the point of exit for purposes of decontamination or disposal. The contents of such impervious containers must be identified wi suitable labels. For maintenance and decontamination activities, authorized employees entering the area should be provided with an required to wear clean, impervious garments, including gloves, boots and continuous-air supplied hood.
· Prior to removing protective garments the employee should undergo decontamination and be required to shower upon removal of th garments and hood.
· Overalls.
· P.V.C. apron.
· Barrier cream.
· Skin cleansing cream.
· Eye wash unit.

ENGINEERING CONTROLS

· Employees exposed to confirmed human carcinogens should be authorized to do so by the employer, and work in a regulated area.
· Work should be undertaken in an isolated system such as a "glove-box" . Employees should wash their hands and arms upo completion of the assigned task and before engaging in other activities not associated with the isolated system.
· Within regulated areas, the carcinogen should be stored in sealed containers, or enclosed in a closed system, including piping system with any sample ports or openings closed while the carcinogens are contained within.
· Open-vessel systems are prohibited.
· Each operation should be provided with continuous local exhaust ventilation so that air movement is always from ordinary work areas to

the operation.
· Exhaust air should not be discharged to regulated areas, non-regulated areas or the external environment unless decontaminated. Clean make-up air should be introduced in sufficient volume to maintain correct operation of the local exhaust system.
· For maintenance and decontamination activities, authorized employees entering the area should be provided with and required to we clean, impervious garments, including gloves, boots and continuous-air supplied hood. Prior to removing protective garments th employee should undergo decontamination and be required to shower upon removal of the garments and hood.
· Except for outdoor systems, regulated areas should be maintained under negative pressure (with respect to non-regulated areas).
· Local exhaust ventilation requires make-up air be supplied in equal volumes to replaced air.
· Laboratory hoods must be designed and maintained so as to draw air inward at an average linear face velocity of 150 feet/ min. with a minimum of 125 feet/ min. Design and construction of the fume hood requires that insertion of any portion of the employees body, oth than hands and arms, be disallowed.

Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL PROPERTIES

Solid.
Does not mix with water.
Sinks in water.

State	Divided solid	Molecular Weight	228.28
Melting Range (°F)	486- 489	Viscosity	Not Applicable
Boiling Range (°F)	838	Solubility in water (g/L)	Immiscible
Flash Point (°F)	Not available	pH (1% solution)	Not applicable
Decomposition Temp (°F)	Not Available	pH (as supplied)	Not applicable
Autoignition Temp (°F)	Not available	Vapour Pressure (mmHG)	Negligible
Upper Explosive Limit (%)	Not available	Specific Gravity (water=1)	1.274
Lower Explosive Limit (%)	Not available	Relative Vapor Density (air=1)	Not applicable
Volatile Component (%vol)	Negligible	Evaporation Rate	Not applicable

chrysene

log Kow (Prager 1995):

log Kow (Sangster 1997):

APPEARANCE

Off-white powder; does not mix with water. Sublimes in vacuo. Exhibits strong fluorescence under UV light. Generally only slight soluble in cold organic solvents; solubility improves markedly when heated.

log Kow 5.01-6.01

Material	Value

Section 10 - CHEMICAL STABILITY

CONDITIONS CONTRIBUTING TO INSTABILITY

· Presence of incompatible materials.
· Product is considered stable.

STORAGE INCOMPATIBILITY

■ Avoid reaction with oxidizing agents.

For incompatible materials - refer to Section 7 - Handling and Storage.

Section 11 - TOXICOLOGICAL INFORMATION

chrysene

TOXICITY AND IRRITATION

CHRYSENE:
■ unless otherwise specified data extracted from RTECS - Register of Toxic Effects of Chemical Substances.

TOXICITY	IRRITATION
Intraperitoneal (rat) LD50: >320 mg/kg	Nil Reported

▪ The substance is classified by IARC as Group 3:

NOT classifiable as to its carcinogenicity to humans.
Evidence of carcinogenicity may be inadequate or limited in animal testing.
NOTE: Substance has been shown to be mutagenic in at least one assay, or belongs to a family of chemicals producing damage change to cellular DNA.
Target organs in include skin (tumours at site of application).

CARCINOGEN

chrysene	US - Rhode Island Hazardous Substance List	IARC	
CHRYSENE	US Environmental Defense Scorecard Recognized Carcinogens	Reference(s)	P65
CHRYSENE	US Environmental Defense Scorecard Suspected Carcinogens	Reference(s)	P65
CHRYSENE/TRIPHENYLENE	US Environmental Defense Scorecard Suspected Carcinogens	Reference(s)	P65-MC
POLYCYCLIC ORGANIC MATTER (POM)	US Environmental Defense Scorecard Suspected Carcinogens	Reference(s)	EPA-HEN, P65-MC
Chrysene(BaP) (inhalation)	US Air Toxics Hot Spots TSD for Describing Available Cancer Potency Factors	IARC Class	3
Chrysene(BaP) (oral)	US Air Toxics Hot Spots TSD for Describing Available Cancer Potency Factors	IARC Class	
PBIT_(PERS~	US - Maine Chemicals of High Concern List	Carcinogen	CA Prop 65; IRIS
PBIT_(PERS~	US - Maine Chemicals of High Concern List	Carcinogen	

SKIN

chrysene	Canada - Alberta Occupational Exposure Limits - Skin	Substance Interaction	1

Section 12 - ECOLOGICAL INFORMATION

Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
This material and its container must be disposed of as hazardous waste.
Avoid release to the environment.
Refer to special instructions/ safety data sheets.

Ecotoxicity

Ingredient	Persistence: Water/Soil	Persistence: Air	Bioaccumulation	Mo
chrysene	LOW	LOW	HIGH	LO

GESAMP/EHS COMPOSITE LIST - GESAMP Hazard Profiles

Name / EHS TRN A1a A1b A1 A2 B1 B2 C1 C2 C3 D1 D2 D3 E1 E2 E3 Cas No / RTECS No _____ ___ ___ ___ ___ ___ ___ __ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ ___ Poly(2+)c 224 574 4 4 4 NR (4) NI (1) (1) (2) (1) (1) CM S 3 yclic 6 aromatics / CAS:218- 0 9 /

Legend: EHS=EHS Number (EHS=GESAMP Working Group on the Evaluation of the Hazards of Harmful Substances Carried by Ship NRT=Net Register Tonnage, A1a=Bioaccumulation log Pow, A1b=Bioaccumulation BCF, A1=Bioaccumulation, A2=Biodegradatio B1=Acuteaquatic toxicity LC/ECIC50 (mg/l), B2=Chronic aquatic toxicity NOEC (mg/l), C1=Acute mammalian oral toxicity LD50 (mg/kg C2=Acutemammalian dermal toxicity LD50 (mg/kg), C3=Acute mammalian inhalation toxicity LC50 (mg/kg), D1=Skin irritation corrosion, D2=Eye irritation& corrosion, D3=Long-term health effects, E1=Tainting, E2=Physical effects on wildlife & benthic habitat E3=Interference with coastal amenities, For column A2: R=Readily biodegradable, NR=Not readily biodegradable. For column D C=Carcinogen, M=Mutagenic, R=Reprotoxic, S=Sensitising, A=Aspiration hazard, T=Target organ systemic toxicity, L=Lunginjur N=Neurotoxic, I=Immunotoxic. For column E1: NT=Not tainting (tested), T=Tainting test positive. For column E2: Fp=Persistent floate F=Floater, S=Sinking substances. The numerical scales start from 0 (no hazard), while higher numbers reflect increasing hazard.

(GESAMP/EHS Composite List of Hazard Profiles - Hazard evaluation of substances transported by ships)

Section 13 - DISPOSAL CONSIDERATIONS

US EPA Waste Number & Descriptions

B. Component Waste Numbers
When chrysene is present as a solid waste as a discarded commercial chemical
product, off-specification species, as a container residue, or a spill residue,
use EPA waste number U050 (waste code T).

Disposal Instructions

All waste must be handled in accordance with local, state and federal regulations.
¦ Puncture containers to prevent re-use and bury at an authorized landfill.
Legislation addressing waste disposal requirements may differ by country, state and/ or territory. Each user must refer to laws operatin in their area. In some areas, certain wastes must be tracked.
A Hierarchy of Controls seems to be common - the user should investigate:
· Reduction
· Reuse
· Recycling
· Disposal (if all else fails)
This material may be recycled if unused, or if it has not been contaminated so as to make it unsuitable for its intended use. Shelf life considerations should also be applied in making decisions of this type. Note that properties of a material may change in use, an recycling or reuse may not always be appropriate.
DO NOT allow wash water from cleaning equipment to enter drains. Collect all wash water for treatment before disposal.
· Recycle wherever possible.
· Consult manufacturer for recycling options or consult Waste Management Authority for disposal if no suitable treatment or dispos facility can be identified.

Section 14 - TRANSPORTATION INFORMATION



DOT:
Symbols: G Hazard class or Division: 9
Identification Numbers: UN3077 PG: III
Label Codes: 9 Special provisions: 8, 146,
335, B54,
IB8, IP3,
N20, T1,
TP33
Packaging: Exceptions: 155 Packaging: Non- bulk: 213
Packaging: Exceptions: 155 Quantity limitations: No limit
Passenger aircraft/rail:
Quantity Limitations: Cargo No limit Vessel stowage: Location: A
aircraft only:
Vessel stowage: Other: None
Hazardous materials descriptions and proper shipping names:
Environmentally hazardous substance, solid, n.o.s

Air Transport IATA:

ICAO/IATA Class: 9 ICAO/IATA Subrisk: None
UN/ID Number: 3077 Packing Group: III
Special provisions: A97
Cargo Only
Packing Instructions: 400 kg Maximum Qty/Pack: 956
Passenger and Cargo Passenger and Cargo
Packing Instructions: 400 kg Maximum Qty/Pack: 956
Passenger and Cargo Limited Quantity Passenger and Cargo Limited Quantity
Packing Instructions: 30 kg G Maximum Qty/Pack: Y956
Shipping Name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID,
N.O.S. *(CONTAINS CHRYSENE)

Maritime Transport IMDG:

IMDG Class: 9 IMDG Subrisk: None
UN Number: 3077 Packing Group: III

EMS Number: F-A , S-F Special provisions: 179 274 335 909
Limited Quantities: 5 kg Marine Pollutant: Yes
Shipping Name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.(contains chrysene)

Section 15 - REGULATORY INFORMATION

chrysene (CAS: 218-01-9) is found on the following regulatory lists;
"Canada - British Columbia Occupational Exposure Limits","Canada - Nova Scotia Occupational Exposure Limits","Canada - Princ Edward Island Occupational Exposure Limits","Canada - Prince Edward Island Occupational Exposure Limits - Carcinogens","Canada - Quebec Permissible Exposure Values for Airborne Contaminants (English)","Canada ARET (Accelerated Reduction / Elimination of Toxics) Substance List","Canada Domestic Substances List (DSL)","Canada Ingredient Disclosure List (SOR/88-64)","Canada Nation Pollutant Release Inventory (NPRI)","Canada Toxicological Index Service - Workplace Hazardous Materials Information System - WHMIS (English)","International Agency for Research on Cancer (IARC) - Agents Reviewed by the IARC Monographs","Internation Chemical Secretariat (ChemSec) REACH SIN* List (*Substitute It Now!) 1.0","OSPAR List of Substances of Possible Concern","US - Alaska Limits for Air Contaminants","US - California Air Toxics ""Hot Spots"" List (Assembly Bill 2588) Substances for which emission must be quantified","US - California Proposition 65 - Carcinogens","US - California Proposition 65 - No Significant Risk Levels (NSRL for Carcinogens","US - California Toxic Air Contaminant List Category II","US - Connecticut Hazardous Air Pollutants","US - Idaho - Limits for Air Contaminants","US - Maine Chemicals of High Concern List","US - Massachusetts Oil & Hazardous Material List","US - Minnesota Hazardous Substance List","US - New Jersey Right to Know Hazardous Substances","US - Pennsylvania - Hazardou Substance List","US - Rhode Island Hazardous Substance List","US - Tennessee Occupational Exposure Limits - Limits For A Contaminants","US - Vermont Hazardous Constituents","US - Vermont Hazardous wastes which are Discarded Commercial Chemic Products or Off-Specification Batches of Commercial Chemical Products or Spill Residues of Either","US - Vermont Permissib Exposure Limits Table Z-1-A Transitional Limits for Air Contaminants","US - Washington Dangerous waste constituents list","US - Washington Discarded Chemical Products List - ""U"" Chemical Products","US - Wyoming Toxic and Hazardous Substances Table Z Limits for Air Contaminants","US ACGIH Threshold Limit Values (TLV)","US ACGIH Threshold Limit Values (TLV) - Carcinogens","U CAA (Clean Air Act) - HON Rule - Organic HAPs (Hazardous Air Pollutants)","US CERCLA Priority List of Hazardous Substances","U CWA (Clean Water Act) - Priority Pollutants","US Department of Transportation (DOT) List of Hazardous Substances and Reportab Quantities - Hazardous Substances Other Than Radionuclides","US DOE Temporary Emergency Exposure Limits (TEELs)","US EPA Carcinogens Listing","US EPA National Priorities List - Superfund Chemical Data Matrix (SCDM) - Hazard Ranking System - Hazardou Substance Benchmarks","US List of Lists - Consolidated List of Chemicals Subject to EPCRA, CERCLA and Section 112(r) of the Clea Air Act","US RCRA (Resource Conservation & Recovery Act) - Appendix IX to Part 264 Ground-Water Monitoring List 1","US RCRA (Resource Conservation & Recovery Act) - Hazardous Constituents - Appendix VIII to 40 CFR 261","US RCRA (Resource Conservatio & Recovery Act) - List of Hazardous Inorganic and Organic Constituents 1","US RCRA (Resource Conservation & Recovery Act) - List of Hazardous Wastes","US RCRA (Resource Conservation & Recovery Act) - Phase 4 LDR Rule - Universal Treatment Standards","U -Texas Air Monitoring Comparison Values for Evaluating PAHs","US Toxic Substances Control Act (TSCA) - Inventory"

Section 16 - OTHER INFORMATION

Reasonable care has been taken in the preparation of this information, but the author makes no warranty of merchantability or any other warranty, expressed or implied, with respect to this information. The author ma no representations and assumes no liability for any direct, incidental or consequential damages resulting fr its use. For additional technical information please call our toxicology department on +800 CHEMCALL.

■ Classification of the preparation and its individual components has drawn on official and authoritative sources as well as independe review by the Chemwatch Classification committee using available literature references.
A list of reference resources used to assist the committee may be found at:
www.chemwatch.net/references.

■ The (M)SDS is a Hazard Communication tool and should be used to assist in the Risk Assessment. Many factors determine wheth the reported Hazards are Risks in the workplace or other settings. Risks may be determined by reference to Exposures Scenarios. Sca of use, frequency of use and current or available engineering controls must be considered.

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Issue Date: Jan-5-2009

Print Date:May-24-2011

Safety Data Sheet

Revision Date: 06/20/18
www.restek.com

2 Letter ISO country code/language code: US/EN

1. IDENTIFICATION

Catalog Number / Product Name:	**31276 / Dibenzo(a,h)anthracene Standard**
Company:	Restek Corporation
Address:	110 Benner Circle Bellefonte, Pa. 16823
Phone#:	814-353-1300
Fax#:	814-353-1309
Emergency#:	800-424-9300 (CHEMTREC) 703-527-3887 (Outside the US)
Email:	www.restek.com
Revision Number:	8
Intended use:	For Laboratory use only

2. HAZARD(S)IDENTIFICATION

Emergency Overview:

GHS Hazard Symbols:



GHS Classification:	Carcinogenicity Category 2
GHS Signal Word:	Warning
GHS Hazard:	Suspected of causing cancer.
GHS Precautions:	
Safety Precautions:	Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Wear protective gloves/protective clothing/eye protection/face protection.
First Aid Measures:	IF exposed or concerned: Get medical advice/attention.
Storage:	Store locked up.
Disposal:	Dispose of contents/container according to section 13 of the SDS.
Single Exposure Target Organs:	No data available
Repeated Exposure Target Organs:	No data available

3. COMPOSITION / INFORMATION ON INGREDIENT

Chemical Name	CAS #	EINEC #	% Composition
Dichloromethane	75-09-2	200-838-9	99.9
dibenz (a,h) anthracene	53-70-3	200-181-8	0.1

4. FIRST-AID MEASURES

Inhalation:	Remove to fresh air. If breathing is difficult, have a trained individual administer oxygen. If not breathing, give artificial respiration and have a trained individual administer oxygen. Get medical attention immediately
Eyes:	Immediately flush eyes with plenty of water for at least 20 minutes retracting eyelids often. Tilt the head to prevent chemical from transferring to the uncontaminated eye. Get immediate medical attention and monitor the eye daily as advised by your physician. Serious harm (damage) may result if treatment is delayed. Continue to flush eyes while awaiting medical attention
Skin Contact:	Wash with soap and water. Remove contaminated clothing, launder immediately, and discard contaminated leather goods. Get medical attention immediately.
Ingestion:	Do not induce vomiting and seek medical attention immediately. Drink two glasses of water or milk to dilute. Provide medical care provider with this SDS. Never give anything by mouth to an unconscious person

5. FIRE- FIGHTING MEASURES

Extinguishing Media:	Use alcohol resistant foam, carbon dioxide, or dry chemical when fighting fires. Water or foam may cause frothing if liquid is burning but it still may be a useful extinguishing agent if carefully applied to the surface of the fire. Do Not direct a stream of water into the hot burning liquid. Use methods suitable to fight surrounding fire.
Fire and/or Explosion Hazards:	No data.
Fire Fighting Methods and Protection:	Use methods for the surrounding fire.
Hazardous Combustion Products:	Carbon dioxide, Carbon monoxide

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions and Equipment:	Exposure to the spilled material may be severely irritating or toxic. Follow personal protective equipment recommendations found in Section 8 of this SDS. Personal protective equipment needs must be evaluated based on information provided on this sheet and the special circumstances created by the spill including; the material spilled, the quantity of the spill, the area in which the spill occurred, and the expertise of employees in the area responding to the spill. Never exceed any occupational exposure limits.
Methods for Clean-up:	Prevent the spread of any spill to minimize harm to human health and the environment if safe to do so. Wear complete and proper personal protective equipment following the recommendation of Section 8 at a minimum. Dike with suitable absorbent material like granulated clay. Gather and store in a sealed container pending a waste disposal evaluation.

7. HANDLING AND STORAGE

Handling Technical Measures and Precautions:	Toxic or severely irritating material. Avoid contacting and avoid breathing the material. Use only in a well ventilated area. As with all chemicals, good industrial hygiene practices should be followed when handling this material.
Storage Technical Measures and Conditions:	Store in a cool dry place. Isolate from incompatible materials. Keep container closed when not in use

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

United States:

Chemical Name	CAS No.	IDLH	ACGIH STEL	ACGIH TLV-TWA	OSHA Exposure Limit
Dichloromethane	75-09-2	2300 ppm IDLH	None Known	50 ppm TWA	25 ppm TWA; 125 ppm STEL (15 min. TWA)
dibenz (a,h) anthracene	53-70-3	Not established	None Known	Not established	No data available

Personal Protection:

Engineering Measures:	Local exhaust ventilation or other engineering controls are normally required when handling or using this product to avoid overexposure.
Respiratory Protection:	Respiratory protection may be required to avoid overexposure when handling this product. General or local exhaust ventilation is the preferred means of protection. Use a respirator if general room ventilation is not available or sufficient to

	eliminate symptoms.
Eye Protection:	Wear chemically resistant safety glasses with side shields when handling this product. Wear additional eye protection such as chemical splash goggles and/or face shield when the possibility exists for eye contact with splashing or spraying liquid, or airborne material. Do not wear contact lenses. Have an eye wash station available.
Skin Protection:	Avoid skin contact by wearing chemically resistant gloves, an apron and other protective equipment depending upon conditions of use. Inspect gloves for chemical break-through and replace at regular intervals. Clean protective equipment regularly. Wash hands and other exposed areas with mild soap and water before eating, drinking, and when leaving work.
Medical Conditions Aggravated By Exposure:	Eye disease Skin disease including eczema and sensitization Respiratory disease including asthma and bronchitis

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance, color:	Colorless
Odor:	Strong
Physical State:	No data available
pH:	Not applicable
Vapor Pressure:	No data available
Vapor Density:	2.93 (air = 1)
Boiling Point (°C):	524 °C Boiling Point
Melting Point (°C):	-96.7 °C
Flash Point (°F):	No data available
Upper Flammable/Explosive Limit, % in air:	No data available
Lower Flammable/Explosive Limit, % in air:	No data available
Autoignition Temperature (°C):	556 deg C
Decomposition Temperature (°C):	No data available
Specific Gravity:	1.3254 - 1.3258 g/cm3 at 20 °C
Evaporation Rate:	No data available
Odor Threshold:	ND
Solubility:	Moderate; 50-99%
Partition Coefficient: n-octanol in water:	No data available
VOC % by weight:	0
Molecular Weight:	No data available

10. STABILITY AND REACTIVITY

Stability:	Stable under normal conditions.
Conditions to Avoid:	None known.Contamination High temperatures
Materials to Avoid / Chemical Incompatiability:	Strong oxidizing agents Caustics (bases)
Hazardous Decomposition Products:	Carbon dioxide Carbon monoxide

11. TOXICOLOGICAL INFORMATION

Routes of Entry:	Inhalation Absorption Ingestion Skin contact Eye contact
Target Organs Potentially Affected By Exposure:	Skin, Cardiovascular System, Eyes, Liver
Chemical Interactions That Change Toxicity:	None Known

Immediate (Acute) Health Effects by Route of Exposure:

Inhalation Irritation:	Can cause moderate respiratory irritation, dizziness, weakness, fatigue, nausea and headache.
Inhalation Toxicity:	Harmful! Can cause systemic damage (see "Target Organs)Inhalation may cause severe central nervous system depression (including unconsciousness).
Skin Contact:	Contact causes severe skin irritation and possible burns.
Skin Absorption:	Harmful if absorbed through the skin. May cause severe irritation and systemic damage.
Eye Contact:	Contact with the eyes may cause moderate to severe eye injury. Eye contact may result in tearing and reddening, but not likely to permanently injure eye tissue. Temporary vision impairment (cloudy or blurred vision) is possible.
Ingestion Irritation:	Irritating to mouth, throat, and stomach. Can cause abdominal discomfort, nausea, vomiting and diarrhea.
Ingestion Toxicity:	Harmful if swallowed. May cause systemic poisoning.

Long-Term (Chronic) Health Effects:

Carcinogenicity:	Contains a probable or known human carcinogen.
Reproductive and Developmental Toxicity:	No data available to indicate product or any components

present at greater than 0.1% may cause birth defects.

Inhalation: Upon prolonged and/or repeated exposure, can cause moderate respiratory irritation, dizziness, weakness, fatigue, nausea and headache.Harmful! Can cause systemic damage upon prolonged and/or repeated exposure (see "Target Organs)

Skin Absorption: Upon prolonged or repeated exposure, harmful if absorbed through the skin. May cause severe irritation and systemic damage

Component Toxicological Data:

NIOSH:

Chemical Name	CAS No.	LD50/LC50
Methane, dichloro-	75-09-2	Inhalation LC50 Rat 53 mg/L 6 h

Component Carcinogenic Data:

OSHA:

Chemical Name	CAS No.	
Dibenz[a,h]anthracene	53-70-3	Present
Methylene chloride	75-09-2	25 ppm TWA (8 hr.); 125 ppm STEL (15 min.); 12.5 ppm Action Level (see 29 CFR 1910.1051); effective date for respiratory protection for certain employers to acheive the 8-hour TWA PEL is August 31, 1998; the start up date to install engineering controls is December 10, 1998.; {OSHA - 29 CFR 1910 Specifically Regulate

ACGIH:

Chemical Name	CAS No.	
Dichloromethane	75-09-2	A3 - Confirmed Animal Carcinogen with Unknown Relevance to Humans

NIOSH:

Chemical Name	CAS No.	
Methylene chloride	75-09-2	potential occupational carcinogen

NTP:

Chemical Name	CAS No.
No data available	

IARC:

Chemical Name	CAS No.	Group No.
Monograph 92 [2010]; Supplement 7 [1987]; Monograph 32 [1983] (overall evaluation upgraded from 2B to 2A with supporting evidence from other relevant data)	53-70-3	Group 2A
Monograph 110 [in preparation]; Monograph 71 [1999]	75-09-2	Group 2A

12. ECOLOGICAL INFORMATION

Overview: Moderate ecological hazard. This product may be dangerous to plants and/or wildlife. Keep out of waterways.

Mobility: No data

Persistence: No data

Bioaccumulation: No data

Degradability: No data

Ecological Toxicity Data: No data available

13. DISPOSAL CONSIDERATIONS

Waste Description of Spent Product: Spent or discarded material is a hazardous waste.Mixing spent or discarded material with other materials may render the mixture hazardous. Perform a hazardous waste determination on mixtures.

Disposal Methods: Incinerate spent or discarded material a permitted hazardous waste facility.

Waste Disposal of Packaging: Comply with all Local, State, Federal, and Provincial Environmental Regulations.

14. TRANSPORTATION INFORMATION

United States:

DOT Proper Shipping Name: Dichloromethane
UN Number: UN1593
Hazard Class: 6.1
Packing Group: III

International:

IATA Proper Shipping Name: Dichloromethane
UN Number: UN1593
Hazard Class: 6.1
Packing Group: III

Marine Pollutant: No

Chemical Name	CAS#	Marine Pollutant	Severe Marine Pollutant
No data available			

15. REGULATORY INFORMATION

United States:

Chemical Name	CAS#	CERCLA	SARA 313	SARA EHS 313	TSCA
Dichloromethane	75-09-2	X	X	-	X
dibenz (a,h) anthracene	53-70-3	X	X	-	X

The following chemicals are listed on CA Prop 65:

Chemical Name	CAS #	Regulation
Dibenz[a,h]anthracene	53-70-3	Prop 65 Cancer
Dichloromethane Dichloromethane (Methylene chloride)	75-09-2	Prop 65 Cancer

State Right To Know Listing:

Chemical Name	CAS#	New Jersey	Massachusetts	Pennsylvania	California
Dichloromethane	75-09-2	X	X	X	X
dibenz (a,h) anthracene	53-70-3	X	X	X	X

16. OTHER INFORMATION

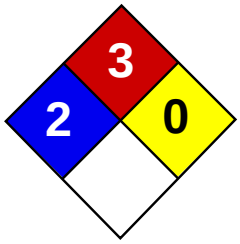
Prior Version Date: 01/06/17

Other Information: Any changes to the SDS compared to previous versions are marked by a vertical line in front of the concerned paragraph.

References: No data available

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Health	2
Fire	3
Reactivity	0
Personal Protection	H

Material Safety Data Sheet
Ethylbenzene MSDS

Section 1: Chemical Product and Company Identification

Product Name: Ethylbenzene

Catalog Codes: SLE2044

CAS#: 100-41-4

RTECS: DA0700000

TSCA: TSCA 8(b) inventory: Ethylbenzene

CI#: Not available.

Synonym: Ethyl Benzene; Ethylbenzol; Phenylethane

Chemical Name: Ethylbenzene

Chemical Formula: C8H10

Contact Information:

Sciencelab.com, Inc.
14025 Smith Rd.
Houston, Texas 77396

US Sales: **1-800-901-7247**
International Sales: **1-281-441-4400**

Order Online: ScienceLab.com

CHEMTREC (24HR Emergency Telephone), call: 1-800-424-9300

International CHEMTREC, call: 1-703-527-3887

For non-emergency assistance, call: 1-281-441-4400

Section 2: Composition and Information on Ingredients

Composition:

Name	CAS #	% by Weight
Ethylbenzene	100-41-4	100

Toxicological Data on Ingredients: Ethylbenzene: ORAL (LD50): Acute: 3500 mg/kg [Rat].

Section 3: Hazards Identification

Potential Acute Health Effects:
Hazardous in case of eye contact (irritant), of ingestion, of inhalation. Slightly hazardous in case of skin contact (irritant, permeator).

Potential Chronic Health Effects:
Slightly hazardous in case of skin contact (irritant, sensitizer). CARCINOGENIC EFFECTS: Classified 2B (Possible for human.) by IARC. MUTAGENIC EFFECTS: Mutagenic for mammalian somatic cells. Mutagenic for bacteria and/or yeast. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Not available. The substance may be toxic to central nervous system (CNS). Repeated or prolonged exposure to the substance can produce target organs damage.

Section 4: First Aid Measures

Eye Contact:

Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Cold water may be used. WARM water MUST be used. Get medical attention.

Skin Contact: Wash with soap and water. Cover the irritated skin with an emollient. Get medical attention if irritation develops.

Serious Skin Contact: Not available.

Inhalation:
If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Serious Inhalation:
Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. WARNING: It may be hazardous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled material is toxic, infectious or corrosive. Seek medical attention.

Ingestion:
Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention if symptoms appear.

Serious Ingestion: Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: Flammable.

Auto-Ignition Temperature: 432°C (809.6°F)

Flash Points:
CLOSED CUP: 15°C (59°F). (Tagliabue.) OPEN CUP: 26.667°C (80°F) (Cleveland) (CHRIS, 2001) CLOSED CUP: 12.8 C (55 F) (Bingham et al, 2001; NIOSH, 2001) CLOSED CUP: 21 C (70 F) (NFPA)

Flammable Limits: LOWER: 0.8% - 1.6%UPPER: 6.7% - 7%

Products of Combustion: These products are carbon oxides (CO, CO2).

Fire Hazards in Presence of Various Substances: Highly flammable in presence of open flames and sparks, of heat.

Explosion Hazards in Presence of Various Substances:
Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available. Slightly explosive in presence of heat.

Fire Fighting Media and Instructions:
Flammable liquid, soluble or dispersed in water. SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use alcohol foam, water spray or fog.

Special Remarks on Fire Hazards:
Vapor may travel considerable distance to source of ignition and flash back. Vapors may form explosive mixtures with air. When heated to decomposition it emits acrid smoke and irritating fumes.

Special Remarks on Explosion Hazards: Vapors may form explosive mixtures in air.

Section 6: Accidental Release Measures

Small Spill: Absorb with an inert material and put the spilled material in an appropriate waste disposal.

Large Spill:
Flammable liquid. Keep away from heat. Keep away from sources of ignition. Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. Do not touch spilled material. Prevent entry into sewers, basements or confined areas; dike if needed. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

Section 7: Handling and Storage

Precautions:
Keep away from heat. Keep away from sources of ignition. Ground all equipment containing material. Do not ingest. Do not breathe gas/fumes/ vapor/spray. Avoid contact with eyes. Wear suitable protective clothing. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Keep away from incompatibles such as oxidizing agents.

Storage:
Store in a segregated and approved area. Keep container in a cool, well-ventilated area. Keep container tightly closed and sealed until ready for use. Avoid all possible sources of ignition (spark or flame). Sensitive to light. Store in light-resistant containers.

Section 8: Exposure Controls/Personal Protection

Engineering Controls:
Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location.

Personal Protection:
Splash goggles. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

Personal Protection in Case of a Large Spill:
Splash goggles. Full suit. Vapor respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits:
TWA: 100 STEL: 125 (ppm) from OSHA (PEL) [United States] TWA: 435 STEL: 545 from OSHA (PEL) [United States] TWA: 435 STEL: 545 (mg/m3) from NIOSH [United States] TWA: 100 STEL: 125 (ppm) from NIOSH [United States] TWA: 100 STEL: 125 (ppm) from ACGIH (TLV) [United States] TWA: 100 STEL: 125 (ppm) [United Kingdom (UK)] TWA: 100 STEL: 125 (ppm) [Belgium] TWA: 100 STEL: 125 (ppm) [Finland] TWA: 50 (ppm) [Norway] Consult local authorities for acceptable exposure limits.

Section 9: Physical and Chemical Properties

Physical state and appearance: Liquid.

Odor: Sweetish. Gasoline-like. Aromatic.

Taste: Not available.

Molecular Weight: 106.16 g/mole

Color: Colorless.

pH (1% soln/water): Not available.

Boiling Point: 136°C (276.8°F)

Melting Point: -94.9 (-138.8°F)

Critical Temperature: 617.15°C (1142.9°F)

Specific Gravity: 0.867 (Water = 1)

Vapor Pressure: 0.9 kPa (@ 20°C)

Vapor Density: 3.66 (Air = 1)

Volatility: 100% (v/v).

Odor Threshold: 140 ppm

Water/Oil Dist. Coeff.: The product is more soluble in oil; log(oil/water) = 3.1

Ionicity (in Water): Not available.

Dispersion Properties: See solubility in water, diethyl ether.

Solubility:
Easily soluble in diethyl ether. Very slightly soluble in cold water or practically insoluble in water. Soluble in all proportions in Ethyl alcohol. Soluble in Carbon tetrachloride, Benzene. Insoluble in Ammonia. Slightly soluble in Chloroform. Solubility in Water: 169 mg/l @ 25 deg. C.; 0.014 g/100 ml @ 15 deg. C.

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Heat, ingnition sources (flames, sparks, static), incompatible materials, light

Incompatibility with various substances: Reactive with oxidizing agents.

Corrosivity: Not considered to be corrosive for metals and glass.

Special Remarks on Reactivity:
Can react vigorously with oxidizing materials. Sensitive to light.

Special Remarks on Corrosivity: Not available.

Polymerization: Will not occur.

Section 11: Toxicological Information

Routes of Entry: Absorbed through skin. Inhalation.

Toxicity to Animals: Acute oral toxicity (LD50): 3500 mg/kg [Rat].

Chronic Effects on Humans:
CARCINOGENIC EFFECTS: Classified 2B (Possible for human.) by IARC. MUTAGENIC EFFECTS: Mutagenic for mammalian somatic cells. Mutagenic for bacteria and/or yeast. May cause damage to the following organs: central nervous system (CNS).

Other Toxic Effects on Humans:
Hazardous in case of ingestion, of inhalation. Slightly hazardous in case of skin contact (irritant, permeator).

Special Remarks on Toxicity to Animals:
Lethal Dose/Conc 50% Kill: LD50 [Rabbit] - Route: Skin; Dose: 17800 ul/kg Lowest Published Lethal Dose/Conc: LDL[Rat] - Route: Inhalation (vapor); Dose: 4000 ppm/4 H

Special Remarks on Chronic Effects on Humans:
May cause adverse reproductive effects and birth defects (teratogenic) based on animal test data. May cause cancer based on animals data. IARC evidence for carcinogenicity in animals is sufficient. IARC evidence of carcinogenicity in humans inadequate. May affect genetic material (mutagenic).

Special Remarks on other Toxic Effects on Humans:
Acute Potential Health Effects: Skin: Can cause mild skin irritation. It can be absorbed through intact skin. Eyes: Contact with vapor or liquid can cause severe eye irritation depending on concentration. It may also cause conjunctivitis. At a vapor exposure level of 85 - 200 ppm , it is mildly and transiently irritating to the eyes; 1000 ppm causes further irritation and tearing; 2000 ppm results in immediate and severe irritation and tearing; 5,000 ppm is intolerable (ACGIH, 1991; Clayton and Clayton, 1994). Standard draize test for eye irritation using 500 mg resulted in severe irritation (RTECS) Inhalation: Exposure to high concentrations can cause nasal, mucous membrane and respiratory tract irritation and can also result in chest constriction and, trouble breathing, respiratory failure, and even death. It can also affect behavior/Central Nervous System. The effective dose for CNS depression in experimental animals was 10,000 ppm (ACGIH, 1991). Symptoms of CNS depression include

headache, nausea, weakness, dizziness, vertigo, irritability, fatigue, lightheadedness, sleepiness, tremor, loss of coordination, judgement and conciousness, coma, and death. It can also cause pulmonary edema. Inhalation of 85 ppm can produce fatigue, insomnia, headache, and mild irritation of the respiratory tract (Haley & Berndt, 1987). Ingestion: Do not drink, pipet or siphon by mouth. May cause gastroinestinal/digestive tract irritation with Abdominal pain, nausea, vomiting. Ethylbenzene is a pulmonary aspiration hazard. Pulmonary aspiration of even small amounts of the liquid may cause fatal pneumonitis. It may also affect behavior/central nervous system with

Section 12: Ecological Information

Ecotoxicity:
Ecotoxicity in water (LC50): 14 mg/l 96 hours [Fish (Trout)] (static). 12.1 mg/l 96 hours [Fish (Fathead Minnow)] (flow-through)]. 150 mg/l 96 hours [Fish (Blue Gill/Sunfish)] (static). 275 mg/l 96 hours [Fish (Sheepshead Minnow)]. 42.3 mg/l 96 hours [Fish (Fathead Minnow)](soft water). 87.6mg/l 96 hours [Shrimp].

BOD5 and COD: Not available.

Products of Biodegradation:
Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The products of degradation are less toxic than the product itself.

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations

Waste Disposal:
Waste must be disposed of in accordance with federal, state and local environmental control regulations.

Section 14: Transport Information

DOT Classification: CLASS 3: Flammable liquid.

Identification: : Ethylbenzene UNNA: 1175 PG: II

Special Provisions for Transport: Not available.

Section 15: Other Regulatory Information

Federal and State Regulations:
Connecticut hazardous material survey.: Ethylbenzene Illinois toxic substances disclosure to employee act: Ethylbenzene Illinois chemical safety act: Ethylbenzene New York release reporting list: Ethylbenzene Rhode Island RTK hazardous substances: Ethylbenzene Pennsylvania RTK: Ethylbenzene Minnesota: Ethylbenzene Massachusetts RTK: Ethylbenzene Massachusetts spill list: Ethylbenzene New Jersey: Ethylbenzene New Jersey spill list: Ethylbenzene Louisiana spill reporting: Ethylbenzene California Director's List of Hazardous Substances: Ethylbenzene TSCA 8(b) inventory: Ethylbenzene TSCA 4(a) proposed test rules: Ethylbenzene TSCA 8(d) H and S data reporting: Ethylbenzene: Effective Date: 6/19/87; Sunset Date: 6/19/97 SARA 313 toxic chemical notification and release reporting: Ethylbenzene

Other Regulations:
OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200). EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances.

Other Classifications:

WHMIS (Canada):
CLASS B-2: Flammable liquid with a flash point lower than 37.8°C (100°F). CLASS D-2A: Material causing other toxic effects (VERY TOXIC). CLASSE D-2B: Material causing other toxic effects (TOXIC).

DSCL (EEC):
R11- Highly flammable. R20- Harmful by inhalation. S16- Keep away from sources of ignition - No smoking. S24/25- Avoid contact with skin and eyes. S29- Do not empty into drains.

HMIS (U.S.A.):

Health Hazard: 2

Fire Hazard: 3

Reactivity: 0

Personal Protection: h

National Fire Protection Association (U.S.A.):

Health: 2

Flammability: 3

Reactivity: 0

Specific hazard:

Protective Equipment:
Gloves. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Splash goggles.

Section 16: Other Information

References:
-Manufacturer's Material Safety Data Sheet. -Fire Protection Guide to Hazardous Materials, 13th ed., National Fire Protection Association (NFPA) -Registry of Toxic Effects of Chemical Substances (RTECS) -Chemical Hazard Response Information System (CHRIS) -Hazardous Substance Data Bank (HSDB) -New Jersey Hazardous Substance Fact Sheet -Ariel Global View -Reprotext System

Other Special Considerations: Not available.

Created: 10/09/2005 05:28 PM

Last Updated: 05/21/2013 12:00 PM

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Safety Data Sheet

Revision Date: 06/04/19
www.restek.com

2 Letter ISO country code/language code: US/EN

1. IDENTIFICATION

Catalog Number / Product Name:	**31279 / Indeno(1,2,3-c,d)pyrene Standard**
Company:	Restek Corporation
Address:	110 Benner Circle Bellefonte, Pa. 16823
Phone#:	814-353-1300
Fax#:	814-353-1309
Emergency#:	800-424-9300 (CHEMTREC) 703-527-3887 (Outside the US)
Email:	www.restek.com
Revision Number:	11
Intended use:	For Laboratory use only

2. HAZARD(S)IDENTIFICATION

Emergency Overview:

GHS Hazard Symbols:



GHS Classification:	Carcinogenicity Category 2
GHS Signal Word:	Warning
GHS Hazard:	Suspected of causing cancer.
GHS Precautions:	
Safety Precautions:	Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Wear protective gloves/protective clothing/eye protection/face protection.
First Aid Measures:	IF exposed or concerned: Get medical advice/attention.
Storage:	Store locked up.
Disposal:	Dispose of contents/container according to section 13 of the SDS.
Single Exposure Target Organs:	No data available
Repeated Exposure Target Organs:	No data available

3. COMPOSITION / INFORMATION ON INGREDIENT

Chemical Name	CAS #	EINEC #	% Composition
Dichloromethane	75-09-2	200-838-9	99.9
indeno (1,2,3-c,d) pyrene	193-39-5	205-893-2	0.1

4. FIRST-AID MEASURES

Inhalation:	Remove to fresh air. If breathing is difficult, have a trained individual administer oxygen. If not breathing, give artificial respiration and have a trained individual administer oxygen. Get medical attention immediately
Eyes:	Immediately flush eyes with plenty of water for at least 20 minutes retracting eyelids often. Tilt the head to prevent chemical from transferring to the uncontaminated eye. Get immediate medical attention and monitor the eye daily as advised by your physician. Serious harm (damage) may result if treatment is delayed. Continue to flush eyes while awaiting medical attention
Skin Contact:	Wash with soap and water. Remove contaminated clothing, launder immediately, and discard contaminated leather goods. Get medical attention immediately.
Ingestion:	Do not induce vomiting and seek medical attention immediately. Drink two glasses of water or milk to dilute. Provide medical care provider with this SDS. Never give anything by mouth to an unconscious person

5. FIRE- FIGHTING MEASURES

Extinguishing Media:	Use alcohol resistant foam, carbon dioxide, or dry chemical when fighting fires. Water or foam may cause frothing if liquid is burning but it still may be a useful extinguishing agent if carefully applied to the surface of the fire. Do Not direct a stream of water into the hot burning liquid. Use methods suitable to fight surrounding fire.
Fire and/or Explosion Hazards:	No data.
Fire Fighting Methods and Protection:	Use methods for the surrounding fire.
Hazardous Combustion Products:	Carbon dioxide, Carbon monoxide

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions and Equipment:	Exposure to the spilled material may be severely irritating or toxic. Follow personal protective equipment recommendations found in Section 8 of this SDS. Personal protective equipment needs must be evaluated based on information provided on this sheet and the special circumstances created by the spill including; the material spilled, the quantity of the spill, the area in which the spill occurred, and the expertise of employees in the area responding to the spill. Never exceed any occupational exposure limits.
Methods for Clean-up:	Prevent the spread of any spill to minimize harm to human health and the environment if safe to do so. Wear complete and proper personal protective equipment following the recommendation of Section 8 at a minimum. Dike with suitable absorbent material like granulated clay. Gather and store in a sealed container pending a waste disposal evaluation.

7. HANDLING AND STORAGE

Handling Technical Measures and Precautions:	Toxic or severely irritating material. Avoid contacting and avoid breathing the material. Use only in a well ventilated area. As with all chemicals, good industrial hygiene practices should be followed when handling this material.
Storage Technical Measures and Conditions:	Store in a cool dry place. Isolate from incompatible materials. Keep container closed when not in use

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

United States:

Chemical Name	CAS No.	IDLH	ACGIH STEL	ACGIH TLV-TWA	OSHA Exposure Limit
Dichloromethane	75-09-2	2300 ppm IDLH	None Known	50 ppm TWA	25 ppm TWA; 125 ppm STEL (15 min. TWA)
indeno (1,2,3-c,d) pyrene	193-39-5	Not established	None Known	Not established	No data available

Personal Protection:

Engineering Measures:	Local exhaust ventilation or other engineering controls are normally required when handling or using this product to avoid overexposure.
Respiratory Protection:	Respiratory protection may be required to avoid overexposure when handling this product. General or local exhaust ventilation is the preferred means of protection. Use a respirator if general room ventilation is not available or sufficient to

	eliminate symptoms.
Eye Protection:	Wear chemically resistant safety glasses with side shields when handling this product. Wear additional eye protection such as chemical splash goggles and/or face shield when the possibility exists for eye contact with splashing or spraying liquid, or airborne material. Do not wear contact lenses. Have an eye wash station available.
Skin Protection:	Avoid skin contact by wearing chemically resistant gloves, an apron and other protective equipment depending upon conditions of use. Inspect gloves for chemical break-through and replace at regular intervals. Clean protective equipment regularly. Wash hands and other exposed areas with mild soap and water before eating, drinking, and when leaving work.
Medical Conditions Aggravated By Exposure:	Eye disease Skin disease including eczema and sensitization Respiratory disease including asthma and bronchitis

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance, color:	Colorless
Odor:	Strong
Physical State:	No data available
pH:	Not applicable
Vapor Pressure:	No data available
Vapor Density:	2.93 (air = 1)
Boiling Point (°C):	530 °C
Melting Point (°C):	-96.7 °C
Flash Point (°F):	No data available
Upper Flammable/Explosive Limit, % in air:	No data available
Lower Flammable/Explosive Limit, % in air:	No data available
Autoignition Temperature (°C):	556 deg C
Decomposition Temperature (°C):	No data available
Specific Gravity:	1.3254 - 1.3258 g/cm3 at 20 °C
Evaporation Rate:	No data available
Odor Threshold:	ND
Solubility:	Moderate; 50-99%
Partition Coefficient: n-octanol in water:	No data available
VOC % by weight:	99.9
Molecular Weight:	No data available

10. STABILITY AND REACTIVITY

Stability:	Stable under normal conditions.
Conditions to Avoid:	None known.Contamination High temperatures
Materials to Avoid / Chemical Incompatiability:	Strong oxidizing agents Caustics (bases)
Hazardous Decomposition Products:	Carbon dioxide Carbon monoxide

11. TOXICOLOGICAL INFORMATION

Routes of Entry:	Inhalation Absorption Ingestion Skin contact Eye contact
Target Organs Potentially Affected By Exposure:	Skin, Cardiovascular System, Eyes, Liver
Chemical Interactions That Change Toxicity:	None Known

Immediate (Acute) Health Effects by Route of Exposure:

Inhalation Irritation:	Can cause moderate respiratory irritation, dizziness, weakness, fatigue, nausea and headache.
Inhalation Toxicity:	Harmful! Can cause systemic damage (see "Target Organs)Inhalation may cause severe central nervous system depression (including unconsciousness).
Skin Contact:	Contact causes severe skin irritation and possible burns.
Skin Absorption:	Harmful if absorbed through the skin. May cause severe irritation and systemic damage.
Eye Contact:	Contact with the eyes may cause moderate to severe eye injury. Eye contact may result in tearing and reddening, but not likely to permanently injure eye tissue. Temporary vision impairment (cloudy or blurred vision) is possible.
Ingestion Irritation:	Irritating to mouth, throat, and stomach. Can cause abdominal discomfort, nausea, vomiting and diarrhea.
Ingestion Toxicity:	Harmful if swallowed. May cause systemic poisoning.

Long-Term (Chronic) Health Effects:

Carcinogenicity:	Contains a probable or known human carcinogen.
Reproductive and Developmental Toxicity:	No data available to indicate product or any components

present at greater than 0.1% may cause birth defects.

Inhalation: Upon prolonged and/or repeated exposure, can cause moderate respiratory irritation, dizziness, weakness, fatigue, nausea and headache.Harmful! Can cause systemic damage upon prolonged and/or repeated exposure (see "Target Organs)

Skin Absorption: Upon prolonged or repeated exposure, harmful if absorbed through the skin. May cause severe irritation and systemic damage

Component Toxicological Data:

NIOSH:

Chemical Name	CAS No.	LD50/LC50
Methane, dichloro-	75-09-2	Inhalation LC50 Rat 53 mg/L 6 h

Component Carcinogenic Data:

OSHA:

Chemical Name	CAS No.	
Indeno[1,2,3-cd]pyrene	193-39-5	Present
Methylene chloride	75-09-2	25 ppm TWA (8 hr.); 125 ppm STEL (15 min.); 12.5 ppm Action Level (see 29 CFR 1910.1051); effective date for respiratory protection for certain employers to acheive the 8-hour TWA PEL is August 31, 1998; the start up date to install engineering controls is December 10, 1998.; {OSHA - 29 CFR 1910 Specifically Regulate

ACGIH:

Chemical Name	CAS No.	
Dichloromethane	75-09-2	A3 - Confirmed Animal Carcinogen with Unknown Relevance to Humans

NIOSH:

Chemical Name	CAS No.	
Methylene chloride	75-09-2	potential occupational carcinogen

NTP:

Chemical Name	CAS No.
No data available	

IARC:

Chemical Name	CAS No.	Group No.
Monograph 110 [in preparation]; Monograph 71 [1999]	75-09-2	Group 2A
Monograph 92 [2010]; Supplement 7 [1987]; Monograph 32 [1983]	193-39-5	Group 2B

12. ECOLOGICAL INFORMATION

Overview: Moderate ecological hazard. This product may be dangerous to plants and/or wildlife. Keep out of waterways.

Mobility: No data

Persistence: No data

Bioaccumulation: No data

Degradability: No data

Ecological Toxicity Data: No data available

13. DISPOSAL CONSIDERATIONS

Waste Description of Spent Product: Spent or discarded material is a hazardous waste.Mixing spent or discarded material with other materials may render the mixture hazardous. Perform a hazardous waste determination on mixtures.

Disposal Methods: Incinerate spent or discarded material a permitted hazardous waste facility.

Waste Disposal of Packaging: Comply with all Local, State, Federal, and Provincial

Environmental Regulations.

14. TRANSPORTATION INFORMATION

United States:
DOT Proper Shipping Name: Dichloromethane
UN Number: UN1593
Hazard Class: 6.1
Packing Group: III

International:
IATA Proper Shipping Name: Dichloromethane
UN Number: UN1593
Hazard Class: 6.1
Packing Group: III

Marine Pollutant: No

Chemical Name	CAS#	Marine Pollutant	Severe Marine Pollutant
No data available			

15. REGULATORY INFORMATION

United States:

Chemical Name	CAS#	CERCLA	SARA 313	SARA EHS 313	TSCA
Dichloromethane	75-09-2	X	X	-	X
indeno (1,2,3-c,d) pyrene	193-39-5	X	X	-	X

The following chemicals are listed on CA Prop 65:

Chemical Name	CAS #	Regulation
Indeno[1,2,3-cd]pyrene	193-39-5	Prop 65 Cancer
Dichloromethane Dichloromethane (Methylene chloride)	75-09-2	Prop 65 Cancer

State Right To Know Listing:

Chemical Name	CAS#	New Jersey	Massachusetts	Pennsylvania	California
Dichloromethane	75-09-2	X	X	X	X
indeno (1,2,3-c,d) pyrene	193-39-5	X	X	X	X

16. OTHER INFORMATION

Prior Version Date: 03/22/18
Other Information: Any changes to the SDS compared to previous versions are marked by a vertical line in front of the concerned paragraph.
References: No data available
Disclaimer: Restek Corporation provides the descriptions, data and information contained herein in good faith but makes no representation as to its comprehensiveness or accuracy. It is provided for your guidance only. Because many factors may affect processing or application/use, Restek Corporation recommends you perform an assessment to determine the suitability of a product for your particular purpose prior to use. No warranties of any kind, either expressed or implied, including fitness for a particular purpose, are made regarding products described, data or information set forth. In no case shall the descriptions, information, or data provided be considered a part of our terms and conditions of sale. Further, the descriptions, data and information furnished hereunder are given gratis. No obligation or liability for the description, data and information given are assumed. All such being given and accepted at your risk.

SAFETY DATA SHEET

Revision Date 19-Jan-2018 **Revision Number** 3

1. Identification

Product Name **n-Butylbenzene**

Cat No. : **AC107850000; AC107850010; AC107850050; AC107850500; AC107852500**

CAS-No 104-51-8
Synonyms 1-Phenylbutane

Recommended Use Laboratory chemicals.
Uses advised against Not for food, drug, pesticide or biocidal product use

Details of the supplier of the safety data sheet

Company
Fisher Scientific
One Reagent Lane
Fair Lawn, NJ 07410
Tel: (201) 796-7100

Acros Organics
One Reagent Lane
Fair Lawn, NJ 07410

Emergency Telephone Number
For information **US** call: 001-800-ACROS-01 / **Europe** call: +32 14 57 52 11
Emergency Number **US:**001-201-796-7100 / **Europe:** +32 14 57 52 99
CHEMTREC Tel. No.**US:**001-800-424-9300 / **Europe:**001-703-527-3887

2. Hazard(s) identification

Classification
This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Flammable liquids	Category 3

Label Elements

Signal Word
Warning

Hazard Statements
Flammable liquid and vapor



Precautionary Statements

Prevention
Keep away from heat/sparks/open flames/hot surfaces. - No smoking
Keep container tightly closed
Ground/bond container and receiving equipment
Use explosion-proof electrical/ventilating/lighting/equipment
Use only non-sparking tools
Take precautionary measures against static discharge
Wear protective gloves/protective clothing/eye protection/face protection
Skin
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower
Fire
In case of fire: Use CO2, dry chemical, or foam for extinction
Storage
Store in a well-ventilated place. Keep cool
Disposal
Dispose of contents/container to an approved waste disposal plant
Hazards not otherwise classified (HNOC)
None identified

3. Composition/Information on Ingredients

Component	CAS-No	Weight %
Butyl benzene	104-51-8	> 99

4. First-aid measures

Eye Contact Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Get medical attention.

Skin Contact Wash off immediately with soap and plenty of water while removing all contaminat clothes and shoes. Obtain medical attention.

Inhalation Remove from exposure, lie down. Move to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. Obtain medical attention.

Ingestion Do not induce vomiting. Clean mouth with water. Aspiration hazard. Get medical attention.

Most important symptoms and effects Breathing difficulties. Symptoms of overexposure may be headache, dizziness, tir nausea and vomiting

Notes to Physician Treat symptomatically

5. Fire-fighting measures

Suitable Extinguishing Media Water spray. Carbon dioxide (CO_2). Dry chemical. Use water spray to cool unopen containers. Chemical foam.

Unsuitable Extinguishing Media No information available

ash Point 59 °C / 138.2 °F

Method - No information available

Autoignition Temperature 412 °C / 773.6 °F

Explosion Limits
per 5.80%
Lower .80%
Sensitivity to Mechanical Impact No information available

Sensitivity to Static Discharge No information available

Specific Hazards Arising from the Chemical
Combustible material. Flammable. Vapors may travel to source of ignition and flash back. Containers may explode when heated.

Hazardous Combustion Products
Carbon monoxide (CO) Carbon dioxide (CO_2

Protective Equipment and Precautions for Firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

NFPA

Health	Flammability	Instability	Physical hazar
0	2	0	N/A

6. Accidental release measures

Personal Precautions Ensure adequate ventilation. Use personal protective equipment.
Environmental Precautions See Section 12 for additional ecological information.

Methods for Containment and Clean Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal b sawdust). Keep in suitable, closed containers for disposal. Remove all sources of Use spark-proof tools and explosion-proof equipment.

7. Handling and storage

Handling Avoid contact with skin and eyes. Do not breathe dust. Do not breathe vapors or spray mist. Use explosion-proof equipment. Use only non-sparking tools.

Storage Keep in a dry, cool and well-ventilated place. Keep container tightly closed. Keep away from heat and sources of ignition.

8. Exposure controls / personal protection

Exposure Guidelines This product does not contain any hazardous materials with occupational exposure limitsestablished by the region specific regulatory bodies.

Engineering Measures Ensure adequate ventilation, especially in confined areas.

Personal Protective Equipment

Eye/face Protection Wear appropriate protective eyeglasses or chemical safety goggles as described b OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Sta EN166.

Skin and body protection Wear appropriate protective gloves and clothing to prevent skin exposure.

Respiratory Protection Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European St EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Hygiene Measures Handle in accordance with good industrial hygiene and safety practice.

9. Physical and chemical properties

Physical State	Liquid
Appearance	Colorless
Odor	Odorless
Odor Threshold	No information available

pH	No information available
Melting Point/Range	-88 °C / -126.4 °F
Boiling Point/Range	183 °C / 361.4 °F @ 760 mmHg
Flash Point	59 °C / 138.2 °F
Evaporation Rate	No information available
Flammability (solid,gas)	No information available
Flammability or explosive limits	
per	5.80%
Lower	.80%
Vapor Pressure	1.33 hPa @ 23 °C
Vapor Density	4.6
Specific Gravity	0.860
Solubility	No information available
Partition coefficient; n-octanol/water	No data available
Autoignition Temperature	412 °C / 773.6 °F
Decomposition Temperature	No information available
Viscosity	No information available
Molecular Formula	C10 H14
Molecular Weight	134.22

10. Stability and reactivity

Reactive Hazard None known, based on information available

Stability Stable under normal conditions.

Conditions to Avoid Keep away from open flames, hot surfaces and sources of ignition. Incompatible products.

Incompatible Materials Strong oxidizing agents, oxygen

Hazardous Decomposition Products Carbon monoxide (CO), Carbon dioxide (CO_2

Hazardous Polymerization Hazardous polymerization does not occur.

Hazardous Reactions None under normal processing.

11. Toxicological information

Acute Toxicity

Product Information No acute toxicity information is available for this product

Component Information

Toxicologically Synergistic Products No information available

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Irritation No information available

Sensitization No information available

Carcinogenicity The table below indicates whether each agency has listed any ingredient as a carc

Component	CAS-No	IARC	NTP	ACGIH	OSHA	Mexic
Butyl benzene	104-51-8	Not listed	Not listed	Not listed	Not listed	Not list

Mutagenic Effects No information available

Reproductive Effects No information available.

Developmental Effects No information available.

Teratogenicity No information available.

STOT - single exposure None known
STOT - repeated exposure None known

Aspiration hazard No information available

Symptoms / effects,both acute and delayed Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting

Endocrine Disruptor Information

Component	EU - Endocrine Disrupters Candidate List	EU - Endocrine Disruptors - Evaluated Substances	Japan - Endocrine Dis Information
Butyl benzene	Group III Chemical	Not applicable	Not applicable

Other Adverse Effects The toxicological properties have not been fully investigated. See actual entry in RTECS for complete information.

12. Ecological information

Ecotoxicity
Do not empty into drains.

Persistence and Degradability No information available

Bioaccumulation/ Accumulation No information available.

Mobility .

Component	log Pow
Butyl benzene	4.6

13. Disposal considerations

Waste Disposal Methods Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, an national hazardous waste regulations to ensure complete and accurate classificati

14. Transport information

DOT
-No UN2709
Hazard Class 3
Packing Group III

TDG
-No UN2709
Hazard Class 3
Packing Group III

IATA
-No 2709
oper Shipping Name BUTYLBENZENES
Hazard Class 3
Packing Group III

IMDG/IMO
-No 2709
oper Shipping Name BUTYLBENZENES
Hazard Class 3
Packing Group III

15. Regulatory information

International Inventories

Component	TSCA	DSL	NDSL	EINECS		NLP	PICCS	ENCS	AICS	IECSC	
Butyl benzene	X	X	-	203-209-7	-		X	X	X	X	

Legend:
X - Listed
E - Indicates a substance that is the subject of a Section 5(e) Consent order under TSCA.
F - Indicates a substance that is the subject of a Section 5(f) Rule under TSCA.
N - Indicates a polymeric substance containing no free-radical initiator in its inventory name but is considered to cover the designated polymer made with any free-radical initiator regardless of the amount used.
P - Indicates a commenced PMN substance
R - Indicates a substance that is the subject of a Section 6 risk management rule under TSCA.
S - Indicates a substance that is identified in a proposed or final Significant New Use Rule
T - Indicates a substance that is the subject of a Section 4 test rule under TSCA.
XU - Indicates a substance exempt from reporting under the Inventory Update Rule, i.e. Partial Updating of the TSCA Inventory Data Base Production and Site Reports (40 CFR 710(B).
Y1 - Indicates an exempt polymer that has a number-average molecular weight of 1,000 or greater.
Y2 - Indicates an exempt polymer that is a polyester and is made only from reactants included in a specified list of low concern reactants that comprises one of the eligibility criteria for the exemption rule.

U.S. Federal Regulations

TSCA 12(b) Not applicable

SARA 313 Not applicable

SARA 311/312 Hazard Categories See section 2 for more information

CWA (Clean Water Act) Not applicable

Clean Air Act Not applicable

OSHA Occupational Safety and Health Administration
Not applicable

CERCLA Not applicable

California Proposition 65 This product does not contain any Proposition 65 chemicals

U.S. State Right-to-Know Regulations

Component	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Isla
Butyl benzene	X	X	X	-	-

U.S. Department of Transportation

Reportable Quantity (RQ): N
DOT Marine Pollutant N
DOT Severe Marine Pollutant N

U.S. Department of Homeland Security
This product does not contain any DHS chemicals.

Other International Regulations

Mexico - Grade No information available

16. Other information

Prepared By Regulatory Affairs
Thermo Fisher Scientific
Email: EMSDS.RA@thermofisher.com

Revision Date 19-Jan-2018

Print Date	19-Jan-2018
Revision Summary	This document has been updated to comply with the US OSHA HazCom 2012 Sta replacing the current legislation under 29 CFR 1910.1200 to align with the Globally Harmonized System of Classification and Labeling of Chemicals (GHS).

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text

End of SDS

N-PROPYL BENZENE CAS No 103-65-1	MATERIAL SAFETY DATA SHEET SDS/MSDS

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifiers

Product name : N-Propyl Benzene

CAS-No. : 103-65-1

1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Laboratory chemicals, Industrial & for professional use only.

1.3 Details of the supplier of the safety data sheet

Company : Central Drug House (P) Ltd
7/28 Vardaan House
New Delhi -110002
INDIA

Telephone : +91 11 49404040
Email : care@cdhfinechemical.com

1.4 Emergency telephone number

Emergency Phone # : +91 11 49404040 (9:00am - 6:00 pm) [Office hours]

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008
Flammable liquids (Category 3), H226
Aspiration hazard (Category 1), H304
Specific target organ toxicity - single exposure (Category 3), H335
Chronic aquatic toxicity (Category 2), H411

For the full text of the H-Statements mentioned in this Section, see Section 16.

2.2 Label elements

Labelling according Regulation (EC) No 1272/2008

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.

H411	Toxic to aquatic life with long lasting effects.
Precautionary statement(s)	
P261	Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
P273	Avoid release to the environment.
P301 + P310	IF SWALLOWED: Immediately call a POISON CENTER/doctor.
P331	Do NOT induce vomiting.
Supplemental Hazard Statements	none

2.3 Other hazards - none

SECTION 3: Composition/information on ingredients

3.1 Substances

Synonyms	:	1-Phenylpropane
Formula	:	C_9H_{12}
Molecular weight	:	120.19 g/mol
CAS-No.	:	103-65-1
EC-No.	:	203-132-9
Index-No.	:	601-024-00-X

Hazardous ingredients according to Regulation (EC) No 1272/2008

Component		Classification	Concentration
Prop ylbenzene			
CAS-No.	103-65-1	Flam. Liq. 3; STOT SE 3; Asp.	<= 100 %
EC-No.	203-132-9	Tox. 1; Aquatic Chronic 2;	
Index-No.	601-024-00-X	H226, H335, H304, H411	

For the full text of the H-Statements mentioned in this Section, see Section 16.

SECTION 4: First aid measures

4.1 Description of first aid measures

General advice
Consult a physician. Show this safety data sheet to the doctor in attendance.

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

4.2 Most important symptoms and effects, both acute and delayed
The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

4.3 Indication of any immediate medical attention and special treatment needed
No data available

SECTION 5: Firefighting measures

5.1 Extinguishing media

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

5.2 Special hazards arising from the substance or mixture
Carbon oxides

5.3 Advice for firefighters
Wear self-contained breathing apparatus for firefighting if necessary.

5.4 Further information
Use water spray to cool unopened containers.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures
Use personal protective equipment. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas.
For personal protection see section 8.

6.2 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.

6.3 Methods and materials for containment and cleaning up
Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations (see section 13).

6.4 Reference to other sections
For disposal see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling
Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.
Keep away from sources of ignition - No smoking.Take measures to prevent the build up of electrostatic charge.
For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities
Store in cool place. 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.
Storage class (TRGS 510): Flammable Liquids

7.3 Specific end use(s)
Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

8.2 Exposure controls

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

Personal protective equipment

Eye/face 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 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.

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

Respiratory protection
Where risk assessment shows air-purifying respirators are appropriate use (US) or type ABEK (EN 14387) respirator cartridges as a backup to enginee 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).

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

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

a)	Appearance	Form: liquid, clear Colour: colourless
b)	Odour	No data available
c)	Odour Threshold	No data available
d)	pH	No data available
e)	Melting point/freezing point	Melting point/range: -99 °C - lit.
f)	Initial boiling point and boiling range	159 °C - lit.
g)	Flash point	42.0 °C - closed cup
h)	Evaporation rate	No data available
i)	Flammability (solid, gas)	No data available
j)	Upper/lower flammability or explosive limits	Upper explosion limit: 6 %(V) Lower explosion limit: 0.8 %(V)
k)	Vapour pressure	No data available
l)	Vapour density	No data available
m)	Relative density	0.862 g/cm3 at 25 °C
n)	Water solubility	slightly soluble
o)	Partition coefficient: n-octanol/water	No data available
p)	Auto-ignition temperature	450.0 °C
q)	Decomposition temperature	No data available
r)	Viscosity	No data available
s)	Explosive properties	No data available
t)	Oxidizing properties	No data available

9.2 Other safety information
No data available

SECTION 10: Stability and reactivity

10.1 Reactivity
No data available

10.2 Chemical stability
Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions
No data available

10.4 Conditions to avoid
Heat, flames and sparks.

10.5 Incompatible materials
Strong oxidizing agents

10.6 Hazardous decomposition products
Hazardous decomposition products formed under fire conditions. - Carbon oxides
Other decomposition products - No data available
In the event of fire: see section 5

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity
LD50 Oral - Rat - 6,040 mg/kg(Propylbenzene)
Remarks: Behavioral:Somnolence (general depressed activity).
LC50 Inhalation - Rat - 2 h - 65000 ppm(Propylbenzene)

Skin corrosion/irritation
No data available(Propylbenzene)

Serious eye damage/eye irritation
No data available(Propylbenzene)

Respiratory or skin sensitisation
No data available(Propylbenzene)

Germ cell mutagenicity

No data available(Propylbenzene)

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.

Reproductive toxicity
No data available(Propylbenzene)

Specific target organ toxicity - single exposure
May cause respiratory irritation.(Propylbenzene)

Specific target organ toxicity - repeated exposure
No data available

Aspiration hazard
May be fatal if swallowed and enters airways.(Propylbenzene)

Additional Information
RTECS: DA8750000

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

Kidney - (Propylbenzene)

SECTION 12: Ecological information

12.1 Toxicity

Toxicity to fish	LC50 - Oncorhynchus mykiss (rainbow trout) - 1.55 mg/l - 96.0 h(Propylbenzene)
Toxicity to daphnia and other aquatic invertebrates	Immobilization EC50 - Daphnia magna (Water flea) - 2 mg/l - 24 h(Propylbenzene)

12.2 Persistence and degradability
No data available

12.3 Bioaccumulative potential
No data available

12.4 Mobility in soil
No data available(Propylbenzene)

12.5 Results of PBT and vPvB assessment
PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

12.6 Other adverse effects
Toxic to aquatic life.

Avoid release to the environment.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product
Burn in a chemical incinerator equipped with an afterburner and scrubber b highly flammable. Offer surplus and non-recyclable solutions to a licensed disposal company.

Contaminated packaging
Dispose of as unused product.

SECTION 14: Transport information

14.1 UN number
ADR/RID: 2364 IMDG: 2364 IATA: 2364

14.2 UN proper shipping name
ADR/RID: n-PROPYLBENZENE
IMDG: n-PROPYLBENZENE
IATA: n-Propylbenzene

14.3 Transport hazard class(es)
ADR/RID: 3 IMDG: 3 IATA: 3

14.4 Packaging group
ADR/RID: III IMDG: III IATA: III

14.5 Environmental hazards
ADR/RID: no IMDG Marine pollutant: no IATA: no

14.6 Special precautions for user
No data available

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture
This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

15.2 Chemical safety assessment
For this product a chemical safety assessment was not carried out

SECTION 16: Other information

Full text of H-Statements referred to under sections 2 and 3.

H226	Flammable liquid and vapour.
H304	May be fatal if swallowed and enters airways.
H335	May cause respiratory irritation.
H411	Toxic to aquatic life with long lasting effects.

Further information

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. Central Drug House (P) Ltd and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See www.cdhfinechemical.com for additional terms and conditions of sale.

SAFETY DATA SHEET

Revision Date 19-Jan-2018 **Revision Number** 3

1. Identification

Product Name **Naphthalene-d8**

Cat No. : **AC174960000; AC174960010; AC174960050**

Synonyms (2H8)Naphthalene

Recommended Use Laboratory chemicals.
Uses advised against Not for food, drug, pesticide or biocidal product use

Details of the supplier of the safety data sheet

Company
Fisher Scientific
One Reagent Lane
Fair Lawn, NJ 07410
Tel: (201) 796-7100

Acros Organics
One Reagent Lane
Fair Lawn, NJ 07410

Emergency Telephone Number
For information **US** call: 001-800-ACROS-01 / **Europe** call: +32 14 57 52 11
Emergency Number **US:**001-201-796-7100 / **Europe:** +32 14 57 52 99
CHEMTREC Tel. No.**US:**001-800-424-9300 / **Europe:**001-703-527-3887

2. Hazard(s) identification

Classification
This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Acute oral toxicity	Category 4
Acute dermal toxicity	Category 4
Acute Inhalation Toxicity - Dusts and Mists	Category 4
Combustible dust	Yes

Label Elements

Signal Word
Warning

Hazard Statements
May form combustible dust concentrations in air
Harmful if swallowed
Harmful in contact with skin
Harmful if inhaled



Precautionary Statements
Preventio
Wash face, hands and any exposed skin thoroughly after handling
Do not eat, drink or smoke when using this product
Wear protective gloves/protective clothing/eye protection/face protection
Avoid breathing dust/fume/gas/mist/vapors/spray
Use only outdoors or in a well-ventilated area
Inhalatio
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
Call a POISON CENTER or doctor/physician if you feel unwell
Skin
IF ON SKIN: Wash with plenty of soap and water
Call a POISON CENTER or doctor/physician if you feel unwell
Wash contaminated clothing before reuse
Ingestion
IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell
Rinse mouth
Storage
Store in a well-ventilated place. Keep container tightly closed
Disposal
Dispose of contents/container to an approved waste disposal plant
Hazards not otherwise classified (HNOC)
None identified

3. Composition/Information on Ingredients

Component	CAS-No	Weight %
(2H8)Naphthalene	1146-65-2	100

4. First-aid measures

Eye Contact Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Get medical attention.

Skin Contact Wash off immediately with soap and plenty of water while removing all contami clothes and shoes. In the case of skin irritation or allergic reactions see a physician.

Inhalation Remove from exposure, lie down. Move to fresh air. If symptoms persist, call a physician. If not breathing, give artificial respiration.

Ingestion Never give anything by mouth to an unconscious person. Drink plenty of water. Call a physician immediately. If possible drink milk afterwards.

Most important symptoms and effects No information available.

Notes to Physician Treat symptomatically

5. Fire-fighting measures

Suitable Extinguishing Media Cool closed containers exposed to fire with water spray. Carbon dioxide (CO_2). Dry chemical.

Unsuitable Extinguishing Media No information available

Flash Point 78 °C / 172.4 °F

Method - No information available

Autoignition Temperature 526.1 °C / 979 °F

Explosion Limits
Upper 5.9%
Lower 0.9%
Sensitivity to Mechanical Impact No information available
Sensitivity to Static Discharge No information available

Specific Hazards Arising from the Chemical
Flammable. Dust can form an explosive mixture in air. Combustible material. Fine dust dispersed in air may ignite. Combustible material. Containers may explode when heated.

Hazardous Combustion Products
Carbon monoxide (CO) Carbon dioxide (CO_2
Protective Equipment and Precautions for Firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

NFPA

Health	Flammability	Instability	Physical ha
2	1	1	N/A

6. Accidental release measures

Personal Precautions Remove all sources of ignition. Take precautionary measures against static discharges.
Environmental Precautions See Section 12 for additional ecological information.

Methods for Containment and Clean Sweep up and shovel into suitable containers for disposal. Remove all sources of ignition. Use spark-proof tools and explosion-proof equipment.

7. Handling and storage

Handling Do not get in eyes, on skin, or on clothing. Take precautionary measures against static discharges. Remove and wash contaminated clothing before re-use. Avoid brea vapors or mists. Do not ingest. Use only in area provided with appropriate exha ventilation. Wash thoroughly after handling. Use explosion-proof equipment. Use only non-sparking tools. Use only in well-ventilated areas. Keep away from open flames, hot surfaces and sources of ignition.

Storage Keep in a dry, cool and well-ventilated place. Keep away from heat and sources of ignition. Keep containers tightly closed in a dry, cool and well-ventilated place.

8. Exposure controls / personal protection

Exposure Guidelines This product does not contain any hazardous materials with occupational expos limitsestablished by the region specific regulatory bodies.

Engineering Measures Ensure adequate ventilation, especially in confined areas. Use explosion-proof electrical/ventilating/lighting/equipment.

Personal Protective Equipment

Eye/face Protection	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 S EN166.
Skin and body protection	Wear appropriate protective gloves and clothing to prevent skin exposure.
Respiratory Protection	Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.
Hygiene Measures	Handle in accordance with good industrial hygiene and safety practice.

9. Physical and chemical properties

Physical State	Solid
Appearance	White
Odor	
Odor Threshold	No information available
	No information available
Melting Point/Range	81 - 83 °C / 177.8 - 181.4 °F
Boiling Point/Range	No information available
Flash Point	78 °C / 172.4 °F
Evaporation Rate	Not applicable
Flammability (solid,gas)	No information available
Flammability or explosive limits	
Uppe	
Lowe	
Vapor Pressure	0.3 mmHg @ 25 °C
Vapor Density	Not applicable
Specific Gravity	No information available
Solubility	No information available
Partition coefficient; n-octanol/water	No data available
Autoignition Temperature	526.1 °C / 979 °F
Decomposition Temperature	No information available
Viscosity	Not applicable
Molecular Formula	C10 D8
Molecular Weight	136.22

10. Stability and reactivity

Reactive Hazard	None known, based on information available
Stability	Stable under recommended storage conditions. Hygroscopic.
Conditions to Avoid	Keep away from open flames, hot surfaces and sources of ignition. Incompatible products. Exposure to moist air or water.
Incompatible Materials	Strong oxidizing agents
Hazardous Decomposition Products	Carbon monoxide (CO), Carbon dioxide (CO_2
Hazardous Polymerization	Hazardous polymerization does not occur.
Hazardous Reactions	None under normal processing.

11. Toxicological information

Acute Toxicity

Product Information
Component Information
Toxicologically Synergistic Products No information available

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Irritation No information available

Sensitization No information available

Carcinogenicity The table below indicates whether each agency has listed any ingredient as a c

Component	CAS-No	IARC	NTP	ACGIH	OSHA	Mexico
(2H8)Naphthalene	1146-65-2	Not listed	Not listed	Not listed	Not listed	Not listed

Mutagenic Effects No information available

Reproductive Effects No information available.

Developmental Effects No information available.

Teratogenicity No information available.

STOT - single exposure None known
STOT - repeated exposure None known

Aspiration hazard No information available

Symptoms / effects,both acute and delayed No information available

Endocrine Disruptor Information No information available

Other Adverse Effects The toxicological properties have not been fully investigated.

12. Ecological information

Ecotoxicity
Do not empty into drains.

Persistence and Degradability No information available

Bioaccumulation/ Accumulation No information available.

Mobility No information available.

13. Disposal considerations

Waste Disposal Methods Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classific

14. Transport information

DOT Not regulated
TDG Not regulated
IATA
- o 1334
- **Proper Shipping Name** NAPHTHALENE, CRUDE
- **Hazard Class** 4.1
- **Packing Group** III

IMDG/IMO
- o 1334

Proper Shipping Name	NAPHTHALENE, CRUDE
Hazard Class	4.1
Packing Group	III

15. Regulatory information

International Inventories

Component	TSCA	DSL	NDSL	EINECS		NLP	PICCS	ENCS	AICS	IECSC	KECL
(2H8)Naphthalene	-	-	-	214-552-7							

Legend
X - Listed
E - Indicates a substance that is the subject of a Section 5(e) Consent order under TSCA.
F - Indicates a substance that is the subject of a Section 5(f) Rule under TSCA.
N - Indicates a polymeric substance containing no free-radical initiator in its inventory name but is considered to cover the designated polymer made with any free-radical initiator regardless of the amount used.
P - Indicates a commenced PMN substance
R - Indicates a substance that is the subject of a Section 6 risk management rule under TSCA.
S - Indicates a substance that is identified in a proposed or final Significant New Use Rule
T - Indicates a substance that is the subject of a Section 4 test rule under TSCA.
XU - Indicates a substance exempt from reporting under the Inventory Update Rule, i.e. Partial Updating of the TSCA Inventory Data Base Production and Site Reports (40 CFR 710(B).
Y1 - Indicates an exempt polymer that has a number-average molecular weight of 1,000 or greater.
Y2 - Indicates an exempt polymer that is a polyester and is made only from reactants included in a specified list of low concern reactants that comprises one of the eligibility criteria for the exemption rule.

U.S. Federal Regulations

TSCA 12(b) Not applicable

SARA 313 Not applicable

SARA 311/312 Hazard Categories See section 2 for more information

CWA (Clean Water Act) Not applicable

Clean Air Act Not applicable

OSHA Occupational Safety and Health Administration
Not applicable

CERCLA Not applicable

California Proposition 65 This product does not contain any Proposition 65 chemicals

U.S. State Right-to-Know Regulations Not applicable

U.S. Department of Transportation

Reportable Quantity (RQ):	N
DOT Marine Pollutant	N
DOT Severe Marine Pollutant	N

U.S. Department of Homeland Security
This product does not contain any DHS chemicals.

Other International Regulations

Mexico - Grade No information available

16. Other information

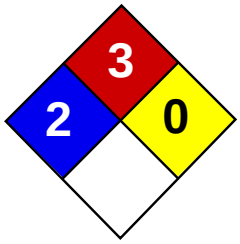
Prepared By	Regulatory Affairs Thermo Fisher Scientific Email: EMSDS.RA@thermofisher.com
Revision Date	19-Jan-2018
Print Date	19-Jan-2018
Revision Summary	This document has been updated to comply with the US OSHA HazCom 2012 replacing the current legislation under 29 CFR 1910.1200 to align with the Glob Harmonized System of Classification and Labeling of Chemicals (GHS).

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text

End of SDS





Health	2
Fire	3
Reactivity	0
Personal Protection	H

Material Safety Data Sheet
Toluene MSDS

Section 1: Chemical Product and Company Identification

Product Name: Toluene

Catalog Codes: SLT2857, SLT3277

CAS#: 108-88-3

RTECS: XS5250000

TSCA: TSCA 8(b) inventory: Toluene

CI#: Not available.

Synonym: Toluol, Tolu-Sol; Methylbenzene; Methacide; Phenylmethane; Methylbenzol

Chemical Name: Toluene

Chemical Formula: C6-H5-CH3 or C7-H8

Contact Information:

Sciencelab.com, Inc.
14025 Smith Rd.
Houston, Texas 77396

US Sales: **1-800-901-7247**
International Sales: **1-281-441-4400**

Order Online: ScienceLab.com

CHEMTREC (24HR Emergency Telephone), call: 1-800-424-9300

International CHEMTREC, call: 1-703-527-3887

For non-emergency assistance, call: 1-281-441-4400

Section 2: Composition and Information on Ingredients

Composition:

Name	CAS #	% by Weight
Toluene	108-88-3	100

Toxicological Data on Ingredients: Toluene: ORAL (LD50): Acute: 636 mg/kg [Rat]. DERMAL (LD50): Acute: 14100 mg/kg [Rabbit]. VAPOR (LC50): Acute: 49000 mg/m 4 hours [Rat]. 440 ppm 24 hours [Mouse].

Section 3: Hazards Identification

Potential Acute Health Effects:
Hazardous in case of skin contact (irritant), of eye contact (irritant), of ingestion, of inhalation. Slightly hazardous in case of skin contact (permeator).

Potential Chronic Health Effects:
CARCINOGENIC EFFECTS: A4 (Not classifiable for human or animal.) by ACGIH, 3 (Not classifiable for human.) by IARC. MUTAGENIC EFFECTS: Not available. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Not available. The substance may be toxic to blood, kidneys, the nervous system, liver, brain, central nervous system (CNS). Repeated or prolonged exposure to the substance can produce target organs damage.

Section 4: First Aid Measures

Eye Contact:
Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention.

Skin Contact:
In case of contact, immediately flush skin with plenty of water. Cover the irritated skin with an emollient. Remove contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention.

Serious Skin Contact:
Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek immediate medical attention.

Inhalation:
If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Serious Inhalation:
Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. WARNING: It may be hazardous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled material is toxic, infectious or corrosive. Seek medical attention.

Ingestion:
Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If large quantities of this material are swallowed, call a physician immediately. Loosen tight clothing such as a collar, tie, belt or waistband.

Serious Ingestion: Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: Flammable.

Auto-Ignition Temperature: 480°C (896°F)

Flash Points: CLOSED CUP: 4.4444°C (40°F). (Setaflash) OPEN CUP: 16°C (60.8°F).

Flammable Limits: LOWER: 1.1% UPPER: 7.1%

Products of Combustion: These products are carbon oxides (CO, CO2).

Fire Hazards in Presence of Various Substances:
Flammable in presence of open flames and sparks, of heat. Non-flammable in presence of shocks.

Explosion Hazards in Presence of Various Substances:
Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available.

Fire Fighting Media and Instructions:
Flammable liquid, insoluble in water. SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use water spray or fog.

Special Remarks on Fire Hazards: Not available.

Special Remarks on Explosion Hazards:
Toluene forms explosive reaction with 1,3-dichloro-5,5-dimethyl-2,4-imidazolididione; dinitrogen tetraoxide; concentrated nitric acid, sulfuric acid + nitric acid; N2O4; AgClO4; BrF3; Uranium hexafluoride; sulfur dichloride. Also forms an explosive mixture with tetranitromethane.

Section 6: Accidental Release Measures

Small Spill: Absorb with an inert material and put the spilled material in an appropriate waste disposal.

Large Spill:
Toxic flammable liquid, insoluble or very slightly soluble in water. Keep away from heat. Keep away from sources of ignition. Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. Do not get water inside container. Do not touch spilled material. Prevent entry into sewers, basements or confined areas; dike if needed. Call for assistance on disposal. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

Section 7: Handling and Storage

Precautions:
Keep away from heat. Keep away from sources of ignition. Ground all equipment containing material. Do not ingest. Do not breathe gas/fumes/ vapor/spray. Wear suitable protective clothing. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes. Keep away from incompatibles such as oxidizing agents.

Storage:
Store in a segregated and approved area. Keep container in a cool, well-ventilated area. Keep container tightly closed and sealed until ready for use. Avoid all possible sources of ignition (spark or flame).

Section 8: Exposure Controls/Personal Protection

Engineering Controls:
Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location.

Personal Protection:
Splash goggles. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

Personal Protection in Case of a Large Spill:
Splash goggles. Full suit. Vapor respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits:
TWA: 200 STEL: 500 CEIL: 300 (ppm) from OSHA (PEL) [United States] TWA: 50 (ppm) from ACGIH (TLV) [United States] SKIN TWA: 100 STEL: 150 from NIOSH [United States] TWA: 375 STEL: 560 (mg/m3) from NIOSH [United States] Consult local authorities for acceptable exposure limits.

Section 9: Physical and Chemical Properties

Physical state and appearance: Liquid.

Odor: Sweet, pungent, Benzene-like.

Taste: Not available.

Molecular Weight: 92.14 g/mole

Color: Colorless.

pH (1% soln/water): Not applicable.

Boiling Point: 110.6°C (231.1°F)

Melting Point: -95°C (-139°F)

Critical Temperature: 318.6°C (605.5°F)

Specific Gravity: 0.8636 (Water = 1)

Vapor Pressure: 3.8 kPa (@ 25°C)

Vapor Density: 3.1 (Air = 1)

Volatility: Not available.

Odor Threshold: 1.6 ppm

Water/Oil Dist. Coeff.: The product is more soluble in oil; log(oil/water) = 2.7

Ionicity (in Water): Not available.

Dispersion Properties: See solubility in water, diethyl ether, acetone.

Solubility:
Soluble in diethyl ether, acetone. Practically insoluble in cold water. Soluble in ethanol, benzene, chloroform, glacial acetic acid, carbon disulfide. Solubility in water: 0.561 g/l @ 25 deg. C.

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Heat, ignition sources (flames, sparks, static), incompatible materials

Incompatibility with various substances: Reactive with oxidizing agents.

Corrosivity: Non-corrosive in presence of glass.

Special Remarks on Reactivity:
Incompatible with strong oxidizers, silver perchlorate, sodium difluoride, Tetranitromethane, Uranium Hexafluoride. Frozen Bromine Trifluoride reacts violently with Toluene at -80 deg. C. Reacts chemically with nitrogen oxides, or halogens to form nitrotoluene, nitrobenzene, and nitrophenol and halogenated products, respectively.

Special Remarks on Corrosivity: Not available.

Polymerization: Will not occur.

Section 11: Toxicological Information

Routes of Entry: Absorbed through skin. Dermal contact. Eye contact. Inhalation. Ingestion.

Toxicity to Animals:
WARNING: THE LC50 VALUES HEREUNDER ARE ESTIMATED ON THE BASIS OF A 4-HOUR EXPOSURE. Acute oral toxicity (LD50): 636 mg/kg [Rat]. Acute dermal toxicity (LD50): 14100 mg/kg [Rabbit]. Acute toxicity of the vapor (LC50): 440 24 hours [Mouse].

Chronic Effects on Humans:
CARCINOGENIC EFFECTS: A4 (Not classifiable for human or animal.) by ACGIH, 3 (Not classifiable for human.) by IARC. May cause damage to the following organs: blood, kidneys, the nervous system, liver, brain, central nervous system (CNS).

Other Toxic Effects on Humans:
Hazardous in case of skin contact (irritant), of ingestion, of inhalation. Slightly hazardous in case of skin contact (permeator).

Special Remarks on Toxicity to Animals:
Lowest Published Lethal Dose: LDL [Human] - Route: Oral; Dose: 50 mg/kg LCL [Rabbit] - Route: Inhalation; Dose: 55000 ppm/40min

Special Remarks on Chronic Effects on Humans:
Detected in maternal milk in human. Passes through the placental barrier in human. Embryotoxic and/or foetotoxic in animal. May cause adverse reproductive effects and birth defects (teratogenic). May affect genetic material (mutagenic)

Special Remarks on other Toxic Effects on Humans:

Acute Potential Health Effects: Skin: Causes mild to moderate skin irritation. It can be absorbed to some extent through the skin. Eyes: Cauess mild to moderate eye irritation with a burning sensation. Splash contact with eyes also causes conjunctivitis, blepharospasm, corneal edema, corneal abraisons. This usually resolves in 2 days. Inhalation: Inhalation of vapor may cause respiratory tract irritation causing coughing and wheezing, and nasal discharge. Inhalation of high concentrations may affect behavior and cause central nervous system effects characterized by nausea, headache, dizziness, tremors, restlessness, lightheadedness, exhilaration, memory loss, insomnia, impaired reaction time, drowsiness, ataxia, hallucinations, somnolence, muscle contraction or spasticity, unconsciousness and coma. Inhalation of high concentration of vapor may also affect the cardiovascular system (rapid heart beat, heart palpitations, increased or decreased blood pressure, dysrhythmia,), respiration (acute pulmonary edema, respiratory depression, apnea, asphyxia), cause vision disturbances and dilated pupils, and cause loss of appetite. Ingestion: Aspiration hazard. Aspiration of Toluene into the lungs may cause chemical pneumonitis. May cause irritation of the digestive tract with nausea, vomiting, pain. May have effects similar to that of acute inhalation. Chronic Potential Health Effects: Inhalation and Ingestion: Prolonged or repeated exposure via inhalation may cause central nervous system and cardiovascular symptoms similar to that of acute inhalation and ingestion as well liver damage/failure, kidney damage/failure (with hematuria, proteinuria, oliguria, renal tubular acidosis), brain damage, weight loss, blood (pigmented or nucleated red blood cells, changes in white blood cell count), bone marrow changes, electrolyte imbalances (Hypokalemia, Hypophostatemia), severe, muscle weakness and Rhabdomyolysis. Skin: Repeated or prolonged skin contact may cause defatting dermatitis.

Section 12: Ecological Information

Ecotoxicity:
Ecotoxicity in water (LC50): 313 mg/l 48 hours [Daphnia (daphnia)]. 17 mg/l 24 hours [Fish (Blue Gill)]. 13 mg/l 96 hours [Fish (Blue Gill)]. 56 mg/l 24 hours [Fish (Fathead minnow)]. 34 mg/l 96 hours [Fish (Fathead minnow)]. 56.8 ppm any hours [Fish (Goldfish)].

BOD5 and COD: Not available.

Products of Biodegradation:
Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The products of degradation are less toxic than the product itself.

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations

Waste Disposal:
Waste must be disposed of in accordance with federal, state and local environmental control regulations.

Section 14: Transport Information

DOT Classification: CLASS 3: Flammable liquid.

Identification: : Toluene UNNA: 1294 PG: II

Special Provisions for Transport: Not available.

Section 15: Other Regulatory Information

Federal and State Regulations:
California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer, birth defects or other reproductive harm, which would require a warning under the statute: Toluene California prop. 65 (no significant risk level): Toluene: 7 mg/day (value) California prop. 65 (acceptable daily intake level): Toluene: 7 mg/day (value) California prop. 65: This product contains the following ingredients for which the State of California has found to cause birth defects which would require a warning under the statute: Toluene Connecticut hazardous material survey.: Toluene Illinois

toxic substances disclosure to employee act: Toluene Illinois chemical safety act: Toluene New York release reporting list: Toluene Rhode Island RTK hazardous substances: Toluene Pennsylvania RTK: Toluene Florida: Toluene Minnesota: Toluene Michigan critical material: Toluene Massachusetts RTK: Toluene Massachusetts spill list: Toluene New Jersey: Toluene New Jersey spill list: Toluene Louisiana spill reporting: Toluene California Director's List of Hazardous Substances.: Toluene TSCA 8(b) inventory: Toluene TSCA 8(d) H and S data reporting: Toluene: Effective date: 10/04/82; Sunset Date: 10/0/92 SARA 313 toxic chemical notification and release reporting: Toluene CERCLA: Hazardous substances.: Toluene: 1000 lbs. (453.6 kg)

Other Regulations:
OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200). EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances.

Other Classifications:

WHMIS (Canada):
CLASS B-2: Flammable liquid with a flash point lower than 37.8°C (100°F). CLASS D-2A: Material causing other toxic effects (VERY TOXIC).

DSCL (EEC):
R11- Highly flammable. R20- Harmful by inhalation. S16- Keep away from sources of ignition - No smoking. S25- Avoid contact with eyes. S29- Do not empty into drains. S33- Take precautionary measures against static discharges.

HMIS (U.S.A.):

Health Hazard: 2

Fire Hazard: 3

Reactivity: 0

Personal Protection: h

National Fire Protection Association (U.S.A.):

Health: 2

Flammability: 3

Reactivity: 0

Specific hazard:

Protective Equipment:
Gloves. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Splash goggles.

Section 16: Other Information

References: Not available.

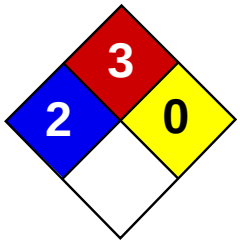
Other Special Considerations: Not available.

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Health	2
Fire	3
Reactivity	0
Personal Protection	H

Material Safety Data Sheet
Xylenes MSDS

Section 1: Chemical Product and Company Identification

Product Name: Xylenes

Catalog Codes: SLX1075, SLX1129, SLX1042, SLX1096

CAS#: 1330-20-7

RTECS: ZE2100000

TSCA: TSCA 8(b) inventory: Xylenes

CI#: Not available.

Synonym: Xylenes; Dimethylbenzene; xylol; methyltoluene

Chemical Name: Xylenes (o-, m-, p- isomers)

Chemical Formula: C6H4(CH3)2

Contact Information:

Sciencelab.com, Inc.
14025 Smith Rd.
Houston, Texas 77396

US Sales: **1-800-901-7247**
International Sales: **1-281-441-4400**

Order Online: ScienceLab.com

CHEMTREC (24HR Emergency Telephone), call: 1-800-424-9300

International CHEMTREC, call: 1-703-527-3887

For non-emergency assistance, call: 1-281-441-4400

Section 2: Composition and Information on Ingredients

Composition:

Name	CAS #	% by Weight
Xylenes	1330-20-7	100

Toxicological Data on Ingredients: Xylenes: ORAL (LD50): Acute: 4300 mg/kg [Rat]. 2119 mg/kg [Mouse]. DERMAL (LD50): Acute: >1700 mg/kg [Rabbit].

Section 3: Hazards Identification

Potential Acute Health Effects: Hazardous in case of skin contact (irritant, permeator), of eye contact (irritant), of ingestion, of inhalation.

Potential Chronic Health Effects:
CARCINOGENIC EFFECTS: 3 (Not classifiable for human.) by IARC. MUTAGENIC EFFECTS: Not available. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Not available. The substance may be toxic to blood, kidneys, liver, mucous membranes, bone marrow, central nervous system (CNS). Repeated or prolonged exposure to the substance can produce target organs damage.

Section 4: First Aid Measures

Eye Contact:

Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention.

Skin Contact:
In case of contact, immediately flush skin with plenty of water. Cover the irritated skin with an emollient. Remove contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention.

Serious Skin Contact:
Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek immediate medical attention.

Inhalation:
If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention if symptoms appear.

Serious Inhalation:
Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek medical attention.

Ingestion:
Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention if symptoms appear.

Serious Ingestion: Not available.

Section 5: Fire and Explosion Data

Flammability of the Product: Flammable.

Auto-Ignition Temperature: 464°C (867.2°F)

Flash Points: CLOSED CUP: 24°C (75.2°F). (Tagliabue.) OPEN CUP: 37.8°C (100°F).

Flammable Limits: LOWER: 1% UPPER: 7%

Products of Combustion: These products are carbon oxides (CO, CO2).

Fire Hazards in Presence of Various Substances:
Highly flammable in presence of open flames and sparks, of heat. Non-flammable in presence of shocks.

Explosion Hazards in Presence of Various Substances:
Risks of explosion of the product in presence of mechanical impact: Not available. Slightly explosive in presence of open flames and sparks, of heat.

Fire Fighting Media and Instructions:
Flammable liquid, soluble or dispersed in water. SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use alcohol foam, water spray or fog. Cool containing vessels with water jet in order to prevent pressure build-up, autoignition or explosion.

Special Remarks on Fire Hazards: Vapors may travel to source of ignition and flash back.

Special Remarks on Explosion Hazards:
Vapors may form explosive mixtures with air. Containers may explode when heated. May polymerize explosively when heated. An attempt to chlorinate xylene with 1,3-Dichloro-5,5-dimethyl-2,4-imidazolidindione (dichlorohydrantoin) caused a violent explosion

Section 6: Accidental Release Measures

Small Spill: Absorb with an inert material and put the spilled material in an appropriate waste disposal.

Large Spill:
Flammable liquid. Keep away from heat. Keep away from sources of ignition. Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. Do not touch spilled material. Prevent entry into sewers, basements or confined

areas; dike if needed. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

Section 7: Handling and Storage

Precautions:
Keep away from heat. Keep away from sources of ignition. Ground all equipment containing material. Do not ingest. Do not breathe gas/fumes/ vapor/spray. Wear suitable protective clothing. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes. Keep away from incompatibles such as oxidizing agents, acids.

Storage:
Store in a segregated and approved area. Keep container in a cool, well-ventilated area. Keep container tightly closed and sealed until ready for use. Avoid all possible sources of ignition (spark or flame).

Section 8: Exposure Controls/Personal Protection

Engineering Controls:
Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location.

Personal Protection:
Splash goggles. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

Personal Protection in Case of a Large Spill:
Splash goggles. Full suit. Vapor respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits:
TWA: 100 (ppm) [Canada] TWA: 435 (mg/m3) [Canada] TWA: 434 STEL: 651 (mg/m3) from ACGIH (TLV) [United States] TWA: 100 STEL: 150 (ppm) from ACGIH (TLV) [United States] Consult local authorities for acceptable exposure limits.

Section 9: Physical and Chemical Properties

Physical state and appearance: Liquid.

Odor: Sweetish.

Taste: Not available.

Molecular Weight: 106.17 g/mole

Color: Colorless. Clear

pH (1% soln/water): Not available.

Boiling Point: 138.5°C (281.3°F)

Melting Point: -47.4°C (-53.3°F)

Critical Temperature: Not available.

Specific Gravity: 0.864 (Water = 1)

Vapor Pressure: 0.9 kPa (@ 20°C)

Vapor Density: 3.7 (Air = 1)

Volatility: Not available.

Odor Threshold: 1 ppm

Water/Oil Dist. Coeff.: The product is more soluble in oil; log(oil/water) = 3.1

Ionicity (in Water): Not available.

Dispersion Properties: Not available.

Solubility:
Insoluble in cold water, hot water. Miscible with absolute alcohol, ether, and many other organic liquids.

Section 10: Stability and Reactivity Data

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Heat, ignition sources, incompatibles

Incompatibility with various substances: Reactive with oxidizing agents, acids.

Corrosivity: Non-corrosive in presence of glass.

Special Remarks on Reactivity: Store away from acetic acid, nitric acid, chlorine, bromine, and fluorine.

Special Remarks on Corrosivity: Not available.

Polymerization: Will not occur.

Section 11: Toxicological Information

Routes of Entry: Absorbed through skin. Dermal contact. Eye contact. Inhalation.

Toxicity to Animals:
WARNING: THE LC50 VALUES HEREUNDER ARE ESTIMATED ON THE BASIS OF A 4-HOUR EXPOSURE. Acute oral toxicity (LD50): 2119 mg/kg [Mouse]. Acute dermal toxicity (LD50): >1700 mg/kg [Rabbit]. Acute toxicity of the vapor (LC50): 5000 4 hours [Rat].

Chronic Effects on Humans:
CARCINOGENIC EFFECTS: 3 (Not classifiable for human.) by IARC. May cause damage to the following organs: blood, kidneys, liver, mucous membranes, bone marrow, central nervous system (CNS).

Other Toxic Effects on Humans: Hazardous in case of skin contact (irritant, permeator), of ingestion, of inhalation.

Special Remarks on Toxicity to Animals:
Lowest Lethal Dose: LDL [Human] - Route: Oral; Dose: 50 mg/kg LCL [Man] - Route: Oral; Dose: 10000 ppm/6H

Special Remarks on Chronic Effects on Humans:
Detected in maternal milk in human. Passes through the placental barrier in animal. Embryotoxic and/or foetotoxic in animal. May cause adverse reproductive effects (male and femael fertility (spontaneous abortion and fetotoxicity)) and birth defects based animal data.

Special Remarks on other Toxic Effects on Humans:
Acute Potential Health Effects: Skin: Causes skin irritation. Can be absorbed through skin. Eyes: Causes eye irritation. Inhalation: Vapor causes respiratory tract and mucous membrane irritation. May affect central nervous system and behavior (General anesthetic/CNS depressant with effects including headache, weakness, memory loss, irritability, dizziness, giddiness, loss of coordination and judgement, respiratory depression/arrest or difficulty breathing, loss of appetite, nausea, vomiting, shivering, and possible coma and death). May also affects blood, sense organs, liver, and peripheral nerves. Ingestion: May cause gastrointestinal irritation including abdominal pain, vomiting, and nausea. May also affect liver and urinary system/ kidneys. May cause effects similar to those of acute inhalation. Chronic Potential Health Effects: Chronic inhalation may affect the urinary system (kidneys) blood (anemia), bone marrow (hyperplasia of bone marrow) brain/behavior/Central Nervous system. Chronic inhalation may alsocause mucosal bleeding. Chronic ingestion may affect the liver and metabolism (loss of appetite) and may affect urinary system (kidney damage)

Section 12: Ecological Information

Ecotoxicity: Not available.

BOD5 and COD: Not available.

Products of Biodegradation:
Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The products of degradation are less toxic than the product itself.

Special Remarks on the Products of Biodegradation: Not available.

Section 13: Disposal Considerations

Waste Disposal:
Waste must be disposed of in accordance with federal, state and local environmental control regulations.

Section 14: Transport Information

DOT Classification: CLASS 3: Flammable liquid.

Identification: : Xylenes UNNA: 1307 PG: III

Special Provisions for Transport: Not available.

Section 15: Other Regulatory Information

Federal and State Regulations:
Connecticut hazardous material survey.: Xylenes Illinois chemical safety act: Xylenes New York acutely hazardous substances: Xylenes Rhode Island RTK hazardous substances: Xylenes Pennsylvania RTK: Xylenes Minnesota: Xylenes Michigan critical material: Xylenes Massachusetts RTK: Xylenes Massachusetts spill list: Xylenes New Jersey: Xylenes New Jersey spill list: Xylenes Louisiana spill reporting: Xylenes California Director's List of Hazardous Substances: Xylenes TSCA 8(b) inventory: Xylenes SARA 302/304/311/312 hazardous chemicals: Xylenes SARA 313 toxic chemical notification and release reporting: Xylenes CERCLA: Hazardous substances.: Xylenes: 100 lbs. (45.36 kg)

Other Regulations:
OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200). EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances.

Other Classifications:

WHMIS (Canada):
CLASS B-2: Flammable liquid with a flash point lower than 37.8°C (100°F). CLASS D-2A: Material causing other toxic effects (VERY TOXIC).

DSCL (EEC):
R10- Flammable. R21- Harmful in contact with skin. R36/38- Irritating to eyes and skin. S2- Keep out of the reach of children. S36/37- Wear suitable protective clothing and gloves. S46- If swallowed, seek medical advice immediately and show this container or label.

HMIS (U.S.A.):

Health Hazard: 2

Fire Hazard: 3

Reactivity: 0

Personal Protection: h

National Fire Protection Association (U.S.A.):

Health: 2

Flammability: 3

Reactivity: 0

Specific hazard:

Protective Equipment:
Gloves. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Splash goggles.

Section 16: Other Information

References: Not available.

Other Special Considerations: Not available.

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SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006
Version 5.0 Revision Date 29.10.2012
Print Date 19.04.2017
GENERIC EU MSDS - NO COUNTRY SPECIFIC DATA - NO OEL DATA

1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1 Product identifiers

Product name : Arsenic

Product Number : 267961
Brand : Aldrich
Index-No. : 033-001-00-X
CAS-No. : 7440-38-2

1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Laboratory chemicals, Manufacture of substances

1.3 Details of the supplier of the safety data sheet

Company : Sigma-Aldrich Israel Ltd.
3 PARK RABIN, PLAUT
7670603 REHOVOT
ISRAEL

Telephone : +972 8948-4222
Fax : +972 8948-4200

1.4 Emergency telephone number

Emergency Phone # : +972 (8) 948-4222

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]
Acute aquatic toxicity (Category 1)
Chronic aquatic toxicity (Category 1)
Acute toxicity, Inhalation (Category 3)
Acute toxicity, Oral (Category 3)

Classification according to EU Directives 67/548/EEC or 1999/45/EC
Toxic by inhalation and if swallowed. Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

2.2 Label elements

Labelling according Regulation (EC) No 1272/2008 [CLP]
Pictogram



Signal word Danger

Hazard statement(s)
H301 Toxic if swallowed.
H331 Toxic if inhaled.
H410 Very toxic to aquatic life with long lasting effects.

Precautionary statement(s)
P261 Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
P273 Avoid release to the environment.
P301 + P310 IF SWALLOWED: Immediately call a POISON CENTER or doctor/

physician.

P311	Call a POISON CENTER or doctor/ physician.
P501	Dispose of contents/ container to an approved waste disposal plant.
Supplemental Hazard Statements	none

According to European Directive 67/548/EEC as amended.

Hazard symbol(s)



R-phrase(s)

R23/25	Toxic by inhalation and if swallowed.
R50/53	Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

S-phrase(s)

S20/21	When using do not eat, drink or smoke.
S28	After contact with skin, wash immediately with plenty of soap and water.
S45	In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
S60	This material and its container must be disposed of as hazardous waste.
S61	Avoid release to the environment. Refer to special instructions/ Safety data sheets.

2.3 Other hazards - none

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

Formula : As
Molecular Weight : 74,92 g/mol

Component	Concentration
Arsenic	
CAS-No. 7440-38-2 EC-No. 231-148-6 Index-No. 033-001-00-X	-

4. FIRST AID MEASURES

4.1 Description of first aid measures

General advice
Consult a physician. Show this safety data sheet to the doctor in attendance.

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. Take victim immediately to hospital. 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.

4.2 Most important symptoms and effects, both acute and delayed
Absorption into the body leads to the formation of methemoglobin which in sufficient concentration causes cyanosis. Onset may be delayed 2 to 4 hours or longer.

4.3 Indication of any immediate medical attention and special treatment needed
no data available

5. FIREFIGHTING MEASURES

5.1 Extinguishing media

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

5.2 Special hazards arising from the substance or mixture
Arsenic oxides

5.3 Advice for firefighters
Wear self contained breathing apparatus for fire fighting if necessary.

5.4 Further information
no data available

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures
Wear respiratory protection. Avoid dust formation. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust.

6.2 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.

6.3 Methods and materials for containment and cleaning up
Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.

6.4 Reference to other sections
For disposal see section 13.

7. HANDLING AND STORAGE

7.1 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.

7.2 Conditions for safe storage, including any incompatibilities
Store in cool place. Keep container tightly closed in a dry and well-ventilated place.

7.3 Specific end uses
no data available

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

Components with workplace control parameters

8.2 Exposure controls

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

Personal protective equipment

Eye/face 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 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.

The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it.

Immersion protection
Material: Nitrile rubber
Minimum layer thickness: 0,11 mm
Break through time: > 480 min
Material tested:Dermatril® (Aldrich Z677272, Size M)

Splash protection
Material: Nitrile rubber
Minimum layer thickness: 0,11 mm
Break through time: > 30 min
Material tested:Dermatril® (Aldrich Z677272, Size M)

data source: KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 873000, e-mail sales@kcl.de, test method: EN374
If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the CE approved gloves. This recommendation is advisory only and must be evaluated by an Industrial Hygienist familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

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.

Respiratory protection
Where risk assessment shows air-purifying respirators are appropriate use a full-face particle respirator type N99 (US) or type P2 (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).

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

a)	Appearance	Form: powder Colour: grey
b)	Odour	no data available
c)	Odour Threshold	no data available
d)	pH	no data available
e)	Melting point/freezing point	Melting point/range: 817 °C - lit.
f)	Initial boiling point and boiling range	613 °C - lit.
g)	Flash point	not applicable
h)	Evaporation rate	no data available
i)	Flammability (solid, gas)	no data available
j)	Upper/lower flammability or explosive limits	no data available
k)	Vapour pressure	no data available
l)	Vapour density	no data available
m)	Relative density	5,727 g/mL at 25 °C
n)	Water solubility	no data available
o)	Partition coefficient: n-octanol/water	no data available

p)	Autoignition temperature	no data available
q)	Decomposition temperature	no data available
r)	Viscosity	no data available
s)	Explosive properties	no data available
t)	Oxidizing properties	no data available

9.2 Other safety information
no data available

10. STABILITY AND REACTIVITY

10.1 Reactivity
no data available

10.2 Chemical stability
no data available

10.3 Possibility of hazardous reactions
no data available

10.4 Conditions to avoid
Heat. Exposure to air may affect product quality.

10.5 Incompatible materials
Oxidizing agents, Halogens, Palladium undergoes a violent reaction with arsenic, Zinc, Platinum oxide, Nitrogen trichloride, Bromine azide

10.6 Hazardous decomposition products
Other decomposition products - no data available

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity
LD50 Oral - rat - 763 mg/kg
Remarks: Behavioral:Ataxia. Diarrhoea

LD50 Oral - mouse - 145 mg/kg
Remarks: Behavioral:Ataxia. Diarrhoea

Inhalation: 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

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

IARC: 1 - Group 1: Carcinogenic to humans (Arsenic)

Reproductive toxicity
no data available

Specific target organ toxicity - single exposure
no data available

Specific target organ toxicity - repeated exposure
no data available

Aspiration hazard
no data available

Potential health effects

Inhalation	Toxic if inhaled. May cause respiratory tract irritation.
Ingestion	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
Absorption into the body leads to the formation of methemoglobin which in sufficient concentration causes cyanosis. Onset may be delayed 2 to 4 hours or longer.

Additional Information
RTECS: CG0525000

12. ECOLOGICAL INFORMATION

12.1 Toxicity

Toxicity to fish	LC50 - Pimephales promelas (fathead minnow) - 9,9 mg/l - 96,0 h
Toxicity to daphnia and other aquatic invertebrates	EC50 - Daphnia magna (Water flea) - 3,8 mg/l - 48 h

12.2 Persistence and degradability
no data available

12.3 Bioaccumulative potential
no data available

12.4 Mobility in soil
no data available

12.5 Results of PBT and vPvB assessment
no data available

12.6 Other adverse effects
Very toxic to aquatic life with long lasting effects.

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Product
Offer surplus and non-recyclable solutions to a licensed disposal company. 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

14.1 UN number
ADR/RID: 1558 IMDG: 1558 IATA: 1558

14.2 UN proper shipping name
ADR/RID: ARSENIC
IMDG: ARSENIC
IATA: Arsenic

14.3 Transport hazard class(es)

ADR/RID: 6.1	IMDG: 6.1	IATA: 6.1

14.4 Packaging group

ADR/RID: II	IMDG: II	IATA: II

14.5 Environmental hazards

ADR/RID: yes	IMDG Marine pollutant: yes	IATA: no

14.6 Special precautions for user

no data available

15. REGULATORY INFORMATION

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

no data available

15.2 Chemical Safety Assessment

no data available

16. OTHER INFORMATION

Further information

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Barium Metal

MSDS # 84.00

Section 1: Product and Company Identification

Barium Metal

Synonyms/General Names: Barium
Product Use: For educational use only
Manufacturer: Columbus Chemical Industries, Inc., Columbus, WI 53925.

24 Hour Emergency Information Telephone Numbers
CHEMTREC (USA): 800-424-9300 **CANUTEC (Canada): 613-424-6666**
ScholAR Chemistry; 5100 W. Henrietta Rd, Rochester, NY 14586; (866) 260-0501; www.Scholarchemistry.com

Section 2: Hazards Identification

Soft, silvery, lustrous metal immersed in heavy mineral oil; no odor.

HMIS (0 to 4)

Health	3
Fire Hazard	3
Reactivity	2

WARNING! Flammable solid, dangerous when wet, highly toxic by ingestion.
Flammable solid, keep away from all ignition sources. Contact with water produces flammable gas.
Target organs: Central nervous system, kidneys.

This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Section 3: Composition / Information on Ingredients

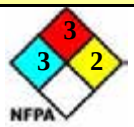
Barium Metal (7440-39-3), 100%

Section 4: First Aid Measures

Always seek professional medical attention after first aid measures are provided.

Eyes: Immediately flush eyes with excess water for 15 minutes, lifting lower and upper eyelids occasionally.
Skin: Immediately flush skin with excess water for 15 minutes while removing contaminated clothing.
Ingestion: Call Poison Control immediately. Rinse mouth with cold water. Give victim 1-2 tbsp of activated charcoal mixed with 8 oz water.
Inhalation: Remove to fresh air. If not breathing, give artificial respiration.

Section 5: Fire Fighting Measures



Flammable solid. When heated to decomposition, emits acrid fumes and explosive hydrogen gas.
Protective equipment and precautions for firefighters: Do Not Use carbon dioxide, foam, water or halogenated extinguishing agents. Use class D extinguisher or smother with dry sand, dry clay, dry ground limestone or dry graphite. Firefighters should wear full fire fighting turn-out gear and respiratory protection (SCBA). Material is not sensitive to mechanical impact or static discharge.

Section 6: Accidental Release Measures

Use personal protection recommended in Section 8. Isolate the hazard area and deny entry to unnecessary and unprotected personnel. Remove all ignition sources and ventilate area. Sweep up spill and place material in a dry container for disposal. See Section 13 for disposal information.

Section 7: Handling and Storage Red

Handling: Use with adequate ventilation and do not breathe dust or vapor. Avoid contact with skin, eyes, or clothing. Wash hands thoroughly after handling.
Storage: Store in Flammable Area [Red Storage] with other flammable materials and away from any strong oxidizers. Store in a dedicated flammables cabinet. Store in a cool, dry, well-ventilated, locked store room away from incompatible materials.

Section 8: Exposure Controls / Personal Protection

Use ventilation to keep airborne concentrations below exposure limits. Have approved eyewash facility, safety shower, and fire extinguishers readily available. Wear chemical splash goggles and chemical resistant clothing such as gloves and aprons. Wash hands thoroughly after handling material and before eating or drinking. Use NIOSH-approved respirator with a dust cartridge. Exposure guidelines: Barium compounds: OSHA PEL: 0.5 mg/m^3 and ACGIH TLV: 0.5 mg/m^3, STEL: N/A.

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Section 9: Physical and Chemical Properties

Molecular formula	Ba.	**Appearance**	Silver metal in heavy mineral oil.
Molecular weight	137.33.	**Odor**	No odor.
Specific Gravity	3.62 g/mL @ 20°C..	**Odor Threshold**	N/A.
Vapor Density (air=1)	N/A.	**Solubility**	Reacts violently with water.
Melting Point	850°C.	**Evaporation rate**	N/A *(Butyl acetate = 1).*
Boiling Point/Range	1695°C.	**Partition Coefficient**	N/A *(log P_{OW}).*
Vapor Pressure (20°C)	N/A.	**pH**	N/A.
Flash Point:	N/A.	**UEL**	N/A.
Autoignition Temp.:	N/A.	**LEL**	N/A.

N/A = Not available or applicable

Section 10: Stability and Reactivity

Avoid heat and ignition sources
Stability: Stable under normal conditions of use.
Incompatibility: Water, acids, chlorine, iodine, bromine and oxidizing agents.
Shelf life: Indefinite if stored properly.

Section 11: Toxicology Information

Acute Symptoms/Signs of exposure: ***Eyes***: Stinging pain, burns, watering of eyes, inflammation of eyelids and conjunctivitis. Avoid looking at burning magnesium. ***Skin***: Irritation, redness, burns. Powdered metal ignites readily on skin causing burns. ***Ingestion***: Nausea, vomiting and headache. ***Inhalation***: Rapid irregular breathing, headache, burns to mucous membranes. Inhalation of dust or fumes causes metal fume fever.
Chronic Effects: Repeated/prolonged skin contact may cause dryness or rashes.
Sensitization: none expected
Barium: LD50 [oral, rat]; Not Available; LC50 [rat]; Not Available; LD50 Dermal [rabbit]; Not Available
Material has not been found to be a carcinogen nor produce genetic, reproductive, or developmental effects.

Section 12: Ecological Information

Ecotoxicity (aquatic and terrestrial): Ecological impact has not been determined

Section 13: Disposal Considerations

Check with all applicable local, regional, and national laws and regulations. Local regulations may be more stringent than regional or national regulations. Use a licensed chemical waste disposal firm for proper disposal.

Section 14: Transport Information

DOT Shipping Name:	Barium.	**Canada TDG:**	Barium .
DOT Hazard Class:	4.3, pg II.	**Hazard Class:**	4.3, pg II.
Identification Number:	UN1400.	**UN Number:**	UN1400.

Section 15: Regulatory Information

EINECS: Listed (231-149.1) .
WHMIS Canada: B6:D2B: Reactive Flammable: Toxic Material.
TSCA: All components are listed or are exempt.
California Proposition 65: Not listed.
The product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

Section 16: Other Information

Current Issue Date: January 23, 2009
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Material Safety Data Sheet

ACC# 12510

Section 1 - Chemical Product and Company Identification

MSDS Name: Lead
Catalog Numbers: S71957, S719571, S75257, S80049, L18-500, L246-500, L27-1LB, L27-1RL, NC9657609, NC9888945, XXL24625KG
Synonyms: Lead metal.
Company Identification:
Fisher Scientific
1 Reagent Lane
Fair Lawn, NJ 07410
For information, call: 201-796-7100
Emergency Number: 201-796-7100
For CHEMTREC assistance, call: 800-424-9300
For International CHEMTREC assistance, call: 703-527-3887

tion 2 - Composition, Information on Ingredien

CAS#	Chemical Name	Percent	EINECS/ELINCS
7439-92-1	Lead	99.8	231-1

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Appearance: bluish white, silvery gray solid.
Warning! Possible cancer hazard. May cause cancer based on animal data. Causes eye and skin irritation. Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment. May be absorbed through intact skin. May cause central nervous system depression. May cause kidney damage. May cause adverse reproductive effects. May cause fetal effects.
Target Organs: Kidneys, central nervous system, blood forming organs.

Potential Health Effects

Eye: Causes eye irritation.
Skin: Causes skin irritation. May be absorbed through the skin.
Ingestion: Causes gastrointestinal irritation with nausea, vomiting and diarrhea. Ingestion of lead compounds can cause toxic effects in the blood-forming organs, kidneys and central nervous system. Symptoms of lead poisoning or plumbism include weakness, weight loss, lassitude, insomnia, and hypotension. It also includes constipation, anorexia, abdominal discomfort and colic.
Inhalation: May cause respiratory tract irritation. Inhalation of fumes may cause metal fume fever, which is characterized by flu-like symptoms with metallic taste, fever, chills, cough, weakness, chest pain, muscle pain and increased white blood cell count. May cause effects similar to those described for ingestion.
Chronic: Possible cancer hazard based on tests with laboratory animals. Chronic exposure may cause reproductive disorders and teratogenic effects. Chronic exposure to lead may result in plumbism which is characterized by lead line in gum, headache, muscle weakness, mental changes.

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. Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Discard contaminated clothing in a manner which limits further exposure.
Ingestion: Get medical aid immediately. Do NOT induce vomiting. If conscious and alert, rinse mouth and drink 2-4 cupfuls of milk or water.
Inhalation: Remove from exposure and move to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.
Notes to Physician: Treat symptomatically and supportively.
Antidote: The use of Dimercaprol or BAL (British Anti-Lewisite) as a chelating agent should be determined by qualified medical personnel. The use of d-Penicillamine as a chelating agent should be determined by qualified medical personnel. The use of Calcium disodium EDTA as a chelating agent should be determined by qualified medical perso

Section 5 - Fire Fighting Measures

General Information: As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion. Use extinguishing media appropriate to the surrounding fire. Substance is noncombustible. Dust can be an explosion hazard when exposed to heat or flame.
Extinguishing Media: For small fires, use water spray, dry chemical, carbon dioxide or chemical foam. Substance is noncombustible; use agent most appropriate to extinguish surrounding fire.
Flash Point: Not available.
Autoignition Temperature: Not available.
Explosion Limits, Lower: Not available.
Upper: Not available.
NFPA Rating: (estimated) Health: 2; Flammability: 0; Instability: 0

Section 6 - Accidental Release Measures

General Information: Use proper personal protective equipment as indicated in Section 8.
Spills/Leaks: Vacuum or sweep up material and place into a suitable disposal container. Clean up spills immediately, observing precautions in the Protective Equipment section. Avoid generating dusty conditions. Provide ventilation.

Section 7 - Handling and Storage

Handling: Wash thoroughly after handling. Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Use with adequate ventilation. Minimize dust generation and accumulation. Avoid contact with eyes, skin, and clothing. Avoid ingestion and inhalation. Wash clothing before reuse.
Storage: Store in a cool, dry place. Keep from contact with oxidizing materials. Keep containers tightly closed.

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 general or local exhaust ventilation to keep airborne concentrations below

the permissible exposure limits.

Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Lead	0.05 mg/m3 TWA	0.050 mg/m3 TWA 100 mg/m3 IDLH	50 æg/m3 TWA; 50 æg/m3 TWA (as Pb); 30 æg/m3 Action Level (as Pb. Poison - see 29 CFR 1910.10 25)

OSHA Vacated PELs: Lead: No OSHA Vacated PELs are listed for this chemical.

Personal Protective Equipment

Eyes: Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin: Wear appropriate protective gloves and clothing to prevent skin exposure.

Clothing: Wear appropriate protective clothing to prevent skin exposure.

Respirators: Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Section 9 - Physical and Chemical Properties

Physical State: Solid

Appearance: bluish white, silvery gray

Odor: none reported

pH: Not applicable.

Vapor Pressure: 1.3 mm Hg @ 970C

Vapor Density: Not available.

Evaporation Rate: Not applicable.

Viscosity: Not applicable.

Boiling Point: 1740 deg C

Freezing/Melting Point:327.4 deg C

Decomposition Temperature: Not available.

Solubility: Insoluble in water.

Specific Gravity/Density:11.3

Molecular Formula: Pb

Molecular Weight:207.2

Section 10 - Stability and Reactivity

Chemical Stability: Stable under normal temperatures and pressures.

Conditions to Avoid: Dust generation, excess heat.

Incompatibilities with Other Materials: Strong oxidizing agents.

Hazardous Decomposition Products: Lead/lead oxides.

Hazardous Polymerization: Has not been reported.

Section 11 - Toxicological Information

RTECS#:

CAS# 7439-92-1: OF7525000

LD50/LC50:

Not available.

Carcinogenicity:

CAS# 7439-92-1:

- **ACGIH:** A3 - Confirmed animal carcinogen with unknown relevance to humans
- **California:** carcinogen, initial date 10/1/92
- **NTP:** Suspect carcinogen
- **IARC:** Group 2A carcinogen

Epidemiology: There are several reports that certain lead compounds administered to animals in high doses are carcinogenic, primarily producing renal tumors. Salts demonstrating carcinogenicity in animals are usually soluble salts. Epidemiological studies have not shown a relationship between lead exposure and the incidence of cancer in lead workers. However, one study of lead-exposed workers demonstrated a statistically significant elevation in the standardized mortality ratio for gastric and lung cancer in battery plant workers only.
Teratogenicity: Lead penetrates the placental barrier and has caused fetal abnormalities in animals. Excesssive exposure to lead during pregnancy has caused neurological disorders in infants.
Reproductive Effects: Reproductive effects from lead have been documented in animals and human beings of both sexes. In battery workmen with a mean exposure of 8.5 years to lead, there was an increased frequency of sperm abnormalities as compared with a control group.
Mutagenicity: Mutagenic effects have occurred in humans.
Neurotoxicity: Subtle neurologic effects have been demonstrated with relatively low blood levels of lead. The performance of lead workers on various neurophysiological tests was mildly reduced when compared with a control group. Anxiety, depression, poor concentration, forgetfulness, mild reductions in motor and sensory nerve conduction velociities have been documented in lead-exposed workers.
Other Studies:

Section 12 - Ecological Information

Ecotoxicity: No data available. LC50 Japanese quail (Coturnix japonica), males or females, 14 days old, oral (5-day adlibitum in diet) >5,000 ppm; at 1000, 2236 & 5000 onset of toxic signs began at 7, 7 & 7 days and remissed at 11, 11 & 12 days, respectively, no mortality was observed; control references were dieldrin & dicrotophos; corn oil diluent was added to diet at ratio of 2:98 by wt; (extreme concentrations: 1,000-5,000 ppm) /Lead metal, 100%.
Environmental: Terrestrial: Extremely stable metal. While some corrosion may be expected in soil, generally an inert coat of an insoluble salt will form and limit further corrosion. Aquatic: Lead will simply sink into the sediment. Atmospheric: Will be in particulate matter and be subject to washout and gravitational settling. Will biodegrade and bioconcentrate.
Physical: No information available.
Other: For more information, see "HANDBOOK OF ENVIRONMENTAL FATE AND EXPOSURE DATA."

Section 13 - Disposal Considerations

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

Section 14 - Transport Information

	US DOT	Canada TDG
Shipping Name:	Not regulated	Not Regulated
Hazard Class:		
UN Number:		
Packing Group:		

Section 15 - Regulatory Information

US FEDERAL

TSCA
CAS# 7439-92-1 is listed on the TSCA inventory.
Health & Safety Reporting List
None of the chemicals are on the Health & Safety Reporting List.
Chemical Test Rules
None of the chemicals in this product are under a Chemical Test Rule.
Section 12b
None of the chemicals are listed under TSCA Section 12b.
TSCA Significant New Use Rule
None of the chemicals in this material have a SNUR under TSCA.
CERCLA Hazardous Substances and corresponding RQs
CAS# 7439-92-1: 10 lb final RQ (no reporting of releases of this hazardous substance is required
SARA Section 302 Extremely Hazardous Substances
None of the chemicals in this product have a TPQ.
SARA Codes
CAS # 7439-92-1: immediate, delayed.
Section 313
This material contains Lead (CAS# 7439-92-1, 99.8%),which is subject to the reporting requirements of Section 313 of SARA Title III and 40 CFR Part 373.
Clean Air Act:
This material does not contain any hazardous air pollutants.
This material does not contain any Class 1 Ozone depletors.
This material does not contain any Class 2 Ozone depletors.
Clean Water Act:
None of the chemicals in this product are listed as Hazardous Substances under the CWA. CAS# 7439-92-1 is listed as a Priority Pollutant under the Clean Water Act. CAS# 7439-92-1 is listed as a Toxic Pollutant under the Clean Water Act.
OSHA:
None of the chemicals in this product are considered highly hazardous by OSHA.
STATE
CAS# 7439-92-1 can be found on the following state right to know lists: California, New Jersey, Pennsylvania, Minnesota, Massachusetts.

California Prop 65
The following statement(s) is(are) made in order to comply with the California Safe Drinking Water Act:
WARNING: This product contains Lead, a chemical known to the state of California to cause cancer.
WARNING: This product contains Lead, a chemical known to the state of California to cause male reproductive toxicity.
California No Significant Risk Level: CAS# 7439-92-1: 15 æg/day NSRL (oral)

European/International Regulations

European Labeling in Accordance with EC Directives
Hazard Symbols:
T N
Risk Phrases:
R 20/22 Harmful by inhalation and if swallowed.
R 33 Danger of cumulative effects.
R 61 May cause harm to the unborn child.
R 62 Possible risk of impaired fertility.
R 50/53 Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Safety Phrases:
S 45 In case of accident or if you feel unwell, seek medical advice

immediately (show the label where possible).
S 53 Avoid exposure - obtain special instructions before use.
S 60 This material and its container must be disposed of as hazardou
s waste.
S 61 Avoid release to the environment. Refer to special instructions
/safety data sheets.

WGK (Water Danger/Protection)

CAS# 7439-92-1: No information available.

Canada - DS

CAS# 7439-92-1 is listed on Canada's DSL List.

Canada - W

This product has a WHMIS classification of D2A.

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

Canadian Ingredient Disclosure List

CAS# 7439-92-1 is listed on the Canadian Ingredient Disclosure List.

Section 16 - Additional Information

MSDS Creation Date: 4/29/1999
Revision #5 Date: 5/22/2007

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 event shall Fisher 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 Fisher has been advised of the possibility of such damages.

SAFETY DATA SHEET

Creation Date 20-Aug-2014 **Revision Date** 17-Jan-2018 **Revision Number** 3

1. Identification

Product Name **Mercury (Certified ACS)**

Cat No. : **M141-1LB; M141-6LB**

Synonyms Colloidal mercury; Hydrargyrum; Metallic mercury

Recommended Use Laboratory chemicals.
Uses advised against Not for food, drug, pesticide or biocidal product use

Details of the supplier of the safety data sheet

Company
Fisher Scientific
One Reagent Lane
Fair Lawn, NJ 07410
Tel: (201) 796-7100

Emergency Telephone Number
CHEMTREC®, Inside the USA: 800-424-9300
CHEMTREC®, Outside the USA: 001-703-527-3887

2. Hazard(s) identification

Classification
This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Corrosive to metals	Category 1
Acute Inhalation Toxicity - Vapors	Category 2
Reproductive Toxicity	Category 1B
Specific target organ toxicity - (repeated exposure)	Category 1
Target Organs - Central nervous system (CNS), Kidney.	

Label Elements

Signal Word
Danger

Hazard Statements
May be corrosive to metals
Fatal if inhaled
May damage the unborn child
Causes damage to organs through prolonged or repeated exposure



Precautionary Statements
Preventio
Obtain special instructions before use
Do not handle until all safety precautions have been read and understood
Use personal protective equipment as required
Do not get in eyes, on skin, or on clothing
Wash face, hands and any exposed skin thoroughly after handling
Do not eat, drink or smoke when using this product
Do not breathe dust/fume/gas/mist/vapors/spray
Use only outdoors or in a well-ventilated area
Wear respiratory protection
Response
IF exposed or concerned: Get medical attention/advice
Inhalatio
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
Immediately call a POISON CENTER or doctor/physician
Skin
Immediately call a POISON CENTER or doctor/physician
IF ON SKIN: Gently wash with plenty of soap and water
Remove/Take off immediately all contaminated clothing
Wash contaminated clothing before reuse
Storage
Store locked up
Store in a well-ventilated place. Keep container tightly closed
Disposal
Dispose of contents/container to an approved waste disposal plant
Hazards not otherwise classified (HNOC)
Very toxic to aquatic life with long lasting effects
WARNING. Reproductive Harm - https://www.p65warnings.ca.gov/.

3. Composition/Information on Ingredients

Component	CAS-No	Weight %
Mercury	7439-97-6	100

4. First-aid measures

Eye Contact Rinse immediately with plenty of water, also under the eyelids, for at least 15 m Immediate medical attention is required.

Skin Contact Wash off immediately with soap and plenty of water while removing all contami clothes and shoes. Immediate medical attention is required.

Inhalation Move to fresh air. If breathing is difficult, give oxygen. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Immediate medical attention is required.

Ingestion Do not induce vomiting. Call a physician or Poison Control Center immediately.

Most important symptoms and effects No information available.

Notes to Physician Treat symptomatically

5. Fire-fighting measures

Suitable Extinguishing Media Substance is nonflammable; use agent most appropriate to extinguish surrounding fire.

Unsuitable Extinguishing Media No information available

Flash Point No information available
Method - No information available

Autoignition Temperature No information available

Explosion Limits
Upper No data available
Lower No data available
Sensitivity to Mechanical Impact No information available
Sensitivity to Static Discharge No information available

Specific Hazards Arising from the Chemical
Very toxic. Non-combustible, substance itself does not burn but may decompose upon heating to produce corrosive and/or toxic fumes. Keep product and empty container away from heat and sources of ignition.

Hazardous Combustion Products
Mercury oxide Highly toxic fumes
Protective Equipment and Precautions for Firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

NFPA

Health	Flammability	Instability	Physical ha
4	0	0	N/A

6. Accidental release measures

Personal Precautions Wear self-contained breathing apparatus and protective suit. Evacuate personnel to safe areas. Ensure adequate ventilation. Do not get in eyes, on skin, or on clothing.

Environmental Precautions Should not be released into the environment. See Section 12 for additional eco information.

Methods for Containment and Clean Wear self-contained breathing apparatus and protective suit. Soak up with inert absorbent material. Keep in suitable, closed containers for disposal.

7. Handling and storage

Handling Use only under a chemical fume hood. Wear personal protective equipment. Do not get in eyes, on skin, or on clothing. Do not breathe vapors or spray mist. Do not ingest.

Storage Keep containers tightly closed in a dry, cool and well-ventilated place. Corrosives area.

8. Exposure controls / personal protection

Exposure Guidelines

Component	ACGIH TLV	OSHA PEL	NIOSH IDLH	Mexico OEL (TWA)
Mercury	TWA: 0.025 mg/m³ Skin	(Vacated) TWA: 0.05 mg/m³ Ceiling: 0.1 mg/m³ (Vacated) STEL: 0.03 mg/m³ Skin (Vacated) Ceiling: 0.1 mg/m³	IDLH: 10 mg/m TWA: 0.05 mg/m Ceiling: 0.1 mg/m	TWA: 0.05 mg/m

Legend

ACGIH - American Conference of Governmental Industrial Hygienists
OSHA - Occupational Safety and Health Administration
NIOSH IDLH: The National Institute for Occupational Safety and Health Immediately Dangerous to Life or Health

Engineering Measures Use only under a chemical fume hood. Ensure adequate ventilation, especially in confined areas. Ensure that eyewash stations and safety showers are close to the works location.

Personal Protective Equipment

Eye/face Protection 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 S EN166.

Skin and body protection Wear appropriate protective gloves and clothing to prevent skin exposure.

Respiratory Protection Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Hygiene Measures Handle in accordance with good industrial hygiene and safety practice.

9. Physical and chemical properties

Physical State	Liquid
Appearance	Silver
Odor	
Odor Threshold	No information available
	No information available
Melting Point/Range	-38.87 °C / -38 °F
Boiling Point/Range	356.72 °C / 674.1 °F
Flash Point	No information available
Evaporation Rate	No information available
Flammability (solid,gas)	No information available
Flammability or explosive limits	
Upper	No data available
Lower	No data available
Vapor Pressure	0.002 mmHg @ 25 °C
Vapor Density	7.0
Specific Gravity	13.59 (H2O=1)
Solubility	Insoluble in water
Partition coefficient; n-octanol/water	No data available
Autoignition Temperature	No information available
Decomposition Temperature	No information available
Viscosity	No information available
Molecular Formula	Hg
Molecular Weight	200.59

10. Stability and reactivity

Reactive Hazard None known, based on information available

Stability Stable under normal conditions.

Conditions to Avoid Incompatible products. Excess heat.

Incompatible Materials Strong oxidizing agents, Ammonia, Metals, Halogens

Hazardous Decomposition Products Mercury oxide, Highly toxic fumes

Hazardous Polymerization Hazardous polymerization does not occur.

Hazardous Reactions None under normal processing.

11. Toxicological information

Acute Toxicity

Product Information No acute toxicity information is available for this product

Component Information

Toxicologically Synergistic Products No information available

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Irritation No information available

Sensitization No information available

Carcinogenicity The table below indicates whether each agency has listed any ingredient as a c

Component	CAS-No	IARC	NTP	ACGIH	OSHA	Mexico
Mercury	7439-97-6	Not listed	Not listed	Not listed	Not listed	Not listed

Mutagenic Effects No information available

Reproductive Effects No information available.

Developmental Effects May cause harm to the unborn child.

Teratogenicity No information available.

STOT - single exposure None known

STOT - repeated exposure Central nervous system (CNS) Kidney

Aspiration hazard No information available

Symptoms / effects,both acute and delayed No information available

Endocrine Disruptor Information No information available

Other Adverse Effects The toxicological properties have not been fully investigated.

12. Ecological information

Ecotoxicity

This product contains the following substance(s) which are hazardous for the environment.

Component	Freshwater Algae	Freshwater Fish	Microtox	Water F
Mercury	Not listed	0.9 mg/L LC50 96h 0.18 mg/L LC50 96h 0.16 mg/L LC50 96h 0.5 mg/L LC50 96h	Not listed	EC50: = 5.0 µg/L, 96h (water fle

Persistence and Degradability No information available

Bioaccumulation/ Accumulation No information available.

Mobility No information available.

13. Disposal considerations

Waste Disposal Methods Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classific

Component	RCRA - U Series Wastes	RCRA - P Series Wast
Mercury - 7439-97-6	U151	-

14. Transport information

DOT

o	UN2809
Proper Shipping Name	MERCURY
Hazard Class	8
Subsidiary Hazard Class	6.1
Packing Group	III

TDG

o	UN2809
Proper Shipping Name	MERCURY
Hazard Class	8
Subsidiary Hazard Class	6.1
Packing Group	III

IATA

o	UN2809
Proper Shipping Name	MERCURY
Hazard Class	8
Subsidiary Hazard Class	6.1
Packing Group	III

IMDG/IMO

o	UN2809
Proper Shipping Name	MERCURY
Hazard Class	8
Subsidiary Hazard Class	6.1
Packing Group	III

15. Regulatory information

International Inventories

Component	TSCA	DSL	NDSL	EINECS		NLP	PICCS	ENCS	AICS	IECS	
Mercury	X	X	-	231-106-7	-		X	-	X	X	X

Legend
X - Listed
E - Indicates a substance that is the subject of a Section 5(e) Consent order under TSCA.
F - Indicates a substance that is the subject of a Section 5(f) Rule under TSCA.
N - Indicates a polymeric substance containing no free-radical initiator in its inventory name but is considered to cover the designated polymer made with any free-radical initiator regardless of the amount used.
P - Indicates a commenced PMN substance
R - Indicates a substance that is the subject of a Section 6 risk management rule under TSCA.
S - Indicates a substance that is identified in a proposed or final Significant New Use Rule
T - Indicates a substance that is the subject of a Section 4 test rule under TSCA.
XU - Indicates a substance exempt from reporting under the Inventory Update Rule, i.e. Partial Updating of the TSCA Inventory Data Base Production and Site Reports (40 CFR 710(B).
Y1 - Indicates an exempt polymer that has a number-average molecular weight of 1,000 or greater.
Y2 - Indicates an exempt polymer that is a polyester and is made only from reactants included in a specified list of low concern reactants that comprises one of the eligibility criteria for the exemption rule.

U.S. Federal Regulations

TSCA 12(b)

Component	TSCA 12(b)
Mercury	Section 5

SARA 313

Component	CAS-No	Weight %	SARA 313 - Th Values
Mercury	7439-97-6	100	1.0

SARA 311/312 Hazard Categories See section 2 for more information

CWA (Clean Water Act)

Component	CWA - Hazardous Substances	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants
Mercury	-	-	X	X

Clean Air Act

Component	HAPS Data	Class 1 Ozone Depletors	Class 2 Ozone De
Mercury	X		-

OSHA Occupational Safety and Health Administration
Not applicable

CERCLA This material, as supplied, contains one or more substances regulated as a haz substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302)

Component	Hazardous Substances RQs	CERCLA EHS RQs
Mercury	1 lb	-

California Proposition 65 This product contains the following proposition 65 chemicals

Component	CAS-No	California Prop. 65	Prop 65 NSRL	Category
ercury	7439-97-6	Developmental	-	Developm

U.S. State Right-to-Know Regulations

Component	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island
ercury	X	X	X	X	X

U.S. Department of Transportation

Reportable Quantity (RQ): N
DOT Marine Pollutant N
DOT Severe Marine Pollutant N

U.S. Department of Homeland Security
This product does not contain any DHS chemicals.

Other International Regulations

Mexico - Grade No information available

16. Other information

Prepared By Regulatory Affairs
Thermo Fisher Scientific
Email: EMSDS.RA@thermofisher.com

Creation Date 20-Aug-2014
Revision Date 17-Jan-2018
Print Date 17-Jan-2018
Revision Summary This document has been updated to comply with the US OSHA HazCom 2012 replacing the current legislation under 29 CFR 1910.1200 to align with the Glob Harmonized System of Classification and Labeling of Chemicals (GHS).

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text

End of SDS

Appendix C

Soil/Materials Management Plan (SMMP)

SOIL/MATERIALS MANAGEMENT PLAN

for
470 Kent Avenue
Remedial Action Work Plan

470 Kent Avenue, Brooklyn, New York
Block 2134, Lots 1 and 150 (portion)
BCP Site #C224053

Submitted to:
New York State Department of Environmental Conservation
Division of Environmental Remediation
Remedial Bureau C, Section A
625 Broadway, 12th Floor
Albany, NY 12233-7016

Prepared for:
470 Kent Ave Associates LLC
157 West 57th Street, 45th Floor
New York, NY 10019

Prepared by:
TENEN ENVIRONMENTAL
121 West 27th Street, Suite 702
New York, NY 10001

August 2021

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FIGURES

Figure 1 – Site Location
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1.0 INTRODUCTION

This Soil/Materials Management Plan (SMMP) has been developed for the Remedial Action Work Plan (RAWP) prepared for 470 Kent Avenue (the Site).

The Site is located at the northwest corner of Kent Avenue and Division Street in the South Williamsburg area of Brooklyn. The property is 4.5 acres. The western boundary of the Site is generally the existing shoreline with the Wallabout Channel. The Site is located in Community Board 1 and is generally identified as a Block 2134, Portions of Lots 1 and 150 (portion), as shown on Figure 1.

The Site consists of two buildings with a covered area between them. The buildings are two and three stories respectively. Alternate addresses include 462-490 Kent Avenue and 1-19 Division Avenue. A lumberyard currently operates at the Site. Adjoining and surrounding properties are a mix of residential, industrial and park land. A map of the current Site layout is included as Figure 2.

Currently, two 1,000 gallon capacity underground storage tanks (USTs) are registered with the NYSDEC Petroleum Bulk Storage (PBS) program under Site No. 2-612201.

1.1 Soil Screening Methods

Visual, olfactory and PID soil screening and assessment will be performed by a qualified environmental professional or experienced field geologist under the supervision of the Remedial Engineer (RE) and will be reported in the Construction Completion Report (CCR). Soil Screening will be performed during all remedial excavations into known or potentially contaminated material regardless of when the invasive work is done prior to issuance of a COC.

1.2 Soil Staging Methods

Excavated soil from suspected areas of contamination will be stockpiled separately and will be segregated from clean soil and construction materials. Stockpiles will be used only when necessary and will be removed as soon as practicable. While stockpiles are in place, they will be inspected daily, and before and after every storm event. Results of inspections will be recorded in a logbook, maintained at the Site and available for inspection by the New York State Department of Environmental Conservation (NYSDEC). Excavated soils will be stockpiled on double layers of 8-mil minimum-thickness sheeting, at a minimum. Stockpiles will be kept covered when not in use with appropriately anchored plastic tarps and will be routinely inspected. Broken or ripped tarps will be promptly replaced.

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

1.3 Characterization of Excavated Materials

Soil/fill or other excavated media that is transported off the Site for disposal will be sampled in a manner required by the receiving facility, and in compliance with applicable laws and regulations. Soils are not proposed for reuse on-Site.

1.4 Materials Excavation, Load-Out and Departure

The RE overseeing the remedial activities, or a qualified environmental professional under his/her supervision, will:

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

Locations where vehicles exit the Site shall be inspected daily for evidence of soil tracking off premises. Cleaning of the adjacent streets will be performed as needed to maintain a clean condition with respect to Site-derived materials. Mechanical processing of historical fill and contaminated soil on the Site is prohibited.

1.5 Off-Site Materials Transport

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

Trucks removing soil from the Site will be loaded on-site and exit the Site turning right onto Avenue. From Kent Street, trucks will make a right onto Metropolitan Avenue. Trucks will then be able to access the Brooklyn Queens Expressway (I-278), which is a truck through route.

This is the most appropriate route and take into account: (a) limiting transport through residential areas and past sensitive sites; (b) use of city mapped truck routes; (c) limiting total distance to major highways; (d) promoting safety in access to highways; and, (e) overall safety in transport. All trucks loaded with Site materials will exit the vicinity of the Site using only the most-current New York City Department of Transportation (NYCDOT)-approved truck routes (currently the 2015 New York City Truck Route Map).

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

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

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

1.6 Materials Disposal Off-Site

To document that the disposal of regulated material exported from the Site complies with applicable laws and regulations, the following documentation will be established and reported by the RE for each disposal destination used in this project:

(1) a letter from the RE or Applicant to each disposal facility describing the material to be disposed and requesting written acceptance of the material. This letter will state that material to be disposed is regulated material generated at an environmental remediation Site in New York under a governmental remediation program. The letter will provide the project identity and the name and phone number of the RE or Applicant, and will include as an attachment a summary of all chemical data for the material being transported; and
(2) a letter from each disposal facility stating it is in receipt of the correspondence, (1) above, and is approved to accept the material.

These documents will be included in the CCR.

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

All soil, fill and other waste excavated and removed from the Site will be managed as regulated material (municipal solid waste per 6NYCRR Part 360-1.2) and will be disposed in accordance with applicable laws and regulations. Historic fill and material that does not meet the lower of the NYSDEC 6 NYCRR Part 375-6.8(b) Restricted-Residential Use and Protection of Groundwater soil cleanup objectives (SCOs) is prohibited from being taken to a New York State recycling facility (6NYCRR Part 360-16 Registration Facility). Historic fill and contaminated soils taken off-Site will be handled as solid waste and will not be disposed at a Part 360-16 Registration Facility (also known as a Soil Recycling Facility).

Approximately 37,500 cubic yards (CY) of soil is proposed for off-Site disposal during the implementation of the RAWP. Final disposal facilities will be identified to NYSDEC prior to shipping material to any facility. Waste characterization will be performed for off-Site disposal in a manner required by the receiving facility and in conformance with its applicable permits. Waste characterization sampling and analytical methods, sampling frequency, analytical results and QA/QC will be reported in the CCR. A manifest system for off-Site transportation of exported materials will be employed. Manifest information will be reported in the CCR. Hazardous wastes derived from on-Site will be stored, transported and disposed of in compliance with applicable laws and regulations.

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

1.7 Materials Reuse On-Site

"Reuse on-Site" means material that is excavated during the remedy or development does not leave the property, and is relocated within the same property and on comparable soil/fill material, and addressed pursuant to Engineering Controls. The RE will ensure that reused materials are segregated from other materials to be exported from the Site and that procedures defined for material reuse in the RAWP are followed. Reuse of demolition debris and overburden soil may be contemplated. Reused soil must be non-hazardous and meet the Use-based SCOs and Protection of Groundwater SCOs in accordance with the predetermined beneficial use determination listed in 6 NYCRR Part 360-1.15(b) if the material will remain following the implementation of all remedial actions. If any of the waste materials are used for an end use specified in 6 NYCRR Part 360-1.15(b), it will not be considered a solid waste. Reuse of soil will be coordinated in advance with the NYSDEC project manager.

Organic matter (wood, roots, stumps, etc.) or other waste derived from clearing and grubbing the Site will not be buried onsite. Soil and fill excavated from the Site for grading or other purposes will not be reused within a cover soil layer or within landscaping berms.

1.8 Demarcation

After completion of hotspot removal and any other invasive remedial activities, and prior to backfilling, the top of the residual soil/fill will be defined by one of three methods:

(1) Placement of a demarcation layer. The demarcation layer will consist of geo-synthetic fencing or equivalent material to be placed on the surface of residual soil/fill to provide an observable reference layer. A description or map of the approximate depth of the demarcation layer will be provided in the CCR;

(2) A land survey of the top elevation of residual soil/fill before placement of cover soils, pavement, and associated sub-soils, or other materials or structures; and,
(3) All materials beneath the approved cover will be considered impacted and subject to Site management after the remedy is complete.

Demarcation may be established by one or any combination of the above three methods. As appropriate, a map showing the method of demarcation for the Site and all associated documentation will be presented in the CCR. The demarcation will constitute the top of the Site management horizon, if necessary.

1.9 Import of Backfill Soil from Off-Site Sources

If materials are imported, they will be in compliance with: (1) the Part 375-6.7(d) and (2) all Federal, State and local rules and regulations for handling and transport of material.

The following presents the requirements for imported fill materials to be used below the cover layer and within the clean soil cover layer. The backfill and cover soil quality objectives will be the lower of the Protection of Groundwater or Restricted-Residential Use SCOs.

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

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

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

All materials received for import to the Site will be approved by a PE/QEP and will be in compliance with applicable City, State and Federal laws and requirements. The source of the fill, evidence that an inspection was performed on the source, chemical sampling results, frequency of testing, and a Site map indicating the locations where backfill or soil cover was placed will be reported to NYSDEC at the end of construction activities and before obtaining a Certificate of Occupancy or Department of Building Letter of Completion.

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

- Trucks with imported fill material will be in compliance with applicable laws and regulations and will enter the Site at designated locations;
- The PE/QEP is responsible to ensure that every truck load of imported material is inspected for evidence of contamination; and
- Fill material will be free of solid waste including pavement materials, debris, stumps, roots, and other organic matter, as well as ashes, oil, perishables or foreign matter.

Composite and discrete samples of imported material will be taken consistent with Table 5.4(e)10 of DER-10. Once it is determined that the fill material meets imported backfill or cover soil chemical requirements and is non-hazardous, and lacks petroleum contamination, the material will be loaded onto trucks for delivery to the Site.

Recycled concrete aggregate (RCA) will be from Site building demolition or imported from facilities permitted or registered by NYSDEC. Facilities will be reported to NYSDEC at the end of construction activities and before obtaining a Certificate of Occupancy or Department of Building Letter of Completion. A PE/QEP is responsible to ensure that the facility is compliant with 6NYCRR Part 360 registration and permitting requirements for the period of acquisition of RCA. RCA imported from compliant facilities will not require additional testing, unless required by NYSDEC under its terms for operation of the facility. RCA imported to the Site must be derived from recognizable and uncontaminated concrete. RCA material is not acceptable for, and will not be used as cover material.

1.10 Fluids Management

All liquids to be removed from the Site will be handled, transported and disposed in accordance with applicable laws and regulations. Groundwater removal and management will be completed vacuum wellpoint system consisting of 1.5" wellpoints on five to seven foot centers (closer along Kent Avenue due to higher groundwater elevation) connected to a vacuum header with swing connections using one dewatering pump.

A SPDES and Long Island Well Permit are required prior to discharge. Discharge of water generated during remedial construction to surface waters (i.e., a stream or river) is prohibited without a SPDES permits issued by NYSDEC.

1.11 Stormwater Pollution Prevention

Applicable laws and regulations pertaining to stormwater pollution prevention will be addressed during the remedial program. The Stormwater Pollution Prevention Plan (SWPPP) will be implemented during the IRM.

1.12 Erosion and Sediment Control Measures

Erosion and sediment control measures identified in this Soil/Materials Management Plan and the SWPPP will be installed around the entire perimeter of the remedial construction area and inspected one a week and after every storm event to ensure that they are operating appropriately.

Discharge locations will be inspected to determine whether erosion control measures are effective in preventing significant impacts to receptors. Results of inspections will be recorded in a logbook, 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. Undercutting or erosion off the silt fence anchor will be repaired immediately with appropriate backfill materials. Manufacturer's recommendations will be followed for replacing silt fencing damaged due to weathering.

1.13 Contingency Plan

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

1.14 Odor, Dust and Nuisance Control

A Site-specific Community Air Monitoring Plan (CAMP) and a Health and Safety Plan (HASP) are included as Appendix A and B, respectively, of the RAWP.

Odor Control

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

This odor control plan is capable of controlling emissions of nuisance odors. If nuisance odors are identified, work will be halted and the source of odors will be identified and corrected. Work will not resume until all nuisance odors have been abated. NYSDEC will be notified of all odor complaint events. Implementation of all odor controls, including halt of work, will be the responsibility of the Remedial Engineer (RE), who is responsible for certifying the CCR.

Dust Control

Dust management during invasive on-Site work will include, as necessary:

- Use of a dedicated water spray method for roads, excavation areas, and stockpiles;
- Use of properly anchored tarps to cover stockpiles;
- Exercise of extra care during dry and high-wind periods; and

- Use of gravel or recycled concrete aggregate on egress and other roadways to provide a clean and dust-free road surface.

This dust control plan is capable of controlling emissions of dust. If nuisance dust emissions are identified, work will be halted and the source of dusts will be identified and corrected. Work will not resume until all nuisance dust emissions have been abated. NYSDEC will be notified of all dust complaint events. Implementation of all dust controls, including halt of work, will be the responsibility of the RE.

Other Nuisances

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

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

1.15 Import of Clean Cover and Fill Material

Soil may be imported to the Site to backfill after excavating the petroleum hot spot. Any imported soil will be uncontaminated soil that meets the lower of the appropriate Part 375-6.8(b) Restricted-Residential Use and Protection of Groundwater soil cleanup objectives (SCOs).

Any imported uncontaminated soil cover will be from an approved source/facility and will be evaluated by the RE to ensure the following:

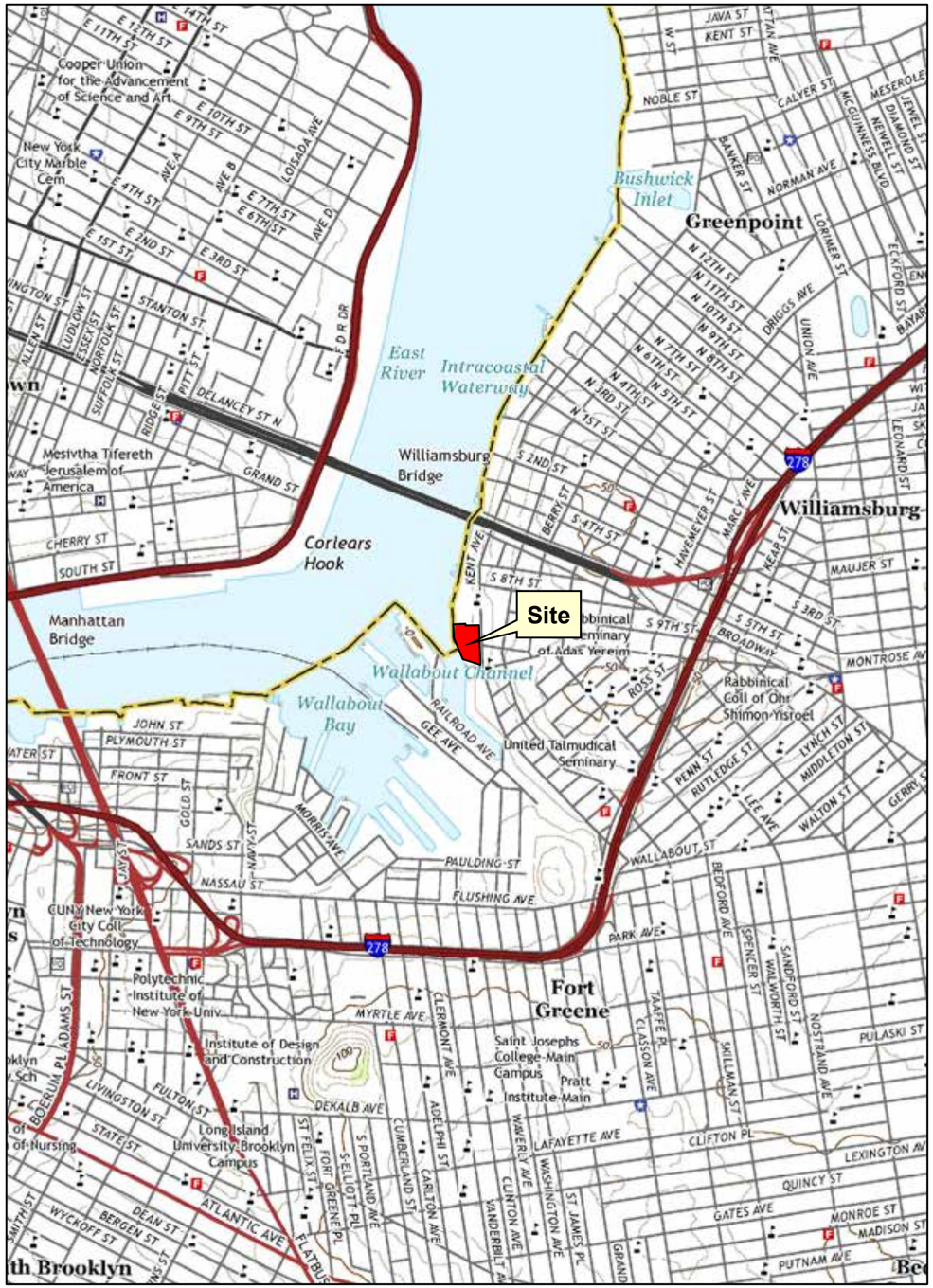
(1) That a segregated stockpile for less than 750 tons (500 cubic yards) is properly maintained at the source and will not be comingled with any other material prior to importing and grading the clean soil material at the Site;
(2) That the material does not include any solid waste, including construction and demolition material, as prohibited;
(3) That screening for evidence of contamination by visual, olfactory and PID soil screening practices prior to testing at the source, as well as upon importing to the Site for grading, is completed; and
(4) That a maximum five-part composite sample will be collected from the segregated stockpile at the source at a minimum frequency of one sample per 250 cubic yards and analyzed for the following Full List parameters:
    - VOCs by EPA Method 8260C
    - SVOCs by EPA Method 8270D
    - Pesticides by EPA Method 8081B
    - PCBs by EPA Method 8082A
    - TAL Metals by EPA Method 6010C/7471B

Upon receipt of the segregated stockpile analytical results collected at the source, a Clean Soil Sampling Report will be submitted to NYSDEC for review/approval prior to importing. The report will include the following:

(1) A summary of the sample quantities collected and analyzed, tabulated data and comparison to the Unrestricted Use SCOs;
(2) Analytical data sheets and chain-of-custody (COC) documentation;
(3) Estimate of the amount of soil/material stockpiled in tons and cubic yards;
(4) Photographs from the segregated stockpile at the source with sample point locations identified;
(5) An affidavit from the source/facility on company letterhead stating that the segregated stockpile has been properly maintained at the source and complies with the requirements listed above; and
(6) A copy of the source/facility NYSDEC permit(s).

If fill material is imported, a highly visible demarcation barrier (i.e. orange geo-synthetic material or equivalent) will be installed beneath the clean soil/fill surface cover. Upon importing and grading any NYSDEC-approved clean soil cover on top of a highly visible demarcation barrier, the following documentation will be presented in the CCR:

(1) Copies of purchase invoices;
(2) Truck transportation slips from the source to the Site;
(3) Confirmation of the number of tons and cubic yards of NYSDEC-approved clean soil cover material imported and graded at the Site on top of a highly visible demarcation barrier;
(4) A Site plan depicting all areas where the NYSDEC-approved clean soil cover has been placed; and
(5) Photographs documenting the importing and grading of the NYSDEC-approved clean soil cover across the Site with the underlying highly visible demarcation barrier (i.e., orange geo-synthetic material or equivalent).



Basemap: USGS Topographic Map, 7.5 Minute Quadrangles, Brooklyn, NY, 2016

Site Location

0 1,000 2,000 4,000 Feet



http://gis.nyc.gov/taxmap/map.htm

Department of Finance Digital Tax Map

0 200 400 800 Feet



Service Layer Credits: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community
NYC Department of City Planning, Information Technology Division

Department of City Planning MapPLUTO - 2020 v6

0 200 400 800 Feet

Site

470 Kent Avenue
Brooklyn, New York
Block 2134, Lots 1 & 150

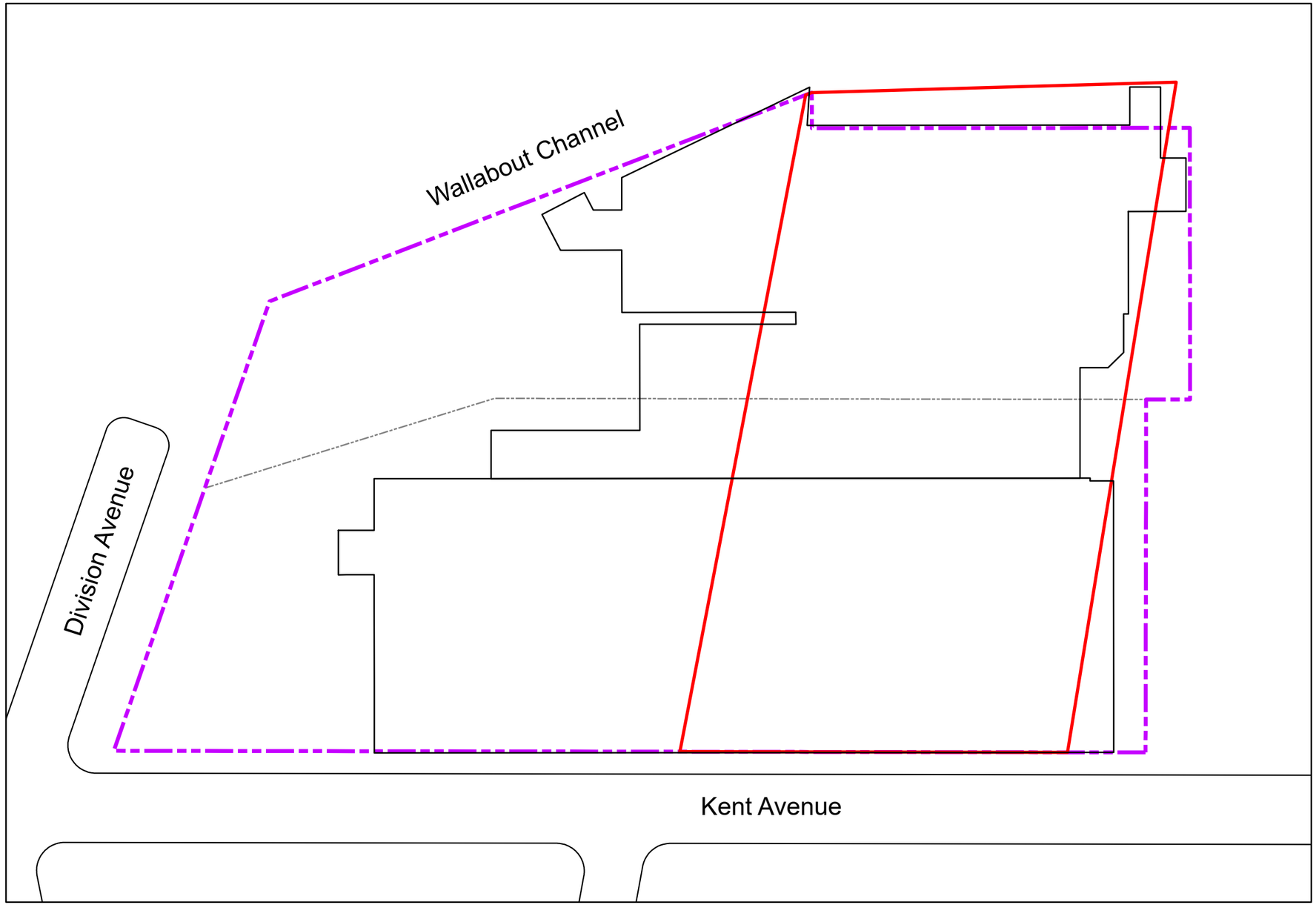
TENEN ENVIRONMENTAL

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Drawn By	Checked By	Date	Scale
LM	MC	Septmeber 2021	As Noted

Drawing Title: **Site Location Map**

Drawing No: **Figure 1**



Legend

- Approximate Former MGP Boundary
- Site Boundary
- Lot Line

Feet
0 30 60 120

Service Layer Credits: NYS ITS GIS Program Office

Site

470 Kent Avenue
Brooklyn, New York
Block 2134, Lots 1 & 150

[redacted]

Tenen Environmental, LLC
121 West 27th Street
Suite 702
New York, NY 10001
O: (646) 606-2332
F: (646) 606-2379

Drawn By	Checked By	Date	Scale
LM	MC	September 2021	As Noted

Drawing Title: **Site Layout**

Drawing No: **Figure 2**

Appendix D

Quality Assurance Project Plan (QAPP)

Appendix D
Quality Assurance Project Plan

for
470 Kent Avenue
Remedial Action Work Plan

470 Kent Avenue – Brooklyn, New York
Block 2134, Lots 1 and 150 (portion)
BCP Site #C224053

Submitted to:
New York State Department of Environmental Conservation
Division of Environmental Remediation
Remedial Bureau C, Section A
625 Broadway, 12th Floor
Albany, NY 12233-7016

Prepared for:
470 Kent Ave Associates LLC
157 West 57th Street, 45th Floor
New York, NY 10019

Prepared by:
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August 2021

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Appendix A – Resumes

1.0 INTRODUCTION

This Quality Assurance Project Plan (QAPP) has been developed for the Remedial Action Work Plan (RAWP) prepared for 470 Kent Avenue property (the Site).

The Site is located at the northeast corner of Kent Avenue and Division Street in the South Williamsburg area of Brooklyn, New York. The property is approximately 3.7 acres. The western boundary of the Site is the Wallabout Channel. The Site is located in Community Board 1 and is generally identified as Block 2134, Lots 1 and 150 (portion) in the Williamsburg neighborhood of Brooklyn.

The Site consists of two buildings with a covered area between them. The buildings are two and three stories, respectively. Alternate addresses include 462-490 Kent Avenue and 1-19 Division Avenue. A lumberyard currently operates at the Site. Adjoining and surrounding properties are a mix of residential, industrial and park land.

1.1 Project Scope and QAPP Objective

The proposed scope of work includes the following:

- Collection of post-remedial soil samples; and,
- collection of quarterly groundwater monitoring samples from new permanent monitoring wells.

The objective of the QAPP is to detail the policies, organization, objectives, functional activities and specific quality assurance/quality control activities designed to achieve the data quality goals or objectives of the Remedial Action Work Plan. This QAPP addresses how the acquisition and handling of samples and the review and reporting of data will be documented for quality control (QC) purposes. Specifically, this QAPP addresses the following:

- The procedures to be used to collect, preserve, package, and transport samples;
- Field data collection and record keeping;
- Data management;
- Chain-of-custody procedures; and,
- Determination of precision, accuracy, completeness, representativeness, decision rules, comparability and level of quality control effort.

2.0 PROJECT ORGANIZATION

The personnel detailed are responsible for the implementation of the QAPP. Tenen Environmental, LLC (Tenen) will implement the RAWP on behalf of 470 Kent Ave Associates, LLC (the Volunteer) once it has been approved by the New York State Department of Environmental Conservation (NYSDEC).

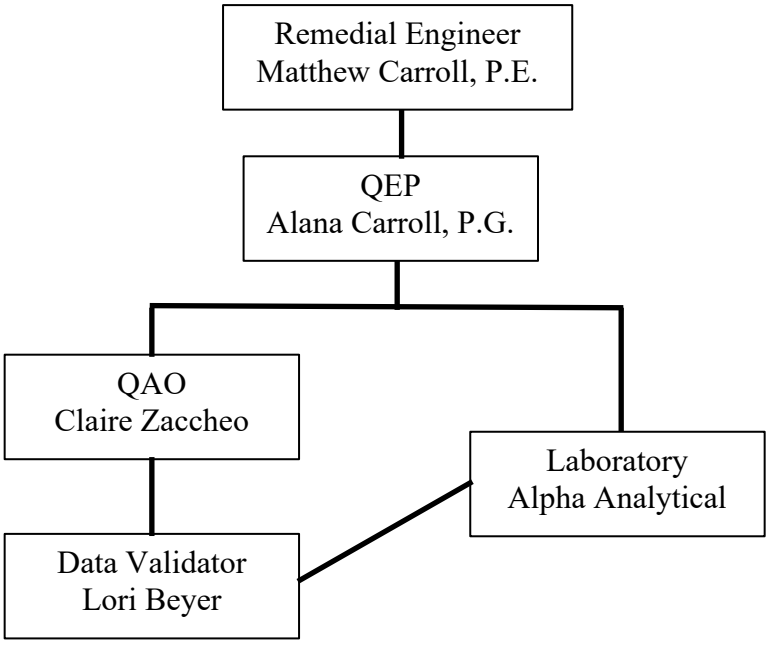
The Remedial Engineer for the project will be Mr. Matthew Carroll, P.E. Mr. Carroll is an environmental engineer experienced in all aspects of site assessment and development and implementation of remedial strategies. His experience involves projects from inception through investigation, remediation and closure. His expertise includes soil, soil vapor and groundwater remediation; remedial selection and design; field/health and safety oversight and preparation of work plans and reports to satisfy the requirements of various regulatory agencies. Mr. Carroll received his Bachelor of Engineering from Stevens Institute of Technology and Bachelor of Science in Chemistry from New York University and is a New York State professional engineer; his resume is included in Appendix A.

The Project Manager and Qualified Environmental Professional (QEP) will be Alana Carroll, P.G., principal at Tenen. Mrs. Carroll is a professional geologist with experience in all aspects of site assessment, development and implementation of remedial strategies. Her experience involves projects from inception through investigation, remediation and closure. Her expertise includes soil, soil vapor and groundwater remediation; remedial selection and design; field/health and safety oversight and preparation of work plans and reports to satisfy the requirements of various regulatory agencies. Mrs. Carroll received her BS in Geology from Hofstra University; her resume is included in Appendix A.

The Quality Assurance Officer will be Ms. Claire Zaccheo. Ms. Zaccheo is an environmental engineer with experience in soil, groundwater and soil vapor sampling techniques and data analysis, remedial systems, and environmental permitting. Ms. Zaccheo holds a Bachelor of Science and a Masters of Science in Environmental Engineering from Manhattan College; her resume is included in Appendix A.

In addition, Tenen will utilize subcontractors for laboratory services (Alpha Analytical of Westborough, MA) and data validation (L.A.B. Validation Corp. of East Northport, NY). The resume for the Data Usability Summary Report (DUSR) preparer, Ms. Lori Beyer, is included in Appendix A.

An organization chart for the implementation of the Remedial Action Work Plan and QAPP is below.



3.0 SAMPLING AND DECONTAMINATION PROCEDURES

A detailed description of the procedures to be used during this program for collection of the groundwater samples is provided below. Proposed sample locations are shown on Figure 16 of the Work Plan. An Analytical Methods/Quality Assurance Summary is provided in Table 1, included in Section 3.11.

3.1 Level of Effort for QC Samples

Field blank, trip blank, field duplicate and matrix spike (MS) / matrix spike duplicate (MSD) samples will be analyzed to assess the quality of the data resulting from the field sampling and analytical programs. Each type of QC sample is discussed below.

- Field and trip blanks consisting of distilled water will be submitted to the analytical laboratories to provide the means to assess the quality of the data resulting from the field-sampling program. Field (equipment) blank samples are analyzed to check for procedural chemical constituents that may cause sample contamination. Trip blanks are used to assess the potential for contamination of samples due to contaminant migration during sample shipment and storage.

- Duplicate samples are analyzed to check for sampling and analytical reproducibility.

- MS/MSD samples provide information about the effect of the sample matrix on the digestion and measurement methodology.

The general level of QC effort will be one field duplicate and one field blank (when non-dedicated equipment is used) for every 20 or fewer investigative samples of a given matrix. Additional sample volume will also be provided to the laboratory to allow one site-specific MS/MSD for every 20 or fewer investigative samples of a given matrix. One trip blank will be included along with each sample delivery group of volatile organic compound (VOC) samples.

The analytical laboratory, Alpha Analytical, is certified under the New York State Department of Health (NYSDOH) Environmental Laboratory Approval Program (ELAP) as LabIDs 11148 and 11627. NYSDEC Analytical Services Protocol (ASP) Category B deliverables will be prepared by the laboratory.

3.2 Sample Handling

Samples will either be picked up by the laboratory, delivered to the laboratory in person by the sampler, or transported to the laboratory by overnight courier. All samples will be shipped to the laboratory to arrive within 48 hours after collection, and the laboratory will adhere to the analytical holding times for these analyses, as listed in the current version of the New York State ASP.

3.3 Custody Procedures

Sample custody will be controlled and maintained through the chain-of-custody procedures. The chain of custody is the means by which the possession and handling of samples is tracked from the site to the laboratory. Sample containers will be cleaned and preserved at the laboratory before shipment to the Site. The following sections (Sections 3.4 and 3.5) describe procedures for maintaining sample custody from the time samples are collected to the time they are received by the analytical laboratory.

3.4 Sample Storage

Samples will be stored in secure limited-access areas. Walk-in coolers or refrigerators will be maintained at 4°C, ± 2°C, or as required by the applicable regulatory program. The temperatures of all refrigerated storage areas are monitored and recorded a minimum of once per day. Deviations of temperature from the applicable range require corrective action, including moving samples to another storage location, if necessary.

3.5 Sample Custody

Sample custody is defined by this QAPP as the following:

- The sample is in someone's actual possession;
- The sample is in someone's view after being in his or her physical possession;
- The sample was in someone's possession and then locked, sealed, or secured in a manner that prevents unsuspected tampering; or,
- The sample is placed in a designated and secured area.

Samples will be removed from storage areas by the sample custodian or laboratory personnel and transported to secure laboratory areas for analysis. Access to the laboratory and sample storage areas is restricted to laboratory personnel and escorted visitors only; all areas of the laboratory are therefore considered secure.

Laboratory documentation used to establish chain of custody and sample identification may include the following:

- Field chains of custody or other paperwork that arrives with the sample;
- Laboratory chain of custody;
- Sample labels or tags attached to each sample container;
- Sample custody seals;
- Sample preparation logs (i.e., extraction and digestion information) recorded in hardbound laboratory books, filled out in legible handwriting, and signed and dated by the chemist;
- Sample analysis logs (e.g., metals, GC/MS, etc.) information recorded in hardbound laboratory books that are filled out in legible handwriting, and signed and dated by the chemist;
- Sample storage log (same as the laboratory chain of custody); and,

- Sample disposition log, which documents sample disposal by a contracted waste disposal company.

3.6 Sample Tracking

All samples will be maintained in the appropriate coolers prior to and after analysis. Laboratory analysts will remove and return their samples, as needed. Samples that require internal chain of custody procedures will be relinquished to the analysts by the sample custodians. The analyst and sample custodian will sign the original chain of custody relinquishing custody of the samples from the sample custodian to the analyst. When the samples are returned, the analyst will sign the original chain of custody returning sample custody to the sample custodian. Sample extracts will be relinquished to the instrumentation analysts by the preparatory analysts. Each preparation department will track internal chain of custody through their logbooks/spreadsheets.

Any change in the sample during the time of custody will be noted on the chain of custody (e.g., sample breakage or depletion).

3.7 Post-Remedial Soil Sampling

Soil will be screened with a photoionization detector (PID) along the base and sidewalls of the petroleum excavation and geologically described using the Unified Soil Classification System, including documentation of observations regarding potential contamination such as odors, staining, etc. All descriptions and observations will be documented in a field notebook.

If evidence of volatile contamination is detected, one soil sample will be collected from the location of highest suspected contamination. Any soil samples will be collected using dedicated sample scoops or single-use gloves. Soil samples to be analyzed will be collected directly the scoop. All collected soil samples will be placed in pre-cleaned, pre-preserved laboratory provided sample bottles, cooled to 4°C in the field, and transported under chain-of-custody command to the designated laboratory for analysis.

Soil samples will be analyzed for Part 375 volatile organic compounds (VOCs) by EPA Method 8260, semivolatile organic compounds (SVOCs) by EPA Method 8270, metals by EPA Method 6010, pesticides by EPA Method 8081 and PCBs by EPA Method 8082 with a Category B data package.

3.8 Quarterly Groundwater Sampling

Prior to sample collection, static water levels will be measured and recorded from all monitoring wells. Monitoring wells will also be gauged for the presence of light non-aqueous phase liquid (LNAPL). In the event that LNAPL is detected, Tenen will record the thickness and will not collect a sample. If LNAPL is not detected, Tenen will purge and sample monitoring wells using low-flow/minimal drawdown purge and sample collection procedures (peristaltic pump). Prior to sample collection, groundwater will be evacuated from each well at a low-flow rate (typically less than 0.1 L/min). Field measurements for pH, temperature, turbidity, dissolved oxygen, specific

conductance, oxidation-reduction potential and water level, as well as visual and olfactory field observations, will be periodically recorded and monitored for stabilization. Purging will be considered complete when pH, specific conductivity, dissolved oxygen and temperature stabilize and when turbidity measurements fall below 50 Nephelometric Turbidity Units (NTU) or become stable above 50 NTU. If stabilization does not occur or the well has been purged and recovery cannot maintain the pace of low flow purging, a sample will be collected and a notation will be made in the field book.

Stability is defined as variation between field measurements of 10 percent or less and no overall upward or downward trend in the measurements. Upon stabilization of field parameters, groundwater samples will be collected and analyzed as discussed below.

Wells will be purged and sampled using dedicated pump tubing following low-flow/minimal drawdown purge and sample collection procedures, as described above. The pump will be decontaminated between samples and the tubing will be replaced.

Groundwater samples will be collected for laboratory analysis through dedicated tubing. Prior to, and immediately following collection of groundwater samples, field measurements for pH, specific conductance, temperature, dissolved oxygen, turbidity and depth-to-water, as well as visual and olfactory field observations will be recorded. All collected groundwater samples will be placed in pre-cleaned, pre-preserved laboratory provided sample bottles, cooled to 4°C in the field, and transported under chain-of-custody command to the designated laboratory for analysis.

Post-remedial groundwater sampling will be completed in accordance with a Site Management Plan (SMP). It is anticipated that groundwater samples will be collected from six newly-installed wells approximately six months after the groundwater remedy described in the RAWP is implemented and quarterly for a minimum of two years after.

Groundwater samples will be analyzed for Part 375 VOCs and SVOCs.

3.9 Indoor Air Sampling

Indoor air samples will be collected in accordance with the NYSDOH Soil Vapor Guidance prior to building occupancy. At least two samples per building will be collected from the lowest level.

The samples will be collected in a laboratory-supplied eight-liter canister using a 24-hour regulator. The sampling flow rate will not exceed 0.2 liters per minute (L/min). A slight vacuum will be left in the Summa® canister at the end of sampling to documented that the canister did not leak during transit. If no vacuum remains in the canister, the canister will not be sent to the laboratory for analysis, and the sample will be re-collected. The sample will be analyzed for VOCs using EPA Method TO-15.

3.10 Analytical Methods/Quality Assurance Summary Table

A summary of the analytical methods and quality assurance methods are included in Table 1, below.

Table 1
Analytical Methods/Quality Assurance Summary

Matrix	Proposed Samples	QA/QC Samples				Total # Samples	Analytical Parameter	Method	Preservative	Holding Time	Container
		TB	FB	DUP	MS/MSD						
Soil	40	4	2	2	2/2	52	VOCs	8260C	Cool to 4°C, No Headspace	14 days	(3) 5-gram Encore; (1) 2-oz plastic bottle
	40	0	2	2	2/2	48	SVOCs	8270D	Cool to 4°C	28 days for mercury; 6 months for all others	(1) 4-oz amber glass bottle
	40	0	2	2	2/2	48	Pesticides	8081B			
	40	0	2	2	2/2	48	PCBs	8082A			
	40	0	2	2	2/2	48	TAL Metals	6010C / 7471B			
Groundwater	6	1	1	1	1/1	11	VOCs	8260	Cool to 4°C, pH<2 with HCl	14 days	(3) 40 mL amber glass vials
Indoor Air	6 plus 3 ambient	0	0	0	0	9	VOCs	TO-15	None	14 days	8L summa

TB – Trip Blank
FB – Field Blank
DUP – Duplicate
°C – degrees Celsius
mL – milliliter
L – liter

3.11 Decontamination

Where possible, samples will be collected using new, dedicated sampling equipment so that decontamination is not required. All non-dedicated drilling tools and equipment will be decontaminated between boring locations using potable tap water and a phosphate-free detergent (e.g., Alconox) and/or a steam cleaner. All non-dedicated sampling equipment will also have a final rinse with deionized water. Decontamination water will be collected and disposed as investigation-derived waste (IDW).

3.12 Data Review and Reporting

The NYSDEC ASP Category B data package will be validated by an independent data validation subconsultant and a DUSR summarizing the results of the data validation process will be prepared. All reported analytical results will be qualified as necessary by the data validation and will be reviewed and compared against background concentrations and/or applicable New York State criteria:

Soil – Part 375 and CP-51 soil cleanup objectives (SCOs); and,
Groundwater – Ambient Water Quality Standards (AWQS) and Guidance Values and Groundwater Effluent Limitations for groundwater as listed in NYSDEC Technical and Operations Guidance Series (TOGS) 1.1.1.

Reports documenting the quarterly groundwater monitoring analytical results will be prepared in accordance with a Site Management Plan, and will describe Site conditions and document applicable observations made during the sample collection. In addition, the reports will include a description of the sampling procedures, tabulated sample results and an assessment of the data and conclusions. The laboratory data packages, DUSR, and field notes will be included in the report as appendices. All data will also be submitted electronically to NYSDEC via the Environmental Information Management System (EIMS) in EqUIS format.

Appendix A

Resumes

Appendix A

Resumes

Matthew Carroll, P.E.
Environmental Engineer/Principal

Experience Summary

Matthew Carroll is an environmental engineer experienced in all aspects of site assessment and development and implementation of remedial strategies. He has managed projects from inception through investigation, remediation and closure. His expertise includes soil, soil gas, and groundwater remediation, preparation of cost estimates, remedial alternative selection and design, soil characterization for disposal, field safety oversight, and preparation of work plans and reports to satisfy New York and New Jersey state requirements, and New York City "e" designation and restrictive declarations. Mr. Carroll's project management experience includes past management of a New York City School Construction Authority hazardous materials contract. He is responsible for all engineering work performed by Tenen and is currently the project manager and remedial engineer for several New York State Brownfield Cleanup Program sites.

Selected Project Experience

470 Kent Avenue, Brooklyn
As project manager, supported the client in due diligence and transactional activities, including a Phase I ESA, preliminary site investigation, and remedial cost estimate; preparation of BCP application and remedial investigation work plan. The former manufactured gas plant, sugar refinery and lumberyard will be developed as a mixed-use project with market rate and affordable housing and public waterfront access. As remedial engineer, will be responsible for development of remedial alternatives and oversight and certification of all remedial activities.

500 Exterior Street, Bronx
Designed and implemented the investigation of this former lumberyard and auto repair shop that will be redeveloped as mixed use development with an affordable housing component; prepared BCP application and subsequent work plans and reports. Designed a remedial strategy incorporating both interim remedial measures (IRMs) and remediation during the development phase.

Gateway Elton I and II, Brooklyn
Conducted soil disposal characterization, prepared Remedial Action Work Plans and designed methane mitigation systems for two phases of a nine-building residential development and commercial space; prepared and oversaw implementation of a Stormwater Pollution Prevention Plan during construction and prepared and certified the remedial closure reports for the project.

Affordable Housing Development, Rye, NY
Consultant to the City of Rye on environmental issues pertaining to a county-owned development site slated for an afford senior housing; reviewed environmental documentation for the project and prepared summary memorandum for City Council review; recommended engineering controls to address potential exposure to petroleum constituents, presented report findings at public meetings and currently providing ongoing environmental support during project implementation.

Queens West Development BCP Site, Long Island City, New York
Assistant Project Manager for two developers involved in the site.

- Responsible for oversight of remediation under the New York State Brownfield Cleanup Program
- Technical review of work plans and reports and coordination of the Applicant's investigation and oversight efforts
- Provided input for mass calculations and well placement for an in-situ oxidation remedy implemented on a proposed development parcel and within a City street
- Conducted technical review of work pertaining to a former refinery. Documents reviewed included work plans for characterization and contaminant delineation; pilot test (chemical oxidation); remediation (excavation and groundwater treatment). Managed field personnel conducting full time oversight and prepared progress summaries for distribution to project team
- Following implementation of remedial action, implemented the Site Management Plan and installation/design of engineering controls (SSDS, vapor barrier/concrete slab, NAPL recovery). Also responsible for coordination with NYSDEC

Brownfield Cleanup Program Redevelopment Sites – West Side, New York City
Managed remediation of a development consisting of four parcels being addressed under one or more State and city regulatory programs (NYS Brownfield Cleanup Program, NYS Spills, and NYC "e" designation program). Remediation includes soil removal, screening and disposal; treatment of groundwater during construction dewatering and implementation of a worker health and safety plan and community air monitoring plan (HASP/CAMP)

Managed an additional BCP site, supported the Applicant in coordination with MTA to create station access for the planned No. 7 subway extension; also provided support the client in coordination with Amtrak to obtain access for remedial activities on the portion of the site that is within an Amtrak easement. The site will eventually be used for construction of a mixed-use high-rise building.

BCP Site, Downtown Brooklyn, New York
Performed investigation on off-site properties and designed an SSDS for an adjacent building, retrofitting the system within the constraints of the existing structure; coordinated the installation of the indoor HVAC controls and vapor barrier; provided input to the design of a SVE system to address soil vapor issues on the site.

West Chelsea Brownfield Cleanup Program Site
Designed an in-situ remediation program and sub-slab depressurization system to address contamination remaining under the High Line Viaduct; SSDS design included specification of sub-grade components, fan modeling and selection, identifying exhaust location within building constraints and performance modeling; prepared the Operations Maintenance and Monitoring Plan and Site Management Plan sections pertaining to the SSDS.

Historic Creosote Spill Remediation – Queens, New York – New York State Voluntary Cleanup Program
Modeled contamination volume and extent and prepared mass estimates of historic fill constituents and creosote-related contamination; designed a soil vapor extraction (SVE) and dewatering system to address historic creosote release both above and below static

water table; coordinated with the Metropolitan Transit Authority and prepared drawings to secure approval to drill in the area of MTA subway tunnels.

NYSDEC Spill Site– Far West Side, Manhattan
Provided support to client during negotiations with a major oil company regarding allocation of remedial costs. Worked with client's attorney to develop a regulatory strategy to address the client's obligations under the NYSDEC Spills Program and the New York City "e" designation requirements.

Affordable Housing Site, Brooklyn, New York
Modified prior work plans for soil, soil vapor and groundwater investigation to address requirements for site entry into the New York City Brownfield Cleanup Program. Prepared technical basis for use of prior data previously disallowed by OER. Currently conducting site investigation.

New York City School Construction Authority Hazardous Materials Contract
Provided work scopes and cost estimates, managed and implemented concurrent projects, including Phase I site assessments, Phase II soil, groundwater and soil gas investigations, review of contractor bid documents, preparation of SEQR documents, specifications and field oversight for above- and underground storage tank removal, and emergency response and spill control.

Former Manufacturing Facility, Hoboken, New Jersey
Evaluated site investigation data to support a revision of the current property use to unrestricted; modified the John & Ettinger vapor intrusion model to apply the model to a site-specific, mixed use commercial/residential development; implemented a Remedial Action Work Plan that included the characterization, removal and separation of 9,500 cubic yards of historic fill; designed and implemented a groundwater characterization/delineation program using a real-time Triad approach; designed and implemented an innovative chemical oxidation technology for the property.

F**ormer Varnish Manufacturer – Newark, New Jersey**
Prepared a Phase I environmental site assessment; implemented soil and groundwater sampling to assess presence of petroleum and chlorinated compounds; prepared alternate cost remediation scenarios for settlement purposes and implemented a groundwater investigation plan, including pump tests and piezometer installation to assess the effect of subsurface utilities and unique drainage pathways upon contaminant transport.

Education and Certifications

Professional Engineer, New York
Bachelor of Engineering, Environmental; Stevens Institute of Technology, 2002
Bachelor of Science, Chemistry, New York University, 2002
Technical and Regulatory Training in Underground Storage Tanks, Cook College, Rutgers University, 2006

3.9 Decontamination

Where possible, samples will be collected using new, dedicated sampling equipment so that decontamination is not required. All non-dedicated equipment will be decontaminated between boring locations using potable tap water and a phosphate-free detergent (e.g., Alconox) and/or a steam cleaner. All non-dedicated sampling equipment will also have a final rinse with deionized water. Decontamination water will be collected and disposed as investigation-derived waste (IDW).

3.10 Data Review and Reporting

The NYSDEC ASP Category B data package will be validated by an independent data validation subconsultant and a DUSR summarizing the results of the data validation process will be prepared. All reported analytical results will be qualified as necessary by the data validation and will be reviewed and compared against background concentrations and/or applicable New York State criteria:

Soil – Protection of Groundwater and Restricted-Commercial Use Soil Cleanup Objectives (SCOs) and Supplemental Soil Cleanup Levels (SCLs) as listed in 6NYCRR Part 375 and NYSDEC Commissioner's Policy CP-51; and,

A report documenting the Interim Remedial Measure implementation will be prepared, and will describe Site conditions and document applicable observations made during the sample collection. In addition, the report will include a description of the sampling procedures, tabulated sample results and an assessment of the data and conclusions. The laboratory data packages, DUSR, geologic logs, well construction diagrams, and field notes will be included in the report as appendices. All data will also be submitted electronically to NYSDEC via the Environmental Information Management System (EIMS) in EqUIS format.

Alana M. Carroll, PG
Senior Project Manager

PROFESSIONAL PROFILE

Ms. Alana Carroll is a professional geologist with experience managing a variety of environmental consulting projects in the New York metropolitan area and specializing in remedial investigations, conceptual site modeling, and remedial design and implementation. She provides analytical, technical, and regulatory guidance to clients, including developers and environmental attorneys, on a variety of projects in various stages of investigation, remediation, and redevelopment. Ms. Carroll has managed projects from inception through investigation, remediation, and closure in the New York State Brownfield Cleanup Program, the New York State Department of Environmental Conservation (NYSDEC) Spills and Voluntary Cleanup Programs, the New York State Superfund Program, and the New York City E-Designation Program.

CREDENTIALS AND PROFESSIONAL HONORS

New York State Licensed Professional Geologist #000979
Adjunct Professor, Manhattan College, School of Engineering
M.A., Earth and Environmental Sciences, Brooklyn College, New York
B.S., Geology, Hofstra University, Uniondale, New York

CONTINUING EDUCATION AND TRAINING

OSHA 10-Hour Construction Training (2015)
Hazardous Waste Operations and Emergency Response 40-Hour Certification
(2004; refreshers 2005, 2006, 2007, 2009, 2010, 2011, 2012, 2013, 2014, and 2015)
First Aid and CPR Certified (2012)
Amtrak Contractor Safety Training (2010 and 2011)

PROFESSIONAL AFFILIATIONS

Member of Geologic Society of America
Member of New Partners for Community Revitalization

RELEVANT EXPERIENCE

New York State Brownfield Cleanup Program, Former West 18th Street MGP Site, Block 690, Lots 20 and 29, West Chelsea, Manhattan, New York—Successfully guided the client into the Brownfield Cleanup Program at the remediation stage. Prepared detailed remedial cost estimates for several redevelopment scenarios. Assisted in negotiating cleanup costs on behalf of the developer with the entity responsible for onsite contamination from former manufactured gas plant (MGP) operations. Designed and managed a pre-design investigation that delineated onsite coal tar impacts and differentiated petroleum impacts. Served on a team that designed an *in situ* stabilization treatability study. Prepared the Remedial Action Work Plan and Alternatives Analysis that included the excavation and removal of coal tar source material within two MGP gas holders and the encapsulation of residual coal tar. Performed an essential role on the construction and design team, coordinating with the structural, foundation, mechanical, and architectural contractors.

New York State Brownfield Cleanup Program, 520 West 28th Street, West Chelsea, Manhattan, New York—Managed several investigations to address New York State Spills, New York City E-Designation, and New York State Brownfield Cleanup programs. Prepared scopes of work to address requirements of both State and City regulatory agencies. Served as an essential member of the construction and design team, coordinating with the structural, foundation, mechanical, and architectural contractors. Managed access with adjacent property owners for full-scale excavation. Coordinated with State and City agencies for the satisfaction of air, noise, and hazardous waste requirements. Coordinated and managed the characterization and disposal of over 35,000 tons of hazardous material and historic fill. Designed and managed the remedial action necessary to obtain a successful Track 1 Cleanup. Assisted in negotiating a nuanced approach to support excavation that allowed for a Track 1 Cleanup. Prepared the final engineering report that expedited the certificate of completion.

New York State Brownfield Cleanup Program, Teitelbaum Dry Cleaner, Long Island City, New York—Designed and managed multiple onsite and offsite investigations to address NYSDEC and New York State Department of Health (NYSDOH) regulatory requirements with respect to chlorinated solvent impacts to groundwater and soil vapor. Designed and managed chlorinated solvent plume delineation and remediation in both groundwater and soil vapor. Prepared a technical memorandum on the fate and transport of the onsite chlorinated solvent groundwater plume that established limited liability for downgradient impacts and identified a secondary source. Coordinated with multiple adjacent parties for access. Designed a remedial approach for the site building that included source removal, groundwater injection, and a retro-fitted sub-slab depressurization system (SSDS).

Confidential Project, Steuben County, NY—Performed a forensic review and analysis of environmental records associated with five parcels of land that the State deemed as illegal solid waste dumps. Prepared and presented two technical arguments to NYSDEC and NYSDOH detailing illegal dumping, historic fill material, human health exposure pathways, bioavailability of historic fill constituents and remedial alternatives. Designed a full-scale remedial investigation of soil, groundwater and sediments for five parcels of historically industrial land.

New York City Voluntary Cleanup Program, Gallery Row, West Chelsea, Manhattan, New York—Managed multiple investigations over five tax lots to address New York City E-Designation and Voluntary Cleanup Program requirements. Designed a remedial action that incorporates a phased and targeted excavation below Highline Park. Coordinated with State and City agencies for the satisfaction of air, noise, and hazardous waste requirements. Served as an integral part of the construction and design team.

New York State Brownfield Cleanup Program, Former Nu-Brite Dry Cleaner, 1299 First Avenue, East Side, Manhattan, New York—Designed and managed multiple investigations to address onsite chlorinated solvent impacts to soil, groundwater, and soil vapor. Site challenges included investigation and remedial action within existing, occupied building sites. Designed and managed a bedrock fracture investigation to address potential impacts to bedrock. Designed and managed offsite delineation of chlorinated solvent plume in soil vapor. Directed multiple offsite soil vapor investigations within adjacent properties; assisted in negotiating several nuanced access agreements. Managed an onsite interim remedial measure including the installation of a retro coat vapor barrier and retro-fitted SSDS within the site building.

New York State Brownfield Cleanup Program, 34th Street and 42nd Street, West Side, Manhattan, New York—Designed and managed multiple investigations to address New York State Spills and Brownfield Cleanup programs. Prepared scopes of work to address requirements of both state regulations and those agreed to by the former owner. Coordinated

with NYSDEC to modify scopes based on field observations and limitations, which resulted in not having to mobilize for additional investigations. Coordinated with multiple entities for access to perform investigations, including Javits Convention Center, Amtrak, New York City Department of Transportation, Metropolitan Transit Authority, and their contractors. Developed a three-phase analysis plan with the laboratory to determine the minimum required extent of excavation next to an Amtrak line while limiting analytical costs, decreasing in the extent of excavation, and lowering disposal and structural support requirement costs.

New York State Brownfield Cleanup Program, 388 Bridge Street, Downtown Brooklyn, New York—Designed and managed all onsite and offsite investigations of soil, soil gas, groundwater, and indoor air, including coordination of staff and subcontractors. Prepared investigation reports for submittal to client, project team, NYSDEC, and NYSDOH. Participated in project team decision making with clients, lawyers, construction manager, and other consultants. Managed New York City Transit approvals for subsurface investigations near subway lines. Coordinated offsite access in residences, commercial spaces, and a private school. Participated in soil vapor extraction pilot test implementation and reporting. Assisted with implementation of an offsite SSDS in an existing building; activities included system design/layout, installation oversight, testing, and long-term operation and maintenance. Responsible for NYSDEC/NYSDOH coordination and reporting for all investigations. Tracked project activities for inclusion in NYSDEC/NYSDOH programmatic submittals, including monthly reports and remedial schedules.

New York Department of Environmental Remediation, Class 2 State Superfund, Laurel Hill Site, Queens, New York—Managed multiphase, multiparcel project involving design, installation, and ongoing operation, maintenance, and monitoring of six remedial caps. Site challenges included the division of the site into individual parcels that were independent of one another; subsequently, each parcel had a stormwater management design individual to the surrounding parcels. Other challenges included the site's position in a wetlands area fronting Newtown Creek, and working with the New York City Department of Transportation to facilitate its schedule for the adjacent Kosciusko Bridge restoration.

New York State Brownfield Cleanup Program, Willets Point Development, Queens, New York—Managed the Brownfield Cleanup Program application and Phase I environmental site assessment effort for 45 parcels of industrialized land. Coordinated with multiple interested parties, including New York City Department of Housing Preservation and Development and the Economic Development Corporation for access and contracting.

New York State Brownfield Cleanup Program, Uniforms for Industry, Queens, New York—Designed and managed an alternative approach to the offsite soil vapor intrusion investigation. Utilized soil vapor modeling to evaluate potential human health risks and migration probabilities. Provided support for the design of a retrofitted passive venting system.

New York State Spills Program, Gotham Center, Queens, New York—Responsible for proposal and budget development, subcontractor selection and coordination, negotiation, and preparation of subcontractor terms and agreements, budget, and invoice review for a comprehensive subsurface investigation. Prepared and implemented scope of work for delineation of soil contamination and calculation of contaminant mass estimates. Subsequent to interpretation of site data and subgrade characteristics, developed and presented remedial alternatives and associated costs for internal and client project teams. Prepared remedial investigation report in coordination with the New York City Economic Development Corporation and the client for submittal to state regulators.

Claire Zaccheo
Project Engineer

Experience Summary

Claire Zaccheo is an environmental engineer experienced in development and implementation of remedial strategies. Her experience spans site investigation, remediation and closure. Her expertise includes soil, soil gas and groundwater sampling, air monitoring, soil and groundwater remediation, field safety oversight, data analysis and preparation and implementation of work plans and reports to satisfy regulatory requirements. Ms. Zaccheo's project management experience includes management of a groundwater remediation system at a federal Superfund site in New York City.

Selected Project Experience

Federal Superfund Site Remediation, Brooklyn, New York
Project Engineer

- Responsible for overseeing and coordinating implementation of operation and maintenance (O&M) of a dual-phase extraction system and groundwater treatment system under the New York State Department of Environmental Conservation (NYSDEC) Division of Environmental Remediation (DER) at a Superfund Site in Brooklyn, New York.
- Technical review and analysis of O&M data.
- Provided input and technical analysis of air, water and soil mass calculations and analytical data.
- Development of work plans and reports in compliance with the NYSDEC State Pollutant Discharge Elimination System (SPDES) equivalency Permit.

500 Exterior Street, Bronx, New York
Project Engineer

- Responsible for implementation of Remedial Investigation, including soil boring, monitoring well and soil vapor point installation at NYS BCP site.
- Responsible for data analysis and reporting remedial investigation results and developing a Remedial Action Work Plan for site development as part of the NYSBCP.
- Responsible for daily coordination with field staff and daily reporting to the NYS Department of Environmental Conservation (DEC) project manager during implementation of the remedial action.
- Development of Final Engineering Report (FER) to obtain a BCP Certificate of Closure at the completion of remedial activities.

Gotham Center Redevelopment Site, Queens, New York
Project Engineer

- Completed oversight of monitoring well installation and soil characterization sampling for a redevelopment project.
- Developed remedial strategy in compliance with NYC E-designation requirements and NYS Spills requirements, which included removal and disposal of soil, application of chemical oxidants and installation of a vapor barrier. Managed field

staff, completed daily reporting and coordinated with NYC Office of Environmental Remediation (OER) project manager.
- Completed documentation required for Spill closure and E-designation Notice of Satisfaction

LaGuardia Hotel Redevelopment Project, East Elmhurst, New York
Project Engineer

- Responsible for overseeing soil boring installation at NYS Brownfield Cleanup Program (BCP) site.
- Performed soil characterization and sampling for soil/fill disposal classification.
- Responsible for data analysis and reporting for soil disposal as part of the redevelopment plan as part of the BCP.

Hunters Point Dewatering, Queens, New York
Project Engineer

- Assisted in obtaining a Long Island Well Permit Equivalency for a NYS BCP redevelopment project. Responsibilities included determination of daily allowable flowrate and dewatering system design in compliance with the NYSDEC guidelines.

Cadman Plaza West Redevelopment Project, Brooklyn, New York
Project Engineer

- Completed oversight of a monitoring well installation as well as soil characterization and sampling for a redevelopment project. Performed data analysis of laboratory results and reporting.

Education

Bachelor of Science, Environmental Engineering: Manhattan College, 2011
Masters of Science, Environmental Engineering: Manhattan College, 2014

Certifications

Hazardous Waste Operations and Emergency Responses (HAZWOPER) 40 Hour
HAZWOPER Site Supervisor
OSHA 30 Hour
Storm Water Pollution Prevention Planning (SWPPP) – Erosion and Sediment

Professional Associations

National Groundwater Association (NGWA)

First place recipient of the 2014 New York Water Environmental Association's Annual Conference University Forum for presenting a research paper entitled "The Kinetics of Glycerol Acclimated Biomass in Separate Centrate Treatment"

L.A.B. Validation Corp., 14 West Point Drive, East Northport, New York 11731

Lori A. Beyer

SUMMARY: General Manager/Laboratory Director with a solid technical background combined with Management experience in environmental testing industry. Outstanding organizational, leadership, communication and technical skills. Customer focused, quality oriented professional with consistently high marks in customer/employee satisfaction.

EXPERIENCE:

1998-Present L.A.B. Validation Corporation, 14 West Point Drive, East Northport, NY
President

- Perform Data Validation activities relating to laboratory generated Organic and Inorganic Environmental Data.

1998-Present American Analytical Laboratories, LLC. 56 Toledo Street, Farmingdale, NY
Laboratory Director/Technical Director

- Plan, direct and control the operation, development and implementation of programs for the entire laboratory in order to meet AAL's financial and operational performance standards.
- Ensures that all operations are in compliance with AAL's QA manual and other appropriate regulatory requirements.
- Actively maintains a safe and healthy working environmental that is demanded by local laws/regulations.
- Monitors and manages group's performance with respect to data quality, on time delivery, safety, analyst development/goal achievement and any other key performance indices.
- Reviews work for accuracy and completeness prior to release of results to customers.

1996-1998 Nytest Environmental, Inc. (NEI) Port Washington, New York
General Manager

- Responsible for controlling the operation of an 18,000 square foot facility to meet NEI's financial and operational performance standards.
- Management of 65 FTEs including Sales and Operations
- Ensure that all operations are in compliance with NEI's QA procedures
- Ensures that productivity indicators, staffing levels and other cost factors are held within established guidelines
- Maintains a quantified model of laboratory's capacity and uses this model as the basis for controlling the flow of work into and through the lab so as to ensure that customer requirements and lab's revenue and contribution targets are achieved.

1994-1996 Nytest Environmental, Inc. (NEI) Port Washington, New York
Technical Project Manager

- Responsible for the coordination and implementation of environmental testing programs requirements between NEI and their customers
- Supervise Customer Service Department
- Assist in the development of major proposals
- Complete management of all Federal and State Contracts and assigned commercial contracts
- Provide technical assistance to the customer, including data validation and interpretation
- Review and Implement Project specific QAPP's.

1995-1996 Nytest Environmental, Inc. (NEI) Port Washington, New York
Corporate QA/QC Officer

- Responsible for the implementation of QA practices as required in the NJDEP and EPA Contracts
- Primary contact for NJDEP QA/QC issues including SOP preparation, review and approval
- Responsible for review, verification and adherence to the Contract requirements and NEI QA Plan

1992-1994 Nytest Environmental, Inc. (NEI) Port Washington, New York
Data Review Manager

- Responsible for the accurate compilation, review and delivery of analytical data to the company's customers. Directly and effectively supervised a department of 22 personnel.
- Managed activities of the data processing software including method development, form creation, and production
- Implement new protocol requirements for report and data management formats
- Maintained control of data storage/archival areas as EPA/CLP document control officer

1987-1991 Nytest Environmental, Inc. (NEI) Port Washington, New York
Data Review Specialist

- Responsible for the review of GC, GC/MS, Metals and Wet Chemistry data in accordance with regulatory requirements
- Proficient with USEPA, NYSDEC, NJDEP and NEESA requirements
- Review data generated in accordance with SW846, NYSDEC ASP, EPA/CLP and 40 CFR Methodologies

1986-1987 Nytest Environmental, Inc (NEI) Port Washington, New York
GC/MS VOA Analyst

EDUCATION:

1982-1985 State University of New York at Stony Brook, New York; BS Biology/Biochemistry
1981-1982 University of Delaware; Biology/Chemistry
5/91 Rutgers University; Mass Spectral Data Interpretation Course, GC/MS Training
8/92 Westchester Community College; Organic Data Validation Course
9/93 Westchester Community College; Inorganic Data Validation Course

Westchester Community College

Professional Development Center

Awards this Certificate of Achievement To

LORI BEYER

for Successfully Completing

ORGANIC DATA VALIDATION COURSE (35 HOURS)

Dr. John Samuelian

Date AUGUST 1992

Assistant Dean
Professional Development Center

President

The Professional Development Center

SUNY
WESTCHESTER COMMUNITY COLLEGE
Valhalla, New York 10595

Westchester Community College

Professional Development Center

Awards this Certificate of Achievement To

LORI BEYER

for Successfully Completing

INORGANIC DATA VALIDATION

Instructor: Dale Boshart

Date MARCH 1993

Assistant Dean
Professional Development Center

President

The Professional Development Center

SUNY
WESTCHESTER COMMUNITY COLLEGE
Valhalla, New York 10595

New York State Department of Environmental Conservation
50 Wolf Road, Albany, New York 12233

Thomas C. Jorling
Commissioner

July 8, 1992

Ms. Elaine Sall
Program Coordinator
Westchester Community College
Valhalla, NY 10595-1698

Dear Elaine,

Thank you for your letter of June 29, 1992. I have reviewed the course outline for organic data validation, qualifications for teachers and qualifications for students. The course that you propose to offer would be deemed equivalent to that which is offered by EPA. The individuals who successfully complete the course and pass the final written exam would be acceptable to perform the task of organic data validation for the Department of Environmental Conservation, Division of Hazardous Waste Remediation.

As we have discussed in our conversation of July 7, 1992, you will forward to me prior to the August course deadline, the differences between the EPA SOW/90 and the NYSDEC ASP 12/91. You stated these differences will be compiled by Mr. John Samulian.

I strongly encourage you to offer an inorganic data validation course. I anticipate the same list of candidates would be interested in an inorganic validation course as well, since most of the data to be validated consists of both organic and inorganic data.

Thank you for you efforts and please contact me if I can be of any further assistance.

Sincerely,

Maureen P. Serafini

Maureen P. Serafini
Environmental Chemist II
Division of Hazardous Waste
Remediation

The Professional
Development Center
AT
WESTCHESTER COMMUNITY COLLEGE

914 285-6619

October 2, 1992

Ms. Lori Beyer
3 sparkill Drive
East Northport, NY 11731

Dear Ms. Beyer:

Congratulations upon successful completion of the Organic Data Validation course held August 17 - 21, 1992, through Westchester Community College, Professional Development Center. This course has been deemed by New York State Department of Environmental Conservation as equivalent to EPA's Organic Data Validation Course.

Enclosed is your Certificate. Holders of this Certificate are deemed competent to perform organic data validation for the New York State DEC Division of Hazardous Waste Remediation.

The Professional Development Center at Westchester Community College plans to continue to offer courses and seminars which will be valuable to environmental engineers, chemists and related personnel. Current plans include a TCLP seminar on November 17th and a conference on Environmental Monitoring Regulations on November 18th.

We look forward to seeing you again soon at another environmental program or event. Again, congratulations.

Very truly yours,

Passing Grade is 70%
Your Grade is 99%

Elaine Sall
Program Coordinator

ES/bf

SUNY
WESTCHESTER COMMUNITY COLLEGE
Valhalla, New York 10595

The Professional
Development Center
AT
WESTCHESTER COMMUNITY COLLEGE

914 285-6619

June 21, 1993

Dear Ms. Beyer:

Enclosed is your graded final examination in the Inorganic Data Validation course you completed this past March. A score of 70% was required in order to receive a certificate of satisfactory completion. Persons holding this certificate are deemed acceptable to perform Inorganic Data Validation for the New York State Department of Environmental Conservation, Division of Hazardous Waste Remediation.

I am also enclosing a course evaluation for you to complete if you have not already done so. The information you provide will greatly aid us in structuring further courses. We wish to make these course offerings as relevant, targeted and comprehensive as possible. Your evaluation is vital to that end.

Congratulations on your achievement. I look forward to seeing you again at another professional conference or course. We will be co-sponsoring an environmental monitoring conference on October 21, 1993 with the New York Water Pollution Control Association, Lower Hudson Chapter, at IBM's Yorktown Heights, NY site. Information regarding this event will be going out in August.

Very truly yours,

Elaine Sall

Elaine Sall
Program Coordinator

ES/bf

Enclosures

SUNY
WESTCHESTER COMMUNITY COLLEGE
Valhalla, New York 10595

Appendix E
Residual Groundwater Treatment Specifications

OXYGEN RELEASE COMPOUND

ORC Advanced® Technical Description

ORC Advanced® is an engineered, oxygen release compound designed specifically for enhanced, *in situ* aerobic bioremediation of petroleum hydrocarbons in groundwater and saturated soils. Upon contact with groundwater, this calcium oxyhydroxide-based material becomes hydrated producing a controlled release of molecular oxygen (17% by weight) for periods of up to 12 months on a single application.



Example of ORC Advanced

ORC Advanced decreases time to site closure and accelerates degradation rates up to 100 times faster than natural degradation rates. A single ORC Advanced application can support aerobic biodegradation for up to 12 months with minimal site disturbance, no permanent or emplaced above ground equipment, piping, tanks, power sources, etc are needed. There is no operation or maintenance required. ORC Advanced provides lower costs, greater efficiency and reliability compared to engineered mechanical systems, oxygen emitters and bubblers.

ORC Advanced provides remediation practitioners with a significantly faster and highly effective means of treating petroleum contaminated sites. Petroleum hydrocarbon contamination is often associated with retail petroleum service stations resulting from leaking underground storage tanks, piping and dispensers. As a result, ORC Advanced technology and applications have been tailored around the remediation needs of the retail petroleum industry and include: tank pit excavations, amending and mixing with backfill, direct-injection, bore-hole backfill, ORC Advanced Pellets for waterless and dustless application, combined ISCO and bioremediation applications, etc.

For a list of treatable contaminants with the use of ORC Advanced, view the Range of Treatable Contaminants Guide

Chemical Composition

- Calcium hydroxide oxide
- Calcium hydroxide
- Monopotassium phosphate
- Dipotassium phosphate

Properties

- Physical state: Solid
- Form: Powder
- Odor: Odorless
- Color: White to pale yellow
- pH: 12.5 (3% suspension/water)

OXYGEN RELEASE COMPOUND

ORC Advanced® Technical Description

Storage and Handling Guidelines

Storage
Store in a cool, dry place out of direct sunlight
Store in original tightly closed container
Store in a well-ventilated place
Do not store near combustible materials
Store away from incompatible materials
Provide appropriate exhaust ventilation in places where dust is formed

Handling
Minimize dust generation and accumulation
Keep away from heat
Routine housekeeping should be instituted to ensure that dust does not accumulate on surfaces
Observe good industrial hygiene practices
Take precaution to avoid mixing with combustibles
Keep away from clothing and other combustible materials
Avoid contact with water and moisture
Avoid contact with eyes, skin, and clothing
Avoid prolonged exposure
Wear appropriate personal protective equipment

Applications

- Slurry mixture direct-push injection through hollow rods or direct-placement into boreholes
- *In situ* or *ex situ* slurry mixture into contaminated backfill or contaminated soils in general
- Slurry mixture injections in conjunction with chemical oxidants like RegenOx or PersulfOx
- Filter sock applications in groundwater for highly localized treatment
- *Ex situ* biopiles

Health and Safety

Wash thoroughly after handling. Wear protective gloves, eye protection, and face protection. Please review the ORC Advanced Safety Data Sheet for additional storage, usage, and handling requirements.

REGENESIS®

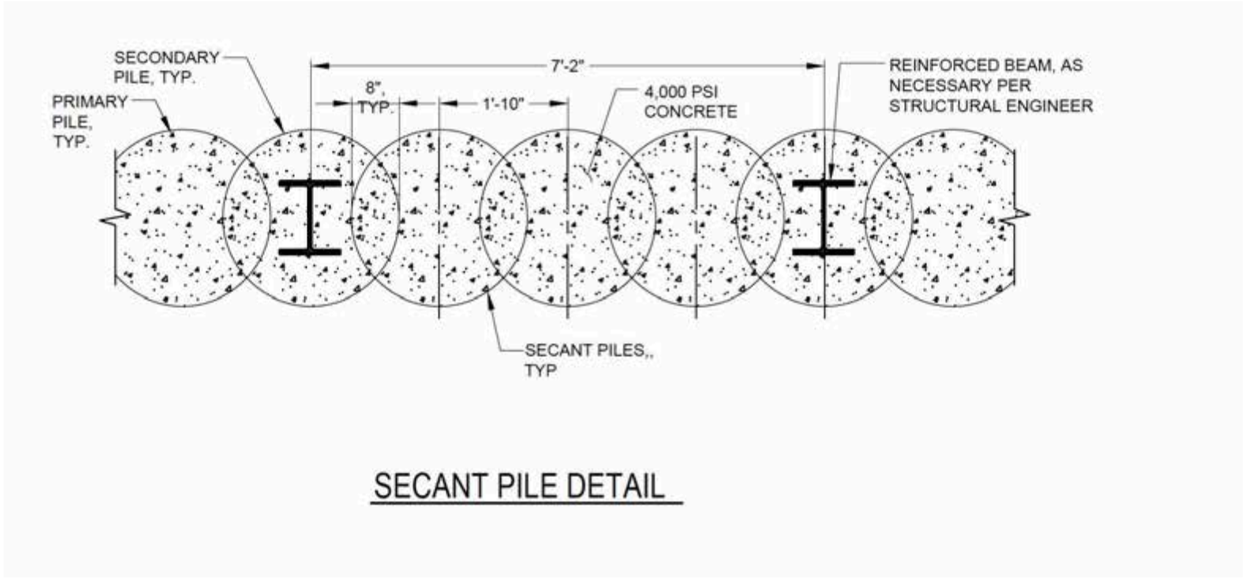
www.regenesis.com
1011 Calle Sombra, San Clemente CA 92673
949.366.8000

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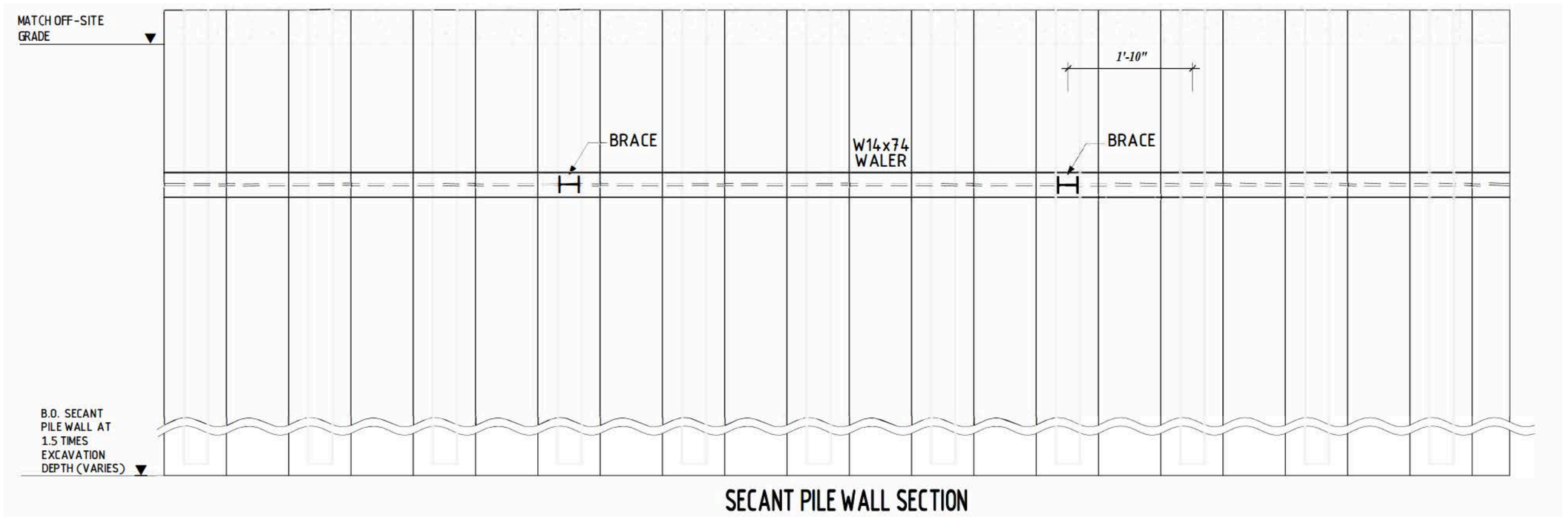
Appendix F
Secant Pile Wall Details

Secant Pile Wall Installation Procedure

1. Set-up drill rig on proper pile location and plumb mast.
2. Attach casing to drill rig.
3. Spin casing into ground until refusal.
4. The drill rig consists of a kelly bar with an auger bit attached to the end of the rod. Place auger bit into casing and begin drilling.
5. The drill shall advance the auger bit approximately 3-feet above the bottom of the casing; driller shall never advance the auger bit ahead of the casing.
6. After advancing auger bit approximately 3-feet above the bottom of the casing, the driller shall remove kelly bar / auger bit from casing.
7. Spin/shake kelly bar to remove all soil cutting from the flights of auger bit.
8. Repeat Steps 6 through 7 until majority of soil cuttings have been removed from inside casing while leaving a 3-foot soil plug.
9. Spin casing into ground.
10. Repeat Steps 2 through 9 until casing reaches proper pile tip elevation and is free from all spoils.
11. Place tremie pipe to the bottom of casing and begin pumping grout.
12. Continue pumping grout until good grout is observed coming out of the casing
13. Remove casing out of ground.
14. If secant pile requires reinforcement, place the appropriate reinforcement into the wet grout.
15. Top off pile with grout.



SECANT PILE DETAIL



SECANT PILE WALL SECTION

470 Kent Avenue
Brooklyn, New York
Block 2134, Lots 1 & 150

Site

TENEN ENVIRONMENTAL
Tenen Environmental, LLC
121 West 27th Street
Suite 702
New York, NY 10001
O: (646) 606-2332
F: (646) 606-2379

Drawn By	Checked By	Date	Scale
LM	MC	August 2022	As Noted

Drawing Title: **Secant Pile Wall**

Drawing No: **Figure 1**

Appendix G

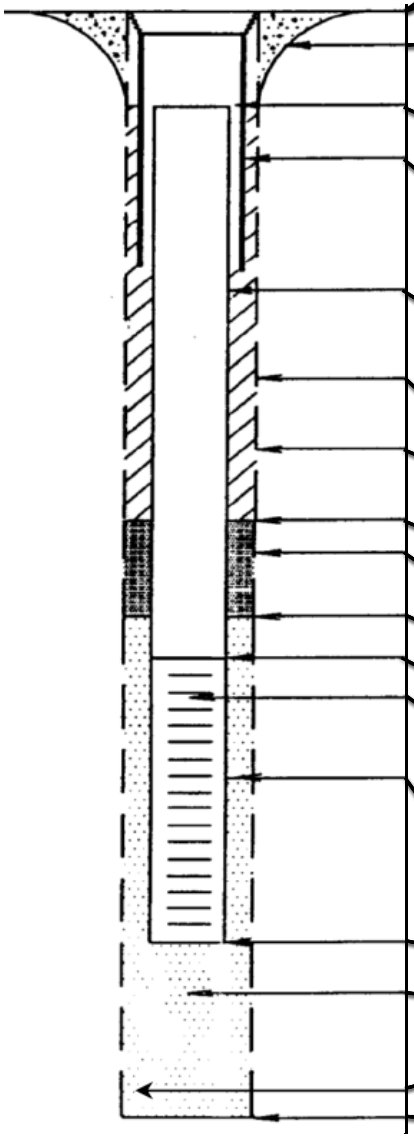
Post-Remedial Groundwater Monitoring Well Detail

TENEN ENVIRONMENTAL

MONITORING WELL CONSTRUCTION DIAGRAM

Monitoring Well Construction Diagram (Flush Mount)

Project:	470 Kent Avenue - Brooklyn, NY	**Well Number: MW-**	
Field Geologist:		Date Started:	
Driller:		Date Completed:	
Drilling Method:		Elevation Datum:	
Development Method:		Weather:	
Sump Installed? (Y/N)	Sump Length (Ft): N/A	Boring Number:	



Ground Surface	Concrete
Elevation of Top of Surface Casing	N/A
Type of Surface Plug	Concrete
Depth of Surface Plug (ft-bgs)	0.5
Diameter of Surface Plug (ft)	N/A
Riser Pipe	
Depth of Top of Riser Pipe (ft-bg)	0.25
Elevation of Top of Riser Pipe	
I.D. of Surface Casing (in)	8
Type of Surface Casing	Manhole cover
Depth of Surface Casing (ft-bg)	1
I.D. of Riser (in)	2
Type of Riser	Schedule 40 PVC
Borehole Diameter (in)	4
Type of Backfill	Clean Sand
Backfill - Tremied? (Y/N)	N
Depth of Top of Seal (ft-bg)	0.5
Elevation of Top of Seal	N/A
Type of Seal	Bentonite Pellets
Seal - Tremied? (Y/N)	N
Depth of Top of Filter Pack (ft-bg)	1
Depth of Top of Screen (ft-bg)	Est 7 (3 ft above gw)
Elevation of Top of Screen	N/A
Type of Screen	Schedule 40 PVC
I.D. of Screen (in)	2
Slot Size of Screen (in)	0.02
Length of Screen (ft)	10
Type of Filter Pack	Sand
Filter Pack - Tremied? (Y/N)	N
Depth of Bottom of Screen (ft-bg)	Est 17 (7 ft below gw)
Depth of Bottom of Filter Pack (ft-bg)	Est 18
Elevation of Bottom of Filter Pack	N/A
Type of Backfill Below Filter Pack	N/A
Depth of Bottom of Hole (ft-bg)	Est 18
Elevation of Bottom of Hole	N/A

Comments: