SETON BRILLA CHARTER SCHOOL

1956 JEROME AVENUE, BRONX, NEW YORK

Site Management Plan

NYSDEC Site Number: C203152
OER Project Number: 21TMP1325X
E-Designation: E-442

Prepared for:

New York State Department of Environmental Conservation
Division of Environmental Remediation, Remedial Bureau B
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Prepared On Behalf Of:

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Revisions to Final Approved Site Management Plan:

Revision No.	Date Submitted	Summary of Revision	NYSDEC Approval Date

DECEMBER 2023

CERTIFICATION STATEMENT

I, Rebecca Kinal, PE, certify that I am currently a New York State Professional Engineer and that this Site Management Plan was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the New York State Department of Environmental Conservation (NYSDEC) Division of Environmental Remediation (DER) Technical Guidance for Site Investigation and Remediation (DER-10).

Rebecca A. Kinal 12/20/2023

NYS Professional Engineer #082046 Date Signature

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LIST OF ACRONYMS

Acronym	Definition
AG	Air Guide
AGC	Annual Guideline Concentrations
AST	Aboveground Storage Tank
AWQSGVs	Ambient Water Quality Standards and Guidance Values
BCA	Brownfield Cleanup Agreement
BCP	Brownfield Cleanup Program
bgs	Below Ground Surface
BTEX	A group of VOCs comprising benzene, toluene, ethylbenzene, and xylenes
CAMP	Community Air Monitoring Plan
CFR	Code of Federal Regulations
COC	Certificate of Completion
CP	Commissioner's Policy
CPP	Citizen Participation Plan
CVOC	Chlorinated Volatile Organic Compound
DAR	Division of Air Resources
DER	Division of Environmental Remediation
DUSR	Data Usability Summary Report
EC	Engineering Control
ELAP	Environmental Laboratory Approval Program
EPA	United States Environmental Protection Agency
ESA	Environmental Site Assessment
EWP	Excavation Work Plan
GAC	Granular Activated Carbon
GPA	Gas Permeable Aggregate
HASP	Health and Safety Plan
HP	Horsepower
IC	Institutional Control
inH_2O	Inches of Water Column
MFR	Modified Fenton's Reagent
MP	Monitoring Point
MS	Matrix Spike
MSD	Matrix Spike Duplicate
MTA	Metropolitan Transportation Authority
MTBE	Methyl Tert-butyl Ether
MW	Monitoring Well
NAPL	Non-Aqueous Phase Liquid
ng/L	Nanograms per Liter
NY	New York
NYC	New York City
NYCRR	New York Codes, Rules and Regulations
NYS	New York State
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
NYSDOT	New York State Department of Transportation
OER	New York City Office of Environmental Remediation

Acronym	Definition
OSHA	United States Occupational Safety and Health Administration
PAH	Polycyclic Aromatic Hydrocarbon
PCB	Polychlorinated Biphenyl
PCE	Tetrachloroethylene
PE	Professional Engineer
PFAS	Per- and Polyfluoroalkyl Substances
PFOA	Perfluorooctanoic Acid
PFOS	Perfluorooctanesulfonic Acid
PGWSCO	Protection of Groundwater Soil Cleanup Objective
PID	Photoionization detector
ppm	Parts per Million
ppb	Parts per Billion
PRR	Periodic Review Report
PVC	Polyvinyl Chloride
QA	Quality Assurance
QAPP	Quality Assurance Project Plan
QC	Quality Control
QEP	Qualified Environmental Professional
RAO	Remedial Action Objective
RAWP	Remedial Action Work Plan
RDI	Remedial Design Investigation
REC	Recognized Environmental Condition
RI	Remedial Investigation
RP	Remedial Party
RRGV	Restricted Residential Use Guidance Value
RRSCO	Restricted Residential Soil Cleanup Objective
RSO	Remedial Site Optimization
SB	Soil Boring
SCFM	Standard Cubic Feet per Minute
SCG	Standards, Criteria, and Guidance
SCO	Soil Cleanup Objective
sf	Square Feet
SGC	Short-term Guideline Concentration
SMP	Site Management Plan
SPDES	State Pollutant Discharge Elimination System
SSDS	Sub-slab Depressurization System
SV	Soil Vapor
SVE	Soil Vapor Extraction
SVIE	Soil Vapor Intrusion Evaluation
SVOC	Semivolatile Organic Compound
TAL	Target Analyte List
TCE	Trichloroethylene
TCL	Target Compound List
TOGS	Technical Operational and Guidance Series
UST	Underground Storage Tank
UUGV	Unrestricted Use Guidance Value
UUSCO	Unrestricted Use Soil Cleanup Objective

Acronym	Definition
VFD	Variable-frequency Drive
VOC	Volatile Organic Compound
µg/L	Micrograms per Liter
$\mu g/m^3$	Micrograms per Cubic Meter

EXECUTIVE SUMMARY

The following provides a brief summary of the controls implemented for the Site, as well as the inspections, monitoring, maintenance, and reporting activities required by this Site Management Plan (SMP):

Site Identification:	BCP Site Identification No. C203152 Seton Brilla Charter School 1956 Jerome Avenue, Bronx, New York
Institutional Controls (ICs):	1. The property may be used for restricted residential, commercial, or industrial uses.
	2. All ECs must be operated and maintained as specified in this SMP.
	3. All ECs must be inspected at a frequency and in a manner defined in this SMP.
	4. The use of groundwater underlying the property is prohibited without the necessary water quality treatment as determined by the New York State Department of Health to render it safe for use as drinking water or for industrial purposes, and the user must first notify and obtain written approval to do so from the New York State Department of Environmental Conservation.
	5. Data and information pertinent to site management must be reported at the frequency and in a manner as defined in this SMP.
	6. All future activities that will disturb remaining contaminated material must be conducted in accordance with this SMP.
	7. Monitoring to assess the performance and effectiveness of the remedy must be performed as defined in this SMP.
	8. Operation, maintenance, monitoring, inspection, and reporting of any mechanical or physical component of the remedy shall be performed as defined in this SMP.
	9. Access to the Site must be provided to agents, employees, or other representatives of the State of New York with reasonable prior notice to the property owner to assure compliance with the restrictions identified by the Environmental Easement.
	10. The potential for vapor intrusion must be evaluated for any buildings developed in the area within the IC boundaries noted on Figure 2, and any potential impacts that are identified must be monitored or mitigated.
	11. Vegetable gardens and farming in residual soil on the Site are prohibited.
Engineering Controls (ECs):	1. Site Cover System
	2. Sub-Slab Depressurization System (SSDS)
	3. Soil Vapor Extraction (SVE) System 4. Groundwater Treatment/Groundwater Monitoring
Inspections:	
1. Site Inspection	Annually
2. SSDS Inspection	Monthly during first quarter post-startup and quarterly thereafter
3. SVE System Inspection	Weekly during the first month post start-up, monthly during first quarter post start-up, and quarterly thereafter

Monitoring:	
1. SSDS Monitoring	Monthly during first quarter post-startup and quarterly thereafter
2. SVE System Monitoring	Weekly during the first month post start-up, monthly during first quarter post start-up, and quarterly thereafter
3. Groundwater Monitoring	Quarterly during the first year; frequency thereafter will be outlined in the first Periodic Review Report
Maintenance:	
1. SSDS Maintenance	Quarterly/As necessary
2. SVE System Maintenance	Quarterly/As necessary
Reporting:	
1. Periodic Review Report (PRR)	First PRR 16 months after receipt of Certificate of Completion. Annually thereafter.
2. Quarterly Monitoring Reports	Reports to include groundwater monitoring and SVE System operations and maintenance. Quarterly during the first year; frequency thereafter will be outlined in the first PRR.

Further descriptions of the above requirements are provided in detail in the latter sections of this SMP.

1.0 INTRODUCTION

1.1 General

This Site Management Plan (SMP) is a required element of the remedial program for the Seton Brilla Charter School property located at 1956 Jerome Avenue in the Morris Heights neighborhood of the Bronx, New York (hereafter referred to as the Site). See Figure 1 for a map of the Site location. The 0.238-acre Site is currently in the New York State Brownfield Cleanup Program (BCP), Site No. C203152, which is administered by the New York State Department of Environmental Conservation (NYSDEC or the Department). 2-6 East Tremont Avenue LLC entered into a Brownfield Cleanup Agreement (BCA) with NYSDEC on April 29, 2022 to remediate the Site. The Site boundaries are shown on Figure 2 and more fully described in the metes and bounds Site description that is part of the Environmental Easement provided in Appendix A.

After completion of the remedial work, some contamination was left at this Site, which is hereafter referred to as "remaining contamination." Institutional and Engineering Controls (ICs and ECs) have been incorporated into the Site remedy to control exposure to remaining contamination to ensure protection of public health and the environment. An Environmental Easement granted to NYSDEC and recorded with the New York City Office of the City Register (Document ID No. 2023083100216001) requires compliance with this SMP and all ECs and ICs placed on the Site.

This SMP was prepared to manage remaining contamination at the Site and off-site until the Environmental Easement is extinguished in accordance with Environmental Conservation Law Article 71, Title 36. This plan has been approved by NYSDEC, and compliance with this plan is required by the grantor of the Environmental Easement and the grantor's successors and assigns. This SMP may only be revised with the approval of NYSDEC.

It is important to note that:

- This SMP details the Site-specific implementation procedures that are required by the Environmental Easement. Failure to properly implement the SMP is a violation of the Environmental Easement, which is grounds for revocation of the Certificate of Completion (COC); and
- Failure to comply with this SMP is also a violation of Environmental Conservation Law, 6 New York Codes, Rules, and Regulations (NYCRR) Part 375, and the BCA (Index # C203152-04-22; Site # C203152) for the Site, and thereby subject to applicable penalties.

All reports associated with the Site can be viewed by contacting NYSDEC or its successor agency managing environmental issues in New York State. A list of contacts for persons involved with the Site is provided in Appendix B of this SMP.

This SMP was prepared by AKRF, Inc. (AKRF) on behalf of 2-6 East Tremont Avenue LLC in accordance with the requirements of NYSDEC's DER-10 ("Technical Guidance for Site Investigation and Remediation"), dated May 2010, and the guidelines provided by NYSDEC. This SMP addresses the means for implementing the ICs and ECs that are required by the Environmental Easement for the Site. The responsibilities of the owner and remedial party are included as Appendix C.

1.2 Revisions

Revisions to this plan will be proposed in writing to NYSDEC's project manager. NYSDEC can also make changes to the SMP or request revisions from the remedial party. Revisions will be necessary upon, but not limited to, the following occurring: a change in media monitoring

requirements, upgrades to or shutdown of a remedial system, post-remedial removal of contaminated sediment or soil, or other significant change to the Site conditions. All approved alterations must conform with Article 145 Section 7209 of the Education Law regarding the application of professional seals and alterations. For example, any changes to as-built drawings must be stamped by a New York State Professional Engineer (PE). In accordance with the Environmental Easement for the Site, the NYSDEC project manager will provide a notice of any approved changes to the SMP and append these notices to the SMP that is retained in its files.

1.3 Notifications

Notifications will be submitted by the property owner to NYSDEC, as needed, in accordance with NYSDEC's DER-10, for the following reasons:

1. 60-day advance notice of any proposed changes in Site use that are required under the terms of the BCA, 6 NYCRR Part 375, and/or Environmental Conservation Law.
2. 7-day advance notice of any field activity associated with the remedial program.
3. 15-day advance notice of any proposed ground-intrusive activity pursuant to the Excavation Work Plan (EWP). If the ground-intrusive activity qualifies as a change of use as defined in 6 NYCRR Part 375, the above mentioned 60-day advance notice is also required.
4. Notice within 48 hours of any damage or defect to the foundation, structures, or ECs that reduces or has the potential to reduce the effectiveness of an EC, and likewise, any action to be taken to mitigate the damage or defect.
5. Notice within 48 hours of any non-routine maintenance activities.
6. Verbal notice by noon of the following day of any emergency (such as a fire, flood, or earthquake) that reduces or has the potential to reduce the effectiveness of ECs in place at the Site, with written confirmation within 7 days that includes a summary of actions taken, or to be taken, and the potential impact to the environment and the public.
7. Follow-up status reports on actions taken to respond to any emergency event requiring ongoing responsive action submitted to NYSDEC within 45 days describing and documenting actions taken to restore the effectiveness of the ECs.

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

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

Table I below includes contact information for the above notifications. The information on this table will be updated as necessary to provide accurate contact information. A full listing of Site-related contact information is provided in Appendix B.

Table I
Notifications*

Name, Role	Contact Information	Required Notification**
Rafi Alam NYSDEC Project Manager	(518) 402-8606 rafi.alam@dec.ny.gov	All Notifications
Heidi Dudeck, NYSDEC DER Project Manager's Supervisor	(518) 402-0193 heidi.dudek@dec.ny.gov	All Notifications
Lexy Servis, NYSDEC Site Control	(518) 402-9473 alexandra.servis@dec.ny.gov	Notifications 1 and 8
Arunesh Ghosh NYSDOH Project Manager	518-402-7860 arunesh.ghosh@health.ny.gov	Notifications 4, 6, and 7

Notes:
* = Notifications are subject to change and will be updated as necessary.
** = Numbers in this column reference the numbered bullets in the notification list in this section

2.0 SUMMARY OF PREVIOUS INVESTIGATIONS AND REMEDIAL ACTIONS

2.1 Site Location and Description

The Site is located in the Bronx, New York, and is identified as Block 2853, Lot 22 on the New York City (NYC) Tax Map (see Figure 4). The Site is an approximately 10,369-square-foot (sf) area and is bounded to the north by East Tremont Avenue, followed by a five-story multi-use residential-commercial building; to the east by the C.S. Brown retail hardware store, followed by Walton Avenue; to the south by several automobile repair facilities, followed by East 177th Street; and to the west by Jerome Avenue and the elevated Metropolitan Transit Authority (MTA) subway tracks, followed by automotive repair shops and a vacant commercial building (see Figure 2). The boundaries of the Site are more fully described in Appendix A – Environmental Easement. The owner and operator of the Site parcel at the time of issuance of this SMP is:

2-6 East Tremont Avenue LLC
450 West 14th Street, 8th Floor
New York, New York 10014

2.2 Physical Setting

2.2.1 Land Use

The Site consists of a seven-story building operated by the Seton Brilla Charter School that is currently under construction, with occupancy anticipated to begin in September 2024. The new building will occupy the entire footprint of the Site, and a playground will be located on the northern portion of the roof. The current zoning designations are C4-4D (commercial), so the proposed use is consistent with existing zoning for the Site. The current Site occupants include construction workers and inspectors. Once the new building is complete, occupants will include students, building staff, and maintenance crews.

The surrounding area primarily consists of automotive, commercial, and transit uses, with some residential and institutional uses. Two schools (The Bronx School of Young Leaders at 40 West Tremont Avenue, and St. Margaret Elementary School at 121 E 177th Street) and one health care facility (Care for the Homeless, Inc. at 1911 Jerome Avenue) are located within 500 feet of the Site. The surrounding land usage is presented on Figure 3 and the tax map is presented on Figure 4.

2.2.2 Geology

According to a survey prepared by Gallas Surveying Group dated October 1, 2021, the elevation of the Site is between approximately 44.86 and 50.69 feet above the North American Vertical Datum of 1988 (NAVD88), which is an approximation of mean sea level. Ground surface is higher along the northeastern Site boundary (East Tremont Avenue) and lower along the southwestern Site boundary (Jerome Avenue). The surface topography in the area immediately surrounding the Site generally slopes south-southwest towards the Harlem River.

Based on AKRF's Subsurface (Phase II) Investigation and Remedial Investigation (RI), subsurface materials consist of fill materials (generally brown and gray sand and silt with gravel, brick, concrete, and wood) down to approximately 9 feet below grade surface (bgs). The fill is generally underlain by brown and gray silt, sand, and trace gravel to approximately 20 feet bgs (the maximum soil boring depth). Bedrock was not encountered during either investigation or remedial activities. Soil boring logs from the Phase II and RI are provided in Appendix D.

2.2.3 Hydrogeology

Based on AKRF's Phase II and RI, groundwater elevation across the Site ranges between 40.68 and 39.11 feet (NAVD88), or between 4.64 and 11.48 feet bgs, and flows in a north-northwest direction beneath the Site. Regional groundwater flow is from east/northeast to west/southwest, and appears to flow towards the Harlem River, which is approximately 0.75 miles west of the Site. Groundwater in the Bronx is not used as a source of drinking water. Groundwater elevation data is provided in Table 1, and a groundwater elevation map is provided as Figure 5. Groundwater monitoring well construction logs from the Phase II and RI are provided in Appendix D.

2.3 Investigation and Remedial History

The following narrative provides a remedial history timeline and a brief summary of the available project records to document key investigative and remedial milestones for the Site. Full titles for each of the reports referenced below are provided in Section 8 – References.

Phase I Environmental Site Assessment - 1956 Jerome Avenue, Bronx, New York, AKRF, February 2021

AKRF prepared a Phase I Environmental Site Assessment (ESA) for the Site, which identified the following Recognized Environmental Conditions (RECs):

- Historical Sanborn maps indicated that between 1950 and 2007, the Site contained two 550-gallon gasoline underground storage tanks (USTs). At the time of reconnaissance, evidence of suspect or former USTs (four fill port and/or vent pipes) was observed along Jerome Avenue and no documentation detailing the closure and removal of the tanks was identified. Additionally, at the time of the reconnaissance, a hydraulic lift was observed in the southern portion of the Site, and the Site owner indicated that two 275-gallon heating oil aboveground storage tanks (ASTs) were formerly located within the southeastern portion of the partial cellar at the Site. The removal date was unknown, no evidence of petroleum bulk storage was observed at the Site, and no staining was observed within the area of the former ASTs.
- Historical Sanborn maps and the city directory search identified the following historical uses at the Site between 1927 and 2017: an automobile parking and repair facility, a steam equipment manufacturer, and appliance manufacturing.
- A review of the historical city directories and Sanborn maps identified spills and numerous automotive, commercial, industrial (film processing, scrap metal, rubbish removal, and appliance manufacturing), and dry cleaning/laundry uses on adjacent and surrounding blocks between 1927 and 2017. Properties located to the south (on the property block) and west of the Site (across Jerome Avenue) had automotive uses, most with gasoline USTs, from 1950 until the most recent map available.

Based on the assessment, AKRF recommended a Phase II Investigation.

Phase II Investigation Report – 1956 Jerome Avenue, Bronx, New York, AKRF, July 2021

AKRF conducted a Phase II Investigation of the Site on May 10 and 11, 2021. The investigation included the advancement of 6 soil borings (RI-SB-01 through RI-SB-06) with the collection and laboratory analysis of 10 soil samples, the installation of 3 temporary monitoring wells (RI-TW-01 through RI-TW-03) with the collection and laboratory analysis of 3 groundwater samples, and the installation of 4 sub-slab soil vapor points with the collection and laboratory analysis of 4 soil vapor samples.

The stratigraphy beneath the Site consisted of fill (brown and gray silt and sand with gravel, brick, wood, and concrete) from surface grade to approximately 9 feet bgs across the Site. The fill material

was generally underlain by brown and gray silt, sand, and trace gravel to the terminus of the borings (between 3 and 20 feet bgs). Groundwater was encountered at approximately 8 feet bgs. Bedrock was not encountered during the investigation. Soil was field screened with a photoionization detector (PID) to measure relative concentrations of organic vapors. Elevated PID readings were detected in all six soil borings and petroleum-like odors were observed in two soil boings (RI-SB-01 and RI-SB-02). Staining and non-aqueous phase liquid (NAPL) were not observed in the soil borings.

Soil sample analytical results for volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), pesticides, polychlorinated biphenyls (PCBs), and metals were compared to the 6 NYCRR Part 375 Unrestricted Use Soil Cleanup Objectives (UUSCOs) and Restricted Residential Soil Cleanup Objectives (RRSCOs). The analytical results for VOCs were also compared to the Protection of Groundwater Soil Cleanup Objectives (PGWSCOs). Per- and polyfluoroalkyl substances (PFAS) results were compared to the Unrestricted Use Guidance Values (UUGVs) and Restricted Residential Guidance Values (RRGVs) as outlined in the NYSDEC Sampling, Analysis, and Assessment of PFAS guidance dated January 2021. Results of the soil analytical results are summarized below:

- Twenty-three VOCs were detected in 5 of the 10 soil samples analyzed (and the blind duplicate sample). Nine VOCs (1,2,4,5-trimethylbenzene 1,3,5-trimethylbenzene, acetone, benzene, ethylbenzene, methyl ethyl ketone, n-propylbenzene, toluene, and total xylenes) were detected above the UUSCOs at concentrations ranging from an estimated 0.056 parts per million (ppm) to 63 ppm. 1,2,4,5-trimethylbenzene (59 ppm), benzene (5.6 ppm), and ethylbenzene (46 ppm) were also detected above the RRSCOs in sample RI-SB-01_(8-10)_20210510.
- Thirteen SVOCs were detected in 4 of the 10 soil samples analyzed and the blind duplicate sample at total concentrations ranging from an estimated 0.065 ppm to 17.66 ppm. No SVOCs were detected above their respective UUSCOs or RRSCOs.
- Twenty-two metals were detected in one or more of the soil samples analyzed. Three metals were detected above the UUSCOs: barium [maximum (max.) 635 ppm], lead (max. 109 ppm), and selenium (max. 18.7 ppm). Barium was also detected above the RRSCO in one sample.
- The PCB Aroclor 1254 was detected below the UUSCO and RRSCO for total PCBs in one sample. No other PCBs were detected in the soil samples analyzed.
- Pesticides were not detected in the soil samples analyzed.
- The PFAS compound perfluorohexanoic acid was detected in the sample analyzed and its associated blind duplicate sample at estimated concentrations of 0.075 parts per billion (ppb) and 0.11 ppb, respectively. Perfluorooctanesulfonic acid (PFOS) and perfluorooctanoic acid (PFOA) were not detected in the sample or its blind duplicate.

Groundwater sample analytical results were compared to the NYSDEC Class GA Ambient Water Quality Standards and Guidance Values (AWQSGVs), and PFAS results were compared to the NYSDEC Screening Levels. The results are summarized below:

- Eighteen VOCs were detected in the groundwater samples and the blind duplicate sample. Eleven VOCs were detected above the AWQSGVs in one or more of the samples and the associated blind duplicate sample: 1,2,4,5-tetramethylbenzene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, ethylbenzene, isopropylbenzene, m/p-xylenes, n-propylbenzene, o-xylene, methyl tert-butyl ether (MTBE), and toluene.
- Fourteen SVOCs were detected in one or more of the groundwater samples analyzed. Six SVOCs [benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene,

indeno(1,2,3-cd)pyrene, and naphthalene] were detected at concentrations above their respective AWQSGVs in one sample.

- Twenty metals were detected in the total (unfiltered) groundwater samples, four of which were detected above the AWQSGVs in all three samples and the blind duplicate sample: iron, magnesium, manganese, and sodium.
- Sixteen metals were detected in the dissolved (filtered) groundwater samples, four of which (iron, magnesium, manganese, and sodium) were detected above the AWQSGVs in at least one sample. The metals detected at concentrations above the AWQSGVs in the dissolved and total analyses are naturally occurring in regional soil and groundwater.
- No PCBs or pesticides were detected above laboratory reporting limits in any of the groundwater samples.
- Twelve PFAS compounds were detected in one or more of the groundwater samples analyzed. PFOA and PFOS were detected in all three samples and the blind duplicate sample at concentrations above the NYSDEC Screening Level of 10 nanograms per liter (ng/L). No PFAS compounds were detected above NYSDEC Screening Levels in the aqueous field blank.

Sub-slab soil vapor samples collected during the Phase II were compared to the New York State Department of Health (NYSDOH) Final Guidance for Evaluating Soil Vapor Intrusion matrices dated October 2006 (updated May 2017). The results are summarized below:

- Twenty-four VOCs were detected in one or more of the sub-slab soil vapor samples. Chlorinated VOCs (CVOCs) were detected at variable concentrations ranging from 0.461 $\mu g/m^3$ to 369 $\mu g/m^3$ in one or more of the sub-slab soil vapor samples analyzed. Tetrachloroethylene (PCE) was detected above the lowest sub-slab vapor criteria listed on NYSDOH Matrix Table B (100 $\mu g/m^3$) in three samples: RI-SV-01_20210510 (397 $\mu g/m^3$), RI-SV-02_20210510 (369 $\mu g/m^3$), and RI-SV-04_20210510 (107 $\mu g/m^3$). According to Matrix Table B, concentrations above 100 $\mu g/m^3$ result in "no further action," "monitor," or "identify sources and resample or mitigate," depending upon the indoor air concentrations. The remaining compounds within the matrix compound list were not detected. No matrix compounds were detected above the "mitigate" threshold.
- VOCs associated with petroleum were detected at variable concentrations in all sub-slab soil vapor samples. BTEX (a combination of benzene, toluene, ethylbenzene, and xylenes) was detected at concentrations between 54.1 $\mu g/m^3$ in sample RI-SV-02_20210510 and 9,175 $\mu g/m^3$ in sample RI-SV-01_20210510.

Based on the petroleum-like odors and elevated PID readings detected in soil, elevated petroleum-related VOC and SVOC concentrations in soil, and VOC and SVOC detections in groundwater, Spill No. 2103719 was assigned to the Site on July 19, 2021.

Remedial Investigation Report – Seton Brilla Charter School, 1956 Jerome Avenue, Morris Heights, Bronx, New York, AKRF, September 2021

AKRF conducted an RI of the Site between August 17 and September 14, 2021. The investigation included the advancement of 9 soil borings (RI-SB-07 through RI-SB-15) with the collection and laboratory analysis of 17 soil samples, the installation of 6 permanent monitoring wells (RI-MW-04 through RI-MW-09) with the collection and laboratory analysis of 6 groundwater samples, and the installation of 8 sub-slab soil vapor points with the collection and laboratory analysis of 8 sub-slab soil vapor samples.

The stratigraphy of the Site consisted of approximately nine feet of fill from sidewalk grade across the Site, characterized by brown and gray sand and silt with gravel, brick, concrete, and wood. The

fill was generally underlain by brown and gray silt, sand, and trace gravel to approximately 20 feet bgs, the terminus of the deepest borings. Bedrock was not encountered during the investigation. Elevated VOC concentrations up to 1,608 ppm were detected in five soil borings using the PID, and petroleum-like odors were detected in three soil borings (RI-SB-07, RI-SB-09, and RI-SB-10). Staining and NAPL were not observed in the soil borings. Based on Site-specific measurements, groundwater elevation across the Site ranged between 40.68 and 39.11 feet (NAVD88), and flows in a north-northwest direction.

Soil sample analytical results for VOCs, SVOCs, pesticides, PCBs, hexavalent chromium, 1,4-dioxane, mercury, total cyanide, and metals were compared to the 6 NYCRR Part 375 UUSCOs and RRSCOs. Soil results for VOCs were also compared to the 6 NYCRR Part 375 PGWSCOs. PFAS results were compared to the UUGVs and RRGVs. Results of the soil analytical results are summarized below:

- Eighteen VOCs were detected in 12 of the 17 soil samples analyzed (and the blind duplicate). Eleven VOCs (1,2,4-trimethylbenzene 1,3,5-trimethylbenzene, acetone, benzene, ethylbenzene, methylene chloride, n-butylbenzene, n-propylbenzene, sec-butylbenzene, toluene, and total xylenes) were detected above the PGWSCOs and/or UUSCOs at concentrations ranging from an estimated 0.094 ppm to 130 ppm. Benzene (max. 100 ppm), ethylbenzene (max. 45 ppm), and n-propylbenzene (max. 130 ppm) were also detected above their respective RRSCOs in sample RI-SB-10_(6-8)_20210818 and the blind duplicate.
- Twenty-three SVOCs were detected in 15 of the 17 soil samples analyzed, and the blind duplicate, at total concentrations ranging from an estimated 0.53 ppm to 16.7 ppm. Indeno[1,2,3-cd]pyrene was detected at 0.58 ppm in sample RI-SB-07(0-2)_20210817, above the UUSCO and RRSCO of 0.5 ppm.
- All 25 metals were detected in one or more of the soil samples analyzed. The following six metals were detected above their respective UUSCOs: copper (max. an estimated concentration of 69 ppm in the blind duplicate sample), lead (max. an estimated concentration of 153 ppm in the blind duplicate sample), hexavalent chromium (2.5 ppm in RI-SB-14(0-2)_20210824), mercury (max. 0.39 ppm in RI-SB-12(0-2)_20210824), nickel (max. an estimated concentration of 44 ppm in RI-SB-15(0-2)_20210824), and zinc (max. 227 ppm in RI-SB-12(0-2)_20210824).
- PCBs were not detected in the soil samples analyzed.
- Pesticides were not detected above UUSCOs or RRSCOs in the soil samples analyzed.
- PFAS compounds were not detected above the guidance values in the soil samples analyzed.

Groundwater sample analytical results were compared to the NYSDEC Class GA AWQSGVs, and PFAS results were compared to the NYSDEC Screening Levels. The results are summarized below:

- Eleven VOCs were detected above the AWQSGVs in sample RI-MW-06_20210830 and the blind duplicate sample, including: 1,2,4-trimethylbenzene [max. 57 micrograms per liter (µg/L)], 1,3,5-trimethylbenzene (max. 55 µg/L), benzene (max. 1,600 µg/L), ethylbenzene (max. 220 µg/L), isopropylbenzene (max. 64 µg/L), m/p-xylenes (max. 290 µg/L), MTBE (max. 27 µg/L), n-butylbenzene (max. 6.1 µg/L), n-propylbenzene (max. 120 µg/L), o-xylene (max. 23 µg/L), and toluene (max. 96 µg/L). MTBE was also detected above its respective AWQSGV in samples RI-MW-4_20210831 and RI-MW-05_20210830 at concentrations of 18 µg/L and 20 µg/L, respectively. Additionally, benzene was detected above its respective AWQSGV in sample MW-9_20210831 at a concentration of 1.7 µg/L. VOCs were not detected in the aqueous field blank or trip blank samples.

- Six SVOCs were detected in one or more of the groundwater samples analyzed. Two SVOCs were detected at concentrations above their respective AWQSGVs in sample RI-MW-06_20210830 and the blind duplicate sample: naphthalene (max. 80 µg/L) and phenol (max. an estimated 7.7 µg/L). No SVOCs were detected in the aqueous field blank.
- Seventeen metals were detected in the total (unfiltered) groundwater samples, four of which (iron, magnesium, manganese, and sodium) were detected above the AWQSGVs in at least one sample. Total iron was detected in four samples and the blind duplicate sample at concentrations ranging from 2,510 µg/L to 18,000 µg/L; total magnesium was detected in five samples and the blind duplicate sample at concentrations ranging from 38,400 µg/L to 67,900 µg/L; total manganese was detected in six samples and the blind duplicate sample at concentrations ranging from 451 µg/L to 1,120 µg/L; and total sodium was detected in six samples and the blind duplicate sample at concentrations ranging from 60,800 µg/L to 439,000 µg/L. Total (unfiltered) metals were not detected above AWQSGVs in the aqueous field blank.
- Fourteen metals were detected in the dissolved (filtered) groundwater samples, four of which (iron, magnesium, manganese, and sodium) were detected above the AWQSGVs in at least one sample. Dissolved iron was detected in four samples and the blind duplicate sample at concentrations ranging from 1,790 µg/L to 15,600 µg/L; dissolved magnesium was detected in five samples and the blind duplicate sample at concentrations ranging from 39,100 µg/L to 70,300 µg/L; dissolved manganese was detected in six samples and the blind duplicate sample at concentrations ranging from 471 µg/L to 1,190 µg/L; and dissolved sodium was detected in six samples and the blind duplicate sample at concentrations ranging from 71,300 µg/L to 450,000 µg/L. Dissolved metals were not detected in the aqueous field blank.
- PCBs and pesticides were not detected above laboratory reporting limits in any of the groundwater samples or in the aqueous field blank.
- Thirteen PFAS compounds were detected in one or more of the groundwater samples analyzed. PFOA and PFOS were detected in all six samples and the blind duplicate sample at concentrations ranging from 13.1 ng/L to 54.8 ng/L, above the NYSDEC Screening Level of 10 ng/L.

Eight sub-slab soil vapor samples were collected during the RI, and 50 VOCs were detected in one or more of the sub-slab soil vapor samples analyzed. Although there are currently no regulatory or published guidance values for VOCs in soil vapor, sub-slab soil vapor data was used to assess the potential for exposure to receptors and to help define the nature and extent of contamination at the Site.

In the absence of soil vapor standards, criteria, or guidance (SCGs), results were (conservatively) compared to the NYSDOH 2006 Final Guidance for Evaluating Soil Vapor Intrusion in the State of New York. The established matrices address mitigation or monitoring of 1,1,1-trichloroethane, carbon tetrachloride, methylene chloride, PCE, trichloroethylene (TCE), 1,1-dichloroethene, cis-1,2-dichloroethene, and vinyl chloride. None of the VOCs detected in the sub-slab soil vapor samples exceeded their respective maximum NYSDOH matrix values for sub-slab vapor. CVOCs were detected at variable concentrations ranging from 0.035 µg/m^3 to 21 µg/m^3 in one or more of the sub-slab soil vapor samples analyzed. PCE was detected in all eight samples at variable concentrations ranging from an estimated 0.38 µg/m^3 to 21 µg/m^3. VOCs associated with petroleum were detected at variable concentrations in all eight of the sub-slab soil vapor samples analyzed. BTEX was detected at concentrations ranging from 54.9 µg/m^3 to 1,280 µg/m^3.

Brownfield Cleanup Program Application – Seton Brilla Charter School, 1956 Jerome Avenue, Bronx, New York, AKRF, December 2021

AKRF prepared a BCP Application for the Site in October 2021, which discussed soil, groundwater, and soil vapor contamination associated with the Site's former uses.

Brownfield Cleanup Agreement – Seton Brilla Charter School, 1956 Jerome Avenue, Bronx, New York, AKRF, April 2022

The Site was entered into the BCP in April 2022 (BCA Index No. C203152-04-22).

Remedial Action Work Plan, Seton Brilla Charter School, 1956 Jerome Avenue, Bronx, New York, AKRF, May 2022

AKRF prepared a Remedial Action Work Plan (RAWP) in May 2022, which outlined the remedial activities and cleanup objectives for the Site to achieve a Track 4 Cleanup. The RAWP proposed excavation and removal of soil/fill to between depths of approximately 2 feet below the initial site grade to approximately 2 feet below the groundwater table in the petroleum contamination source area; excavation and removal of any previously unknown USTs and associated piping encountered during the excavation in accordance with applicable federal, state, and local laws and regulations; implementation of a groundwater treatment program consisting of a surface application and mechanical mixing of Modified Fenton's Reagent (MFR); and installation of ICs/ECs, including a site cover system, an active sub-slab depressurization system (SSDS), and a contingency soil vapor extraction (SVE) system, into the proposed building design. The RAWP included a Remedial Design Investigation (RDI) Work Plan to aid in the design of the proposed groundwater treatment remedy.

RAWP approval and the NYSDEC Decision Document were both issued in July 2022.

Citizen Participation Plan, 1956 Jerome Avenue, Bronx, New York, AKRF, July 2022

AKRF prepared a Citizen Participation Plan (CPP) for the Site in July 2022, which provided details on major issues of public concern related to the Site and surrounding areas. The CPP provided this information to the public and encouraged citizen involvement in decisions being made about the Site regarding their health.

Groundwater Treatment Design Report, Seton Brilla Charter School, 1956 Jerome Avenue, Bronx, New York, AKRF, December 2022

An RDI was conducted to delineate petroleum contamination vertically and horizontally in soil and groundwater throughout the Site, which included collection and laboratory analysis of soil and groundwater samples, and completion of a bench scale to determine which chemical oxidant(s), and at what volume and concentration, would be most effective in treating the constituents of concern at the Site. The report concluded that a groundwater treatment program should be implemented at the Site that included: excavation into groundwater of an approximately 1,200-sf area in the southwestern corner of the Site; off-site disposal of the petroleum-contaminated soil; surface application and mechanical mixing of approximately 4,990 pounds of MFR; and injection of approximately 1,250 pounds of MFR in the southwestern corner of the Site.

2.4 Site History

Historical records including Sanborn maps and a city directory search indicated that as early as 1950, the Site was occupied by a garage with automobile repair uses and two 550-gallon gasoline USTs. The Site was also listed with the following uses between 1927 and 2017: automobile repair, steam equipment manufacturing, appliance manufacturing, and janitorial supplies sales. During the Phase I ESA site reconnaissance, a hydraulic lift was observed in the southern portion of the facility,

and the facility operator indicated that two fuel oil ASTs had previously been located within the partial cellar in the northwestern corner of the Site.

Known Site owners included: Jacob Steinberg until 1971, 1962 Associates Inc. and Rubman Construction Co. Inc. in 1971, Carl Rubman between 1971 and 1981, Hilson Realty Co Inc. between 1981 and 1998, 1956 Jerome Ave LLC between 1998 and 2020, Michael Harbater between 1980 and 2021, and Arnold Blank in 2020. The Site has been owned by 2-6 East Tremont Avenue LLC since April 27, 2021.

2.5 Remedial Action Objectives

The Remedial Action Objectives (RAOs) for the Site are as follows:

Groundwater

RAOs for Public Health Protection

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

RAOs for Environmental Protection

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

Soil

RAOs for Public Health Protection

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

RAOs for Environmental Protection

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

Soil Vapor

RAOs for Public Health Protection

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

2.6 Remaining Contamination

2.6.1 Soil

The remedial excavation included excavation of soil to two feet below grade site-wide plus additional soil down to 10-feet below grade (two feet into the groundwater table) in the petroleum source area. Although the remedial excavation only extended to two feet below grade on the eastern portion of the site, additional soil was excavated to approximately 12 feet below sidewalk grade to enable construction of the cellar.

Following completion of soil excavation and disposal activities, documentation soil sampling was conducted with a total of 27 samples collected. Results of the soil documentation samples indicated that residual soil contamination that exceeds RRSCOs and/or PGWSCOs (for select VOCs) remains in place below the demarcation barrier. To prevent future exposure to remaining contamination, a site cover system consisting of a

combination of concrete building slabs, exterior concrete sidewalks, and asphalt pavement was constructed.

A summary of the remaining documentation samples that exceed RRSCOs and/or PGWSCOs, if applicable, is presented in Table II below:

Table II
Documentation Samples Results with RRSCO and/or PGWSCO Exceedances

Documentation Location	Sample ID	Sample Depth	Compound	RRSCO (mg/kg)	PGWSCO (mg/kg)	Result (mg/kg)
BS-02	BS-02_20230118	10-11	Benzene	4.8	0.06	**0.068**
BS-03	BS-03_20230119	10-11	1,2,4-Trimethylbenzene	52	3.6	**160**
			1,3,5-Trimethylbenzene (Mesitylene)	52	8.4	**47**
			Benzene	4.8	0.06	**30**
			Ethylbenzene	41	1	**76**
			N-Propylbenzene	100	3.9	**31**
			Toluene	100	0.7	**170**
			Xylenes, Total	100	1.6	**410**
SW-05	SW-05_20230117	8-10	1,2,4-Trimethylbenzene	52	3.6	**9**
			Benzene	4.8	0.06	**0.17**
			Ethylbenzene	41	1	**2.9**
			Toluene	100	0.7	**1**
			Xylenes, Total	100	1.6	**16**
SW-06	SW-06_20230117	8-10	1,2,4-Trimethylbenzene	52	3.6	**4.4**
			Benzene	4.8	0.06	**0.064**
			Ethylbenzene	41	1	**1.3**
			Xylenes, Total	100	1.6	**6.9**
SW-09	SW-09_20230119	8-10	1,2,4-Trimethylbenzene	52	3.6	**38**
			1,3,5-Trimethylbenzene (Mesitylene)	52	8.4	**10 H**
			Benzene	4.8	0.06	**3.4 H**
			Ethylbenzene	41	1	**13 H**
			N-Propylbenzene	100	3.9	**7.2 H**
			Toluene	100	0.7	**16 H**
			Xylenes, Total	100	1.6	**58**
SW-10	SW-10_20230119	8-10	1,2,4-Trimethylbenzene	52	3.6	**58**
			1,3,5-Trimethylbenzene (Mesitylene)	52	8.4	**16 H**
			Benzene	4.8	0.06	**4.7 H**
			Ethylbenzene	41	1	**20 H**
			N-Propylbenzene	100	3.9	**12 H**
			Toluene	100	0.7	**21 H**
			Xylenes, Total	100	1.6	**87**
SW-11	SW-11_20230119	8-10	1,2,4-Trimethylbenzene	52	3.6	**38**
			1,3,5-Trimethylbenzene (Mesitylene)	52	8.4	**11**
			Benzene	4.8	0.06	**3.3**

Documentation Location	Sample ID	Sample Depth	Compound	RRSCO (mg/kg)	PGWSCO (mg/kg)	Result (mg/kg)
			Ethylbenzene	41	1	**13**
			N-Propylbenzene	100	3.9	**8.6**
			Toluene	100	0.7	**9.3**
			Xylenes, Total	100	1.6	**48**
SW-11B	SW-11B_8-10_20230221	8-10	1,2,4-Trimethylbenzene	52	3.6	**42**
			Benzene	4.8	0.06	**1.8**
			Ethylbenzene	41	1	**24**
			N-Propylbenzene	100	3.9	**10**
			Toluene	100	0.7	**12**
			Xylenes, Total	100	1.6	**78**
SW-01	SW-01_2_20221028	2	Benzo(a)Anthracene	1	NA	1.6
			Benzo(a)Pyrene	1	NA	1.7
			Benzo(b)Fluoranthene	1	NA	2
			Indeno(1,2,3-c,d)Pyrene	0.5	NA	1
SW-02	SW-02_2_20221028	2	Benzo(a)Anthracene	1	NA	5.7
			Benzo(a)Pyrene	1	NA	5.3
			Benzo(b)Fluoranthene	1	NA	6.2
			Chrysene	3.9	NA	5.3
			Dibenz(a,h)Anthracene	0.33	NA	0.62
			Indeno(1,2,3-c,d)Pyrene	0.5	NA	3.2

Notes:
H = Sample result is estimated and biased high
NA = Not Applicable
mg/kg = milligrams per kilogram
Exceedances of RRSCOs are highlighted in gray shading.
Exceedances of PGWSCOs are highlighted with bold font.

Tables 2 through 8 and Figure 6 summarize the results of all soil samples collected that exceed the UUSCOs, RRSCOs, and/or PGWSCOs at the Site after completion of the remedial action.

2.6.2 Groundwater

Groundwater quality was characterized during previous investigations prior to entering the BCP and during the RI, as described in Section 2.3. Based on analytical results from samples collected during the RI, petroleum-related VOCs, polycyclic aromatic hydrocarbons (PAHs), and total and dissolved metals were detected above the AWQSGVs. Perfluorobutanoic acid, Perfluoropentanoic acid, PFOS, and PFOA were also detected above their NYSDEC PFAS Screening Levels in multiple samples. Based on petroleum contamination noted in the field, including petroleum-like odors and elevated PID readings, and the detections of VOCs and SVOCs in soil and groundwater in the southwestern portion of the Site, a petroleum spill was reported to the NYSDEC Spills Hotline (NYSDEC Spill No. 2103719).

To address residual petroleum contamination in groundwater related to NYSDEC Spill No. 2103719, approximately 4,990 pounds of MFR were mechanically mixed and approximately 1,250 pounds of MFR was injected into the subsurface in the southwestern

portion of the Site. The application of MFR was designed to breakdown remaining petroleum VOCs in soil at the smear zone and in groundwater and enhance natural biodegradation of the residual petroleum contamination. The approximate extent of the groundwater treatment area is presented on Figure 7.

Three post-remedial groundwater monitoring wells (MW-01, MW-02, and MW-03) were installed (downgradient, central, and upgradient of the treatment area, respectively) during the remedy. The wells were developed following installation, and post-remediation groundwater samples were collected and submitted for laboratory analysis of VOCs in July 2023. Laboratory analytical results for VOCs revealed concentrations of BTEX above the AWQSGVs in the groundwater sample (and blind duplicate) collected from MW-01, which is located downgradient of the source area within the groundwater treatment area, indicating that some residual groundwater contamination remains in the subsurface in the southwestern corner of the Site. Post-remedial groundwater monitoring and sampling will continue under the SMP. As natural attenuation of residual BTEX is anticipated the need for additional rounds of MFR injections will be evaluated after four rounds of groundwater sampling have been conducted. The evaluation will be included in the first PRR. Groundwater use at the Site is subject to the ICs documented within the Environmental Easement.

A summary of the groundwater sample results that exceed AWQSGVs is presented in Table III below. BTEX was detected at concentrations above the AWQSGVs in MW-01 and MW-02, as summarized in Table III. There were no exceedances of the AWQSGVs in the groundwater samples collected from MW-03, located upgradient of the treatment area.

Table III
Post-Remedial Groundwater Sample Analytical Results

Analyte	Sample Identification	AWQSGV (µg/L)	Concentration (µg/L)
1,2,4,5-Tetramethylbenzene	DUP-01_20230720	5	12
	MW-01_20230720		12
	MW-02_20230721		36
1,2,4-Trimethylbenzene	DUP-01_20230720	5	12
	MW-01_20230720		12
	MW-02_20230721		680
1,3,5-Trimethylbenzene (Mesitylene)	DUP-01_20230720	5	15
	MW-01_20230720		15
	MW-02_20230721		170
Acetone	MW-01_20230720	50	58
	MW-02_20230721		130
Benzene	DUP-01_20230720	1	14
	MW-01_20230720		14
	MW-02_20230721		61
Ethylbenzene	DUP-01_20230720	5	34
	MW-01_20230720		34
	MW-02_20230721		580
Isopropylbenzene (Cumene)	DUP-01_20230720	5	6
	MW-01_20230720		5.9
	MW-02_20230721		37
M,P-Xylenes	DUP-01_20230720	5	40
	MW-01_20230720		41

Analyte	Sample Identification	AWQSGV (µg/L)	Concentration (µg/L)
	MW-02_20230721		1,900
N-Butylbenzene	MW-02_20230721	5	9.5 J
N-Propylbenzene	DUP-01_20230720	5	10
	MW-01_20230720		10
	MW-02_20230721		100
O-Xylene (1,2-Dimethylbenzene)	DUP-01_20230720	5	11
	MW-01_20230720		11
	MW-02_20230721		590
Toluene	DUP-01_20230720	5	6.2
	MW-01_20230720		6.6
	MW-02_20230721		590

Notes:
J = The concentration given is an estimated value
µg/L = micrograms per liter
DUP-01_20230720 is a blind duplicate of sample MW-01_20230720

Table 8 summarizes the results of the post-remedial groundwater samples collected in July 2023. Exceedances of the AWQSGVs are identified on Figure 7. Monitoring well construction and development logs for the three post-treatment wells are included as Appendix E.

2.6.3 Soil Vapor

Analytical results from the soil vapor samples collected during previous investigations identified chlorinated solvents and petroleum-related VOCs in soil vapor beneath the Site. A contingency SVE system was installed in the southwestern portion of the Site as a supplement to the required active SSDS to mitigate potential on-site exposure to contaminated soil vapor via soil vapor intrusion, if necessary, based on the results of the Soil Vapor Intrusion Evaluation (SVIE). The SVIE will consist of the collection of concurrent sub-slab and indoor air samples. The SVIE will be conducted for the newly constructed on-site building envelope to determine if operation of the contingency SVE system will be necessary to adequately depressurize the entire building and prevent then potential for exposures via the soil vapor intrusion pathway. The data will be evaluated via the NYSDOH decision matrices to determine if operation of the contingency SVE system is required.

2.7 Management of Remaining Contamination

The remaining contamination at the Site is managed via utilization of ICs and ECs to isolate the remaining contamination, prevent exposure, and protect human health and the environment. The ICs are in the form of an Environmental Easement for the Site that requires periodic certification; allows the use and development of the Site for restricted residential, commercial, and/or industrial use; restricts the use of groundwater as a source of potable or process water without necessary water quality treatment as determined by NYSDOH; and requires compliance with this NYSDEC-approved SMP.

Section 3.0 (Institutional and Engineering Control Plan) includes descriptions and plans for the ECs, and the requirements for monitoring, inspection, operation, maintenance, and reporting to confirm that the remediation goals continue to be met.

3.0 INSTITUTIONAL AND ENGINEERING CONTROL PLAN

3.1 General

Since remaining contamination exists at the Site, ICs and ECs are required to protect human health and the environment. This IC/EC Plan describes the procedures for the implementation and management of all Ics/ECs at the Site. The IC/EC Plan is one component of the SMP and is subject to revision by the NYSDEC project manager.

This plan provides:

- A description of all ICs/ECs on the Site;
- The basic implementation and intended role of each IC/EC;
- A description of the key components of the ICs set forth in the Environmental Easement;
- A description of the controls to be evaluated during each required inspection and periodic review;
- A description of the plans and procedures to be followed for implementation of ICs/ECs, such as the implementation of the EWP (as provided in Appendix F) for the proper handling of remaining contamination that may be disturbed during maintenance or redevelopment work on the Site; and
- Any other provisions necessary to identify or establish methods for implementing the ICs/ECs required by the Site remedy, as determined by the NYSDEC project manager.

3.2 Institutional Controls

A series of ICs is required by the Decision Document to: (1) implement, maintain, and monitor the EC systems; (2) prevent future exposure to remaining contamination; and (3) limit the use and development of the Site to restricted residential, commercial, and/or industrial uses only. Adherence to these ICs on the Site is required by the Environmental Easement and will be implemented under this SMP. ICs identified in the Environmental Easement may not be discontinued without an amendment to or extinguishment of the Environmental Easement. The IC boundaries are shown on Figure 2. These ICs are:

- The property may be used for restricted residential, commercial, and/or industrial use;
- All ECs must be operated and maintained as specified in this SMP;
- All ECs must be inspected at a frequency and in a manner defined in the SMP;
- The use of groundwater underlying the property is prohibited without the necessary water quality treatment as determined by NYSDOH to render it safe for use as drinking water or for industrial purposes, and the user must first notify and obtain written approval to do so from NYSDEC;
- Data and information pertinent to site management must be reported at the frequency and in a manner as defined in this SMP;
- All future activities that will disturb remaining contaminated material must be conducted in accordance with this SMP;
- Monitoring to assess the performance and effectiveness of the remedy must be performed as defined in this SMP;

- Operation, maintenance, monitoring, inspection, and reporting of any mechanical or physical component of the remedy shall be performed as defined in this SMP;
- Access to the Site must be provided to agents, employees, or other representatives of the State of New York with reasonable prior notice to the property owner to assure compliance with the restrictions identified by the Environmental Easement;
- Any on-site buildings will be required to have an active sub-slab depressurization system (SSDS), or other acceptable measures, to mitigate the migration of vapors into the building from the subsurface. Additionally, the proposed building will include a soil vapor intrusion evaluation (SVIE) comprising of confirmatory soil vapor intrusion (concurrent and co-located sub-slab and indoor air sampling), standalone indoor air sampling (of classrooms and other areas to be used by sensitive populations), as well as ambient air sampling.
- Vegetable gardens and farming in residual soil on the Site are prohibited; and
- An evaluation shall be performed to determine the need for further investigation and remediation should large scale redevelopment occur, if any of the existing structures are demolished, or if the subsurface is otherwise made accessible.

3.3 Engineering Controls

3.3.1 Cover System

Exposure to remaining contamination at the Site is prevented by a cover system placed over the Site, which is comprised of a minimum of 5-inch-thick concrete building slabs. Figure 8 presents the location of the cover system and applicable demarcation layers. The EWP provided in Appendix F outlines the procedures required to be implemented in the event that the cover system is breached, penetrated, or temporarily removed. Procedures for the inspection of this cover are provided in the Monitoring and Sampling Plan included in Section 4.0 of this SMP. Any work conducted pursuant to the EWP must also be performed in accordance with the procedures defined in the Health and Safety Plan (HASP) and Community Air Monitoring Plan (CAMP) prepared for the Site and provided in Appendix G. Any breach of the Site's cover system must be overseen by a PE who is licensed and registered in New York State or a qualified person who directly reports to a PE who is licensed and registered in New York State.

3.3.2 SSDS

An SSDS was installed to mitigate the potential for sub-slab vapor intrusion into the new building. As the new building's cellar slab is within the water table, the SSDS was installed beneath the slab on grade portion of the building only. The SSDS induces a negative pressure (i.e., vacuum) beneath the proposed building slab. The SSDS installed at the Site is comprised of the following components:

- A minimum 6-inch-thick gas permeable aggregate (GPA) stratum underlain by a geotextile fabric beneath the entire SSDS treatment area;
- Six slotted 4-inch PVC horizontal SSDS pipes embedded in a GPA layer (¾-inch stone) below the at-grade building slab in the western portion of the building, which combine into two solid 4-inch-diameter Schedule 40 PVC legs (SSDS-01 and SSDS-02);
- Installation of condensate drains at the low points in the SSDS branches with solid piping, as necessary;

The following elements of the SSDS will be installed at the Site during building construction:

- Connection of the SSDS piping to a pipe manifold, which combines the PVC pipe sections into a single 8-inch-diameter header. The pipe header will connect to a single galvanized steel riser pipe, which will extend vertically through the building and 10 feet above the roof. Its placement will be at least 25 feet from any operable windows or air intakes on the roof of the building [both on-site (considering the proposed windows and air intakes for building completion) and off-site];
- Installation of a blower (make/model: IPF CHVS 63) to achieve a minimum vacuum of 0.004 inches of water column (inH_2O), with a shut-off alarm connected to an alarm panel installed in the building;
- A variable-frequency drive (VFD) to throttle blower operation, to be installed along with the blower on the roof of the building;
- Installation of a control panel equipped with a telemetry alarm system to notify select personnel (AKRF Project Manager, Deputy Project Manager, and building operations personnel) of alarm conditions;
- Four SSDS vacuum monitoring points (MPs) beneath the building slab; and
- Accessories, including cleanouts, sample ports, vacuum indicators/pressure gauges, flow meters, butterfly valves, and differential pressure switches.

The SSDS complies with the requirements stated in Section 11.0 of the RAWP. The layout of the SSDS piping and monitoring points is shown on Figure 9. As-built drawings for the underground components of the SSDS are included in Appendix H.

Procedures for operating and maintaining the SSDS are documented in the Operation and Maintenance Plan (Section 5.0 of this SMP). Procedures for monitoring the SSDS are included in the Monitoring and Sampling Plan (Section 4.0 of this SMP). The Monitoring and Sampling Plan also addresses severe condition inspections in the event that a severe condition occurs, which may affect controls at the Site.

3.3.3 Contingency SVE System

The contingency SVE system, if deemed necessary, will operate in combination with the SSDS in the at-grade portion of the Site, to prevent soil vapor intrusion. The need for activation of the SVE system will be based on the results of the SVIE. The sub-grade components of the contingency SVE system were installed during remedial activities and include:

- Four SVE legs consisting of 0.02-inch slotted 4-inch-diameter Schedule 40 PVC pipe lengths installed horizontally in the vadose zone in the southwestern corner of the Site.
- The four SVE legs transition to two solid 4-inch-diameter Schedule 40 PVC pipe lengths (SVE-01 and SVE-02) as the legs approach the manifold.

The following system components will be installed under the SMP if the SVIE determines activation of the SVE is necessary:

- A 3-horsepower SVE blower (make/model: Rotron EN656M72XL), which will operate at approximately 60 inH_2O and 95 standard cubic feet per minute (SCFM);

- Individual SVE line and dilution line accessories, including vacuum gauges, pitot tube/differential pressure gauge assemblies for air flow rate measurements, throttling valves, and sampling ports;
- Additional accessories, including pre- and post-blower vacuum/pressure, temperature gauges, and pre- and post-particulate filter vacuum gauges;
- One 20-gallon moisture separator tank with a high-level alarm;
- One inline particulate filter;
- One dilution line with particulate filter;
- One control panel equipped with a telemetry system to notify select personnel (AKRF Project Manager, Deputy Project Manager, and building operations personnel) of alarm conditions;
- System alarms, including one high temperature sensor and one low vacuum sensor;
- Two granulated activated carbon (GAC) vessels (each vessel contains 300 pounds of carbon, make/model to be determined), piped in series, with influent, intermediate, and effluent sample ports;
- Connection of the SVE pipe manifold to a single riser pipe, which extends vertically through the building to 10 feet above the main roof. The riser will be relocated on the bulkhead roof as the building is being completed. Its permanent placement will be at least 25 feet from any operable windows or air intakes on the roof of the building [both on-site (considering the proposed windows and air intakes for building completion) and off-site]; and
- Three SVE MPs.

The contingency SVE system is designed to operate on a continual basis, 24 hours a day, 7 days a week, and 365 days a year except for periodic shutdowns for maintenance, if the SVIE reveals that system operation will be necessary. Procedures for operating and maintaining the SVE system are documented in the Operation and Maintenance Plan (Section 5.0 of this SMP). As-built drawings, signed and sealed by a PE who is licensed and registered in New York State, are included in Appendix H. If required, the SVE system will operate until monitoring (as outlined in Section 4.0 of this SMP) and appropriate consultation with NYSDEC and NYSDOH confirm that the SVE wells and/or carbon treatment are no longer required to prevent soil vapor intrusion within the building. The layout of the SVE system piping and monitoring points is shown on Figure 9.

3.3.4 Groundwater Treatment

One round of MFR injections was conducted as part of the remedy. As natural attenuation of residual BTEX is anticipated post-injection, the need for additional rounds of MFR injections will be evaluated after four rounds of groundwater sampling have been conducted. The evaluation will be included in the first PRR. If it is determined that supplemental groundwater treatment is necessary, a supplemental groundwater treatment design report will be prepared and submitted to NYSDEC and NYSDOH for review and approval prior to implementation.

The design of the supplemental groundwater treatment program will depend on groundwater quality and subsurface conditions at the Site. However, the groundwater treatment will likely include, but not be limited to, an *in-situ* application of MFR via injections using a direct push drilling rig along the southwestern property boundary. The

MFR application would be designed to break down remaining petroleum VOCs in soil and groundwater and enhance natural biodegradation of the residual petroleum contamination.

MFR consists of stabilized hydrogen peroxide (H_2O_2) as the oxidant and a proprietary chelated iron catalyst (Cat-4260), which is a circum-neutral pH organometallic complex (chelated iron) with high mobility within the subsurface. This specific formulation of MFR is designed to enhance in-situ treatment of contaminants using Fenton's chemistry while mitigating some of the drawbacks of conventional Fenton's reagent (e.g., acidic pH and low mobility).

If additional groundwater treatment is implemented at the Site, additional rounds of periodic groundwater monitoring will be performed. The supplemental post-remedial groundwater monitoring will be performed in accordance with Section 4.5 of this SMP. Any change to the frequency or sampling requirements will require approval from the NYSDEC project manager.

3.3.5 Criteria for Completion of Remediation/Termination of Remedial Systems

Generally, remedial processes are considered completed when monitoring indicates that the remedy has achieved the RAOs identified by the Decision Document. The framework for determining when remedial processes are complete is provided in Section 6.4 of NYSDEC DER-10. Unless waived by NYSDEC, confirmation samples of applicable environmental media are required before terminating any remedial actions at the Site. Confirmation samples require Category B deliverables and a Data Usability Summary Report (DUSR).

The remedial party will also conduct any needed Site restoration activities, such as asphalt/concrete patching and decommissioning of treatment system equipment. In addition, the remedial party will conduct any necessary restoration of vegetation coverage, trees, and wetlands, and will comply with NYSDEC and the United States Army Corps of Engineers regulations and guidance. Also, the remedial party will ensure that no ongoing erosion is occurring on the Site.

3.3.4.1 – Cover System

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

3.3.4.2 – SSDS

The SSDS will not be discontinued unless prior written approval is granted by the NYSDEC and NYSDOH project managers. If monitoring data indicates that the SSDS may no longer be required, a proposal to discontinue the SSDS will be submitted by the remedial party to the NYSDEC and NYSDOH project managers.

3.3.4.3 – Contingency SVE System

If it determined to be necessary, the contingency SVE system will not be discontinued unless prior written approval is granted by the NYSDEC project manager. In the event that monitoring data indicates that the SVE system may no longer be required, a proposal to discontinue the system will be submitted by the remedial party to the NYSDEC project manager. Conditions that warrant discontinuing the SVE system include contaminant concentrations in soil vapor from the SVE system that: (1) reach levels that are consistently below NYSDOH Air Guidance Values, (2) have become asymptotic to a low level over an extended period of time as accepted by NYSDEC, or (3) NYSDEC has determined that the SVE system has reached the limit of its effectiveness. This assessment will be based in

part on post-remediation contaminant levels in soil vapor collected from sampling ports installed on the SVE manifold legs. Systems will remain in place and operational until permission to discontinue their use is granted in writing by the NYSDEC project manager.

3.3.4.4 – Post-Remediation Monitoring Wells

Groundwater monitoring activities to assess the effectiveness of the groundwater treatment program will continue, as determined by the NYSDEC project manager in consultation with the NYSDOH project manager, until residual groundwater concentrations are found to be consistently below AWQSGVs or the Site SCGs, or have become asymptotic at an acceptable level over an extended period. If monitoring data indicates that monitoring may no longer be required, a proposal to discontinue the monitoring will be submitted by the remedial party. Monitoring will continue until permission to discontinue is granted in writing by the NYSDEC project manager. If groundwater contaminant levels become asymptotic at a level that is not acceptable to NYSDEC, additional injections, source removal, treatment, and/or control measures will be evaluated.

4.0 MONITORING AND SAMPLING PLAN

4.1 General

This Monitoring and Sampling Plan describes the measures for evaluating the overall performance and effectiveness of the remedy. This Monitoring and Sampling Plan may only be revised with the approval of the NYSDEC project manager. Details regarding the sampling procedures, data quality usability objectives, analytical methods, etc. for all samples collected as part of site management for the Site are included in the Quality Assurance Project Plan (QAPP), included in Appendix I.

This Monitoring and Sampling Plan describes the methods to be used for:

- Sampling and analysis of all appropriate media (e.g., soil vapor and soil);
- Assessing compliance with applicable NYSDEC SCGs, particularly AWQSGVs for groundwater and Part 375 Soil Cleanup Objectives (SCOs) for soil; and
- Evaluating Site information periodically to confirm that the remedy continues to be effective in protecting public health and the environment.

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

- Sampling locations, protocol, and frequency;
- Information on all designed monitoring systems;
- Analytical sampling program requirements; and
- Annual inspection and periodic certification.

Sampling protocols are also detailed in the Field Sampling Plan included in Appendix I. Reporting requirements are provided in Section 7.0 of this SMP.

4.2 Site-Wide Inspection

Site-wide inspections will be performed at a minimum of once per year. These periodic inspections must be conducted when the ground surface is visible (i.e., no snow cover). Site-wide inspections will be performed by a qualified environmental professional (QEP) as defined in 6 NYCRR Part 375, a PE who is licensed and registered in New York State, or a qualified person who directly reports to a PE who is licensed and registered in New York State. Modification to the frequency or duration of the inspections will require approval from the NYSDEC project manager. Site-wide inspections will also be performed after all severe weather conditions that may affect ECs or monitoring devices. During these inspections, an inspection form will be completed, as provided in Appendix J – Site Management Forms. The form will compile sufficient information to assess the following:

- Compliance with all ICs, including Site usage;
- An evaluation of the condition and continued effectiveness of ECs;
- General Site conditions at the time of the inspection;
- Whether stormwater management systems, such as basins and outfalls, are working as designed;
- The site management activities being conducted, including, where appropriate, confirmation sampling and a health and safety inspection; and
- Confirm that Site records are up to date.

Inspections of all remedial components installed at the Site will be conducted. A comprehensive site-wide inspection will be conducted and documented according to the SMP schedule, regardless of the frequency of the Periodic Review Report (PRR). The inspections will determine and document the following:

- Whether ECs continue to perform as designed;
- If these controls continue to be protective of human health and the environment;
- Compliance with the requirements of this SMP and the Environmental Easement;
- Achievement of remedial performance criteria; and
- If Site records are complete and up to date.

Reporting requirements are outlined in Section 7.0 of this SMP.

Inspections will also be performed in the event of an emergency. If an emergency, such as a natural disaster or an unforeseen failure of any of the ECs, occurs that reduces or has the potential to reduce the effectiveness of ECs in place at the Site, verbal notice to the NYSDEC project manager must be given by noon of the following day. In addition, an inspection of the Site will be conducted by a QEP, or a person working under their supervision, within 5 days of the event to verify the effectiveness of the ICs/ECs implemented at the Site. Written confirmation must be provided to the NYSDEC project manager within 7 days of the event that includes a summary of actions taken, or to be taken, and the potential impact to the environment and the public.

4.3 Sub-Slab Depressurization System

4.3.1 System Monitoring

Monitoring of the SSDS will be performed on a routine basis, as identified in the SSDS Monitoring/Inspection Schedule included as Table II. The monitoring of remedial systems must be conducted by a QEP as defined in 6 NYCRR Part 375, a PE who is licensed and registered in New York State, or a qualified person who directly reports to a PE who is licensed and registered in New York State. Modification to the frequency or related monitoring requirements will require approval from the NYSDEC project manager. A visual inspection of the complete system will be conducted on a quarterly basis. Unscheduled inspections and/or monitoring may take place when a suspected failure of the SSDS has been reported that is deemed likely to affect the operation of the system. SSDS components to be monitored are included in Table IV.

SSDS monitoring will include a combination of visual inspections, individual line and riser gauge readings, blower inspections, alarm checks, and monitoring point readings. The locations of the sub-slab soil vapor points are shown on Figure 9 and SSDS system details are included in Appendix H.

The inspection frequency may be modified based on field screening with the approval of NYSDEC. Indoor air monitoring may also be required to supplement the proposed sub-slab monitoring depending on monitoring results/site-related data. This SMP will be modified to reflect changes in monitoring plans approved by NYSDEC. The applicable monitoring log is provided in Appendix J.

Table IV
SSDS Monitoring Requirements and Schedule

Remedial System Component	Monitoring Parameter	Operating Range	Monitoring Schedule
Vacuum Monitoring Points	Induced Vacuum Reading	$\geq$ 0.004 inH_2O	Monthly for first quarter and quarterly thereafter
Individual SSDS Lines	Flow Rate and Applied Vacuum	Varies - see Log Sheets	Monthly for first quarter and quarterly thereafter
Riser Pipe from Manifold to Roof	Flow Rate and Applied Vacuum	Varies - see Log Sheets	Monthly for first quarter and quarterly thereafter
Aboveground System Components	Visual Intactness	NA	Monthly for first quarter and quarterly thereafter

Notes:
inH_2O = inches of water column
NA = not applicable

4.4 Contingency Soil Vapor Extraction System

A contingency SVE system was installed in the vadose zone to prevent intrusion of contaminant soil vapor within the building, if the results of the SVIE determine its necessary.

If determined to be required, the SVE system would continue to be maintained and operational until permission to discontinue operation is granted in writing by NYSDEC and NYSDOH. A proposal to discontinue the SVE system may be submitted by the owner based on SVE system operation history and effluent vapor sample data.

4.4.1 System Monitoring and Vapor Sampling

The SVE system will be monitored once a week during the first month of operation. After the initial month of operation, the SVE system will be inspected at a minimum of once a month during the first quarter of operation and quarterly thereafter to ensure proper operation. The inspections will consist of individual SVE line gauge readings, blower and carbon inspections, alarm checks, and monitoring point readings.

Sampling of the SVE wells will be performed as identified in the SVE Monitoring/Inspection Schedule included as Table V. Confirmatory extracted vapor sampling will be conducted following startup to reassess VOC emissions calculations and provide baseline VOC concentrations at the onset of system operation. Influent, intermediate, and effluent vapor samples will be collected using 1-Liter Tedlar® bags in accordance with the QAPP and analyzed for VOCs by a NYSDOH Environmental Laboratory Approval Program (ELAP)-certified laboratory using United States Environmental Protection Agency (EPA) Method TO-15. Additional sampling for scheduling of carbon change-outs will be conducted as described in Section 5.5.5. The applicable sampling log is provided in Appendix J.

All effluent vapor VOC concentrations will be compared to the NYSDEC Division of Air Resources (DAR-1) publication Air Guide-1 (AG-1): Annual Guideline Concentrations (AGC)/Short-term Guideline Concentrations (SGC) Tables, updated October 18, 2010. The analysis will be performed using NYSDEC DAR-1 Air Guide-1 Policy (Policy DAR-1: Guidelines for the Control of Toxic Ambient Air Contaminants, November 12, 1997), which simulates the atmospheric processes that disperse pollutants from an emissions source to predict concentrations at selected downwind receptor locations. The procedures in the DAR-1 policy are used to model conservative, worst-case annual and short-term

concentrations based on the laboratory analytical results and exhaust stack parameters to compare against the NYSDOH AGCs and SGCs.

Table V
SVE System Monitoring Requirements and Schedule

Remedial System Component	Monitoring Parameter	Operating Range	Monitoring Schedule
Soil Vapor Monitoring Points	Induced Vacuum Reading	$\geq$ 0.01 inH_2O	Weekly during the first month, monthly during first quarter and quarterly thereafter
Individual SVE Lines	Flow Rate and Applied Vacuum	Varies - see Log Sheets	Weekly during the first month, monthly during first quarter and quarterly thereafter
SVE Blower Inlet Parameters	Temperature and Pressure	Varies - see Log Sheets	Weekly during the first month, monthly during first quarter and quarterly thereafter
Aboveground System Components	Visual Intactness	NA	Weekly during the first month, monthly during first quarter and quarterly thereafter
Carbon System Vapor	VOCs	NA	Upon system startup, semi-annually during first year, and annually thereafter

Notes:
inH_2O = inches of water column
NA = not applicable

A complete list of components to be inspected is provided in the Inspection Checklist in Appendix J. If any equipment readings are not within their specified operation range, any equipment is observed to be malfunctioning, or the system is not performing within specifications, maintenance and repair (as per the Operation and Maintenance Plan in Section 5.0) is required immediately.

4.5 Post-Remediation Media Monitoring and Sampling

Post-remediation groundwater samples will be collected from the monitoring wells on a routine basis. Sampling locations, required analytical parameters, and a schedule are provided in Tables IV and V, below. Modification to the frequency or sampling requirements will require approval from the NYSDEC project manager.

4.5.1 Groundwater Sampling

The network of monitoring wells, as shown on Figure 7, has been installed to monitor remaining groundwater contamination at upgradient, central, and downgradient locations across the Site. Table VI summarizes each well's purpose, location, depth, diameter, and screened interval.

The remedial party will measure depth to the water table for each monitoring well in the network before sampling. Groundwater monitoring will be performed on a quarterly basis for one year, with one sample collected from each of the three groundwater monitoring wells (MW-01, MW-02, and MW-03). Modification to the frequency or sampling requirements will require approval from the NYSDEC project manager.

Table VI
Monitoring Well Construction Details

Monitoring Well ID	Well Location	Coordinates (longitude/ latitude)[1]	Well Diameter (inches)	Depth to Top of Screen (ft bgs)	Depth to Bottom of Screen (ft bgs)	Elevation (above msl)
MW-01	Central	42.0996021°/ 065.4133013°	2	5	15	45.36
MW-02	Downgradient	42.0998740°/ 065.4130124°	2	5	15	45.01
MW-03	Upgradient	42.1003187°/ 065.4125454°	:2	5	15	45.48

Notes:

[1]All elevations are measured using North American Vertical Datum of 1988 (NAVD88) and locations are measured using the North American Datum of 1983 – Long Island Zone.

ft bgs = feet below ground surface, msl = mean sea level
° = degrees

Monitoring well construction logs are included in Appendix E of this SMP. Deliverables for the groundwater monitoring program are specified below and in Section 7.0 – Reporting Requirements.

The samples will be collected using EPA low flow techniques and then submitted to a NYSDOH ELAP-certified laboratory for analysis of Target Compound List (TCL) VOCs using Category B deliverables, as summarized in Table VII. One blind duplicate, one field blank, one trip blank, and one matrix spike/matrix spike duplicate (MS/MSD) sample will be collected for quality assurance/quality control (QA/QC) purposes. The groundwater data will be reviewed by a third-party validator and a DUSR will be prepared to document the usability and validity of the data. All purged groundwater will be containerized in 55-gallon drums for future off-site disposal at a permitted facility.

Table VII
Post-Remediation Groundwater Sampling Requirements and Schedule

Sampling Location	Analytical Parameters	Reporting Limit (µg/L)	Schedule
MW-01	TCL VOCs (EPA Method 624)	AWQSGVs	Quarterly
MW-02	TCL VOCs (EPA Method 624)	AWQSGVs	Quarterly
MW-03	TCL VOCs (EPA Method 624)	AWQSGVs	Quarterly

Notes:

µg/L = micrograms per Liter
AWQSGVs = Ambient Water Quality Standards and Guidance Values

The groundwater analytical results will be reported to NYSDEC in a brief letter report, which will include a summary of the ongoing laboratory analytical results, a comparison to the baseline groundwater analytical results, and recommendations for additional groundwater treatment, if necessary. The first post-remediation groundwater sampling event occurred in July 2023. Quarterly sampling events will begin upon receipt of the COC

in December 2023, and quarterly thereafter for one year (January, April, July, and October 2024).

Based on the post-remediation sampling results, additional groundwater treatment events may be required in the future. If supplemental groundwater treatment is required based on the results of the first year of periodic groundwater monitoring, a groundwater treatment design report will be prepared and submitted to NYSDEC and NYSDOH for review and approval. Additional groundwater monitoring will be conducted if subsequent treatment events are requested. Modification to the frequency or sampling requirements will require approval from NYSDEC.

4.5.2 Monitoring and Sampling Protocol

All sampling activities will be recorded in a field book and associated sampling logs as provided in Appendix J – Site Management Forms. Other observations (e.g., groundwater monitoring well integrity, etc.) will also be noted on the sampling log. The sampling log will serve as the inspection form for the monitoring network.

Prior to collecting the samples, but after removing the well cap, each well will be screened for the presence of VOCs using a PID. The depth to groundwater will then be measured in the wells using an electronic oil/water interface probe attached to a measuring tape accurate to 0.01 foot; this will also be used to gauge potential measurable product on the surface of the water table. The water level data, well diameter, and depth to bottom will be used to calculate the volume of water in each well, and any separate-phase product will be documented, if present. The wells that do not contain separate-phase product will then be purged using low-flow purging techniques.

Groundwater samples will be collected using dedicated polyethylene tubing and placed directly into laboratory-supplied sample bottles. The samples will be analyzed by a NYSDOH ELAP-certified laboratory with NYSDEC Category B deliverables. For wells that contain separate-phase product (not anticipated), a sample of the product will be collected and analyzed for flashpoint. All non-dedicated sampling equipment (e.g., submersible pumps and oil/water interface probes) will be decontaminated between sampling locations using the following procedure:

1. Scrub equipment with a bristle brush using a tap water/Simple Green® or Alconox® solution.
2. Rinse with tap water.
3. Scrub again with a bristle brush using a tap water/Simple Green® or Alconox® solution.
4. Rinse with tap water.
5. Rinse with distilled water.
6. Air-dry the equipment.

4.5.3 Monitoring Well Repairs and Decommissioning

If biofouling or silt accumulation occurs in the on-site monitoring wells, the wells will be physically agitated/surged and redeveloped. Additionally, if an event renders the wells unusable, the monitoring wells will be properly decommissioned and replaced. Repairs and/or replacement of wells in the monitoring well network will be performed based on assessments of structural integrity and overall performance.

NYSDEC will be notified prior to any repair or decommissioning of any monitoring well for the purpose of replacement, and the repair or decommissioning and replacement process will be documented in the subsequent PRR. Well decommissioning without replacement will be done only with the prior approval of NYSDEC. Well abandonment will be performed in accordance with NYSDEC's guidance entitled CP-43: Groundwater Monitoring Well Decommissioning Procedures. Monitoring wells that are decommissioned because they have been rendered unusable will be replaced in kind in the nearest available location, unless otherwise approved by NYSDEC.

The sampling frequency may only be modified with the approval of NYSDEC. This SMP will be modified to reflect changes in sampling plans approved by NYSDEC. Deliverables for the groundwater monitoring program are specified in Section 7.0 – Reporting Requirements.

4.5.4 Soil Vapor Intrusion Evaluation

Any on-site buildings will be required to have an active sub-slab depressurization system (SSDS), or other acceptable measures, to mitigate the migration of vapors into the building from the subsurface. A pressure field extension test will be required to confirm that the system is mitigating the building effectively and operating as intended. The proposed building will include a soil vapor intrusion evaluation comprising of confirmatory soil vapor intrusion (concurrent and co-located sub-slab and indoor air sampling), standalone indoor air sampling of classrooms (and other areas to be used by sensitive populations), and ambient air sampling. This evaluation (including sampling) will be used to determine whether or not the contingent Soil Vapor Extraction System should be implemented to achieve the goal of actively mitigating the entire on-site building.

An SVIE will be conducted for the newly constructed on-site building envelope to determine if operation of the contingency SVE system will be necessary. Prior to building occupancy and during the heating season, if feasible, concurrent sub-slab soil vapor and indoor air samples will be collected in accordance with the October 2006 Guidance for Evaluating Soil Vapor Intrusion in the State of New York (with updates). The SVIE will include the collection of sub-slab soil vapor samples from five on-site vapor monitoring points (MP-1, MP-2, and SVMP-1 through SVMP-3) and the collection of seven indoor air samples. Five of the indoor air samples (IA-1 through IA-5) will be collected from the first floor of the new building and will be co-located with the sub-slab soil vapor samples. Two additional indoor air samples (IA-6 and IA-7) will be located on the second floor of the new building. All indoor air samples will be collected from the breathing zone, approximately four feet above the floor. Indoor air samples will be collected from the following locations within the new building:

- IA-01: First Floor, Room 109B, Non-Food Storage Room
- IA-02: First Floor, Room 109A, Package Room
- IA-03: First Floor, Room 104, Main Office
- IA-04: First Floor, Room 114, Main Office
- IA-05: First Floor, Northwest Hallway
- IA-06: Second Floor, Room 323, Music Room
- IA-07: Second Floor, Room 301, Performing Arts/Dance Room

One ambient (outdoor) air sample (AA-1) will be collected for QA/QC purposes. The ambient air sample will also be collected from 3 to 4 feet above sidewalk grade to mimic the breathing zone. As the building will be a used for commercial purposes, the sub-slab soil vapor, indoor air, and ambient air samples will be collected via 6-liter Summa Canisters over an 8-hour period with the flow rate not to exceed 0.0125 liters per minute. The samples will be submitted to an ELAP-certified laboratory for analysis of VOCs via TO-15.

The results of the SVIE will be documented in an SVIE report that will be submitted to NYSDEC and NYSDOH. All work will be completed in accordance with the Quality Assurance Project Plan (QAPP) and the Health and Safety Plan (HASP), included as Appendices I and G, respectively. Proposed sub-slab soil vapor, indoor air, and ambient air samples are shown on Figure 9.

No required vapor mitigation systems will be turned off or decommissioned without prior approval from the State. Requests to decommission vapor mitigation systems in the future may be submitted to the state for consideration and require sampling events conducted over multiple heating seasons, yielding data, that demonstrates the system(s) is/are no longer needed to address potential exposure concerns from soil vapor intrusion.

5.0 OPERATION AND MAINTENANCE PLAN

5.1 General

This Operation and Maintenance Plan provides a brief description of the measures necessary to operate, monitor, and maintain the mechanical components of the remedy selected for the Site. This Operation and Maintenance Plan:

- Includes the procedures necessary to allow individuals unfamiliar with the Site to operate and maintain the SSDS and, if required, the contingency SVE system; and
- Will be updated periodically to reflect changes in Site conditions or the manner in which the SSDS and SVE system are operated and maintained.

A copy of this Operation and Maintenance Plan, along with the complete SMP, is to be maintained at the Site. This Operation and Maintenance Plan is not to be used as a standalone document, but as a component document of the SMP.

5.2 Scope

The SSDS and contingency SVE system are designed to operate continuously, 24 hours a day, 7 days a week, 365 days a year, without any required adjustments or repairs beyond the routine maintenance items discussed in Sections 5.4.3 and 5.5.3, respectively. Manufacturers' specifications for each of the SSDS and SVE components (included in Appendices K and L, respectively) should be consulted prior to any repairs or adjustments that may become necessary. Regular system inspections, operation parameter documentation, and performance assessment guidelines are detailed in Sections 4.3 and 4.4 of this SMP.

5.3 Performance Criteria

An SSDS will be installed at the Site to prevent the potential for vapor intrusion into the building. A contingency SVE system was installed in the southwestern corner of the Site to prevent migration of contaminated soil vapor into the building from the subsurface, if an SVIE determines that it is necessary. While the subgrade components of both systems have been installed, the above grade components will be installed under this SMP. As-built drawings for the subgrade components of the SSDS and SVE system are included in Appendix H, and the SSDS and SVE component manuals are included in Appendices K and L, respectively. Details pertaining to the performance monitoring of these ECs are outlined below.

5.4 SSDS Operation and Maintenance

An SSDS will be installed to mitigate the potential for soil vapor intrusion by applying negative pressure beneath the concrete slab, minimizing the potential for vapor intrusion into the Site building. The major components of the SSDS include:

- A minimum 6-inch-thick gas permeable aggregate (GPA) stratum underlain by a geotextile fabric beneath the entire SSDS treatment area;
- Six slotted 4-inch PVC horizontal SSDS pipes embedded in a GPA layer (¾-inch stone) below the at-grade building slab in the western portion of the building, which combine into two solid 4-inch-diameter Schedule 40 PVC legs (SSDS-01 and SSDS-02);
- Connection of the two SSDS legs (SSDS-01 and SSDS-02) to a pipe manifold, which combines the PVC pipe sections into a single 8-inch-diameter header pipe. The header pipe connects to a single riser pipe, which extends 10 feet above the main roof. Its permanent placement will be

at least 25 feet from any operable windows or air intakes on the roof of the building [both on-site (considering the proposed windows and air intakes for building completion) and off-site];

- Four sub-slab vacuum monitoring points throughout the Site building;
- One appropriately sized 1.5 horsepower (HP) blower to vent soil vapor;
- A control panel equipped with a remote audio/visual alarm system, along with telemetry alarm to notify select personnel (AKRF Project Manager, Deputy Project Manager, and building personnel) of alarm conditions; and
- A VFD to throttle blower operation, installed when the blower is relocated to the roof of the building.

As-built drawings for the below grade portions of the SSDS are included in Appendix H and SSDS component manuals are included in Appendix K.

5.4.1 SSDS Start-Up and Testing

The system will be fully installed and tested following installation and system startup, which will include:

- MP induced vacuum readings;
- Individual line applied vacuum and air flow rate readings;
- Combined riser applied vacuum readings; and
- Blower influent vacuum/pressure readings.

Further adjustments to the blower and individual SSDS lines may be necessary after any alterations to the overall system. SSDS equipment, including individual valves on SSDS lines, will be throttled to rebalance the system, adjusting air flow rates and vacuum/pressure readings to acceptable values. The blower will be relocated to the roof and the VFD will also be installed at that time.

At a minimum, the findings and conclusions following system restart activities will be reported in the subsequent quarterly media monitoring report. In addition, depending on the nature of the adjustment to the system, the process and instrumentation diagram (P&ID) and/or Site figures may need to be updated to reflect the work completed. Such revisions shall be completed and submitted to NYSDEC with the media monitoring report.

All further modifications, adjustments, or additions to the SSDS should be completed in accordance with the equipment specifications provided by the manufacturer. This SMP will be maintained on-site and includes manufacturers' specifications for all system components as part of the manuals provided in Appendix K.

5.4.2 SSDS Operation: Routine Operation Procedures

The SSDS is designed to operate continuously without any required adjustments or repairs beyond the routine maintenance items discussed in Section 5.4.3. No adjustments to the operating schedule or other intentional interruptions to operation (other than those required for routine maintenance) shall be permitted without written approval by NYSDEC and NYSDOH.

The effectiveness of the SSDS components will be confirmed via monthly inspections for the first quarter after startup, and then quarterly thereafter. All system inspections will be conducted by personnel under the supervision of a QEP and will consist of confirming that the blowers are operating properly, taking instantaneous PID readings at the sample port

before the blower, and taking vacuum readings at the six MPs. Each inspection log will also document any unusual conditions (e.g., unusual odors, spills, leaks, excessive blower noise, etc.). A copy of the SSDS Inspection Log is provided in Appendix J.

Individual flow rate and vacuum readings will be recorded for each of the six SSDS pipe runs and sub-slab vacuum will be confirmed in each of the four MPs. This operational data will be used as needed to adjust controls for individual branches, and any faulty gauges will be repaired or replaced as needed. SSDS inspections will be conducted on a quarterly basis.

Care shall be taken during inspections to identify and repair any system malfunctions or problems (i.e., leaks, cracks, collection of condensation, etc.). Manufacturer's specifications, included as Appendix K, should be consulted prior to any repairs or adjustments that may become necessary.

If shutdown of the SSDS is considered, a proposal to discontinue the SSDS will be submitted by the property owner to NYSDEC and NYSDOH for approval. The SSDS will remain in place and operational until permission to discontinue use is granted in writing by NYSDEC and NYSDOH.

5.4.3 SSDS Operation: Routine Equipment Maintenance

A schedule for SSDS routine equipment maintenance work is provided in Table VIII:

Table VIII
SSDS System Inspection/Maintenance Schedule

Operations Monitoring Tasks	Frequency
SSDS Inspection and Monitoring	Monthly during first quarter post-startup and quarterly thereafter
System Component Maintenance	Quarterly and as necessary

Typical routine maintenance items that should be checked during inspections are listed in the SSDS Inspection Log provided in Appendix J and include:

- Confirmation that the blower is operating and air is discharging through the exhaust piping;
- Confirmation that the pressure and air flow rate gauges on each SSDS fan are clean and within normal range;
- Confirmation that the blower effluent PID readings and temperatures are within acceptable range; and
- Confirmation that the exterior of the SSDS control panel is clean.

Some routine maintenance will require intentional interruptions to SSDS operation. Both unexpected and deliberate alterations to and/or shutdowns of the system will be recorded in the field book and documented on the SSDS Inspection Log, provided in Appendix J. A cumulative shutdown log, also provided in Appendix J, will be maintained separately to track any atypical system activity, including but not limited to alarm conditions and responses, and to track scheduled shutdowns for system maintenance.

5.4.3.1 – Routine System Component Maintenance

The SSDS consists of a blower and motor pair. Each piece of equipment requires routine maintenance that is dictated either by runtimes or operating conditions, as defined by manufacturer's specifications, with most maintenance items being required on a quarterly

basis. The pertinent material cut sheets and manuals are provided as Appendix K. A binder containing complete paper copies of manufacturer's specifications for all system components will be maintained on-site.

5.4.3.2 – Reporting

Barring any unusual findings, the system inspections and maintenance described above will be reported per the requirements of Section 7.0 of this SMP. In the event that an unexpected condition is noted, such as a critical malfunction or extreme weather condition that may hinder system operations, NYSDEC will be alerted promptly.

5.4.4 SSDS Operation: Non-Routine Equipment Maintenance

In most instances, non-routine maintenance will be required due to operating conditions that are monitored by the SSDS alarm system. The primary objective of the alarm system is to notify personnel when operating conditions are likely to reduce or otherwise compromise SSDS efficiency. The telemetry alarm system will notify designated personnel (AKRF Project Manager, Deputy Project Manager, and building personnel) of the alarm condition via email and/or text message.

The SSDS alarm system will also notify the current owner's environmental professional when operating conditions are likely to cause damage to the SSDS equipment. The SSDS alarm will provide both an audible and visual notification for a low vacuum condition from the differential pressure switch. The audible alarm will be an 85 to 95 decibel horn or buzzer with a manual acknowledge off switch. An alarm condition may be indicative of damage to, or deterioration of, the SSDS pits and pipes. Damage to the individual SSDS lines may be noticeable only by interpreting unusually high or low vacuum readings or air flow rates, which will be noted in the routine system inspections and remedied upon identification.

5.4.5 Fire Safety

2-6 East Tremont LLC will conduct an annual facility walk with the local fire chief and/or fire suppression team. The site walk will allow for the addition of the facility to any local preplanning efforts. The NYSDEC project manager will be provided with the local fire chief's/fire suppression team's recommendations as soon as they become available. Following review, the NYSDEC project manager may direct the remedial party to implement the recommendations and/or revise the SMP.

5.5 Contingency SVE System Operation and Maintenance

A contingency SVE system will be installed to prevent soil vapor intrusion, if deemed necessary based on the results of an SVIE. The SVE system collects and treats contaminated vapor, and subsequently discharges the vapor through a dedicated exhaust stack. the VOC-contaminated air extracted from the SVE piping network is treated using GAC and discharged to the atmosphere in accordance with 6 NYCRR Part 212. The major components of the SVE system include:

- Four legs of slotted 4-inch-diameter PVC piping laid horizontally, which target the vadose zone treatment interval;
- One minimum 3 HP blower to extract soil vapor;
- Two 300-pound GAC treatment units located in the SVE equipment room to treat contaminated soil vapor;

- A control panel equipped with a telemetry system to notify select personnel (AKRF Project Manager, Deputy Project Manager, and building personnel) of alarm conditions;
- Three SVE vacuum MPs;
- Connection of the SVE pipe manifold to a single riser pipe, which extends vertically through the building and 10 feet above the main roof. Its permanent placement will be at least 25 feet from any operable windows or air intakes on the roof of the building [both on-site (considering the proposed windows and air intakes for building completion) and off-site]; and
- A VFD to throttle blower operation, installed before building occupancy (when the SSDS blower is relocated to the roof).

5.5.1 Contingency SVE System Start-Up and Testing

Initial startup of the SVE system will occur after completion of the SVIE, if deemed necessary by the SVIE. If, in the course of the SVE system lifetime, significant changes are made to the system and the system must be restarted, some or all of the initial startup testing protocols listed in Table IX shall be implemented and documented in addition to ongoing routine maintenance and monitoring activities. These procedures need not be followed after routine system restarts, such as those needed after alarm resets or following routine system maintenance.

Table IX
SVE System Startup Protocols

	Following SVE pipe addition, repair, or replacement	**Following SVE blower repair or replacement**	**Following carbon vessel repair or replacement**
Carbon System Vapor Sampling	No	No	Yes
SVE line pressure testing	Yes	No	No
SVE blower inspection	Yes	Yes	Yes

Note: Pressure testing and blower inspection procedures are described in full in the QAPP, provided as Appendix I.

As described in the QAPP, SVE blower inspections shall comprise confirmation of:

- SVE monitoring point induced vacuum readings;
- PID, vacuum, and air flow rates at each SVE well during active operation in that zone;
- SVE blower-related readings, including pre-/post-particulate filter blower vacuum and air flow rate readings; and
- Carbon influent, intermediate, and effluent pressure, temperature, and PID readings.

Appropriate values for these confirmation readings are outlined in the SVE Inspection Log, provided in Appendix J.

Further adjustments to the blower and individual SVE lines may be necessary after any alterations to the overall system. SVE equipment, including individual valves on SVE lines, will be throttled to rebalance the system, adjusting air flow rates and vacuum/pressure readings to acceptable values. The VFD will also be installed prior to occupancy (when the SSDS blower is relocated to the roof).

At a minimum, the findings and conclusions following system restart activities will be reported in the subsequent quarterly media monitoring report. In addition, depending on the nature of the adjustment to the system, the P&ID and/or Site figures may need to be updated to reflect the work completed. Such revisions shall be completed and submitted to NYSDEC with the quarterly media monitoring report.

All further modifications, adjustments, or additions to the SVE system should be completed in accordance with the equipment specifications provided by the manufacturer.

5.5.2 Contingency SVE System Operation: Routine Operation Procedures

The contingency SVE system, if necessary, is designed to operate continuously without any required adjustments or repairs beyond the routine maintenance items discussed in Sections 5.5.3. No adjustments to the operating schedule or other intentional interruptions to operation (other than those required for routine maintenance) shall be permitted without written approval by NYSDEC and NYSDOH.

The operation of the SVE system components will be confirmed by quarterly system inspections by a P.E. or the P.E.'s designated environmental professional. The check will consist of confirming the blower is operating properly with individual flow rate and vacuum readings for each of the SVE wells within designated ranges, and confirming instantaneous PID readings at the influent, intermediate, and effluent sample ports on the carbon treatment units. The check will also note any unusual conditions (e.g., unusual odors, spills, leaks, blower noise, etc.). A copy of the SVE Inspection Log is provided in Appendix J.

Care shall be taken during inspections to identify and repair any system malfunctions or problems (i.e., leaks, cracks, collection of condensation, etc.). Manufacturer's specifications, included as Appendix L, should be consulted prior to any repairs or adjustments that may become necessary.

If, in consultation with NYSDEC and NYSDOH, shutdown of the SVE system and/or carbon treatment system is considered, a proposal to discontinue the SVE system and/or carbon treatment system will be submitted by the property owner to NYSDEC and NYSDOH for approval. The SVE and/or carbon treatment system will remain in place and operational until permission to discontinue use is granted in writing by NYSDEC and NYSDOH.

5.5.3 Contingency SVE System Operation: Routine Equipment Maintenance

A tentative schedule for SVE system routine equipment maintenance work is provided in the following table:

Table X
SVE System Inspection/Maintenance Schedule

Operations Monitoring Tasks	Frequency
SVE System Inspection	Weekly during the first month, monthly during first quarter post startup and quarterly thereafter
Carbon System Vapor Sampling	Upon Startup. Semi-annual during first year, annual thereafter, and as necessary
Wellhead and External System Component Maintenance	Quarterly and as necessary

Typical routine maintenance items that should be addressed during monthly inspections are listed in the SVE Inspection Log provided in Appendix J and include:

- Confirmation that the blower is operating and air is discharging through the exhaust piping to the roof;
- Confirmation that the pressure and air flow rate gauges on each manifold leg are clean and within normal range;
- Confirmation that the blower effluent PID readings and temperatures are within acceptable range; and
- Confirmation that the exterior of the SVE system control panel is clean.

Some routine maintenance will require intentional interruptions to SVE system operation. Both unexpected and deliberate alterations to and/or shutdowns of the system will be recorded in the field book and documented on the SVE Inspection Log provided in Appendix J. A shutdown log, also provided in Appendix J, will be maintained separately to track any atypical system activity, including but not limited to alarm conditions and responses and scheduled shutdowns for system maintenance.

5.5.3.1 – Routine System Component Maintenance

The SVE system, if required, will consist of one blower and motor pair. Each piece of equipment requires routine maintenance that is dictated either by runtimes or operating conditions, as defined by manufacturer's specifications. However, most maintenance items are required on a quarterly basis, assuming continuous operation. The pertinent material cut sheets and manuals are provided as Appendix L. A binder containing complete manufacturer's specifications for all system components will be maintained on-site.

5.5.3.2 – Wellhead and External System Component Maintenance

Individual wellheads and manholes will be inspected, at a minimum, on an annual basis. All SVE wells are accessible via flush-mount well covers. In the event of a damaged or out-of-service SVE well, the well will be properly decommissioned. Repairs and/or replacement of SVE wells will be performed based on assessments of structural integrity and overall performance.

NYSDEC will be notified prior to any repair or decommissioning of the SVE well for the purpose of replacement, and the repair or decommissioning and replacement process will be documented in the subsequent PRR. The decommissioning of SVE wells without replacement will be done only with the prior approval of NYSDEC. SVE well abandonment will be performed in accordance with NYSDEC's CP-43: Groundwater Monitoring Well Decommissioning Policy. If the SVE wells are decommissioned because they have been rendered unusable, replacement SVE wells will be reinstalled in the nearest available location, unless directed otherwise by NYSDEC.

Wellhead and external system component inspections should be conducted as detailed in the QAPP, provided in Appendix I.

5.5.3.3 – Reporting

Barring any unusual findings, the system inspections and maintenance described above will be reported per the requirements of Section 7.0 of this SMP. In the event that an unexpected condition is noted, such as a critical malfunction or extreme weather condition that may hinder system operations, NYSDEC will be alerted promptly.

5.5.4 Contingency SVE System Operation: Non-Routine Equipment Maintenance

In most instances, non-routine maintenance will be required due to operating conditions that are governed by the SVE alarm system and system telemetry. The primary objective of system telemetry is to notify personnel when operating conditions are likely to reduce or otherwise compromise SVE efficiency, which could lead to the potential uncontrolled intrusion of volatile soil vapor into the new building.

The system telemetry will also notify the current owner's environmental professional when operating conditions may be indicative of damage to the SVE equipment. SVE alarm conditions are detailed in Table XI. Potential damage to the SVE pipes or carbon units should trigger one of the alarm conditions. Damage to the individual SVE lines may be noticeable only by interpreting unusually high or low vacuum readings or air flow rates, which will be noted in the system inspections and remedied upon identification.

The SVE system was also designed with particulate and moisture separators on the blower skid to prevent solids from reaching the blowers. The particulate and moisture separators are shown in the P&ID provided as part of the manual in Appendix L. Procedures for maintaining the particulate separators and all SVE components are provided in the operation and maintenance manuals provided in Appendix L and the QAPP provided in Appendix I.

Table XI
SVE System Alarm Conditions

Alarm Condition	Response Measure
Moisture Separator High Level	Drain/containerize moisture, identify and address/eliminate cause of moisture influx
Blower Outlet High Temperature	Identify and address/eliminate cause of high temperature condition
Blower Inlet Low Vacuum	Identify and address/eliminate cause of low pressure condition

5.5.5 Contingency SVE System Sampling Event Protocol

5.5.5.1 – Effluent Vapor Sampling Protocol

Though theoretical calculations have been made to approximate the anticipated carbon usage rate, carbon replacement frequency will be based on field screening using a PID and laboratory analytical results. Individual lines are not anticipated to be sampled in the routine sampling events; however, there are sampling ports for each line, prior to manifolding, to facilitate field screening or sampling, as necessary, at the discretion of the remedial engineer and in consultation with NYSDEC and NYSDOH.

The set of SVE system carbon vessels will be field screened quarterly and sampled as described below to provide an estimate of carbon usage. Confirmatory SVE system sampling will be conducted following startup to more accurately assess the VOC concentrations in extracted soil vapor from the entire Site, and the condition and lifespan of the carbon units. Samples of the SVE system air will be collected as part of initial startup and again 6 months and 12 months following start-up. Subsequent SVE system vapor sampling will be performed annually, and as needed, to evaluate system operating conditions and support the calculations of contaminant mass removal.

The vapor samples will be collected using a peristaltic pump to fill a one-liter Tedlar bag, in accordance with the sampling procedures detailed in the QAPP provided as Appendix

I. All samples for laboratory analysis will be submitted to a NYSDOH ELAP-certified laboratory for analysis of VOCs by EPA Method TO-15.

All sampling activities will be recorded in a field book and in the SVE Vapor Sampling Log presented in Appendix J. Field observations (e.g., visual observations and PID readings of effluent, etc.) will be noted on the sampling log, which will be subject to the reporting requirements and system checks discussed in Sections 5.5.6 and 7.0. Complete effluent vapor sampling procedures are detailed in the QAPP.

5.5.5.2 – Spent Carbon Sampling Protocol

All spent carbon will be disposed of or recycled off-site in accordance with all applicable local, state, and federal regulations. Based on the requirements of the disposal/recycling facility and waste disposal contractor, a carbon sample may need to be collected for facility acceptance purposes. If so, a representative sample of the spent carbon will be collected and submitted for laboratory analysis based on the requirements of the receiving facility, as detailed in the QAPP provided as Appendix I. Spent carbon will be handled as a listed hazardous waste unless a contained-in request is approved by NYSDEC.

All sampling activities will be recorded in a field book. Field observations (e.g., visual observations and PID readings of carbon, etc.) will be noted on the sampling log, which will be subject to the reporting requirements and system checks discussed in Sections 5.5.6 and 7.0.

5.5.5.3 – Condensate Water Sampling

All condensate water collected from the SVE water knock-out vessel will be transferred to 55-gallon drums and disposed of off-site in accordance with all applicable local, state, and federal regulations on an as-needed basis. A representative condensate water sample will be collected from each 55-gallon drum and submitted for laboratory analysis, as detailed in the QAPP provided as Appendix I. Documentation associated with condensate water disposal will be subject to the reporting requirements and system checks discussed in Sections 5.5.6 and 7.0.

5.5.6 Contingency SVE System Maintenance and Performance Monitoring Reporting Requirements

Any unexpected or critical issues identified during the monitoring tasks will be reported via email or phone notification to the NYSDEC project manager. Maintenance reports and any other information generated during regular operations at the Site will be kept on-file on-site. All reports, forms, and other relevant information generated will be available to NYSDEC upon request and submitted as part of the PRR, as specified in Section 7.2 of this SMP.

5.5.6.1 – Routine Maintenance Forms

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

- Date;
- Name, company, and position of person(s) conducting maintenance activities;
- Maintenance activities conducted;
- Any modifications to the system;

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

5.5.6.2 – Non-Routine Maintenance Forms

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

- Date;
- Name, company, and position of person(s) conducting non-routine maintenance/repair activities;
- Presence of leaks;
- Date of leak repair;
- Other repairs or adjustments made to the system;
- Where appropriate, color photographs or sketches showing the approximate location of any problems or incidents (included either on the form or on an attached sheet); and
- Other documentation such as copies of invoices for repair work, receipts for replacement equipment, etc. (attached to the checklist/form).

5.5.7 Fire Safety

2-6 East Tremont LLC will conduct an annual facility walk with the local fire chief and/or fire suppression team. The site walk will allow for the addition of the facility to any local preplanning efforts. The NYSDEC project manager will be provided with the local fire chief's/fire suppression team's recommendations as soon as they become available. Following review, the NYSDEC project manager may direct the remedial party to implement the recommendations and/or revise the SMP.

5.6 Contingency Plan

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

The appropriate actions for on-site emergencies are detailed in the HASP and CAMP, provided as Appendix G.

5.7 Emergency Telephone Numbers

In the event of any environmentally related situation or unplanned occurrence requiring assistance, the owner or owner's representative(s) should contact the appropriate party from the contact list below. For emergencies, appropriate emergency response personnel should be contacted. Prompt contact should also be made to AKRF's project principal or project manager or the current property manager/owner's representative for the Site. Emergency contact lists must be maintained in an easily accessible location at the Site. Table XII includes contact information for the emergency response personnel.

Table XII
Emergency Contact Numbers

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

5.8 Map and Directions to Nearest Health Facility

A map showing the route from the Site to the Hospital is included under the HASP (Appendix G). Details are provided below:

- Site Location: 1956 Jerome Avenue
- Nearest Hospital Name: Bronxcare Hospital Center – Emergency Room
- Hospital Location: 570 1st Avenue, New York, NY 10016
- Hospital Telephone: (212) 263-5550
- Directions to Hospital:
  1. Head southwest on Jerome Ave toward E 177th St.
  2. Turn LEFT onto E 175th St.
  3. Turn RIGHT onto Walton Ave.
  4. Turn LEFT onto E Mt Eden Ave/Mt Eden Pkwy.
  5. Turn RIGHT at the first cross street onto Selwyn Ave.
  6. The entrance to the Emergency Room will be on the LEFT.

6.0 PERIODIC ASSESSMENTS/EVALUATIONS

6.1 Climate Change Vulnerability Assessment

Increases in both the severity and frequency of storms/weather events and an increase in sea level elevations, along with accompanying flooding impacts, shifting precipitation patterns, and wide temperature fluctuation, resulting from global climactic change and instability have the potential to significantly impact the performance, effectiveness, and protectiveness of a given site and associated remedial systems. Vulnerability assessments provide information so that the Site and associated remedial systems are prepared for the impacts of the increasing frequency and intensity of severe storms/weather events and associated flooding.

This section provides a summary of vulnerability assessments that will be conducted for the Site during periodic assessments, and briefly summarizes the vulnerability of the Site and/or ECs to severe storms/weather events and associated flooding.

- Flood Plain: The Site is not located within a flood plain.
- Site Drainage and Storm Water Management: Stormwater at the Site and the surrounding area flows to the New York City combined sewer system.
- Erosion: The Site is covered by buildings and hardscapes; thus, erosion is not anticipated to be an issue of concern.
- High Wind: All permanent building components are secured against high winds. In the event that high winds are forecast for the Site, proper precautions will be taken to secure or shelter any Site components that are not protected against high winds.
- Electricity: Electricity to the buildings is supplied via newly installed underground vaults and conduits and is not expected to be affected by severe weather events.
- Spill/Contaminant Release: Storage of large amounts of fuel oil or other chemicals at the Site is not expected. Nominal amounts of cleaning chemicals are likely to be stored throughout the Site but are not expected to be affected by severe weather conditions.

6.2 Green Remediation Evaluation

NYSDEC's DER-31 Green Remediation requires that green remediation concepts and techniques be considered during all stages of the remedial program, including site management, with the goal of improving the sustainability of the cleanup and summarizing the net environmental benefit of any implemented green technology. This SMP does not require any green remediation evaluations to be completed for the Site during site management. Any updates or related Site improvements will be incorporated in the PRR.

6.2.1 Remedial Systems

Remedial systems will be operated properly considering the current Site conditions to conserve materials and resources to the greatest extent possible. Consideration will be given to operating rates and use of reagents and consumables. Spent materials will be sent for recycling, as appropriate.

6.2.2 Building Operations

Structures including buildings and sheds will be operated and maintained to provide for the most efficient operation of the remedy, while minimizing energy, waste generation, and water consumption.

6.2.3 Frequency of System Checks, Sampling and Other Periodic Activities

Transportation to and from the Site, use of consumables in relation to visiting the Site in order to conduct system checks and/or collect samples, and shipping samples to a laboratory for analyses have direct and/or inherent energy costs. The schedule and/or means of these periodic activities have been prepared so that these tasks can be accomplished in a manner that does not impact remedy protectiveness but reduces expenditure of energy or resources.

6.3 Remedial System Optimization

A Remedial System Optimization (RSO) study will be conducted any time that the NYSDEC project manager or the remedial party requests in writing that an in-depth evaluation of the remedy is needed. An RSO may be appropriate if any of the following occur:

- The remedial actions have not met or are not expected to meet RAOs in the time frame estimated in the Decision Document;
- The management and operation of the remedial system is exceeding the estimated costs;
- The remedial system is not performing as expected or as designed;
- Previously unidentified source material may be suspected;
- Plume shift has potentially occurred;
- Site conditions change due to development, change of use, change in groundwater use, etc.;
- There is an anticipated transfer of site management to another remedial party or agency; and/or
- A new and applicable remedial technology becomes available.

An RSO will provide a critique of a site's conceptual model, give a summary of past performance, document current cleanup practices, summarize progress made toward the site's cleanup goals, gather additional performance or media specific data and information, and provide recommendations for improvements to enhance the ability of the present system to reach RAOs or to provide a basis for changing the remedial strategy.

The RSO study will focus on overall Site cleanup strategy, process optimization, and management with the intent of identifying impediments to cleanup and improvements to Site operations to increase efficiency, cost effectiveness, and remedial time frames. Green remediation technology and principals are to be considered when performing the RSO.

7.0 REPORTING REQUIREMENTS

7.1 Site Management Reports

All site management inspection, maintenance, and monitoring events will be recorded on the appropriate site management forms provided in Appendix J. These forms are subject to NYSDEC revision. All site management inspection, maintenance, and monitoring events will be conducted by a QEP as defined in 6 NYCRR Part 375, a PE who is licensed and registered in New York State, or a qualified person who directly reports to a PE who is licensed and registered in New York State.

All applicable inspection forms and other records generated for the Site during the reporting period, including media sampling data and system maintenance reports, will be provided in electronic format to NYSDEC in accordance with the requirements of Table XIII and summarized in the PRR.

Table XIII
Schedule of Monitoring/Inspection Reports

Task/Report	Reporting Frequency*
Monitoring/Inspection Letter Report with Figures and Attachments (Inspections and Associated Sampling Events)	Quarterly for first PRR cycle and annually thereafter.
Periodic Review Report (Inclusive of All Inspections and Sampling Events)	Annually. First inspection no more than 16 months after COC, then at least annually thereafter and PRR due 1 month later.

* The frequency of events will be conducted as specified until otherwise approved by the NYSDEC project manager.

All quarterly monitoring/inspections reports will include, at a minimum:

- Date of event or reporting period;
- Name, company, and position of person(s) conducting monitoring/inspection activities;
- Description of the activities performed;
- Where appropriate, color photographs or sketches showing the approximate location of any problems or incidents noted (included either on the checklist/form or on an attached sheet);
- Type of samples collected (e.g., sub-slab vapor, indoor air, outdoor air);
- Copies of all field forms completed (e.g., sampling logs, chain-of-custody documentation, maintenance forms);
- Sampling results in comparison to appropriate SCGs;
- A figure illustrating sample type and sampling locations;
- Copies of all laboratory data sheets and the laboratory data deliverables required for all points sampled (to be submitted electronically in the NYSDEC-identified format);
- Any observations, conclusions, or recommendations; and
- A determination as to whether contaminant conditions have changed since the last reporting event.

Routine maintenance event reporting forms will be provided with the quarterly reports and will include, at a minimum:

- Date of event;

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

Non-routine maintenance event reporting forms will be provided with the quarterly inspection reports and will include, at a minimum:

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

Data will be reported in digital format as determined by NYSDEC. Currently, data is to be supplied electronically and submitted to the NYSDEC Environmental Quality Information System (EQuIS™) database in accordance with the requirements found at this link: http://www.dec.ny.gov/chemical/62440.html.

7.2 Periodic Review Report

A PRR will be submitted to the NYSDEC project manager beginning 16 months after the COC is issued. After submittal of the initial PRR, the next PRR shall be submitted annually to the NYSDEC project manager or at another frequency as may be required by the NYSDEC project manager. In the event that the Site is subdivided into separate parcels with different ownership, a single PRR will be prepared that addresses the Site described in Appendix A – Environmental Easement. The report will be prepared in accordance with NYSDEC's DER-10 and submitted within 30 days of the end of each certification period. Media sampling results will also be incorporated into the PRR. The report will include:

- Identification, assessment, and certification of all ECs/ICs required by the remedy for the Site;
- Results of the required annual Site inspections and severe condition inspections, if applicable;
- All applicable site management forms and other records generated for the Site during the reporting period in the NYSDEC-approved electronic format, if not previously submitted;
- Identification of any wastes generated during the reporting period, along with waste characterization data, manifests, and disposal documentation;
- A summary of any discharge monitoring data and/or information generated during the reporting period, with comments and conclusions;
- Data summary tables and graphical representations of contaminants of concern by media (groundwater, soil vapor, etc.), including a listing of all compounds analyzed, the applicable standards, and exceedances highlighted. These tables and figures will include a presentation of

past data as part of an evaluation of contaminant concentration trends, including but not limited to:

  - Trend monitoring graphs that present groundwater contaminant levels from before the start of the remedy implementation to the most current sampling data; and
  - Trend monitoring graphs depicting system influent analytical data on a per event and cumulative basis;

- Operation and maintenance data summary tables;
- A current plume map for sites with remaining groundwater contamination;
- Results of all analyses, copies of all laboratory data sheets, and the required laboratory data deliverables for all samples collected during the reporting period, submitted in digital format as determined by NYSDEC. Currently, data is supplied electronically and submitted to the NYSDEC EQuIS™ database in accordance with the requirements found at this link: http://www.dec.ny.gov/chemical/62440.html.
- A Site evaluation, which includes the following:
  - The compliance of the remedy with the requirements of the Site-specific RAWP and Decision Document;
  - The operation and the effectiveness of all treatment units, etc., including identification of any needed repairs or modifications;
  - Any new conclusions or observations regarding Site contamination based on inspections or data generated by the Monitoring and Sampling Plan for the media being monitored;
  - Recommendations regarding any necessary changes to the remedy and/or Monitoring and Sampling Plan;
  - An evaluation of trends in contaminant levels in the affected media to determine if the remedy continues to be effective in achieving remedial goals as specified by the RAWP and Decision Document; and
  - The overall performance and effectiveness of the remedy; and
- A performance summary for all treatment systems at the Site during the calendar year, including information such as:
  - The number of days the system operated for the reporting period;
  - The average, high, and low flows per day;
  - The contaminant mass removed and the cost per pound of mass removed during the certification period and during the life of the treatment system;
  - A description of breakdowns and/or repairs along with an explanation for any significant downtime;
  - A description of the resolution of performance problems;
  - Alarm conditions;
  - Trends in equipment failure;
  - A summary of the performance, effluent, and/or effectiveness monitoring; and

- Comments, conclusions, and recommendations based on data evaluation. Recommendations must address how receptors would be impacted. Recommendations can include:
  - Proposals to address efficiency and costs, such as: instituting remote operation, system changes to decrease maintenance costs and downtime, and system changes to decrease energy use; and
  - Proposals to modify or shut down a treatment system due to remediation completion, system performance, or changed conditions. System shutdowns are addressed in Section 6.4 of DER-10.

7.2.1 Certification of Institutional and Engineering Controls

Following the last inspection of the reporting period, a PE licensed to practice and registered in New York State will prepare, and include in the PRR, the following certification as per the requirements of NYSDEC DER-10:

"For each institutional or engineering control identified for the Site, I certify that all of the following statements are true:

- *The inspection of the Site to confirm the effectiveness of the institutional and engineering controls required by the remedial program was performed under my direction;*
- *The institutional control and/or engineering control employed at this Site is unchanged from the date the control was put in place, or last approved by NYSDEC;*
- *Nothing has occurred that would impair the ability of the control to protect public health and the environment;*
- *Nothing has occurred that would constitute a violation or failure to comply with any site management plan for this control;*
- *Access to the Site will continue to be provided to the Department to evaluate the remedy, including access to evaluate the continued maintenance of this control;*
- *Use of the Site is compliant with the Environmental Easement;*
- *The engineering control systems are performing as designed and are effective;*
- *To the best of my knowledge and belief, the work and conclusions described in this certification are in accordance with the requirements of the Site remedial program and generally accepted engineering practices;*
- *No new information has come to my attention, including groundwater monitoring data from wells located at the Site boundary, if any, to indicate that the assumptions made in the qualitative exposure assessment of off-site contamination are no longer valid;*
- *The assumptions made in the qualitative exposure assessment remain valid; and*
- *The information presented in this report is accurate and complete.*
- *If a financial assurance mechanism is required under the oversight document for the site, the mechanism remains valid and sufficient for the intended purpose under the document.*

I certify that all information and statements in this certification form are true. I understand that a false statement made herein is punishable as a Class "A" misdemeanor, pursuant

to Section 210.45 of the Penal Law. I, Rebecca Kinal, of AKRF, Inc., am certifying as Owner's/Remedial Party's Designated Site Representative.

I certify that the New York State Education Department has granted a Certificate of Authorization to provide Professional Engineering services to the firm that prepared this Periodic Review Report."

The signed certification will be included in the PRR.

The PRR will be submitted, in electronic format, to the NYSDEC project manager and the NYSDOH project manager. The PRR may also need to be submitted in hard-copy format, if requested by the NYSDEC project manager.

7.3 Corrective Measures Work Plan

If any component of the remedy is found to have failed, or if the periodic certification cannot be provided due to the failure of an IC or EC or failure to conduct site management activities, a Corrective Measures Work Plan will be submitted to the NYSDEC project manager for approval. This plan will explain the failure and provide the details and schedule for performing work necessary to correct the failure. Unless an emergency condition exists, no work will be performed pursuant to the Corrective Measures Work Plan until it has been approved by the NYSDEC project manager.

7.4 Remedial Site Optimization Report

If an RSO is to be performed (see Section 6.4), upon completion of the RSO, an RSO report must be submitted to the NYSDEC project manager for approval. The RSO report will document the research/investigation and data gathering that was conducted, evaluate the results and facts obtained, present a revised conceptual Site model, and present recommendations. RSO recommendations are to be implemented upon approval from NYSDEC. Additional work plans, design documents, HASPs, etc. may still be required to implement the recommendations, based upon the actions that need to be taken. A Final Engineering Report and update to the SMP may also be required.

The RSO report will be submitted, in electronic format, to the NYSDEC project manager and the NYSDOH project manager.

8.0 REFERENCES

1. 6 NYCRR Part 375, Environmental Remediation Programs. December 14, 2006.
2. NYSDEC DER-10 – "Technical Guidance for Site Investigation and Remediation".
3. NYSDEC, 1998. Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations Division of Water Technical and Operational Guidance Series (TOGS) 1.1.1. June 1998 (April 2000 addendum).
4. *Phase I Environmental Site Assessment* – 1956 Jerome Avenue Bronx, New York, AKRF, Inc., February 2021
5. *Phase II Investigation Report* – 1956 Jerome Avenue, Bronx, New York, AKRF, July 2021
6. *Remedial Investigation Report* – Seton Brilla Charter School, 1956 Jerome Avenue, Bronx, New York, AKRF, September 2021
7. *Remedial Action Work Plan* – Seton Brilla Charter School, 1956 Jerome Avenue, Bronx, New York, AKRF, May 2022
8. *Remedial Design Investigation Work Plan* – Seton Brilla Charter School, 1956 Jerome Avenue, Bronx, New York, AKRF, May 2022
9. *Citizen Participation Plan* – Seton Brilla Charter School, 1956 Jerome Avenue, Bronx, New York, AKRF, July 2022
10. *BCP Application* – Seton Brilla Charter School, 1956 Jerome Avenue, Bronx, New York, AKRF, Inc., December 2021
11. *Brownfield Cleanup Agreement* – Seton Brilla Charter School, 1956 Jerome Avenue, Bronx, New York, AKRF, Inc., April 2022
12. *Decision Document* – BCP Site No. C203152, Seton Brilla Charter School, 1956 Jerome Avenue, Bronx, New York, July 2022.
13. *Groundwater Treatment Design Report* – Seton Brilla Charter School, 1956 Jerome Avenue, Bronx, New York, January 2023.

TABLES

(ATTACHED)

Table 1
Seton Brilla Charter School
1956 Jerome Avenue, Bronx, NY
Groundwater Elevation Summary

Monitoring Well	Top of Casing Elevation (ft.)[1]	Depth to Groundwater (ft. bgs)[2]	Depth to Bottom (ft. bgs)[2]	Groundwater Elevation (ft)
MW-01	45.36	6.10	17.90	39.26
MW-02	45.01	5.50	20.40	39.51
MW-03	45.48	9.40	17.50	36.08

Notes:

[1]Elevation measured in feet (ft.) above mean sea level according to the North American Vertical Datum of 1988 (NAVD88) on July 7, 2023.

[2]Depth to water measured in feet below ground surface (ft. bgs) at each sample location.

Table 2
Seton Brilla Charter School
1956 Jerome Avenue, Bronx, NY
Documentation Sampling
Soil Analytical Results of Volatile Organic Compounds (VOCs)

			AKRF Sample ID	BS-01_20230117	BS-01_20230117	BS-02_20230118	BS-03_20230119	BS-03_20230119	EP-01_2_20221028	EP-02_2_20221028
			Laboratory Sample ID	L2302678-04	L2302678-04	L2302922-01	L2303274-04	L2303274-04	L2260497-01	L2260497-02
			Date Sampled	1/17/2023	1/17/2023	1/18/2023	1/19/2023	1/19/2023	10/28/2022	10/28/2022
			Dilution Factor	1	2	1	2	10	1	1
			Unit	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Compound	**NYSDEC UUSCO**	**NYSDEC RRSCO**	**NYSDEC PGWSCO**	CONC Q	CONC Q	CONC Q	CONC Q	CONC Q	CONC Q	CONC Q
1,1,1,2-Tetrachloroethane	NS	NS	NS	0.0005 U	NR	0.0012 U	0.1 U	NR	0.00066 U	0.00054 U
1,1,1-Trichloroethane	0.68	100	0.68	0.0005 U	NR	0.0012 U	0.1 U	NR	0.00066 U	0.00054 U
1,1,2,2-Tetrachloroethane	NS	NS	NS	NR	0.072 U	0.0012 U	0.1 U	NR	0.00066 U	0.00054 U
1,1,2-Trichloroethane	NS	NS	NS	0.001 U	NR	0.0024 U	0.21 U	NR	0.0013 U	0.0011 U
1,1-Dichloroethane	0.27	26	0.27	NR	0.14 U	0.0024 U	0.21 U	NR	0.0013 U	0.0011 U
1,1-Dichloroethene	0.33	100	0.33	0.001 U	NR	0.0024 U	0.21 U	NR	0.0013 U	0.0011 U
1,1-Dichloropropene	NS	NS	NS	0.0005 U	NR	0.0012 U	0.1 U	NR	0.00066 U	0.00054 U
1,2,3-Trichlorobenzene	NS	NS	NS	0.002 U	NR	0.0048 U	0.42 U	NR	0.0026 U	0.0022 U
1,2,3-Trichloropropane	NS	NS	NS	0.002 U	NR	0.0048 U	0.42 U	NR	0.0026 U	0.0022 U
1,2,4,5-Tetramethylbenzene	NS	NS	NS	NR	1	0.081	14	NR	0.0026 UJ	0.0022 UJ
1,2,4-Trichlorobenzene	NS	NS	NS	0.002 U	NR	0.0048 U	0.42 U	NR	0.0026 U	0.0022 U
1,2,4-Trimethylbenzene	**3.6**	52	3.6	NR	0.1 J	0.68	NR	**160**	0.0026 U	0.0022 U
1,2-Dibromo-3-Chloropropane	NS	NS	NS	NR	0.43 U	0.0073 U	0.63 U	NR	0.0039 UJ	0.0032 UJ
1,2-Dibromoethane (Ethylene Dibromide)	NS	NS	NS	NR	0.14 U	0.0024 U	0.21 U	NR	0.0013 U	0.0011 U
1,2-Dichlorobenzene	1.1	100	1.1	0.002 U	NR	0.0048 U	0.42 U	NR	0.0026 U	0.0022 U
1,2-Dichloroethane	0.02	3.1	0.02	NR	0.14 U	0.0024 U	0.21 U	NR	0.0013 U	0.0011 U
1,2-Dichloropropane	NS	NS	NS	0.001 U	NR	0.0024 U	0.21 U	NR	0.0013 U	0.0011 U
1,3,5-Trimethylbenzene (Mesitylene)	**8.4**	52	8.4	NR	0.065 J	0.19	**47**	NR	0.0026 U	0.0022 U
1,3-Dichlorobenzene	2.4	49	2.4	NR	0.29 U	0.0048 U	0.42 U	NR	0.0026 U	0.0022 U
1,3-Dichloropropane	NS	NS	NS	0.002 U	NR	0.0048 U	0.42 U	NR	0.0026 U	0.0022 U
1,4-Dichlorobenzene	1.8	13	1.8	0.002 U	NR	0.0048 U	0.42 U	NR	0.0026 U	0.0022 U
1,4-Diethyl Benzene	NS	NS	NS	0.17 H	NR	0.0048 U	0.42 U	NR	0.0026 U	0.0022 U
2,2-Dichloropropane	NS	NS	NS	NR	0.29 U	0.0048 U	0.42 U	NR	0.0026 U	0.0022 U
2-Chlorotoluene	NS	NS	NS	NR	0.29 U	0.0048 U	0.42 U	NR	0.0026 U	0.0022 U
2-Hexanone	NS	NS	NS	0.01 U	NR	0.024 U	2.1 U	NR	0.013 U	0.011 U
4-Chlorotoluene	NS	NS	NS	0.002 U	NR	0.0048 U	0.42 U	NR	0.0026 U	0.0022 U
4-Ethyltoluene	NS	NS	NS	0.12 H	NR	0.49	NR	140	0.0026 U	0.0022 U
Acetone	**0.05**	100	0.05	0.01 U	NR	0.024 U	2.1 U	NR	0.013 U	**0.1**
Acrylonitrile	NS	NS	NS	0.004 U	NR	0.0097 U	0.84 U	NR	0.0052 U	0.0043 U
Benzene	**0.06**	4.8	0.06	NR	0.072 U	**0.068**	**30**	NR	0.00066 U	0.00054 U
Bromobenzene	NS	NS	NS	NR	0.29 U	0.0048 U	0.42 U	NR	0.0026 U	0.0022 U
Bromochloromethane	NS	NS	NS	0.002 U	NR	0.0048 U	0.42 U	NR	0.0026 U	0.0022 U
Bromodichloromethane	NS	NS	NS	0.0005 U	NR	0.0012 U	0.1 U	NR	0.00066 U	0.00054 U
Bromoform	NS	NS	NS	0.004 U	NR	0.0097 U	0.84 U	NR	0.0052 UJ	0.0043 UJ
Bromomethane	NS	NS	NS	0.002 U	NR	0.0048 U	0.42 U	NR	0.0026 U	0.0022 U
Carbon Disulfide	NS	NS	NS	0.01 UJ	NR	0.024 UJ	2.1 UJ	NR	0.013 UJ	0.011 UJ
Carbon Tetrachloride	0.76	2.4	0.76	0.001 U	NR	0.0024 U	0.21 U	NR	0.0013 U	0.0011 U
Chlorobenzene	1.1	100	1.1	0.0005 U	NR	0.0012 U	0.1 U	NR	0.00066 U	0.00054 U
Chloroethane	NS	NS	NS	NR	0.29 U	0.0048 U	0.42 U	NR	0.0026 U	0.0022 U
Chloroform	0.37	49	0.37	0.0015 U	NR	0.0036 U	0.31 U	NR	0.002 U	0.0016 U
Chloromethane	NS	NS	NS	0.004 U	NR	0.0097 U	0.84 U	NR	0.0052 U	0.0043 U
Cis-1,2-Dichloroethylene	0.25	100	0.25	0.001 U	NR	0.0024 U	0.21 U	NR	0.0013 U	0.0011 U
Cis-1,3-Dichloropropene	NS	NS	NS	0.0005 U	NR	0.0012 U	0.1 U	NR	0.00066 U	0.00054 U
Cymene	NS	NS	NS	0.058 H	NR	0.0085	1.3	NR	0.0013 U	0.0011 U
Dibromochloromethane	NS	NS	NS	NR	0.14 U	0.0024 U	0.21 U	NR	0.0013 U	0.0011 U
Dibromomethane	NS	NS	NS	0.002 U	NR	0.0048 U	0.42 U	NR	0.0026 U	0.0022 U
Dichlorodifluoromethane	NS	NS	NS	0.01 U	NR	0.024 U	2.1 U	NR	0.013 UJ	0.011 UJ
Dichloroethylenes	NS	NS	NS	NR	0.14 U	0.0024 U	0.21 U	NR	0.0013 U	0.0011 U
Diethyl Ether (Ethyl Ether)	NS	NS	NS	NR	0.29 U	0.0048 U	0.42 U	NR	0.0026 U	0.0022 U
Ethylbenzene	**1**	41	1	NR	0.083 J	0.25	NR	**76**	0.0013 U	0.0011 U
Isopropylbenzene (Cumene)	NS	NS	NS	NR	0.2	0.038	9.3	NR	0.0013 U	0.00023 J
M,P-Xylenes	NS	NS	NS	NR	0.16 J	0.84	NR	290	0.0026 U	0.00061 J
Methyl Ethyl Ketone (2-Butanone)	0.12	100	0.12	0.01 U	NR	0.024 U	2.1 U	NR	0.013 U	0.0091 J
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	NS	NS	NS	0.01 U	NR	0.024 U	2.1 U	NR	0.013 U	0.011 U
Methylene Chloride	0.05	100	0.05	0.005 U	NR	0.012 U	1 U	NR	0.0066 U	0.0054 U
N-Butylbenzene	12	100	12	0.15 H	NR	0.034	7.2	NR	0.0013 U	0.0011 U
N-Propylbenzene	**3.9**	100	3.9	NR	0.53	0.11	**31**	NR	0.0013 U	0.0011 U
O-Xylene (1,2-Dimethylbenzene)	NS	NS	NS	NR	0.043 J	0.35	120	NR	0.0013 U	0.0011 U
Sec-Butylbenzene	11	100	11	0.057 H	NR	0.014	3.1	NR	0.0013 U	0.0011 U
Styrene	NS	NS	NS	0.001 U	NR	0.0024 U	0.2 J	NR	0.0013 U	0.0011 U
T-Butylbenzene	5.9	100	5.9	0.006 H	NR	0.0048 U	0.42 U	NR	0.0026 U	0.0022 U
Tert-Butyl Methyl Ether	0.93	100	0.93	NR	0.29 U	0.0048 U	0.42 U	NR	0.0026 U	0.0022 U
Tetrachloroethylene (PCE)	1.3	19	1.3	0.0005 U	NR	0.0035	0.1 U	NR	0.00066 U	0.00027 J
Toluene	**0.7**	100	0.7	NR	0.14 U	0.18	NR	**170**	0.0013 U	0.0011 U
Total, 1,3-Dichloropropene (Cis And Trans)	NS	NS	NS	NR	0.072 U	0.0012 U	0.1 U	NR	0.00066 UJ	0.00054 UJ
Trans-1,2-Dichloroethene	0.19	100	0.19	0.0015 U	NR	0.0036 U	0.31 U	NR	0.002 U	0.0016 U
Trans-1,3-Dichloropropene	NS	NS	NS	0.001 U	NR	0.0024 U	0.21 U	NR	0.0013 U	0.0011 U
Trans-1,4-Dichloro-2-Butene	NS	NS	NS	NR	0.72 U	0.012 U	1 U	NR	0.0066 U	0.0054 U
Trichloroethylene (TCE)	0.47	21	0.47	0.0005 U	NR	0.0012 U	0.1 U	NR	0.00066 UJ	0.00054 UJ
Trichlorofluoromethane	NS	NS	NS	NR	0.58 U	0.0097 U	0.84 U	NR	0.0052 U	0.0043 U
Vinyl Acetate	NS	NS	NS	NR	1.4 U	0.024 U	2.1 U	NR	0.013 U	0.011 U
Vinyl Chloride	0.02	0.9	0.02	NR	0.14 U	0.0024 U	0.21 U	NR	0.0013 U	0.0011 U
Xylenes, Total	**0.26**	100	1.6	NR	0.2 J	**1.2**	NR	**410**	0.0013 U	0.00061 J

Table 2
Seton Brilla Charter School
1956 Jerome Avenue, Bronx, NY
Documentation Sampling
Soil Analytical Results of Volatile Organic Compounds (VOCs)

			AKRF Sample ID	EP-03_2_20221028	EP-04_2_20221101	EP-05_2_20221101	EP-06_2_20221101	EP-07_2_20221101	EP-08-2_20221108	EP-12_2_20230201
			Laboratory Sample ID	L2260497-03	L2261106-01	L2261106-02	L2261106-03	L2261106-04	L2262572-01	L2305518-01
			Date Sampled	10/28/2022	11/01/2022	11/01/2022	11/01/2022	11/01/2022	11/08/2022	2/01/2023
			Dilution Factor	1	1	1	1	1	1	1
			Unit	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Compound	**NYSDEC UUSCO**	**NYSDEC RRSCO**	**NYSDEC PGWSCO**	CONC Q	CONC Q	CONC Q	CONC Q	CONC Q	CONC Q	CONC Q
1,1,1,2-Tetrachloroethane	NS	NS	NS	0.00064 U	0.0006 U	0.0007 U	0.00063 U	0.00052 U	0.0007 U	0.00046 U
1,1,1-Trichloroethane	0.68	100	0.68	0.00064 U	0.0006 U	0.0007 U	0.00063 U	0.00052 U	0.0007 U	0.00046 U
1,1,2,2-Tetrachloroethane	NS	NS	NS	0.00064 U	0.0006 U	0.0007 U	0.00063 U	0.00052 U	0.0007 U	0.00046 U
1,1,2-Trichloroethane	NS	NS	NS	0.0013 U	0.0012 U	0.0014 U	0.0012 U	0.001 U	0.0014 U	0.00093 U
1,1-Dichloroethane	0.27	26	0.27	0.0013 U	0.0012 U	0.0014 U	0.0012 U	0.001 U	0.0014 U	0.00093 U
1,1-Dichloroethene	0.33	100	0.33	0.0013 U	0.0012 U	0.0014 U	0.0012 U	0.001 U	0.0014 U	0.00093 U
1,1-Dichloropropene	NS	NS	NS	0.00064 U	0.0006 U	0.0007 U	0.00063 U	0.00052 U	0.0007 U	0.00046 U
1,2,3-Trichlorobenzene	NS	NS	NS	0.0026 U	0.0024 U	0.0028 U	0.0025 U	0.0021 U	0.0028 U	0.0018 U
1,2,3-Trichloropropane	NS	NS	NS	0.0026 U	0.0024 U	0.0028 U	0.0025 U	0.0021 U	0.0028 U	0.0018 U
1,2,4,5-Tetramethylbenzene	NS	NS	NS	0.0026 UJ	0.0024 U	0.0028 U	0.003	0.0024	0.0028 U	0.0018 U
1,2,4-Trichlorobenzene	NS	NS	NS	0.0026 U	0.0024 U	0.0028 U	0.0025 U	0.0021 U	0.0028 U	0.0018 U
1,2,4-Trimethylbenzene	**3.6**	52	3.6	0.0026 U	0.0024 U	0.0028 U	0.0042	0.0029	0.0028 U	0.0018 U
1,2-Dibromo-3-Chloropropane	NS	NS	NS	0.0038 UJ	0.0036 U	0.0042 U	0.0038 U	0.0031 U	0.0042 U	0.0028 U
1,2-Dibromoethane (Ethylene Dibromide)	NS	NS	NS	0.0013 U	0.0012 U	0.0014 U	0.0012 U	0.001 U	0.0014 U	0.00093 U
1,2-Dichlorobenzene	1.1	100	1.1	0.0026 U	0.0024 U	0.0028 U	0.00051 J	0.00062 J	0.0028 U	0.0018 U
1,2-Dichloroethane	0.02	3.1	0.02	0.0013 U	0.0012 U	0.0014 U	0.0012 U	0.001 U	0.0014 U	0.00093 U
1,2-Dichloropropane	NS	NS	NS	0.0013 U	0.0012 U	0.0014 U	0.0012 U	0.001 U	0.0014 U	0.00093 U
1,3,5-Trimethylbenzene (Mesitylene)	**8.4**	52	8.4	0.0026 U	0.0024 U	0.0028 U	0.0029	0.0014 J	0.0028 U	0.0018 U
1,3-Dichlorobenzene	2.4	49	2.4	0.0026 U	0.0024 U	0.0028 U	0.0025 U	0.0021 U	0.0028 U	0.0018 U
1,3-Dichloropropane	NS	NS	NS	0.0026 U	0.0024 U	0.0028 U	0.0025 U	0.0021 U	0.0028 U	0.0018 U
1,4-Dichlorobenzene	1.8	13	1.8	0.0026 U	0.0024 U	0.0028 U	0.00028 J	0.0021 U	0.0028 U	0.0018 U
1,4-Diethyl Benzene	NS	NS	NS	0.0026 U	0.0024 U	0.0028 U	0.0075	0.004	0.0028 U	0.0018 U
2,2-Dichloropropane	NS	NS	NS	0.0026 U	0.0024 U	0.0028 U	0.0025 U	0.0021 U	0.0028 U	0.0018 U
2-Chlorotoluene	NS	NS	NS	0.0026 U	0.0024 U	0.0028 U	0.0025 U	0.0021 U	0.0028 U	0.0018 U
2-Hexanone	NS	NS	NS	0.013 U	0.012 U	0.014 U	0.012 U	0.01 U	0.014 U	0.0093 U
4-Chlorotoluene	NS	NS	NS	0.0026 U	0.0024 U	0.0028 U	0.0025 U	0.0021 U	0.0028 U	0.0018 U
4-Ethyltoluene	NS	NS	NS	0.0026 U	0.0024 U	0.0028 U	0.0031	0.0014 J	0.0028 U	0.0018 U
Acetone	**0.05**	100	0.05	0.013 U	**0.11 J**	0.021 J	**0.076 J**	**0.076 J**	0.012 J	0.024
Acrylonitrile	NS	NS	NS	0.0051 U	0.0048 U	0.0056 U	0.005 U	0.0041 U	0.0056 U	0.0037 U
Benzene	**0.06**	4.8	0.06	0.00064 U	0.0006 U	0.0007 U	0.00063 U	0.00052 U	0.0007 U	0.00046 U
Bromobenzene	NS	NS	NS	0.0026 U	0.0024 U	0.0028 U	0.0025 U	0.0021 U	0.0028 U	0.0018 U
Bromochloromethane	NS	NS	NS	0.0026 U	0.0024 U	0.0028 U	0.0025 U	0.0021 U	0.0028 U	0.0018 U
Bromodichloromethane	NS	NS	NS	0.00064 U	0.0006 U	0.0007 U	0.00063 U	0.00052 U	0.0007 U	0.00046 U
Bromoform	NS	NS	NS	0.0051 UJ	0.0048 U	0.0056 U	0.005 U	0.0041 U	0.0056 U	0.0037 U
Bromomethane	NS	NS	NS	0.0026 U	0.0024 U	0.0028 U	0.0025 U	0.0021 U	0.0028 U	0.0018 UJ
Carbon Disulfide	NS	NS	NS	0.013 UJ	0.012 UJ	0.014 UJ	0.012 UJ	0.01 UJ	0.014 UJ	0.0093 UJ
Carbon Tetrachloride	0.76	2.4	0.76	0.0013 U	0.0012 U	0.0014 U	0.0012 U	0.001 U	0.0014 U	0.00093 U
Chlorobenzene	1.1	100	1.1	0.00064 U	0.0006 U	0.0007 U	0.00063 U	0.00052 U	0.0007 U	0.00046 U
Chloroethane	NS	NS	NS	0.0026 U	0.0024 U	0.0028 U	0.0025 U	0.0021 U	0.0028 U	0.0018 U
Chloroform	0.37	49	0.37	0.0019 U	0.0018 U	0.0021 U	0.0019 U	0.0016 U	0.0021 U	0.0014 U
Chloromethane	NS	NS	NS	0.0051 U	0.0048 U	0.0056 U	0.005 U	0.0041 U	0.0056 U	0.0037 U
Cis-1,2-Dichloroethylene	0.25	100	0.25	0.0013 U	0.0012 U	0.0014 U	0.0012 U	0.001 U	0.0014 U	0.00093 U
Cis-1,3-Dichloropropene	NS	NS	NS	0.00064 U	0.0006 U	0.0007 U	0.00063 U	0.00052 U	0.0007 U	0.00046 U
Cymene	NS	NS	NS	0.0013 U	0.0012 U	0.0014 U	0.0016	0.00028 J	0.0014 U	0.00093 U
Dibromochloromethane	NS	NS	NS	0.0013 U	0.0012 U	0.0014 U	0.0012 U	0.001 U	0.0014 U	0.00093 U
Dibromomethane	NS	NS	NS	0.0026 U	0.0024 U	0.0028 U	0.0025 U	0.0021 U	0.0028 U	0.0018 U
Dichlorodifluoromethane	NS	NS	NS	0.013 UJ	0.012 U	0.014 U	0.012 U	0.01 U	0.014 UJ	0.0093 U
Dichloroethylenes	NS	NS	NS	0.0013 U	0.0012 U	0.0014 U	0.0012 U	0.001 U	0.0014 U	0.00093 U
Diethyl Ether (Ethyl Ether)	NS	NS	NS	0.0026 U	0.0024 U	0.0028 U	0.0025 U	0.0021 U	0.0028 UJ	0.0018 UJ
Ethylbenzene	**1**	41	1	0.0013 U	0.0012 U	0.0014 U	0.00034 J	0.00029 J	0.0014 U	0.00093 U
Isopropylbenzene (Cumene)	NS	NS	NS	0.00014 J	0.0012 U	0.0014 U	0.00021 J	0.00013 J	0.0014 U	0.00093 U
M,P-Xylenes	NS	NS	NS	0.0026 U	0.0024 U	0.0028 U	0.00099 J	0.0011 J	0.0028 U	0.0018 U
Methyl Ethyl Ketone (2-Butanone)	0.12	100	0.12	0.013 U	0.0068 J	0.014 U	0.0045 J	0.0043 J	0.014 U	0.0093 U
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	NS	NS	NS	0.013 U	0.012 U	0.014 U	0.012 U	0.01 U	0.014 U	0.0093 U
Methylene Chloride	0.05	100	0.05	0.0064 U	0.006 U	0.007 U	0.0063 U	0.0052 U	0.007 U	0.0046 U
N-Butylbenzene	12	100	12	0.0013 U	0.0012 U	0.0014 U	0.0005 J	0.0004 J	0.0014 U	0.00093 U
N-Propylbenzene	**3.9**	100	3.9	0.0013 U	0.0012 U	0.0014 U	0.00063 J	0.00036 J	0.0014 U	0.00093 U
O-Xylene (1,2-Dimethylbenzene)	NS	NS	NS	0.0013 U	0.0012 U	0.0014 U	0.0014	0.001	0.0014 U	0.00093 U
Sec-Butylbenzene	11	100	11	0.0013 U	0.0012 U	0.0014 U	0.00041 J	0.00028 J	0.0014 U	0.00093 U
Styrene	NS	NS	NS	0.0013 U	0.0012 U	0.0014 U	0.0012 U	0.001 U	0.0014 U	0.00093 U
T-Butylbenzene	5.9	100	5.9	0.0026 U	0.0024 U	0.0028 U	0.0025 U	0.0021 U	0.0028 U	0.0018 U
Tert-Butyl Methyl Ether	0.93	100	0.93	0.0026 U	0.0024 U	0.0028 U	0.0025 U	0.0021 U	0.0028 U	0.0007 J
Tetrachloroethylene (PCE)	1.3	19	1.3	0.00064 U	0.018	0.0011	0.0035	0.0028	0.0007 U	0.00046 U
Toluene	**0.7**	100	0.7	0.0013 U	0.0012 U	0.0014 U	0.0012 U	0.001 U	0.0014 U	0.00093 U
Total, 1,3-Dichloropropene (Cis And Trans)	NS	NS	NS	0.00064 UJ	0.0006 U	0.0007 U	0.00063 U	0.00052 U	0.0007 U	0.00046 U
Trans-1,2-Dichloroethene	0.19	100	0.19	0.0019 U	0.0018 U	0.0021 U	0.0019 U	0.0016 U	0.0021 U	0.0014 U
Trans-1,3-Dichloropropene	NS	NS	NS	0.0013 U	0.0012 U	0.0014 U	0.0012 U	0.001 U	0.0014 U	0.00093 U
Trans-1,4-Dichloro-2-Butene	NS	NS	NS	0.0064 U	0.006 U	0.007 U	0.0063 U	0.0052 U	0.007 U	0.0046 U
Trichloroethylene (TCE)	0.47	21	0.47	0.00064 UJ	0.0006 U	0.0007 U	0.00063 U	0.00052 U	0.0007 U	0.00046 U
Trichlorofluoromethane	NS	NS	NS	0.0051 U	0.0048 U	0.0056 U	0.005 U	0.0041 U	0.0056 U	0.0037 U
Vinyl Acetate	NS	NS	NS	0.013 U	0.012 U	0.014 U	0.012 U	0.01 U	0.014 U	0.0093 U
Vinyl Chloride	0.02	0.9	0.02	0.0013 U	0.0012 U	0.0014 U	0.0012 U	0.001 U	0.0014 U	0.00093 U
Xylenes, Total	**0.26**	100	1.6	0.0013 U	0.0012 U	0.0014 U	0.0024 J	0.0021 J	0.0014 U	0.00093 U

Table 2
Seton Brilla Charter School
1956 Jerome Avenue, Bronx, NY
Documentation Sampling
Soil Analytical Results of Volatile Organic Compounds (VOCs)

			AKRF Sample ID	SW-01_2_20221028	SW-02_2_20221028	SW-03_2_20221028	SW-04_20230117	SW-05_20230117	SW-06_20230117	SW-06B_8-10_20230221
			Laboratory Sample ID	L2260497-04	L2260497-05	L2260497-06	L2302678-01	L2302678-02	L2302678-03	L2309192-01
			Date Sampled	10/28/2022	10/28/2022	10/28/2022	1/17/2023	1/17/2023	1/17/2023	2/21/2023
			Dilution Factor	1	1	1	1	1	1	1
			Unit	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Compound	**NYSDEC UUSCO**	**NYSDEC RRSCO**	**NYSDEC PGWSCO**	CONC Q	CONC Q	CONC Q	CONC Q	CONC Q	CONC Q	CONC Q
1,1,1,2-Tetrachloroethane	NS	NS	NS	0.0007 U	0.00064 U	0.00062 U	0.00067 U	0.034 U	0.032 U	NR
1,1,1-Trichloroethane	0.68	100	0.68	0.0007 U	0.00064 U	0.00062 U	0.00067 U	0.034 U	0.032 U	NR
1,1,2,2-Tetrachloroethane	NS	NS	NS	0.0007 U	0.00064 U	0.00062 U	0.00067 U	0.034 U	0.032 U	NR
1,1,2-Trichloroethane	NS	NS	NS	0.0014 U	0.0013 U	0.0012 U	0.0013 U	0.068 U	0.064 U	NR
1,1-Dichloroethane	0.27	26	0.27	0.0014 U	0.0013 U	0.0012 U	0.0013 U	0.068 U	0.064 U	NR
1,1-Dichloroethene	0.33	100	0.33	0.0014 U	0.0013 U	0.0012 U	0.0013 U	0.068 U	0.064 U	NR
1,1-Dichloropropene	NS	NS	NS	0.0007 U	0.00064 U	0.00062 U	0.00067 U	0.034 U	0.032 U	NR
1,2,3-Trichlorobenzene	NS	NS	NS	0.0028 U	0.0025 U	0.0025 U	0.0027 U	0.14 U	0.13 U	NR
1,2,3-Trichloropropane	NS	NS	NS	0.0028 U	0.0025 U	0.0025 U	0.0027 U	0.14 U	0.13 U	NR
1,2,4,5-Tetramethylbenzene	NS	NS	NS	0.0028 UJ	0.0025 UJ	0.0025 UJ	0.013	1.7	0.97	NR
1,2,4-Trichlorobenzene	NS	NS	NS	0.0028 U	0.0025 U	0.0025 U	0.0027 U	0.14 U	0.13 U	NR
1,2,4-Trimethylbenzene	**3.6**	52	3.6	0.0028 U	0.0025 U	0.0025 U	0.12	**9**	**4.4**	0.00056 J
1,2-Dibromo-3-Chloropropane	NS	NS	NS	0.0042 UJ	0.0038 UJ	0.0037 UJ	0.004 U	0.2 UJ	0.19 UJ	NR
1,2-Dibromoethane (Ethylene Dibromide)	NS	NS	NS	0.0014 U	0.0013 U	0.0012 U	0.0013 U	0.068 U	0.064 U	NR
1,2-Dichlorobenzene	1.1	100	1.1	0.0028 U	0.0025 U	0.0025 U	0.0027 U	0.14 U	0.13 U	NR
1,2-Dichloroethane	0.02	3.1	0.02	0.0014 U	0.0013 U	0.0012 U	0.0013 U	0.068 U	0.064 U	NR
1,2-Dichloropropane	NS	NS	NS	0.0014 U	0.0013 U	0.0012 U	0.0013 U	0.068 U	0.064 U	NR
1,3,5-Trimethylbenzene (Mesitylene)	**8.4**	52	8.4	0.0028 U	0.0025 U	0.0025 U	0.049	3.5	1.6	NR
1,3-Dichlorobenzene	2.4	49	2.4	0.0028 U	0.0025 U	0.0025 U	0.0027 U	0.14 U	0.13 U	NR
1,3-Dichloropropane	NS	NS	NS	0.0028 U	0.0025 U	0.0025 U	0.0027 U	0.14 U	0.13 U	NR
1,4-Dichlorobenzene	1.8	13	1.8	0.0028 U	0.0025 U	0.0025 U	0.0027 U	0.14 U	0.13 U	NR
1,4-Diethyl Benzene	NS	NS	NS	0.0028 U	0.0025 U	0.0025 U	0.0027 U	0.14 U	0.13 U	NR
2,2-Dichloropropane	NS	NS	NS	0.0028 U	0.0025 U	0.0025 U	0.0027 U	0.14 U	0.13 U	NR
2-Chlorotoluene	NS	NS	NS	0.0028 U	0.0025 U	0.0025 U	0.0027 U	0.14 U	0.13 U	NR
2-Hexanone	NS	NS	NS	0.014 U	0.013 U	0.012 U	0.013 U	0.68 U	0.64 U	NR
4-Chlorotoluene	NS	NS	NS	0.0028 U	0.0025 U	0.0025 U	0.0027 U	0.14 U	0.13 U	NR
4-Ethyltoluene	NS	NS	NS	0.0028 U	0.0025 U	0.0025 U	0.046	5.7	2.6	NR
Acetone	**0.05**	100	0.05	0.014 U	0.013 U	0.012 U	0.047	0.68 U	0.64 U	NR
Acrylonitrile	NS	NS	NS	0.0056 U	0.0051 U	0.005 U	0.0054 U	0.27 U	0.26 U	NR
Benzene	**0.06**	4.8	0.06	0.0007 U	0.00064 U	0.00062 U	0.019	**0.17**	**0.064**	0.00024 U
Bromobenzene	NS	NS	NS	0.0028 U	0.0025 U	0.0025 U	0.0027 U	0.14 U	0.13 U	NR
Bromochloromethane	NS	NS	NS	0.0028 U	0.0025 U	0.0025 U	0.0027 U	0.14 U	0.13 U	NR
Bromodichloromethane	NS	NS	NS	0.0007 U	0.00064 U	0.00062 U	0.00067 U	0.034 U	0.032 U	NR
Bromoform	NS	NS	NS	0.0056 UJ	0.0051 UJ	0.005 UJ	0.0054 U	0.27 U	0.26 U	NR
Bromomethane	NS	NS	NS	0.0028 U	0.0025 U	0.0025 U	0.0027 U	0.14 U	0.13 U	NR
Carbon Disulfide	NS	NS	NS	0.014 UJ	0.013 UJ	0.012 UJ	0.013 UJ	0.68 UJ	0.64 UJ	NR
Carbon Tetrachloride	0.76	2.4	0.76	0.0014 U	0.0013 U	0.0012 U	0.0013 U	0.068 UJ	0.064 UJ	NR
Chlorobenzene	1.1	100	1.1	0.0007 U	0.00064 U	0.00062 U	0.00067 U	0.034 U	0.032 U	NR
Chloroethane	NS	NS	NS	0.0028 U	0.0025 U	0.0025 U	0.0027 U	0.14 U	0.13 U	NR
Chloroform	0.37	49	0.37	0.0021 U	0.0019 U	0.0018 U	0.002 U	0.1 U	0.096 U	NR
Chloromethane	NS	NS	NS	0.0056 U	0.0051 U	0.005 U	0.0054 U	0.27 U	0.26 U	NR
Cis-1,2-Dichloroethylene	0.25	100	0.25	0.0014 U	0.0013 U	0.0012 U	0.0013 U	0.068 U	0.064 U	NR
Cis-1,3-Dichloropropene	NS	NS	NS	0.0007 U	0.00064 U	0.00062 U	0.00067 U	0.034 U	0.032 U	NR
Cymene	NS	NS	NS	0.0014 U	0.0013 U	0.0012 U	0.0027	0.26	0.13	NR
Dibromochloromethane	NS	NS	NS	0.0014 U	0.0013 U	0.0012 U	0.0013 U	0.068 U	0.064 U	NR
Dibromomethane	NS	NS	NS	0.0028 U	0.0025 U	0.0025 U	0.0027 U	0.14 U	0.13 U	NR
Dichlorodifluoromethane	NS	NS	NS	0.014 UJ	0.013 UJ	0.012 UJ	0.013 U	0.68 U	0.64 U	NR
Dichloroethylenes	NS	NS	NS	0.0014 U	0.0013 U	0.0012 U	0.0013 U	0.068 U	0.064 U	NR
Diethyl Ether (Ethyl Ether)	NS	NS	NS	0.0028 U	0.0025 U	0.0025 U	0.0027 U	0.14 U	0.13 U	NR
Ethylbenzene	**1**	41	1	0.0014 U	0.0013 U	0.0012 U	0.025	**2.9**	**1.3**	0.00025 J
Isopropylbenzene (Cumene)	NS	NS	NS	0.0014 U	0.00015 H	0.0012 U	0.013	0.68	0.31	NR
M,P-Xylenes	NS	NS	NS	0.0028 U	0.0025 U	0.0025 U	0.049	13	5.7	0.00047 J
Methyl Ethyl Ketone (2-Butanone)	0.12	100	0.12	0.014 U	0.013 U	0.012 U	0.013 U	0.68 U	0.64 U	NR
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	NS	NS	NS	0.014 U	0.013 U	0.012 U	0.013 U	0.68 U	0.64 U	NR
Methylene Chloride	0.05	100	0.05	0.007 U	0.0064 U	0.0062 U	0.0067 U	0.34 U	0.32 U	NR
N-Butylbenzene	12	100	12	0.0014 U	0.0013 U	0.0012 U	0.0023	0.61	0.31	NR
N-Propylbenzene	**3.9**	100	3.9	0.0014 U	0.0013 U	0.0012 U	0.021	1.5	0.68	NR
O-Xylene (1,2-Dimethylbenzene)	NS	NS	NS	0.0014 U	0.0013 U	0.0012 U	0.01	2.6	1.2	0.00048 U
Sec-Butylbenzene	11	100	11	0.0014 U	0.0013 U	0.0012 U	0.0021	0.23	0.11	NR
Styrene	NS	NS	NS	0.0014 U	0.0013 U	0.0012 U	0.0013 U	0.068 U	0.064 U	NR
T-Butylbenzene	5.9	100	5.9	0.0028 U	0.0025 U	0.0025 U	0.00033 J	0.025 J	0.012 J	NR
Tert-Butyl Methyl Ether	0.93	100	0.93	0.0028 U	0.0025 U	0.0025 U	0.0027 U	0.14 U	0.13 U	NR
Tetrachloroethylene (PCE)	1.3	19	1.3	0.0007 U	0.00064 U	0.00062 U	0.00056 J	0.034 U	0.032 U	NR
Toluene	**0.7**	100	0.7	0.0014 U	0.0013 U	0.0012 U	0.0026	**1**	0.42	NR
Total, 1,3-Dichloropropene (Cis And Trans)	NS	NS	NS	0.0007 UJ	0.00064 UJ	0.00062 UJ	0.00067 U	0.034 U	0.032 U	NR
Trans-1,2-Dichloroethene	0.19	100	0.19	0.0021 U	0.0019 U	0.0018 U	0.002 U	0.1 U	0.096 U	NR
Trans-1,3-Dichloropropene	NS	NS	NS	0.0014 U	0.0013 U	0.0012 U	0.0013 U	0.068 U	0.064 U	NR
Trans-1,4-Dichloro-2-Butene	NS	NS	NS	0.007 U	0.0064 U	0.0062 U	0.0067 U	0.34 U	0.32 U	NR
Trichloroethylene (TCE)	0.47	21	0.47	0.0007 UJ	0.00064 UJ	0.00062 UJ	0.00067 U	0.034 U	0.032 U	NR
Trichlorofluoromethane	NS	NS	NS	0.0056 U	0.0051 U	0.005 U	0.0054 U	0.27 U	0.26 U	NR
Vinyl Acetate	NS	NS	NS	0.014 U	0.013 U	0.012 U	0.013 U	0.68 U	0.64 U	NR
Vinyl Chloride	0.02	0.9	0.02	0.0014 U	0.0013 U	0.0012 U	0.0013 U	0.068 U	0.064 U	NR
Xylenes, Total	**0.26**	100	1.6	0.0014 U	0.0013 U	0.0012 U	0.059	**16**	**6.9**	0.00047 J

Table 2
Seton Brilla Charter School
1956 Jerome Avenue, Bronx, NY
Documentation Sampling
Soil Analytical Results of Volatile Organic Compounds (VOCs)

			AKRF Sample ID	SW-07_20230118	SW-08_20230118	SW-09_20230119	SW-09_20230119	SW-10_20230119	SW-10_20230119	DUP-01_20230221
			Laboratory Sample ID	L2302922-02	L2302922-03	L2303274-01	L2303274-01	L2303274-02	L2303274-02	L2309192-03
			Date Sampled	1/18/2023	1/18/2023	1/19/2023	1/19/2023	1/19/2023	1/19/2023	2/21/2023
			Dilution Factor	1	1	1	10	1	10	1
			Unit	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Compound	**NYSDEC UUSCO**	**NYSDEC RRSCO**	**NYSDEC PGWSCO**	CONC Q	CONC Q	CONC Q	CONC Q	CONC Q	CONC Q	CONC Q
1,1,1,2-Tetrachloroethane	NS	NS	NS	0.00083 U	0.00055 U	0.029 U	NR	0.053 U	NR	NR
1,1,1-Trichloroethane	0.68	100	0.68	0.00083 U	0.00055 U	0.029 U	NR	0.053 U	NR	NR
1,1,2,2-Tetrachloroethane	NS	NS	NS	0.00083 U	0.034 U	0.029 U	NR	0.053 U	NR	NR
1,1,2-Trichloroethane	NS	NS	NS	0.0017 U	0.067 U	0.058 U	NR	0.11 U	NR	NR
1,1-Dichloroethane	0.27	26	0.27	0.0017 U	0.0011 U	0.058 U	NR	0.11 U	NR	NR
1,1-Dichloroethene	0.33	100	0.33	0.0017 U	0.0011 U	0.058 U	NR	0.11 U	NR	NR
1,1-Dichloropropene	NS	NS	NS	0.00083 U	0.00055 U	0.029 U	NR	0.053 U	NR	NR
1,2,3-Trichlorobenzene	NS	NS	NS	0.0033 U	0.13 U	0.12 U	NR	0.21 U	NR	NR
1,2,3-Trichloropropane	NS	NS	NS	0.0033 U	0.13 U	0.12 U	NR	0.21 U	NR	NR
1,2,4,5-Tetramethylbenzene	NS	NS	NS	0.03	0.036	5.5 H	NR	10 H	NR	NR
1,2,4-Trichlorobenzene	NS	NS	NS	0.0033 U	0.0022 U	0.12 U	NR	0.21 U	NR	NR
1,2,4-Trimethylbenzene	**3.6**	52	3.6	0.2	0.25	NR	**38**	NR	**58**	0.0046
1,2-Dibromo-3-Chloropropane	NS	NS	NS	0.005 U	0.0033 U	0.17 U	NR	0.32 U	NR	NR
1,2-Dibromoethane (Ethylene Dibromide)	NS	NS	NS	0.0017 U	0.0011 U	0.058 U	NR	0.11 U	NR	NR
1,2-Dichlorobenzene	1.1	100	1.1	0.0033 U	0.0022 U	0.12 U	NR	0.21 U	NR	NR
1,2-Dichloroethane	0.02	3.1	0.02	0.0017 U	0.0011 U	0.058 U	NR	0.11 U	NR	NR
1,2-Dichloropropane	NS	NS	NS	0.0017 U	0.067 U	0.058 U	NR	0.11 U	NR	NR
1,3,5-Trimethylbenzene (Mesitylene)	**8.4**	52	8.4	0.065	0.074 J	**10 H**	NR	**16 H**	NR	NR
1,3-Dichlorobenzene	2.4	49	2.4	0.0033 U	0.0022 U	0.12 U	NR	0.21 U	NR	NR
1,3-Dichloropropane	NS	NS	NS	0.0033 U	0.13 U	0.12 U	NR	0.21 U	NR	NR
1,4-Dichlorobenzene	1.8	13	1.8	0.0033 U	0.0022 U	0.12 U	NR	0.21 U	NR	NR
1,4-Diethyl Benzene	NS	NS	NS	0.0033 U	0.13 U	0.12 U	NR	0.21 U	NR	NR
2,2-Dichloropropane	NS	NS	NS	0.0033 U	0.0022 U	0.12 U	NR	0.21 U	NR	NR
2-Chlorotoluene	NS	NS	NS	0.0033 U	0.13 U	0.12 U	NR	0.21 U	NR	NR
2-Hexanone	NS	NS	NS	0.017 U	0.67 U	0.58 U	NR	1.1 U	NR	NR
4-Chlorotoluene	NS	NS	NS	0.0033 U	0.0022 U	0.12 U	NR	0.21 U	NR	NR
4-Ethyltoluene	NS	NS	NS	0.14	0.22	NR	26	NR	38	NR
Acetone	**0.05**	100	0.05	0.017 U	0.011 U	**1.9 H**	NR	**3.4 H**	NR	0.0059 J
Acrylonitrile	NS	NS	NS	0.0067 U	0.0044 U	0.23 U	NR	0.43 U	NR	NR
Benzene	**0.06**	4.8	0.06	0.019	0.018 J	**3.4 H**	NR	**4.7 H**	NR	0.00054 U
Bromobenzene	NS	NS	NS	0.0033 U	0.13 U	0.12 U	NR	0.21 U	NR	NR
Bromochloromethane	NS	NS	NS	0.0033 U	0.13 U	0.12 U	NR	0.21 U	NR	NR
Bromodichloromethane	NS	NS	NS	0.00083 U	0.00055 U	0.029 U	NR	0.053 U	NR	NR
Bromoform	NS	NS	NS	0.0067 U	0.0044 U	0.23 U	NR	0.43 U	NR	NR
Bromomethane	NS	NS	NS	0.0033 U	0.0022 U	0.12 U	NR	0.21 U	NR	NR
Carbon Disulfide	NS	NS	NS	0.017 UJ	0.67 UJ	0.58 UJ	NR	1.1 UJ	NR	NR
Carbon Tetrachloride	0.76	2.4	0.76	0.0017 U	0.067 U	0.058 U	NR	0.11 U	NR	NR
Chlorobenzene	1.1	100	1.1	0.00083 U	0.00055 U	0.029 U	NR	0.053 U	NR	NR
Chloroethane	NS	NS	NS	0.0033 U	0.0022 U	0.12 U	NR	0.21 U	NR	NR
Chloroform	0.37	49	0.37	0.0025 U	0.0016 U	0.086 U	NR	0.16 U	NR	NR
Chloromethane	NS	NS	NS	0.0067 U	0.0044 U	0.23 U	NR	0.43 U	NR	NR
Cis-1,2-Dichloroethylene	0.25	100	0.25	0.0017 U	0.067 U	0.058 U	NR	0.11 U	NR	NR
Cis-1,3-Dichloropropene	NS	NS	NS	0.00083 U	0.034 U	0.029 U	NR	0.053 U	NR	NR
Cymene	NS	NS	NS	0.0035	0.0075 J	0.54 H	NR	0.91 H	NR	NR
Dibromochloromethane	NS	NS	NS	0.0017 U	0.067 U	0.058 U	NR	0.11 U	NR	NR
Dibromomethane	NS	NS	NS	0.0033 U	0.13 U	0.12 U	NR	0.21 U	NR	NR
Dichlorodifluoromethane	NS	NS	NS	0.017 U	0.011 U	0.58 U	NR	1.1 U	NR	NR
Dichloroethylenes	NS	NS	NS	0.0017 U	0.067 U	0.058 U	NR	0.11 U	NR	NR
Diethyl Ether (Ethyl Ether)	NS	NS	NS	0.0033 U	0.13 U	0.12 U	NR	0.21 U	NR	NR
Ethylbenzene	**1**	41	1	0.049	0.16	**13 H**	NR	**20 H**	NR	0.0015
Isopropylbenzene (Cumene)	NS	NS	NS	0.01	0.015	2.1 H	NR	3.5 H	NR	NR
M,P-Xylenes	NS	NS	NS	0.21	0.63	NR	44	NR	67	0.0036
Methyl Ethyl Ketone (2-Butanone)	0.12	100	0.12	0.017 U	0.011 U	0.58 U	NR	1.1 U	NR	NR
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	NS	NS	NS	0.017 U	0.011 U	0.58 U	NR	1.1 U	NR	NR
Methylene Chloride	0.05	100	0.05	0.0083 U	0.34 U	0.29 U	NR	0.53 U	NR	NR
N-Butylbenzene	12	100	12	0.011	0.033 J	2.2 H	NR	3.6 H	NR	NR
N-Propylbenzene	**3.9**	100	3.9	0.03	0.047	**7.2 H**	NR	**12 H**	NR	0.0012
O-Xylene (1,2-Dimethylbenzene)	NS	NS	NS	0.08	0.27	14 H	NR	20 H	NR	0.0014
Sec-Butylbenzene	11	100	11	0.0043	0.012 J	0.84 H	NR	1.4 H	NR	NR
Styrene	NS	NS	NS	0.0017 U	0.00038 J	0.024 H	NR	0.028 H	NR	NR
T-Butylbenzene	5.9	100	5.9	0.0033 U	0.13 U	0.12 U	NR	0.21 U	NR	NR
Tert-Butyl Methyl Ether	0.93	100	0.93	0.0033 U	0.0022 U	0.12 U	NR	0.21 U	NR	NR
Tetrachloroethylene (PCE)	1.3	19	1.3	0.0012	0.003	0.029 U	NR	0.053 U	NR	NR
Toluene	**0.7**	100	0.7	0.046	0.049 J	**16 H**	NR	**21 H**	NR	0.00063 J
Total, 1,3-Dichloropropene (Cis And Trans)	NS	NS	NS	0.00083 U	0.034 U	0.029 U	NR	0.053 U	NR	NR
Trans-1,2-Dichloroethene	0.19	100	0.19	0.0025 U	0.0016 U	0.086 U	NR	0.16 U	NR	NR
Trans-1,3-Dichloropropene	NS	NS	NS	0.0017 U	0.0011 U	0.058 U	NR	0.11 U	NR	NR
Trans-1,4-Dichloro-2-Butene	NS	NS	NS	0.0083 U	0.0055 U	0.29 U	NR	0.53 U	NR	NR
Trichloroethylene (TCE)	0.47	21	0.47	0.00083 U	0.00055 U	0.029 U	NR	0.053 U	NR	NR
Trichlorofluoromethane	NS	NS	NS	0.0067 U	0.0044 U	0.23 U	NR	0.43 U	NR	NR
Vinyl Acetate	NS	NS	NS	0.017 U	0.011 U	0.58 U	NR	1.1 U	NR	NR
Vinyl Chloride	0.02	0.9	0.02	0.0017 U	0.067 U	0.058 U	NR	0.11 U	NR	NR
Xylenes, Total	**0.26**	100	1.6	**0.29**	0.26 J	NR	**58**	NR	**87**	0.005

Table 2
Seton Brilla Charter School
1956 Jerome Avenue, Bronx, NY
Documentation Sampling
Soil Analytical Results of Volatile Organic Compounds (VOCs)

			AKRF Sample ID	SW-10B_8-10_20230221	SW-11_20230119	SW-11_20230119	SW-11B_8-10_20230221	SW-11B_8-10_20230221	SW-11C_8-10_20230302	SW-12_2_20230201
			Laboratory Sample ID	L2309192-02	L2303274-03	L2303274-03	L2309192-04	L2309192-04	L2310958-01	L2305518-02
			Date Sampled	2/21/2023	1/19/2023	1/19/2023	2/21/2023	2/21/2023	3/02/2023	2/01/2023
			Dilution Factor	1	1	10	2.5	10	1	1
			Unit	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Compound	**NYSDEC UUSCO**	**NYSDEC RRSCO**	**NYSDEC PGWSCO**	CONC Q	CONC Q	CONC Q	CONC Q	CONC Q	CONC Q	CONC Q
1,1,1,2-Tetrachloroethane	NS	NS	NS	NR	0.059 U	NR	NR	NR	NR	0.0004 U
1,1,1-Trichloroethane	0.68	100	0.68	NR	0.059 U	NR	NR	NR	NR	0.0004 U
1,1,2,2-Tetrachloroethane	NS	NS	NS	NR	0.059 U	NR	NR	NR	NR	0.0004 U
1,1,2-Trichloroethane	NS	NS	NS	NR	0.12 U	NR	NR	NR	NR	0.0008 U
1,1-Dichloroethane	0.27	26	0.27	NR	0.12 U	NR	NR	NR	NR	0.0008 U
1,1-Dichloroethene	0.33	100	0.33	NR	0.12 U	NR	NR	NR	NR	0.0008 U
1,1-Dichloropropene	NS	NS	NS	NR	0.059 U	NR	NR	NR	NR	0.0004 U
1,2,3-Trichlorobenzene	NS	NS	NS	NR	0.24 U	NR	NR	NR	NR	0.0016 U
1,2,3-Trichloropropane	NS	NS	NS	NR	0.24 U	NR	NR	NR	NR	0.0016 U
1,2,4,5-Tetramethylbenzene	NS	NS	NS	NR	6	NR	NR	NR	NR	0.0016 U
1,2,4-Trichlorobenzene	NS	NS	NS	NR	0.24 U	NR	NR	NR	NR	0.0016 U
1,2,4-Trimethylbenzene	**3.6**	52	3.6	0.0009 L	NR	**38**	NR	**42**	0.0019 U	0.0016 U
1,2-Dibromo-3-Chloropropane	NS	NS	NS	NR	0.35 U	NR	NR	NR	NR	0.0024 U
1,2-Dibromoethane (Ethylene Dibromide)	NS	NS	NS	NR	0.12 U	NR	NR	NR	NR	0.0008 U
1,2-Dichlorobenzene	1.1	100	1.1	NR	0.24 U	NR	NR	NR	NR	0.0016 U
1,2-Dichloroethane	0.02	3.1	0.02	NR	0.12 U	NR	NR	NR	NR	0.0008 U
1,2-Dichloropropane	NS	NS	NS	NR	0.12 U	NR	NR	NR	NR	0.0008 U
1,3,5-Trimethylbenzene (Mesitylene)	**8.4**	52	8.4	NR	**11**	NR	NR	NR	NR	0.0016 U
1,3-Dichlorobenzene	2.4	49	2.4	NR	0.24 U	NR	NR	NR	NR	0.0016 U
1,3-Dichloropropane	NS	NS	NS	NR	0.24 U	NR	NR	NR	NR	0.0016 U
1,4-Dichlorobenzene	1.8	13	1.8	NR	0.24 U	NR	NR	NR	NR	0.0016 U
1,4-Diethyl Benzene	NS	NS	NS	NR	0.24 U	NR	NR	NR	NR	0.0016 U
2,2-Dichloropropane	NS	NS	NS	NR	0.24 U	NR	NR	NR	NR	0.0016 U
2-Chlorotoluene	NS	NS	NS	NR	0.24 U	NR	NR	NR	NR	0.0016 U
2-Hexanone	NS	NS	NS	NR	1.2 U	NR	NR	NR	NR	0.008 U
4-Chlorotoluene	NS	NS	NS	NR	0.24 U	NR	NR	NR	NR	0.0016 U
4-Ethyltoluene	NS	NS	NS	NR	25	NR	NR	NR	NR	0.0016 U
Acetone	**0.05**	100	0.05	0.007 UJ	**2.1**	NR	**3.6**	NR	0.0094 U	0.0038 J
Acrylonitrile	NS	NS	NS	NR	0.47 U	NR	NR	NR	NR	0.0032 U
Benzene	**0.06**	4.8	0.06	0.00035 UJ	**3.3**	NR	**1.8**	NR	0.00047 U	0.0004 U
Bromobenzene	NS	NS	NS	NR	0.24 U	NR	NR	NR	NR	0.0016 U
Bromochloromethane	NS	NS	NS	NR	0.24 U	NR	NR	NR	NR	0.0016 U
Bromodichloromethane	NS	NS	NS	NR	0.059 U	NR	NR	NR	NR	0.0004 U
Bromoform	NS	NS	NS	NR	0.47 U	NR	NR	NR	NR	0.0032 U
Bromomethane	NS	NS	NS	NR	0.24 U	NR	NR	NR	NR	0.0016 UJ
Carbon Disulfide	NS	NS	NS	NR	1.2 UJ	NR	NR	NR	NR	0.008 UJ
Carbon Tetrachloride	0.76	2.4	0.76	NR	0.12 U	NR	NR	NR	NR	0.0008 U
Chlorobenzene	1.1	100	1.1	NR	0.059 U	NR	NR	NR	NR	0.0004 U
Chloroethane	NS	NS	NS	NR	0.24 U	NR	NR	NR	NR	0.0016 U
Chloroform	0.37	49	0.37	NR	0.18 U	NR	NR	NR	NR	0.0012 U
Chloromethane	NS	NS	NS	NR	0.47 U	NR	NR	NR	NR	0.0032 U
Cis-1,2-Dichloroethylene	0.25	100	0.25	NR	0.12 U	NR	NR	NR	NR	0.0008 U
Cis-1,3-Dichloropropene	NS	NS	NS	NR	0.059 U	NR	NR	NR	NR	0.0004 U
Cymene	NS	NS	NS	NR	0.59	NR	NR	NR	NR	0.0008 U
Dibromochloromethane	NS	NS	NS	NR	0.12 U	NR	NR	NR	NR	0.0008 U
Dibromomethane	NS	NS	NS	NR	0.24 U	NR	NR	NR	NR	0.0016 U
Dichlorodifluoromethane	NS	NS	NS	NR	1.2 U	NR	NR	NR	NR	0.008 U
Dichloroethylenes	NS	NS	NS	NR	0.12 U	NR	NR	NR	NR	0.0008 U
Diethyl Ether (Ethyl Ether)	NS	NS	NS	NR	0.24 U	NR	NR	NR	NR	0.0016 UJ
Ethylbenzene	**1**	41	1	0.00028 L	**13**	NR	**24**	NR	0.00094 U	0.0008 U
Isopropylbenzene (Cumene)	NS	NS	NS	NR	2.4	NR	NR	NR	NR	0.0008 U
M,P-Xylenes	NS	NS	NS	0.00075 L	38	NR	NR	60	0.0019 U	0.00057 J
Methyl Ethyl Ketone (2-Butanone)	0.12	100	0.12	NR	1.2 U	NR	NR	NR	NR	0.008 U
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	NS	NS	NS	NR	1.2 U	NR	NR	NR	NR	0.008 U
Methylene Chloride	0.05	100	0.05	NR	0.59 U	NR	NR	NR	NR	0.004 U
N-Butylbenzene	12	100	12	NR	2.5	NR	NR	NR	NR	0.0008 U
N-Propylbenzene	**3.9**	100	3.9	0.00019 L	**8.6**	NR	**10**	NR	0.00094 U	0.0008 U
O-Xylene (1,2-Dimethylbenzene)	NS	NS	NS	0.00029 L	10	NR	18	NR	0.00094 U	0.0008 U
Sec-Butylbenzene	11	100	11	NR	0.94	NR	NR	NR	NR	0.0008 U
Styrene	NS	NS	NS	NR	0.12 U	NR	NR	NR	NR	0.0008 U
T-Butylbenzene	5.9	100	5.9	NR	0.24 U	NR	NR	NR	NR	0.0016 U
Tert-Butyl Methyl Ether	0.93	100	0.93	NR	0.24 U	NR	NR	NR	NR	0.00085 J
Tetrachloroethylene (PCE)	1.3	19	1.3	NR	0.059 U	NR	NR	NR	NR	0.0004 U
Toluene	**0.7**	100	0.7	0.0007 UJ	**9.3**	NR	**12**	NR	0.00094 U	0.0008 U
Total, 1,3-Dichloropropene (Cis And Trans)	NS	NS	NS	NR	0.059 U	NR	NR	NR	NR	0.0004 U
Trans-1,2-Dichloroethene	0.19	100	0.19	NR	0.18 U	NR	NR	NR	NR	0.0012 U
Trans-1,3-Dichloropropene	NS	NS	NS	NR	0.12 U	NR	NR	NR	NR	0.0008 U
Trans-1,4-Dichloro-2-Butene	NS	NS	NS	NR	0.59 U	NR	NR	NR	NR	0.004 U
Trichloroethylene (TCE)	0.47	21	0.47	NR	0.059 U	NR	NR	NR	NR	0.0004 U
Trichlorofluoromethane	NS	NS	NS	NR	0.47 U	NR	NR	NR	NR	0.0032 U
Vinyl Acetate	NS	NS	NS	NR	1.2 U	NR	NR	NR	NR	0.008 U
Vinyl Chloride	0.02	0.9	0.02	NR	0.12 U	NR	NR	NR	NR	0.0008 U
Xylenes, Total	**0.26**	100	1.6	0.001 L	**48**	NR	**78**	NR	0.00094 U	0.00057 J

Table 2
Seton Brilla Charter School
1956 Jerome Avenue, Bronx, NY
Documentation Sampling
Soil Analytical Results of Volatile Organic Compounds (VOCs)

			AKRF Sample ID	SW-13_2_20230201	SW-14_2_20230201	SW-15_2_20230201	SW-16_2_20230201	SW-17_2_20230725	DUP-02_20230725
			Laboratory Sample ID	L2305518-03	L2305518-04	L2305518-05	L2305518-06	L2342699-01	L2342699-02
			Date Sampled	2/01/2023	2/01/2023	2/01/2023	2/01/2023	7/25/2023	7/25/2023
			Dilution Factor	1	1	1	1	1	1
			Unit	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Compound	**NYSDEC UUSCO**	**NYSDEC RRSCO**	**NYSDEC PGWSCO**	CONC Q	CONC Q	CONC Q	CONC Q	CONC Q	CONC Q
1,1,1,2-Tetrachloroethane	NS	NS	NS	0.00042 U	0.00055 U	0.00038 U	0.00042 U	0.00053 U	0.00058 U
1,1,1-Trichloroethane	0.68	100	0.68	0.00042 U	0.00055 U	0.00038 U	0.00042 U	0.00053 U	0.00058 U
1,1,2,2-Tetrachloroethane	NS	NS	NS	0.00042 U	0.00055 U	0.00038 U	0.00042 U	0.00053 UJ	0.00058 UJ
1,1,2-Trichloroethane	NS	NS	NS	0.00084 U	0.0011 U	0.00076 U	0.00085 U	0.001 U	0.0012 U
1,1-Dichloroethane	0.27	26	0.27	0.00084 U	0.0011 U	0.00076 U	0.00085 U	0.001 U	0.0012 U
1,1-Dichloroethene	0.33	100	0.33	0.00084 U	0.0011 U	0.00076 U	0.00085 U	0.001 U	0.0012 U
1,1-Dichloropropene	NS	NS	NS	0.00042 U	0.00055 U	0.00038 U	0.00042 U	0.00053 U	0.00058 U
1,2,3-Trichlorobenzene	NS	NS	NS	0.0017 U	0.0022 U	0.0015 U	0.0017 U	0.0021 UJ	0.0023 UJ
1,2,3-Trichloropropane	NS	NS	NS	0.0017 U	0.0022 U	0.0015 U	0.0017 U	0.0021 UJ	0.0023 UJ
1,2,4,5-Tetramethylbenzene	NS	NS	NS	0.0017 U	0.0022 U	0.0015 U	0.0017 U	0.0021 UJ	0.0023 UJ
1,2,4-Trichlorobenzene	NS	NS	NS	0.0017 U	0.0022 U	0.0015 U	0.0017 U	0.0021 UJ	0.0023 UJ
1,2,4-Trimethylbenzene	**3.6**	52	3.6	0.0017 U	0.0022 U	0.0015 U	0.0017 U	0.0021 UJ	0.0023 UJ
1,2-Dibromo-3-Chloropropane	NS	NS	NS	0.0025 U	0.0033 U	0.0023 U	0.0025 U	0.0032 UJ	0.0035 UJ
1,2-Dibromoethane (Ethylene Dibromide)	NS	NS	NS	0.00084 U	0.0011 U	0.00076 U	0.00085 U	0.001 U	0.0012 U
1,2-Dichlorobenzene	1.1	100	1.1	0.0017 U	0.0022 U	0.0015 U	0.0017 U	0.0021 UJ	0.0023 UJ
1,2-Dichloroethane	0.02	3.1	0.02	0.00084 U	0.0011 U	0.00076 U	0.00085 U	0.001 U	0.0012 U
1,2-Dichloropropane	NS	NS	NS	0.00084 U	0.0011 U	0.00076 U	0.00085 U	0.001 U	0.0012 U
1,3,5-Trimethylbenzene (Mesitylene)	**8.4**	52	8.4	0.0017 U	0.0022 U	0.0015 U	0.0017 U	0.0021 U	0.0023 U
1,3-Dichlorobenzene	2.4	49	2.4	0.0017 U	0.0022 U	0.0015 U	0.0017 U	0.0021 UJ	0.0023 UJ
1,3-Dichloropropane	NS	NS	NS	0.0017 U	0.0022 U	0.0015 U	0.0017 U	0.0021 U	0.0023 U
1,4-Dichlorobenzene	1.8	13	1.8	0.0017 U	0.0022 U	0.0015 U	0.0017 U	0.0021 UJ	0.0003 L
1,4-Diethyl Benzene	NS	NS	NS	0.0017 U	0.0022 U	0.0015 U	0.0017 U	0.0021 U	0.0023 U
2,2-Dichloropropane	NS	NS	NS	0.0017 U	0.0022 U	0.0015 U	0.0017 U	0.0021 U	0.0023 U
2-Chlorotoluene	NS	NS	NS	0.0017 U	0.0022 U	0.0015 U	0.0017 U	0.0021 U	0.0023 U
2-Hexanone	NS	NS	NS	0.0084 U	0.011 U	0.0076 U	0.0085 U	0.01 U	0.012 U
4-Chlorotoluene	NS	NS	NS	0.0017 U	0.0022 U	0.0015 U	0.0017 U	0.0021 U	0.0023 U
4-Ethyltoluene	NS	NS	NS	0.0017 U	0.0022 U	0.0015 U	0.0017 U	0.0021 U	0.0023 U
Acetone	**0.05**	100	0.05	0.0084 U	0.011 U	0.0076 U	0.0085 U	0.01 U	0.012 U
Acrylonitrile	NS	NS	NS	0.0034 U	0.0044 U	0.003 U	0.0034 U	0.0042 U	0.0047 U
Benzene	**0.06**	4.8	0.06	0.00042 U	0.00055 U	0.00038 U	0.00042 U	0.00053 U	0.00058 U
Bromobenzene	NS	NS	NS	0.0017 U	0.0022 U	0.0015 U	0.0017 U	0.0021 UJ	0.0023 UJ
Bromochloromethane	NS	NS	NS	0.0017 U	0.0022 U	0.0015 U	0.0017 U	0.0021 U	0.0023 U
Bromodichloromethane	NS	NS	NS	0.00042 U	0.00055 U	0.00038 U	0.00042 U	0.00053 U	0.00058 U
Bromoform	NS	NS	NS	0.0034 U	0.0044 U	0.003 U	0.0034 U	0.0042 U	0.0047 U
Bromomethane	NS	NS	NS	0.0017 UJ	0.0022 U	0.0015 U	0.0017 U	0.0021 U	0.0023 U
Carbon Disulfide	NS	NS	NS	0.0084 UJ	0.011 UJ	0.0076 UJ	0.0085 UJ	0.01 U	0.012 U
Carbon Tetrachloride	0.76	2.4	0.76	0.00084 U	0.0011 U	0.00076 U	0.00085 U	0.001 U	0.0012 U
Chlorobenzene	1.1	100	1.1	0.00042 U	0.00055 U	0.00038 U	0.00042 U	0.00053 U	0.00058 U
Chloroethane	NS	NS	NS	0.0017 U	0.0022 U	0.0015 U	0.0017 U	0.0021 U	0.0023 U
Chloroform	0.37	49	0.37	0.0013 U	0.0016 U	0.0011 U	0.0013 U	0.0016 U	0.0018 U
Chloromethane	NS	NS	NS	0.0034 U	0.0044 U	0.003 U	0.0034 U	0.0042 U	0.0047 U
Cis-1,2-Dichloroethylene	0.25	100	0.25	0.00084 U	0.0011 U	0.00076 U	0.00085 U	0.001 U	0.0012 U
Cis-1,3-Dichloropropene	NS	NS	NS	0.00042 U	0.00055 U	0.00038 U	0.00042 U	0.00053 U	0.00058 U
Cymene	NS	NS	NS	0.00084 U	0.0011 U	0.00076 U	0.00085 U	0.001 UJ	0.0012 UJ
Dibromochloromethane	NS	NS	NS	0.00084 U	0.0011 U	0.00076 U	0.00085 U	0.001 U	0.0012 U
Dibromomethane	NS	NS	NS	0.0017 U	0.0022 U	0.0015 U	0.0017 U	0.0021 U	0.0023 U
Dichlorodifluoromethane	NS	NS	NS	0.0084 U	0.011 U	0.0076 U	0.0085 U	0.01 U	0.012 U
Dichloroethylenes	NS	NS	NS	0.00084 U	0.0011 U	0.00076 U	0.00085 U	0.001 U	0.0012 U
Diethyl Ether (Ethyl Ether)	NS	NS	NS	0.0017 UJ	0.0022 UJ	0.0015 UJ	0.0017 UJ	0.0021 U	0.0023 U
Ethylbenzene	**1**	41	1	0.00084 U	0.0011 U	0.00076 U	0.00085 U	0.001 UJ	0.0012 UJ
Isopropylbenzene (Cumene)	NS	NS	NS	0.00084 U	0.0011 U	0.00076 U	0.00085 U	0.001 UJ	0.0012 UJ
M,P-Xylenes	NS	NS	NS	0.0017 U	0.0022 U	0.0015 U	0.0017 U	0.0021 U	0.0023 U
Methyl Ethyl Ketone (2-Butanone)	0.12	100	0.12	0.0084 U	0.011 U	0.0076 U	0.0085 U	0.01 UJ	0.012 UJ
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	NS	NS	NS	0.0084 U	0.011 U	0.0076 U	0.0085 U	0.01 U	0.012 U
Methylene Chloride	0.05	100	0.05	0.0042 U	0.0055 U	0.0038 U	0.0042 U	0.0053 U	0.0058 U
N-Butylbenzene	12	100	12	0.00084 U	0.0011 U	0.00076 U	0.00085 U	0.001 UJ	0.0012 UJ
N-Propylbenzene	**3.9**	100	3.9	0.00084 U	0.0011 U	0.00076 U	0.00085 U	0.001 UJ	0.0012 UJ
O-Xylene (1,2-Dimethylbenzene)	NS	NS	NS	0.00084 U	0.0011 U	0.00076 U	0.00085 U	0.001 U	0.0012 U
Sec-Butylbenzene	11	100	11	0.00084 U	0.0011 U	0.00076 U	0.00085 U	0.001 UJ	0.0004 L
Styrene	NS	NS	NS	0.00084 U	0.0011 U	0.00076 U	0.00085 U	0.001 U	0.0012 U
T-Butylbenzene	5.9	100	5.9	0.0017 U	0.0022 U	0.0015 U	0.0017 U	0.0021 UJ	0.0023 UJ
Tert-Butyl Methyl Ether	0.93	100	0.93	0.00091 J	0.00097 J	0.00077 J	0.00062 J	0.0021 U	0.0023 U
Tetrachloroethylene (PCE)	1.3	19	1.3	0.00042 U	0.00055 U	0.00038 U	0.00042 U	0.00053 UJ	0.00058 UJ
Toluene	**0.7**	100	0.7	0.00084 U	0.0011 U	0.00076 U	0.00085 U	0.001 U	0.0012 U
Total, 1,3-Dichloropropene (Cis And Trans)	NS	NS	NS	0.00042 U	0.00055 U	0.00038 U	0.00042 U	0.00053 U	0.00058 U
Trans-1,2-Dichloroethene	0.19	100	0.19	0.0013 U	0.0016 U	0.0011 U	0.0013 U	0.0016 U	0.0018 U
Trans-1,3-Dichloropropene	NS	NS	NS	0.00084 U	0.0011 U	0.00076 U	0.00085 U	0.001 U	0.0012 U
Trans-1,4-Dichloro-2-Butene	NS	NS	NS	0.0042 U	0.0055 U	0.0038 U	0.0042 U	0.0053 UJ	0.0058 UJ
Trichloroethylene (TCE)	0.47	21	0.47	0.00042 U	0.00055 U	0.00038 U	0.00042 U	0.00053 U	0.00058 U
Trichlorofluoromethane	NS	NS	NS	0.0034 U	0.0044 U	0.003 U	0.0034 U	0.0042 U	0.0047 U
Vinyl Acetate	NS	NS	NS	0.0084 U	0.011 U	0.0076 U	0.0085 U	0.01 UJ	0.012 UJ
Vinyl Chloride	0.02	0.9	0.02	0.00084 U	0.0011 U	0.00076 U	0.00085 U	0.001 U	0.0012 U
Xylenes, Total	**0.26**	100	1.6	0.00084 U	0.0011 U	0.00076 U	0.00085 U	0.001 U	0.0012 U

Table 2
Seton Brilla Charter School
1956 Jerome Avenue, Bronx, NY
Documentation Sampling
Soil Analytical Results of Volatile Organic Compounds (VOCs)

				AKRF Sample ID	FIELD BLANK_20230725	TRIP BLANK	TRIP BLANK_20230725
				Laboratory Sample ID	L2342699-04	L2309192-05	L2342699-03
				Date Sampled	7/25/2023	2/17/2023	7/25/2023
				Dilution Factor	1	1	1
				Unit	µg/L	µg/L	µg/L
Compound	**NYSDEC UUSCO**	**NYSDEC RRSCO**	**NYSDEC PGWSCO**		CONC Q	CONC Q	CONC Q
1,1,1,2-Tetrachloroethane	NS	NS	NS		2.5 U	2.5 U	2.5 U
1,1,1-Trichloroethane	0.68	100	0.68		2.5 U	2.5 U	2.5 U
1,1,2,2-Tetrachloroethane	NS	NS	NS		0.5 U	0.5 U	0.5 U
1,1,2-Trichloroethane	NS	NS	NS		1.5 U	1.5 U	1.5 U
1,1-Dichloroethane	0.27	26	0.27		2.5 U	2.5 U	2.5 U
1,1-Dichloroethene	0.33	100	0.33		0.5 U	0.5 U	0.5 U
1,1-Dichloropropene	NS	NS	NS		2.5 U	2.5 U	2.5 U
1,2,3-Trichlorobenzene	NS	NS	NS		2.5 U	2.5 U	2.5 U
1,2,3-Trichloropropane	NS	NS	NS		2.5 U	2.5 U	2.5 U
1,2,4,5-Tetramethylbenzene	NS	NS	NS		2 U	2 U	2 U
1,2,4-Trichlorobenzene	NS	NS	NS		2.5 U	2.5 U	2.5 U
1,2,4-Trimethylbenzene	**3.6**	52	3.6		2.5 U	2.5 U	2.5 U
1,2-Dibromo-3-Chloropropane	NS	NS	NS		2.5 U	2.5 U	2.5 U
1,2-Dibromoethane (Ethylene Dibromide)	NS	NS	NS		2 U	2 U	2 U
1,2-Dichlorobenzene	1.1	100	1.1		2.5 U	2.5 U	2.5 U
1,2-Dichloroethane	0.02	3.1	0.02		0.5 U	0.5 U	0.5 U
1,2-Dichloropropane	NS	NS	NS		1 U	1 U	1 U
1,3,5-Trimethylbenzene (Mesitylene)	**8.4**	52	8.4		2.5 U	2.5 U	2.5 U
1,3-Dichlorobenzene	2.4	49	2.4		2.5 U	2.5 U	2.5 U
1,3-Dichloropropane	NS	NS	NS		2.5 U	2.5 U	2.5 U
1,4-Dichlorobenzene	1.8	13	1.8		2.5 U	2.5 U	2.5 U
1,4-Diethyl Benzene	NS	NS	NS		2 U	2 U	2 U
2,2-Dichloropropane	NS	NS	NS		2.5 U	2.5 U	2.5 U
2-Chlorotoluene	NS	NS	NS		2.5 U	2.5 U	2.5 U
2-Hexanone	NS	NS	NS		5 U	5 U	5 U
4-Chlorotoluene	NS	NS	NS		2.5 U	2.5 U	2.5 U
4-Ethyltoluene	NS	NS	NS		2 U	2 U	2 U
Acetone	**0.05**	100	0.05		5 U	5 UJ	2.4 J
Acrylonitrile	NS	NS	NS		5 U	5 U	5 U
Benzene	**0.06**	4.8	0.06		0.5 U	0.5 U	0.5 U
Bromobenzene	NS	NS	NS		2.5 U	2.5 U	2.5 U
Bromochloromethane	NS	NS	NS		2.5 U	2.5 U	2.5 U
Bromodichloromethane	NS	NS	NS		0.5 U	0.5 U	0.5 U
Bromoform	NS	NS	NS		2 U	2 U	2 U
Bromomethane	NS	NS	NS		2.5 U	2.5 U	2.5 U
Carbon Disulfide	NS	NS	NS		5 U	5 U	5 U
Carbon Tetrachloride	0.76	2.4	0.76		0.5 U	0.5 U	0.5 U
Chlorobenzene	1.1	100	1.1		2.5 U	2.5 U	2.5 U
Chloroethane	NS	NS	NS		2.5 U	2.5 U	2.5 U
Chloroform	0.37	49	0.37		2.5 U	2.5 U	2.5 U
Chloromethane	NS	NS	NS		2.5 U	2.5 U	2.5 U
Cis-1,2-Dichloroethylene	0.25	100	0.25		2.5 U	2.5 U	2.5 U
Cis-1,3-Dichloropropene	NS	NS	NS		0.5 U	0.5 U	0.5 U
Cymene	NS	NS	NS		2.5 U	2.5 U	2.5 U
Dibromochloromethane	NS	NS	NS		0.5 U	0.5 U	0.5 U
Dibromomethane	NS	NS	NS		5 U	5 U	5 U
Dichlorodifluoromethane	NS	NS	NS		5 U	5 U	5 U
Dichloroethylenes	NS	NS	NS		2.5 U	2.5 U	2.5 U
Diethyl Ether (Ethyl Ether)	NS	NS	NS		2.5 U	2.5 U	2.5 U
Ethylbenzene	**1**	41	1		2.5 U	2.5 U	2.5 U
Isopropylbenzene (Cumene)	NS	NS	NS		2.5 U	2.5 U	2.5 U
M,P-Xylenes	NS	NS	NS		2.5 U	2.5 U	2.5 U
Methyl Ethyl Ketone (2-Butanone)	0.12	100	0.12		5 U	5 U	5 U
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	NS	NS	NS		5 U	5 U	5 U
Methylene Chloride	0.05	100	0.05		2.5 U	2.5 U	2.5 U
N-Butylbenzene	12	100	12		2.5 U	2.5 U	2.5 U
N-Propylbenzene	**3.9**	100	3.9		2.5 U	2.5 U	2.5 U
O-Xylene (1,2-Dimethylbenzene)	NS	NS	NS		2.5 U	2.5 U	2.5 U
Sec-Butylbenzene	11	100	11		2.5 U	2.5 U	2.5 U
Styrene	NS	NS	NS		2.5 U	2.5 U	2.5 U
T-Butylbenzene	5.9	100	5.9		2.5 U	2.5 U	2.5 U
Tert-Butyl Methyl Ether	0.93	100	0.93		2.5 U	2.5 U	2.5 U
Tetrachloroethylene (PCE)	1.3	19	1.3		0.5 U	0.5 U	0.5 U
Toluene	**0.7**	100	0.7		2.5 U	2.5 U	2.5 U
Total, 1,3-Dichloropropene (Cis And Trans)	NS	NS	NS		0.5 U	0.5 U	0.5 U
Trans-1,2-Dichloroethene	0.19	100	0.19		2.5 U	2.5 U	2.5 U
Trans-1,3-Dichloropropene	NS	NS	NS		0.5 U	0.5 U	0.5 U
Trans-1,4-Dichloro-2-Butene	NS	NS	NS		2.5 U	2.5 U	2.5 U
Trichloroethylene (TCE)	0.47	21	0.47		0.5 U	0.5 U	0.5 U
Trichlorofluoromethane	NS	NS	NS		2.5 U	2.5 U	2.5 U
Vinyl Acetate	NS	NS	NS		5 U	5 U	5 U
Vinyl Chloride	0.02	0.9	0.02		1 U	1 U	1 U
Xylenes, Total	**0.26**	100	1.6		2.5 U	2.5 U	2.5 U

Table 3
Seton Brilla Charter School
1956 Jerome Avenue, Bronx, NY
Documentation Sampling
Soil Analytical Results of Semivolatile Organic Compounds (SVOCs)

			AKRF Sample ID	BS-01_20230117	BS-02_20230118	BS-03_20230119	EP-01_2_20221028	EP-02_2_20221028	EP-03_2_20221028
			Laboratory Sample ID	L2302678-04	L2302922-01	L2303274-04	L2260497-01	L2260497-02	L2260497-03
			Date Sampled	1/17/2023	1/18/2023	1/19/2023	10/28/2022	10/28/2022	10/28/2022
			Dilution Factor	1	1	1	1	1	1
			Unit	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Compound	**NYSDEC UUSCO**	**NYSDEC RRSCO**	**NYSDEC PGWSCO**	CONC Q	CONC Q	CONC Q	CONC Q	CONC Q	CONC Q
1,2,4,5-Tetrachlorobenzene	NS	NS	NS	0.21 U	0.2 U	0.21 U	0.19 U	0.21 U	0.2 U
1,4-Dioxane (P-Dioxane)	0.1	13	0.1	0.031 U	0.03 UJ	0.031 UJ	0.029 U	0.032 U	0.031 U
2,4,5-Trichlorophenol	NS	NS	NS	0.21 U	0.2 U	0.21 U	0.19 U	0.21 R	0.2 U
2,4,6-Trichlorophenol	NS	NS	NS	0.12 U	0.12 U	0.12 U	0.12 U	0.13 R	0.12 U
2,4-Dichlorophenol	NS	NS	NS	0.19 U	0.18 U	0.19 U	0.17 U	0.19 R	0.18 U
2,4-Dimethylphenol	NS	NS	NS	0.21 U	0.2 U	0.21 U	0.19 U	0.21 R	0.2 U
2,4-Dinitrophenol	NS	NS	NS	0.99 U	0.94 U	1 UJ	0.92 U	1 R	0.98 U
2,4-Dinitrotoluene	NS	NS	NS	0.21 U	0.2 U	0.21 U	0.19 U	0.21 U	0.2 U
2,6-Dinitrotoluene	NS	NS	NS	0.21 U	0.2 U	0.21 U	0.19 U	0.21 U	0.2 U
2-Chloronaphthalene	NS	NS	NS	0.21 U	0.2 U	0.21 U	0.19 U	0.21 U	0.2 U
2-Chlorophenol	NS	NS	NS	0.21 U	0.2 U	0.21 U	0.19 U	0.21 R	0.2 U
2-Methylnaphthalene	NS	NS	NS	0.3	0.1 J	0.36	0.065 J	0.26 U	0.25 U
2-Methylphenol (O-Cresol)	0.33	100	0.33	0.21 U	0.2 U	0.21 U	0.19 U	0.21 R	0.2 U
2-Nitroaniline	NS	NS	NS	0.21 U	0.2 U	0.21 U	0.19 U	0.21 U	0.2 U
2-Nitrophenol	NS	NS	NS	0.45 U	0.42 U	0.45 U	0.42 U	0.46 R	0.44 U
3- And 4- Methylphenol (Total)	NS	NS	NS	0.3 U	0.28 U	0.3 U	0.28 U	0.31 R	0.3 U
3,3'-Dichlorobenzidine	NS	NS	NS	0.21 U	0.2 U	0.21 UJ	0.19 U	0.21 U	0.2 U
3-Nitroaniline	NS	NS	NS	0.21 U	0.2 U	0.21 U	0.19 U	0.21 U	0.2 U
4,6-Dinitro-2-Methylphenol	NS	NS	NS	0.54 U	0.51 UJ	0.54 U	0.5 U	0.56 R	0.53 U
4-Bromophenyl Phenyl Ether	NS	NS	NS	0.21 U	0.2 U	0.21 U	0.19 U	0.21 U	0.2 U
4-Chloro-3-Methylphenol	NS	NS	NS	0.21 U	0.2 U	0.21 U	0.19 U	0.21 R	0.2 U
4-Chloroaniline	NS	NS	NS	0.21 UJ	0.2 U	0.21 UJ	0.19 U	0.21 UJ	0.2 U
4-Chlorophenyl Phenyl Ether	NS	NS	NS	0.21 U	0.2 U	0.21 U	0.19 U	0.21 U	0.2 U
4-Nitroaniline	NS	NS	NS	0.21 U	0.2 U	0.21 U	0.19 U	0.21 U	0.2 U
4-Nitrophenol	NS	NS	NS	0.29 U	0.28 U	0.29 U	0.27 U	0.3 R	0.29 U
Acenaphthene	20	100	98	0.16 U	0.16 U	0.17 U	0.15 U	0.17 U	0.16 U
Acenaphthylene	100	100	107	0.16 U	0.16 U	0.17 U	0.1 J	0.17 U	0.049 J
Acetophenone	NS	NS	NS	0.21 U	0.2 U	0.16 J	0.19 U	0.21 U	0.2 U
Anthracene	100	100	1,000	0.12 U	0.12 U	0.12 U	0.077 J	0.13 U	0.052 J
Benzo(a)Anthracene	**1**	1	1	0.12 U	0.071 J	0.12 U	0.4	0.14	0.22
Benzo(a)Pyrene	**1**	1	22	0.16 U	0.088 J	0.17 U	0.51	0.17	0.23
Benzo(b)Fluoranthene	**1**	1	1.7	0.12 U	0.11 J	0.12 U	0.67	0.21	0.32
Benzo(g,h,i)Perylene	100	100	1,000	0.16 U	0.07 J	0.17 U	0.31	0.058 J	0.13 J
Benzo(k)Fluoranthene	**0.8**	3.9	1.7	0.12 U	0.037 J	0.12 U	0.22	0.046 J	0.12
Benzoic Acid	NS	NS	NS	0.67 U	0.64 U	0.67 UJ	0.62 U	0.7 R	0.66 U
Benzyl Alcohol	NS	NS	NS	0.21 U	0.2 U	0.21 U	0.19 U	0.21 R	0.2 U
Benzyl Butyl Phthalate	NS	NS	NS	0.21 U	0.2 U	0.21 U	0.28	0.21 U	2.2
Biphenyl (Diphenyl)	NS	NS	NS	0.47 U	0.45 U	0.47 U	0.44 U	0.49 U	0.47 U
Bis(2-Chloroethoxy) Methane	NS	NS	NS	0.22 U	0.21 U	0.22 U	0.21 U	0.23 U	0.22 U
Bis(2-Chloroethyl) Ether (2-Chloroethyl Ether)	NS	NS	NS	0.19 U	0.18 U	0.19 U	0.17 U	0.19 U	0.18 U
Bis(2-Chloroisopropyl) Ether	NS	NS	NS	0.25 U	0.24 UJ	0.25 UJ	0.23 UJ	0.26 UJ	0.25 UJ
Bis(2-Ethylhexyl) Phthalate	NS	NS	NS	0.21 U	0.2 U	0.21 U	0.26	0.12 J	1.6
Carbazole	NS	NS	NS	0.21 U	0.2 U	0.21 U	0.049 J	0.21 U	0.036 J
Chrysene	**1**	3.9	1	0.12 U	0.075 J	0.025 J	0.44	0.098 J	0.24
Dibenz(a,h)Anthracene	**0.33**	0.33	1,000	0.12 U	0.024 J	0.12 U	0.077 J	0.027 J	0.036 J
Dibenzofuran	7	59	210	0.21 U	0.2 U	0.21 U	0.026 J	0.21 U	0.022 J
Diethyl Phthalate	NS	NS	NS	0.21 U	0.2 U	0.21 U	0.19 U	0.21 U	0.2 U
Dimethyl Phthalate	NS	NS	NS	0.21 U	0.2 U	0.21 U	0.19 U	0.21 U	0.2 U
Di-N-Butyl Phthalate	NS	NS	NS	0.21 U	0.2 U	0.21 U	0.073 J	0.43	0.98
Di-N-Octylphthalate	NS	NS	NS	0.21 U	0.2 U	0.21 U	0.19 U	0.21 U	0.2 U
Fluoranthene	100	100	1,000	0.12 U	0.12	0.043 J	0.75	0.16	0.46
Fluorene	30	100	386	0.21 U	0.2 U	0.21 U	0.02 J	0.21 U	0.021 J
Hexachlorobenzene	0.33	1.2	3.2	0.12 U	0.12 U	0.12 U	0.12 U	0.13 U	0.12 U
Hexachlorobutadiene	NS	NS	NS	0.21 U	0.2 U	0.21 U	0.19 U	0.21 U	0.2 U
Hexachlorocyclopentadiene	NS	NS	NS	0.59 U	0.56 U	0.6 UJ	0.55 U	0.61 U	0.59 U
Hexachloroethane	NS	NS	NS	0.16 U	0.16 U	0.17 U	0.15 U	0.17 U	0.16 U
Indeno(1,2,3-c,d)Pyrene	**0.5**	0.5	8.2	0.16 U	0.062 J	0.17 U	0.37	0.12 J	0.16
Isophorone	NS	NS	NS	0.19 U	0.18 U	0.19 U	0.17 U	0.19 U	0.18 U
Naphthalene	12	100	12	0.076 J	0.13 J	0.58	0.064 J	0.21 U	0.036 J
Nitrobenzene	NS	NS	NS	0.19 U	0.18 U	0.19 U	0.17 U	0.19 U	0.18 U
N-Nitrosodi-N-Propylamine	NS	NS	NS	0.21 U	0.2 U	0.21 UJ	0.19 U	0.21 U	0.2 U
N-Nitrosodiphenylamine	NS	NS	NS	0.16 U	0.16 U	0.17 U	0.15 U	0.17 U	0.16 U
Pentachlorophenol	0.8	6.7	0.8	0.16 U	0.16 UJ	0.17 U	0.15 U	0.17 R	0.16 U
Phenanthrene	100	100	1,000	0.12 U	0.045 J	0.025 J	0.34	0.076 J	0.29
Phenol	0.33	100	0.33	0.21 U	0.2 U	0.21 U	0.19 U	0.21 R	0.2 U
Pyrene	100	100	1,000	0.12 U	0.11 J	0.039 J	0.65	0.23	0.38

Table 3
Seton Brilla Charter School
1956 Jerome Avenue, Bronx, NY
Documentation Sampling
Soil Analytical Results of Semivolatile Organic Compounds (SVOCs)

			AKRF Sample ID	EP-04_2_20221101	EP-05_2_20221101	EP-06_2_20221101	EP-07_2_20221101	EP-08-2_20221108	EP-12_2_20230201
			Laboratory Sample ID	L2261106-01	L2261106-02	L2261106-03	L2261106-04	L2262572-01	L2305518-01
			Date Sampled	11/01/2022	11/01/2022	11/01/2022	11/01/2022	11/08/2022	2/01/2023
			Dilution Factor	1	1	1	1	1	1
			Unit	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Compound	**NYSDEC UUSCO**	**NYSDEC RRSCO**	**NYSDEC PGWSCO**	CONC Q	CONC Q	CONC Q	CONC Q	CONC Q	CONC Q
1,2,4,5-Tetrachlorobenzene	NS	NS	NS	0.19 UJ	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U
1,4-Dioxane (P-Dioxane)	0.1	13	0.1	0.028 UJ	0.029 U	0.028 U	0.028 U	0.029 U	0.028 U
2,4,5-Trichlorophenol	NS	NS	NS	0.19 UJ	0.19 UJ	0.19 UJ	0.19 UJ	0.19 U	0.19 UJ
2,4,6-Trichlorophenol	NS	NS	NS	0.11 UJ	0.12 UJ	0.11 UJ	0.11 UJ	0.12 U	0.11 UJ
2,4-Dichlorophenol	NS	NS	NS	0.17 UJ	0.17 UJ	0.17 UJ	0.17 UJ	0.18 U	0.17 UJ
2,4-Dimethylphenol	NS	NS	NS	0.19 UJ	0.19 UJ	0.19 UJ	0.19 UJ	0.19 U	0.19 UJ
2,4-Dinitrophenol	NS	NS	NS	0.91 UJ	0.92 UJ	0.9 UJ	0.91 UJ	0.94 U	0.9 UJ
2,4-Dinitrotoluene	NS	NS	NS	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U
2,6-Dinitrotoluene	NS	NS	NS	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U
2-Chloronaphthalene	NS	NS	NS	0.19 U	0.19 UJ	0.19 U	0.19 U	0.19 U	0.19 U
2-Chlorophenol	NS	NS	NS	0.19 UJ	0.19 UJ	0.19 UJ	0.19 UJ	0.19 U	0.19 UJ
2-Methylnaphthalene	NS	NS	NS	0.23 U	0.23 UJ	0.057 J	0.042 J	0.23 U	0.22 U
2-Methylphenol (O-Cresol)	0.33	100	0.33	0.19 UJ	0.19 UJ	0.19 UJ	0.19 UJ	0.19 U	0.19 UJ
2-Nitroaniline	NS	NS	NS	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U
2-Nitrophenol	NS	NS	NS	0.41 UJ	0.42 UJ	0.41 UJ	0.41 UJ	0.42 U	0.4 UJ
3- And 4- Methylphenol (Total)	NS	NS	NS	0.27 UJ	0.28 UJ	0.27 UJ	0.27 UJ	0.28 U	0.27 UJ
3,3'-Dichlorobenzidine	NS	NS	NS	0.19 U	0.19 UJ	0.19 UJ	0.19 UJ	0.19 U	0.19 UJ
3-Nitroaniline	NS	NS	NS	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 UJ
4,6-Dinitro-2-Methylphenol	NS	NS	NS	0.5 UJ	0.5 UJ	0.49 UJ	0.49 UJ	0.51 U	0.49 UJ
4-Bromophenyl Phenyl Ether	NS	NS	NS	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U
4-Chloro-3-Methylphenol	NS	NS	NS	0.19 UJ	0.19 UJ	0.19 UJ	0.19 UJ	0.19 U	0.19 UJ
4-Chloroaniline	NS	NS	NS	0.19 U	0.19 UJ	0.19 UJ	0.19 UJ	0.19 U	0.19 U
4-Chlorophenyl Phenyl Ether	NS	NS	NS	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U
4-Nitroaniline	NS	NS	NS	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U
4-Nitrophenol	NS	NS	NS	0.27 UJ	0.27 UJ	0.26 UJ	0.27 UJ	0.27 U	0.26 UJ
Acenaphthene	20	100	98	0.022 J	0.15 U	0.022 J	0.15 U	0.16 U	0.15 U
Acenaphthylene	100	100	107	0.15 U	0.15 U	0.032 J	0.15 U	0.16 U	0.15 U
Acetophenone	NS	NS	NS	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U
Anthracene	100	100	1,000	0.056 J	0.12 U	0.056 J	0.11 U	0.12 U	0.11 U
Benzo(a)Anthracene	**1**	1	1	0.17	0.13	0.2	0.16	0.12 U	0.11 U
Benzo(a)Pyrene	**1**	1	22	0.15	0.16	0.22	0.17	0.16 U	0.15 U
Benzo(b)Fluoranthene	**1**	1	1.7	0.18	0.22	0.3	0.23	0.12 U	0.11 U
Benzo(g,h,i)Perylene	100	100	1,000	0.096 J	0.11 J	0.13 J	0.1 J	0.16 U	0.15 U
Benzo(k)Fluoranthene	**0.8**	3.9	1.7	0.064 J	0.078 J	0.079 J	0.09 J	0.12 U	0.11 U
Benzoic Acid	NS	NS	NS	0.62 UJ	0.62 UJ	0.61 UJ	0.62 UJ	0.63 U	0.61 R
Benzyl Alcohol	NS	NS	NS	0.19 UJ	0.19 UJ	0.19 UJ	0.19 UJ	0.19 U	0.19 UJ
Benzyl Butyl Phthalate	NS	NS	NS	0.091 J	0.18 J	0.92	7.2	0.19 U	0.19 U
Biphenyl (Diphenyl)	NS	NS	NS	0.43 UJ	0.44 U	0.43 U	0.43 U	0.44 U	0.43 U
Bis(2-Chloroethoxy) Methane	NS	NS	NS	0.2 U	0.21 U	0.2 U	0.2 U	0.21 U	0.2 U
Bis(2-Chloroethyl) Ether (2-Chloroethyl Ether)	NS	NS	NS	0.17 U	0.17 UJ	0.17 UJ	0.17 UJ	0.18 U	0.17 U
Bis(2-Chloroisopropyl) Ether	NS	NS	NS	0.23 U	0.23 UJ	0.22 U	0.23 U	0.23 U	0.22 U
Bis(2-Ethylhexyl) Phthalate	NS	NS	NS	0.11 J	0.16 J	0.42	1.7	0.19 U	0.19 U
Carbazole	NS	NS	NS	0.02 J	0.019 J	0.032 J	0.023 J	0.19 U	0.19 U
Chrysene	**1**	3.9	1	0.15	0.16	0.21	0.18	0.12 U	0.11 U
Dibenz(a,h)Anthracene	**0.33**	0.33	1,000	0.024 J	0.034 J	0.032 J	0.028 J	0.12 U	0.11 U
Dibenzofuran	7	59	210	0.19 U	0.19 U	0.02 J	0.19 U	0.19 U	0.19 U
Diethyl Phthalate	NS	NS	NS	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U
Dimethyl Phthalate	NS	NS	NS	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U
Di-N-Butyl Phthalate	NS	NS	NS	0.074 J	0.11 J	0.45	0.31	0.19 U	0.19 U
Di-N-Octylphthalate	NS	NS	NS	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U
Fluoranthene	100	100	1,000	0.34	0.28	0.44	0.35	0.12 U	0.11 U
Fluorene	30	100	386	0.021 J	0.19 U	0.023 J	0.19 U	0.19 U	0.19 U
Hexachlorobenzene	0.33	1.2	3.2	0.11 U	0.12 U	0.11 U	0.11 U	0.12 U	0.11 U
Hexachlorobutadiene	NS	NS	NS	0.19 U	0.19 UJ	0.19 U	0.19 U	0.19 U	0.19 U
Hexachlorocyclopentadiene	NS	NS	NS	0.54 UJ	0.55 UJ	0.54 UJ	0.54 UJ	0.56 U	0.54 U
Hexachloroethane	NS	NS	NS	0.15 U	0.15 UJ	0.15 U	0.15 U	0.16 U	0.15 U
Indeno(1,2,3-c,d)Pyrene	**0.5**	0.5	8.2	0.1 J	0.12 J	0.15	0.12 J	0.16 U	0.15 U
Isophorone	NS	NS	NS	0.17 U	0.17 UJ	0.17 UJ	0.17 UJ	0.18 U	0.17 U
Naphthalene	12	100	12	0.19 U	0.03 J	0.048 J	0.048 J	0.19 U	0.19 U
Nitrobenzene	NS	NS	NS	0.17 U	0.17 UJ	0.17 UJ	0.17 UJ	0.18 U	0.17 U
N-Nitrosodi-N-Propylamine	NS	NS	NS	0.19 U	0.19 UJ	0.19 UJ	0.19 UJ	0.19 U	0.19 U
N-Nitrosodiphenylamine	NS	NS	NS	0.15 U	0.15 UJ	0.15 U	0.15 U	0.16 U	0.15 U
Pentachlorophenol	0.8	6.7	0.8	0.15 UJ	0.15 UJ	0.15 UJ	0.15 UJ	0.16 U	0.15 UJ
Phenanthrene	100	100	1,000	0.22	0.13	0.28	0.19	0.12 U	0.11 U
Phenol	0.33	100	0.33	0.19 UJ	0.19 UJ	0.19 UJ	0.19 UJ	0.19 U	0.19 UJ
Pyrene	100	100	1,000	0.3	0.24	0.37	0.29	0.12 U	0.11 U

Table 3
Seton Brilla Charter School
1956 Jerome Avenue, Bronx, NY
Documentation Sampling
Soil Analytical Results of Semivolatile Organic Compounds (SVOCs)

			AKRF Sample ID	SW-01_2_20221028	SW-02_2_20221028	SW-02_2_20221028	SW-03_2_20221028	SW-04_20230117	SW-05_20230117
			Laboratory Sample ID	L2260497-04	L2260497-05	L2260497-05	L2260497-06	L2302678-01	L2302678-02
			Date Sampled	10/28/2022	10/28/2022	10/28/2022	10/28/2022	1/17/2023	1/17/2023
			Dilution Factor	1	1	5	1	1	1
			Unit	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Compound	**NYSDEC UUSCO**	**NYSDEC RRSCO**	**NYSDEC PGWSCO**	CONC Q	CONC Q	CONC Q	CONC Q	CONC Q	CONC Q
1,2,4,5-Tetrachlorobenzene	NS	NS	NS	0.21 U	0.19 U	NR	0.22 U	0.19 U	0.2 U
1,4-Dioxane (P-Dioxane)	0.1	13	0.1	0.032 U	0.029 U	NR	0.033 U	0.029 UJ	0.031 UJ
2,4,5-Trichlorophenol	NS	NS	NS	0.21 U	0.19 U	NR	0.22 U	0.19 U	0.2 U
2,4,6-Trichlorophenol	NS	NS	NS	0.13 U	0.11 U	NR	0.13 U	0.12 U	0.12 U
2,4-Dichlorophenol	NS	NS	NS	0.19 U	0.17 U	NR	0.2 U	0.17 U	0.18 U
2,4-Dimethylphenol	NS	NS	NS	0.21 U	0.19 U	NR	0.22 U	0.19 U	0.2 U
2,4-Dinitrophenol	NS	NS	NS	1 U	0.92 U	NR	1 U	0.93 U	0.98 U
2,4-Dinitrotoluene	NS	NS	NS	0.21 U	0.19 UJ	NR	0.22 U	0.19 U	0.2 U
2,6-Dinitrotoluene	NS	NS	NS	0.21 U	0.19 UJ	NR	0.22 U	0.19 U	0.2 U
2-Chloronaphthalene	NS	NS	NS	0.21 U	0.19 U	NR	0.22 U	0.19 U	0.2 U
2-Chlorophenol	NS	NS	NS	0.21 U	0.19 U	NR	0.22 U	0.19 U	0.2 U
2-Methylnaphthalene	NS	NS	NS	0.06 J	0.56	NR	0.26 U	0.23 U	0.77
2-Methylphenol (O-Cresol)	0.33	100	0.33	0.21 U	0.19 U	NR	0.22 U	0.19 U	0.2 U
2-Nitroaniline	NS	NS	NS	0.21 U	0.19 UJ	NR	0.22 U	0.19 U	0.2 U
2-Nitrophenol	NS	NS	NS	0.46 U	0.41 U	NR	0.47 U	0.42 U	0.44 U
3- And 4- Methylphenol (Total)	NS	NS	NS	0.3 U	0.27 U	NR	0.31 U	0.28 U	0.3 U
3,3'-Dichlorobenzidine	NS	NS	NS	0.21 U	0.19 U	NR	0.22 U	0.19 U	0.2 U
3-Nitroaniline	NS	NS	NS	0.21 U	0.19 UJ	NR	0.22 U	0.19 U	0.2 U
4,6-Dinitro-2-Methylphenol	NS	NS	NS	0.55 U	0.5 U	NR	0.57 U	0.5 U	0.53 U
4-Bromophenyl Phenyl Ether	NS	NS	NS	0.21 U	0.19 U	NR	0.22 U	0.19 U	0.2 U
4-Chloro-3-Methylphenol	NS	NS	NS	0.21 U	0.19 U	NR	0.22 U	0.19 U	0.2 U
4-Chloroaniline	NS	NS	NS	0.21 U	0.19 U	NR	0.22 U	0.19 UJ	0.2 UJ
4-Chlorophenyl Phenyl Ether	NS	NS	NS	0.21 U	0.19 UJ	NR	0.22 U	0.19 U	0.2 U
4-Nitroaniline	NS	NS	NS	0.21 U	0.19 UJ	NR	0.22 U	0.19 U	0.2 U
4-Nitrophenol	NS	NS	NS	0.3 U	0.27 U	NR	0.3 U	0.27 U	0.29 U
Acenaphthene	20	100	98	0.21	2.1 L	NR	0.17 U	0.16 U	0.16 U
Acenaphthylene	100	100	107	0.072 J	0.078 L	NR	0.17 U	0.16 U	0.16 U
Acetophenone	NS	NS	NS	0.21 U	0.19 U	NR	0.22 U	0.19 U	0.2 U
Anthracene	100	100	1,000	0.78	4.8	NR	0.13 U	0.12 U	0.12 U
Benzo(a)Anthracene	**1**	1	1	**1.6**	**5.7**	NR	0.15	0.027 J	0.12 U
Benzo(a)Pyrene	**1**	1	22	**1.7**	**5.3**	NR	0.17	0.16 U	0.16 U
Benzo(b)Fluoranthene	**1**	1	1.7	**2**	**6.2**	NR	0.22	0.12 U	0.12 U
Benzo(g,h,i)Perylene	100	100	1,000	0.84	2.5	NR	0.096 J	0.16 U	0.16 U
Benzo(k)Fluoranthene	**0.8**	3.9	1.7	0.67	**2.3**	NR	0.078 J	0.12 U	0.12 U
Benzoic Acid	NS	NS	NS	0.69 U	0.62 U	NR	0.71 U	0.63 U	0.66 U
Benzyl Alcohol	NS	NS	NS	0.21 U	0.19 U	NR	0.22 U	0.19 U	0.2 U
Benzyl Butyl Phthalate	NS	NS	NS	0.23	0.18 J	NR	0.22 U	0.19 U	0.2 U
Biphenyl (Diphenyl)	NS	NS	NS	0.48 U	0.2 J	NR	0.5 U	0.44 U	0.47 U
Bis(2-Chloroethoxy) Methane	NS	NS	NS	0.23 U	0.21 U	NR	0.24 U	0.21 U	0.22 U
Bis(2-Chloroethyl) Ether (2-Chloroethyl Ether)	NS	NS	NS	0.19 U	0.17 U	NR	0.2 U	0.17 U	0.18 U
Bis(2-Chloroisopropyl) Ether	NS	NS	NS	0.25 UJ	0.23 UJ	NR	0.26 UJ	0.23 UJ	0.25 UJ
Bis(2-Ethylhexyl) Phthalate	NS	NS	NS	0.51	0.21 H	NR	0.22 U	0.19 U	0.2 U
Carbazole	NS	NS	NS	0.13 J	1.8	NR	0.22 U	0.19 U	0.2 U
Chrysene	**1**	3.9	1	**1.6**	**5.3**	NR	0.15	0.027 J	0.12 U
Dibenz(a,h)Anthracene	**0.33**	0.33	1,000	0.2	**0.62**	NR	0.028 J	0.12 U	0.12 U
Dibenzofuran	7	59	210	0.15 J	1.7 L	NR	0.22 U	0.19 U	0.2 U
Diethyl Phthalate	NS	NS	NS	0.21 U	0.19 UJ	NR	0.22 U	0.19 U	0.2 U
Dimethyl Phthalate	NS	NS	NS	0.21 U	0.19 UJ	NR	0.22 U	0.19 U	0.2 U
Di-N-Butyl Phthalate	NS	NS	NS	0.21	0.2 H	NR	0.15 J	0.19 U	0.2 U
Di-N-Octylphthalate	NS	NS	NS	0.21 U	0.19 U	NR	0.22 U	0.19 U	0.2 U
Fluoranthene	100	100	1,000	3.8	NR	12	0.26	0.059 J	0.031 J
Fluorene	30	100	386	0.18 J	1.8 L	NR	0.22 U	0.19 U	0.2 U
Hexachlorobenzene	0.33	1.2	3.2	0.13 U	0.11 U	NR	0.13 U	0.12 U	0.12 U
Hexachlorobutadiene	NS	NS	NS	0.21 U	0.19 U	NR	0.22 U	0.19 U	0.2 U
Hexachlorocyclopentadiene	NS	NS	NS	0.61 U	0.55 U	NR	0.62 U	0.55 U	0.59 U
Hexachloroethane	NS	NS	NS	0.17 U	0.15 U	NR	0.17 U	0.16 U	0.16 U
Indeno(1,2,3-c,d)Pyrene	**0.5**	0.5	8.2	**1**	**3.2**	NR	0.12 J	0.16 U	0.16 U
Isophorone	NS	NS	NS	0.19 U	0.17 U	NR	0.2 U	0.17 U	0.18 U
Naphthalene	12	100	12	0.062 J	0.59	NR	0.22 U	0.19 U	0.53
Nitrobenzene	NS	NS	NS	0.19 U	0.17 U	NR	0.2 U	0.17 U	0.18 U
N-Nitrosodi-N-Propylamine	NS	NS	NS	0.21 U	0.19 U	NR	0.22 U	0.19 U	0.2 U
N-Nitrosodiphenylamine	NS	NS	NS	0.17 U	0.15 U	NR	0.17 U	0.16 U	0.16 U
Pentachlorophenol	0.8	6.7	0.8	0.17 U	0.15 U	NR	0.17 U	0.16 U	0.16 U
Phenanthrene	100	100	1,000	3	NR	14	0.092 J	0.029 J	0.027 J
Phenol	0.33	100	0.33	0.21 U	0.19 U	NR	0.22 U	0.19 U	0.2 U
Pyrene	100	100	1,000	3.2	NR	9.5	0.23	0.055 J	0.027 J

Table 3
Seton Brilla Charter School
1956 Jerome Avenue, Bronx, NY
Documentation Sampling
Soil Analytical Results of Semivolatile Organic Compounds (SVOCs)

			AKRF Sample ID	SW-06_20230117	SW-07_20230118	SW-08_20230118	SW-09_20230119	SW-10_20230119	SW-11_20230119
			Laboratory Sample ID	L2302678-03	L2302922-02	L2302922-03	L2303274-01	L2303274-02	L2303274-03
			Date Sampled	1/17/2023	1/18/2023	1/18/2023	1/19/2023	1/19/2023	1/19/2023
			Dilution Factor	1	1	1	1	1	1
			Unit	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Compound	**NYSDEC UUSCO**	**NYSDEC RRSCO**	**NYSDEC PGWSCO**	CONC Q	CONC Q	CONC Q	CONC Q	CONC Q	CONC Q
1,2,4,5-Tetrachlorobenzene	NS	NS	NS	0.2 U	0.19 U	0.19 U	0.2 UJ	0.21 UJ	0.25 U
1,4-Dioxane (P-Dioxane)	0.1	13	0.1	0.03 UJ	0.028 UJ	0.029 UJ	0.031 UJ	0.032 UJ	0.038 UJ
2,4,5-Trichlorophenol	NS	NS	NS	0.2 U	0.19 U	0.19 U	0.2 UJ	0.21 UJ	0.25 U
2,4,6-Trichlorophenol	NS	NS	NS	0.12 U	0.11 U	0.11 U	0.12 UJ	0.13 UJ	0.15 U
2,4-Dichlorophenol	NS	NS	NS	0.18 U	0.17 U	0.17 U	0.18 UJ	0.19 UJ	0.23 U
2,4-Dimethylphenol	NS	NS	NS	0.2 U	0.19 U	0.19 U	0.2 UJ	0.21 UJ	0.25 U
2,4-Dinitrophenol	NS	NS	NS	0.96 U	0.91 U	0.92 U	0.98 UJ	1 UJ	1.2 UJ
2,4-Dinitrotoluene	NS	NS	NS	0.2 U	0.19 U	0.19 U	0.2 UJ	0.21 UJ	0.25 U
2,6-Dinitrotoluene	NS	NS	NS	0.2 U	0.19 U	0.19 U	0.2 UJ	0.21 UJ	0.25 U
2-Chloronaphthalene	NS	NS	NS	0.2 U	0.19 U	0.19 U	0.2 UJ	0.21 UJ	0.25 U
2-Chlorophenol	NS	NS	NS	0.2 U	0.19 U	0.19 U	0.2 UJ	0.21 UJ	0.25 U
2-Methylnaphthalene	NS	NS	NS	0.61	0.048 J	0.031 J	0.26 L	0.67 L	0.25 J
2-Methylphenol (O-Cresol)	0.33	100	0.33	0.2 U	0.19 U	0.19 U	0.2 UJ	0.21 UJ	0.25 U
2-Nitroaniline	NS	NS	NS	0.2 U	0.19 U	0.19 U	0.2 UJ	0.21 UJ	0.25 U
2-Nitrophenol	NS	NS	NS	0.43 U	0.41 U	0.41 U	0.44 UJ	0.46 UJ	0.55 U
3- And 4- Methylphenol (Total)	NS	NS	NS	0.29 U	0.27 U	0.27 U	0.29 UJ	0.3 UJ	0.36 U
3,3'-Dichlorobenzidine	NS	NS	NS	0.2 U	0.19 U	0.19 U	0.2 UJ	0.21 UJ	0.25 UJ
3-Nitroaniline	NS	NS	NS	0.2 U	0.19 U	0.19 U	0.2 UJ	0.21 UJ	0.25 U
4,6-Dinitro-2-Methylphenol	NS	NS	NS	0.52 U	0.5 U	0.5 U	0.53 UJ	0.55 UJ	0.66 U
4-Bromophenyl Phenyl Ether	NS	NS	NS	0.2 U	0.19 U	0.19 U	0.2 UJ	0.21 UJ	0.25 U
4-Chloro-3-Methylphenol	NS	NS	NS	0.2 U	0.19 U	0.19 U	0.2 UJ	0.21 UJ	0.25 U
4-Chloroaniline	NS	NS	NS	0.2 UJ	0.19 U	0.19 U	0.2 UJ	0.21 UJ	0.25 UJ
4-Chlorophenyl Phenyl Ether	NS	NS	NS	0.2 U	0.19 U	0.19 U	0.2 UJ	0.21 UJ	0.25 U
4-Nitroaniline	NS	NS	NS	0.2 U	0.19 U	0.19 U	0.2 UJ	0.21 UJ	0.25 U
4-Nitrophenol	NS	NS	NS	0.28 U	0.27 U	0.27 U	0.28 UJ	0.3 UJ	0.36 U
Acenaphthene	20	100	98	0.16 U	0.15 U	0.15 U	0.16 UJ	0.17 UJ	0.2 U
Acenaphthylene	100	100	107	0.16 U	0.15 U	0.15 U	0.16 UJ	0.17 UJ	0.2 U
Acetophenone	NS	NS	NS	0.2 U	0.19 U	0.19 U	0.14 L	0.45 L	0.12 J
Anthracene	100	100	1,000	0.12 U	0.11 U	0.11 U	0.12 UJ	0.13 UJ	0.15 U
Benzo(a)Anthracene	**1**	1	1	0.12 U	0.03 J	0.13	0.12 UJ	0.03 L	0.15 U
Benzo(a)Pyrene	**1**	1	22	0.16 U	0.15 U	0.16	0.16 UJ	0.17 UJ	0.2 U
Benzo(b)Fluoranthene	**1**	1	1.7	0.12 U	0.04 J	0.17	0.12 UJ	0.047 L	0.15 U
Benzo(g,h,i)Perylene	100	100	1,000	0.16 U	0.024 J	0.11 J	0.16 UJ	0.028 L	0.2 U
Benzo(k)Fluoranthene	**0.8**	3.9	1.7	0.12 U	0.11 U	0.086 J	0.12 UJ	0.13 UJ	0.15 U
Benzoic Acid	NS	NS	NS	0.65 U	0.62 U	0.62 U	0.66 UJ	0.68 UJ	0.82 UJ
Benzyl Alcohol	NS	NS	NS	0.2 U	0.19 U	0.19 U	0.2 UJ	0.21 UJ	0.25 U
Benzyl Butyl Phthalate	NS	NS	NS	0.2 U	0.19 U	0.19 U	0.2 UJ	0.21 UJ	0.25 U
Biphenyl (Diphenyl)	NS	NS	NS	0.46 U	0.43 U	0.43 U	0.46 UJ	0.48 UJ	0.58 U
Bis(2-Chloroethoxy) Methane	NS	NS	NS	0.22 U	0.2 U	0.2 U	0.22 UJ	0.23 UJ	0.27 U
Bis(2-Chloroethyl) Ether (2-Chloroethyl Ether)	NS	NS	NS	0.18 U	0.17 U	0.17 U	0.18 UJ	0.19 UJ	0.23 U
Bis(2-Chloroisopropyl) Ether	NS	NS	NS	0.24 UJ	0.23 UJ	0.23 UJ	0.24 UJ	0.25 UJ	0.3 UJ
Bis(2-Ethylhexyl) Phthalate	NS	NS	NS	0.2 U	0.19 U	0.19 U	0.2 UJ	0.21 UJ	0.25 U
Carbazole	NS	NS	NS	0.2 U	0.19 U	0.19 U	0.2 UJ	0.21 UJ	0.25 U
Chrysene	**1**	3.9	1	0.021 J	0.03 J	0.14	0.12 UJ	0.029 L	0.15 U
Dibenz(a,h)Anthracene	**0.33**	0.33	1,000	0.12 U	0.11 U	0.025 J	0.12 UJ	0.13 UJ	0.15 U
Dibenzofuran	7	59	210	0.2 U	0.19 U	0.19 U	0.2 UJ	0.21 UJ	0.25 U
Diethyl Phthalate	NS	NS	NS	0.2 U	0.19 U	0.19 U	0.2 UJ	0.21 UJ	0.25 U
Dimethyl Phthalate	NS	NS	NS	0.2 U	0.19 U	0.19 U	0.2 UJ	0.21 UJ	0.25 U
Di-N-Butyl Phthalate	NS	NS	NS	0.2 U	0.19 U	0.19 U	0.2 UJ	0.21 UJ	0.25 U
Di-N-Octylphthalate	NS	NS	NS	0.2 U	0.19 U	0.19 U	0.2 UJ	0.21 UJ	0.25 U
Fluoranthene	100	100	1,000	0.04 J	0.053 J	0.3	0.12 UJ	0.042 L	0.15 U
Fluorene	30	100	386	0.2 U	0.19 U	0.19 U	0.2 UJ	0.21 UJ	0.25 U
Hexachlorobenzene	0.33	1.2	3.2	0.12 U	0.11 U	0.11 U	0.12 UJ	0.13 UJ	0.15 U
Hexachlorobutadiene	NS	NS	NS	0.2 U	0.19 U	0.19 U	0.2 UJ	0.21 UJ	0.25 U
Hexachlorocyclopentadiene	NS	NS	NS	0.57 U	0.54 U	0.54 U	0.58 UJ	0.6 UJ	0.72 UJ
Hexachloroethane	NS	NS	NS	0.16 U	0.15 U	0.15 U	0.16 UJ	0.17 UJ	0.2 U
Indeno(1,2,3-c,d)Pyrene	**0.5**	0.5	8.2	0.16 U	0.15 U	0.095 J	0.16 UJ	0.029 L	0.2 U
Isophorone	NS	NS	NS	0.18 U	0.17 U	0.17 U	0.18 UJ	0.19 UJ	0.23 U
Naphthalene	12	100	12	0.47	0.07 J	0.042 J	0.39 L	1 L	0.37
Nitrobenzene	NS	NS	NS	0.18 U	0.17 U	0.17 U	0.18 UJ	0.19 UJ	0.23 U
N-Nitrosodi-N-Propylamine	NS	NS	NS	0.2 U	0.19 U	0.19 U	0.2 UJ	0.21 UJ	0.25 UJ
N-Nitrosodiphenylamine	NS	NS	NS	0.16 U	0.15 U	0.15 U	0.16 UJ	0.17 UJ	0.2 U
Pentachlorophenol	0.8	6.7	0.8	0.16 U	0.15 U	0.15 U	0.16 UJ	0.17 UJ	0.2 U
Phenanthrene	100	100	1,000	0.035 J	0.11 U	0.14	0.12 UJ	0.13 UJ	0.15 U
Phenol	0.33	100	0.33	0.2 U	0.19 U	0.19 U	0.2 UJ	0.21 UJ	0.25 U
Pyrene	100	100	1,000	0.041 J	0.05 J	0.26	0.12 UJ	0.041 L	0.15 U

Table 3
Seton Brilla Charter School
1956 Jerome Avenue, Bronx, NY
Documentation Sampling
Soil Analytical Results of Semivolatile Organic Compounds (SVOCs)

			AKRF Sample ID	SW-12_2_20230201	SW-13_2_20230201	SW-14_2_20230201	SW-15_2_20230201	SW-16_2_20230201
			Laboratory Sample ID	L2305518-02	L2305518-03	L2305518-04	L2305518-05	L2305518-06
			Date Sampled	2/01/2023	2/01/2023	2/01/2023	2/01/2023	2/01/2023
			Dilution Factor	1	1	1	1	1
			Unit	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Compound	**NYSDEC UUSCO**	**NYSDEC RRSCO**	**NYSDEC PGWSCO**	CONC Q	CONC Q	CONC Q	CONC Q	CONC Q
1,2,4,5-Tetrachlorobenzene	NS	NS	NS	0.19 U	0.19 U	0.2 U	0.19 U	0.2 U
1,4-Dioxane (P-Dioxane)	0.1	13	0.1	0.028 U	0.028 U	0.03 U	0.029 U	0.03 U
2,4,5-Trichlorophenol	NS	NS	NS	0.19 U	0.19 U	0.2 U	0.19 U	0.2 U
2,4,6-Trichlorophenol	NS	NS	NS	0.11 U	0.11 U	0.12 U	0.12 U	0.12 U
2,4-Dichlorophenol	NS	NS	NS	0.17 U	0.17 U	0.18 U	0.18 U	0.18 U
2,4-Dimethylphenol	NS	NS	NS	0.19 U	0.19 U	0.2 U	0.19 U	0.2 U
2,4-Dinitrophenol	NS	NS	NS	0.91 U	0.91 U	0.95 U	0.93 U	0.95 U
2,4-Dinitrotoluene	NS	NS	NS	0.19 U	0.19 U	0.2 U	0.19 U	0.2 U
2,6-Dinitrotoluene	NS	NS	NS	0.19 U	0.19 U	0.2 U	0.19 U	0.2 U
2-Chloronaphthalene	NS	NS	NS	0.19 U	0.19 U	0.2 U	0.19 U	0.2 U
2-Chlorophenol	NS	NS	NS	0.19 U	0.19 U	0.2 U	0.19 U	0.2 U
2-Methylnaphthalene	NS	NS	NS	0.23 U	0.23 U	0.24 U	0.23 U	0.24 U
2-Methylphenol (O-Cresol)	0.33	100	0.33	0.19 U	0.19 U	0.2 U	0.19 U	0.2 U
2-Nitroaniline	NS	NS	NS	0.19 U	0.19 U	0.2 U	0.19 U	0.2 U
2-Nitrophenol	NS	NS	NS	0.41 U	0.41 U	0.43 U	0.42 U	0.43 U
3- And 4- Methylphenol (Total)	NS	NS	NS	0.27 U	0.27 U	0.28 U	0.28 U	0.28 U
3,3'-Dichlorobenzidine	NS	NS	NS	0.19 UJ	0.19 UJ	0.2 UJ	0.19 UJ	0.2 UJ
3-Nitroaniline	NS	NS	NS	0.19 UJ	0.19 UJ	0.2 UJ	0.19 UJ	0.2 UJ
4,6-Dinitro-2-Methylphenol	NS	NS	NS	0.49 U	0.49 U	0.51 U	0.5 U	0.51 U
4-Bromophenyl Phenyl Ether	NS	NS	NS	0.19 U	0.19 U	0.2 U	0.19 U	0.2 U
4-Chloro-3-Methylphenol	NS	NS	NS	0.19 U	0.19 U	0.2 U	0.19 U	0.2 U
4-Chloroaniline	NS	NS	NS	0.19 U	0.19 U	0.2 U	0.19 U	0.2 U
4-Chlorophenyl Phenyl Ether	NS	NS	NS	0.19 U	0.19 U	0.2 U	0.19 U	0.2 U
4-Nitroaniline	NS	NS	NS	0.19 U	0.19 U	0.2 U	0.19 U	0.2 U
4-Nitrophenol	NS	NS	NS	0.27 U	0.27 U	0.28 U	0.27 U	0.28 U
Acenaphthene	20	100	98	0.15 U	0.15 U	0.16 U	0.16 U	0.16 U
Acenaphthylene	100	100	107	0.15 U	0.15 U	0.16 U	0.16 U	0.16 U
Acetophenone	NS	NS	NS	0.19 U	0.19 U	0.2 U	0.19 U	0.2 U
Anthracene	100	100	1,000	0.11 U	0.11 U	0.12 U	0.12 U	0.12 U
Benzo(a)Anthracene	**1**	1	1	0.11 U	0.11 U	0.12 U	0.12 U	0.12 U
Benzo(a)Pyrene	**1**	1	22	0.15 U	0.15 U	0.16 U	0.16 U	0.16 U
Benzo(b)Fluoranthene	**1**	1	1.7	0.11 U	0.11 U	0.12 U	0.12 U	0.12 U
Benzo(g,h,i)Perylene	100	100	1,000	0.15 U	0.15 U	0.16 U	0.16 U	0.16 U
Benzo(k)Fluoranthene	**0.8**	3.9	1.7	0.11 U	0.11 U	0.12 U	0.12 U	0.12 U
Benzoic Acid	NS	NS	NS	0.62 R	0.62 R	0.64 R	0.63 R	0.64 R
Benzyl Alcohol	NS	NS	NS	0.19 U	0.19 U	0.2 U	0.19 U	0.2 U
Benzyl Butyl Phthalate	NS	NS	NS	0.19 U	0.19 U	0.2 U	0.19 U	0.2 U
Biphenyl (Diphenyl)	NS	NS	NS	0.43 U	0.43 U	0.45 U	0.44 U	0.45 U
Bis(2-Chloroethoxy) Methane	NS	NS	NS	0.2 U	0.2 U	0.21 U	0.21 U	0.21 U
Bis(2-Chloroethyl) Ether (2-Chloroethyl Ether)	NS	NS	NS	0.17 U	0.17 U	0.18 U	0.18 U	0.18 U
Bis(2-Chloroisopropyl) Ether	NS	NS	NS	0.23 U	0.23 U	0.24 U	0.23 U	0.24 U
Bis(2-Ethylhexyl) Phthalate	NS	NS	NS	0.19 U	0.19 U	0.2 U	0.19 U	0.2 U
Carbazole	NS	NS	NS	0.19 U	0.19 U	0.2 U	0.19 U	0.2 U
Chrysene	**1**	3.9	1	0.11 U	0.11 U	0.12 U	0.12 U	0.12 U
Dibenz(a,h)Anthracene	**0.33**	0.33	1,000	0.11 U	0.11 U	0.12 U	0.12 U	0.12 U
Dibenzofuran	7	59	210	0.19 U	0.19 U	0.2 U	0.19 U	0.2 U
Diethyl Phthalate	NS	NS	NS	0.19 U	0.19 U	0.2 U	0.19 U	0.2 U
Dimethyl Phthalate	NS	NS	NS	0.19 U	0.19 U	0.2 U	0.19 U	0.2 U
Di-N-Butyl Phthalate	NS	NS	NS	0.19 U	0.19 U	0.2 U	0.19 U	0.2 U
Di-N-Octylphthalate	NS	NS	NS	0.19 U	0.19 U	0.2 U	0.19 U	0.2 U
Fluoranthene	100	100	1,000	0.11 U	0.11 U	0.12 U	0.12 U	0.12 U
Fluorene	30	100	386	0.19 U	0.19 U	0.2 U	0.19 U	0.2 U
Hexachlorobenzene	0.33	1.2	3.2	0.11 U	0.11 U	0.12 U	0.12 U	0.12 U
Hexachlorobutadiene	NS	NS	NS	0.19 U	0.19 U	0.2 U	0.19 U	0.2 U
Hexachlorocyclopentadiene	NS	NS	NS	0.54 U	0.54 U	0.56 U	0.56 U	0.56 U
Hexachloroethane	NS	NS	NS	0.15 U	0.15 U	0.16 U	0.16 U	0.16 U
Indeno(1,2,3-c,d)Pyrene	**0.5**	0.5	8.2	0.15 U	0.15 U	0.16 U	0.16 U	0.16 U
Isophorone	NS	NS	NS	0.17 U	0.17 U	0.18 U	0.18 U	0.18 U
Naphthalene	12	100	12	0.19 U	0.19 U	0.2 U	0.19 U	0.2 U
Nitrobenzene	NS	NS	NS	0.17 U	0.17 U	0.18 U	0.18 U	0.18 U
N-Nitrosodi-N-Propylamine	NS	NS	NS	0.19 U	0.19 U	0.2 U	0.19 U	0.2 U
N-Nitrosodiphenylamine	NS	NS	NS	0.15 U	0.15 U	0.16 U	0.16 U	0.16 U
Pentachlorophenol	0.8	6.7	0.8	0.15 U	0.15 U	0.16 U	0.16 U	0.16 U
Phenanthrene	100	100	1,000	0.11 U	0.11 U	0.12 U	0.12 U	0.12 U
Phenol	0.33	100	0.33	0.19 U	0.19 U	0.2 U	0.19 U	0.2 U
Pyrene	100	100	1,000	0.11 U	0.11 U	0.12 U	0.12 U	0.12 U

Table 3
Seton Brilla Charter School
1956 Jerome Avenue, Bronx, NY
Documentation Sampling
Soil Analytical Results of Semivolatile Organic Compounds (SVOCs)

			AKRF Sample ID	SW-17_2_20230725	DUP-02_20230725	FIELD BLANK_20230725
			Laboratory Sample ID	L2342699-01	L2342699-02	L2342699-04
			Date Sampled	7/25/2023	7/25/2023	7/25/2023
			Dilution Factor	1	1	1
			Unit	mg/kg	mg/kg	µg/L
Compound	**NYSDEC UUSCO**	**NYSDEC RRSCO**	**NYSDEC PGWSCO**	CONC Q	CONC Q	CONC Q
1,2,4,5-Tetrachlorobenzene	NS	NS	NS	0.19 UJ	0.19 UJ	10 U
1,4-Dioxane (P-Dioxane)	0.1	13	0.1	0.028 UJ	0.029 UJ	0.214 U
2,4,5-Trichlorophenol	NS	NS	NS	0.19 UJ	0.19 UJ	5 U
2,4,6-Trichlorophenol	NS	NS	NS	0.11 UJ	0.11 UJ	5 U
2,4-Dichlorophenol	NS	NS	NS	0.17 UJ	0.17 UJ	5 U
2,4-Dimethylphenol	NS	NS	NS	0.19 UJ	0.19 UJ	5 U
2,4-Dinitrophenol	NS	NS	NS	0.91 R	0.92 R	20 R
2,4-Dinitrotoluene	NS	NS	NS	0.19 UJ	0.19 UJ	5 U
2,6-Dinitrotoluene	NS	NS	NS	0.19 UJ	0.19 UJ	5 U
2-Chloronaphthalene	NS	NS	NS	0.19 UJ	0.19 UJ	0.2 U
2-Chlorophenol	NS	NS	NS	0.19 UJ	0.19 UJ	2 U
2-Methylnaphthalene	NS	NS	NS	0.23 UJ	0.23 UJ	0.1 U
2-Methylphenol (O-Cresol)	0.33	100	0.33	0.19 UJ	0.19 UJ	5 U
2-Nitroaniline	NS	NS	NS	0.19 UJ	0.19 UJ	5 U
2-Nitrophenol	NS	NS	NS	0.41 UJ	0.41 UJ	10 U
3- And 4- Methylphenol (Total)	NS	NS	NS	0.27 UJ	0.28 UJ	5 U
3,3'-Dichlorobenzidine	NS	NS	NS	0.19 UJ	0.19 UJ	5 U
3-Nitroaniline	NS	NS	NS	0.19 UJ	0.19 UJ	5 U
4,6-Dinitro-2-Methylphenol	NS	NS	NS	0.49 R	0.5 R	10 U
4-Bromophenyl Phenyl Ether	NS	NS	NS	0.19 UJ	0.19 UJ	2 U
4-Chloro-3-Methylphenol	NS	NS	NS	0.19 UJ	0.19 UJ	2 U
4-Chloroaniline	NS	NS	NS	0.19 UJ	0.19 UJ	5 U
4-Chlorophenyl Phenyl Ether	NS	NS	NS	0.19 UJ	0.19 UJ	2 U
4-Nitroaniline	NS	NS	NS	0.19 UJ	0.19 UJ	5 U
4-Nitrophenol	NS	NS	NS	0.27 UJ	0.27 UJ	10 U
Acenaphthene	20	100	98	0.15 UJ	0.15 UJ	0.1 U
Acenaphthylene	100	100	107	0.15 UJ	0.15 UJ	0.1 U
Acetophenone	NS	NS	NS	0.19 UJ	0.19 UJ	5 U
Anthracene	100	100	1,000	0.11 UJ	0.11 UJ	0.1 U
Benzo(a)Anthracene	**1**	1	1	0.11	0.078 L	0.05 J
Benzo(a)Pyrene	**1**	1	22	0.11 L	0.086 L	0.1 U
Benzo(b)Fluoranthene	**1**	1	1.7	0.14	0.1 L	0.1 U
Benzo(g,h,i)Perylene	100	100	1,000	0.078 L	0.066 L	0.1 U
Benzo(k)Fluoranthene	**0.8**	3.9	1.7	0.047 L	0.033 L	0.1 U
Benzoic Acid	NS	NS	NS	0.62 UJ	0.62 UJ	50 R
Benzyl Alcohol	NS	NS	NS	0.19 UJ	0.19 UJ	2 U
Benzyl Butyl Phthalate	NS	NS	NS	0.055 L	0.19 UJ	5 U
Biphenyl (Diphenyl)	NS	NS	NS	0.43 UJ	0.44 UJ	2 U
Bis(2-Chloroethoxy) Methane	NS	NS	NS	0.2 UJ	0.21 UJ	5 U
Bis(2-Chloroethyl) Ether (2-Chloroethyl Ether)	NS	NS	NS	0.17 UJ	0.17 UJ	2 U
Bis(2-Chloroisopropyl) Ether	NS	NS	NS	0.23 UJ	0.23 UJ	2 U
Bis(2-Ethylhexyl) Phthalate	NS	NS	NS	0.087 L	0.076 L	3 U
Carbazole	NS	NS	NS	0.19 UJ	0.19 UJ	2 U
Chrysene	**1**	3.9	1	0.11	0.1 L	0.1 U
Dibenz(a,h)Anthracene	**0.33**	0.33	1,000	0.11 UJ	0.11 UJ	0.1 U
Dibenzofuran	7	59	210	0.19 UJ	0.19 UJ	2 U
Diethyl Phthalate	NS	NS	NS	0.19 UJ	0.19 UJ	5 U
Dimethyl Phthalate	NS	NS	NS	0.19 UJ	0.19 UJ	5 U
Di-N-Butyl Phthalate	NS	NS	NS	0.19 UJ	0.19 UJ	5 U
Di-N-Octylphthalate	NS	NS	NS	0.19 UJ	0.19 UJ	5 U
Fluoranthene	100	100	1,000	0.22	0.15 L	0.1 U
Fluorene	30	100	386	0.19 UJ	0.19 UJ	0.1 U
Hexachlorobenzene	0.33	1.2	3.2	0.11 UJ	0.11 UJ	0.8 U
Hexachlorobutadiene	NS	NS	NS	0.19 UJ	0.19 UJ	0.5 U
Hexachlorocyclopentadiene	NS	NS	NS	0.54 UJ	0.55 UJ	20 U
Hexachloroethane	NS	NS	NS	0.15 UJ	0.15 UJ	0.8 U
Indeno(1,2,3-c,d)Pyrene	**0.5**	0.5	8.2	0.084 L	0.063 L	0.1 U
Isophorone	NS	NS	NS	0.17 UJ	0.17 UJ	5 U
Naphthalene	12	100	12	0.19 UJ	0.19 UJ	0.1 U
Nitrobenzene	NS	NS	NS	0.17 UJ	0.17 UJ	2 U
N-Nitrosodi-N-Propylamine	NS	NS	NS	0.19 UJ	0.19 UJ	5 U
N-Nitrosodiphenylamine	NS	NS	NS	0.15 UJ	0.15 UJ	2 U
Pentachlorophenol	0.8	6.7	0.8	0.15 UJ	0.15 UJ	0.8 U
Phenanthrene	100	100	1,000	0.1 L	0.087 L	0.1 U
Phenol	0.33	100	0.33	0.19 UJ	0.19 UJ	5 U
Pyrene	100	100	1,000	0.19	0.13 L	0.1 U

Table 4
Seton Brilla Charter School
1956 Jerome Avenue, Bronx, NY
Documentation Sampling
Soil Analytical Results of Metals

			AKRF Sample ID	BS-01_20230117	BS-01_20230117	BS-02_20230118	BS-02_20230118	BS-03_20230119
			Laboratory Sample ID	L2302678-04	L2302678-04	L2302922-01	L2302922-01	L2303274-04
			Date Sampled	1/17/2023	1/17/2023	1/18/2023	1/18/2023	1/19/2023
			Unit	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
			Dilution Factor	1	2	1	2	1
Compound	**NYSDEC UUSCO**	**NYSDEC RRSCO**		CONC Q	CONC Q	CONC Q	CONC Q	CONC Q
Aluminum	NS	NS		NR	9,360	NR	9,590 L	NR
Antimony	NS	NS		NR	0.675 H	NR	0.829 H	NR
Arsenic	13	16		NR	1.93	NR	1.58	NR
Barium	350	400		NR	70.2	NR	63.3	NR
Beryllium	7.2	72		NR	0.5	NR	0.463 U	NR
Cadmium	2.5	4.3		NR	0.182 J	NR	0.926 U	NR
Calcium	NS	NS		NR	3,110	NR	2,750 J	NR
Chromium, Hexavalent	**1**	110		1.01 U	NR	0.497 J	NR	1.01 U
Chromium, Total	NS	NS		NR	27.7	NR	34.3 J	NR
Cobalt	NS	NS		NR	6.97	NR	6.59	NR
Copper	50	270		NR	24.1	NR	21.7	NR
Cyanide	27	27		NR	NR	NR	NR	NR
Iron	NS	NS		NR	12,200	NR	16,200	NR
Lead	**63**	400		NR	18.3	NR	29.3	NR
Magnesium	NS	NS		NR	4,340	NR	5,660	NR
Manganese	1,600	2,000		NR	197	NR	226 J	NR
Mercury	**0.18**	0.81		0.057 J	NR	0.081	NR	0.086 U
Nickel	30	310		NR	17	NR	19.3 J	NR
Potassium	NS	NS		NR	1,650	NR	2,180 J	NR
Selenium	3.9	180		NR	1.99 U	NR	1.85 U	NR
Silver	2	180		NR	0.498 U	NR	0.463 U	NR
Sodium	NS	NS		NR	193 J	NR	288	NR
Thallium	NS	NS		NR	1.99 U	NR	1.85 U	NR
Vanadium	NS	NS		NR	29	NR	29.8	NR
Zinc	**109**	10,000		NR	48.8	NR	46.8	NR

Table 4
Seton Brilla Charter School
1956 Jerome Avenue, Bronx, NY
Documentation Sampling
Soil Analytical Results of Metals

		AKRF Sample ID	BS-03_20230119	EP-01_2_20221028	EP-01_2_20221028	EP-02_2_20221028	EP-02_2_20221028
		Laboratory Sample ID	L2303274-04	L2260497-01	L2260497-01	L2260497-02	L2260497-02
		Date Sampled	1/19/2023	10/28/2022	10/28/2022	10/28/2022	10/28/2022
		Unit	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
		Dilution Factor	2	1	2	1	2
Compound	**NYSDEC UUSCO**	**NYSDEC RRSCO**	CONC Q	CONC Q	CONC Q	CONC Q	CONC Q
Aluminum	NS	NS	8,220 L	NR	4,990	NR	6,020
Antimony	NS	NS	4.8 U	NR	0.735 H	NR	5.2 U
Arsenic	13	16	1.7	NR	3.65	NR	1.53
Barium	350	400	64.5	NR	57.8	NR	66.3
Beryllium	7.2	72	0.136 J	NR	0.454 U	NR	0.52 U
Cadmium	2.5	4.3	0.961 U	NR	0.653 J	NR	0.281 J
Calcium	NS	NS	10,200	NR	14,800	NR	58,400
Chromium, Hexavalent	**1**	110	NR	0.258 J	NR	0.432 J	NR
Chromium, Total	NS	NS	22.4	NR	15.2	NR	16.6
Cobalt	NS	NS	5.53	NR	5.33	NR	5.43
Copper	50	270	17.2	NR	27	NR	16.5
Cyanide	27	27	NR	NR	NR	NR	NR
Iron	NS	NS	12,300	NR	29,400	NR	10,200
Lead	**63**	400	37.2	NR	40.5	NR	26.9
Magnesium	NS	NS	5,530	NR	3,800	NR	32,300
Manganese	1,600	2,000	169	NR	182	NR	210
Mercury	**0.18**	0.81	NR	0.142	NR	0.102 U	NR
Nickel	30	310	13.5	NR	12.6	NR	9.93
Potassium	NS	NS	1,340	NR	1,320	NR	2,040
Selenium	3.9	180	1.92 U	NR	1.81 U	NR	2.08 U
Silver	2	180	0.48 U	NR	0.454 U	NR	0.52 U
Sodium	NS	NS	250	NR	273	NR	170 J
Thallium	NS	NS	1.92 U	NR	1.81 U	NR	2.08 U
Vanadium	NS	NS	22.3	NR	15.6	NR	19.3
Zinc	**109**	10,000	47.8	NR	**123**	NR	56.6

Table 4
Seton Brilla Charter School
1956 Jerome Avenue, Bronx, NY
Documentation Sampling
Soil Analytical Results of Metals

		AKRF Sample ID	EP-03_2_20221028	EP-03_2_20221028	EP-04_2_20221101	EP-04_2_20221101	EP-05_2_20221101
		Laboratory Sample ID	L2260497-03	L2260497-03	L2261106-01	L2261106-01	L2261106-02
		Date Sampled	10/28/2022	10/28/2022	11/01/2022	11/01/2022	11/01/2022
		Unit	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
		Dilution Factor	1	2	1	2	1
Compound	**NYSDEC UUSCO**	**NYSDEC RRSCO**	CONC Q	CONC Q	CONC Q	CONC Q	CONC Q
Aluminum	NS	NS	NR	7,090	NR	8,300 L	NR
Antimony	NS	NS	NR	4.84 U	NR	4.5 UJ	NR
Arsenic	13	16	NR	3.58	NR	2.87	NR
Barium	350	400	NR	103	NR	103	NR
Beryllium	7.2	72	NR	0.484 U	NR	0.45 U	NR
Cadmium	2.5	4.3	NR	0.687 J	NR	0.901 U	NR
Calcium	NS	NS	NR	47,500	NR	41,200	NR
Chromium, Hexavalent	**1**	110	0.409 J	NR	0.565 J	NR	0.377 J
Chromium, Total	NS	NS	NR	21.4	NR	21.6	NR
Cobalt	NS	NS	NR	5.33	NR	6.5	NR
Copper	50	270	NR	31.5	NR	33.5	NR
Cyanide	27	27	NR	NR	NR	NR	NR
Iron	NS	NS	NR	13,000	NR	14,200	NR
Lead	**63**	400	NR	**73**	NR	**125**	NR
Magnesium	NS	NS	NR	6,600	NR	19,800	NR
Manganese	1,600	2,000	NR	193	NR	237	NR
Mercury	**0.18**	0.81	0.166	NR	0.121	NR	**0.181**
Nickel	30	310	NR	11.8	NR	14.2	NR
Potassium	NS	NS	NR	2,200	NR	2,470	NR
Selenium	3.9	180	NR	1.93 U	NR	1.8 U	NR
Silver	2	180	NR	0.832	NR	0.45 U	NR
Sodium	NS	NS	NR	549	NR	310	NR
Thallium	NS	NS	NR	1.93 U	NR	1.8 U	NR
Vanadium	NS	NS	NR	21.4	NR	23.9	NR
Zinc	**109**	10,000	NR	**212**	NR	92.4	NR

Table 4
Seton Brilla Charter School
1956 Jerome Avenue, Bronx, NY
Documentation Sampling
Soil Analytical Results of Metals

		AKRF Sample ID	EP-05_2_20221101	EP-06_2_20221101	EP-06_2_20221101	EP-07_2_20221101	EP-07_2_20221101
		Laboratory Sample ID	L2261106-02	L2261106-03	L2261106-03	L2261106-04	L2261106-04
		Date Sampled	11/01/2022	11/01/2022	11/01/2022	11/01/2022	11/01/2022
		Unit	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
		Dilution Factor	2	1	2	1	2
Compound	**NYSDEC UUSCO**	**NYSDEC RRSCO**	CONC Q	CONC Q	CONC Q	CONC Q	CONC Q
Aluminum	NS	NS	7,000 L	NR	7,950 L	NR	7,660 L
Antimony	NS	NS	4.58 UJ	NR	4.4 UJ	NR	4.48 UJ
Arsenic	13	16	3.24	NR	3.08	NR	2.89
Barium	350	400	79.8	NR	90.2	NR	79.3
Beryllium	7.2	72	0.458 U	NR	0.44 U	NR	0.448 U
Cadmium	2.5	4.3	0.917 U	NR	0.879 U	NR	0.897 U
Calcium	NS	NS	32,400	NR	37,100	NR	22,100
Chromium, Hexavalent	**1**	110	NR	0.44 J	NR	0.44 J	NR
Chromium, Total	NS	NS	18.2	NR	19.2	NR	20.2
Cobalt	NS	NS	5	NR	5.28	NR	4.93
Copper	50	270	29.4	NR	39.4	NR	24.9
Cyanide	27	27	NR	NR	NR	NR	NR
Iron	NS	NS	11,100	NR	12,400	NR	11,200
Lead	**63**	400	**83.3**	NR	**76.4**	NR	**74.1**
Magnesium	NS	NS	8,330	NR	9,820	NR	7,190
Manganese	1,600	2,000	175	NR	182	NR	160
Mercury	**0.18**	0.81	NR	0.147	NR	0.109	NR
Nickel	30	310	11.7	NR	13	NR	12.3
Potassium	NS	NS	1,640	NR	2,340	NR	1,660
Selenium	3.9	180	1.83 U	NR	1.76 U	NR	1.79 U
Silver	2	180	0.458 U	NR	0.323 J	NR	0.448 U
Sodium	NS	NS	321	NR	425	NR	302
Thallium	NS	NS	1.83 U	NR	1.76 U	NR	1.79 U
Vanadium	NS	NS	19.9	NR	23	NR	21.7
Zinc	**109**	10,000	106	NR	96.9	NR	**115**

Table 4
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		AKRF Sample ID	EP-08-2_20221108	EP-08-2_20221108	EP-12_2_20230201	EP-12_2_20230201	EP-12_2_20230201
		Laboratory Sample ID	L2262572-01	L2262572-01	L2305518-01	L2305518-01	L2305518-01
		Date Sampled	11/08/2022	11/08/2022	2/01/2023	2/01/2023	2/01/2023
		Unit	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
		Dilution Factor	1	2	1	2	20
Compound	**NYSDEC UUSCO**	**NYSDEC RRSCO**	CONC Q	CONC Q	CONC Q	CONC Q	CONC Q
Aluminum	NS	NS	NR	7,330	NR	2,600	NR
Antimony	NS	NS	NR	4.51 U	NR	4.37 U	NR
Arsenic	13	16	NR	1.47	NR	0.881	NR
Barium	350	400	NR	54	NR	18.9	NR
Beryllium	7.2	72	NR	0.451 U	NR	0.369 J	NR
Cadmium	2.5	4.3	NR	0.901 U	NR	0.176 J	NR
Calcium	NS	NS	NR	4,760	NR	NR	182,000
Chromium, Hexavalent	**1**	110	0.955 U	NR	**4.67**	NR	NR
Chromium, Total	NS	NS	NR	22.5	NR	6.54	NR
Cobalt	NS	NS	NR	4.49	NR	2	NR
Copper	50	270	NR	15.3	NR	4.08	NR
Cyanide	27	27	NR	NR	NR	NR	NR
Iron	NS	NS	NR	10,600	NR	5,520	NR
Lead	**63**	400	NR	11.9	NR	3.14 J	NR
Magnesium	NS	NS	NR	4,110	NR	NR	104,000
Manganese	1,600	2,000	NR	129	NR	323	NR
Mercury	**0.18**	0.81	0.075 U	NR	0.072 U	NR	NR
Nickel	30	310	NR	12.7	NR	3.41	NR
Potassium	NS	NS	NR	1,320	NR	415	NR
Selenium	3.9	180	NR	1.8 U	NR	1.75 U	NR
Silver	2	180	NR	0.451 U	NR	0.554	NR
Sodium	NS	NS	NR	112 J	NR	66.7 J	NR
Thallium	NS	NS	NR	1.8 U	NR	1.75 U	NR
Vanadium	NS	NS	NR	20.5	NR	7.08	NR
Zinc	**109**	10,000	NR	28.3	NR	56.7	NR

Table 4
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Soil Analytical Results of Metals

			AKRF Sample ID	SW-01_2_20221028	SW-01_2_20221028	SW-02_2_20221028	SW-02_2_20221028	SW-03_2_20221028
			Laboratory Sample ID	L2260497-04	L2260497-04	L2260497-05	L2260497-05	L2260497-06
			Date Sampled	10/28/2022	10/28/2022	10/28/2022	10/28/2022	10/28/2022
			Unit	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
			Dilution Factor	1	2	1	2	1
Compound	**NYSDEC UUSCO**	**NYSDEC RRSCO**		CONC Q	CONC Q	CONC Q	CONC Q	CONC Q
Aluminum	NS	NS		NR	7,970	NR	7,070	NR
Antimony	NS	NS		NR	4.85 U	NR	4.54 U	NR
Arsenic	13	16		NR	3.92	NR	2.61	NR
Barium	350	400		NR	125	NR	116	NR
Beryllium	7.2	72		NR	0.485 U	NR	0.454 U	NR
Cadmium	2.5	4.3		NR	0.504 J	NR	0.427 J	NR
Calcium	NS	NS		NR	27,500	NR	21,200	NR
Chromium, Hexavalent	**1**	110		0.346 J	NR	0.622 J	NR	1.06 U
Chromium, Total	NS	NS		NR	21.9	NR	20.9	NR
Cobalt	NS	NS		NR	8.46	NR	6.38	NR
Copper	50	270		NR	34.6	NR	32.5	NR
Cyanide	27	27		NR	NR	NR	NR	NR
Iron	NS	NS		NR	16,800	NR	13,000	NR
Lead	**63**	400		NR	**134**	NR	**95.9**	NR
Magnesium	NS	NS		NR	9,440	NR	8,620	NR
Manganese	1,600	2,000		NR	223	NR	177	NR
Mercury	**0.18**	0.81		**0.19**	NR	0.118	NR	0.11
Nickel	30	310		NR	14	NR	12.6	NR
Potassium	NS	NS		NR	2,480	NR	2,080	NR
Selenium	3.9	180		NR	1.94 U	NR	1.82 U	NR
Silver	2	180		NR	0.485 U	NR	0.454 U	NR
Sodium	NS	NS		NR	402	NR	272	NR
Thallium	NS	NS		NR	1.94 U	NR	1.82 U	NR
Vanadium	NS	NS		NR	26.2	NR	21.9	NR
Zinc	**109**	10,000		NR	108	NR	103	NR

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		AKRF Sample ID	SW-03_2_20221028	SW-04_20230117	SW-04_20230117	SW-05_20230117	SW-05_20230117
		Laboratory Sample ID	L2260497-06	L2302678-01	L2302678-01	L2302678-02	L2302678-02
		Date Sampled	10/28/2022	1/17/2023	1/17/2023	1/17/2023	1/17/2023
		Unit	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
		Dilution Factor	2	1	2	1	2
Compound	**NYSDEC UUSCO**	**NYSDEC RRSCO**	CONC Q	CONC Q	CONC Q	CONC Q	CONC Q
Aluminum	NS	NS	7,960	NR	7,240	NR	8,500
Antimony	NS	NS	5.18 U	NR	1.12 H	NR	0.836 H
Arsenic	13	16	2.62	NR	2.18	NR	1.85
Barium	350	400	118	NR	59.3	NR	49.4
Beryllium	7.2	72	0.518 U	NR	0.409 J	NR	0.493
Cadmium	2.5	4.3	0.435 J	NR	0.677 J	NR	0.177 J
Calcium	NS	NS	21,800	NR	9,230	NR	7,760
Chromium, Hexavalent	**1**	110	NR	0.601 J	NR	0.992 U	NR
Chromium, Total	NS	NS	22.2	NR	19.6	NR	23.4
Cobalt	NS	NS	8.68	NR	5.88	NR	6.33
Copper	50	270	39.4	NR	19.8	NR	15.7
Cyanide	27	27	NR	NR	NR	NR	NR
Iron	NS	NS	15,100	NR	10,700	NR	11,800
Lead	**63**	400	**77.3**	NR	47.7	NR	20.4
Magnesium	NS	NS	11,400	NR	4,340	NR	6,820
Manganese	1,600	2,000	285	NR	171	NR	170
Mercury	**0.18**	0.81	NR	0.053 J	NR	0.084 U	NR
Nickel	30	310	14.1	NR	13.6	NR	15
Potassium	NS	NS	2,370	NR	1,420	NR	1,230
Selenium	3.9	180	2.07 U	NR	1.84 U	NR	1.88 U
Silver	2	180	0.518 U	NR	0.46 U	NR	0.47 U
Sodium	NS	NS	306	NR	178 J	NR	154 J
Thallium	NS	NS	2.07 U	NR	1.84 U	NR	1.88 U
Vanadium	NS	NS	25.4	NR	22.4	NR	23.1
Zinc	**109**	10,000	103	NR	105	NR	52.2

Table 4
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			AKRF Sample ID	SW-06_20230117	SW-06_20230117	SW-07_20230118	SW-07_20230118	SW-08_20230118
			Laboratory Sample ID	L2302678-03	L2302678-03	L2302922-02	L2302922-02	L2302922-03
			Date Sampled	1/17/2023	1/17/2023	1/18/2023	1/18/2023	1/18/2023
			Unit	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
			Dilution Factor	1	2	1	2	1
Compound	**NYSDEC UUSCO**	**NYSDEC RRSCO**		CONC Q	CONC Q	CONC Q	CONC Q	CONC Q
Aluminum	NS	NS		NR	8,340	NR	9,400 L	NR
Antimony	NS	NS		NR	0.935 H	NR	0.981 H	NR
Arsenic	13	16		NR	1.92	NR	1.94	NR
Barium	350	400		NR	60.2	NR	79.1	NR
Beryllium	7.2	72		NR	0.445 J	NR	0.458 U	NR
Cadmium	2.5	4.3		NR	0.15 J	NR	0.915 U	NR
Calcium	NS	NS		NR	13,100	NR	8,550 J	NR
Chromium, Hexavalent	**1**	110		0.965 U	NR	0.45 J	NR	0.957
Chromium, Total	NS	NS		NR	22.6	NR	28.6 J	NR
Cobalt	NS	NS		NR	6	NR	6.36	NR
Copper	50	270		NR	16.6	NR	21.8	NR
Cyanide	27	27		NR	NR	NR	NR	NR
Iron	NS	NS		NR	11,000	NR	15,400	NR
Lead	**63**	400		NR	21.9	NR	38.1	NR
Magnesium	NS	NS		NR	8,240	NR	7,440	NR
Manganese	1,600	2,000		NR	164	NR	212 J	NR
Mercury	**0.18**	0.81		0.081 U	NR	0.095	NR	0.07 J
Nickel	30	310		NR	15.1	NR	17.3 J	NR
Potassium	NS	NS		NR	1,340	NR	1,910 J	NR
Selenium	3.9	180		NR	1.92 U	NR	1.83 U	NR
Silver	2	180		NR	0.481 U	NR	0.458 U	NR
Sodium	NS	NS		NR	132 J	NR	359	NR
Thallium	NS	NS		NR	1.92 U	NR	1.83 U	NR
Vanadium	NS	NS		NR	23.5	NR	30.6	NR
Zinc	**109**	10,000		NR	41.5	NR	57.8	NR

Table 4
Seton Brilla Charter School
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		AKRF Sample ID	SW-08_20230118	SW-09_20230119	SW-09_20230119	SW-10_20230119	SW-10_20230119
		Laboratory Sample ID	L2302922-03	L2303274-01	L2303274-01	L2303274-02	L2303274-02
		Date Sampled	1/18/2023	1/19/2023	1/19/2023	1/19/2023	1/19/2023
		Unit	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
		Dilution Factor	2	1	2	1	2
Compound	**NYSDEC UUSCO**	**NYSDEC RRSCO**	CONC Q	CONC Q	CONC Q	CONC Q	CONC Q
Aluminum	NS	NS	9,260 L	NR	8,360 L	NR	7,790 L
Antimony	NS	NS	1.01 H	NR	0.684 H	NR	0.806 H
Arsenic	13	16	1.99	NR	2.19	NR	1.98
Barium	350	400	71.7	NR	65.4	NR	61.2
Beryllium	7.2	72	0.453 U	NR	0.149 J	NR	0.131 J
Cadmium	2.5	4.3	0.907 U	NR	0.997 U	NR	0.115 J
Calcium	NS	NS	18,100 J	NR	13,200	NR	16,400
Chromium, Hexavalent	**1**	110	NR	1.01 U	NR	1.02 U	NR
Chromium, Total	NS	NS	28.7 J	NR	24.3	NR	21.3
Cobalt	NS	NS	6.03	NR	5.82	NR	5.62
Copper	50	270	20.5	NR	16.9	NR	18.5
Cyanide	27	27	NR	NR	NR	NR	NR
Iron	NS	NS	14,800	NR	14,200	NR	12,600
Lead	**63**	400	54.5	NR	52.9	NR	45.2
Magnesium	NS	NS	10,200	NR	7,110	NR	7,690
Manganese	1,600	2,000	195 J	NR	180	NR	189
Mercury	**0.18**	0.81	NR	0.081 U	NR	0.093 U	NR
Nickel	30	310	16.6 J	NR	14.5	NR	14
Potassium	NS	NS	1,740 J	NR	1,420	NR	1,400
Selenium	3.9	180	1.81 U	NR	1.99 U	NR	1.94 U
Silver	2	180	0.453 U	NR	0.498 U	NR	0.486 U
Sodium	NS	NS	508	NR	213	NR	253
Thallium	NS	NS	1.81 U	NR	1.99 U	NR	1.94 U
Vanadium	NS	NS	27.6	NR	24.4	NR	21.7
Zinc	**109**	10,000	67.8	NR	49.9	NR	57.5

Table 4
Seton Brilla Charter School
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		AKRF Sample ID	SW-11_20230119	SW-11_20230119	SW-12_2_20230201	SW-12_2_20230201	SW-12_2_20230201
		Laboratory Sample ID	L2303274-03	L2303274-03	L2305518-02	L2305518-02	L2305518-02
		Date Sampled	1/19/2023	1/19/2023	2/01/2023	2/01/2023	2/01/2023
		Unit	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
		Dilution Factor	1	2	1	2	20
Compound	**NYSDEC UUSCO**	**NYSDEC RRSCO**	CONC Q	CONC Q	CONC Q	CONC Q	CONC Q
Aluminum	NS	NS	NR	9,380 L	NR	3,030	NR
Antimony	NS	NS	NR	0.711 H	NR	4.43 U	NR
Arsenic	13	16	NR	2.66	NR	0.841 J	NR
Barium	350	400	NR	74	NR	28.6	NR
Beryllium	7.2	72	NR	0.171 J	NR	0.472	NR
Cadmium	2.5	4.3	NR	1.18 U	NR	0.304 J	NR
Calcium	NS	NS	NR	15,300	NR	NR	194,000
Chromium, Hexavalent	**1**	110	1.23 U	NR	0.429 J	NR	NR
Chromium, Total	NS	NS	NR	25.2	NR	6.79	NR
Cobalt	NS	NS	NR	6.5	NR	2.65	NR
Copper	50	270	NR	20.1	NR	5	NR
Cyanide	27	27	NR	NR	NR	NR	NR
Iron	NS	NS	NR	15,800	NR	7,460	NR
Lead	**63**	400	NR	58.5	NR	3 J	NR
Magnesium	NS	NS	NR	6,010	NR	NR	113,000
Manganese	1,600	2,000	NR	211	NR	544	NR
Mercury	**0.18**	0.81	0.099 U	NR	0.073 U	NR	NR
Nickel	30	310	NR	16.4	NR	3.98	NR
Potassium	NS	NS	NR	1,580	NR	484	NR
Selenium	3.9	180	NR	2.35 U	NR	1.77 U	NR
Silver	2	180	NR	0.588 U	NR	0.568	NR
Sodium	NS	NS	NR	312	NR	64.3 J	NR
Thallium	NS	NS	NR	2.35 U	NR	1.77 U	NR
Vanadium	NS	NS	NR	26.3	NR	9.88	NR
Zinc	**109**	10,000	NR	58.9	NR	66.6	NR

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		AKRF Sample ID	SW-13_2_20230201	SW-13_2_20230201	SW-13_2_20230201	SW-14_2_20230201	SW-14_2_20230201
		Laboratory Sample ID	L2305518-03	L2305518-03	L2305518-03	L2305518-04	L2305518-04
		Date Sampled	2/01/2023	2/01/2023	2/01/2023	2/01/2023	2/01/2023
		Unit	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
		Dilution Factor	1	2	20	1	2
Compound	**NYSDEC UUSCO**	**NYSDEC RRSCO**	CONC Q	CONC Q	CONC Q	CONC Q	CONC Q
Aluminum	NS	NS	NR	2,710	NR	NR	2,880
Antimony	NS	NS	NR	4.49 U	NR	NR	4.62 U
Arsenic	13	16	NR	0.795 J	NR	NR	0.781 J
Barium	350	400	NR	19.9	NR	NR	21
Beryllium	7.2	72	NR	0.416 J	NR	NR	0.452 J
Cadmium	2.5	4.3	NR	0.173 J	NR	NR	0.23 J
Calcium	NS	NS	NR	NR	188,000	NR	NR
Chromium, Hexavalent	**1**	110	0.425 J	NR	NR	0.44 J	NR
Chromium, Total	NS	NS	NR	5.13	NR	NR	5.35
Cobalt	NS	NS	NR	2.09	NR	NR	2.19
Copper	50	270	NR	3.99	NR	NR	3.81
Cyanide	27	27	NR	NR	NR	NR	NR
Iron	NS	NS	NR	6,360	NR	NR	6,520
Lead	**63**	400	NR	2.3 J	NR	NR	2.49 J
Magnesium	NS	NS	NR	NR	110,000	NR	NR
Manganese	1,600	2,000	NR	385	NR	NR	405
Mercury	**0.18**	0.81	0.074 U	NR	NR	0.077 U	NR
Nickel	30	310	NR	3.03	NR	NR	3.18
Potassium	NS	NS	NR	442	NR	NR	441
Selenium	3.9	180	NR	1.8 U	NR	NR	1.85 U
Silver	2	180	NR	0.527	NR	NR	0.572
Sodium	NS	NS	NR	56.7 J	NR	NR	60.2 J
Thallium	NS	NS	NR	1.8 U	NR	NR	1.85 U
Vanadium	NS	NS	NR	7.73	NR	NR	7.77
Zinc	**109**	10,000	NR	57.4	NR	NR	59.9

Table 4
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		AKRF Sample ID	SW-14_2_20230201	SW-15_2_20230201	SW-15_2_20230201	SW-15_2_20230201	SW-16_2_20230201
		Laboratory Sample ID	L2305518-04	L2305518-05	L2305518-05	L2305518-05	L2305518-06
		Date Sampled	2/01/2023	2/01/2023	2/01/2023	2/01/2023	2/01/2023
		Unit	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
		Dilution Factor	20	1	2	20	1
Compound	**NYSDEC UUSCO**	**NYSDEC RRSCO**	CONC Q	CONC Q	CONC Q	CONC Q	CONC Q
Aluminum	NS	NS	NR	NR	2,760	NR	NR
Antimony	NS	NS	NR	NR	4.66 U	NR	NR
Arsenic	13	16	NR	NR	0.772 J	NR	NR
Barium	350	400	NR	NR	20.5	NR	NR
Beryllium	7.2	72	NR	NR	0.431 J	NR	NR
Cadmium	2.5	4.3	NR	NR	0.212 J	NR	NR
Calcium	NS	NS	193,000	NR	NR	200,000	NR
Chromium, Hexavalent	**1**	110	NR	0.955 U	NR	NR	0.959 U
Chromium, Total	NS	NS	NR	NR	5.27	NR	NR
Cobalt	NS	NS	NR	NR	2.16	NR	NR
Copper	50	270	NR	NR	3.81	NR	NR
Cyanide	27	27	NR	NR	NR	NR	NR
Iron	NS	NS	NR	NR	6,430	NR	NR
Lead	**63**	400	NR	NR	2.48 J	NR	NR
Magnesium	NS	NS	112,000	NR	NR	116,000	NR
Manganese	1,600	2,000	NR	NR	407	NR	NR
Mercury	**0.18**	0.81	NR	0.075 U	NR	NR	0.076 U
Nickel	30	310	NR	NR	3.08	NR	NR
Potassium	NS	NS	NR	NR	433	NR	NR
Selenium	3.9	180	NR	NR	1.86 U	NR	NR
Silver	2	180	NR	NR	0.588	NR	NR
Sodium	NS	NS	NR	NR	57.9 J	NR	NR
Thallium	NS	NS	NR	NR	1.86 U	NR	NR
Vanadium	NS	NS	NR	NR	7.7	NR	NR
Zinc	**109**	10,000	NR	NR	61.1	NR	NR

Table 4
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		AKRF Sample ID	SW-16_2_20230201	SW-16_2_20230201	SW-17_2_20230725	SW-17_2_20230725	DUP-02_20230725
		Laboratory Sample ID	L2305518-06	L2305518-06	L2342699-01	L2342699-01	L2342699-02
		Date Sampled	2/01/2023	2/01/2023	7/25/2023	7/25/2023	7/25/2023
		Unit	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
		Dilution Factor	2	20	1	2	1
Compound	**NYSDEC UUSCO**	**NYSDEC RRSCO**	CONC Q	CONC Q	CONC Q	CONC Q	CONC Q
Aluminum	NS	NS	2,710	NR	NR	7,610	NR
Antimony	NS	NS	4.53 U	NR	NR	4.49 UJ	NR
Arsenic	13	16	0.688 J	NR	NR	3.49	NR
Barium	350	400	20.2	NR	NR	66.9	NR
Beryllium	7.2	72	0.405 J	NR	NR	0.435 J	NR
Cadmium	2.5	4.3	0.271 J	NR	NR	0.228 J	NR
Calcium	NS	NS	NR	195,000	NR	31,900	NR
Chromium, Hexavalent	**1**	110	NR	NR	0.929 U	NR	0.934 U
Chromium, Total	NS	NS	5.46	NR	NR	21.8	NR
Cobalt	NS	NS	2.04	NR	NR	5.41	NR
Copper	50	270	3.96	NR	NR	24.8	NR
Cyanide	27	27	NR	NR	1.1 UJ	NR	1.1 UJ
Iron	NS	NS	6,360	NR	NR	13,300	NR
Lead	**63**	400	2.5 J	NR	NR	51.5	NR
Magnesium	NS	NS	NR	114,000	NR	12,500	NR
Manganese	1,600	2,000	389	NR	NR	201	NR
Mercury	**0.18**	0.81	NR	NR	0.05 J	NR	0.094
Nickel	30	310	3.01	NR	NR	14.9	NR
Potassium	NS	NS	441	NR	NR	1,610	NR
Selenium	3.9	180	1.81 U	NR	NR	1.8 U	NR
Silver	2	180	0.59	NR	NR	0.449 U	NR
Sodium	NS	NS	64.4 J	NR	NR	189	NR
Thallium	NS	NS	1.81 U	NR	NR	0.362 J	NR
Vanadium	NS	NS	7.48	NR	NR	22.5	NR
Zinc	**109**	10,000	56.8	NR	NR	74.8 L	NR

Table 4
Seton Brilla Charter School
1956 Jerome Avenue, Bronx, NY
Documentation Sampling
Soil Analytical Results of Metals

		AKRF Sample ID	DUP-02_20230725	FIELD BLANK_20230725
		Laboratory Sample ID	L2342699-02	L2342699-04
		Date Sampled	7/25/2023	7/25/2023
		Unit	mg/kg	µg/L
		Dilution Factor	2	1
Compound	**NYSDEC UUSCO**	**NYSDEC RRSCO**	CONC Q	CONC Q
Aluminum	NS	NS	7,740	10 U
Antimony	NS	NS	4.55 UJ	4 U
Arsenic	13	16	3.12	0.5 U
Barium	350	400	69.1	0.33 J
Beryllium	7.2	72	0.435 J	0.5 U
Cadmium	2.5	4.3	0.24 J	0.2 U
Calcium	NS	NS	34,000	80.6 J
Chromium, Hexavalent	**1**	110	NR	10 U
Chromium, Total	NS	NS	22.2	0.19 J
Cobalt	NS	NS	5.29	0.5 U
Copper	50	270	22.5	1 U
Cyanide	27	27	NR	10 UJ
Iron	NS	NS	12,600	50 U
Lead	**63**	400	**79**	1 U
Magnesium	NS	NS	11,800	70 U
Manganese	1,600	2,000	206	1 U
Mercury	**0.18**	0.81	NR	0.2 U
Nickel	30	310	13.9	2 U
Potassium	NS	NS	1,640	100 U
Selenium	3.9	180	1.82 U	5 U
Silver	2	180	0.455 U	0.4 U
Sodium	NS	NS	192	350
Thallium	NS	NS	0.315 J	1 U
Vanadium	NS	NS	23.6	5 U
Zinc	**109**	10,000	73.6 L	10 U

Table 5
Seton Brilla Charter School
1956 Jerome Avenue, Bronx, NY
Documentation Sampling
Soil Analytical Results of Polychlorinated Biphenyls (PCBs)

		AKRF Sample ID	BS-01_20230117	BS-02_20230118	BS-03_20230119	EP-01_2_20221028
		Laboratory Sample ID	L2302678-04	L2302922-01	L2303274-04	L2260497-01
		Date Sampled	1/17/2023	1/18/2023	1/19/2023	10/28/2022
		Unit	mg/kg	mg/kg	mg/kg	mg/kg
		Dilution Factor	1	1	1	1
Compound	**NYSDEC UUSCO**	**NYSDEC RRSCO**	CONC Q	CONC Q	CONC Q	CONC Q
PCB-1016 (Aroclor 1016)	NS	NS	0.0408 U	0.0381 U	0.0397 U	0.0379 U
PCB-1221 (Aroclor 1221)	NS	NS	0.0408 U	0.0381 U	0.0397 U	0.0379 U
PCB-1232 (Aroclor 1232)	NS	NS	0.0408 U	0.0381 U	0.0397 U	0.0379 U
PCB-1242 (Aroclor 1242)	NS	NS	0.0408 U	0.0381 U	0.0157 J	0.0379 U
PCB-1248 (Aroclor 1248)	NS	NS	0.0408 U	0.0381 U	0.0397 U	0.0379 U
PCB-1254 (Aroclor 1254)	NS	NS	0.0408 U	0.0381 U	0.00444 J	0.0379 U
PCB-1260 (Aroclor 1260)	NS	NS	0.0408 U	0.0381 U	0.0397 U	0.0379 UJ
PCB-1262 (Aroclor 1262)	NS	NS	0.0408 U	0.0381 U	0.0397 U	0.0379 U
PCB-1268 (Aroclor 1268)	NS	NS	0.0408 U	0.0381 U	0.0397 U	0.0379 U
Total PCBs	0.1	1	0.0408 U	0.0381 U	0.0201 J	0.0379 UJ

Table 5
Seton Brilla Charter School
1956 Jerome Avenue, Bronx, NY
Documentation Sampling
Soil Analytical Results of Polychlorinated Biphenyls (PCBs)

		AKRF Sample ID	EP-02_2_20221028	EP-03_2_20221028	EP-04_2_20221101	EP-05_2_20221101
		Laboratory Sample ID	L2260497-02	L2260497-03	L2261106-01	L2261106-02
		Date Sampled	10/28/2022	10/28/2022	11/01/2022	11/01/2022
		Unit	mg/kg	mg/kg	mg/kg	mg/kg
		Dilution Factor	1	1	1	1
Compound	**NYSDEC UUSCO**	**NYSDEC RRSCO**	CONC Q	CONC Q	CONC Q	CONC Q
PCB-1016 (Aroclor 1016)	NS	NS	0.0422 U	0.0391 U	0.0364 UJ	0.0384 UJ
PCB-1221 (Aroclor 1221)	NS	NS	0.0422 U	0.0391 U	0.0364 UJ	0.0384 UJ
PCB-1232 (Aroclor 1232)	NS	NS	0.0422 U	0.0391 U	0.0364 UJ	0.0384 UJ
PCB-1242 (Aroclor 1242)	NS	NS	0.0422 U	0.0391 U	0.0364 UJ	0.0384 UJ
PCB-1248 (Aroclor 1248)	NS	NS	0.0422 U	0.0391 U	0.0364 UJ	0.0384 UJ
PCB-1254 (Aroclor 1254)	NS	NS	0.0422 U	0.0106 J	0.0364 UJ	0.0384 UJ
PCB-1260 (Aroclor 1260)	NS	NS	0.0422 UJ	0.0391 UJ	0.0364 UJ	0.0384 UJ
PCB-1262 (Aroclor 1262)	NS	NS	0.0422 U	0.0391 U	0.0364 UJ	0.0384 UJ
PCB-1268 (Aroclor 1268)	NS	NS	0.0422 U	0.0391 U	0.0364 UJ	0.0384 UJ
Total PCBs	0.1	1	0.0422 UJ	0.0106 J	0.0364 UJ	0.0384 UJ

Table 5
Seton Brilla Charter School
1956 Jerome Avenue, Bronx, NY
Documentation Sampling
Soil Analytical Results of Polychlorinated Biphenyls (PCBs)

		AKRF Sample ID	EP-06_2_20221101	EP-07_2_20221101	EP-08-2_20221108	EP-12_2_20230201
		Laboratory Sample ID	L2261106-03	L2261106-04	L2262572-01	L2305518-01
		Date Sampled	11/01/2022	11/01/2022	11/08/2022	2/01/2023
		Unit	mg/kg	mg/kg	mg/kg	mg/kg
		Dilution Factor	1	1	1	1
Compound	**NYSDEC UUSCO**	**NYSDEC RRSCO**	CONC Q	CONC Q	CONC Q	CONC Q
PCB-1016 (Aroclor 1016)	NS	NS	0.0362 UJ	0.0379 UJ	0.0379 U	0.0359 U
PCB-1221 (Aroclor 1221)	NS	NS	0.0362 UJ	0.0379 UJ	0.0379 U	0.0359 U
PCB-1232 (Aroclor 1232)	NS	NS	0.0362 UJ	0.0379 UJ	0.0379 U	0.0359 U
PCB-1242 (Aroclor 1242)	NS	NS	0.0362 UJ	0.0379 UJ	0.0379 U	0.0359 U
PCB-1248 (Aroclor 1248)	NS	NS	0.0362 UJ	0.0379 UJ	0.0379 U	0.0359 U
PCB-1254 (Aroclor 1254)	NS	NS	0.0362 UJ	0.0379 UJ	0.0379 U	0.0359 U
PCB-1260 (Aroclor 1260)	NS	NS	0.00923 J	0.0379 UJ	0.0379 UJ	0.0359 U
PCB-1262 (Aroclor 1262)	NS	NS	0.0362 UJ	0.0379 UJ	0.0379 U	0.0359 U
PCB-1268 (Aroclor 1268)	NS	NS	0.0362 UJ	0.0379 UJ	0.0379 U	0.0359 U
Total PCBs	0.1	1	0.00923 J	0.0379 UJ	0.0379 UJ	0.0359 U

Table 5
Seton Brilla Charter School
1956 Jerome Avenue, Bronx, NY
Documentation Sampling
Soil Analytical Results of Polychlorinated Biphenyls (PCBs)

		AKRF Sample ID	SW-01_2_20221028	SW-02_2_20221028	SW-03_2_20221028	SW-04_20230117
		Laboratory Sample ID	L2260497-04	L2260497-05	L2260497-06	L2302678-01
		Date Sampled	10/28/2022	10/28/2022	10/28/2022	1/17/2023
		Unit	mg/kg	mg/kg	mg/kg	mg/kg
		Dilution Factor	1	1	1	1
Compound	**NYSDEC UUSCO**	**NYSDEC RRSCO**	CONC Q	CONC Q	CONC Q	CONC Q
PCB-1016 (Aroclor 1016)	NS	NS	0.0402 U	0.0376 U	0.0435 U	0.0374 U
PCB-1221 (Aroclor 1221)	NS	NS	0.0402 U	0.0376 U	0.0435 U	0.0374 U
PCB-1232 (Aroclor 1232)	NS	NS	0.0402 U	0.0376 U	0.0435 U	0.0374 U
PCB-1242 (Aroclor 1242)	NS	NS	0.0402 U	0.0376 U	0.0435 U	0.0374 U
PCB-1248 (Aroclor 1248)	NS	NS	0.0402 U	0.0376 U	0.0435 U	0.0374 U
PCB-1254 (Aroclor 1254)	NS	NS	0.0402 U	0.0376 U	0.0435 U	0.0374 U
PCB-1260 (Aroclor 1260)	NS	NS	0.0402 UJ	0.0376 UJ	0.0435 UJ	0.0374 U
PCB-1262 (Aroclor 1262)	NS	NS	0.0402 U	0.0376 U	0.0435 U	0.0374 U
PCB-1268 (Aroclor 1268)	NS	NS	0.0402 U	0.0376 U	0.0435 U	0.0374 U
Total PCBs	0.1	1	0.0402 UJ	0.0376 UJ	0.0435 UJ	0.0374 U

Table 5
Seton Brilla Charter School
1956 Jerome Avenue, Bronx, NY
Documentation Sampling
Soil Analytical Results of Polychlorinated Biphenyls (PCBs)

		AKRF Sample ID	SW-05_20230117	SW-06_20230117	SW-07_20230118	SW-08_20230118
		Laboratory Sample ID	L2302678-02	L2302678-03	L2302922-02	L2302922-03
		Date Sampled	1/17/2023	1/17/2023	1/18/2023	1/18/2023
		Unit	mg/kg	mg/kg	mg/kg	mg/kg
		Dilution Factor	1	1	1	1
Compound	**NYSDEC UUSCO**	**NYSDEC RRSCO**	CONC Q	CONC Q	CONC Q	CONC Q
PCB-1016 (Aroclor 1016)	NS	NS	0.0404 U	0.0394 U	0.0372 U	0.0372 U
PCB-1221 (Aroclor 1221)	NS	NS	0.0404 U	0.0394 U	0.0372 U	0.0372 U
PCB-1232 (Aroclor 1232)	NS	NS	0.0404 U	0.0394 U	0.0372 U	0.0372 U
PCB-1242 (Aroclor 1242)	NS	NS	0.0404 U	0.0394 U	0.0372 U	0.0372 U
PCB-1248 (Aroclor 1248)	NS	NS	0.0404 U	0.0394 U	0.0372 U	0.0372 U
PCB-1254 (Aroclor 1254)	NS	NS	0.0404 U	0.0394 U	0.0372 U	0.0372 U
PCB-1260 (Aroclor 1260)	NS	NS	0.0404 U	0.0394 U	0.0372 U	0.0372 U
PCB-1262 (Aroclor 1262)	NS	NS	0.0404 U	0.0394 U	0.0372 U	0.0372 U
PCB-1268 (Aroclor 1268)	NS	NS	0.0404 U	0.0394 U	0.0372 U	0.0372 U
Total PCBs	0.1	1	0.0404 U	0.0394 U	0.0372 U	0.0372 U

Table 5
Seton Brilla Charter School
1956 Jerome Avenue, Bronx, NY
Documentation Sampling
Soil Analytical Results of Polychlorinated Biphenyls (PCBs)

		AKRF Sample ID	SW-09_20230119	SW-10_20230119	SW-11_20230119	SW-12_2_20230201
		Laboratory Sample ID	L2303274-01	L2303274-02	L2303274-03	L2305518-02
		Date Sampled	1/19/2023	1/19/2023	1/19/2023	2/01/2023
		Unit	mg/kg	mg/kg	mg/kg	mg/kg
		Dilution Factor	1	1	1	1
Compound	**NYSDEC UUSCO**	**NYSDEC RRSCO**	CONC Q	CONC Q	CONC Q	CONC Q
PCB-1016 (Aroclor 1016)	NS	NS	0.0421 U	0.0411 U	0.0482 U	0.0374 U
PCB-1221 (Aroclor 1221)	NS	NS	0.0421 U	0.0411 U	0.0482 U	0.0374 U
PCB-1232 (Aroclor 1232)	NS	NS	0.0421 U	0.0411 U	0.0482 U	0.0374 U
PCB-1242 (Aroclor 1242)	NS	NS	0.016 J	0.0132 J	0.0163 J	0.0374 U
PCB-1248 (Aroclor 1248)	NS	NS	0.0421 U	0.0411 U	0.0482 U	0.0374 U
PCB-1254 (Aroclor 1254)	NS	NS	0.0421 U	0.0411 U	0.0482 U	0.0374 U
PCB-1260 (Aroclor 1260)	NS	NS	0.0421 U	0.0411 U	0.0482 U	0.0374 U
PCB-1262 (Aroclor 1262)	NS	NS	0.0421 U	0.0411 U	0.0482 U	0.0374 U
PCB-1268 (Aroclor 1268)	NS	NS	0.0421 U	0.0411 U	0.0482 U	0.0374 U
Total PCBs	0.1	1	0.016 J	0.0132 J	0.0163 J	0.0374 U

Table 5
Seton Brilla Charter School
1956 Jerome Avenue, Bronx, NY
Documentation Sampling
Soil Analytical Results of Polychlorinated Biphenyls (PCBs)

		AKRF Sample ID	SW-13_2_20230201	SW-14_2_20230201	SW-15_2_20230201	SW-16_2_20230201
		Laboratory Sample ID	L2305518-03	L2305518-04	L2305518-05	L2305518-06
		Date Sampled	2/01/2023	2/01/2023	2/01/2023	2/01/2023
		Unit	mg/kg	mg/kg	mg/kg	mg/kg
		Dilution Factor	1	1	1	1
Compound	**NYSDEC UUSCO**	**NYSDEC RRSCO**	CONC Q	CONC Q	CONC Q	CONC Q
PCB-1016 (Aroclor 1016)	NS	NS	0.0371 U	0.0387 U	0.0389 U	0.0378 U
PCB-1221 (Aroclor 1221)	NS	NS	0.0371 U	0.0387 U	0.0389 U	0.0378 U
PCB-1232 (Aroclor 1232)	NS	NS	0.0371 U	0.0387 U	0.0389 U	0.0378 U
PCB-1242 (Aroclor 1242)	NS	NS	0.0371 U	0.0387 U	0.0389 U	0.0378 U
PCB-1248 (Aroclor 1248)	NS	NS	0.0371 U	0.0387 U	0.0389 U	0.0378 U
PCB-1254 (Aroclor 1254)	NS	NS	0.0371 U	0.0387 U	0.0389 U	0.0378 U
PCB-1260 (Aroclor 1260)	NS	NS	0.0371 U	0.0387 U	0.0389 U	0.0378 U
PCB-1262 (Aroclor 1262)	NS	NS	0.0371 U	0.0387 U	0.0389 U	0.0378 U
PCB-1268 (Aroclor 1268)	NS	NS	0.0371 U	0.0387 U	0.0389 U	0.0378 U
Total PCBs	0.1	1	0.0371 U	0.0387 U	0.0389 U	0.0378 U

Table 5
Seton Brilla Charter School
1956 Jerome Avenue, Bronx, NY
Documentation Sampling
Soil Analytical Results of Polychlorinated Biphenyls (PCBs)

		AKRF Sample ID	SW-17_2_20230725	DUP-02_20230725	FIELD BLANK_20230725
		Laboratory Sample ID	L2342699-01	L2342699-02	L2342699-04
		Date Sampled	7/25/2023	7/25/2023	7/25/2023
		Unit	mg/kg	mg/kg	µg/L
		Dilution Factor	1	1	1
Compound	**NYSDEC UUSCO**	**NYSDEC RRSCO**	CONC Q	CONC Q	CONC Q
PCB-1016 (Aroclor 1016)	NS	NS	0.0564 U	0.056 U	0.071 U
PCB-1221 (Aroclor 1221)	NS	NS	0.0564 U	0.056 U	0.071 U
PCB-1232 (Aroclor 1232)	NS	NS	0.0564 U	0.056 U	0.071 U
PCB-1242 (Aroclor 1242)	NS	NS	0.0564 U	0.056 U	0.071 U
PCB-1248 (Aroclor 1248)	NS	NS	0.0564 U	0.056 U	0.071 U
PCB-1254 (Aroclor 1254)	NS	NS	0.0564 U	0.056 U	0.071 U
PCB-1260 (Aroclor 1260)	NS	NS	0.0564 U	0.056 U	0.071 U
PCB-1262 (Aroclor 1262)	NS	NS	0.0564 U	0.056 U	0.071 U
PCB-1268 (Aroclor 1268)	NS	NS	0.0564 U	0.056 U	0.071 U
Total PCBs	0.1	1	0.0564 U	0.056 U	0.071 U

Table 6
Seton Brilla Charter School
1956 Jerome Avenue, Bronx, NY
Documentation Sampling
Soil Analytical Results of Pesticides

			AKRF Sample ID	BS-01_20230117	BS-02_20230118	BS-03_20230119	EP-01_2_20221028
			Laboratory Sample ID	L2302678-04	L2302922-01	L2303274-04	L2260497-01
			Date Sampled	1/17/2023	1/18/2023	1/19/2023	10/28/2022
			Unit	mg/kg	mg/kg	mg/kg	mg/kg
			Dilution Factor	1	1	1	1
Compound	**NYSDEC UUSCO**	**NYSDEC RRSCO**		CONC Q	CONC Q	CONC Q	CONC Q
Aldrin	0.005	0.097		0.00198 U	0.00189 U	0.00195 U	0.00183 U
Alpha Bhc (Alpha Hexachlorocyclohexane)	0.02	0.48		0.000825 U	0.000788 U	0.000814 U	0.000762 U
Alpha Endosulfan	NS	NS		0.00198 U	0.00189 U	0.00195 U	0.00183 U
Beta Bhc (Beta Hexachlorocyclohexane)	0.036	0.36		0.00198 U	0.00189 U	0.00195 U	0.00183 U
Beta Endosulfan	NS	NS		0.00198 U	0.00189 U	0.00195 U	0.00183 U
Chlordane, Total	NS	NS		0.0165 UJ	0.0158 U	0.0163 U	0.0152 U
cis-Chlordane	0.094	4.2		0.00247 U	0.00236 U	0.00244 U	0.00229 U
Delta BHC (Delta Hexachlorocyclohexane)	0.04	100		0.00198 U	0.00189 U	0.00195 U	0.00183 U
Dieldrin	0.005	0.2		0.00124 U	0.00118 U	0.00122 U	0.00114 U
Endosulfan Sulfate	NS	NS		0.000825 U	0.000788 U	0.000814 U	0.000762 U
Endrin	0.014	11		0.000825 U	0.000788 U	0.000814 U	0.000762 U
Endrin Aldehyde	NS	NS		0.00247 U	0.00236 U	0.00244 U	0.00229 U
Endrin Ketone	NS	NS		0.00198 U	0.00189 U	0.00195 U	0.00183 U
Gamma Bhc (Lindane)	0.1	1.3		0.000825 U	0.000788 U	0.000814 U	0.000762 U
Heptachlor	0.042	2.1		0.00099 U	0.000945 U	0.000977 U	0.000915 U
Heptachlor Epoxide	NS	NS		0.00371 U	0.00354 U	0.00366 U	0.00343 U
Methoxychlor	NS	NS		0.00371 U	0.00354 U	0.00366 U	0.00343 U
P,P'-DDD	0.0033	13		0.00198 U	0.00189 U	0.00195 U	0.00183 U
P,P'-DDE	0.0033	8.9		0.00198 U	0.00189 U	0.00195 U	0.00183 U
P,P'-DDT	**0.0033**	7.9		0.00198 U	0.00189 U	0.00195 U	0.00418 U
Silvex (2,4,5-TP)	3.8	100		NR	NR	NR	NR
Toxaphene	NS	NS		0.0371 U	0.0354 U	0.0366 U	0.0343 U
trans-Chlordane	NS	NS		0.00247 U	0.00236 U	0.00244 U	0.00229 U

Table 6
Seton Brilla Charter School
1956 Jerome Avenue, Bronx, NY
Documentation Sampling
Soil Analytical Results of Pesticides

			AKRF Sample ID	EP-02_2_20221028	EP-03_2_20221028	EP-04_2_20221101	EP-05_2_20221101
			Laboratory Sample ID	L2260497-02	L2260497-03	L2261106-01	L2261106-02
			Date Sampled	10/28/2022	10/28/2022	11/01/2022	11/01/2022
			Unit	mg/kg	mg/kg	mg/kg	mg/kg
			Dilution Factor	1	1	1	1
Compound	**NYSDEC UUSCO**	**NYSDEC RRSCO**		CONC Q	CONC Q	CONC Q	CONC Q
Aldrin	0.005	0.097		0.002 U	0.00191 U	0.0018 U	0.00181 U
Alpha Bhc (Alpha Hexachlorocyclohexane)	0.02	0.48		0.000835 U	0.000798 U	0.000751 U	0.000754 U
Alpha Endosulfan	NS	NS		0.002 U	0.00191 U	0.0018 U	0.00181 U
Beta Bhc (Beta Hexachlorocyclohexane)	0.036	0.36		0.002 U	0.00191 U	0.0018 U	0.00181 U
Beta Endosulfan	NS	NS		0.002 U	0.00191 U	0.0018 U	0.00181 U
Chlordane, Total	NS	NS		0.0167 U	0.016 U	0.015 U	0.0151 U
cis-Chlordane	0.094	4.2		0.0025 U	0.00239 U	0.00225 U	0.00226 U
Delta BHC (Delta Hexachlorocyclohexane)	0.04	100		0.002 U	0.00191 U	0.0018 U	0.00181 U
Dieldrin	0.005	0.2		0.00125 U	0.0012 U	0.00113 U	0.00113 U
Endosulfan Sulfate	NS	NS		0.000835 U	0.000798 U	0.000751 U	0.000754 U
Endrin	0.014	11		0.000835 U	0.000798 U	0.000751 U	0.000754 U
Endrin Aldehyde	NS	NS		0.0025 U	0.00239 U	0.00225 U	0.00226 U
Endrin Ketone	NS	NS		0.002 U	0.00191 U	0.0018 U	0.00181 U
Gamma Bhc (Lindane)	0.1	1.3		0.000835 U	0.000798 U	0.000751 U	0.000754 U
Heptachlor	0.042	2.1		0.001 U	0.000957 U	0.000901 U	0.000904 U
Heptachlor Epoxide	NS	NS		0.00376 U	0.00359 U	0.00338 U	0.00339 U
Methoxychlor	NS	NS		0.00376 U	0.00359 U	0.00338 U	0.00339 U
P,P'-DDD	0.0033	13		0.002 U	0.00191 U	0.0018 U	0.00181 U
P,P'-DDE	0.0033	8.9		0.002 U	0.00191	0.0018 U	0.00181 U
P,P'-DDT	**0.0033**	7.9		0.002 U	0.00251 U	0.0018 U	0.00181 U
Silvex (2,4,5-TP)	3.8	100		NR	NR	NR	NR
Toxaphene	NS	NS		0.0376 U	0.0359 U	0.0338 U	0.0339 U
trans-Chlordane	NS	NS		0.0025 U	0.00239 U	0.00225 U	0.00226 U

Table 6
Seton Brilla Charter School
1956 Jerome Avenue, Bronx, NY
Documentation Sampling
Soil Analytical Results of Pesticides

			AKRF Sample ID	EP-06_2_20221101	EP-07_2_20221101	EP-08-2_20221108	EP-12_2_20230201
			Laboratory Sample ID	L2261106-03	L2261106-04	L2262572-01	L2305518-01
			Date Sampled	11/01/2022	11/01/2022	11/08/2022	2/01/2023
			Unit	mg/kg	mg/kg	mg/kg	mg/kg
			Dilution Factor	1	1	1	1
Compound	**NYSDEC UUSCO**	**NYSDEC RRSCO**		CONC Q	CONC Q	CONC Q	CONC Q
Aldrin	0.005	0.097		0.00179 U	0.00175 U	0.00181 U	0.00172 U
Alpha Bhc (Alpha Hexachlorocyclohexane)	0.02	0.48		0.000744 U	0.000731 U	0.000756 U	0.000719 U
Alpha Endosulfan	NS	NS		0.00179 U	0.00175 U	0.00181 U	0.00172 U
Beta Bhc (Beta Hexachlorocyclohexane)	0.036	0.36		0.00179 U	0.00175 U	0.00181 U	0.00172 U
Beta Endosulfan	NS	NS		0.00179 U	0.00175 U	0.00181 U	0.00172 U
Chlordane, Total	NS	NS		0.0149 U	0.0146 U	0.0151 U	0.0144 U
cis-Chlordane	0.094	4.2		0.00223 U	0.00219 U	0.00227 U	0.00216 U
Delta BHC (Delta Hexachlorocyclohexane)	0.04	100		0.00179 U	0.00175 U	0.00181 U	0.00172 U
Dieldrin	0.005	0.2		0.00112 U	0.0011 U	0.00113 U	0.00108 U
Endosulfan Sulfate	NS	NS		0.000744 U	0.000731 U	0.000756 U	0.000719 U
Endrin	0.014	11		0.000744 U	0.000731 U	0.000756 U	0.000719 U
Endrin Aldehyde	NS	NS		0.00223 U	0.00219 U	0.00227 U	0.00216 U
Endrin Ketone	NS	NS		0.00179 U	0.00175 U	0.00181 U	0.00172 U
Gamma Bhc (Lindane)	0.1	1.3		0.000744 U	0.000731 U	0.000756 U	0.000719 U
Heptachlor	0.042	2.1		0.000893 U	0.000877 U	0.000907 U	0.000862 U
Heptachlor Epoxide	NS	NS		0.00335 U	0.00329 U	0.0034 U	0.00323 U
Methoxychlor	NS	NS		0.00335 U	0.00329 U	0.0034 U	0.00323 U
P,P'-DDD	0.0033	13		0.00179 U	0.00175 U	0.00181 U	0.00172 U
P,P'-DDE	0.0033	8.9		0.00179 U	0.00175 U	0.000668 J	0.00172 U
P,P'-DDT	**0.0033**	7.9		0.00179 U	0.00684 U	0.00181 U	0.00172 U
Silvex (2,4,5-TP)	3.8	100		NR	NR	NR	NR
Toxaphene	NS	NS		0.0335 U	0.0329 U	0.034 U	0.0323 U
trans-Chlordane	NS	NS		0.00223 U	0.00219 U	0.00227 U	0.00216 U

Table 6
Seton Brilla Charter School
1956 Jerome Avenue, Bronx, NY
Documentation Sampling
Soil Analytical Results of Pesticides

			AKRF Sample ID	SW-01_2_20221028	SW-02_2_20221028	SW-03_2_20221028	SW-04_20230117
			Laboratory Sample ID	L2260497-04	L2260497-05	L2260497-06	L2302678-01
			Date Sampled	10/28/2022	10/28/2022	10/28/2022	1/17/2023
			Unit	mg/kg	mg/kg	mg/kg	mg/kg
			Dilution Factor	1	1	1	1
Compound	**NYSDEC UUSCO**	**NYSDEC RRSCO**		CONC Q	CONC Q	CONC Q	CONC Q
Aldrin	0.005	0.097		0.002 U	0.0018 U	0.00201 U	0.00179 U
Alpha Bhc (Alpha Hexachlorocyclohexane)	0.02	0.48		0.000833 U	0.000751 U	0.000836 U	0.000745 U
Alpha Endosulfan	NS	NS		0.002 U	0.0018 U	0.00201 U	0.00179 U
Beta Bhc (Beta Hexachlorocyclohexane)	0.036	0.36		0.002 U	0.0018 U	0.00201 U	0.00179 U
Beta Endosulfan	NS	NS		0.002 U	0.0018 U	0.00201 U	0.00179 U
Chlordane, Total	NS	NS		0.0167 U	0.015 U	0.0167 U	0.0149 U
cis-Chlordane	0.094	4.2		0.0025 U	0.00225 U	0.00251 U	0.00224 U
Delta BHC (Delta Hexachlorocyclohexane)	0.04	100		0.002 U	0.0018 U	0.00201 U	0.00179 U
Dieldrin	0.005	0.2		0.00125 U	0.00113 U	0.00125 U	0.00112 U
Endosulfan Sulfate	NS	NS		0.000833 U	0.000751 U	0.000836 U	0.000745 U
Endrin	0.014	11		0.000833 U	0.000751 U	0.000836 U	0.000745 U
Endrin Aldehyde	NS	NS		0.0025 U	0.00225 U	0.00251 U	0.00224 U
Endrin Ketone	NS	NS		0.002 U	0.0018 U	0.00201 U	0.00179 U
Gamma Bhc (Lindane)	0.1	1.3		0.000833 U	0.000751 U	0.000836 U	0.000745 U
Heptachlor	0.042	2.1		0.001 U	0.000901 U	0.001 U	0.000894 U
Heptachlor Epoxide	NS	NS		0.00375 U	0.00338 U	0.00376 U	0.00335 U
Methoxychlor	NS	NS		0.00375 U	0.00338 U	0.00376 U	0.00335 U
P,P'-DDD	0.0033	13		0.002 U	0.0018 U	0.00201 U	0.00179 U
P,P'-DDE	0.0033	8.9		0.0011 J	0.0018 U	0.00201 U	0.00179 U
P,P'-DDT	**0.0033**	7.9		**0.00403**	0.00195 U	0.00346 U	0.00179 U
Silvex (2,4,5-TP)	3.8	100		NR	NR	NR	NR
Toxaphene	NS	NS		0.0375 U	0.0338 U	0.0376 U	0.0335 U
trans-Chlordane	NS	NS		0.0025 U	0.00225 U	0.00251 U	0.00224 U

Table 6
Seton Brilla Charter School
1956 Jerome Avenue, Bronx, NY
Documentation Sampling
Soil Analytical Results of Pesticides

			AKRF Sample ID	SW-05_20230117	SW-06_20230117	SW-07_20230118	SW-08_20230118
			Laboratory Sample ID	L2302678-02	L2302678-03	L2302922-02	L2302922-03
			Date Sampled	1/17/2023	1/17/2023	1/18/2023	1/18/2023
			Unit	mg/kg	mg/kg	mg/kg	mg/kg
			Dilution Factor	1	1	1	1
Compound	**NYSDEC UUSCO**	**NYSDEC RRSCO**		CONC Q	CONC Q	CONC Q	CONC Q
Aldrin	0.005	0.097		0.0019 U	0.00183 U	0.00182 U	0.0018 U
Alpha Bhc (Alpha Hexachlorocyclohexane)	0.02	0.48		0.000791 U	0.000762 U	0.000761 U	0.000749 U
Alpha Endosulfan	NS	NS		0.0019 U	0.00183 U	0.00182 U	0.0018 U
Beta Bhc (Beta Hexachlorocyclohexane)	0.036	0.36		0.0019 U	0.00183 U	0.00182 U	0.0018 U
Beta Endosulfan	NS	NS		0.0019 U	0.00183 U	0.00182 U	0.0018 U
Chlordane, Total	NS	NS		0.0158 U	0.0152 U	0.0152 U	0.015 U
cis-Chlordane	0.094	4.2		0.00237 U	0.00229 U	0.00228 U	0.00225 U
Delta BHC (Delta Hexachlorocyclohexane)	0.04	100		0.0019 U	0.00183 U	0.00182 U	0.0018 U
Dieldrin	0.005	0.2		0.00119 U	0.00114 U	0.00114 U	0.00112 U
Endosulfan Sulfate	NS	NS		0.000791 U	0.000762 U	0.000761 U	0.000749 U
Endrin	0.014	11		0.000791 U	0.000762 U	0.000761 U	0.000749 U
Endrin Aldehyde	NS	NS		0.00237 U	0.00229 U	0.00228 U	0.00225 U
Endrin Ketone	NS	NS		0.0019 U	0.00183 U	0.00182 U	0.0018 U
Gamma Bhc (Lindane)	0.1	1.3		0.000791 U	0.000762 U	0.000761 U	0.000749 U
Heptachlor	0.042	2.1		0.000949 U	0.000915 U	0.000913 U	0.000899 U
Heptachlor Epoxide	NS	NS		0.00356 U	0.00343 U	0.00342 U	0.00337 U
Methoxychlor	NS	NS		0.00356 U	0.00343 U	0.00342 U	0.00337 U
P,P'-DDD	0.0033	13		0.0019 U	0.00183 U	0.00182 U	0.0018 U
P,P'-DDE	0.0033	8.9		0.0019 U	0.00183 U	0.00182 U	0.0018 U
P,P'-DDT	**0.0033**	7.9		0.0019 U	0.00183 U	0.00182 U	0.0018 U
Silvex (2,4,5-TP)	3.8	100		NR	NR	NR	NR
Toxaphene	NS	NS		0.0356 U	0.0343 U	0.0342 U	0.0337 U
trans-Chlordane	NS	NS		0.00237 U	0.00229 U	0.00228 U	0.00225 U

Table 6
Seton Brilla Charter School
1956 Jerome Avenue, Bronx, NY
Documentation Sampling
Soil Analytical Results of Pesticides

			AKRF Sample ID	SW-09_20230119	SW-10_20230119	SW-11_20230119	SW-12_2_20230201
			Laboratory Sample ID	L2303274-01	L2303274-02	L2303274-03	L2305518-02
			Date Sampled	1/19/2023	1/19/2023	1/19/2023	2/01/2023
			Unit	mg/kg	mg/kg	mg/kg	mg/kg
			Dilution Factor	1	1	1	1
Compound	**NYSDEC UUSCO**	**NYSDEC RRSCO**		CONC Q	CONC Q	CONC Q	CONC Q
Aldrin	0.005	0.097		0.00194 U	0.00195 U	0.00232 U	0.00177 U
Alpha Bhc (Alpha Hexachlorocyclohexane)	0.02	0.48		0.00081 U	0.000814 U	0.000966 U	0.000739 U
Alpha Endosulfan	NS	NS		0.00194 U	0.00195 U	0.00232 U	0.00177 U
Beta Bhc (Beta Hexachlorocyclohexane)	0.036	0.36		0.00194 U	0.00195 U	0.00232 U	0.00177 U
Beta Endosulfan	NS	NS		0.00194 U	0.00195 U	0.00232 U	0.00177 U
Chlordane, Total	NS	NS		0.0162 U	0.0163 U	0.0193 U	0.0148 U
cis-Chlordane	0.094	4.2		0.00243 U	0.00244 U	0.0029 U	0.00222 U
Delta BHC (Delta Hexachlorocyclohexane)	0.04	100		0.00194 U	0.00195 U	0.00232 U	0.00177 U
Dieldrin	0.005	0.2		0.00122 U	0.00122 U	0.00145 U	0.00111 U
Endosulfan Sulfate	NS	NS		0.00081 U	0.000814 U	0.000966 U	0.000739 U
Endrin	0.014	11		0.00081 U	0.000814 U	0.000966 U	0.000739 U
Endrin Aldehyde	NS	NS		0.00243 U	0.00244 U	0.0029 U	0.00222 U
Endrin Ketone	NS	NS		0.00194 U	0.00195 U	0.00232 U	0.00177 U
Gamma Bhc (Lindane)	0.1	1.3		0.00081 U	0.000814 U	0.000966 U	0.000739 U
Heptachlor	0.042	2.1		0.000972 U	0.000977 U	0.00116 U	0.000887 U
Heptachlor Epoxide	NS	NS		0.00365 U	0.00366 U	0.00435 U	0.00332 U
Methoxychlor	NS	NS		0.00365 U	0.00366 U	0.00435 U	0.00332 U
P,P'-DDD	0.0033	13		0.00194 U	0.00195 U	0.00232 U	0.00177 U
P,P'-DDE	0.0033	8.9		0.00194 U	0.00195 U	0.00232 U	0.00177 U
P,P'-DDT	**0.0033**	7.9		0.00194 U	0.00195 U	0.00232 U	0.00177 U
Silvex (2,4,5-TP)	3.8	100		NR	NR	NR	NR
Toxaphene	NS	NS		0.0365 U	0.0366 U	0.0435 U	0.0332 U
trans-Chlordane	NS	NS		0.00243 U	0.00244 U	0.0029 U	0.00222 U

Table 6
Seton Brilla Charter School
1956 Jerome Avenue, Bronx, NY
Documentation Sampling
Soil Analytical Results of Pesticides

			AKRF Sample ID	SW-13_2_20230201	SW-14_2_20230201	SW-15_2_20230201	SW-16_2_20230201
			Laboratory Sample ID	L2305518-03	L2305518-04	L2305518-05	L2305518-06
			Date Sampled	2/01/2023	2/01/2023	2/01/2023	2/01/2023
			Unit	mg/kg	mg/kg	mg/kg	mg/kg
			Dilution Factor	1	1	1	1
Compound	**NYSDEC UUSCO**	**NYSDEC RRSCO**		CONC Q	CONC Q	CONC Q	CONC Q
Aldrin	0.005	0.097		0.00178 U	0.00183 U	0.00182 U	0.00185 U
Alpha Bhc (Alpha Hexachlorocyclohexane)	0.02	0.48		0.000741 U	0.000763 U	0.00076 U	0.000771 U
Alpha Endosulfan	NS	NS		0.00178 U	0.00183 U	0.00182 U	0.00185 U
Beta Bhc (Beta Hexachlorocyclohexane)	0.036	0.36		0.00178 U	0.00183 U	0.00182 U	0.00185 U
Beta Endosulfan	NS	NS		0.00178 U	0.00183 U	0.00182 U	0.00185 U
Chlordane, Total	NS	NS		0.0148 U	0.0152 U	0.0152 U	0.0154 U
cis-Chlordane	0.094	4.2		0.00222 U	0.00229 U	0.00228 U	0.00231 U
Delta BHC (Delta Hexachlorocyclohexane)	0.04	100		0.00178 U	0.00183 U	0.00182 U	0.00185 U
Dieldrin	0.005	0.2		0.00111 U	0.00114 U	0.00114 U	0.00116 U
Endosulfan Sulfate	NS	NS		0.000741 U	0.000763 U	0.00076 U	0.000771 U
Endrin	0.014	11		0.000741 U	0.000763 U	0.00076 U	0.000771 U
Endrin Aldehyde	NS	NS		0.00222 U	0.00229 U	0.00228 U	0.00231 U
Endrin Ketone	NS	NS		0.00178 U	0.00183 U	0.00182 U	0.00185 U
Gamma Bhc (Lindane)	0.1	1.3		0.000741 U	0.000763 U	0.00076 U	0.000771 U
Heptachlor	0.042	2.1		0.000889 U	0.000915 U	0.000912 U	0.000925 U
Heptachlor Epoxide	NS	NS		0.00333 U	0.00343 U	0.00342 U	0.00347 U
Methoxychlor	NS	NS		0.00333 U	0.00343 U	0.00342 U	0.00347 U
P,P'-DDD	0.0033	13		0.00178 U	0.00183 U	0.00182 U	0.00185 U
P,P'-DDE	0.0033	8.9		0.00178 U	0.00183 U	0.00182 U	0.00185 U
P,P'-DDT	**0.0033**	7.9		0.00178 U	0.00183 U	0.00182 U	0.00185 U
Silvex (2,4,5-TP)	3.8	100		NR	NR	NR	NR
Toxaphene	NS	NS		0.0333 U	0.0343 U	0.0342 U	0.0347 U
trans-Chlordane	NS	NS		0.00222 U	0.00229 U	0.00228 U	0.00231 U

Table 6
Seton Brilla Charter School
1956 Jerome Avenue, Bronx, NY
Documentation Sampling
Soil Analytical Results of Pesticides

		AKRF Sample ID	SW-17_2_20230725	DUP-02_20230725	FIELD BLANK_20230725
		Laboratory Sample ID	L2342699-01	L2342699-02	L2342699-04
		Date Sampled	7/25/2023	7/25/2023	7/25/2023
		Unit	mg/kg	mg/kg	µg/L
		Dilution Factor	1	1	1
Compound	**NYSDEC UUSCO**	**NYSDEC RRSCO**	CONC Q	CONC Q	CONC Q
Aldrin	0.005	0.097	0.00184 U	0.00182 U	0.014 U
Alpha Bhc (Alpha Hexachlorocyclohexane)	0.02	0.48	0.000768 U	0.000757 U	0.014 U
Alpha Endosulfan	NS	NS	0.00184 U	0.00182 U	0.014 U
Beta Bhc (Beta Hexachlorocyclohexane)	0.036	0.36	0.00184 U	0.00182 U	0.014 U
Beta Endosulfan	NS	NS	0.00184 U	0.00182 U	0.029 U
Chlordane, Total	NS	NS	0.0154 U	0.0151 U	0.143 U
cis-Chlordane	0.094	4.2	0.0023 U	0.00227 U	0.014 U
Delta BHC (Delta Hexachlorocyclohexane)	0.04	100	0.00184 U	0.00182 U	0.014 U
Dieldrin	0.005	0.2	0.00106 J	0.00113 J	0.029 U
Endosulfan Sulfate	NS	NS	0.000768 U	0.000757 U	0.029 U
Endrin	0.014	11	0.000768 U	0.000757 U	0.029 U
Endrin Aldehyde	NS	NS	0.0023 U	0.00227 U	0.029 U
Endrin Ketone	NS	NS	0.00184 U	0.00182 U	0.029 U
Gamma Bhc (Lindane)	0.1	1.3	0.000768 U	0.000757 U	0.014 U
Heptachlor	0.042	2.1	0.000921 U	0.000908 U	0.014 U
Heptachlor Epoxide	NS	NS	0.00345 U	0.0034 U	0.014 U
Methoxychlor	NS	NS	0.00345 U	0.0034 U	0.143 U
P,P'-DDD	0.0033	13	0.00184 U	0.00182 U	0.029 U
P,P'-DDE	0.0033	8.9	0.00184 U	0.00182 U	0.029 U
P,P'-DDT	**0.0033**	7.9	0.00303 J	**0.00609 J**	0.029 U
Silvex (2,4,5-TP)	3.8	100	0.19 U	0.19 U	3.33 U
Toxaphene	NS	NS	0.0345 U	0.034 U	0.143 U
trans-Chlordane	NS	NS	0.0023 U	0.00227 U	0.014 U

Table 7
Seton Brilla Charter School
1956 Jerome Avenue, Bronx, NY
Documentation Sampling
Soil Analytical Results of Per- and Polyfluoroalkyl Substances (PFAS)

		AKRF Sample ID	BS-01_20230117	BS-02_20230118	BS-03_20230119	EP-01_2_20221028
		Laboratory Sample ID	L2302688-04	L2302931-01	L2303294-04	L2260497-01
		Date Sampled	1/17/2023	1/18/2023	1/19/2023	10/28/2022
		Dilution Factor	1	1	1	1
		Unit	ppb	ppb	ppb	ppb
Compound	**NYSDEC UUGV**	**NYSDEC RRGV**	CONC Q	CONC Q	CONC Q	CONC Q
6:2 Fluorotelomer sulfonate	NS	NS	0.666 U	0.594 U	0.582 U	0.55 U
8:2 Fluorotelomer sulfonate	NS	NS	0.666 U	0.594 U	0.582 U	0.55 U
N-ethyl perfluorooctanesulfonamidoacetic acid	NS	NS	0.666 U	0.594 U	0.582 U	0.55 U
N-methyl perfluorooctanesulfonamidoacetic acid	NS	NS	0.666 U	0.594 U	0.582 U	0.55 U
Perfluorobutanesulfonic acid	NS	NS	0.333 U	0.297 U	0.291 U	0.275 U
Perfluorobutanoic acid	NS	NS	0.666 U	0.594 U	0.053 J	0.55 U
Perfluorodecanesulfonic acid	NS	NS	0.666 U	0.594 U	0.582 U	0.55 U
Perfluorodecanoic acid	NS	NS	0.333 U	0.297 U	0.291 U	0.275 U
Perfluorododecanoic acid	NS	NS	0.666 U	0.594 U	0.582 U	0.55 U
Perfluoroheptanesulfonic acid	NS	NS	0.666 U	0.594 U	0.582 U	0.55 U
Perfluoroheptanoic acid	NS	NS	0.333 U	0.297 U	0.291 U	0.275 U
Perfluorohexanesulfonic acid	NS	NS	0.333 U	0.297 U	0.291 U	0.275 U
Perfluorohexanoic acid	NS	NS	0.666 U	0.594 U	0.176 J	0.55 U
Perfluorononanoic acid	NS	NS	0.333 U	0.297 U	0.291 U	0.275 U
Perfluorooctanesulfonamide	NS	NS	NR	NR	NR	NR
Perfluorooctanesulfonic acid (PFOS)	NS	NS	NR	NR	NR	NR
Perfluorooctanesulfonic acid (PFOS)	0.88	44	0.333 U	0.297 U	0.291 U	0.275 U
Perfluorooctanoic acid (PFOA)	NS	NS	NR	NR	NR	NR
Perfluorooctanoic acid (PFOA)	0.66	33	0.333 U	0.297 U	0.291 U	0.114 J
Perfluoropentanoic acid	NS	NS	0.666 U	0.066 J	0.275 J	0.55 U
Perfluorotetradecanoic acid	NS	NS	0.666 U	0.594 U	0.582 U	0.55 U
Perfluorotridecanoic acid	NS	NS	0.666 U	0.594 U	0.582 U	0.55 U
Perfluoroundecanoic acid	NS	NS	0.666 U	0.594 U	0.582 U	0.55 U
Perfluroroctanesulfonamide	NS	NS	0.666 U	0.594 U	0.582 U	0.55 U
TOTAL PFOA AND PFOS	NS	NS	0.333 U	0.297 U	0.291 U	0.114 J

Table 7
Seton Brilla Charter School
1956 Jerome Avenue, Bronx, NY
Documentation Sampling
Soil Analytical Results of Per- and Polyfluoroalkyl Substances (PFAS)

			AKRF Sample ID	EP-02_2_20221028	EP-03_2_20221028	EP-04-2_20221101	EP-05-2_20221101
			Laboratory Sample ID	L2260497-02	L2260497-03	L2261110-01	L2261110-02
			Date Sampled	10/28/2022	10/28/2022	11/01/2022	11/01/2022
			Dilution Factor	1	1	1	1
			Unit	ppb	ppb	ppb	ppb
Compound	**NYSDEC UUGV**	**NYSDEC RRGV**		CONC Q	CONC Q	CONC Q	CONC Q
6:2 Fluorotelomer sulfonate	NS	NS		0.594 U	0.579 U	0.631 U	0.628 U
8:2 Fluorotelomer sulfonate	NS	NS		0.594 U	0.579 U	0.631 U	0.628 U
N-ethyl perfluorooctanesulfonamidoacetic acid	NS	NS		0.594 U	0.392 J	0.631 UJ	0.628 UJ
N-methyl perfluorooctanesulfonamidoacetic acid	NS	NS		0.594 U	0.579 U	0.631 UJ	0.628 UJ
Perfluorobutanesulfonic acid	NS	NS		0.297 U	0.29 U	0.316 UJ	0.314 U
Perfluorobutanoic acid	NS	NS		0.594 U	0.579 U	0.631 U	0.033 J
Perfluorodecanesulfonic acid	NS	NS		0.594 U	0.579 U	0.631 U	0.628 U
Perfluorodecanoic acid	NS	NS		0.297 U	0.29 U	0.316 U	0.314 U
Perfluorododecanoic acid	NS	NS		0.594 U	0.579 U	0.631 U	0.628 U
Perfluoroheptanesulfonic acid	NS	NS		0.594 U	0.579 U	0.631 U	0.628 U
Perfluoroheptanoic acid	NS	NS		0.297 U	0.29 U	0.316 UJ	0.314 U
Perfluorohexanesulfonic acid	NS	NS		0.297 U	0.29 U	0.316 U	0.314 U
Perfluorohexanoic acid	NS	NS		0.594 U	0.08 J	0.631 UJ	0.12 J
Perfluorononanoic acid	NS	NS		0.297 U	0.29 U	0.316 U	0.314 U
Perfluorooctanesulfonamide	NS	NS		NR	NR	NR	NR
Perfluorooctanesulfonic acid (PFOS)	NS	NS		NR	NR	NR	NR
Perfluorooctanesulfonic acid (PFOS)	0.88	44		0.297 U	0.323	0.316 U	0.314 U
Perfluorooctanoic acid (PFOA)	NS	NS		NR	NR	NR	NR
Perfluorooctanoic acid (PFOA)	0.66	33		0.297 U	0.221 J	0.066 J	0.247 J
Perfluoropentanoic acid	NS	NS		0.594 U	0.579 U	0.631 U	0.095 J
Perfluorotetradecanoic acid	NS	NS		0.594 U	0.579 U	0.631 U	0.628 U
Perfluorotridecanoic acid	NS	NS		0.594 U	0.579 U	0.631 U	0.628 U
Perfluoroundecanoic acid	NS	NS		0.594 U	0.579 U	0.631 U	0.628 U
Perfluroroctanesulfonamide	NS	NS		0.594 U	0.579 U	0.631 U	0.628 U
TOTAL PFOA AND PFOS	NS	NS		0.297 U	0.544 J	0.066 J	0.247 J

Table 7
Seton Brilla Charter School
1956 Jerome Avenue, Bronx, NY
Documentation Sampling
Soil Analytical Results of Per- and Polyfluoroalkyl Substances (PFAS)

			AKRF Sample ID	EP-06-2_20221101	EP-07-2_20221101	EP-08-2-20221108	EP-12_2_20230201
			Laboratory Sample ID	L2261110-03	L2261110-04	L2262580-01	L2305526-01
			Date Sampled	11/01/2022	11/01/2022	11/08/2022	2/01/2023
			Dilution Factor	1	1	1	1
			Unit	ppb	ppb	ppb	ppb
Compound	**NYSDEC UUGV**	**NYSDEC RRGV**		CONC Q	CONC Q	CONC Q	CONC Q
6:2 Fluorotelomer sulfonate	NS	NS		0.648 U	0.544 U	0.533 U	0.54 U
8:2 Fluorotelomer sulfonate	NS	NS		0.648 U	0.544 U	0.533 U	0.54 U
N-ethyl perfluorooctanesulfonamidoacetic acid	NS	NS		0.648 UJ	0.2 L	0.533 U	0.54 U
N-methyl perfluorooctanesulfonamidoacetic acid	NS	NS		0.648 UJ	0.544 UJ	0.533 U	0.54 U
Perfluorobutanesulfonic acid	NS	NS		0.324 U	0.272 U	0.266 U	0.27 U
Perfluorobutanoic acid	NS	NS		0.039 J	0.056 J	0.533 U	0.54 U
Perfluorodecanesulfonic acid	NS	NS		0.648 U	0.544 U	0.533 U	0.54 U
Perfluorodecanoic acid	NS	NS		0.324 U	0.272 U	0.266 U	0.27 U
Perfluorododecanoic acid	NS	NS		0.648 U	0.544 U	0.533 U	0.54 U
Perfluoroheptanesulfonic acid	NS	NS		0.648 U	0.544 U	0.533 U	0.54 U
Perfluoroheptanoic acid	NS	NS		0.073 JF	0.088 J	0.266 U	0.27 U
Perfluorohexanesulfonic acid	NS	NS		0.324 U	0.272 U	0.266 U	0.27 U
Perfluorohexanoic acid	NS	NS		0.156 J	0.237 J	0.533 U	0.54 U
Perfluorononanoic acid	NS	NS		0.324 U	0.272 U	0.266 U	0.27 U
Perfluorooctanesulfonamide	NS	NS		NR	NR	NR	NR
Perfluorooctanesulfonic acid (PFOS)	NS	NS		NR	NR	NR	NR
Perfluorooctanesulfonic acid (PFOS)	0.88	44		0.324 U	0.206 J	0.266 U	0.27 U
Perfluorooctanoic acid (PFOA)	NS	NS		NR	NR	NR	NR
Perfluorooctanoic acid (PFOA)	0.66	33		0.147 J	0.15 J	0.266 U	0.27 U
Perfluoropentanoic acid	NS	NS		0.17 J	0.262 J	0.533 U	0.54 U
Perfluorotetradecanoic acid	NS	NS		0.648 U	0.544 U	0.533 U	0.54 U
Perfluorotridecanoic acid	NS	NS		0.648 U	0.544 U	0.533 U	0.54 U
Perfluoroundecanoic acid	NS	NS		0.648 U	0.544 U	0.533 U	0.54 U
Perfluroroctanesulfonamide	NS	NS		0.648 U	0.544 U	0.533 U	0.54 U
TOTAL PFOA AND PFOS	NS	NS		0.147 J	0.356 J	0.266 U	0.27 U

Table 7
Seton Brilla Charter School
1956 Jerome Avenue, Bronx, NY
Documentation Sampling
Soil Analytical Results of Per- and Polyfluoroalkyl Substances (PFAS)

			AKRF Sample ID	SW-01_2_20221028	SW-02_2_20221028	SW-03_2_20221028	SW-04_20230117
			Laboratory Sample ID	L2260497-04	L2260497-05	L2260497-06	L2302688-01
			Date Sampled	10/28/2022	10/28/2022	10/28/2022	1/17/2023
			Dilution Factor	1	1	1	1
			Unit	ppb	ppb	ppb	ppb
Compound	**NYSDEC UUGV**	**NYSDEC RRGV**		CONC Q	CONC Q	CONC Q	CONC Q
6:2 Fluorotelomer sulfonate	NS	NS		0.597 U	0.526 U	0.629 U	0.562 U
8:2 Fluorotelomer sulfonate	NS	NS		0.597 U	0.526 U	0.629 U	0.562 U
N-ethyl perfluorooctanesulfonamidoacetic acid	NS	NS		0.597 U	0.526 U	0.629 U	0.562 U
N-methyl perfluorooctanesulfonamidoacetic acid	NS	NS		0.597 U	0.526 U	0.629 U	0.562 U
Perfluorobutanesulfonic acid	NS	NS		0.298 U	0.263 U	0.315 U	0.281 U
Perfluorobutanoic acid	NS	NS		0.036 J	0.526 U	0.629 U	0.562 U
Perfluorodecanesulfonic acid	NS	NS		0.597 U	0.526 U	0.629 U	0.562 U
Perfluorodecanoic acid	NS	NS		0.298 U	0.263 U	0.315 U	0.281 U
Perfluorododecanoic acid	NS	NS		0.597 U	0.526 U	0.629 U	0.562 U
Perfluoroheptanesulfonic acid	NS	NS		0.597 U	0.526 U	0.629 U	0.562 U
Perfluoroheptanoic acid	NS	NS		0.298 U	0.263 U	0.315 U	0.281 U
Perfluorohexanesulfonic acid	NS	NS		0.298 U	0.263 U	0.315 U	0.281 U
Perfluorohexanoic acid	NS	NS		0.088 J	0.526 U	0.629 U	0.562 U
Perfluorononanoic acid	NS	NS		0.298 U	0.263 U	0.315 U	0.281 U
Perfluorooctanesulfonamide	NS	NS		NR	NR	NR	NR
Perfluorooctanesulfonic acid (PFOS)	NS	NS		NR	NR	NR	NR
Perfluorooctanesulfonic acid (PFOS)	0.88	44		0.243 J	0.158 J	0.595	0.281 U
Perfluorooctanoic acid (PFOA)	NS	NS		NR	NR	NR	NR
Perfluorooctanoic acid (PFOA)	0.66	33		0.133 J	0.066 J	0.243 J	0.281 U
Perfluoropentanoic acid	NS	NS		0.096 J	0.526 U	0.067 J	0.562 U
Perfluorotetradecanoic acid	NS	NS		0.597 U	0.526 U	0.629 U	0.562 U
Perfluorotridecanoic acid	NS	NS		0.597 U	0.526 U	0.629 U	0.562 U
Perfluoroundecanoic acid	NS	NS		0.597 U	0.526 U	0.629 U	0.562 U
Perfluroroctanesulfonamide	NS	NS		0.597 U	0.526 U	0.629 U	0.562 U
TOTAL PFOA AND PFOS	NS	NS		0.376 J	0.224 J	0.838 J	0.281 U

Table 7
Seton Brilla Charter School
1956 Jerome Avenue, Bronx, NY
Documentation Sampling
Soil Analytical Results of Per- and Polyfluoroalkyl Substances (PFAS)

			AKRF Sample ID	SW-05_20230117	SW-06_20230117	SW-07_20230118	SW-08_20230118
			Laboratory Sample ID	L2302688-02	L2302688-03	L2302931-02	L2302931-03
			Date Sampled	1/17/2023	1/17/2023	1/18/2023	1/18/2023
			Dilution Factor	1	1	1	1
			Unit	ppb	ppb	ppb	ppb
Compound	**NYSDEC UUGV**	**NYSDEC RRGV**		CONC Q	CONC Q	CONC Q	CONC Q
6:2 Fluorotelomer sulfonate	NS	NS		0.545 U	0.54 U	0.819 U	0.63 U
8:2 Fluorotelomer sulfonate	NS	NS		0.545 U	0.54 U	0.819 U	0.63 U
N-ethyl perfluorooctanesulfonamidoacetic acid	NS	NS		0.545 U	0.54 U	0.819 U	0.63 U
N-methyl perfluorooctanesulfonamidoacetic acid	NS	NS		0.545 U	0.54 U	0.819 U	0.63 U
Perfluorobutanesulfonic acid	NS	NS		0.272 U	0.27 U	0.41 U	0.315 U
Perfluorobutanoic acid	NS	NS		0.545 U	0.54 U	0.819 U	0.63 U
Perfluorodecanesulfonic acid	NS	NS		0.545 U	0.54 U	0.819 U	0.63 U
Perfluorodecanoic acid	NS	NS		0.272 U	0.27 U	0.41 U	0.315 U
Perfluorododecanoic acid	NS	NS		0.545 U	0.54 U	0.819 U	0.63 U
Perfluoroheptanesulfonic acid	NS	NS		0.545 U	0.54 U	0.819 U	0.63 U
Perfluoroheptanoic acid	NS	NS		0.272 U	0.27 U	0.41 U	0.315 U
Perfluorohexanesulfonic acid	NS	NS		0.272 U	0.27 U	0.41 U	0.315 U
Perfluorohexanoic acid	NS	NS		0.545 U	0.54 U	0.819 U	0.63 U
Perfluorononanoic acid	NS	NS		0.272 U	0.27 U	0.41 U	0.315 U
Perfluorooctanesulfonamide	NS	NS		NR	NR	NR	NR
Perfluorooctanesulfonic acid (PFOS)	NS	NS		NR	NR	NR	NR
Perfluorooctanesulfonic acid (PFOS)	0.88	44		0.272 U	0.27 U	0.41 U	0.315 U
Perfluorooctanoic acid (PFOA)	NS	NS		NR	NR	NR	NR
Perfluorooctanoic acid (PFOA)	0.66	33		0.272 U	0.27 U	0.41 U	0.315 U
Perfluoropentanoic acid	NS	NS		0.545 U	0.54 U	0.819 U	0.076 J
Perfluorotetradecanoic acid	NS	NS		0.545 U	0.54 U	0.819 U	0.63 U
Perfluorotridecanoic acid	NS	NS		0.545 U	0.54 U	0.819 U	0.63 U
Perfluoroundecanoic acid	NS	NS		0.545 U	0.54 U	0.819 U	0.63 U
Perfluroroctanesulfonamide	NS	NS		0.545 U	0.54 U	0.819 U	0.63 U
TOTAL PFOA AND PFOS	NS	NS		0.272 U	0.27 U	0.41 U	0.315 U

Table 7
Seton Brilla Charter School
1956 Jerome Avenue, Bronx, NY
Documentation Sampling
Soil Analytical Results of Per- and Polyfluoroalkyl Substances (PFAS)

			AKRF Sample ID	SW-09_20230119	SW-10_20230119	SW-11_20230119	SW-12_2_20230201
			Laboratory Sample ID	L2303294-01	L2303294-02	L2303294-03	L2305526-02
			Date Sampled	1/19/2023	1/19/2023	1/19/2023	2/01/2023
			Dilution Factor	1	1	1	1
			Unit	ppb	ppb	ppb	ppb
Compound	**NYSDEC UUGV**	**NYSDEC RRGV**		CONC Q	CONC Q	CONC Q	CONC Q
6:2 Fluorotelomer sulfonate	NS	NS		0.64 U	0.566 U	0.568 U	0.53 U
8:2 Fluorotelomer sulfonate	NS	NS		0.64 U	0.566 U	0.568 U	0.53 U
N-ethyl perfluorooctanesulfonamidoacetic acid	NS	NS		0.64 U	0.566 U	0.568 U	0.53 U
N-methyl perfluorooctanesulfonamidoacetic acid	NS	NS		0.64 U	0.566 U	0.568 U	0.53 U
Perfluorobutanesulfonic acid	NS	NS		0.32 U	0.283 U	0.284 U	0.265 U
Perfluorobutanoic acid	NS	NS		0.034 J	0.034 J	0.034 J	0.53 U
Perfluorodecanesulfonic acid	NS	NS		0.64 U	0.566 U	0.568 U	0.53 U
Perfluorodecanoic acid	NS	NS		0.32 U	0.283 U	0.284 U	0.265 U
Perfluorododecanoic acid	NS	NS		0.64 U	0.566 U	0.568 U	0.53 U
Perfluoroheptanesulfonic acid	NS	NS		0.64 U	0.566 U	0.568 U	0.53 U
Perfluoroheptanoic acid	NS	NS		0.32 U	0.283 U	0.284 U	0.265 U
Perfluorohexanesulfonic acid	NS	NS		0.32 U	0.283 U	0.284 U	0.265 U
Perfluorohexanoic acid	NS	NS		0.118 J	0.127 J	0.112 J	0.53 U
Perfluorononanoic acid	NS	NS		0.32 U	0.283 U	0.284 U	0.265 U
Perfluorooctanesulfonamide	NS	NS		NR	NR	NR	NR
Perfluorooctanesulfonic acid (PFOS)	NS	NS		NR	NR	NR	NR
Perfluorooctanesulfonic acid (PFOS)	0.88	44		0.32 U	0.283 U	0.284 U	0.265 U
Perfluorooctanoic acid (PFOA)	NS	NS		NR	NR	NR	NR
Perfluorooctanoic acid (PFOA)	0.66	33		0.32 U	0.283 U	0.284 U	0.265 U
Perfluoropentanoic acid	NS	NS		0.182 J	0.172 J	0.142 J	0.53 U
Perfluorotetradecanoic acid	NS	NS		0.64 U	0.566 U	0.568 U	0.53 U
Perfluorotridecanoic acid	NS	NS		0.64 U	0.566 U	0.568 U	0.53 U
Perfluoroundecanoic acid	NS	NS		0.64 U	0.566 U	0.568 U	0.53 U
Perfluroroctanesulfonamide	NS	NS		0.64 U	0.566 U	0.568 U	0.53 U
TOTAL PFOA AND PFOS	NS	NS		0.32 U	0.283 U	0.284 U	0.265 U

Table 7
Seton Brilla Charter School
1956 Jerome Avenue, Bronx, NY
Documentation Sampling
Soil Analytical Results of Per- and Polyfluoroalkyl Substances (PFAS)

			AKRF Sample ID	SW-13_2_20230201	SW-14_2_20230201	SW-15_2_20230201	SW-16_2_20230201
			Laboratory Sample ID	L2305526-03	L2305526-04	L2305526-05	L2305526-06
			Date Sampled	2/01/2023	2/01/2023	2/01/2023	2/01/2023
			Dilution Factor	1	1	1	1
			Unit	ppb	ppb	ppb	ppb
Compound	**NYSDEC UUGV**	**NYSDEC RRGV**		CONC Q	CONC Q	CONC Q	CONC Q
6:2 Fluorotelomer sulfonate	NS	NS		0.586 U	0.611 U	0.513 U	0.53 U
8:2 Fluorotelomer sulfonate	NS	NS		0.586 U	0.611 U	0.513 U	0.53 U
N-ethyl perfluorooctanesulfonamidoacetic acid	NS	NS		0.586 U	0.611 U	0.513 U	0.53 U
N-methyl perfluorooctanesulfonamidoacetic acid	NS	NS		0.586 U	0.611 U	0.513 U	0.53 U
Perfluorobutanesulfonic acid	NS	NS		0.293 U	0.305 U	0.256 U	0.265 U
Perfluorobutanoic acid	NS	NS		0.586 U	0.611 U	0.513 U	0.53 U
Perfluorodecanesulfonic acid	NS	NS		0.586 U	0.611 U	0.513 U	0.53 U
Perfluorodecanoic acid	NS	NS		0.293 U	0.305 U	0.256 U	0.265 U
Perfluorododecanoic acid	NS	NS		0.586 U	0.611 U	0.513 U	0.53 U
Perfluoroheptanesulfonic acid	NS	NS		0.586 U	0.611 U	0.513 U	0.53 U
Perfluoroheptanoic acid	NS	NS		0.293 U	0.305 U	0.256 U	0.265 U
Perfluorohexanesulfonic acid	NS	NS		0.293 U	0.305 U	0.256 U	0.265 U
Perfluorohexanoic acid	NS	NS		0.586 U	0.611 U	0.513 U	0.53 U
Perfluorononanoic acid	NS	NS		0.293 U	0.305 U	0.256 U	0.265 U
Perfluorooctanesulfonamide	NS	NS		NR	NR	NR	NR
Perfluorooctanesulfonic acid (PFOS)	NS	NS		NR	NR	NR	NR
Perfluorooctanesulfonic acid (PFOS)	0.88	44		0.293 U	0.305 U	0.256 U	0.265 U
Perfluorooctanoic acid (PFOA)	NS	NS		NR	NR	NR	NR
Perfluorooctanoic acid (PFOA)	0.66	33		0.293 U	0.305 U	0.256 U	0.265 U
Perfluoropentanoic acid	NS	NS		0.586 U	0.611 U	0.513 U	0.53 U
Perfluorotetradecanoic acid	NS	NS		0.586 U	0.611 U	0.513 U	0.53 U
Perfluorotridecanoic acid	NS	NS		0.586 U	0.611 U	0.513 U	0.53 U
Perfluoroundecanoic acid	NS	NS		0.586 U	0.611 U	0.513 U	0.53 U
Perfluroroctanesulfonamide	NS	NS		0.586 U	0.611 U	0.513 U	0.53 U
TOTAL PFOA AND PFOS	NS	NS		0.293 U	0.305 U	0.256 U	0.265 U

Table 7
Seton Brilla Charter School
1956 Jerome Avenue, Bronx, NY
Documentation Sampling
Soil Analytical Results of Per- and Polyfluoroalkyl Substances (PFAS)

			AKRF Sample ID	SW-17_2_20230725	DUP-02_20230725	FIELD BLANK_20230725
			Laboratory Sample ID	L2342699-01	L2342699-02	L2342699-04
			Date Sampled	7/25/2023	7/25/2023	7/25/2023
			Dilution Factor	1	1	1
			Unit	ppb	ppb	ppt
Compound	**NYSDEC UUGV**	**NYSDEC RRGV**		CONC Q	CONC Q	CONC Q
6:2 Fluorotelomer sulfonate	NS	NS		0.534 U	0.531 U	1.83 U
8:2 Fluorotelomer sulfonate	NS	NS		0.534 U	0.531 U	1.83 U
N-ethyl perfluorooctanesulfonamidoacetic acid	NS	NS		0.105 J	0.189 J	1.83 U
N-methyl perfluorooctanesulfonamidoacetic acid	NS	NS		0.534 U	0.531 U	1.83 U
Perfluorobutanesulfonic acid	NS	NS		0.267 U	0.266 U	1.83 U
Perfluorobutanoic acid	NS	NS		0.026 J	0.531 U	1.83 U
Perfluorodecanesulfonic acid	NS	NS		0.534 U	0.531 U	1.83 U
Perfluorodecanoic acid	NS	NS		0.267 U	0.266 U	1.83 U
Perfluorododecanoic acid	NS	NS		0.534 U	0.531 U	1.83 U
Perfluoroheptanesulfonic acid	NS	NS		0.534 U	0.531 U	1.83 U
Perfluoroheptanoic acid	NS	NS		0.267 U	0.266 U	1.83 U
Perfluorohexanesulfonic acid	NS	NS		0.267 U	0.266 U	1.83 U
Perfluorohexanoic acid	NS	NS		0.134 J	0.11 J	1.83 U
Perfluorononanoic acid	NS	NS		0.267 U	0.266 U	1.83 U
Perfluorooctanesulfonamide	NS	NS		NR	NR	1.83 U
Perfluorooctanesulfonic acid (PFOS)	NS	NS		NR	NR	1.83 U
Perfluorooctanesulfonic acid (PFOS)	0.88	44		0.147 J	0.266 U	NR
Perfluorooctanoic acid (PFOA)	NS	NS		NR	NR	1.83 U
Perfluorooctanoic acid (PFOA)	0.66	33		0.064 JF	0.057 J	NR
Perfluoropentanoic acid	NS	NS		0.196 J	0.169 J	1.83 U
Perfluorotetradecanoic acid	NS	NS		0.534 U	0.531 U	1.83 U
Perfluorotridecanoic acid	NS	NS		0.534 U	0.531 U	1.83 U
Perfluoroundecanoic acid	NS	NS		0.534 U	0.531 U	1.83 U
Perfluroroctanesulfonamide	NS	NS		0.534 U	0.531 U	NR
TOTAL PFOA AND PFOS	NS	NS		0.211 J	0.057 J	1.83 U

Table 8
Seton Brilla Charter School
1956 Jerome Avenue, Bronx, NY
Documentation Sampling
Groundwater Analytical Results of VOCs

	AKRF Sample ID	MW-01_20230720	DUP-01_20230720	MW-02_20230721	MW-03_20230720
	Laboratory Sample ID	L2342135-01	L2342135-03	L2342135-05	L2342135-02
	Date Sampled	7/20/2023	7/20/2023	7/21/2023	7/20/2023
	Unit	µg/L	µg/L	µg/L	µg/L
	Dilution Factor	1	1	10	1
Compound	**AWQSGV**	CONC Q	CONC Q	CONC Q	CONC Q
1,1,1,2-Tetrachloroethane	5	2.5 U	2.5 U	25 U	2.5 U
1,1,1-Trichloroethane	5	2.5 U	2.5 U	25 U	2.5 U
1,1,2,2-Tetrachloroethane	5	0.5 U	0.5 U	5 U	0.5 U
1,1,2-Trichloroethane	1	1.5 U	1.5 U	15 U	1.5 U
1,1-Dichloroethane	5	2.5 U	2.5 U	25 U	2.5 U
1,1-Dichloroethene	5	0.5 U	0.5 U	5 U	0.5 U
1,1-Dichloropropene	5	2.5 U	2.5 U	25 U	2.5 U
1,2,3-Trichlorobenzene	5	2.5 U	2.5 U	25 U	2.5 U
1,2,3-Trichloropropane	0.04	2.5 U	2.5 U	25 U	2.5 U
1,2,4,5-Tetramethylbenzene	**5**	**12**	**12**	**36**	2 U
1,2,4-Trichlorobenzene	5	2.5 U	2.5 U	25 U	2.5 U
1,2,4-Trimethylbenzene	**5**	**12**	**12**	**680**	2.5 U
1,2-Dibromo-3-Chloropropane	0.04	2.5 U	2.5 U	25 U	2.5 U
1,2-Dibromoethane (Ethylene Dibromide)	0.0006	2 U	2 U	20 U	2 U
1,2-Dichlorobenzene	3	2.5 U	2.5 U	25 U	2.5 U
1,2-Dichloroethane	0.6	0.5 U	0.5 U	5 U	0.5 U
1,2-Dichloropropane	1	1 U	1 U	10 U	1 U
1,3,5-Trimethylbenzene (Mesitylene)	**5**	**15**	**15**	**170**	2.5 U
1,3-Dichlorobenzene	3	2.5 U	2.5 U	25 U	2.5 U
1,3-Dichloropropane	5	2.5 U	2.5 U	25 U	2.5 U
1,4-Dichlorobenzene	3	2.5 U	2.5 U	25 U	2.5 U
1,4-Diethyl Benzene	NS	12	12	89	2 U
2,2-Dichloropropane	5	2.5 U	2.5 U	25 U	2.5 U
2-Chlorotoluene	5	2.5 U	2.5 U	25 U	2.5 U
2-Hexanone	50	5 U	5 U	50 U	5 U
4-Chlorotoluene	5	2.5 U	2.5 U	25 U	2.5 U
4-Ethyltoluene	NS	13	13	450	2 U
Acetone	**50**	**58**	46	**130**	16 H
Acrylonitrile	5	5 U	5 U	50 U	5 U
Benzene	**1**	**14**	**14**	**61**	0.2 J
Bromobenzene	5	2.5 U	2.5 U	25 U	2.5 U
Bromochloromethane	5	2.5 U	2.5 U	25 U	2.5 U
Bromodichloromethane	50	0.5 U	0.5 U	5 U	0.5 U
Bromoform	50	2 U	2 U	20 U	2 U
Bromomethane	5	2.5 U	2.5 U	25 U	2.5 U
Carbon Disulfide	60	5 U	5 U	50 U	5 U
Carbon Tetrachloride	5	0.5 U	0.5 U	5 U	0.5 U
Chlorobenzene	5	2.5 U	2.5 U	25 U	2.5 U
Chloroethane	5	2.5 U	2.5 U	25 U	2.5 U
Chloroform	7	2.5 U	2.5 U	25 U	2.5 U
Chloromethane	5	2.5 U	2.5 U	25 U	2.5 U
Cis-1,2-Dichloroethylene	5	2.5 U	2.5 U	25 U	2.5 U
Cis-1,3-Dichloropropene	NS	0.5 U	0.5 U	5 U	0.5 U
Cymene	5	1.4 J	1.4 J	25 U	2.5 U
Dibromochloromethane	50	0.5 U	0.5 U	5 U	0.5 U
Dibromomethane	5	5 U	5 U	50 U	5 U
Dichlorodifluoromethane	5	5 UJ	5 UJ	50 UJ	5 UJ
Dichloroethylenes	NS	2.5 U	2.5 U	25 U	2.5 U
Diethyl Ether (Ethyl Ether)	NS	2.5 U	2.5 U	25 U	2.5 U
Ethylbenzene	**5**	**34**	**34**	**580**	2.5 U
Isopropylbenzene (Cumene)	**5**	**5.9**	**6**	**37**	2.5 U
M,P-Xylenes	**5**	**41**	**40**	**1,900**	2.5 U
Methyl Ethyl Ketone (2-Butanone)	50	5 U	5 U	50 U	5 U
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	NS	6.2 U	5 U	50 U	5 U
Methylene Chloride	5	2.5 U	2.5 U	25 U	2.5 U
N-Butylbenzene	**5**	1.7 J	1.8 J	**9.5 J**	2.5 U
N-Propylbenzene	**5**	**10**	**10**	**100**	2.5 U
O-Xylene (1,2-Dimethylbenzene)	**5**	**11**	**11**	**590**	2.5 U
Sec-Butylbenzene	5	0.91 J	0.93 J	25 U	2.5 U
Styrene	5	2.5 U	2.5 U	25 U	2.5 U
T-Butylbenzene	5	2.5 U	2.5 U	25 U	2.5 U
Tert-Butyl Methyl Ether	10	3.4	3.2	25 U	3.6
Tetrachloroethylene (PCE)	5	1.3	1.3	5 U	0.5 U
Toluene	**5**	**6.6**	**6.2**	**590**	2.5 U
Total, 1,3-Dichloropropene (Cis And Trans)	0.4	0.5 U	0.5 U	5 U	0.5 U
Trans-1,2-Dichloroethene	5	2.5 U	2.5 U	25 U	2.5 U
Trans-1,3-Dichloropropene	NS	0.5 U	0.5 U	5 U	0.5 U
Trans-1,4-Dichloro-2-Butene	5	2.5 U	2.5 U	25 U	2.5 U
Trichloroethylene (TCE)	5	0.5 U	0.5 U	5 U	0.5 U
Trichlorofluoromethane	5	2.5 U	2.5 U	25 U	2.5 U
Vinyl Acetate	NS	5 U	5 U	50 U	5 U
Vinyl Chloride	2	1 U	1 U	10 U	1 U
Xylenes, Total	NS	52	51	2,500	2.5 U

Table 8
Seton Brilla Charter School
1956 Jerome Avenue, Bronx, NY
Documentation Sampling
Groundwater Analytical Results of VOCs

	AKRF Sample ID	FB_20230721	TB_20230719
	Laboratory Sample ID	L2342135-06	L2342135-04
	Date Sampled	7/21/2023	7/19/2023
	Unit	µg/L	µg/L
	Dilution Factor	1	1
Compound	**AWQSGV**	CONC Q	CONC Q
1,1,1,2-Tetrachloroethane	5	2.5 U	2.5 U
1,1,1-Trichloroethane	5	2.5 U	2.5 U
1,1,2,2-Tetrachloroethane	5	0.5 U	0.5 U
1,1,2-Trichloroethane	1	1.5 U	1.5 U
1,1-Dichloroethane	5	2.5 U	2.5 U
1,1-Dichloroethene	5	0.5 U	0.5 U
1,1-Dichloropropene	5	2.5 U	2.5 U
1,2,3-Trichlorobenzene	5	2.5 U	2.5 U
1,2,3-Trichloropropane	0.04	2.5 U	2.5 U
1,2,4,5-Tetramethylbenzene	**5**	2 U	2 U
1,2,4-Trichlorobenzene	5	2.5 U	2.5 U
1,2,4-Trimethylbenzene	**5**	2.5 U	2.5 U
1,2-Dibromo-3-Chloropropane	0.04	2.5 U	2.5 U
1,2-Dibromoethane (Ethylene Dibromide)	0.0006	2 U	2 U
1,2-Dichlorobenzene	3	2.5 U	2.5 U
1,2-Dichloroethane	0.6	0.5 U	0.5 U
1,2-Dichloropropane	1	1 U	1 U
1,3,5-Trimethylbenzene (Mesitylene)	**5**	2.5 U	2.5 U
1,3-Dichlorobenzene	3	2.5 U	2.5 U
1,3-Dichloropropane	5	2.5 U	2.5 U
1,4-Dichlorobenzene	3	2.5 U	2.5 U
1,4-Diethyl Benzene	NS	2 U	2 U
2,2-Dichloropropane	5	2.5 U	2.5 U
2-Chlorotoluene	5	2.5 U	2.5 U
2-Hexanone	50	5 U	5 U
4-Chlorotoluene	5	2.5 U	2.5 U
4-Ethyltoluene	NS	2 U	2 U
Acetone	**50**	2.8 J	5 U
Acrylonitrile	5	5 U	5 U
Benzene	**1**	0.5 U	0.5 U
Bromobenzene	5	2.5 U	2.5 U
Bromochloromethane	5	2.5 U	2.5 U
Bromodichloromethane	50	0.5 U	0.5 U
Bromoform	50	2 U	2 U
Bromomethane	5	2.5 U	2.5 U
Carbon Disulfide	60	5 U	5 U
Carbon Tetrachloride	5	0.5 U	0.5 U
Chlorobenzene	5	2.5 U	2.5 U
Chloroethane	5	2.5 U	2.5 U
Chloroform	7	2.5 U	2.5 U
Chloromethane	5	2.5 U	2.5 U
Cis-1,2-Dichloroethylene	5	2.5 U	2.5 U
Cis-1,3-Dichloropropene	NS	0.5 U	0.5 U
Cymene	5	2.5 U	2.5 U
Dibromochloromethane	50	0.5 U	0.5 U
Dibromomethane	5	5 U	5 U
Dichlorodifluoromethane	5	5 UJ	5 UJ
Dichloroethylenes	NS	2.5 U	2.5 U
Diethyl Ether (Ethyl Ether)	NS	2.5 U	2.5 U
Ethylbenzene	**5**	2.5 U	2.5 U
Isopropylbenzene (Cumene)	**5**	2.5 U	2.5 U
M,P-Xylenes	**5**	2.5 U	2.5 U
Methyl Ethyl Ketone (2-Butanone)	50	5 U	5 U
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	NS	5 U	5 U
Methylene Chloride	5	2.5 U	2.5 U
N-Butylbenzene	**5**	2.5 U	2.5 U
N-Propylbenzene	**5**	2.5 U	2.5 U
O-Xylene (1,2-Dimethylbenzene)	**5**	2.5 U	2.5 U
Sec-Butylbenzene	5	2.5 U	2.5 U
Styrene	5	2.5 U	2.5 U
T-Butylbenzene	5	2.5 U	2.5 U
Tert-Butyl Methyl Ether	10	2.5 U	2.5 U
Tetrachloroethylene (PCE)	5	0.5 U	0.5 U
Toluene	**5**	2.5 U	2.5 U
Total, 1,3-Dichloropropene (Cis And Trans)	0.4	0.5 U	0.5 U
Trans-1,2-Dichloroethene	5	2.5 U	2.5 U
Trans-1,3-Dichloropropene	NS	0.5 U	0.5 U
Trans-1,4-Dichloro-2-Butene	5	2.5 U	2.5 U
Trichloroethylene (TCE)	5	0.5 U	0.5 U
Trichlorofluoromethane	5	2.5 U	2.5 U
Vinyl Acetate	NS	5 U	5 U
Vinyl Chloride	2	1 U	1 U
Xylenes, Total	NS	2.5 U	2.5 U

Tables 2-8
Seton Brilla Charter School
1956 Jerome Avenue, Bronx, NY
Documentation and Groundwater Sampling
Notes

DEFINITIONS

F : Field parameter with a holding time of 15 minutes.
H : Sample result is estimated and biased high.
J : The concentration given is an estimated value.
L : Sample result is estimated and biased low.
NR : Not reported.
NS : No standard.
R : Indicates the reported result is unusable (note: the analyte may or may not be present).
U : The analyte was not detected at the indicated concentration.
mg/kg : milligrams per kilogram
ppb : parts per billion
ppt : parts per trillion
µg/L : micrograms per liter

STANDARDS

Part 375 Soil Cleanup Objectives : Soil Cleanup Objectives listed in New York State Department of Environmental Conservation (NYSDEC) "Part 375" Regulations [6 New York Codes, Rules and Regulations (NYCRR) Part 375].

Exceedances of Part 375 Unrestricted Use Soil Cleanup Objectives (UUSCOs) are highlighted in bold font.
Exceedances of Part 375 Restricted Residential Soil Cleanup Objectives (RRSCOs) are highlighted in gray shading.
Exceedances of Part 375 Protection of Groundwater Soil Cleanup Objectives (PGWSCOs) are highlighted with an underline.

NYSDEC Part 375 PFAS Guidance Values : New York State Department of Environmental Conservation (NYSDEC) Sampling, Analysis and Assessment Of Per- and Polyfluoroalkyl Substances (PFAS) Under NYSDEC's Part 375 Remedial Programs Issued January 2021.

Exceedances of NYSDEC PFAS Unrestricted Use Guidance Values (UUGVs) are highlighted in bold font.
Exceedances of NYSDEC PFAS Restricted Residential Guidance Values (RRGVs) are highlighted in gray shading.

NYSDEC Class GA AWQSGVs : New York State Department of Environmental Conservation (NYSDEC) Technical and Operational Guidance Series (1.1.1): Class GA Ambient Water Quality Standards and Guidance Values (AWQSGVs).

Exceedances of NYSDEC Class GA AWQSGVs are highlighted in bold font.

DUPLICATES

DUP-01_20230221 is a blind duplicate of sample SW-10B_8-10_20230221
DUP-01_20230720 is a blind duplicate of sample MW-01_20230720
DUP-02_20230725 is a blind duplicate of sample SW-17_2_20230725

FIGURES

Service Layer Credits: USGS The National Map: 3d Elevation Program,
Data Refreshed July, 2022

0 400 800

SCALE IN FEET

AKRF
440 Park Avenue South, New York, NY 10016

1956 Jerome Avenue
Bronx, New York

SITE LOCATION

DATE
12/1/2023

PROJECT NO.
210024

FIGURE
1

Aerial Source:
ESRI World Imagery Dec 2022

LEGEND

BCP SITE BOUNDARY

22 LOT BOUNDARY AND TAX LOT

2853 BLOCK NUMBER

NOTE: THE REAL PROPERTY IS SUBJECT TO AN ENVIRONMENTAL EASEMENT.

STATE OF NEW YORK
REBECCA A. KINAL
082046-1
LICENSED PROFESSIONAL ENGINEER

0 10 20 40
SCALE IN FEET

AKRF
440 Park Avenue South, New York, NY 10016

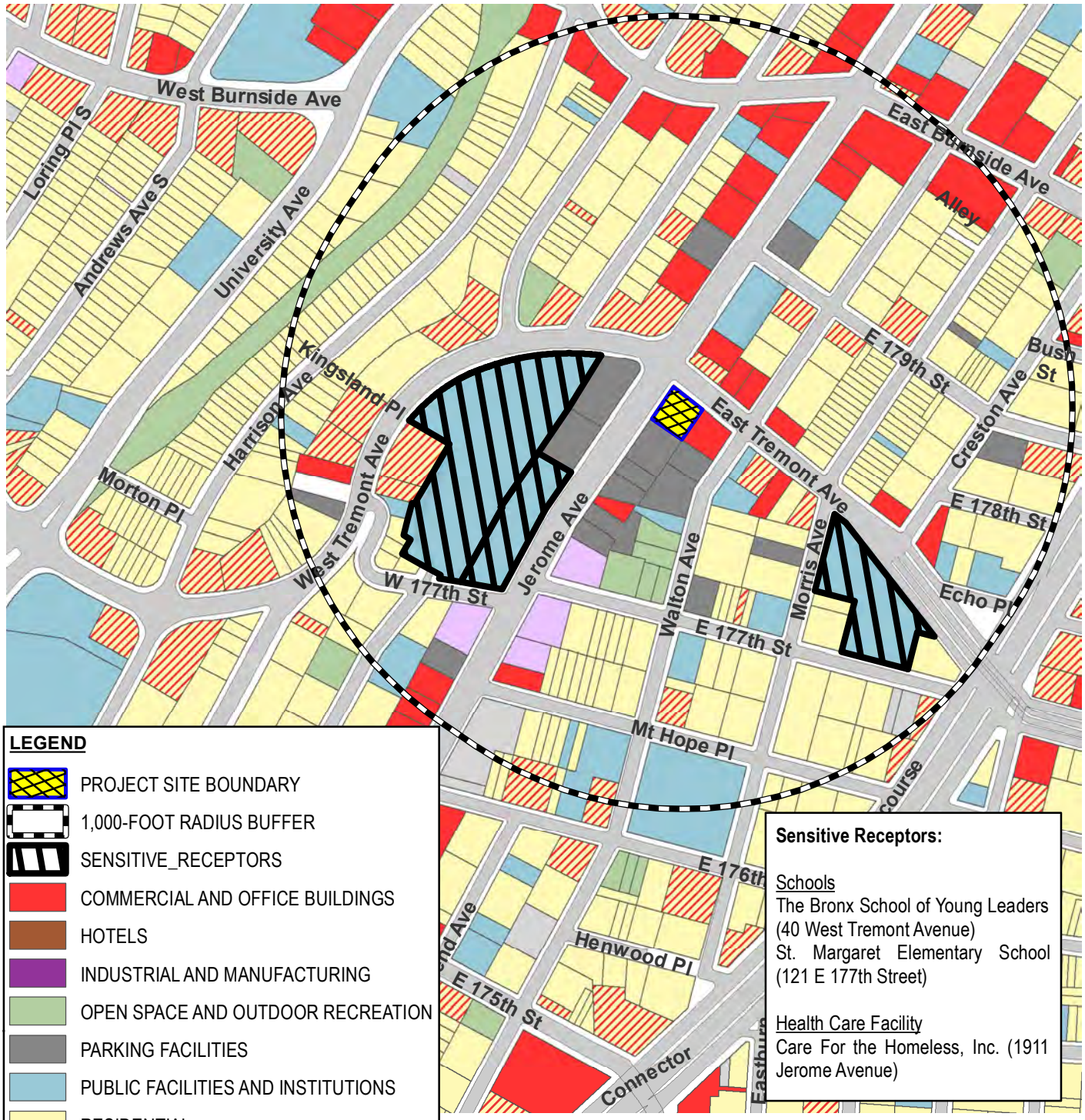
1956 Jerome Avenue
Bronx, New York

SITE PLAN SHOWING BCP SITE BOUNDARY

DATE
11/29/2023

PROJECT NO.
210024

FIGURE
2



LEGEND

- PROJECT SITE BOUNDARY
- 1,000-FOOT RADIUS BUFFER
- SENSITIVE_RECEPTORS
- COMMERCIAL AND OFFICE BUILDINGS
- HOTELS
- INDUSTRIAL AND MANUFACTURING
- OPEN SPACE AND OUTDOOR RECREATION
- PARKING FACILITIES
- PUBLIC FACILITIES AND INSTITUTIONS
- RESIDENTIAL
- RESIDENTIAL WITH COMMERCIAL BELOW
- TRANSPORTATION AND UTILITY
- VACANT LAND
- VACANT BUILDING
- UNDER CONSTRUCTION

Sensitive Receptors:

Schools
The Bronx School of Young Leaders (40 West Tremont Avenue)
St. Margaret Elementary School (121 E 177th Street)

Health Care Facility
Care For the Homeless, Inc. (1911 Jerome Avenue)

Map Source:
NYCDCP (NYC Dept. of City Planning) GIS database

0 400 800
SCALE IN FEET

AKRF
440 Park Avenue South, New York, NY 10016

1956 Jerome Avenue
Bronx, New York

SURROUNDING LAND USE

DATE
10/25/2021

PROJECT NO.
2100024

FIGURE
3

Adjacent Property Owners		
Block	**Lot**	**OwnerName**
2854	26	A & R Tremont LLC
2863	1	NYC Transit
2853	32	Melrose Management,Inc.
2853	17	Uptown Storage Co.,Inc.
2854	1	Lemle Realty Corp
2862	90	Tremont Garage Realty Cp
2853	22	2-6 East Tremont Avenue LLC
2853	27	12 East Tremont, LLC

LEGEND

- ADJACENT PROPERTY
- PROJECT SITE BOUNDARY
- 22 — LOT BOUNDARY AND TAX LOT NUMBER
- 2953 — BLOCK NUMBER

0 100 200

SCALE IN FEET

Map Source:
NYCDCP (NYC Dept. of City Planning) GIS database

Map Source:
NYCDCP (NYC Dept. of City Planning) GIS database

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440 Park Avenue South, New York, NY 10016

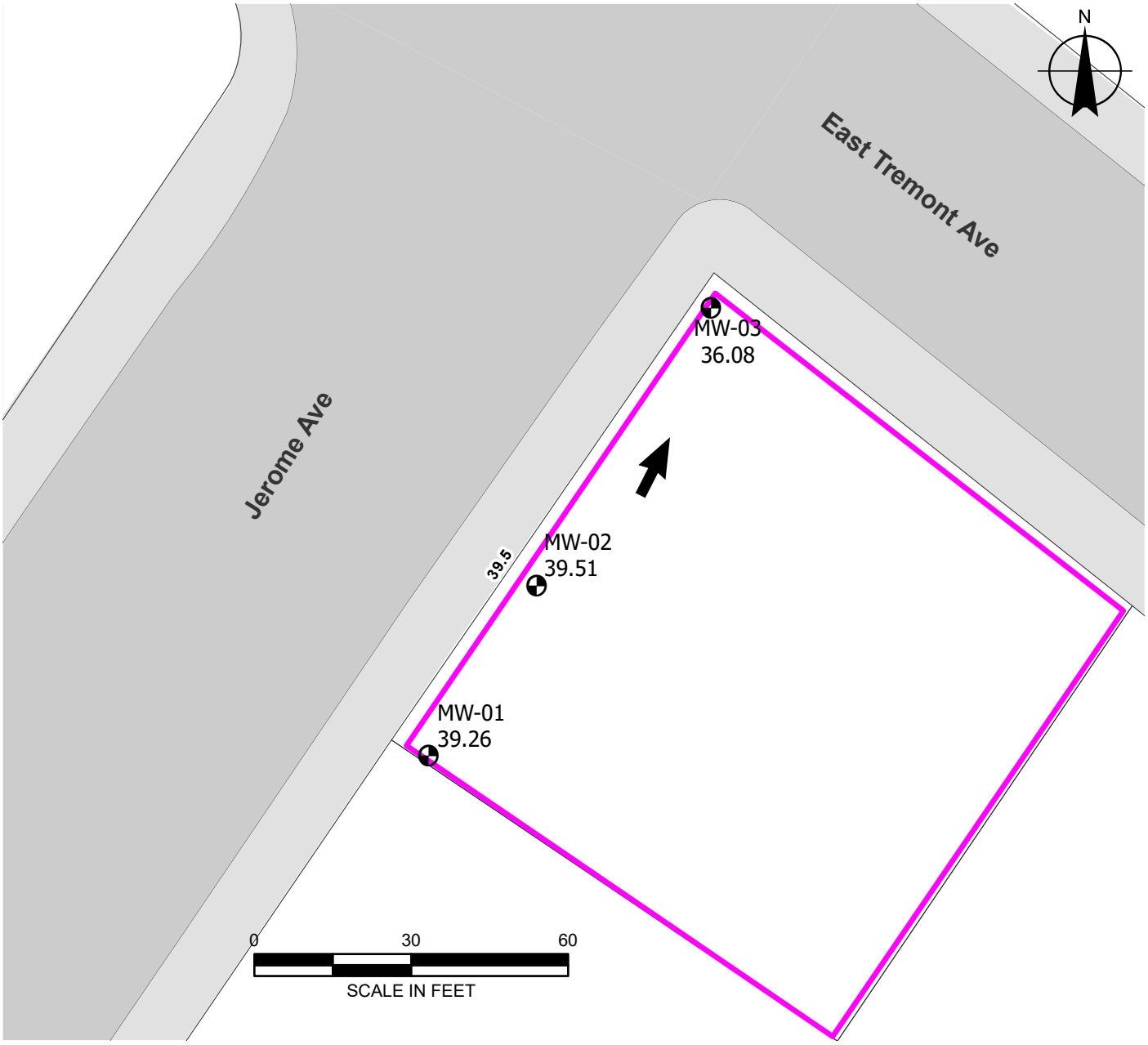
1956 Jerome Avenue
Bronx, New York

TAX MAP

DATE
9/20/2021

PROJECT NO.
210024

FIGURE
4



LEGEND

- PROJECT SITE BOUNDARY
- LOT BOUNDARY AND TAX LOT NUMBER
- POST-REMEDIAL MONITORING WELL LOCATION
- APPROXIMATE GROUNDWATER FLOW DIRECTION

Groundwater Elevation Summary

Monitoring Well	Top of Cap Elevation (ft.)[1]	Depth to Water (ft. bgs)[2]	Depth to Bottom (ft. bgs)[2]	Groundwater Elevation (ft.)
MW-01	45.36	6.10	17.90	39.26
MW-02	45.01	5.50	20.40	39.51
MW-03	45.48	9.40	17.50	36.08

Notes:

[1]Elevation measured in feet (ft.) above mean sea level according to the North American Vertical Datum of 1988 (NAVD88) on July 7, 2023.

[2]Depth to water measured in feet below ground surface (ft. bgs) at each sample location.

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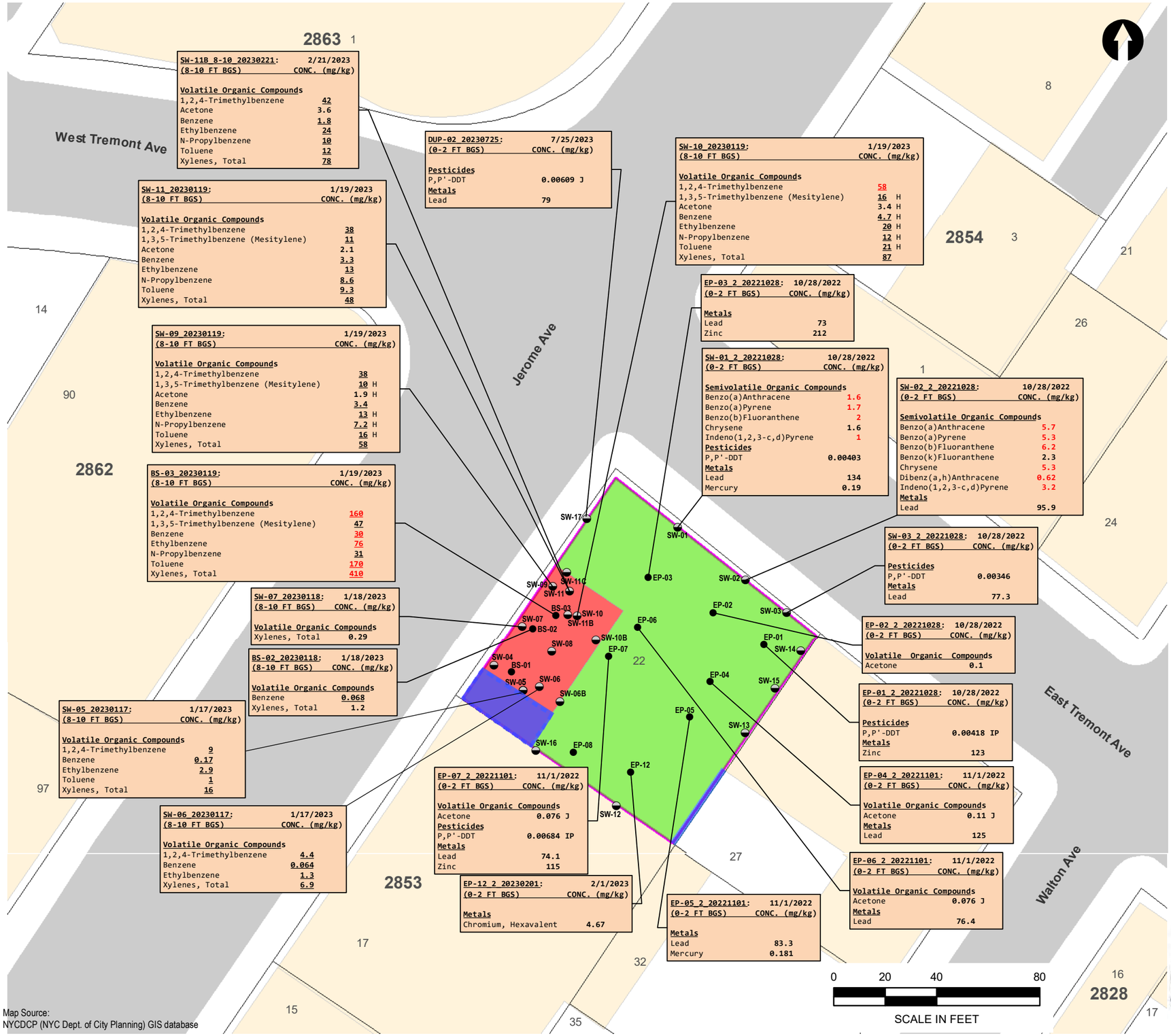
Seton Brilla Charter School
1956 Jerome Avenue,
Bronx, NY

GROUNDWATER ELEVATIONS - JULY 7, 2023

DATE
9/15/2023

PROJECT NO.
210024

FIGURE
5



LEGEND

- PROJECT SITE BOUNDARY
- 22 — LOT BOUNDARY AND TAX LOT
- 2853 — BLOCK NUMBER
- BUILDING
- REMEDIAL EXCAVATION AREA (8-10 FEET)
- REMEDIAL EXCAVATION AREA (0-2 FT)
- SIDEWALL SAMPLES COULD NOT BE COLLECTED ABOVE THE GROUNDWATER TABLE DUE TO THE PRESENCE OF SUPPORT OF EXCAVATION
- BOTTOM SAMPLE LOCATION
- SIDEWALL SAMPLE LOCATION

NOTE:
Soil within the groundwater treatment area was excavated 2 feet into the groundwater table. Soil samples collected from this area are saturated soil samples and their concentrations are reflective of groundwater contamination, which is being addressed as part of the groundwater treatment program.

Part 375 Soil Cleanup Objectives (SCOs): SCOs listed in the New York State Department of Environmental Conservation(NYSDEC) "Part 375" Regulations (6 NYCRR Part 375).

Exceedances of NYSDEC Unrestricted Use Soil Cleanup Objectives (UUSCOs) are presented in bold font.

Exceedances of NYSDEC Restricted Residential Soil Cleanup Objectives (RRSCOs) are presented in red.

Exceedances of NYSDEC Protected Groundwater Soil Cleanup Objectives (PGWSCOs) are presented in underlined font.

mg/kg:milligrams per kilogram = parts per million (ppm)
DUP-01_20230221 is a blind duplicate of sample SW-10B_8-10_20230221

J: The reported value is estimated.
H: Sample result is estimated and biased high.

	PART 375 PROTECTION OF GROUNDWATER mg/kg	PART 375 RESTRICTED RESIDENTIAL mg/kg	PART 375 UNRESTRICTED mg/kg
Volatile Organic Compounds			
1,2,4-Trimethylbenzene	3.6	52	3.6
1,3,5-Trimethylbenzene (Mesitylene)	8.4	52	8.4
Acetone	NA	100	0.05
Benzene	0.06	4.8	0.06
Ethylbenzene	1	41	1
N-Propylbenzene	3.9	100	3.9
Toluene	0.7	100	0.7
Xylenes, Total	1.6	100	0.26
Semivolatile Organic Compounds			
Benzo(a)Anthracene	NA	1	1
Benzo(a)Pyrene	NA	1	1
Benzo(b)Fluoranthene	NA	1	1
Benzo(k)Fluoranthene	NA	3.9	0.8
Chrysene	NA	3.9	1
Dibenz(a,h)Anthracene	NA	0.33	0.33
Indeno(1,2,3-c,d)Pyrene	NA	0.5	0.5
Metals			
Chromium, Hexavalent	NA	110	1
Lead	NA	400	63
Mercury	NA	0.81	0.18
Zinc	NA	10,000	109
Pesticides			
P,P'-DDT	NA	7.9	0.0033

Sample ID — Sample date
EP-02_2_20221028: 10/28/2022
(0-2 FT BGS) CONC. (mg/kg)
Volatile Organic Compounds
Acetone 0.1
Analyte/Compound — Concentration

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1956 Jerome Avenue
Bronx, New York

Documentation sample Concentrations Above NYSDEC UUSCOs, PGWSCOs, and/or RRSCOs

DATE
8/24/2023

PROJECT NO.
210024

FIGURE
6A

Map Source:
NYCDCP (NYC Dept. of City Planning) GIS database

LEGEND

- PROJECT SITE BOUNDARY
- 22 LOT BOUNDARY AND TAX LOT
- 2853 BLOCK NUMBER
- BUILDING
- BOTTOM SAMPLE LOCATION WITH COLLECTION DEPTH IN FEET
- SIDEWALL SAMPLE LOCATION WITH COLLECTION DEPTH IN FEET
- EP-05 (2') = FEET BELOW INITIAL GROUND SURFACE

0 10 20 40
SCALE IN FEET

STATE OF NEW YORK
REBECCA A. KINAL
082046-1
LICENSED PROFESSIONAL ENGINEER

AKRF
440 Park Avenue South, New York, NY 10016

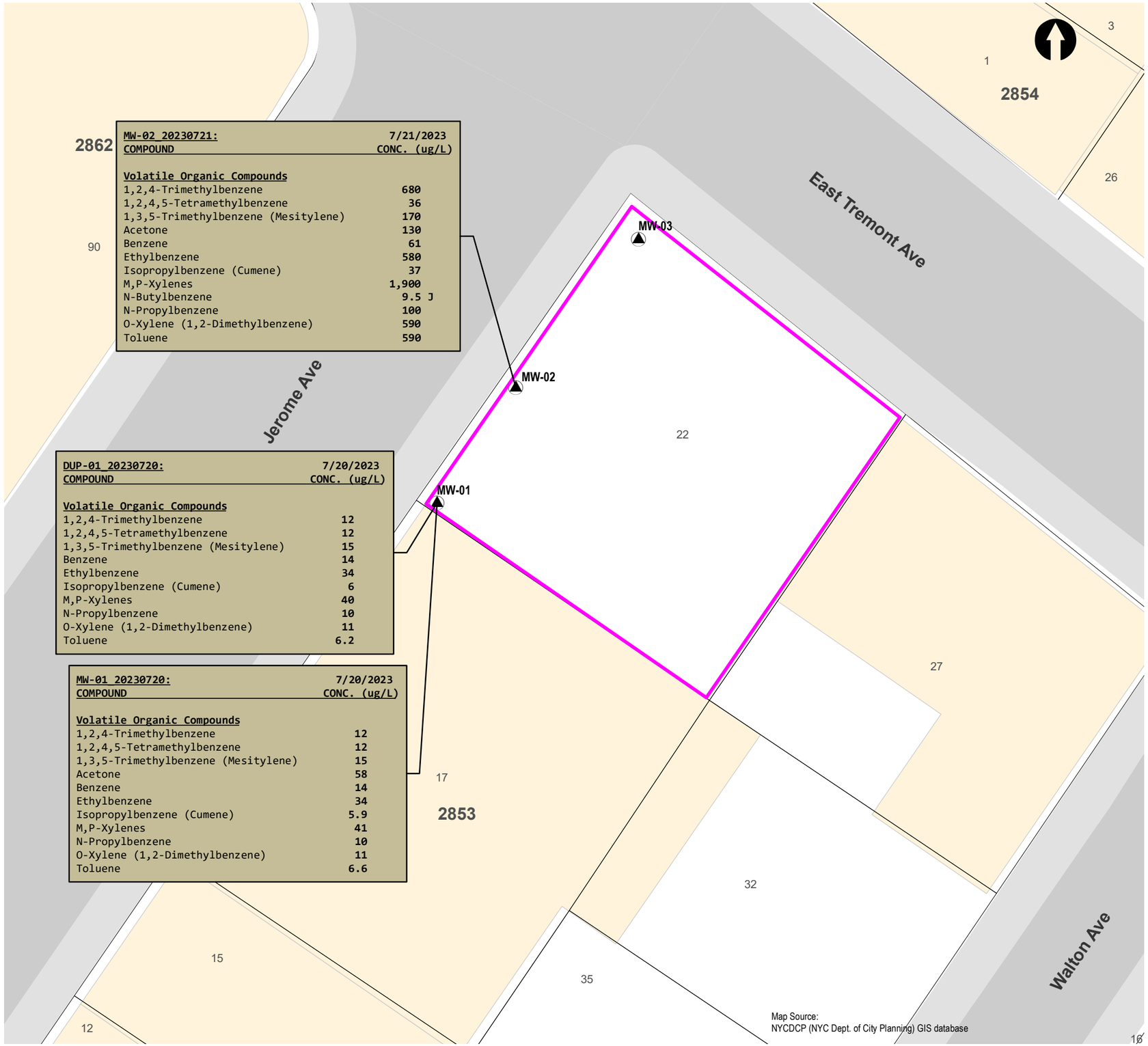
1956 Jerome Avenue
Bronx, New York

Documentation Sample Collection Depths

DATE
11/29/2023

PROJECT NO.
210024

FIGURE
6B



MW-02_20230721:	7/21/2023
COMPOUND	CONC. (ug/L)
Volatile Organic Compounds	
1,2,4-Trimethylbenzene	680
1,2,4,5-Tetramethylbenzene	36
1,3,5-Trimethylbenzene (Mesitylene)	170
Acetone	130
Benzene	61
Ethylbenzene	580
Isopropylbenzene (Cumene)	37
M,P-Xylenes	1,900
N-Butylbenzene	9.5 J
N-Propylbenzene	100
O-Xylene (1,2-Dimethylbenzene)	590
Toluene	590

DUP-01_20230720:	7/20/2023
COMPOUND	CONC. (ug/L)
Volatile Organic Compounds	
1,2,4-Trimethylbenzene	12
1,2,4,5-Tetramethylbenzene	12
1,3,5-Trimethylbenzene (Mesitylene)	15
Benzene	14
Ethylbenzene	34
Isopropylbenzene (Cumene)	6
M,P-Xylenes	40
N-Propylbenzene	10
O-Xylene (1,2-Dimethylbenzene)	11
Toluene	6.2

MW-01_20230720:	7/20/2023
COMPOUND	CONC. (ug/L)
Volatile Organic Compounds	
1,2,4-Trimethylbenzene	12
1,2,4,5-Tetramethylbenzene	12
1,3,5-Trimethylbenzene (Mesitylene)	15
Acetone	58
Benzene	14
Ethylbenzene	34
Isopropylbenzene (Cumene)	5.9
M,P-Xylenes	41
N-Propylbenzene	10
O-Xylene (1,2-Dimethylbenzene)	11
Toluene	6.6

LEGEND

- PROJECT SITE BOUNDARY
- 22 LOT BOUNDARY AND TAX LOT NUMBER
- 2853 BLOCK NUMBER
- BUILDING
- GROUNDWATER MONITORING WELL LOCATIONS

NYSDEC TOGS Class GA Ambient Water Quality Standard and Guidance Values (AWQSGVs):
New York State Department of Environmental Conservation (NYSDEC) Technical and Operational Guidance Series (TOGS) (1.1.1):

µg/L: micrograms per Liter = parts per billion (ppb)
ng/L :1 nanogram per Liter =1,000 parts per trillion (ppt)

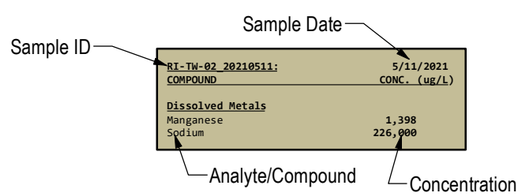
Exceedances of NYSDEC AWQSGVs and Exceedances of NYSDEC Screening Values are shown in bold font.

J: The concentration given is an estimated value.

DUP-01_20230720 is a blind duplicate of sample MW-01_20230720

	NYSDEC AWQSGVs µg/l
Volatile Organic Compounds	
1,2,4,5-Tetramethylbenzene	5
1,2,4-Trimethylbenzene	5
1,3,5-Trimethylbenzene (Mesitylene)	5
Acetone	50
Benzene	1
Ethylbenzene	5
Isopropylbenzene (Cumene)	5
N-Butylbenzene	5
N-Propylbenzene	5
O-Xylene (1,2-Dimethylbenzene)	5
Toluene	5
Xylenes, M,P	5

0 15 30 60
SCALE IN FEET



AKRF
440 Park Avenue South, New York, NY 10016

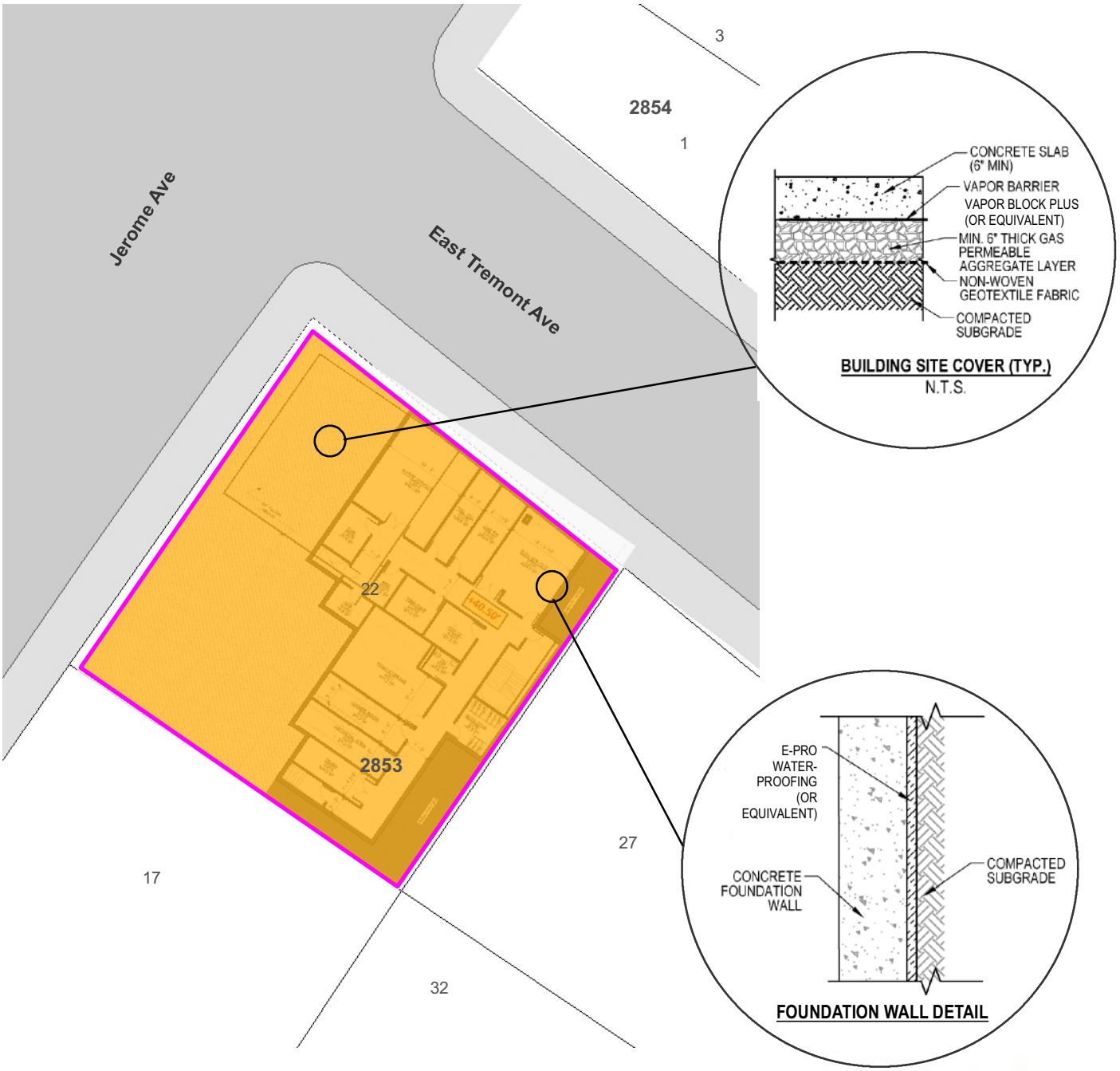
1956 Jerome Avenue
Bronx, New York

Post-Remedial Groundwater Sample Analytical Results Above AWQSGVs

DATE
9/26/2023

PROJECT NO.
210024

FIGURE
7



BUILDING SITE COVER (TYP.)
N.T.S.

FOUNDATION WALL DETAIL

LEGEND

- PROJECT SITE BOUNDARY
- 22 — LOT BOUNDARY AND TAX LOT NUMBER
- 2853 — BLOCK NUMBER
- MINIMUM 6-INCH THICK CONCRETE BUILDING SLAB

SCALE IN FEET

Map Source:
NYCDCP (NYC Dept. of City Planning) GIS database

AKRF
440 Park Avenue South, New York, NY 10016

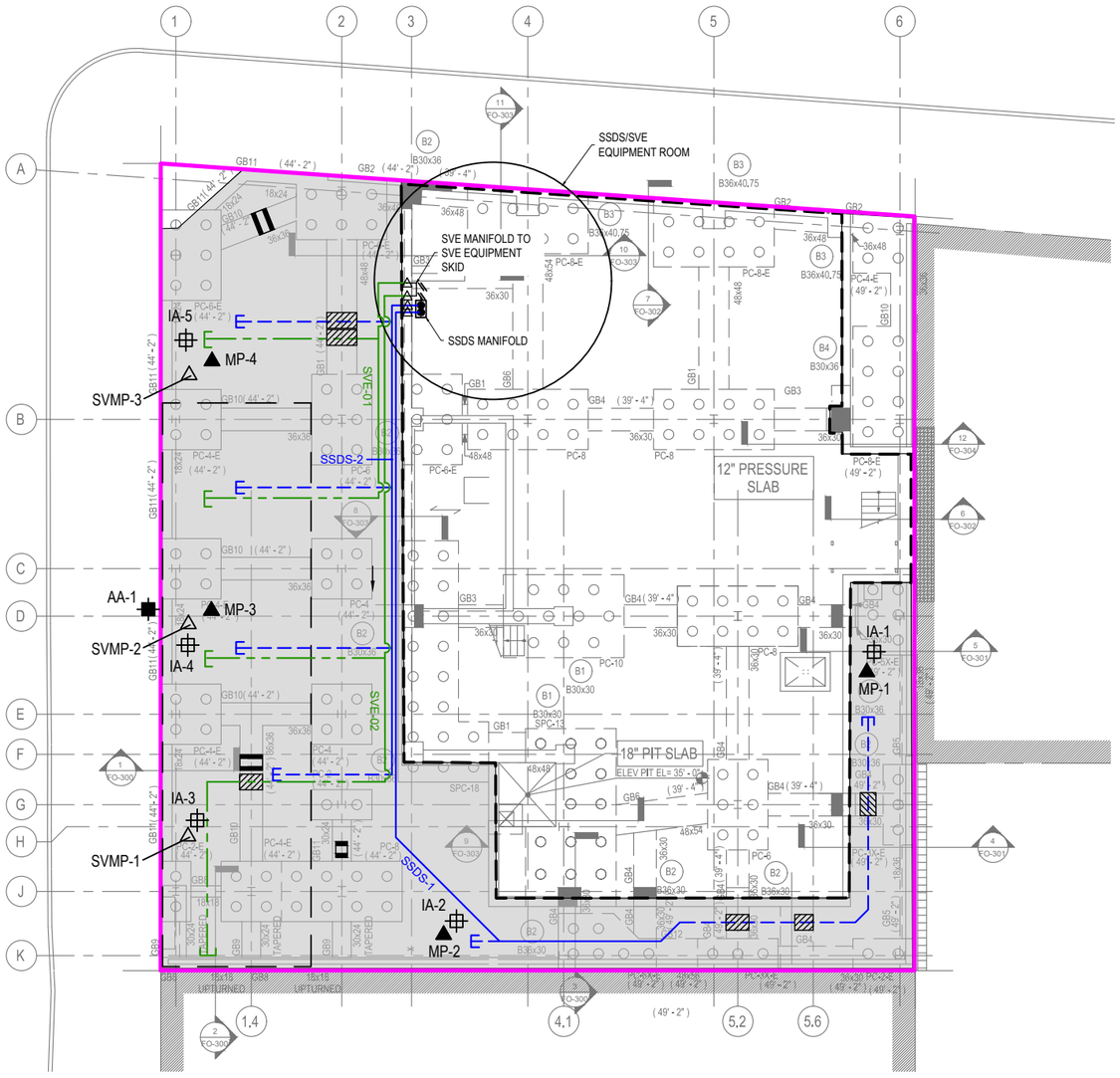
1956 Jerome Avenue
Bronx, New York

AS-BUILT COMPOSITE COVER SYSTEM PLAN

DATE
7/31/2023

PROJECT NO.
210024

FIGURE
8



LEGEND

- BCP SITE BOUNDARY
- SVE TREATMENT ZONE - GAS PERMEABLE AGGREGATE UNDERLAIN BY 6-MIL PLASTIC SHEETING
- SOLID SCHEDULE 40 4" PVC PIPE BENEATH SLAB
- SLOTTED SCHEDULE 40 4" PVC PIPE BENEATH SLAB WITH ENDCAP
- SVE 4" Ø SOLID SCHEDULE 40 PVC PIPE
- SVE 4" Ø SLOTTED SCHEDULE 40 PVC PIPE WITH PVC END CAP
- SSDS/SVE PIPE PENETRATION THROUGH VERTICAL FOUNDATION WALL
- PIPE SLEEVE THROUGH FOUNDATION ELEMENT
- COMMUNICATION SLEEVE THROUGH FOUNDATION ELEMENT
- SSDS MANIFOLD
- MP-1 — MONITORING POINT LOCATION WITH ID
- SVMP-1 — SOIL VAPOR MONITORING POINT LOCATION WITH ID
- INDOOR AIR SAMPLE LOCATION
- AMBIENT AIR SAMPLE LOCATION
- EXTENT OF 20-MIL VAPORBLOCK PLUS VAPOR BARRIER AND GAS-PERMEABLE AGGREGATE
- EXTENT OF E-PRO WATERPROOFING

NOTE:
SUB-SLAB SOIL VAPOR SAMPLES WILL BE COLLECTED FROM MONITORING POINTS MP-1, MP-2, SVMP-1, SVMP-2, AND SVMP-3 PAIRED WITH INDOOR AIR SAMPLES.

SSDS MONITORING POINT LOCATIONS	
ID	**ROOM**
MP-1	109B NON-FOOD STORAGE
MP-2	109A PACKAGE
MP-3	114 MS MAIN OFFICE
MP-4	HALLWAY (NE)

0 10 20 40
SCALE IN FEET

SOURCE:
BASE MAP FROM GF55 ARCHITECTS, LLP "FOUNDATION PLAN", FO-100.00, DATED 06-29-2022.

AKRF
440 Park Avenue South, New York, NY 10016

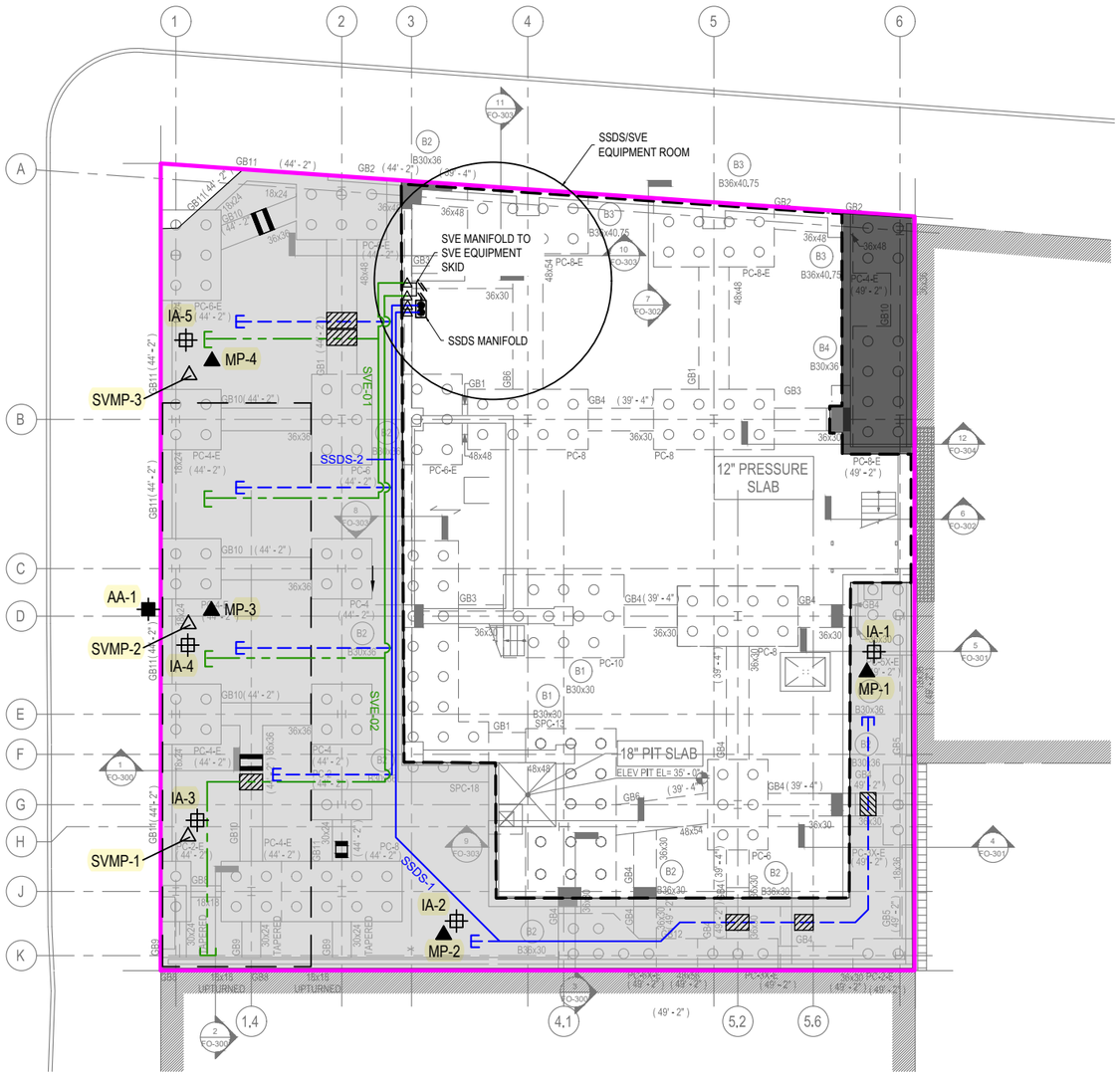
1956 Jerome Avenue
Bronx, New York

SSDS/SVE PIPING LAYOUT

DATE
12/1/2023

PROJECT NO.
210024

FIGURE
9



LEGEND

- BCP SITE BOUNDARY
- SVE TREATMENT ZONE - GAS PERMEABLE AGGREGATE UNDERLAIN BY 6-MIL PLASTIC SHEETING
- SOLID SCHEDULE 40 4" PVC PIPE BENEATH SLAB
- SLOTTED SCHEDULE 40 4" PVC PIPE BENEATH SLAB WITH ENDCAP
- SVE 4" Ø SOLID SCHEDULE 40 PVC PIPE
- SVE 4" Ø SLOTTED SCHEDULE 40 PVC PIPE WITH PVC END CAP
- SSDS/SVE PIPE PENETRATION THROUGH VERTICAL FOUNDATION WALL
- PIPE SLEEVE THROUGH FOUNDATION ELEMENT
- COMMUNICATION SLEEVE THROUGH FOUNDATION ELEMENT
- SSDS MANIFOLD
- MP-1 — MONITORING POINT LOCATION WITH ID
- SVMP-1 — SOIL VAPOR MONITORING POINT LOCATION WITH ID
- IA-1 — INDOOR AIR SAMPLE LOCATION
- AA-1 — AMBIENT AIR SAMPLE LOCATION
- EXTENT OF 20-MIL VAPORBLOCK PLUS VAPOR BARRIER AND GAS-PERMEABLE AGGREGATE
- EXTENT OF E-PRO WATERPROOFING

NOTE:
SUB-SLAB SOIL VAPOR SAMPLES WILL BE COLLECTED FROM MONITORING POINTS MP-1, MP-2, SVMP-1, SVMP-2, AND SVMP-3 PAIRED WITH INDOOR AIR SAMPLES.

SSDS MONITORING POINT LOCATIONS	
ID	**ROOM**
MP-1	109B NON-FOOD STORAGE
MP-2	109A PACKAGE
MP-3	114 MS MAIN OFFICE
MP-4	HALLWAY (NE)

SOURCE:
BASE MAP FROM GF55 ARCHITECTS, LLP "FOUNDATION PLAN", FO-100.00, DATED 06-29-2022.

0 10 20 40
SCALE IN FEET

AKRF
440 Park Avenue South, New York, NY 10016

1956 Jerome Avenue
Bronx, New York

PROPOSED SOIL VAPOR, INDOOR AIR AND AMBIENT AIR SAMPLE LOCATIONS

DATE
12/1/2023

PROJECT NO.
210024

FIGURE
10A

2ND FLOOR PLAN

LEGEND

IA-05 PROPOSED INDOOR AIR SAMPLE LOCATION

0 10 20 40

SCALE IN FEET

Source:
Bolivar Development Revised Floor Plans, 7-13-2021

AKRF
440 Park Avenue South, New York, NY 10016

1956 Jerome Avenue
Bronx, New York

PROPOSED SECOND FLOOR INDOOR AIR SAMPLE LOCATIONS

DATE
11/29/2023

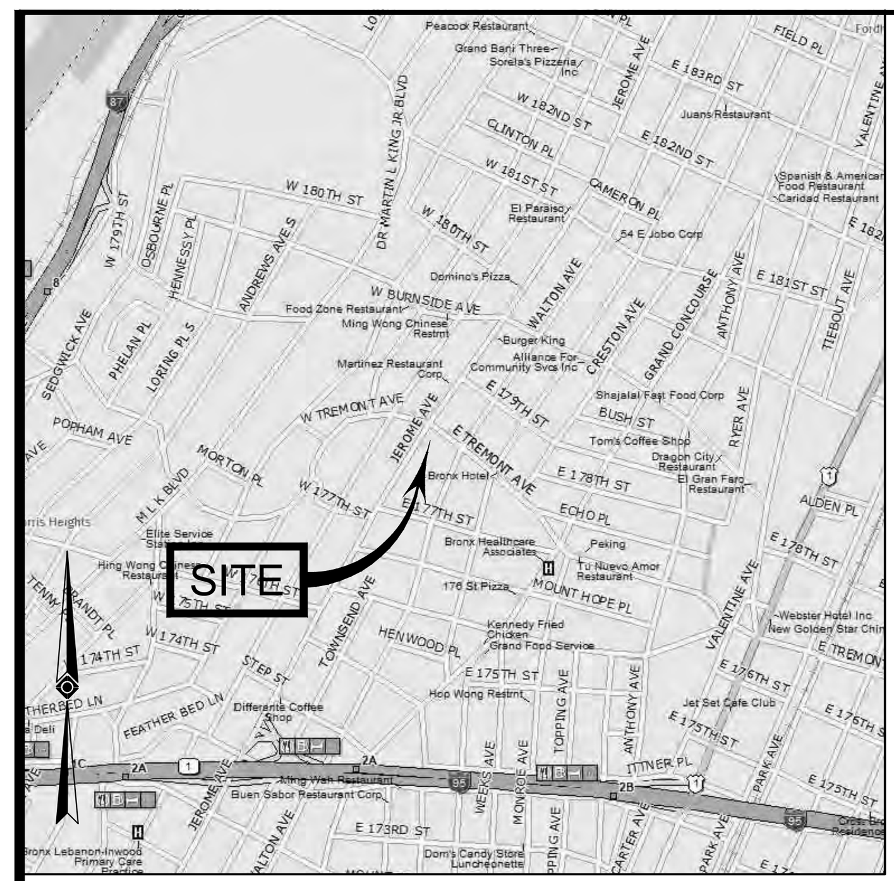
PROJECT NO.
210024

FIGURE
10B

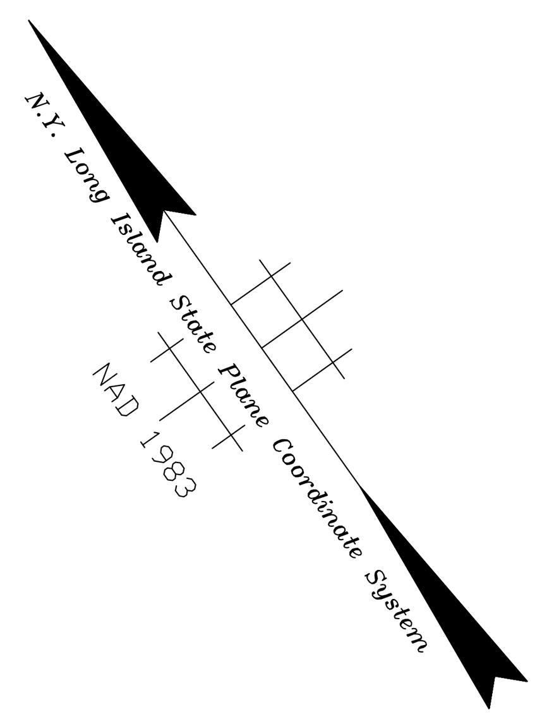
 W:\Projects\210024 - 1956 JEROME AVENUE\Technical\Hazmat\CAD\SMP\210024 Figure 10B Proposed Indoor Air Sample Locations.dwg last save: jszalus 11/29/2023 4:11 PM

APPENDIX A

ENVIRONMENTAL EASEMENT



VICINITY MAP
©2008 DeLorme. Street Atlas USA
(NOT TO SCALE)



NOTES:

1. PROPERTY KNOWN AS LOT 22, BLOCK 2853.
2. AREA = 10,369 S.F. OR 0.238 AC.
3. THE LOCATION OF UNDERGROUND UTILITIES HAVE NOT BEEN SHOWN. UTILITY INFORMATION SHOWN IS LIMITED TO VISIBLE UTILITY HARDWARE AND UTILITY MARKOUTS AT THE SURFACE AND DOES NOT INCLUDE SUCH ITEMS AS SUBSURFACE PIPING, UTILITY LINES, ETC. BEFORE ANY EXCAVATION IS TO BEGIN, UNDERGROUND UTILITIES SHOULD BE VERIFIED BY THE PROPER UTILITY COMPANIES. CONTROL POINT ASSOCIATES, INC. DOES NOT GUARANTEE THE UTILITIES SHOWN COMPRISE SUCH UTILITIES IN THE AREA EITHER IN SERVICE OR ABANDONED.
4. THIS PLAN IS BASED ON INFORMATION PROVIDED, BY A SURVEY PREPARED IN THE FIELD BY CONTROL POINT ASSOCIATES, INC. AND OTHER REFERENCE MATERIAL AS LISTED HEREON.
5. THIS SURVEY IS PREPARED WITH REFERENCE TO A TITLE REPORT PREPARED BY FIRST AMERICAN TITLE INSURANCE COMPANY, FILE NO. 5127007-F-NY-CR-KV, WITH AN EFFECTIVE DATE OF MARCH 22, 2023. WHERE THE FOLLOWING SURVEY RELATED EXCEPTIONS APPEAR IN SCHEDULE B:

   (4) PARTY WALL AGREEMENT RECORDED APRIL 29, 1921 IN LIBER 297, PAGE 377. - SHOWN HEREON
6. THE EXISTENCE OF UNDERGROUND STORAGE TANKS, IF ANY, WAS NOT KNOWN AT THE TIME OF THE FIELD SURVEY.
7. THE OFFSETS SHOWN ARE NOT TO BE USED FOR THE CONSTRUCTION OF ANY STRUCTURE, FENCE, PERMANENT ADDITION, ETC.
8. THIS IS TO CERTIFY THAT THERE ARE NO STREAMS NOR NATURAL WATERCOURSES IN THE PROPERTY AS SHOWN ON THIS SURVEY.

REFERENCES:

1. NEW YORK CITY DIGITAL TAX MAP OF THE BRONX BLOCK 2853, CITY AND STATE OF NEW YORK.
2. SEWER MAPPING. PROVIDED BY NYC DEPARTMENT OF ENVIRONMENTAL PROTECTION BUREAU OF WATER AND SEWER OPERATIONS, 59-17 JUNCTION BOULEVARD, 3RD FLOOR. CORONA, NY 11373-5108. MAP PRINT DATE : 01/08/2021
3. WATER MAPPING. PROVIDED BY NYC DEPARTMENT OF ENVIRONMENTAL PROTECTION BUREAU OF WATER AND SEWER OPERATIONS, 59-17 JUNCTION BOULEVARD, 3RD FLOOR. CORONA, NY 11373-5108. MAP PRINT DATE : 01/08/2021
4. ANNOTATED SEWER MAPPING. PROVIDED BY CLIENT, PREPARED BY NYC DEPARTMENT OF ENVIRONMENTAL PROTECTION BUREAU OF WATER AND SEWER OPERATIONS, 59-17 JUNCTION BOULEVARD, 3RD FLOOR. CORONA, NY 11373-5108.

LEGAL AND ENVIRONMENTAL EASEMENT DESCRIPTION

ALL THAT CERTAIN PLOT, PIECE OR PARCEL OF LAND, SITUATE, LYING AND BEING IN THE BOROUGH AND COUNTY OF BRONX, CITY AND STATE OF NEW YORK, BOUNDED AND DESCRIBED AS FOLLOWS:

BEGINNING AT THE CORNER FORMED BY THE INTERSECTION OF THE EASTERLY SIDE OF JEROME AVENUE AND THE SOUTHERLY SIDE OF TREMONT AVENUE;

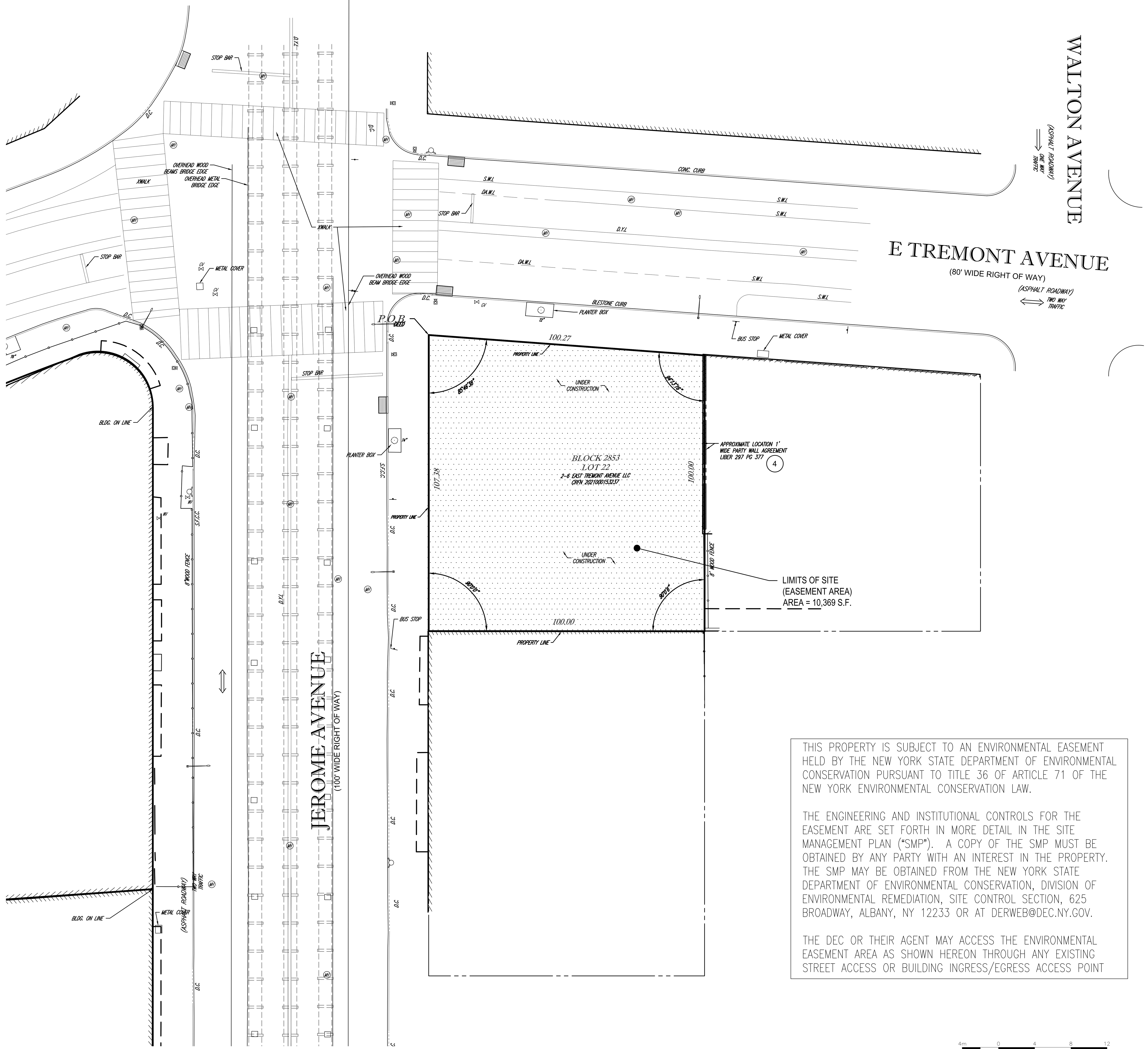
RUNNING THENCE SOUTHERLY ALONG THE SAID EASTERLY SIDE OF JEROME AVENUE, 107.38 FEET;

RUNNING THENCE EASTERLY AND ON A LINE WHICH ON ITS NORTHERLY SIDE FORMS AN ANGLE OF 90 DEGREES WITH THE PRECEDING COURSE, 100 FEET;

RUNNING THENCE NORTHERLY PARALLEL WITH THE SAID EASTERLY SIDE OF JEROME AVENUE AND PART OF THE WAY THROUGH A PARTY WALL 100 FEET TO THE SOUTHERLY SIDE OF TREMONT AVENUE; AND

THENCE WESTERLY ALONG THE SOUTHERLY SIDE OF TREMONT AVENUE 100.27 FEET TO THE POINT OR PLACE OF BEGINNING

CONTAINING = 10,369 S.F. OR 0.238 AC.



THIS PROPERTY IS SUBJECT TO AN ENVIRONMENTAL EASEMENT HELD BY THE NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION PURSUANT TO TITLE 36 OF ARTICLE 71 OF THE NEW YORK ENVIRONMENTAL CONSERVATION LAW.

THE ENGINEERING AND INSTITUTIONAL CONTROLS FOR THE EASEMENT ARE SET FORTH IN MORE DETAIL IN THE SITE MANAGEMENT PLAN ("SMP"). A COPY OF THE SMP MUST BE OBTAINED BY ANY PARTY WITH AN INTEREST IN THE PROPERTY. THE SMP MAY BE OBTAINED FROM THE NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION, DIVISION OF ENVIRONMENTAL REMEDIATION, SITE CONTROL SECTION, 625 BROADWAY, ALBANY, NY 12233 OR AT DERWEB@DEC.NY.GOV.

THE DEC OR THEIR AGENT MAY ACCESS THE ENVIRONMENTAL EASEMENT AREA AS SHOWN HEREON THROUGH ANY EXISTING STREET ACCESS OR BUILDING INGRESS/EGRESS ACCESS POINT

LEGEND

- EXISTING CONTOUR
- BRIDGE SPOT ELEVATION
- EXISTING SPOT ELEVATION
- EXIST. TOP OF CURB ELEVATION
- EXIST. GUTTER ELEVATION
- EXIST. TOP OF WALL ELEVATION
- EXIST. BOTTOM OF WALL ELEVATION
- DEPRESSED CURB
- HYDRANT
- SIAMESE CONNECTION
- WATER VALVE
- POINT INDICATOR VALVE
- WATER METER
- UNKNOWN VALVE
- GAS VALVE
- ROOF DRAIN
- DETECTABLE WARNING PAD
- UTILITY POLE
- UTILITY POLE/LIGHT POLE/SOLAR PANEL
- GUY WIRE
- STREET LIGHT
- TRAFFIC SIGNAL POLE
- TRAFFIC SIGNAL
- SIGN
- UNKNOWN MANHOLE
- CATCH BASIN OR INLET
- DECIDUOUS TREE & TRUNK SIZE
- S.F.C.C. STEEL FACED CONC. CURB
- C.L.F. CHAIN LINK FENCE
- D.C. DEPRESSED CURB
- S.W.L. SOLID WHITE LINE
- S.Y.L. SOLID YELLOW LINE
- S.B.L. SOLID BLUE LINE
- DA.W.L. DASHED WHITE LINE
- S.B. STOP BAR
- 1.0' OFFSET OF STRUCTURE AT GROUND LEVEL RELATIVE TO PROPERTY LINE
- T.O.D. TOP OF DEBRIS
- EASEMENT AREA

1:200 — 4m 0 4 8 12

GRAPHIC SCALE
20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft.

THIS SURVEY IS CERTIFIED TO:
1. FIRST AMERICAN TITLE INSURANCE COMPANY
2. 2-6 EAST TREAMONT AVENUE LLC
3. SEP 1956 JEROME AVE LLC
4. BRILLA COLLEGE PREPARTORY CHARTER SCHOOLS
5. M&T BANK, AS ADMINISTRATIVE AGENT, A NEW YORK BANKING CORPORATION, ITS SUCCESSORS AND ASSIGNS AS THEIR INTERESTS MAY APPEAR

THIS IS TO CERTIFY THAT THIS MAP OR PLAT AND THE SURVEY ON WHICH IT WAS BASED WERE MADE IN ACCORDANCE WITH THE "2021 MINIMUM STANDARD DETAIL REQUIREMENTS FOR ALTA/NSPS LAND TITLE SURVEYS", JOINTLY ESTABLISHED AND ADOPTED BY ALTA AND NSPS, AND INCLUDES ITEMS 2, 3, 4, 8, 9, 13 AND 14 OF TABLE A THEREOF. THE FIELD WORK WAS COMPLETED ON 05-05-2023.

NEW YORK CITY ONE CALL CENTER & L.I. 1-800-272-4480 STOP-CALL-THEN Dig Safely.

UNAUTHORIZED ALTERATION OR ADDITION TO A SURVEY MAP BEARING A LICENSED LAND SURVEYOR'S SEAL IS A VIOLATION OF SECTION 7209, SUB-DIVISION 2, OF THE NEW YORK STATE EDUCATION LAW.

ONLY COPIES FROM THE ORIGINAL OF THIS SURVEY MARKED WITH AN ORIGINAL OF THE LAND SURVEYOR'S EMBOSSED SEAL SHALL BE CONSIDERED TO BE VALID TRUE COPIES.

PREPARED BY:
CONTROL POINT ASSOCIATES, INC. PC
9 TIMES SQUARE,
200 WEST 41ST STREET, SUITE 1203
NEW YORK, NY 10136
646.780.0411 - 908.668.9595 FAX
WWW.CPASURVEY.COM
WARREN, NJ 908.668.0099
CHALFONT, PA 215.712.9800
MT. LAUREL, NJ 609.857.2099
LONG ISLAND, NY 631.580.2645
SOUTHBOROUGH, MA 508.948.3000
ALBANY, NY 518.217.5010

NO.	DATE	BY	DESCRIPTION	APPROVED

REVISIONS

PROJECT NAME

BOLIVAR DEVELOPMENT

1956 JEROME AVENUE
LOT 22, BLOCK 2853
BOROUGH & COUNTY OF BRONX,
CITY & STATE OF NEW YORK

DRAWING TITLE

ALTA/NSPS LAND TITLE SURVEY

SEAL & SIGNATURE

NOT A VALID ORIGINAL DOCUMENT UNLESS SEALED
STATE OF NEW YORK — JAMES C. WEED — 050765 — LICENSED LAND SURVEYOR

05-08-2023
JAMES C. WEED — DATE
NEW YORK PROFESSIONAL LAND SURVEYOR #50765-1

FIELD DATE:	05-05-2023
FIELD BK:	23-07
F. B. PAGE:	104
DATE:	05-08-2023
SCALE:	1"=20'
PROJECT No:	01-200416-01
DRAWING BY:	JJW
CHK BY:	MW
APPROVED BY:	JCW
DWG No:	V-001.0.0
CAD FILE No: 01-200416-00	PAGE No: 1 OF 1

NYC DEPARTMENT OF FINANCE
OFFICE OF THE CITY REGISTER

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2023083100216001002E6F32

RECORDING AND ENDORSEMENT COVER PAGE **PAGE 1 OF 10**

Document ID: 2023083100216001 Document Date: 08-28-2023 Preparation Date: 09-01-2023
Document Type: EASEMENT
Document Page Count: 9

PRESENTER:
KENSINGTON VANGUARD NATIONAL LAND SERVICES
39 W37TH STREET
TITLE NO.5155806
NEW YORK, NY 10018
212-532-8686

RETURN TO:
KENSINGTON VANGUARD NATIONAL LAND SERVICES
39 W37TH STREET
TITLE NO.5155806
NEW YORK, NY 10018
212-532-8686

PROPERTY DATA

Borough	Block	Lot	Unit	Address
BRONX	2853	22	Entire Lot	1956 JEROME AVENUE

Property Type: COMMERCIAL REAL ESTATE

CROSS REFERENCE DATA

CRFN_____ *or* DocumentID_____ *or* _____ Year_____ Reel____ Page_____ *or* File Number_____

PARTIES

GRANTOR/SELLER:
2-6 EAST TREMONT AVENUE LLC
450 WEST 14TH ST., 8TH FLOOR
NEW YORK, NY 10014

GRANTEE/BUYER:
N.Y.S DEPARTMENT OF ENVIRONMANTAL CONSERVATION
625 BROADWAY
ALBANY, NY 12233

FEES AND TAXES

Mortgage :

Mortgage Amount:	$	0.00
Taxable Mortgage Amount:	$	0.00
Exemption:		
TAXES: County (Basic):	$	0.00
City (Additional):	$	0.00
Spec (Additional):	$	0.00
TASF:	$	0.00
MTA:	$	0.00
NYCTA:	$	0.00
Additional MRT:	$	0.00
TOTAL:	$	0.00
Recording Fee:	$	82.00
Affidavit Fee:	$	0.00

Filing Fee: $ 100.00

NYC Real Property Transfer Tax: $ 0.00

NYS Real Estate Transfer Tax: $ 0.00

RECORDED OR FILED IN THE OFFICE OF THE CITY REGISTER OF THE CITY OF NEW YORK
Recorded/Filed 09-05-2023 15:21
City Register File No.(CRFN): **2023000226223**

City Register Official Signature

ENVIRONMENTAL EASEMENT GRANTED PURSUANT TO ARTICLE 71, TITLE 36 OF THE NEW YORK STATE ENVIRONMENTAL CONSERVATION LAW

THIS INDENTURE made this 28th day of August, 2023, between Owner, 2-6 East Tremont Avenue LLC, having an office at 450 West 14th St., 8th Floor, New York, New York, 10014 (the "Grantor"), and The People of the State of New York (the "Grantee."), acting through their Commissioner of the Department of Environmental Conservation (the "Commissioner", or "NYSDEC" or "Department" as the context requires) with its headquarters located at 625 Broadway, Albany, New York 12233,

WHEREAS, the Legislature of the State of New York has declared that it is in the public interest to encourage the remediation of abandoned and likely contaminated properties ("sites") that threaten the health and vitality of the communities they burden while at the same time ensuring the protection of public health and the environment; and

WHEREAS, the Legislature of the State of New York has declared that it is in the public interest to establish within the Department a statutory environmental remediation program that includes the use of Environmental Easements as an enforceable means of ensuring the performance of operation, maintenance, and/or monitoring requirements and the restriction of future uses of the land, when an environmental remediation project leaves residual contamination at levels that have been determined to be safe for a specific use, but not all uses, or which includes engineered structures that must be maintained or protected against damage to perform properly and be effective, or which requires groundwater use or soil management restrictions; and

WHEREAS, the Legislature of the State of New York has declared that Environmental Easement shall mean an interest in real property, created under and subject to the provisions of Article 71, Title 36 of the New York State Environmental Conservation Law ("ECL") which contains a use restriction and/or a prohibition on the use of land in a manner inconsistent with engineering controls which are intended to ensure the long term effectiveness of a site remedial program or eliminate potential exposure pathways to hazardous waste or petroleum; and

WHEREAS, Grantor, is the owner of real property located at the address of 1956 Jerome Avenue in the City of New York, County of Bronx and State of New York, known and designated on the tax map of the New York City Department of Finance as tax map parcel number: Block 2853 Lot 22, being the same as that property conveyed to Grantor by deed dated April 15, 2021 and recorded in the City Register of the City of New York as CRFN #2021000153237. The property subject to this Environmental Easement (the "Controlled Property") comprises approximately .238 +/- acres, and is hereinafter more fully described in the Land Title Survey dated May 8, 2023 prepared by James C. Weed, which will be attached to the Site Management Plan. The Controlled Property description is set forth in and attached hereto as Schedule A; and

WHEREAS, the Department accepts this Environmental Easement in order to ensure the protection of public health and the environment and to achieve the requirements for remediation established for the Controlled Property until such time as this Environmental Easement is extinguished pursuant to ECL Article 71, Title 36; and

NOW THEREFORE, in consideration of the mutual covenants contained herein and the terms and conditions of Brownfield Cleanup Agreement Index Number: C203152-04-22, Grantor conveys to Grantee a permanent Environmental Easement pursuant to ECL Article 71, Title 36 in, on, over, under, and upon the Controlled Property as more fully described herein ("Environmental Easement").

1. Purposes. Grantor and Grantee acknowledge that the Purposes of this Environmental Easement are: to convey to Grantee real property rights and interests that will run with the land in perpetuity in order to provide an effective and enforceable means of encouraging the reuse and redevelopment of this Controlled Property at a level that has been determined to be safe for a specific use while ensuring the performance of operation, maintenance, and/or monitoring requirements; and to ensure the restriction of future uses of the land that are inconsistent with the above-stated purpose.

2. Institutional and Engineering Controls. The controls and requirements listed in the Department approved Site Management Plan ("SMP") including any and all Department approved amendments to the SMP are incorporated into and made part of this Environmental Easement. These controls and requirements apply to the use of the Controlled Property, run with the land, are binding on the Grantor and the Grantor's successors and assigns, and are enforceable in law or equity against any owner of the Controlled Property, any lessees and any person using the Controlled Property.

A. (1) The Controlled Property may be used for:

Restricted Residential as described in 6 NYCRR Part 375-1.8(g)(2)(ii), Commercial as described in 6 NYCRR Part 375-1.8(g)(2)(iii) and Industrial as described in 6 NYCRR Part 375-1.8(g)(2)(iv)

(2) All Engineering Controls must be operated and maintained as specified in the Site Management Plan (SMP);

(3) All Engineering Controls must be inspected at a frequency and in a manner defined in the SMP;

(4) The use of groundwater underlying the property is prohibited without necessary water quality treatment as determined by the NYSDOH or the New York City Department of Health and Mental Hygiene to render it safe for use as drinking water or for industrial purposes, and the user must first notify and obtain written approval to do so from the Department;

(5) Groundwater and other environmental or public health monitoring must be performed as defined in the SMP;

(6) Data and information pertinent to Site Management of the Controlled Property must be reported at the frequency and in a manner defined in the SMP;

(7) All future activities on the property that will disturb remaining contaminated material must be conducted in accordance with the SMP;

(8) Monitoring to assess the performance and effectiveness of the remedy must be performed as defined in the SMP;

(9) Operation, maintenance, monitoring, inspection, and reporting of any mechanical or physical components of the remedy shall be performed as defined in the SMP;

(10) Access to the site must be provided to agents, employees or other representatives of the State of New York with reasonable prior notice to the property owner to assure compliance with the restrictions identified by this Environmental Easement.

B. The Controlled Property shall not be used for Residential purposes as defined in 6NYCRR 375-1.8(g)(2)(i), and the above-stated engineering controls may not be discontinued without an amendment or extinguishment of this Environmental Easement.

C. The SMP describes obligations that the Grantor assumes on behalf of Grantor, its successors and assigns. The Grantor's assumption of the obligations contained in the SMP which may include sampling, monitoring, and/or operating a treatment system, and providing certified reports to the NYSDEC, is and remains a fundamental element of the Department's determination that the Controlled Property is safe for a specific use, but not all uses. The SMP may be modified in accordance with the Department's statutory and regulatory authority. The Grantor and all successors and assigns, assume the burden of complying with the SMP and obtaining an up-to-date version of the SMP from:

Site Control Section
Division of Environmental Remediation
NYSDEC
625 Broadway
Albany, New York 12233
Phone: (518) 402-9553

D. Grantor must provide all persons who acquire any interest in the Controlled Property a true and complete copy of the SMP that the Department approves for the Controlled Property and all Department-approved amendments to that SMP.

E. Grantor covenants and agrees that until such time as the Environmental Easement is extinguished in accordance with the requirements of ECL Article 71, Title 36 of the ECL, the property deed and all subsequent instruments of conveyance relating to the Controlled Property shall state in at least fifteen-point bold-faced type:

This property is subject to an Environmental Easement held by the New York State Department of Environmental Conservation pursuant to Title 36 of Article 71 of the Environmental Conservation Law.

F. Grantor covenants and agrees that this Environmental Easement shall be incorporated in full or by reference in any leases, licenses, or other instruments granting a right to use the Controlled Property.

G. Grantor covenants and agrees that it shall, at such time as NYSDEC may require, submit to NYSDEC a written statement by an expert the NYSDEC may find acceptable certifying under penalty of perjury, in such form and manner as the Department may require, that:

(1) the inspection of the site to confirm the effectiveness of the institutional and engineering controls required by the remedial program was performed under the direction of the individual set forth at 6 NYCRR Part 375-1.8(h)(3).

(2) the institutional controls and/or engineering controls employed at such site:

(i) are in-place;

(ii) are unchanged from the previous certification, or that any identified changes to the controls employed were approved by the NYSDEC and that all controls are in the Department-approved format; and

(iii) that nothing has occurred that would impair the ability of such control to protect the public health and environment;

(3) the owner will continue to allow access to such real property to evaluate the continued maintenance of such controls;

(4) nothing has occurred that would constitute a violation or failure to comply with any site management plan for such controls;

(5) the report and all attachments were prepared under the direction of, and reviewed by, the party making the certification;

(6) to the best of his/her knowledge and belief, the work and conclusions described in this certification are in accordance with the requirements of the site remedial program, and generally accepted engineering practices; and

(7) the information presented is accurate and complete.

3. Right to Enter and Inspect. Grantee, its agents, employees, or other representatives of the State may enter and inspect the Controlled Property in a reasonable manner and at reasonable times to assure compliance with the above-stated restrictions.

4. Reserved Grantor's Rights. Grantor reserves for itself, its assigns, representatives, and successors in interest with respect to the Property, all rights as fee owner of the Property, including:

A. Use of the Controlled Property for all purposes not inconsistent with, or limited by the terms of this Environmental Easement;

B. The right to give, sell, assign, or otherwise transfer part or all of the underlying fee interest to the Controlled Property, subject and subordinate to this Environmental Easement;

5. Enforcement

A. This Environmental Easement is enforceable in law or equity in perpetuity by Grantor, Grantee, or any affected local government, as defined in ECL Section 71-3603, against the owner of the Property, any lessees, and any person using the land. Enforcement shall not be defeated because of any subsequent adverse possession, laches, estoppel, or waiver. It is not a

defense in any action to enforce this Environmental Easement that: it is not appurtenant to an interest in real property; it is not of a character that has been recognized traditionally at common law; it imposes a negative burden; it imposes affirmative obligations upon the owner of any interest in the burdened property; the benefit does not touch or concern real property; there is no privity of estate or of contract; or it imposes an unreasonable restraint on alienation.

B. If any person violates this Environmental Easement, the Grantee may revoke the Certificate of Completion with respect to the Controlled Property.

C. Grantee shall notify Grantor of a breach or suspected breach of any of the terms of this Environmental Easement. Such notice shall set forth how Grantor can cure such breach or suspected breach and give Grantor a reasonable amount of time from the date of receipt of notice in which to cure. At the expiration of such period of time to cure, or any extensions granted by Grantee, the Grantee shall notify Grantor of any failure to adequately cure the breach or suspected breach, and Grantee may take any other appropriate action reasonably necessary to remedy any breach of this Environmental Easement, including the commencement of any proceedings in accordance with applicable law.

D. The failure of Grantee to enforce any of the terms contained herein shall not be deemed a waiver of any such term nor bar any enforcement rights.

6. Notice. Whenever notice to the Grantee (other than the annual certification) or approval from the Grantee is required, the Party providing such notice or seeking such approval shall identify the Controlled Property by referencing the following information:

County, NYSDEC Site Number, NYSDEC Brownfield Cleanup Agreement, State Assistance Contract or Order Number, and the County tax map number or the Liber and Page or computerized system identification number.

Parties shall address correspondence to:

Site Number: C203152
Office of General Counsel
NYSDEC
625 Broadway
Albany New York 12233-5500

With a copy to:

Site Control Section
Division of Environmental Remediation
NYSDEC
625 Broadway
Albany, NY 12233

All notices and correspondence shall be delivered by hand, by registered mail or by Certified mail and return receipt requested. The Parties may provide for other means of receiving and communicating notices and responses to requests for approval.

7. Recordation. Grantor shall record this instrument, within thirty (30) days of execution of this instrument by the Commissioner or her/his authorized representative in the office of the recording officer for the county or counties where the Property is situated in the manner prescribed by Article 9 of the Real Property Law.

8. Amendment. Any amendment to this Environmental Easement may only be executed by the Commissioner of the New York State Department of Environmental Conservation or the Commissioner's Designee, and filed with the office of the recording officer for the county or counties where the Property is situated in the manner prescribed by Article 9 of the Real Property Law.

9. Extinguishment. This Environmental Easement may be extinguished only by a release by the Commissioner of the New York State Department of Environmental Conservation, or the Commissioner's Designee, and filed with the office of the recording officer for the county or counties where the Property is situated in the manner prescribed by Article 9 of the Real Property Law.

10. Joint Obligation. If there are two or more parties identified as Grantor herein, the obligations imposed by this instrument upon them shall be joint and several.

11. Consistency with the SMP. To the extent there is any conflict or inconsistency between the terms of this Environmental Easement and the SMP, regarding matters specifically addressed by the SMP, the terms of the SMP will control.

Remainder of Page Intentionally Left Blank

IN WITNESS WHEREOF, Grantor has caused this instrument to be signed in its name.

2-6 East Tremont Avenue LLC:

By: _____

Print Name: PETER FINE

Title: MANAGER Date: 8/16/23

Grantor's Acknowledgment

STATE OF NEW YORK)
) ss:
COUNTY OF NY)

On the 16th day of AUG., in the year 20 23, before me, the undersigned, personally appeared PETER FINE, personally known to me or proved to me on the basis of satisfactory evidence to be the individual(s) whose name is (are) subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their capacity(ies), and that by his/her/their signature(s) on the instrument, the individual(s), or the person upon behalf of which the individual(s) acted, executed the instrument.

Eileen M. Glass
Notary Public - State of New York

EILEEN M. GLASS
Notary Public-State of New York
No. 01GL6295786
Qualified in Queens County
Commission Expires January 18, 2025

THIS ENVIRONMENTAL EASEMENT IS HEREBY ACCEPTED BY THE PEOPLE OF THE STATE OF NEW YORK, Acting By and Through the Department of Environmental Conservation as Designee of the Commissioner,

By: _____
Andrew O. Guglielmi, Director
Division of Environmental Remediation

Grantee's Acknowledgment

STATE OF NEW YORK)
) ss:
COUNTY OF ALBANY)

On the 28th day of August, in the year 2023 before me, the undersigned, personally appeared Andrew O. Guglielmi, personally known to me or proved to me on the basis of satisfactory evidence to be the individual(s) whose name is (are) subscribed to the within instrument and acknowledged to me that he/she/ executed the same in his/her/ capacity as Designee of the Commissioner of the State of New York Department of Environmental Conservation, and that by his/her/ signature on the instrument, the individual, or the person upon behalf of which the individual acted, executed the instrument.

_____
Notary Public - State of New York

Cheryl A. Salem
Notary Public State of New York
Registration No. 01SA0002177
Qualified in Albany County
My Commission Expires March 3, 2027

SCHEDULE "A" PROPERTY DESCRIPTION

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

BEGINNING at the corner formed by the intersection of the easterly side of Jerome Avenue and the southerly side of Tremont Avenue;

RUNNING THENCE southerly along the said easterly side of Jerome Avenue, 107.38 feet;

RUNNING THENCE easterly and on a line which on its northerly side forms an angle of 90 degrees with the preceding course, 100 feet;

RUNNING THENCE northerly parallel with the said easterly side of Jerome Avenue and part of the way through a party wall 100 feet to the southerly side of Tremont Avenue; and

THENCE westerly along the southerly side of Tremont Avenue 100.27 feet to the point or place of BEGINNING.

CONTAINING WITHIN SAID BOUNDS 0.238 ACRES OR 10,369 SQUARE FEET

NYC DEPARTMENT OF FINANCE
OFFICE OF THE CITY REGISTER

This page is part of the instrument. The City Register will rely on the information provided by you on this page for purposes of indexing this instrument.The information on this page will control for indexing purposes in the event of any conflict with the rest of the document.

2023082801009001001E71C7

RECORDING AND ENDORSEMENT COVER PAGE **PAGE 1 OF 5**

Document ID: 2023082801009001 Document Date: 08-25-2023 Preparation Date: 08-28-2023
Document Type: MEMORANDUM OF LEASE
Document Page Count: 4

PRESENTER:
KENSINGTON VANGUARD NATIONAL LAND SERVICES
39 W37TH STREET
TITLE NO. 5157969-X-NY-RO-KV
NEW YORK, NY 10018
212-532-8686

RETURN TO:
KENSINGTON VANGUARD NATIONAL LAND SERVICES
39 W37TH STREET
NEW YORK, NY 10018

PROPERTY DATA

Borough	Block	Lot	Unit	Address
BRONX	2853	22	Entire Lot	1956 JEROME AVENUE

Property Type: NON-RESIDENTIAL VACANT LAND

CROSS REFERENCE DATA

CRFN: 2023000088063

PARTIES

LESSOR:
2-6 EAST TREMONT AVENUE LLC
450 WEST 14TH STREET, 8TH FLOOR
NEW YORK, NY 10014

LESSEE:
SEP 1956 JEROME AVE, LLC
1562 FIRST AVENUE NO. 205-2219
NEW YORK, NY 10028

FEES AND TAXES

Mortgage :

Mortgage Amount:	$	0.00
Taxable Mortgage Amount:	$	0.00
Exemption:		
TAXES: County (Basic):	$	0.00
City (Additional):	$	0.00
Spec (Additional):	$	0.00
TASF:	$	0.00
MTA:	$	0.00
NYCTA:	$	0.00
Additional MRT:	$	0.00
TOTAL:	$	0.00
Recording Fee:	$	57.00
Affidavit Fee:	$	0.00

Filing Fee: $ 100.00

NYC Real Property Transfer Tax: $ 0.00

NYS Real Estate Transfer Tax: $ 0.00

RECORDED OR FILED IN THE OFFICE OF THE CITY REGISTER OF THE CITY OF NEW YORK
Recorded/Filed 08-31-2023 09:20
City Register File No.(CRFN): **2023000222636**

City Register Official Signature

AMENDED AND RESTATED MEMORANDUM OF LEASE

This AMENDED AND RESTATED MEMORANDUM OF LEASE is made as of the 25th day of August, 2023 by and between **2-6 EAST TREMONT AVENUE LLC**, a New York limited liability company, having an office at 450 West 14th Street, 8th Floor, New York, New York 10014 ("Landlord") and **SEP 1956 JEROME AVE, LLC**, a Delaware limited liability company having an office at 1562 First Avenue No. 205-2219 New York, New York 10028 ("Tenant").

WHEREAS, the parties hereto initially recorded a Memorandum of Lease dated March 22, 2023 and recorded in the Office of the Register of the City of New York, Bronx County (the "Register's Office"), on April 10, 2023 as CRFN 2023000088063. The parties now desire to amend and restate the initially recorded Memorandum of Lease to correct the term set forth therein.

1. Landlord and Tenant executed a Sublease Agreement, dated December 16, 2021, (the "Lease") demising certain real property known as 1956 Jerome Avenue, Bronx, New York, Block 2853, Lot 22 on the tax map of New York County, which is more particularly described and attached as SCHEDULE A (the "Premises").

2. The Lease provides for a term of thirty-nine (39) years commencing on the date that Landlord delivers the Premises to Tenant with Landlord's Work Substantially Completed (as further defined in the Lease), but such date is estimated to be July 1, 2024 with a termination date of June 30, 2063. Tenant has the right to extend the term of this Lease for a period of ten (10) years.

3. This memorandum may be executed in counterparts, each of which shall be an original, but all of which shall constitute one and the same instrument.

[SIGNATURE PAGE FOLLOWS]

IN WITNESS WHEREOF, the parties have executed this Memorandum of Lease as of the day and year first above written.

LANDLORD:

2-6 EAST TREMONT AVENUE LLC, a New York limited liability company

By: _____
Name: Peter Fine
Title: Manager

STATE OF NEW YORK)
ss.:
COUNTY OF NY)

On the 22nd day of August, in the year 2023, before me, the undersigned, personally appeared **PETER FINE**, personally known to me or proved to me on the basis of satisfactory evidence to be the individual whose name is subscribed to the within instrument and acknowledged to me that he/she executed the same in his/her capacity, and that by his/her signature on the instrument, the individual, or the person or entity upon behalf of which the individual acted, executed the instrument.

_____
Notary Public

ROSEMARIE KANELOS
Notary Public, State of New York
No. 01KA6021860
Qualified in Queens County
Commission Expires March 22, 2027

TENANT:

SEP 1956 JEROME AVE, LLC, a Delaware limited liability company

By: SETON EDUCATION PARTNERS d/b/a in New York as Seton Education Partners, Inc.

By: _____
Name: Matthew Salvatierra
Title: Chief Financial Officer

STATE OF NEW YORK)
ss.:
COUNTY OF Bronx)

Christina Reyes
NOTARY PUBLIC, STATE OF NEW YORK
Registration No. 01RE0005580
Qualified in Bronx County
My Commission Expires April 14, 2027

On the 21 day of August, in the year 2023, before me, the undersigned, personally appeared MATTHEW SALVATIERRA, personally known to me or proved to me on the basis of satisfactory evidence to be the individual whose name is subscribed to the within instrument and acknowledged to me that he/she executed the same in his/her capacity, and that by his/her signature on the instrument, the individual, or the person or entity upon behalf of which the individual acted, executed the instrument.

Christina Reyes
Notary Public

Christina Reyes
Notary Public, State of New York
Registration No. 01RE0005580
Qualified in Bronx County
My Commission Expires April 14 2027

SCHEDULE A

LEGAL DESCRIPTION

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

BEGINNING at the corner formed by the intersection of the easterly side of Jerome Avenue and the southerly side of Tremont Avenue;

RUNNING THENCE southerly along the said easterly side of Jerome Avenue, 107.38 feet;

RUNNING THENCE easterly and on a line which on its northerly side forms an angle of 90 degrees with the preceding course, 100 feet;

RUNNING THENCE northerly parallel with the said easterly side of Jerome Avenue and part of the way through a party wall, 100 feet to the southerly side of Tremont Avenue; and

THENCE westerly along the southerly side of Tremont Avenue, 100.27 feet to the point or place of BEGINNING.

ENVIRONMENTAL EASEMENT GRANTED PURSUANT TO ARTICLE 71, TITLE 36 OF THE NEW YORK STATE ENVIRONMENTAL CONSERVATION LAW

THIS INDENTURE made this _____ day of _____, 20__, between Owner, 2-6 East Tremont Avenue LLC, having an office at 450 West 14th St., 8th Floor, New York, New York, 10014 (the "Grantor"), and The People of the State of New York (the "Grantee."), acting through their Commissioner of the Department of Environmental Conservation (the "Commissioner", or "NYSDEC" or "Department" as the context requires) with its headquarters located at 625 Broadway, Albany, New York 12233,

WHEREAS, the Legislature of the State of New York has declared that it is in the public interest to encourage the remediation of abandoned and likely contaminated properties ("sites") that threaten the health and vitality of the communities they burden while at the same time ensuring the protection of public health and the environment; and

WHEREAS, the Legislature of the State of New York has declared that it is in the public interest to establish within the Department a statutory environmental remediation program that includes the use of Environmental Easements as an enforceable means of ensuring the performance of operation, maintenance, and/or monitoring requirements and the restriction of future uses of the land, when an environmental remediation project leaves residual contamination at levels that have been determined to be safe for a specific use, but not all uses, or which includes engineered structures that must be maintained or protected against damage to perform properly and be effective, or which requires groundwater use or soil management restrictions; and

WHEREAS, the Legislature of the State of New York has declared that Environmental Easement shall mean an interest in real property, created under and subject to the provisions of Article 71, Title 36 of the New York State Environmental Conservation Law ("ECL") which contains a use restriction and/or a prohibition on the use of land in a manner inconsistent with engineering controls which are intended to ensure the long term effectiveness of a site remedial program or eliminate potential exposure pathways to hazardous waste or petroleum; and

WHEREAS, Grantor, is the owner of real property located at the address of 1956 Jerome Avenue in the City of New York, County of Bronx and State of New York, known and designated on the tax map of the New York City Department of Finance as tax map parcel number: Block 2853 Lot 22, being the same as that property conveyed to Grantor by deed dated April 15, 2021 and recorded in the City Register of the City of New York as CRFN #2021000153237. The property subject to this Environmental Easement (the "Controlled Property") comprises approximately .238 +/- acres, and is hereinafter more fully described in the Land Title Survey dated May 8, 2023 prepared by James C. Weed, which will be attached to the Site Management Plan. The Controlled Property description is set forth in and attached hereto as Schedule A; and

WHEREAS, the Department accepts this Environmental Easement in order to ensure the protection of public health and the environment and to achieve the requirements for remediation established for the Controlled Property until such time as this Environmental Easement is extinguished pursuant to ECL Article 71, Title 36; and

NOW THEREFORE, in consideration of the mutual covenants contained herein and the terms and conditions of Brownfield Cleanup Agreement Index Number: C203152-04-22, Grantor conveys to Grantee a permanent Environmental Easement pursuant to ECL Article 71, Title 36 in, on, over, under, and upon the Controlled Property as more fully described herein ("Environmental Easement").

1. Purposes. Grantor and Grantee acknowledge that the Purposes of this Environmental Easement are: to convey to Grantee real property rights and interests that will run with the land in perpetuity in order to provide an effective and enforceable means of encouraging the reuse and redevelopment of this Controlled Property at a level that has been determined to be safe for a specific use while ensuring the performance of operation, maintenance, and/or monitoring requirements; and to ensure the restriction of future uses of the land that are inconsistent with the above-stated purpose.

2. Institutional and Engineering Controls. The controls and requirements listed in the Department approved Site Management Plan ("SMP") including any and all Department approved amendments to the SMP are incorporated into and made part of this Environmental Easement. These controls and requirements apply to the use of the Controlled Property, run with the land, are binding on the Grantor and the Grantor's successors and assigns, and are enforceable in law or equity against any owner of the Controlled Property, any lessees and any person using the Controlled Property.

A. (1) The Controlled Property may be used for:

Restricted Residential as described in 6 NYCRR Part 375-1.8(g)(2)(ii), Commercial as described in 6 NYCRR Part 375-1.8(g)(2)(iii) and Industrial as described in 6 NYCRR Part 375-1.8(g)(2)(iv)

(2) All Engineering Controls must be operated and maintained as specified in the Site Management Plan (SMP);

(3) All Engineering Controls must be inspected at a frequency and in a manner defined in the SMP;

(4) The use of groundwater underlying the property is prohibited without necessary water quality treatment as determined by the NYSDOH or the New York City Department of Health and Mental Hygiene to render it safe for use as drinking water or for industrial purposes, and the user must first notify and obtain written approval to do so from the Department;

(5) Groundwater and other environmental or public health monitoring must be performed as defined in the SMP;

(6) Data and information pertinent to Site Management of the Controlled Property must be reported at the frequency and in a manner defined in the SMP;

(7) All future activities on the property that will disturb remaining contaminated material must be conducted in accordance with the SMP;

(8) Monitoring to assess the performance and effectiveness of the remedy must be performed as defined in the SMP;

(9) Operation, maintenance, monitoring, inspection, and reporting of any mechanical or physical components of the remedy shall be performed as defined in the SMP;

(10) Access to the site must be provided to agents, employees or other representatives of the State of New York with reasonable prior notice to the property owner to assure compliance with the restrictions identified by this Environmental Easement.

B. The Controlled Property shall not be used for Residential purposes as defined in 6NYCRR 375-1.8(g)(2)(i), and the above-stated engineering controls may not be discontinued without an amendment or extinguishment of this Environmental Easement.

C. The SMP describes obligations that the Grantor assumes on behalf of Grantor, its successors and assigns. The Grantor's assumption of the obligations contained in the SMP which may include sampling, monitoring, and/or operating a treatment system, and providing certified reports to the NYSDEC, is and remains a fundamental element of the Department's determination that the Controlled Property is safe for a specific use, but not all uses. The SMP may be modified in accordance with the Department's statutory and regulatory authority. The Grantor and all successors and assigns, assume the burden of complying with the SMP and obtaining an up-to-date version of the SMP from:

Site Control Section
Division of Environmental Remediation
NYSDEC
625 Broadway
Albany, New York 12233
Phone: (518) 402-9553

D. Grantor must provide all persons who acquire any interest in the Controlled Property a true and complete copy of the SMP that the Department approves for the Controlled Property and all Department-approved amendments to that SMP.

E. Grantor covenants and agrees that until such time as the Environmental Easement is extinguished in accordance with the requirements of ECL Article 71, Title 36 of the ECL, the property deed and all subsequent instruments of conveyance relating to the Controlled Property shall state in at least fifteen-point bold-faced type:

This property is subject to an Environmental Easement held by the New York State Department of Environmental Conservation pursuant to Title 36 of Article 71 of the Environmental Conservation Law.

F. Grantor covenants and agrees that this Environmental Easement shall be incorporated in full or by reference in any leases, licenses, or other instruments granting a right to use the Controlled Property.

G. Grantor covenants and agrees that it shall, at such time as NYSDEC may require, submit to NYSDEC a written statement by an expert the NYSDEC may find acceptable certifying under penalty of perjury, in such form and manner as the Department may require, that:

(1) the inspection of the site to confirm the effectiveness of the institutional and engineering controls required by the remedial program was performed under the direction of the individual set forth at 6 NYCRR Part 375-1.8(h)(3).

(2) the institutional controls and/or engineering controls employed at such site:

(i) are in-place;

(ii) are unchanged from the previous certification, or that any identified changes to the controls employed were approved by the NYSDEC and that all controls are in the Department-approved format; and

(iii) that nothing has occurred that would impair the ability of such control to protect the public health and environment;

(3) the owner will continue to allow access to such real property to evaluate the continued maintenance of such controls;

(4) nothing has occurred that would constitute a violation or failure to comply with any site management plan for such controls;

(5) the report and all attachments were prepared under the direction of, and reviewed by, the party making the certification;

(6) to the best of his/her knowledge and belief, the work and conclusions described in this certification are in accordance with the requirements of the site remedial program, and generally accepted engineering practices; and

(7) the information presented is accurate and complete.

3. Right to Enter and Inspect. Grantee, its agents, employees, or other representatives of the State may enter and inspect the Controlled Property in a reasonable manner and at reasonable times to assure compliance with the above-stated restrictions.

4. Reserved Grantor's Rights. Grantor reserves for itself, its assigns, representatives, and successors in interest with respect to the Property, all rights as fee owner of the Property, including:

A. Use of the Controlled Property for all purposes not inconsistent with, or limited by the terms of this Environmental Easement;

B. The right to give, sell, assign, or otherwise transfer part or all of the underlying fee interest to the Controlled Property, subject and subordinate to this Environmental Easement;

5. Enforcement

A. This Environmental Easement is enforceable in law or equity in perpetuity by Grantor, Grantee, or any affected local government, as defined in ECL Section 71-3603, against the owner of the Property, any lessees, and any person using the land. Enforcement shall not be defeated because of any subsequent adverse possession, laches, estoppel, or waiver. It is not a

defense in any action to enforce this Environmental Easement that: it is not appurtenant to an interest in real property; it is not of a character that has been recognized traditionally at common law; it imposes a negative burden; it imposes affirmative obligations upon the owner of any interest in the burdened property; the benefit does not touch or concern real property; there is no privity of estate or of contract; or it imposes an unreasonable restraint on alienation.

B. If any person violates this Environmental Easement, the Grantee may revoke the Certificate of Completion with respect to the Controlled Property.

C. Grantee shall notify Grantor of a breach or suspected breach of any of the terms of this Environmental Easement. Such notice shall set forth how Grantor can cure such breach or suspected breach and give Grantor a reasonable amount of time from the date of receipt of notice in which to cure. At the expiration of such period of time to cure, or any extensions granted by Grantee, the Grantee shall notify Grantor of any failure to adequately cure the breach or suspected breach, and Grantee may take any other appropriate action reasonably necessary to remedy any breach of this Environmental Easement, including the commencement of any proceedings in accordance with applicable law.

D. The failure of Grantee to enforce any of the terms contained herein shall not be deemed a waiver of any such term nor bar any enforcement rights.

6. Notice. Whenever notice to the Grantee (other than the annual certification) or approval from the Grantee is required, the Party providing such notice or seeking such approval shall identify the Controlled Property by referencing the following information:

County, NYSDEC Site Number, NYSDEC Brownfield Cleanup Agreement, State Assistance Contract or Order Number, and the County tax map number or the Liber and Page or computerized system identification number.

Parties shall address correspondence to:

Site Number: C203152
Office of General Counsel
NYSDEC
625 Broadway
Albany New York 12233-5500

With a copy to:

Site Control Section
Division of Environmental Remediation
NYSDEC
625 Broadway
Albany, NY 12233

All notices and correspondence shall be delivered by hand, by registered mail or by Certified mail and return receipt requested. The Parties may provide for other means of receiving and communicating notices and responses to requests for approval.

7. Recordation. Grantor shall record this instrument, within thirty (30) days of execution of this instrument by the Commissioner or her/his authorized representative in the office of the recording officer for the county or counties where the Property is situated in the manner prescribed by Article 9 of the Real Property Law.

8. Amendment. Any amendment to this Environmental Easement may only be executed by the Commissioner of the New York State Department of Environmental Conservation or the Commissioner's Designee, and filed with the office of the recording officer for the county or counties where the Property is situated in the manner prescribed by Article 9 of the Real Property Law.

9. Extinguishment. This Environmental Easement may be extinguished only by a release by the Commissioner of the New York State Department of Environmental Conservation, or the Commissioner's Designee, and filed with the office of the recording officer for the county or counties where the Property is situated in the manner prescribed by Article 9 of the Real Property Law.

10. Joint Obligation. If there are two or more parties identified as Grantor herein, the obligations imposed by this instrument upon them shall be joint and several.

11. Consistency with the SMP. To the extent there is any conflict or inconsistency between the terms of this Environmental Easement and the SMP, regarding matters specifically addressed by the SMP, the terms of the SMP will control.

Remainder of Page Intentionally Left Blank

IN WITNESS WHEREOF, Grantor has caused this instrument to be signed in its name.

2-6 East Tremont Avenue LLC:

By: _____

Print Name: Peter Fine

Title: Sole Member Date: 6.29.23

Grantor's Acknowledgment

STATE OF NEW YORK)
) ss:
COUNTY OF NEW YORK)

On the 29th day of JUNE, in the year 20 23, before me, the undersigned, personally appeared PETER FINE, personally known to me or proved to me on the basis of satisfactory evidence to be the individual(s) whose name is (are) subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their capacity(ies), and that by his/her/their signature(s) on the instrument, the individual(s), or the person upon behalf of which the individual(s) acted, executed the instrument.

Eileen M Glass
Notary Public - State of New York

EILEEN M. GLASS
Notary Public-State of New York
No. 01GL6295786
Qualified in Queens County
Commission Expires January 13, 2026

THIS ENVIRONMENTAL EASEMENT IS HEREBY ACCEPTED BY THE PEOPLE OF THE STATE OF NEW YORK, Acting By and Through the Department of Environmental Conservation as Designee of the Commissioner,

By: _____
Andrew O. Guglielmi, Director
Division of Environmental Remediation

Grantee's Acknowledgment

STATE OF NEW YORK)
) ss:
COUNTY OF ALBANY)

On the _____ day of _____, in the year 20__, before me, the undersigned, personally appeared Andrew O. Guglielmi, personally known to me or proved to me on the basis of satisfactory evidence to be the individual(s) whose name is (are) subscribed to the within instrument and acknowledged to me that he/she/ executed the same in his/her/ capacity as Designee of the Commissioner of the State of New York Department of Environmental Conservation, and that by his/her/ signature on the instrument, the individual, or the person upon behalf of which the individual acted, executed the instrument.

_____
Notary Public - State of New York

SCHEDULE "A" PROPERTY DESCRIPTION

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

BEGINNING at the corner formed by the intersection of the easterly side of Jerome Avenue and the southerly side of Tremont Avenue;

RUNNING THENCE southerly along the said easterly side of Jerome Avenue, 107.38 feet;

RUNNING THENCE easterly and on a line which on its northerly side forms an angle of 90 degrees with the preceding course, 100 feet;

RUNNING THENCE northerly parallel with the said easterly side of Jerome Avenue and part of the way through a party wall 100 feet to the southerly side of Tremont Avenue; and

THENCE westerly along the southerly side of Tremont Avenue 100.27 feet to the point or place of BEGINNING.

CONTAINING WITHIN SAID BOUNDS 0.238 ACRES OR 10,369 SQUARE FEET

APPENDIX B

LIST OF SITE CONTACTS

LIST OF SITE CONTACTS

Name	Phone/Email Address
2-6 East Tremont Avenue LLC Site Owner and Remedial Party	(212) 620-0500 / js@bolivar.nyc
Deborah Shapiro Qualified Environmental Professional	(646) 388-9544 / dshapiro@akrf.com
Rebecca Kinal, PE Remedial Engineer	(914) 922-2362 / rkinal@akrf.com
J. Patrick Diggins Project Manager	(914) 922-2784 / jdiggins@akrf.com
Rafi Alam NYSDEC Project Manager	(518) 402-8606 / rafi.alam@dec.ny.gov
Heidi Dudeck NYSDEC DER Project Manager's Supervisor	(518) 402-0193 / heidi.dudek@dec.ny.gov
Lexy Servis, NYSDEC Site Control	(518) 402-9473 / alexandra.servis@dec.ny.gov
Arunesh Ghosh NYSDOH Project Manager	(518) 402-7860 / arunesh.ghosh@health.ny.gov
George Duke Remedial Party Attorney	(646) 915-0236 / gduke@bdflegal.com

APPENDIX C

RESPONSIBILITIES OF OWNER AND REMEDIAL PARTY

RESPONSIBILITIES of OWNER and REMEDIAL PARTY

Responsibilities

The responsibilities for implementing the Site Management Plan ("SMP") for the Seton Brilla Charter School – 1956 Jerome Avenue site (the "Site"), BCP Site Number C203152, are divided between the Site owner and a Remedial Party, as defined below. The Site owner is currently listed as:

2-6 East Tremont Avenue LLC
450 West 14th Street, 8th Floor
New York, New York 10014

Solely for the purposes of this document and based upon the facts related to a particular site and the remedial program being carried out, the term Remedial Party ("RP") refers to any of the following: certificate of completion holder, volunteer, participant, applicant, responsible party, and, in the event that the New York State Department of Environmental Conservation ("NYSDEC") is carrying out remediation or site management, NYSDEC and/or an agent acting on its behalf. The RP is:

2-6 East Tremont Avenue LLC
450 West 14th Street, 8th Floor
New York, New York 10014

Nothing on this page shall supersede the provisions of an Environmental Easement, Consent Order, Consent Decree, agreement, or other legally binding document that affects rights and obligations relating to the Site.

Site Owner's Responsibilities:

1. The owner shall follow the provisions of the SMP as they relate to future construction and excavation at the Site.
2. In accordance with a periodic time frame determined by NYSDEC, the owner shall periodically certify, in writing, that all Institutional Controls set forth in an Environmental Easement remain in place and continue to be complied with. The owner shall provide a written certification to the RP, upon the RP's request, in order to allow the RP to include the certification in the Site's Periodic Review Report (PRR) certification to NYSDEC.
3. In the event that the Site is delisted, the owner remains bound by the Environmental Easement and shall submit, upon request by NYSDEC, a written certification that the Environmental Easement is still in place and has been complied with.
4. The owner shall grant access to the Site to the RP and NYSDEC and its agents for the purposes of performing activities required under the SMP and assuring compliance with the SMP.
5. The owner is responsible for ensuring the security of the remedial components located on its property to the best of its ability. If damage to the remedial components or vandalism is evident, the owner shall notify the Site's RP and NYSDEC in accordance with the timeframes indicated in Section 1.3 of the SMP (Notifications).
6. If some action or inaction by the owner adversely impacts the Site, the owner must notify the Site's RP and NYSDEC in accordance with the timeframe indicated in Section 1.3 of the SMP and coordinate the performance of necessary corrective actions with the RP.
7. The owner must notify the RP and NYSDEC of any change in ownership of the Site property (identifying the tax map numbers in any correspondence) and provide contact information for the new owner of the Site property. 6 New York Codes, Rules, and Regulations (NYCRR) Part 375 contains notification requirements applicable to any construction or activity changes and changes in ownership.

Among the notification requirements is the following: 60 days prior written notification must be made to NYSDEC. Notification is to be submitted to the NYSDEC Division of Environmental Remediation's Site Control Section. Notification requirements for a change in use are detailed in Section 1.3 of the SMP. A change of use includes, but is not limited to, any activity that may increase direct human or environmental exposure (e.g., day care, school, or park). A 60-Day Advance Notification Form and Instructions are found at http://www.dec.ny.gov/chemical/76250.html.

8. Until such time as NYSDEC deems the vapor mitigation system unnecessary, the owner shall operate the system, pay for the utilities for the system's operation, and report any maintenance issues to the RP and NYSDEC.
9. In accordance with the tenant notification law, within 15 days of receipt, the owner must supply a copy of any vapor intrusion data that is produced with respect to structures and that exceeds New York State Department of Health (NYSDOH) or United States Occupational Safety and Health Administration (OSHA) guidelines on the Site, whether produced by NYSDEC, the RP, or owner, to the tenants on the property. The owner must otherwise comply with the tenant and occupant notification provisions of Environmental Conservation Law Article 27, Title 24.

Remedial Party Responsibilities

1. The RP must follow the SMP provisions regarding any construction and/or excavation it undertakes at the Site.
2. The RP shall report to NYSDEC all activities required for remediation, operation, maintenance, monitoring, and reporting. Such reporting includes, but is not limited to, PRRs and certifications, electronic data deliverables, corrective action work plans and reports, and updated SMPs.
3. Before accessing the Site property to undertake a specific activity, the RP shall provide the owner advance notification that shall include an explanation of the work expected to be completed. The RP shall provide to (i) the owner, upon the owner's request, (ii) NYSDEC, and (iii) other entities, if required by the SMP, a copy of any data generated during the Site visit and/or any final report produced.
4. If NYSDEC determines that an update of the SMP is necessary, the RP shall update the SMP and obtain final approval from NYSDEC. Within 5 business days after NYSDEC approval, the RP shall submit a copy of the approved SMP to the owner(s).
5. The RP shall notify NYSDEC and the owner of any changes in RP ownership and/or control and of any changes in the party/entity responsible for the operation, maintenance, and monitoring of and reporting with respect to any remedial system (Engineering Controls). The RP shall provide contact information for the new party/entity. Such activity constitutes a Change of Use pursuant to 375-1.11(d) and requires 60 days prior notice to NYSDEC. A 60-Day Advance Notification Form and Instructions are found at http://www.dec.ny.gov/chemical/76250.html.
6. The RP shall notify NYSDEC of any damage to or modification of the systems as required under Section 1.3 of the SMP.
7. The RP is responsible for the proper maintenance of any installed vapor intrusion mitigation systems associated with the Site, as required in Sections 4.0 and 5.0 (Monitoring and Sampling Plan, and Operation and Maintenance Plan) of the SMP.
8. The RP is responsible for the proper monitoring and maintenance of any installed drinking water treatment system associated with the Site, as required in Sections 4.0 and 5.0 (Monitoring and Sampling Plan, and Operation and Maintenance Plan) of the SMP.
9. Prior to a change in use that impacts the remedial system or requirements and/or responsibilities for implementing the SMP, the RP shall submit to NYSDEC for approval an amended SMP.

10. Any change in use, change in ownership, change in Site classification (e.g., delisting), reduction or expansion of remediation, or other significant change related to the Site may result in a change in responsibilities and, therefore, necessitate an update to the SMP and/or updated legal documents. The RP shall contact the NYSDEC project manager to discuss the need to update such documents.

Change in RP ownership and/or control and/or Site ownership does not affect the RP's obligations with respect to the Site unless a legally binding document executed by NYSDEC releases the RP of its obligations.

Future Site owners and RPs and their successors and assigns are required to carry out the activities set forth above.

APPENDIX D

PHASE II AND RI SOIL BORING AND MONITORING WELL CONSTRUCTION LOGS

SOIL BORING LOG

1956 Jerome Avenue Bronx, New York	Soil Boring ID: **RI-SB-01**
AKRF Project Number: 210024	Sheet 1 of 1

AKRF
440 Park Avenue South, 7th Floor
New York, NY 10016

Drilling Method:	Geoprobe Direct Push
Sampling Method:	Direct Push Probe
Driller:	Eastern Environmental
Weather:	51-64°F, Cloudy
Logged By:	E. Faneuff, AKRF

Drilling
Start Time: 8:00 | Finish Time: 8:45
Date: 5/10/21

Depth (feet)	Recovery (Inches)	Surface Condition: Concrete	Odor	Moisture	PID (ppm)	NAPL	Soil Samples Collected for Laboratory Analysis
1	45	Top 5": CONCRETE.	ND	Dry	ND	ND	
2							
3		Bottom 40": Brown SAND, some Silt, trace Gravel (FILL).	ND	Dry	ND	ND	RI-SB-01_(0-2)_20210510
4							
5							
6	40	Top 20": Brown SAND, some Silt, trace Gravel (FILL).	ND	Dry	47.5	ND	
7							
8		Next 5": Dark Brown SILT, little Roots, trace Sand.	Petroleum-like odor	Dry	121.3	ND	
9		Bottom 15": Gray SAND, little Silt.	Petroleum-like odor	Dry	2374.1	ND	RI-SB-01_(8-10)_20210510
10							
11	50	Top 5": Brown SAND, some Silt, trace Gravel (SLOUGH).	Petroleum-like odor	Wet	1513.0	ND	
12							
13		Next 35": Gray SAND, little Silt.	Petroleum-like odor	Wet	1553.0	ND	
14		Bottom 10": Gray SAND, some Silt, little Weathered Bedrock.	Petroleum-like odor	Wet	1962.0	ND	
15							
16	40	Top 10": Orange SAND, little Silt.	Petroleum-like odor	Wet	63.2	ND	
17		Next 10": Brown SAND, trace Silt.	Petroleum-like odor	Wet	1079.0	ND	
18							
19		Bottom 40": Gray SAND, Weathered Bedrock.	Petroleum-like odor	Wet	1223.0	ND	
20							

Notes: Soil sample analyzed for VOCs, SVOCs, TAL Metals, Pesticides, Herbicides, PCBs, Total Cyanide, and Hexavalent Chromium.

Groundwater encountered at approximately 11 feet below grade during soil boring installation.

End of soil boring at 20 feet below grade.

PID = photoionization detector ppm = parts per million NAPL = non-aqueous phase liquid ND = not detected

Soil classifications and descriptions presented are based on the Modified Burmister Classification System. Descriptions were developed for environmental purposes only.

SOIL BORING LOG

1956 Jerome Avenue Bronx, New York	Soil Boring ID: RI-SB-02
AKRF Project Number: 210024	Sheet 1 of 1

AKRF
440 Park Avenue South, 7th Floor
New York, NY 10016

Drilling Method:	Geoprobe Direct Push
Sampling Method:	Direct Push Probe
Driller:	Eastern Environmental
Weather:	51-64°F, Cloudy
Logged By:	E. Faneuff, AKRF

Drilling
Start Time: 8:45 | Finish Time: 9:30
Date: 5/10/21

Depth (feet)	Recovery (Inches)	Surface Condition: Concrete	Odor	Moisture	PID (ppm)	NAPL	Soil Samples Collected for Laboratory Analysis
1	36	Top 6": CONCRETE.	ND	Dry	65.7	ND	RI-SB-02_(0-2)_20210510
2		Next 25": Gray SAND, little Silt, trace Gravel, Brick (FILL).	ND	Dry	70.2	ND	
3							
4		Bottom 5": Gray SAND, some Silt, trace Gravel (FILL).	ND	Dry	75.5	ND	
5							
6	40	Top 20": Dark Brown SILT, little Sand (FILL).	ND	Dry	212.8	ND	RI-SB-02_(7-9)_20210510 and RI-SB-X_20210510
7		Next 10": Dark Brown SILT, little Wood, trace Sand (FILL).	Slight Petroleum-like odor	Dry	232.8	ND	
8							
9		Bottom 10": Gray SAND, little Silt.	Petroleum-like odor	Moist	192.3	ND	
10							
11	60	Top 50": Gray SILT, some Sand, trace Gravel.	ND	Wet	138.2	ND	
12							
13							
14		Bottom 10": Light Brown SILT, little Sand, trace Gravel.	ND	Wet	87.2	ND	
15							
16	60	Light Brown SAND, little Silt.	ND	Wet	52.3	ND	
17							
18							
19							
20							

Notes: Soil sample analyzed for VOCs, SVOCs, TAL Metals, Pesticides, Herbicides, PCBs, Total Cyanide, Hexavalent Chromium, 1-4 Dioxane, and PFAS.

Groundwater encountered at approximately 10 feet below grade during soil boring installation.

End of soil boring at 20 feet below grade.

PID = photoionization detector ppm = parts per million NAPL = non-aqueous phase liquid ND = not detected

Soil classifications and descriptions presented are based on the Modified Burmister Classification System. Descriptions were developed for environmental purposes only.

SOIL BORING LOG

1956 Jerome Avenue Bronx, New York	Soil Boring ID: RI-SB-03
AKRF Project Number: 210024	Sheet 1 of 1

AKRF
440 Park Avenue South, 7th Floor
New York, NY 10016

Drilling Method:	Geoprobe Direct Push
Sampling Method:	Direct Push Probe
Driller:	Eastern Environmental
Weather:	51-64°F, Cloudy
Logged By:	E. Faneuff, AKRF

Drilling
Start Time: 9:45 | Finish Time: 10:30
Date: 5/10/21

Depth (feet)	Recovery (Inches)	Surface Condition: Concrete	Odor	Moisture	PID (ppm)*	NAPL	Soil Samples Collected for Laboratory Analysis
1	34	Top 4": CONCRETE.	ND	Dry	325.2	ND	RI-SB-03_(0-2)_20210510
2		Next 15": Brown SAND, some Silt, trace Gravel, Brick (FILL).	ND	Dry	359.9	ND	
3							
4		Bottom 15": Brown SILT, some Sand, trace Gravel (FILL).	ND	Dry	459.7	ND	
5							
6	36	Top 6": Brown SAND, some Silt, trace Gravel, Brick (FILL).	ND	Dry	590.9	ND	RI-SB-03_(5-7)_20210510
7		Next 10": Brown SILT, some Sand, trace Gravel (FILL).	ND	Dry	437.3	ND	
8							
9		Next 15": Dark Brown SILT, little Wood, Sand, trace Gravel (FILL).	ND	Moist	237.5	ND	
10		Bottom 5": Gray SILT, some Sand.	ND	Wet	250.0	ND	
11	55	Top 15": Gray SILT, some Sand.	ND	Wet	183.2	ND	
12							
13							
14		Bottom 40": Brown SAND, little Silt.	ND	Wet	53.4	ND	
15							
16	60	Brown SAND, little Silt.	ND	Wet	44.3	ND	
17							
18							
19							
20							

Notes: Soil sample analyzed for VOCs, SVOCs, TAL Metals, Pesticides, Herbicides, PCBs, Total Cyanide, and Hexavalent Chromium.

Groundwater encountered at approximately 9 feet below grade during soil boring installation.

***Detections may be the result of equipment malfunction.**

End of soil boring at 20 feet below grade.

PID = photoionization detector ppm = parts per million NAPL = non-aqueous phase liquid ND = not detected

Soil classifications and descriptions presented are based on the Modified Burmister Classification System. Descriptions were developed for environmental purposes only.

SOIL BORING LOG

1956 Jerome Avenue Bronx, New York	Soil Boring ID: RI-SB-04
AKRF Project Number: 210024	Sheet 1 of 1

AKRF
440 Park Avenue South, 7th Floor
New York, NY 10016

Drilling Method:	Geoprobe Direct Push
Sampling Method:	Direct Push Probe
Driller:	Eastern Environmental
Weather:	51-64°F, Cloudy
Logged By:	E. Faneuff, AKRF

Drilling
Start Time: 10:50 | Finish Time: 11:25
Date: 5/10/21

Depth (feet)	Recovery (Inches)	Surface Condition: Concrete	Odor	Moisture	PID (ppm)*	NAPL	Soil Samples Collected for Laboratory Analysis
1	34	Top 4": CONCRETE.	ND	Dry	394.2	ND	
2							
3		Bottom 30": Brown SAND, some Silt, trace Gravel, Concrete (FILL).	ND	Dry	366.1	ND	RI-SB-04_(0-2)_20210510
4							
5							
6	26	Top 10": Brown SAND, some Silt, trace Gravel, Concrete (FIL	ND	Dry	418.7	ND	RI-SB-04_(6-8)_20210510
7							
8							
9		Bottom 16": Gray SILT, little Sand.	ND	Wet	236.8	ND	
10							
11	50	Top 10": Brown SAND, some Silt, trace Gravel, Concrete (SLOUGH).	ND	Wet	359.2	ND	
12							
13		Next 10": Gray SILT, little Sand.	ND	Wet	359.4	ND	
14		Bottom 30": Light Brown SAND, little Silt.	ND	Wet	252.5	ND	
15							
16	60						
17							
18		Light Brown SAND, little Silt.	ND	Wet	407.9	ND	
19							
20							

Notes: Soil sample analyzed for VOCs, SVOCs, TAL Metals, Pesticides, Herbicides, PCBs, Total Cyanide, and Hexavalent Chromium.

Groundwater encountered at approximately 9 feet below grade during soil boring installation.

***Detections may be the result of equipment malfunction.**

End of soil boring at 20 feet below grade.

PID = photoionization detector ppm = parts per million NAPL = non-aqueous phase liquid ND = not detected

Soil classifications and descriptions presented are based on the Modified Burmister Classification System. Descriptions were developed for environmental purposes only.

SOIL BORING LOG

1956 Jerome Avenue Bronx, New York	Soil Boring ID: **RI-SB-05**
AKRF Project Number: 210024	Sheet 1 of 1

AKRF
440 Park Avenue South, 7th Floor
New York, NY 10016

Drilling Method:	Slap Hammer
Sampling Method:	Hand Auger
Driller:	Eastern Environmental
Weather:	51-64°F, Cloudy
Logged By:	E. Faneuff, AKRF

Drilling
Start Time: 7:20 | Finish Time: 8:30
Date: 5/11/21

Depth (feet)	Recovery (Inches)	Surface Condition: Concrete	Odor	Moisture	PID (ppm)*	NAPL	Soil Samples Collected for Laboratory Analysis
1 – 2	8	Dark Brown SILT, some Sand, Roots, trace Gravel (FILL).	ND	Dry	450.0	ND	RI-SB-05_(0-2)_20210511
3 – 4	10	Light Brown SAND, some Silt, trace Gravel (FILL).	ND	Dry	275.0	ND	
5 – 6	18	Light Brown SAND, some Silt, trace Gravel (FILL).	ND	Moist	356.0	ND	
7 – 8	24	Gray SILT, some Sand, trace Gravel.	ND	Wet	1608.0	ND	

Notes: Soil sample analyzed for VOCs, SVOCs, TAL Metals, Pesticides, Herbicides, PCBs, Total Cyanide, and Hexavalent Chromium.

Groundwater encountered at approximately 7 feet below grade during soil boring installation.

***Detections may be the result of equipment malfunction.**

End of soil boring at 8 feet below grade.

PID = photoionization detector ppm = parts per million NAPL = non-aqueous phase liquid ND = not detected

Soil classifications and descriptions presented are based on the Modified Burmister Classification System. Descriptions were developed for environmental purposes only.

SOIL BORING LOG

1956 Jerome Avenue Bronx, New York	Soil Boring ID:
AKRF Project Number: 210024	Sheet 1 of 1

RI-SB-06

AKRF
440 Park Avenue South, 7th Floor
New York, NY 10016

Drilling Method:	Slap Hammer
Sampling Method:	Hand Auger
Driller:	Eastern Environmental
Weather:	51-64°F, Cloudy
Logged By:	E. Faneuff, AKRF

Drilling
Start Time: 8:30 | Finish Time: 9:00
Date: 5/11/21

Depth (feet)	Recovery (Inches)	Surface Condition: Concrete	Odor	Moisture	PID (ppm)*	NAPL	Soil Samples Collected for Laboratory Analysis
		Top 6": CONCRETE.	ND	Dry	ND	ND	
1		Middle 6": Dark Brown SILT, some Sand, Roots, trace Gravel (FILL).	ND	Dry	42.8	ND	
	18						RI-SB-06_(0-2)_20210511
2		Bottom 6": Gray SILT, little Sand, trace Gravel.	ND	Moist	10.2	ND	
3							
	20	Gray SILT, little Sand, trace Gravel.	ND	Wet	27.9	ND	
4							

Notes: Soil sample analyzed for VOCs, SVOCs, TAL Metals, Pesticides, Herbicides, PCBs, Total Cyanide, and Hexavalent Chromium.

Groundwater encountered at approximately 3 feet below grade during soil boring installation.

***Detections may be the result of equipment malfunction.**

End of soil boring at 4 feet below grade.

PID = photoionization detector ppm = parts per million NAPL = non-aqueous phase liquid ND = not detected

Soil classifications and descriptions presented are based on the Modified Burmister Classification System. Descriptions were developed for environmental purposes only.

SOIL BORING LOG

Seton Brilla Charter School 1956 Jerome Avenue, Bronx, NY	Soil Boring ID: RI-SB-07
AKRF Project Number: 210024	Sheet 1 of 1

AKRF
440 Park Avenue South, 7th Floor
New York, NY 10016

Drilling Method:	Geoprobe Direct Push
Sampling Method:	Direct Push Probe
Driller:	Eastern Environmental
Weather:	75-81°F, Sunny
Logged By:	E. Faneuff, AKRF

Drilling
Start Time: 7:15 **Finish Time: 7:45**
Date: 8/17/21

Depth (feet)	Recovery (Inches)	Surface Condition: Concrete	Odor	Moisture	PID (ppm)	NAPL	Soil Samples Collected for Laboratory Analysis
1	36	Top 3": CONCRETE.	ND	Dry	17.0	ND	
2		Next 15": Brown SAND, some Silt, trace Brick, Concrete, Gravel (Fill).	ND	Dry	20.8	ND	RI-SB-07_ (0-2)_20210817
3							
4							
5		Bottom 18": Brown SAND, some Silt, trace Gravel (Fill).	ND	Dry	40.7	ND	
6	36	Top 16": Brown SAND, some Silt, trace Gravel (Fill).	Petroleum-like odor	Dry	19.3	ND	
7							
8		Next 5": Dark brown SILT, some Wood, trace Sand, Roots.	Petroleum-like odor	Moist	192.7	ND	RI-SB-07_ (6-8)_20210817
9							
10		Bottom 16": Gray SILT, little Sand.	Petroleum-like odor	Wet @ 10'	132.1	ND	
11	42	Top 6": Gray SILT, little Sand	Petroleum-like odor	Wet	370.2	ND	
12							
13		Next 30": Gray SAND, some Silt, trace Clay.	Petroleum-like odor	Wet	882.7	ND	
14		Bottom 6": Light Brown SAND, little Gravel, trace Silt, weathered Bedrock	Petroleum-like odor	Wet	90.1	ND	
15							
16							
17							
18							
19							
20							

Notes: Soil sample analyzed for VOCs, SVOCs, TAL Metals, Pesticides, PCBs, Total Cyanide, Hexavalent Chromium, 1-4 Dioxane, and PFAS.

Groundwater encountered at approximately 10 feet below grade during soil boring installation.

End of soil boring at 15 feet below grade.

PID = photoionization detector ppm = parts per million NAPL = non-aqueous phase liquid ND = not detected

Soil classifications and descriptions presented are based on the Modified Burmister Classification System. Descriptions were developed for environmental purposes only.

SOIL BORING AND WELL INSTALLATION LOG	Seton Brilla Charter School 1956 Jerome Avenue, Bronx, NY AKRF Project Number: 210024	Groundwater Monitoring Well ID: Sheet 1 of 1	RI-MW-04	Soil Boring ID:	RI-SB-08

AKRF
440 Park Avenue South, 7th Floor
New York, NY 10016

Drilling Method:	Geoprobe Direct Push
Sampling Method:	Direct Push Probe
Driller:	Eastern Environmental
Weather:	75-81°F, Sunny
Logged by:	E. Faneuff, AKRF

Drilling
Start Time: 8:30 | Finish Time: 8:45
Date: 8/17/21

Depth (feet)	Well Construction	Surface Condition: Asphalt	Recovery (Inches)	Soil Boring Log	Odor	Moisture	PID	NAPL	Soil Samples Collected for Laboratory Analysis
1		Flush-mounted well cover, locking j-plug, and concrete seal: grade to 0.5' below grade.	30	Top 2": CONCRETE.	ND	Dry	0.0	ND	
2		Bentonite chips: 0.5' to 1' below grade		Bottom 28": Brown SAND, some Silt, trace Gravel, Brick, Concrete (Fill).	ND	Dry	0.0	ND	RI-SB-08_ (0-2)_20210817
3		2" diameter PVC well casing:							
4		0' - 15' below grade.							
5			40	Top 20": Brown SAND, some Silt, trace Gravel, Brick, Concrete (Fill).	ND	Dry	0.0	ND	
6		No. 2 morie sandpack filter: 1' to 15' below grade							
7				Next 10": Dark brown SILT, some Wood, trace Sand, Roots.	ND	Dry	0.0	ND	RI-SB-08_ (7-9)_20210817
8									
9		0.020-inch slotted PVC well screen: 5' to 15' below grade		Bottom 10": Gray SAND, some Silt.	ND	Wet	0.0	ND	
10			50	Top 35":Gray SAND, some Silt.	ND	Wet	0.0	ND	
11									
12									
13									
14		End cap & bottom of screen: 15' bgs		Bottom 15": Light Brown SAND, some Silt, trace weathered Bedrock	ND	Wet	0.0	ND	
15									
16									
17									
18									
19									
20									

Notes: ▼ Groundwater Depth Indicator

Groundwater measured at 5.13 feet below grade in RI-MW-04 on August 31, 2021.

Groundwater monitoring well installed to 15 feet below grade.

Soil samples analyzed for VOCs, SVOCs, Pesticides, PCBs, Metals, 1,4-Dioxane and PFAS.

Groundwater encountered at approximately 9 feet below grade during soil boring installation.

End of soil boring at 15 feet below grade.

PID = photoionization detector **NAPL = non-aqueous phase liquid** **ND = not detected**

Soil classifications and descriptions presented are based on the Modified Burmister Classification System. Descriptions were developed for environmental purposes only.

SOIL BORING AND WELL INSTALLATION LOG	Seton Brilla Charter School 1956 Jerome Avenue, Bronx, NY AKRF Project Number: 210024	Groundwater Monitoring Well ID: Sheet 1 of 1	RI-MW-05	Soil Boring ID:	RI-SB-09

AKRF
440 Park Avenue South, 7th Floor
New York, NY 10016

Drilling Method:	Geoprobe Direct Push
Sampling Method:	Direct Push Probe
Driller:	Eastern Environmental
Weather:	75-81°F, Sunny
Logged by:	E. Faneuff, AKRF

Drilling

Start Time: 10:45 | Finish Time: 11:10

Date: 8/17/21

Depth (feet)	Well Construction	Surface Condition: Asphalt	Recovery (Inches)	Soil Boring Log	Odor	Moisture	PID	NAPL	Soil Samples Collected for Laboratory Analysis
1		Flush-mounted well cover, locking j-plug, and concrete seal: grade to 0.5' below grade.	26	Top 6": CONCRETE.	ND	Dry	1.7	ND	
2		Bentonite chips: 0.5' to 1' below grade		Bottom 20": Brown SAND, some Silt, trace Brick, Gravel (Fill).	ND	Dry	7.2	ND	RI-SB-09_ (0-2)_20210817
3		2" diameter PVC well casing:							
4		0' - 15' below grade.							
5			35	Top 20": Brown SAND, some Silt, trace Brick, Gravel (Fill).	ND	Dry	0.5	ND	
6		No. 2 morie sandpack filter: 1' to 15' below grade							
7				Next 5": Dark brown SILT, some Wood, trace Sand, Roots.	ND	Dry	70.4	ND	
8									
9		0.020-inch slotted PVC well screen: 5' to 15' below grade							RI-SB-09_ (9-11)_20210817 (MS/MSD collected)
10				Bottom 10": Gray SILT, little Sand.	Petroleum-like odor	Moist	296.7	ND	
11			38	Top 20": Brown SILT, some Sand.	Petroleum-like odor	Wet	132.3	ND	
12									
13									
14				Bottom 18": Green/gray SAND, some Silt, trace Gravel, weathered Bedrock	Petroleum-like odor	Wet	146.6	ND	
15		End cap & bottom of screen: 15' bgs							
16									
17									
18									
19									
20									

Notes:
▼ Groundwater Depth Indicator
Groundwater measured at 5.54 feet below grade in RI-MW-05 on August 30, 2021.
Groundwater monitoring well installed to 15 feet below grade.

Soil samples analyzed for VOCs, SVOCs, Pesticides, PCBs, Metals, 1,4-Dioxane and PFAS.
Groundwater encountered at approximately 9 feet below grade during soil boring installation.
End of soil boring at 15 feet below grade.

PID = photoionization detector NAPL = non-aqueous phase liquid ND = not detected

Soil classifications and descriptions presented are based on the Modified Burmister Classification System. Descriptions were developed for environmental purposes only.

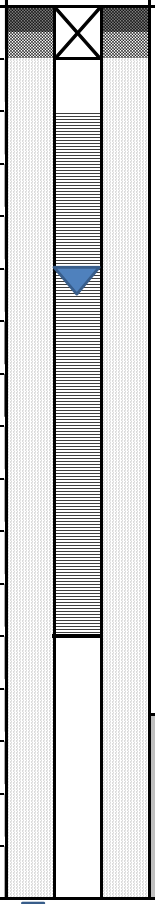
SOIL BORING AND WELL INSTALLATION LOG	Seton Brilla Charter School 1956 Jerome Avenue, Bronx, NY AKRF Project Number: 210024	Groundwater Monitoring Well ID: Sheet 1 of 1	RI-MW-06	Soil Boring ID:	RI-SB-10

AKRF
440 Park Avenue South, 7th Floor
New York, NY 10016

Drilling Method:	Geoprobe Direct Push
Sampling Method:	Direct Push Probe
Driller:	Eastern Environmental
Weather:	75-81°F, Sunny
Logged by:	E. Faneuff, AKRF

Start Time: 7:20 | Finish Time: 9:20

Date: 8/18/21

Depth (feet)	Well Construction	Surface Condition: Asphalt	Recovery (Inches)	Soil Boring Log	Odor	Moisture	PID	NAPL	Soil Samples Collected for Laboratory Analysis
1		**Flush-mounted well cover, locking j-plug, and concrete seal: grade to 0.5' below grade.**	24	Top 4": CONCRETE.	ND	Dry	4.7	ND	
2		**Bentonite chips: 0.5' to 1' below grade**		Bottom 20": Brown SAND, some Silt, trace Brick, Concrete, Gravel (Fill).	ND	Dry	31.3	ND	RI-SB-10_ (0-2)_20210818
3		**1" diameter PVC well casing: 0' - 12' below grade.**	29	Top 14": Brown SAND, some Silt, trace Brick, Concrete, Gravel (Fill).	ND	Dry	0.0	ND	
4									
5				Bottom 15": Brown SAND, some Silt, little Gravel (Fill).	ND	Dry	9.2	ND	
6		**No. 2 morie sandpack filter: 1' to 12' below grade**	36	Top 6": Brown SAND, some Silt, little Gravel (Fill).	Petroleum-like odor	Moist	16.9	ND	
7				Next 10": Dark brown SILT, little Wood, trace Sand, Roots, Gravel (Fill).	Petroleum-like odor	Moist	376.8	ND	RI-SB-10_ (6-8)_20210818 (Duplicate collected)
8				Bottom 10": Gray SILT, little Sand.	Petroleum-like odor	Moist	376.8	ND	
9		**0.020-inch slotted PVC well screen: 2' to 12' below grade**							
10			36	Gray SAND, some silt, trace Gravel.	Petroleum-like odor	Wet	996.7	ND	
11									
12		**End cap & bottom of screen: 12' bgs**							
13			6	Gray SAND, some Silt.	Petroleum-like odor	Wet	218.6	ND	
14									
15									
16									
17									

Notes: ▼ **Groundwater Depth Indicator**

Groundwater measured at 5.64 feet below grade in RI-MW-06 on August 30, 2021.

Groundwater monitoring well installed to 15 feet below grade.

Soil samples analyzed for VOCs, SVOCs, Pesticides, PCBs, Metals, 1,4-Dioxane and PFAS.

Groundwater encountered at approximately 9 feet below grade during soil boring installation.

End of soil boring at 15 feet below grade.

PID = photoionization detector **NAPL = non-aqueous phase liquid** **ND = not detected**

Soil classifications and descriptions presented are based on the Modified Burmister Classification System. Descriptions were developed for environmental purposes only.

SOIL BORING AND WELL INSTALLATION LOG	Seton Brilla Charter School 1956 Jerome Avenue, Bronx, NY AKRF Project Number: 210024	Groundwater Monitoring Well ID: Sheet 1 of 1	RI-MW-07	Soil Boring ID:	RI-SB-11

AKRF
440 Park Avenue South, 7th Floor
New York, NY 10016

Drilling Method:	Geoprobe Direct Push
Sampling Method:	Direct Push Probe
Driller:	Eastern Environmental
Weather:	75-81°F, Sunny
Logged by:	E. Faneuff, AKRF

Start Time: 10:30 | Finish Time: 11:30

Date: 8/18/21

Depth (feet)	Well Construction	Surface Condition: Asphalt	Recovery (Inches)	Soil Boring Log	Odor	Moisture	PID	NAPL	Soil Samples Collected for Laboratory Analysis
1		Flush-mounted well cover, locking j-plug, and concrete seal: grade to 0.5' below grade.	24	Top 2": CONCRETE.	ND	Dry	45.6	ND	
2		Bentonite chips: 0.5' to 1' below grade		Bottom 20": Brown SAND, some Silt, trace Brick, Concrete, Gravel (Fill).	ND	Dry	100.1	ND	RI-SB-11_ (0-2)_20210818
3		1" diameter PVC well casing:	26	Top 16": Brown SAND, some Silt, trace Brick, Concrete, Gravel (Fill).	ND	Dry	20.3	ND	RI-SB-11_ (4-6)_20210818
4		0' - 12' below grade.							
5				Bottom 10": Brown SILT, some Sand, trace Brick, Gravel (Fill).	ND	Moist	13.2	ND	
6		No. 2 morie sandpack filter: 1' to 11' below grade	26	Top 6": Brown SILT, some Sand, trace Brick, Gravel (Fill).	ND	Wet	10.8	ND	
7				Next 5": Dark brown SILT, some Wood, trace Sand, Roots.	ND	Wet	6.2	ND	
8				Bottom 15": Brown SAND, some Silt, trace Gravel.	ND	Wet	15.7	ND	
9		0.020-inch slotted PVC well screen: 2' to 11' below grade	36	Top 16": Brown SAND, some Silt, trace Gravel.	ND	Wet	27.2	ND	
10									
11		End cap & bottom of screen: 11' bgs		Bottom 20": Light brown SAND, little Weathered Bedrock, trace Silt.	ND	Wet	24.6	ND	
12									
13									
14									
15									
16									
17									

Notes:
▼ Groundwater Depth Indicator
Groundwater measured at 5.54 feet below grade in RI-MW-05 on August 30, 2021.
Groundwater monitoring well installed to 11 feet below grade.

Soil samples analyzed for VOCs, SVOCs, Pesticides, PCBs, Metals, 1,4-Dioxane and PFAS.
Groundwater encountered at approximately 6 feet below grade during soil boring installation.
End of soil boring on refusal at 12 feet below grade.

PID = photoionization detector NAPL = non-aqueous phase liquid ND = not detected

Soil classifications and descriptions presented are based on the Modified Burmister Classification System. Descriptions were developed for environmental purposes only.

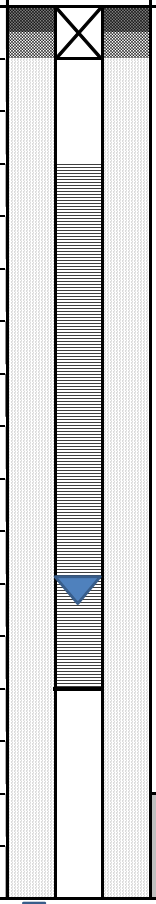
SOIL BORING AND WELL INSTALLATION LOG	Seton Brilla Charter School 1956 Jerome Avenue, Bronx, NY AKRF Project Number: 210024	Groundwater Monitoring Well ID: Sheet 1 of 1	RI-MW-08	Soil Boring ID:	RI-SB-12

AKRF
440 Park Avenue South, 7th Floor
New York, NY 10016

Drilling Method:	Geoprobe Direct Push
Sampling Method:	Direct Push Probe
Driller:	Eastern Environmental
Weather:	87°F, Sunny
Logged by:	H. Thompson, AKRF

Start Time: 10:30 | Finish Time: 11:30

Date: 8/24/21

Depth (feet)	Well Construction	Surface Condition: Asphalt	Recovery (Inches)	Soil Boring Log	Odor	Moisture	PID	NAPL	Soil Samples Collected for Laboratory Analysis
1		**Flush-mounted well cover, locking j-plug, and concrete seal: grade to 0.5' below grade.** **Bentonite chips: 0.5' to 1' below grade** **1" diameter PVC well casing: 0' - 16' below grade.** **No. 2 morie sandpack filter: 1' to 16' below grade** **0.020-inch slotted PVC well screen: 3' to 13' below grade** **End cap & bottom of screen: 13' bgs**	16	Brown SAND, some Silt, trace fine Gravel, Wood (Fill).	ND	Dry	ND	ND	RI-SB-12_ (0-2)_20210824
2									
3									
4			18	Brown SAND, some Silt, trace fine Gravel, Brick, Concrete (Fill).	ND	Dry	ND	ND	
5									
6									
7			14	Brown SAND, some Silt, trace fine Gravel, Wood.	ND	Dry	ND	ND	
8									
9									
10			19	Brown SAND, some Silt, trace fine Gravel, Wood.	ND	Moist	ND	ND	RI-SB-12_ (9-11)_20210824
11									
12									
13			34	Dark brown and gray SAND, some Silt, trace fine Gravel.	ND	Wet	ND	ND	
14									
15									
16									
17									

Notes: ▼ Groundwater Depth Indicator

Groundwater measured at 11.48 feet below grade in RI-MW-07 on August 31, 2021.

Groundwater monitoring well installed to 13 feet below grade.

Soil samples analyzed for VOCs, SVOCs, Pesticides, PCBs, Metals, 1,4-Dioxane and PFAS.

Groundwater encountered at approximately 12 feet below grade during soil boring installation.

End of soil boring at 15 feet below grade.

PID = photoionization detector **NAPL = non-aqueous phase liquid** **ND = not detected**

Soil classifications and descriptions presented are based on the Modified Burmister Classification System. Descriptions were developed for environmental purposes only.

SOIL BORING LOG

Seton Brilla Charter School 1956 Jerome Avenue, Bronx, NY	Soil Boring ID: **RI-SB-13**
AKRF Project Number: 210024	Sheet 1 of 1

AKRF
440 Park Avenue South, 7th Floor
New York, NY 10016

Drilling Method:	Geoprobe Direct Push
Sampling Method:	Direct Push Probe
Driller:	Eastern
Weather:	87°F, Sunny
Logged By:	H. Thompson

Drilling
Start Time: 9:00 **Finish Time: 13:00**
Date: 8/24/21

Depth (feet)	Recovery (Inches)	Surface Condition: Wood Floor/Concrete	Odor	Moisture	PID (ppm)	NAPL	Soil Samples Collected for Laboratory Analysis
1	23	Top 13": CONCRETE	ND	Dry	0.1	ND	
2							
3		Bottom 10": Brown SAND, some Silt, trave fine Gravel (Fill).	ND	Dry	0.1	ND	RI-SB-13_(0-2)_20210824
4	20	Brown SAND, some Silt, trace fine Gravel (Fill).	ND	Dry	ND	ND	
5							
6							
7	34	Top 14": Brown SAND, little Concrete, trace Gravel, Wood, Silt (Fill).	ND	Dry	ND	ND	
8							
9		Bottom 20": Brown SAND, some Silt, trace fine Gravel (Fill).	ND	Dry	ND	ND	
10	20	Brown SAND, little Gravel, trace Concrete, Wood, Silt (Fill).	ND	Dry	ND	ND	RI-SB-13_(10-12)_20210824
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							

Notes: Soil sample analyzed for VOCs, SVOCs, TAL Metals, Pesticides, PCBs, Total Cyanide, Hexavalent Chromium, 1-4 Dioxane, and PFAS.

Groundwater not encountered during soil boring installation.

End of soil boring on refusal at 12 feet below grade.

PID = photoionization detector **ppm = parts per million** **NAPL = non-aqueous phase liquid** **ND = not detected**

Soil classifications and descriptions presented are based on the Modified Burmister Classification System. Descriptions were developed for environmental purposes only.

SOIL BORING AND WELL INSTALLATION LOG	Seton Brilla Charter School 1956 Jerome Avenue, Bronx, NY AKRF Project Number: 210024	Groundwater Monitoring Well ID: Sheet 1 of 1	RI-MW-09	Soil Boring ID:	RI-SB-14

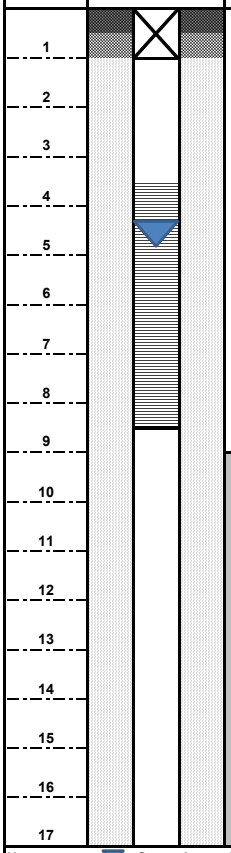
AKRF
440 Park Avenue South, 7th Floor
New York, NY 10016

Drilling Method:	Geoprobe Direct Push
Sampling Method:	Direct Push Probe
Driller:	Eastern Environmental
Weather:	87°F, Sunny
Logged by:	H. Thompson, AKRF

Start Time: 13:30 | Finish Time: 14:00

Date: 8/24/21

Surface Condition: Asphalt



Depth (feet)	Well Construction	Recovery (Inches)	Soil Boring Log	Odor	Moisture	PID	NAPL	Soil Samples Collected for Laboratory Analysis
1–3	Flush-mounted well cover, locking j-plug, and concrete seal: grade to 0.5' below grade. Bentonite chips: 0.5' to 1' below grade 1" diameter PVC well casing: 0' - 8.5' below grade. No. 2 morie sandpack filter: 1' to 8.5' below grade	22	Brown SAND, some Silt, trace fine Gravel (Fi	ND	Dry	ND	ND	RI-SB-14_ (0-2)_20210824
4–6		24	Brown SAND, some Silt, trace fine Gravel (Fill).	ND	Dry	ND	ND	
7–8	0.020-inch slotted PVC well screen: 3.5' to 8.5' below grade	24	Top 22": Brown SAND, some Silt, trace fine Gravel (Fill).	ND	Moist	ND	ND	RI-SB-14_ (6-8)_20210824
8–9	End cap & bottom of screen: 8.5' bgs		Bottom 2": ROCK (possible bedrock)	ND	Wet	ND	ND	

Notes:

▼ Groundwater Depth Indicator

Groundwater measured at 4.81 feet below grade in RI-MW-07 on August 31, 2021.

Groundwater monitoring well installed to 8.5 feet below grade.

Soil samples analyzed for VOCs, SVOCs, Pesticides, PCBs, Metals, 1,4-Dioxane and PFAS.

Groundwater encountered at approximately 8 feet below grade during soil boring installation.

End of soil boring on refusal at 9 feet below grade.

PID = photoionization detector NAPL = non-aqueous phase liquid ND = not detected

Soil classifications and descriptions presented are based on the Modified Burmister Classification System. Descriptions were developed for environmental purposes only.

SOIL BORING LOG

Seton Brilla Charter School 1956 Jerome Avenue, Bronx, NY	Soil Boring ID: **RI-SB-15**
AKRF Project Number: 210024	Sheet 1 of 1

AKRF
440 Park Avenue South, 7th Floor
New York, NY 10016

Drilling Method:	Direct Push
Sampling Method:	Grab
Driller:	Eastern
Weather:	87°F, Sunny
Logged By:	H. Thompson

Drilling
Start Time: 14:05 **Finish Time: 14:30**
Date: 8/24/21

Depth (feet)	Recovery (Inches)	Surface Condition: Concrete	Odor	Moisture	PID (ppm)	NAPL	Soil Samples Collected for Laboratory Analysis
1 2 3	25	Brown SAND, some Silt, trace fine Gravel.	ND	Dry	ND	ND	RI-SB-15_(0-2)_20210824
4 5	0	No recovery.					
6 7 8 9 10 11 12 13 14 15 16 17 18 19 20							

Notes: Soil sample analyzed for VOCs, SVOCs, TAL Metals, Pesticides, PCBs, Total Cyanide, Hexavalent Chromium, 1-4 Dioxane, and PFAS.

Groundwater not encountered during soil boring installation.

End of soil boring at refusal depth of 5 feet below grade.

PID = photoionization detector ppm = parts per million NAPL = non-aqueous phase liquid ND = not detected

Soil classifications and descriptions presented are based on the Modified Burmister Classification System. Descriptions were developed for environmental purposes only.

APPENDIX E

POST-REMEDIAL MONITORING WELL CONSTRUCTION AND DEVELOPMENT LOGS

AKRF

Well Development Log

Job No: 210024	**Client:**	**Well No:** MW-01	
Project Location: 1956 Jerome Ave	**Sampled By:** L Belangia		
Date: 7/7/23	**Time:** 1050		
Total Depth: 17.5 ft.	**Well Diameter:** 2 in.	**Well Volume (V) = Br 2 h (cf)**	
Depth to Water: 7 ft.	**Well Volume*:** 1.71 gal.	B = pi (approx. 3.14)	
Water Column (WC): 10.5 ft.		r = monitoring well radius in ft.	
		h = height of the water column in ft.	
		cf = conversion factor = 7.48 gal/ft³	

Time	Pump Rate G/min	Turbidity (NTU)	Temperature (°C)	Conductivity (mS/cm)	DO (mg/L)	pH	ORP (mV)	Comments (note color or odors)
1050	0.25	2455	22.9	1.590	4.44	7.59	33.4	
1130	0.25	1722	21.6	1.644	4.16	7.54	17.1	
1145	0.25	1436	21.5	1.643	3.22	7.53	0.4	
1200	0.25	981.24	21.5	1.590	3.20	7.54	-1.6	
1215	0.25	796.24	21.4	1.601	2.98	7.55	-10.4	
1225	0.25	541.29	21.5	1.612	2.93	7.54	-11.6	
1235	0.25	376.44	21.4	1.609	2.83	7.54	-20.8	
1240	0.25	155.31	21.4	1.611	2.69	7.55	-23.7	
1245	0.25	94.76	21.4	1.613	2.44	7.55	-26.0	
1250	0.25	71.77	21.4	1.612	2.21	7.53	-27.8	
1255	0.25	65.62	21.4	1.612	2.22	7.54	-27.9	
1300	0.25	55.59	21.4	1.607	2.19	7.53	-30.3	
1305	0.25	49.91	21.6	1.617	2.17	7.54	-30.7	
1310	0.25	49.01	21.5	1.612	2.17	7.54	-31.8	
1315	0.25	47.61	21.4	1.603	2.17	7.54	-32.3	

Total Volume Purged:

2.42 • 60 • 0.25 = 36.3 G

For Surge Method: Purge until water quality parameters are stabile (within 10%) for three successive readings, and turbidity is less than 50 NTU for three successive readings.
For Bailer Method: Purge a minimum of three well volumes and water appears clear in the bailer.

AKRF

Well Development Log

0925 (7/7/23)

Job No:

Project Location: 1956 Jerome Ave

Date: ~~7~~/6/23

Client:

Sampled By: S. Gareis / L Belanger

Time:

Well No: MW-02

Total Depth:	18.87 ft.	Well Diameter:	2 in.
Depth to Water:	5.62 ft.	Well Volume*:	2.160 gal.
Water Column (WC):	13.25 ft.		

Well Volume (V) = Br 2 h (cf)
B = pi (approx. 3.14)
r = monitoring well radius in ft.
h = height of the water column in ft.
cf = conversion factor = 7.48 gal/ft³

	Time	Pump Rate (G/min)	Turbidity (NTU)	Temperature (°C)	Conductivity (mS/cm)	DO (mg/L)	pH	ORP (mV)	Comments (note color or odors)
7/6/23	1410	0.25	1960	22.1	1.590	~~3~~2.82	7.56	31.1	Petroleum/like odors noted on purge water
	1415	0.25	1767	19.6	1.646	4.06	7.57	-22.6	No Sheen noted
	1430	0.25	1581	21.0	1.618	3.24	7.6	-13.5	No NAPL detected
	1506	0.25	1130	22.6	1.631	3.35	7.58	2.7	with probe
	1516	0.25	1040	20.5	1.595	2.92	7.54	2.1	
7/7/23	0940	0.25	966	21.4	1.610	2.74	7.53	1.4	
	0955	0.25	296	21.3	1.594	2.46	7.54	-15.5	
	1000	0.25	197	21.3	1.593	2.53	7.60	-2.9	
	1065	0.25	115	21.4	1.590	2.43	7.53	-34.3	
	1010	0.25	104	21.4	1.586	2.44	7.54	-32.7	
	1020	0.25	72	21.4	1.585	2.43	7.58	-38.9	
	1025	0.25	49	21.4	1.582	2.43	7.57	-34.2	
	1030	0.25	46	21.4	1.583	2.43	7.55	-33.1	
	1035	0.95	44	21.4	1.580	2.43	7.56	-34.4	

Total Volume Purged:

2 · 60 · 0.25 = 30 Gal

For Surge Method: Purge until water quality parameters are stabile (within 10%) for three successive readings, and turbidity is less than 50 NTU for three successive readings.

Method: Purge a minimum of three well volumes and water appears clear in the bailer.

For Bailer

AKRF

Well Development Log

Job No:	210024	**Client:**	2-6 ETrement
Project Location:	1456 Jerome Ave	**Sampled By:**	L Belanger
Date:	7/13/23	**Time:**	
			Well No: MW-03
Total Depth:	16.3 ft.	**Well Diameter:**	2 in.
Depth to Water:	7.3 ft.	**Well Volume*:**	1.48 gal.
Water Column (WC):	9 ft.		

Well Volume (V) = Br 2 h (cf)
B = pi (approx. 3.14)
r = monitoring well radius in ft.
h = height of the water column in ft.
cf = conversion factor = 7.48 gal/ft³

Time	Pump Rate (G/min)	Turbidity (NTU)	Temperature (°C)	Conductivity (mS/cm)	DO (mg/L)	pH	ORP (mV)	Comments (note color or odors)
0900	0.25	2624	23.6	1.554	2.79	7.64	32.8	Brown
0915	0.25	1954	22.4	1.561	2.78	7.69	19.4	
0930	0.25	1424	22.3	1.553	2.66	7.69	14.6	
0945	0.25	1112	22.4	1.549	2.67	7.68	-2.8	
1000	0.25	1009.	22.4	1.545	2.62	7.68	11.7	
1015	0.25	874.19	22.4	1.542	2.61	7.68	-13.4	
1030	0.25	794.62	22.4	1.542	2.59	7.68	-19.8	
1045	0.25	571.52	22.4	1.543	2.55	7.68	-24.9	
1115	0.25	390.64	22.3	1.539	2.43	7.68	-26.9	
1140	0.25	170.07	22.3	1.532	2.42	7.67	-27.7	
1150	0.25	100.81	22.2	1.534	2.41	7.67	-30.8	
1200	0.25	70.93	22.2	1.535	2.39	7.67	-34.4	
1205	0.25	55.11	22.2	1.536	2.39	7.67	-36.5	Clear
1210	0.25	49.90	22.2	1.535	2.37	7.67	-39.3	
1215	0.25	47.66	22.2	1.534	2.36	7.67	-39.2	
1220	0.25	42.42	22.2	1.535	2.36	7.67	-40.1	

Total Volume Purged:

$3.3 \cdot 60 \cdot 0.25 = 50$ Gal

For Surge Method: Purge until water quality parameters are stabile (within 10%) for three successive readings, and turbidity is less than 50 NTU for three successive readings.
For Bailer Method: Purge a minimum of three well volumes and water appears clear in the bailer.

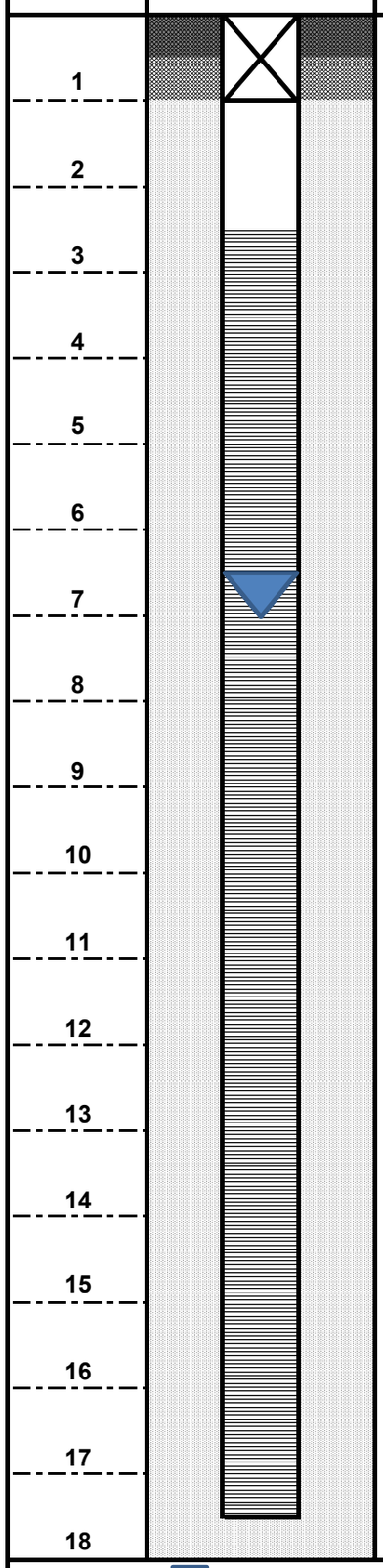
SOIL BORING AND WELL INSTALLATION LOG	Seton Brilla Charter School 1956 Jerome Avenue, Bronx, NY	Groundwater Monitoring Well ID:	MW-01	Soil Boring ID:	SB-01
	AKRF Project Number: 210024	Sheet 1 of 1			

AKRF
440 Park Avenue South, 7th Floor
New York, NY 10016

Drilling Method:	Geoprobe Direct Push
Sampling Method:	Direct Push Probe
Driller:	Eastern Environmental
Weather:	87°F, Sunny
Logged by:	L. Belangia, AKRF

Start Time: 10:00 | **Finish Time: 12:00**

Date: 6/28/23



Surface Condition: Asphalt

Flush-mounted well cover, locking j-plug, and concrete seal: grade to 0.5' below grade.

Bentonite chips: 0.5' to 1' below grade

1" diameter PVC well casing: 0' - 17.5' below grade.

No. 2 morie sandpack filter: 1' to 17.5' below grade

0.020-inch slotted PVC well screen: 2.5' to 17.5' below grade

End cap & bottom of screen: 17.5' bgs

Recovery (Inches)	Soil Boring Log	Odor	Moisture	PID	NAPL	Notes:
60	GRAVEL, some sand.	ND	Dry	ND	ND	
60	GRAVEL, some sand.	ND	Moist	ND	ND	Wet at 7' bgs
60	Brown SAND, some Silt, trace fine Gravel.	Petroleum-like	Wet	ND	ND	
24	Gray SAND, some Silt, trace fine Gravel.	Petroleum-like	Wet	ND	ND	

Notes: ▼ **Groundwater Depth Indicator**

Groundwater measured at 7 feet below grade in MW-01 on July 7, 2023.

Groundwater monitoring well installed to 17.5 feet below grade.

Groundwater encountered at approximately 6 feet below grade during soil boring installation.

End of soil boring at 17.5 feet below grade.

PID = photoionization detector **NAPL = non-aqueous phase liquid** **ND = not detected**

Soil classifications and descriptions presented are based on the Modified Burmister Classification System. Descriptions were developed for environmental purposes only.

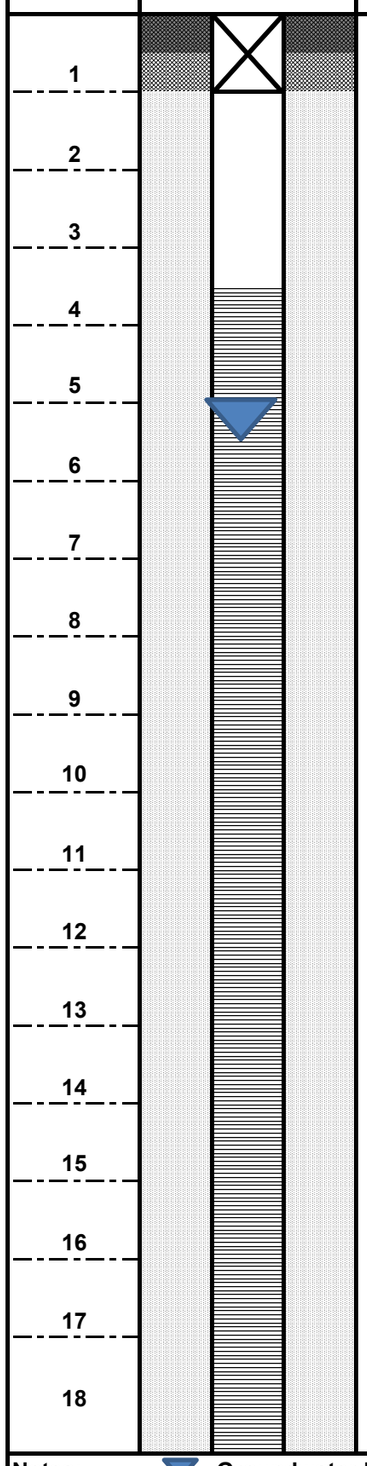
SOIL BORING AND WELL INSTALLATION LOG	Seton Brilla Charter School 1956 Jerome Avenue, Bronx, NY AKRF Project Number: 210024	Groundwater Monitoring Well ID: Sheet 1 of 1	MW-02	Soil Boring ID:	SB-02

AKRF
440 Park Avenue South, 7th Floor
New York, NY 10016

Drilling Method:	Geoprobe Direct Push
Sampling Method:	Direct Push Probe
Driller:	Eastern Environmental
Weather:	87°F, Sunny
Logged by:	L. Belangia, AKRF

Start Time: 08:00 | Finish Time: 09:30

Date: 6/28/23



Surface Condition: Asphalt

Flush-mounted well cover, locking j-plug, and concrete seal: grade to 0.5' below grade.

Bentonite chips: 0.5' to 1' below grade

1" diameter PVC well casing: 0' - 18.5' below grade.

No. 2 morie sandpack filter: 1' to 17.5' below grade

0.020-inch slotted PVC well screen: 2.5' to 17.5' below grade

End cap & bottom of screen: 17.5' bgs

Recovery (Inches)	Soil Boring Log	Odor	Moisture	PID	NAPL	Notes:
60	GRAVEL, some sand.	ND	Dry	ND	ND	
60	GRAVEL, some sand.	ND	Wet	ND	ND	Wet at 5.5' bgs
60	Brown SAND, some Silt, trace fine Gravel.	Petroleum-like	Wet	ND	ND	
36	Gray SAND, some Silt, trace fine Gravel.	Petroleum-like	Wet	ND	ND	

Notes: ▽ Groundwater Depth Indicator

Groundwater measured at 5.5 feet below grade in MW-02 on July 6, 2023.

Groundwater monitoring well installed to 8.5 feet below grade.

Groundwater encountered at approximately 7 feet below grade during soil boring installation.

End of soil boring at 17.5 feet below grade.

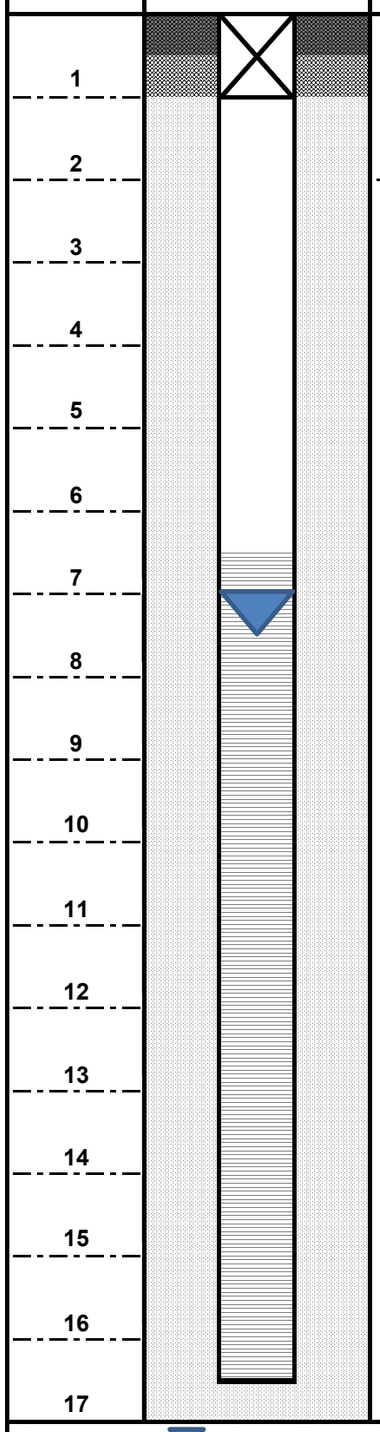
SOIL BORING AND WELL INSTALLATION LOG	Seton Brilla Charter School 1956 Jerome Avenue, Bronx, NY AKRF Project Number: 210024	Groundwater Monitoring Well ID: Sheet 1 of 1	MW-03	Soil Boring ID:	SB-03

AKRF
440 Park Avenue South, 7th Floor
New York, NY 10016

Drilling Method:	Geoprobe Direct Push
Sampling Method:	Direct Push Probe
Driller:	Eastern Environmental
Weather:	87°F, Sunny
Logged by:	L. Belangia, AKRF

Start Time: 13:00 | Finish Time: 15:00

Date: 7/10/23



Depth (feet)	Well Construction	Surface Condition: Asphalt	Recovery (inches)	Soil Boring Log	Odor	Moisture	PID	NAPL	Soil Samples Collected for Laboratory Analysis
1–2		**Temporary Steel Stickup with locking cap.**							Excavated to approx. 2 feet bgs as part of remediation action.
3–5		**Bentonite chips: 2.5' to 3' below grade** **1" diameter PVC well casing: 0' - 16.5' below grade.**	34	Brown SAND, some Silt, trace fine Gravel, Wood (Fill).	ND	Dry	ND	ND	
6–9		**No. 2 morie sandpack filter: 3' to 16.5' below grade** **0.020-inch slotted PVC well screen: 6.5' to 16.5' below grade**	43	Top 24": Brown SAND, some Silt, trace fine Gravel (Fill). Bottom 19": Brown SAND, some Silt.	ND ND	Moist Wet	ND ND	ND ND	Wet at 7.5' bgs.
10–13		**End cap & bottom of screen: 16.5' bgs**	34	Dark brown SAND, some Silt, trace fine Gravel.	ND	Wet	ND	ND	
14–17			18	Dark brown SAND, some Silt, trace fine Gravel.	ND	Wet	ND	ND	

Notes: ▼ **Groundwater Depth Indicator**

Groundwater measured at 7.5 feet below grade in MW-03 on July 13, 2023.

Groundwater monitoring well installed to 16.5 feet below grade.

Groundwater encountered at approximately 7 feet below grade during soil boring installation.

End of soil boring at 16.5 feet below grade.

PID = photoionization detector **NAPL = non-aqueous phase liquid** **ND = not detected**

Soil classifications and descriptions presented are based on the Modified Burmister Classification System. Descriptions were developed for environmental purposes only.

APPENDIX F
EXCAVATION WORK PLAN

EXCAVATION WORK PLAN

1.1 Notification

At least 15 days prior to the start of any activity that is anticipated to encounter remaining contamination, the Site owner or their representative will notify the New York State Department of Environmental Conservation (NYSDEC) contacts listed in Table F-1, below. The information on this table will be updated as necessary to provide accurate contact information. A full listing of Site-related contact information is provided in Appendix B.

Table F-1
Notifications*

Rafi Alam NYSDEC Project Manager	(518) 402-8606 / rafi.alam@dec.ny.gov
Heidi Dudeck NYSDEC DER Project Manager's Supervisor	(518) 402-0193 / heidi.dudek@dec.ny.gov
Lexy Servis, NYSDEC Site Control	(518) 402-9473 / alexandra.servis@dec.ny.gov

* Note: Notifications are subject to change and will be updated as necessary.

This notification will include:

- A detailed description of the work to be performed, including the location and areal extent of excavation, plans/drawings for Site re-grading, intrusive elements or utilities to be installed below the soil cover, estimated volumes of contaminated soil to be excavated, any modifications of truck routes, and any work that may impact an engineering control;
- A summary of environmental conditions anticipated to be encountered in the work areas, including the nature and concentration levels of contaminants of concern, potential presence of grossly contaminated media, and plans for any pre-construction sampling;
- A schedule for the work, detailing the start and completion of all intrusive work;
- A summary of the applicable components of this Excavation Work Plan (EWP);
- A statement that the work will be performed in compliance with this EWP, 29 Code of Federal Regulations (CFR) 1910.120 and 29 CFR 1926 Subpart P;
- A copy of the contractor's Health and Safety Plan (HASP), in electronic format, if it differs from the HASP provided in Appendix G of this Site Management Plan (SMP);
- Identification of disposal facilities for potential waste streams; and
- Identification of sources of any anticipated backfill, along with the required request to import form and all supporting documentation, including, but not limited to, chemical testing results.

The NYSDEC project manager will review the notification and may impose additional requirements for the excavations that are not listed in this EWP.

1.2 Soil Screening Methods

Visual, olfactory, and instrument-based (e.g., photoionization detector) soil screening will be performed during all excavations into known or potentially contaminated material (remaining contamination) or a breach of the cover system. A qualified environmental professional (QEP) as

defined in 6 New York Codes, Rules, and Regulations (NYCRR) Part 375, a Professional Engineer (PE) who is licensed and registered in New York State, or a qualified person who directly reports to a PE who is licensed and registered in New York State will perform the screening. Soil screening will be performed when invasive work is done and will include all excavation and invasive work performed during development, such as excavations for foundations and utility work, after issuance of the Certificate of Completion.

Soils will be segregated based on previous environmental data and screening results into material that requires off-site disposal and material that requires testing to determine if the material can be reused on-site as soil beneath a cover or if the material can be used as cover soil. Further discussion of off-site disposal of materials and on-site reuse is provided in Sections 1.6 and 1.7 of this EWP.

1.3 Soil Staging Methods

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

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

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

1.4 Materials Excavation and Load-Out

A QEP as defined in 6 NYCRR Part 375, a PE who is licensed and registered in New York State, or a qualified person who directly reports to a PE who is licensed and registered in New York State will oversee all invasive work and the excavation and load-out of all excavated material.

The owner of the property and remedial party (if applicable) and its contractors are responsible for safe execution of all invasive and other work performed under this SMP.

The presence of utilities and easements on the Site will be investigated by the QEP. It will be determined whether a risk or impediment to the planned work under this SMP is posed by utilities or easements on the Site. A Site utility stakeout will be completed for all utilities prior to any ground intrusive activities at the Site.

Loaded vehicles leaving the Site will be appropriately lined, tarped, securely covered, manifested, and placarded in accordance with appropriate federal, state, local, and New York State Department of Transportation (NYSDOT) requirements (and all other applicable transportation requirements).

A truck wash will be operated on-site, as appropriate. The QEP will be responsible for ensuring that all outbound trucks will be washed at the truck wash before leaving the Site until the activities performed under this section are complete. Truck wash waters will be collected and disposed of off-site in an appropriate manner.

Locations where vehicles enter or exit the Site shall be inspected daily for evidence of off-site soil tracking.

The QEP will be responsible for ensuring that all egress points for truck and equipment transport from the Site are clean of dirt and other materials derived from the Site during intrusive excavation activities. Cleaning of the adjacent streets will be performed as needed to maintain a clean condition with respect to Site-derived materials. Material accumulated from the street cleaning and egress cleaning activities will be disposed off-site at a permitted landfill facility in accordance with all applicable local, state, and federal regulations.

1.5 Materials Transport Off-Site

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

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

Truck transport routes are as follows:

- Trucks entering the Site will be traveling via the Cross Bronx Expressway (Interstate I-95), and will turn right onto Jerome Avenue. The Site will be on the right.
- Trucks leaving the Site will head south on Jerome Avenue; will turn right onto the Cross Bronx Expressway.

All trucks loaded with Site materials will exit the vicinity of the Site using only these approved truck routes. These are the most appropriate routes and take into account: (a) limiting transport through residential areas and past sensitive sites; (b) use of city mapped truck routes; (c) prohibiting off-site queuing of trucks entering the facility; (d) limiting total distance to major highways; (e) promoting safety in access to highways; and (f) overall safety in transport.

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

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

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

1.6 Materials Disposal Off-Site

All material excavated and removed from the Site will be treated as contaminated and regulated material and will be transported and disposed off-site in a permitted facility in accordance with all local, state, and federal regulations. If disposal of material from this Site is proposed for unregulated off-site disposal (i.e., clean soil removed for development purposes), a formal request with an associated plan will be made to the NYSDEC project manager. Unregulated off-site management of materials from this Site will not occur without formal NYSDEC project manager approval.

Off-site disposal locations for excavated soils will be identified in the pre-excavation notification. This will include estimated quantities and a breakdown by class of disposal facility if appropriate [e.g., hazardous waste disposal facility, solid waste landfill, petroleum treatment facility, construction and debris (C&D) recovery facility]. Actual disposal quantities and associated documentation will be reported to NYSDEC in the Periodic Review Report (PRR). This documentation will include, but will not be limited to: waste profiles, test results, facility acceptance letters, manifests, bills of lading, and facility receipts.

Non-hazardous historic fill and contaminated soils taken off-site will be handled consistent with 6 NYCRR Parts 360, 361, 362, 363, 364, and 365. Material that does not meet Unrestricted Use Soil Cleanup Objectives is prohibited from being taken to a New York State C&D debris recovery facility (6 NYCRR Subpart 360-15 registered or permitted facility).

1.7 Materials Reuse On-Site

The QEP as defined in 6 NYCRR Part 375 will ensure that procedures defined for materials reuse in this SMP are followed and that unacceptable material (i.e., contaminated) does not remain on-site. Contaminated on-site material, including historic fill and contaminated soil, that is acceptable for reuse on-site will be placed below the demarcation layer or impervious surface, and will not be reused within a cover soil layer, within landscaping berms, or as backfill for subsurface utility lines.

Proposed materials for reuse on-site must be sampled for full suite analytical parameters, including per- and polyfluoroalkyl substances (PFAS) and 1,4-dioxane. The sampling frequency will be in accordance with NYSDEC Division of Environmental Remediation (DER)-10 Table 5.4(e)10 unless prior approval is obtained from the NYSDEC project manager for modification of the sampling frequency. The analytical results of soil/fill material testing must meet the Site use criteria presented in NYSDEC DER-10 Appendix 5 – Allowable Constituent Levels for Imported Fill or Soil for all constituents listed, and the NYSDEC Sampling, Analysis, and Assessment of PFAS June 2021 guidance values. Approvals for modifications to the analytical parameters must be obtained from the NYSDEC project manager prior to the sampling event.

Soil/fill material for reuse on-site will be segregated and staged as described in Sections 1.2 and 1.3 of this EWP. The anticipated size and location of stockpiles will be provided in the 15-day notification to the NYSDEC project manager. Stockpile locations will be based on the location of Site excavation activities and proximity to nearby Site features. Material reuse on-site will comply with the requirements of NYSDEC DER-10 Section 5.4I4. Any modifications to the requirements of DER-10 Section 5.4I4 must be approved by the NYSDEC project manager.

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

1.8 Fluids Management

All liquids to be removed from the Site, including but not limited to excavation dewatering, decontamination waters, and groundwater monitoring well purge and development waters, will be handled, transported, and disposed off-site at a permitted facility in accordance with applicable local, state, and federal regulations. Dewatering, purge, and development fluids will not be recharged back to the land surface or subsurface of the Site, and will be managed off-site, unless prior approval is obtained from NYSDEC.

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

1.9 Backfill from Off-Site Sources

All materials proposed for import onto the Site will be approved by the QEP, as defined in 6 NYCRR Part 375, and will be in compliance with the provisions in this SMP prior to receipt at the Site. A Request to Import/Reuse Fill or Soil form, which can be found at http://www.dec.ny.gov/regulations/67386.html, will be prepared and submitted to the NYSDEC project manager, allowing a minimum of 5 business days for review. A copy of the form is presented in Appendix M of the SMP.

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

All imported soils will meet the backfill and cover soil quality standards established in 6 NYCRR 375-6.7(d) and DER-10 Appendix 5 for restricted residential use. Soils that meet 'general' fill requirements under 6 NYCRR Part 360.13, but do not meet backfill or cover soil objectives for this Site, will not be imported onto the Site without prior approval by the NYSDEC project manager. Soil material will be sampled for the full suite of analytical parameters, including PFAS and 1,4-dioxane. Solid waste will not be imported onto the Site.

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

1.10 Stormwater Pollution Prevention

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

Accumulated sediments will be removed as required to keep the barrier and hay bale check functional.

All undercutting or erosion of the silt fence toe anchor shall be repaired immediately with appropriate backfill materials.

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

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

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

1.11 Excavation Contingency Plan

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

Sampling will be performed on product, sediment, and surrounding soils, etc. as necessary to determine the nature of the material and proper disposal method. Chemical analysis will be performed for a full list of analytes [Total Analyte List (TAL) metals, Target Compound List (TCL) volatiles and semi-volatiles (including 1,4-dioxane), TCL pesticides and polychlorinated biphenyls (PCBs), and PFAS], unless the Site history and previous sampling results provide sufficient justification to limit the list of analytes. In this case, a reduced list of analytes will be proposed to the NYSDEC project manager for approval prior to sampling. Any tanks will be closed as per NYSDEC regulations and guidance.

Identification of unknown or unexpected contaminated media identified by screening during invasive Site work will be promptly communicated by phone within two hours to the NYSDEC project manager. Reportable quantities of petroleum product will also be reported to the NYSDEC spills hotline. These findings will be included in the PRR.

1.12 Community Air Monitoring Plan

Air sampling stations will be based on generally prevailing wind conditions. These locations will be adjusted on a daily or more frequent basis based on actual wind directions to provide an upwind and at least one downwind monitoring station. If a sensitive receptor, such as a school, day care, or residential area, is adjacent to the Site, a fixed monitoring station will be located at that Site perimeter, regardless of wind direction.

Exceedances of action levels listed in the Community Air Monitoring Plan (CAMP) will be reported to the NYSDEC and New York State Department of Health (NYSDOH) project managers.

1.13 Special Requirements for Work Within 20 Feet of Potentially Exposed Individuals or Structures

When work areas are within 20 feet of potentially exposed populations or occupied structures, the continuous monitoring locations for VOCs and particulates must reflect the nearest potentially exposed individuals and the location of ventilation system intakes for nearby structures. The use of ECs such as vapor/dust barriers, temporary negative-pressure enclosures, or special ventilation devices should be considered to prevent exposures related to the work activities and to control dust and odors. Consideration should be given to implementing the planned activities when potentially exposed populations are at a minimum, such as during weekends or evening hours in non-residential settings.

- If total VOC concentrations opposite the walls of occupied structures or next to intake vents exceed 1 part per million, monitoring should occur within the occupied structure(s). Depending upon the nature of contamination, chemical-specific colorimetric tubes of sufficient sensitivity may be necessary for comparing the exposure point concentrations with appropriate pre-determined response levels (response actions should also be pre-determined). Background readings in the occupied spaces must be taken prior to commencement of the planned work. Any unusual background readings should be discussed with NYSDOH prior to commencement of the work.
- If total particulate concentrations opposite the walls of occupied structures or next to intake vents exceed 150 micrograms per cubic meter ($\mu g/m^3$), work activities should be suspended until controls are implemented and are successful in reducing the total particulate concentration to 150 $\mu g/m^3$ or less at the monitoring point.
- Depending upon the nature of contamination and remedial activities, other parameters (e.g., explosivity, oxygen, hydrogen sulfide, carbon monoxide) may also need to be monitored. Response levels and actions should be pre-determined, as necessary, for each site.

1.14 Special Requirements for Indoor Work with Co-Located Residences or Facilities

Unless a self-contained, negative-pressure enclosure with proper emission controls will encompass the work area, all individuals not directly involved with the planned work must be absent from the room in which the work will occur. Monitoring requirements shall be as stated above under "Special Requirements for Work Within 20 Feet of Potentially Exposed Individuals or Structures," except that in this instance, "nearby/occupied structures" would be adjacent occupied rooms. Additionally, the location of all exhaust vents in the room and their discharge points, as well as potential vapor pathways (openings, conduits, etc.) relative to adjoining rooms, should be understood and the monitoring locations established accordingly. In these situations, it is strongly recommended that exhaust fans or other engineering controls be used to create negative air pressure within the work area during remedial activities. Additionally, it is strongly recommended that the

planned work be implemented during hours (e.g., weekends or evenings) when building occupancy is at a minimum.

1.15 Odor Control Plan

This odor control plan is capable of controlling emissions of nuisance odors on- and off-site. Specific odor control methods to be used on a routine basis will include monitoring by the on-site QEP or personnel under their direct supervision. If nuisance odors are identified at the Site boundary, or if odor complaints are received, work will be halted and the source of odors will be identified and corrected. Work will not resume until all nuisance odors have been abated. NYSDEC and NYSDOH will be notified of all odor events and of any other complaints about the project. Implementation of all odor controls, including the halt of work, is the responsibility of the remedial party's Remediation Engineer, and any measures that are implemented will be discussed in the PRR.

All necessary means will be employed to prevent on- and off-site nuisances. At a minimum, these measures will include: (a) limiting the area of open excavations and size of soil stockpiles; (b) shrouding open excavations with tarps and other covers; and (c) using foams to cover exposed odorous soils. If odors develop and cannot be otherwise controlled, additional means to eliminate odor nuisances will include: (d) direct load-out of soils to trucks for off-site disposal; (e) use of chemical odorants in spray or misting systems; and (f) use of staff to monitor odors in surrounding neighborhoods.

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

1.16 Dust Control Plan

Particulate monitoring must be conducted according to the CAMP provided in Section 1.12. If particulate levels at the Site exceed the thresholds listed in the CAMP, or if airborne dust is observed on the Site or leaving the Site, the dust suppression techniques listed below will be employed. The remedial party will also take measures listed below to prevent dust production on the Site.

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

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

1.17 Other Nuisances

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

APPENDIX G
HASP AND CAMP

SETON BRILLA CHARTER SCHOOL

1956 JEROME AVENUE, BRONX, NEW YORK

Health and Safety Plan

NYSDEC Site Number: C203152
OER Project Number: 21TMP1325X
E-Designation: E-442

Prepared for:

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

On Behalf Of:

2-6 East Tremont Avenue LLC
450 West 14th Street, 8th Floor
New York, New York 10014

Prepared by:

AKRF, Inc.
440 Park Avenue South, 7th Floor
New York, New York 10016
(212) 696-0670

DECEMBER 2023

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1.0 INTRODUCTION

1.1 Purpose

This Health and Safety Plan (HASP) was prepared by AKRF, Inc. (AKRF) on behalf of 2-6 East Tremont Avenue LLC (the Volunteer) for the Seton Brilla Charter School property (hereinafter referred to as the Site). The Site is an approximately 0.240-acre parcel located at 1956 Jerome Avenue in the Morris Heights section of the Bronx, New York. The Site is identified on the New York City Tax Map as Block 2853, Lot 22. Figure 1 shows the Site location.

The Site was remediated to Track 4 New York State Department of Environmental Conservation (NYSDEC) Part 375 Restricted Residential Soil Cleanup Objectives (RRSCOs) and/or Protection of Groundwater Soil Cleanup Objectives (PGWSCOs) for petroleum-related VOCs only in accordance with the May 2022 NYSDEC-approved Remedial Action Work Plan (RAWP) and Decision Document. A Site Management Plan (SMP) was prepared to manage remaining contamination at the Site, as required by the Environmental Easement. The Environmental Easement is an Institutional Control (IC) restricting the type of use at the Site after completion of the remedial program under the RAWP. Details on the Site environmental history and remedial activities performed under the RAWP are provided in the SMP.

Engineering Controls (ECs) have been incorporated into the Site remedy to control exposure to remaining contamination during the use of the Site to ensure protection of public health and the environment. The following ECs were installed at the Site: (1) a composite cover system; (2) an active sub-slab depressurization system (SSDS); and (3) a contingency soil vapor extraction (SVE) system. An Environmental Easement granted to NYSDEC and recorded with the Bronx County Office of the City Register requires compliance with the SMP, and all ECs and ICs placed on the Site.

The ICs place restrictions on Site use and mandate operation, maintenance, monitoring, and reporting measures for all ECs and ICs. The SMP specifies the methods necessary to ensure compliance with all ECs and ICs required by the Environmental Easement for contamination that may remain at the Site. The SMP has been approved by NYSDEC, and compliance with the plan is required by the grantor of the Environmental Easement and the grantor's successors and assigns. The SMP may be revised only with the approval of NYSDEC.

This HASP, which is an appendix to the SMP, details the procedures required to manage known or potential residual contamination following completion of the remedial action at the Site. The purpose of this HASP is to assign responsibilities, establish personnel protection standards and mandatory safety practices and procedures, and provide contingency plans for situations that may arise during Site management inspections, operation and maintenance (O&M), periodic sampling activities, and any soil/fill disturbance activities conducted at the Site. This HASP takes into account the specific hazards inherent to the Site, and presents procedures to be followed by AKRF and contractors to avoid, and if necessary protect against, health and/or safety hazards. Application of this HASP should be considered on a task-by-task basis, as not all measures are applicable or necessary for all activities on-site. On-site work activities should comply with applicable parts of the United States Occupational Safety and Health Administration (OSHA) regulations, primarily 29 Code of Federal Regulations (CFR) Parts 1910 and 1926. A copy of this HASP will be maintained on-site during all work performed under the SMP.

All workers who participate in remediation-related activities at the Site that are under the direction of AKRF and/or the Site owner are required to comply with the provisions specified in this HASP. All Site visitors who enter designated work zones must also comply with this HASP. Refusal or failure to comply with this HASP or violation of any safety procedures by field personnel and/or

subcontractors performing work covered by this HASP may result in immediate removal from the Site following consultation with the Site owner's representative. No personnel are permitted to enter permit confined spaces under this HASP.

1.2 Scope

This HASP has been developed to address health and safety concerns during Site O&M, monitoring, and inspections after completion of the Site remedy, under the direction of AKRF and any of AKRF's subcontractor(s), as specified in the SMP. On-site work anticipated under the SMP includes the following tasks:

- Assessing achievement of the remedial performance criteria (e.g., inspections of the SSDS, contingency SVE system, and the composite cover system);
- Sampling and analysis of appropriate media (e.g., groundwater, soil vapor, and/or indoor air); and
- O&M of the ECs (SSDS, contingency SVE system, and composite cover system), which may include disturbance and handling of Site soil/fill.

1.3 Application

This HASP applies to all personnel involved in the above tasks under the direction of the Site owner or AKRF, or those who wish to gain access to active intrusive work areas, including:

- Owner's representatives, contractors, and subcontractors performing tasks under the direction of AKRF, the owner, and/or the owner's representative;
- Federal, state, or local representatives;
- AKRF personnel; and
- AKRF subcontractors' and their employees.

2.0 PROJECT ORGANIZATION AND RESPONSIBILITIES

This section specifies the project team's project organization.

2.1 Remedial Engineer (RE)

Ms. Rebecca A. Kinal, P.E. will serve as the RE under the SMP. As the RE, Ms. Kinal will oversee O&M of ECs under the SMP.

2.2 Project Director (PD)

The project director will be Ms. Deborah Shapiro of AKRF. Mr. Shapiro's responsibilities include the following:

- Plan, schedule, and manage implementation of remediation activities;
- Coordinate with the Site Manager (SM), Site Supervisor (SS), and Project Environmental Safety Manager (PESM) to ensure that health and safety requirements are met;
- Ensure that field work is scheduled with adequate personnel and equipment resources to complete the job safely and enforce Site health and safety rules;
- Conduct periodic inspections;
- Participate in incident investigations;
- Ensure this HASP has all of the required approvals before any Site work is conducted;
- Ensure that the SM is informed of project changes that require modifications to this HASP; and
- Assume overall responsibility for project health and safety.

2.3 Site Manager (SM)

The SM will be Mr. Michael Bates of AKRF. The SM's responsibilities include the following:

- Manage day-to-day implementation of the site safety measures specified in this HASP;
- Ensure that adequate communication between field crews, health and safety monitoring personnel, and emergency response personnel is maintained;
- Confirm that the Site's field personnel are adequately trained and qualified to work at the Site and that proper personal protective equipment (PPE) is utilized by field teams;
- Investigate and report all accidents/incidents to the RE, PD, and PESM;
- Conduct and document periodic safety briefings;
- Stop work if necessary based on health and safety monitoring;
- Act as the primary point of contact for Site-related activities and coordinate with project personnel;
- Identify operational changes that require potential modifications to health and safety procedures and Site safety plans, and reports such changes to the RE, PD, and PESM;
- Conduct health and safety monitoring activities;
- Determine upgrades or downgrades of PPE based on Site conditions and/or real-time monitoring results;
- Ensure that monitoring instruments are calibrated; and

- Report summaries of field operations and progress to the PD and PESM.

2.4 Project Environmental and Safety Manager (PESM)

The PESM will be Mr. Patrick Diggins of AKRF. The PESM is a qualified health and safety professional with experience in hazardous waste site remediation activities. The PESM's responsibilities include the following:

- Provide for the development and approval of the HASP;
- Serve as the primary contact to review health and safety matters that may arise;
- Approve revised or new safety protocols for field operations;
- Coordinate revisions of this HASP with field personnel;
- Coordinate upgrading or downgrading of PPE with the SM;
- Assist in the investigation of all accidents/incidents; and
- Enforce work stoppage following reporting of on-site activities from the RE, PD, and SM.

2.5 Site Supervisor (SS)

The SS will be appointed by the owner's contractor. If work is being performed solely by AKRF, the SS tasks would be performed by the SM (Section 2.3). The SS's responsibilities include the following:

- Provide for the necessary training of field crews in accordance with OSHA regulations and provide proof of training to the SM prior to entering the Site;
- Conduct routine safety inspections of work areas at the Site;
- Conduct incident investigations and, together with the SM, prepare appropriate reports;
- Enforce health and safety rules and compliance with this HASP; and
- Plan field work using appropriate safe procedures and equipment.

2.6 Site Personnel

The responsibilities of Site Personnel include the following:

- Report any unsafe or potentially hazardous conditions to the SM;
- Maintain knowledge of the information, instructions, and emergency response actions contained in the HASP;
- Comply with the rules, regulations, and procedures set forth in this HASP and any revisions;
- Prevent unauthorized personnel from entering work sites; and
- Inspect all tools and equipment, including PPE, prior to use.

3.0 SITE HISTORY AND BACKGROUND

Historical records, including Sanborn maps and a city directory search, indicated that as early as 1950, the Site was occupied by a garage with automobile repair uses and two 550-gallon gasoline underground storage tanks (USTs). The Site was also listed with the following uses between 1927 and 2017: automobile repair, steam equipment manufacturing, appliance manufacturing, and janitorial supplies sales. During the Phase I Environmental Site Assessment (ESA) site reconnaissance, a hydraulic lift was observed in the southern portion of the facility, and the facility operator indicated that two fuel oil aboveground storage tanks (ASTs) had previously been located within the partial cellar in the northwestern corner of the Site.

The Site now consists of a multi-story charter school building, which is currently under construction.

Between September 2022 and August 2023, the Site was remediated in accordance with the NYSDEC-approved RAWP. The remedial elements performed consisted of the following:

1. Soil/fill was excavated and disposed of off-site to achieve a Track 4 remedy, including: approximately 1,280 tons (850 cubic yards) of source material associated with NYSDEC Spill No. 2103719 [down to approximately 2 feet below the water table, where petroleum-related volatile organic compounds (VOCs) exceeded PGWSCOs and/or RRSCOs], and approximately 860 tons (570 cubic yards) of soil/fill from the upper 2 feet Site-wide.
2. Four USTs, and the associated piping and appurtenances, were removed in accordance with the RAWP and applicable regulations.
3. A groundwater treatment program that included Modified Fenton's Reagent (MFR) was conducted in the southwestern portion of the Site. Following groundwater treatment, three post-remedial groundwater monitoring wells were installed at the Site to monitor benzene, toluene, ethylbenzene, and xylenes (collectively referred to as BTEX) concentrations. One round of post-remedial groundwater monitoring was conducted prior to receipt of the Certificate of Completion (COC). Subsequent rounds will be conducted under the SMP.
4. The subgrade components of a vapor mitigation system consisting of an active SSDS (with a 20-mil vapor barrier) was installed beneath the proposed new building to prevent vapor intrusion. The aboveground components will be installed under the SMP.
5. A Community Air Monitoring Plan (CAMP) was implemented during all intrusive Site activities to monitor levels of VOCs and airborne particulates within the active work zones and around the perimeter of the Site.
6. Fill that met the requirements of 6 New York Codes, Rules and Regulations (NYCRR) Part 375-6.7(d) was imported to install the ECs and establish the designed grades beneath the proposed Site-wide building slab.
7. Twenty-seven documentation samples were collected across the Site and analyzed to evaluate the performance of the remedy with respect to attainment of Track 4 RRSCOs and/or PGWSCOs (for VOCs only). Documentation sample frequency will be based on the sampling frequency outlined in Section 5.4 of DER-10.
8. A cover system consisting of a minimum six-inch concrete building slab was constructed across the Site.
9. An Environmental Easement was recorded with the New York City Office of the Registrar. The Environmental Easement requires the remedial parties/Site owners to: complete and submit a periodic certification of ICs and ECs to NYSDEC in accordance with NYCRR Part 375-1.8 (h)(3); allow for the future redevelopment and use of the Site for restricted residential use as defined by Part 375-1.8(g), although land use is subject to local zoning laws; prohibit the use of groundwater as a source of potable

or process water without necessary water quality treatment, as determined by the New York State Department of Health (NYSDOH); and require compliance with a Site-specific, NYSDEC-approved SMP.

10. A contingency SVE system was installed to prevent the off-site migration of soil vapor, if necessary, based on the results of a Soil Vapor Intrusion Evaluation (SVIE).
11. An SMP was prepared and will be implemented that identifies all use restrictions and ECs for the Site and details the steps and media-specific requirements necessary to ensure the ICs and ECs remain in place and effective. The SMP also includes an Excavation Work Plan (EWP).

4.0 POTENTIAL HAZARDS AT THE SITE

This section presents an assessment of the chemical, biological, and physical hazards that may be encountered at the Site.

4.1 Hazard Potential

The remediation has been completed; however, some residual contamination remains in the Site subsurface. Exposure to residual contamination is being prevented by the Site-wide cover system, which is designed to remain intact long term. Disturbance of the concrete slabs, SSDS, and/or SVE system without prior NYSDEC approval is prohibited by the Environmental Easement. In the unlikely event of an unanticipated, accidental, or required disturbance of the cover system, or if any cracks or openings in the floor occur, they shall be properly sealed immediately and NYSDEC or its successor agency shall be notified.

4.2 Properties of Chemical Contamination

4.2.1 Chemical Hazards in Soil/Fill, Groundwater, and/or Soil Vapor

Potential chemical pathways that may be encountered include: dermal contact, inhalation, and/or ingestion hazards associated with contaminated soil/fill, groundwater, and/or soil vapor.

The potential health effects from on-site contamination are summarized in Table 1 and detailed in the United States Department of Health and Human Services Agency for Toxic Substances and Disease Registry (ATSDR) fact sheets attached in Appendix A.

Table 1
Potential Health Effects from Remaining On-Site Contamination

Chemicals	REL/PEL	Health Hazards
1,2,4-Trimethylbenzene	PEL = none REL = 25 mg/m^3	Irritation eyes, skin, nose, throat, respiratory system; bronchitis; hypochromic anemia; headache, drowsiness, lassitude (weakness, exhaustion), dizziness, nausea, incoordination; vomiting, confusion; chemical pneumonitis (aspiration liquid)
1,3,5-Trimethylbenzene	PEL = none REL = 25 mg/m^3	Irritation eyes, skin, nose, throat, respiratory system; bronchitis; hypochromic anemia; headache, drowsiness, lassitude (weakness, exhaustion), dizziness, nausea, incoordination; vomiting, confusion; chemical pneumonitis (aspiration liquid)
Barium	PEL = 0.5 mg/m^3 REL = 0.5 mg/m^3	Irritation eyes, skin, upper respiratory system; skin burns; gastroenteritis; muscle spasm; slow pulse, extrasystoles; hypokalemia.
Benzene	REL = TWA 0.1 ppm PEL = TWA 1 ppm	Irritation eyes, skin, nose, respiratory system; dizziness; headache, nausea, staggered gait; anorexia, lassitude (weakness, exhaustion); dermatitis; bone marrow depression.
Ethyl Benzene	REL = TWA 100 ppm PEL = TWA 100 ppm	Irritation eyes, skin, mucous membrane; headache; dermatitis; narcosis, coma.
Iron	REL = TWA 5 mg/m^3 PEL = TWA 10 mg/m^3	Benign pneumoconiosis with X-ray shadows indistinguishable from fibrotic pneumoconiosis (siderosis)

Chemicals	REL/PEL	Health Hazards
Manganese	REL = 1 mg/m^3 PEL = 0.2 mg/m^3	Manganism; asthenia, insomnia, mental confusion; metal fume fever: dry throat, cough, chest tightness, dyspnea (breathing difficulty), rales, flu-like fever; low-back pain; vomiting; malaise (vague feeling of discomfort); lassitude (weakness, exhaustion); kidney damage.
Methylene Chloride	REL = Ca PEL = 25 mg/m^3	irritation eyes, skin; lassitude (weakness, exhaustion), drowsiness, dizziness; numb, tingle limbs; nausea; [potential occupational carcinogen]
N-Butylbenzene	REL = 10 mg/m^3 PEL = 10 mg/m^3	irritation eyes, skin; dry nose, throat; headache; low blood pressure, tachycardia, abnormal cardiovascular system stress; central nervous system, hematopoietic depression; metallic taste; liver, kidney injury
Methyl Ethyl Ketone (2-Butanone)	REL = TWA 200 ppm PEL = TWA 200 ppm	Irritation eyes, skin, nose; headache; dizziness; vomiting; dermatitis.
Naphthalene	REL = TWA 10 ppm PEL = TWA 10 ppm	Irritation eyes; headache, confusion, excitement, malaise (vague feeling of discomfort); nausea, vomiting, abdominal pain; irritation bladder; profuse sweating; jaundice; hematuria (blood in the urine), renal shutdown; dermatitis, optical neuritis, corneal damage.
Phenol	REL = TWA 5 ppm (19 mg/m^3) [skin] PEL = TWA 5 ppm (19 mg/m^3) [skin]	Irritation eyes, nose, throat; anorexia, weight loss; lassitude (weakness, exhaustion), muscle ache, pain; dark urine; cyanosis; liver, kidney damage; skin burns; dermatitis; ochronosis; tremor, convulsions, twitching
Polycyclic Aromatic Hydrocarbons (PAHs)	PEL = 5 mg/m^3	Harmful effects to skin, bodily fluids, and ability to fight disease, reproductive problems; potential carcinogen.
Sec-Butylbenzene	REL = 10 mg/m^3 PEL = 10 mg/m^3	irritation eyes, skin; dry nose, throat; headache; low blood pressure, tachycardia, abnormal cardiovascular system stress; central nervous system, hematopoietic depression; metallic taste; liver, kidney injury
Sodium	REL = 2 mg/m^3 PEL = TWA 2 mg/m^3	Irritation eyes, skin, mucous membrane; pneumonitis; eye, skin burns; temporary loss of hair
Toluene	PEL = TWA 200 ppm (750 mg/m^3)	Central nervous system depression, causing fatigue, headache, confusion, paresthesia, dizziness, and muscular incoordination, irritation of the eyes, mucous membranes, and upper respiratory tract.
Tetrachloroethylene (PCE)	REL = Ca PEL = 100 mg/m^3	irritation eyes, skin, nose, throat, respiratory system; nausea; flush face, neck; dizziness, incoordination; headache, drowsiness; skin erythema (skin redness); liver damage; [potential occupational carcinogen]
Trichloroethylene (TCE)	REL = Ca PEL = 100 mg/m^3	irritation eyes, skin, nose, throat, respiratory system; nausea; flush face, neck; dizziness, incoordination; headache, drowsiness; skin erythema (skin redness); liver damage; [potential occupational carcinogen]

Chemicals	REL/PEL	Health Hazards
Xylenes	REL = TWA 435 mg/m^3 PEL = TWA 435 mg/m^3	Irritation eyes, skin, nose, throat; dizziness, excitement, drowsiness, incoordination, staggering gait; corneal vacuolization; anorexia, nausea, vomiting, abdominal pain; dermatitis
Comments: REL = National Institute for Occupational Safety and Health (NIOSH) Recommended Exposure Limit PEL = OSHA Permissible Exposure Limit mg/m^3 = milligrams per cubic meter ppm = parts per million		

4.2.2 Other Chemical Hazards

Although not anticipated, chemicals not identified in this HASP may be used or encountered during Site work. Prior to the initiation of site management tasks, ATSDR Fact Sheets will be obtained for each of the chemicals to be used and all Site workers and visitors who may potentially be exposed will be made aware of the hazards.

4.3 Physical Hazards

Physical hazards will be addressed as necessary. More detailed safety procedures are provided as appendices to this HASP, where applicable.

4.3.1 Cold Stress

At certain times of the year, workers may be exposed to the hazards of working in cold environments. Potential hazards in cold environments include frostbite, trench/immersion foot, and hypothermia, as well as slippery surfaces and brittle equipment. A Cold Stress Program is provided as Appendix B.

4.3.2 Heat Stress

Heat stress is a significant potential hazard, which is greatly exacerbated with the use of PPE in hot environments. The potential hazards of working in hot environments include dehydration, cramps, heat rash, heat exhaustion, and heat stroke. A heat stress prevention program will be implemented when ambient temperatures exceed 70 ºF for personnel wearing impermeable clothing. A Heath Stress Program is provided as Appendix C.

4.3.3 Noise

Noise is a potential hazard associated with the operation of heavy equipment, power tools, pumps, and generators. Operations that require the use of hearing protection include operation of heavy equipment, generators, jackhammers, chain saws, sheetpile drivers, dewatering equipment, and pressure washers. Site workers who will perform suspected high noise tasks and operations will be provided with earplugs. Workers not performing those tasks but working in close proximity to that equipment will also be required to wear hearing protection. If deemed necessary by the SM, the PESM will be consulted on the need for additional hearing protection and the need to monitor sound levels for Site activities.

4.3.4 Hand and Power Tools

To complete the various tasks for the proposed scope of work, personnel may be required to use hand and/or power tools. The use of hand and power tools can present a variety of hazards, including physical harm from being struck by flying objects, being cut or struck by the tool, fire, and electrocution. Work gloves, safety glasses, and hard hats will be worn

by the operating personnel at all times when using hand and power tools, and ground fault interrupter (GFI)-equipped circuits will be used for all power tools.

4.3.5 Slips, Trips, and Falls

Working in and around the Site will pose slip, trip, and fall hazards due to slippery surfaces that may be oil covered, or from surfaces that are wet from rain or ice. Excavation at the Site will cause uneven footing in the trenches and around the spoil piles. Care should be exercised when walking at the Site, especially when carrying equipment.

4.3.6 Fire and Explosion

The use of cutting/grinding tools, which may spark in the vicinity of flammable building materials, or use of gasoline- or diesel-powered instruments could present the possibility of encountering fire and explosion hazards. Care should be exercised and fire extinguishers available during any work that presents a fire or explosion hazard.

4.3.7 Manual Lifting

Manual lifting of heavy objects, such as sections of pipe or blower supplies, may be required. Failure to follow proper lifting technique can result in back injuries and strains. Site workers will be instructed to use power equipment to lift heavy loads whenever possible and to evaluate loads before trying to lift them (i.e., they should be able to easily tip the load and then return it to its original position). Heavy loads should be carried with a buddy and the following proper lifting techniques will be stressed: 1) make sure footing is solid, 2) make back straight with no curving or slouching, 3) center body over feet, 4) grasp the object firmly and as close to your body as possible, 5) lift with legs, and 6) turn with your feet, don't twist. Back injuries are a serious concern as they are the most common workplace injury, often resulting in lost or restricted work time, and long treatment and recovery periods.

4.3.8 Utilities (Electrocution and Fire Hazards)

Underground utilities at the Site pose fire, explosion, and electrocution hazards. Potential adverse effects of electrical hazards include burns and electrocution, which could result in death. Underground utilities, facilities, equipment, and structures will be located prior to the start of any intrusive activities. The Underground Utilities Call Center will be notified a minimum of three days before any subsurface disturbance. Care shall be exercised to avoid damage to utilities beneath the surface slab. As-builts will be consulted and a geophysical survey shall be completed, if needed.

4.4 Task Hazard Analysis

The scope of work described in Section 1.2 will be accomplished with the following tasks:

1. Mobilization/Demobilization: mobilize equipment and establish Site security, work zones, and staging areas.
2. Site Preparation: locate utilities, construct decontamination pad, and construct negative pressure environmental enclosure around excavation area, if required.
3. Sampling: use appropriate PPE (e.g., nitrile gloves, safety glasses, ear plugs, hard hats).
4. Soil/Fill Excavation and Loading: in the event that soil/fill removal is necessary, remove floor slab in designated area, excavate material and segregate dissimilar materials, load dump trucks or drums, decontaminate heavy equipment, and backfill excavations.

5. Site Restoration Activities: restore flooring in excavation area and any damaged adjacent floors/walls to original condition.

All of these tasks include the potential for chemical and physical hazards, and care should be taken within the work zone to avoid these hazards, as described above. There is a higher potential for chemical hazards to occur during activities that involve the removal and handling of contaminated material; however, exposure to vapors may occur to a lesser degree as soon as the top concrete slab is removed. All tasks should be conducted using the appropriate PPE for the associated exposure, as described in Section 6.0.

5.0 PROCESS SAFETY MANAGEMENT

Process safety management is a systematic way of identifying the potential health and safety hazards associated with major phases of work on a project, and the methods to avoid, control, and mitigate those hazards. Process safety management guidelines will be developed for all activities as necessary, prior to start-up. Process safety management will be used to train work crews in proper safety procedures during phase preparatory meetings.

6.0 PERSONAL PROTECTIVE EQUIPMENT (PPE)

The PPE required for various remediation tasks is based on 29 CFR 1910.120, Hazardous Waste Operations and Emergency Response (HAZWOPER), Appendix B, "General Description and Discussion of the Levels of Protection and Protective Gear." All on-site personnel shall wear, at a minimum, Level D PPE when performing site management tasks. The protection will be based on the air monitoring described in Section 7.0. Table 2 lists the required PPE for the anticipated site management tasks:

Table 2
Personal Protection Equipment (PPE) Selection

Level of Protection and PPE Required		Work Conditions
Level D (x) Steel Toe Boots (x) Hard Hat (as needed) (x) Work Gloves (as needed) (x) Reflective Vest (as needed)	(x) Safety Glasses or Face Shield (x) Ear Plugs (as needed) (x) Latex or nitrile Gloves (as needed)	• All activities except those noted under Levels D modified and C
Level D – Modified ***(in addition to Level D)*** (x) Nitrile Gloves (x) Overboots	(x) Tyvek Coveralls (as needed) -or- (x) Saranex/Polyethylene-coated Tyvek Coveralls (as needed)	• Activities with potential for contact with grossly contaminated material
Level C – ***(in addition to Level D – Modified)*** (x) Half-Face Respirator ( ) Full Face Respirator ( ) Full-Face PAPR	( ) Particulate Cartridge (P100) ( ) Organic Cartridge (x) Dual Organic/Particulate Cartridge	• If PID > 10 ppm and/or • If PM_{10} > 5.0 mg/m^3
Level C - Modified ***(in addition to Level D – Modified)*** ( ) Half-Face Respirator (x) Full Face Respirator ( ) Full-Face PAPR	( ) Particulate Cartridge (P100) ( ) Organic Cartridge (x) Dual Organic/Particulate Cartridge	• If PID >50 ppm; or • Eye irritation occurs
Notes: mg/m^3 = milligrams per cubic meter ppm = parts per million Vapor (PID) and particulate (PM_{10}) measurements are work zone action levels sustained for 15 minutes or greater.		

The PPE specified in Table 2 reflects the hazard analysis presented in Section 4.0 and PPE selection required by 29 CFR 1910.132. For the purposes of PPE selection, the PESM and SM are considered competent persons. The signatures in this HASP constitute certification of the hazard assessment. For any activities not covered by Table 2, the SM will conduct the hazard assessment and select the appropriate required PPE in consultation with the PESM.

6.1 OSHA Requirements for PPE

All PPE used must meet the OSHA standards presented in Table 3.

Table 3
PPE OSHA Standards

Type of Protection	Regulation	Source
Eye and Face	29 CFR 1910.133	ANSI Z87.1 1968
Respiratory	29 CFR 1910.134	ANSI Z88.1 1980
Head	29 CFR 1910.135	ANSI Z89.1 1969
Foot	29 CFR 1910.136	ANSI Z41.1 1967

Note:
CFR = Code of Federal Regulations
ANSI = American National Standards Institute

7.0 AIR MONITORING

Environmental health and safety monitoring will be performed during all soil disturbance activities in accordance with the CAMP, which is also included in Appendix G of the SMP.

8.0 ZONES, PROTECTION, AND COMMUNICATION

8.1 Site Control

Site zones are intended to control the potential spread of contamination and to assure that only authorized individuals are permitted into potentially hazardous areas. A three-zone approach will be utilized and will include: an Exclusion Zone (EZ), a Contamination Reduction Zone (CRZ), and a Support Zone (SZ). These zones will be established prior to beginning work for each task requiring such delineation (i.e., intrusive work beneath the Site cover or handling of contaminated materials). For larger scale subgrade work, the work zones will be sketched out and maps delineating the various work zones will be available at the Site and used during initial Site-specific training.

All work will be conducted under the requirements of 29 CFR 1910.120, and any personnel working in an area where the potential for exposure to Site contaminants exists will only be allowed access after proper training and medical documentation is provided to the SM. These records will be maintained by the SM and copies should be provided to the SM prior to mobilization for project activities.

The following will be used for guidance in revising these preliminary zone designations, if necessary:

- The SZ is an uncontaminated area that will be the field support area for most operations. The SZ provides for field team communications and staging for emergency response. Appropriate sanitary facilities and safety equipment will be located in this zone. Potentially contaminated personnel/materials are not allowed in this zone. The only exception will be appropriately packaged/decontaminated and labeled samples.
- The CRZ is established between the EZ and the SZ. The CRZ contains the contamination reduction corridor and provides an area for decontamination of personnel and portable hand-held equipment, tools, and heavy equipment. A personnel decontamination area will be prepared at each EZ. The CRZ will be used for EZ entry and egress in addition to access for heavy equipment and emergency support services.
- An EZ includes any area that may involve exposure to Site contaminants and hazardous materials and/or conditions. These zones will be clearly delineated by cones, tape, or other means. The SM may establish more than one EZ where different levels of protection may be employed or different hazards exist. The size of the EZ shall be determined by the SM, allowing adequate space for field members, emergency equipment, and the activity to be completed.

8.2 Contamination Control

8.2.1 Personnel Decontamination Station

Personnel hygiene, coupled with diligent decontamination, will significantly reduce the potential for exposure.

8.2.2 Minimization of Contact with Contaminants

During completion of all Site activities, personnel should attempt to minimize the degree of contact with contaminated materials. This involves a conscientious effort to keep "clean" during Site activities. All personnel should minimize physical contact with contamination to ultimately minimize the degree of decontamination required and the generation of waste materials from Site operations.

Field procedures will be developed to control over spray and runoff and to ensure that unprotected personnel working nearby are not affected.

8.2.3 Personnel Decontamination Sequence

Consideration will be given to prevailing wind directions so that the decontamination line, the SZ, and the CRZ exit are upwind from the EZ. Decontamination will be performed by removing all PPE used in the EZ and placing it in drums/trash cans within the CRZ. Baby wipes will be available for washing hands and face after PPE removal. In addition, brushes will be available for removing soil/fill from boots.

8.2.4 Emergency Decontamination

If circumstances dictate that contaminated clothing cannot be readily removed, then remove gross contamination and wrap injured personnel with clean garments/blankets to avoid contaminating other personnel or transporting equipment.

If the injured person can be moved, he/she will be moved to the EZ boundary and decontaminated by Site personnel, as previously described, before emergency responders handle the victim. If the person cannot be moved because of the extent of the injury (a back or neck injury), provisions shall be made to ensure that emergency response personnel will be able to respond to the victim without being exposed to potentially hazardous atmospheric conditions. If the potential for inhalation hazards exists, such as with an open excavation, this area will be covered with poly sheeting to eliminate any potential inhalation hazards. All emergency personnel are to be immediately informed of the injured person's condition and potential contaminants and provided with all pertinent chemical data.

8.2.5 Heavy Equipment Decontamination

Decontamination of chemically contaminated heavy equipment will be accomplished using high-pressure steam or dry decontamination with brushes and shovels. Decontamination shall take place on a decontamination pad and all liquids used in the decontamination procedure will be collected. Vehicles or equipment brought into an EZ will be treated as contaminated and will be decontaminated prior to removal. All liquids used in the decontamination procedure will be collected, stored, and disposed of in accordance with federal, state, and local regulations. Personnel performing these tasks will wear the proper PPE, as described in Table 2.

8.3 Communications

The following communications equipment shall be specified as appropriate:

- Telephones - A cellular telephone will be located in the SZ for communication with emergency support services/facilities and the home office. Personnel in the EZ can carry cellular telephones for communication as well if Level D PPE has been determined to be appropriate.
- Hand Signals - Hand signals shall be used by field teams along with the buddy system. They shall be known by the entire field team before operations commence and their use covered during Site-specific training. Typical hand signals are described in Table 4.

Table 4
Hand Signals

Signal	Meaning
Hand gripping throat	Out of air, can't breathe
Grip on a partner's wrist or placement of both hands around a partner's waist	Leave area immediately/no debate
Hands on top of head	Need assistance
Thumbs up	Okay/I'm all right/I understand
Thumbs down	No/negative

9.0 MEDICAL SURVEILLANCE PROCEDURES

All personnel performing field work at the Site where potential exposure to contaminants exists are required to have passed a complete medical surveillance examination in accordance with 29 CFR 1910.120(f) and, where applicable, expanded health standards.

9.1 Medical Surveillance Requirements

A physician's medical release for work will be confirmed by the SM before a worker can enter the EZ. The medical release shall consider the type of work to be performed and the required PPE. The examination will be conducted annually at a minimum. Additional medical testing may be required by the PESM in consultation with the SM if an over-exposure or accident occurs, if an employee exhibits symptoms of exposure, or if other Site conditions warrant further medical surveillance.

10.0 SAFETY CONSIDERATIONS

10.1 Excavation and Trenching

The safety requirements for each excavation must be determined by a competent person who is capable of identifying existing and predictable hazards and work conditions that are unsanitary, hazardous, or dangerous to employees. The competent person must also have the authorization to take prompt corrective measures to eliminate unsatisfactory conditions.

The following are general requirements for work activities in and around excavations:

- Prior to initiation of any excavation activity, the location of underground utilities, obstructions, etc. will be determined. The New York State One-Call Center will be contacted by the excavation subcontractor a minimum of 72 hours prior to excavation activities.
- All excavations will be inspected daily and after each period of rain by the competent person prior to commencement of work activities. Evidence of cave-ins, slides, sloughing, or surface cracks or excavations will be cause for work to cease until necessary precautions are taken to safeguard employees.
- Excavated and other materials or equipment that could fall or roll into the excavation shall be placed at least 5 feet from the edge of the excavation.
- Each employee in an excavation shall be protected from cave-ins by an adequate protective system designed in accordance with CFR 1926.652 (b) or (c), except when excavations are less than 5 feet in depth and examination of the ground by a competent person provides no indication of a potential cave-in or excavation is made entirely in stable rock.
- Ladders will be positioned no further than 25 feet from any individual working in the trench.

11.0 DISPOSAL PROCEDURES

All discarded materials, waste materials, or other objects shall be handled in such a way as to preclude the potential for spreading contamination, creating a sanitary hazard, or causing litter to be left on-site. All potentially contaminated materials (e.g., clothing, gloves, etc.) will be bagged or drummed as necessary, labeled, and segregated for disposal. All non-contaminated materials shall be collected and bagged for appropriate disposal. The waste management procedures will be conducted in accordance with applicable local, state, and federal regulations.

12.0 EMERGENCY RESPONSE/CONTINGENCY PLAN

This section establishes procedures and provides information for use during a project emergency. Emergencies happen unexpectedly and quickly, and require an immediate response; therefore, contingency planning and advanced training of staff are essential. Specific elements of emergency support procedures addressed in the following subsections include communications, local emergency support units, preparation for medical emergencies, first aid for injuries incurred on-site, record keeping, and emergency Site evacuation procedures.

12.1 Responsibilities

12.1.1 Project Environmental and Safety Manager (PESM)

The PESM is responsible for overseeing and approving the Emergency Response/Contingency Plan and performing audits to determine that the plan is in effect and that all pre-emergency requirements are met. The PESM acts as a liaison to applicable regulatory agencies and notifies OSHA of reportable accidents.

12.1.2 Site Manager (SM)

The SM is responsible for ensuring that all personnel are evacuated safely and that machinery and processes are shut down or stabilized in the event of a stop work order or evacuation. The SM is required to immediately notify the PM and PESM of any fatalities or catastrophes (three or more workers injured and hospitalized) so that the PESM can notify OSHA within the required time frame. The PESM will be notified within 24 hours of all OSHA recordable injuries, fires, spills, releases, or equipment damage in excess of $500. The SM also serves as the Alternate Emergency Coordinator.

12.1.3 Emergency Coordinator

In the event of an emergency, the Emergency Coordinator shall make contact with local emergency response personnel. In these contacts, the Emergency Coordinator will inform response personnel about the nature of work on the Site, the type of contaminants and associated health or safety effects, and the nature of the emergency, particularly if it is related to exposure to contaminants.

The Emergency Coordinator shall review this plan and verify emergency phone numbers and identify hospital routes prior to beginning work on-site. The Emergency Coordinator shall make necessary arrangements to be prepared for any emergencies that could occur.

The Emergency Coordinator shall implement the Emergency Response/Contingency Plan whenever conditions at the Site warrant such action.

12.1.4 Site Personnel

Site personnel are responsible for knowing the Emergency Response/Contingency Plan and the procedures contained herein. Personnel are expected to notify the Emergency Coordinator of situations that could constitute a Site emergency.

12.2 Communications

A variety of communication systems may be utilized during emergency situations. These are discussed in the following sections.

The primary form of communication during an emergency between field groups in the EZ and the Emergency Coordinator will be verbal communications. During an emergency situation, communication lines will be kept clear so that instructions can be received by all field teams.

12.2.1 Telephone Communications

A cellular telephone will be available on-site.

12.2.2 Hand Signals

Hand signals will be employed by downrange field teams where necessary for communication during emergency situations. Hand signals are presented in Table 4 in Section 8.3.

12.3 Pre-Emergency Planning

Before emergency field activities begin, local emergency response personnel may be notified by the Site owner's representative or contractor of the schedule for field activities and about the materials that are thought to exist on the Site so that they will be able to respond quickly and effectively in the event of a fire, explosion, or other emergency.

To be able to deal with any emergency that might occur during remedial activities at the Site, emergency telephone numbers will be readily available in the SM vehicle or the Site office. These telephone numbers are presented Section 12.16. The emergency phone numbers listed are preliminary and will be updated as needed prior to the start of work. Immediately prior to mobilization, the SM shall verify all numbers and document any changes in the Site logbook. Hospital route maps will also be readily available in the SM vehicle and/or Site office.

12.4 Emergency Medical Treatment

The procedures and rules in this HASP are designed to prevent employee injury. However, should an injury occur, no matter how slight, it will be reported to the SM immediately. First aid equipment such as a first aid kit and disposable eye washes will be available on-site.

During the Site safety briefing, project personnel will be informed of the location of the first aid station(s) that have been set up. In the case of a medical emergency, the SM will determine the nature of the emergency and he/she 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, he/she should be driven to a hospital by on-site personnel. Directions to the hospital with a hospital route map are provided in Section 12.15/Table 6. Unless they are in immediate danger, severely injured persons will not be moved until paramedics can attend to them. Some injuries, such as severe cuts and lacerations or burns, may require immediate treatment. Any first aid instructions that can be obtained from doctors or paramedics before an emergency-response squad arrives at the Site or before the injured person can be transported to the hospital will be followed closely.

12.5 Emergency Site Evacuation Routes and Procedures

In the event of a Site emergency that would require the evacuation of personnel, the Emergency Coordinator will immediately contact the Site owner or owner's representative (this person may or may not be on-site). All project personnel will be instructed on proper emergency response procedures and locations of emergency telephone numbers during the initial Site safety meeting. If an emergency occurs at the work area and there is immediate or impending danger, including but not limited to fire, explosion, or significant release of toxic gas into the atmosphere, immediate evacuation of all personnel is necessary. The following evacuation procedures will be used:

- The SM will initiate evacuation procedures by signaling to leave the Site or EZ. The signal for Site evacuation will consist of three long blasts on an air horn.

- All heavy equipment will be shut down and all personnel will evacuate the work areas and assemble at a pre-determined meeting location. The designated meeting location for the Site will be at the sidewalk along Jerome Avenue near the front door of the new building.
- All personnel suspected to be in or near the work area should be accounted for and the whereabouts of missing persons determined immediately.
- The SM will then give further instruction.

If any task covered under this HASP has the potential for significant hazards, evacuation drills will be performed as deemed necessary by the SM and PESM.

12.6 Fire Prevention and Protection

In the event of a fire or explosion, the work area will be evacuated immediately and the Emergency Coordinator will notify the local fire and police departments. No personnel will fight a fire beyond the stage where it can be put out with a portable extinguisher (incipient stage).

Fires will be prevented by adhering to the following precautions:

- Good housekeeping and storage of materials;
- Storage of flammable liquids and gases in nonflammable storage cabinets when not in use, away from oxidizers;
- Storage of oxygen at least 25 feet away from acetylene cylinders when not in use. Oxygen and acetylene may not be stored on welding carts;
- No smoking in the EZ or any work area;
- No hot work without a properly executed hot work permit;
- Shutting off engines to refuel;
- Grounding and bonding metal containers during transfer of flammable liquids;
- Use of UL-approved non-flammable storage cans;
- Fire extinguishers rated at least 10 pounds Class A, B, and C located on all heavy equipment, in all trailers, and near all hot work activities; and
- Monthly inspection of all fire extinguishers.

The contractor is responsible for the maintenance of fire prevention and/or control equipment and the control of fuel source hazards.

12.7 Overt Chemical Exposure

The following are standard procedures to treat chemical exposures. Other specific procedures detailed on the ATSDR Fact Sheets will be followed as necessary. If first aid or emergency medical treatment is necessary, the Emergency Coordinator will contact the appropriate emergency facilities. All chemical exposure incidents must be reported in writing to the PESM. If a member of the field crew demonstrates symptoms of chemical exposure, another team member (buddy) should remove the individual from the immediate area of contamination. The buddy should communicate to the SM (via voice and hand signals) of the chemical exposure. The SM should contact the appropriate emergency response agency. The procedures outlined in Table 5 should be followed.

Table 5
Chemical Exposure Treatment Procedures

Exposure Pathway	Treatment Procedure
Skin and Eye Contact	Use copious amounts of soap and water. Wash/rinse affected areas thoroughly, and then provide appropriate medical attention. Eyes should be rinsed for 15 minutes upon chemical contamination. Skin should also be rinsed for 15 minutes if contact with caustics, acids, or hydrogen peroxide occurs.
Inhalation	Move to fresh air. Decontaminate and transport to hospital or local medical provider.
Ingestion	Decontaminate and transport to emergency medical facility.
Puncture Wound or Laceration	Decontaminate and transport to emergency medical facility.

12.8 Personal Injury

In case of personal injury at the Site, the following procedures should be followed:

- Another team member (buddy) should signal to the SM that an injury has occurred.
- A field team member trained in first aid can administer treatment to an injured worker.
- If deemed necessary, the victim should then be transported to the nearest hospital or medical center. If necessary, an ambulance should be called to transport the victim.
- The SM or PESM should make certain that an Incident Report Form (provided as Appendix D) is completed. This form is to be submitted to the PESM and SSO. Follow-up action should be taken to correct the situation that caused the accident.
- Any incident (near miss, property damage, first aid, medical treatment, etc.) must be reported.
- A first aid kit and an eye wash will be kept on-site during the field activities.

12.9 Decontamination During Medical Emergencies

If emergency lifesaving first aid and/or medical treatment are required, normal decontamination procedures may need to be abbreviated or postponed. The SM or designee will accompany contaminated victims to the medical facility to advise on matters involving decontamination, when necessary. The outer garments on the victim can be removed if this does not cause delays, interfere with treatment, or aggravate the problem. Respiratory equipment must always be removed. Protective clothing can be cut away. If the outer contaminated garments cannot be safely removed on-site, a plastic barrier between the injured individual and clean surfaces should be used to help prevent contamination of the inside of ambulances and/or medical personnel. Outer garments may then be removed at the medical facility. No attempt will be made to wash or rinse the victim if his/her injuries are life threatening, unless it is known that the individual has been contaminated with an extremely toxic or corrosive material which could also cause severe injury or loss of life to emergency response personnel. For minor medical problems or injuries, the normal decontamination procedures will be followed.

12.10 Accident/Incident Reporting

Written confirmation of verbal reports of injuries or other emergencies are to be submitted to the PESM within 24 hours. The Incident Report Form is provided as Appendix D.

In addition to the incident reporting procedures and actions described in this HASP, the SM will coordinate with the owner's representative for reporting and notification for all environmental, safety, and other incidents.

If necessary, a Site safety briefing will be held to discuss accidents/incidents and any findings from the investigation of the incident. This HASP will be modified if deemed necessary by the PESM.

12.11 Spill Control and Response

All small hazardous spills/environmental releases shall be contained as close to the source as possible. Whenever possible, the ATSDR Fact Sheets will be consulted to assist in determining the best means of containment and cleanup. For small spills, absorbent materials such as sand, sawdust or commercial sorbents should be placed directly on the substance to contain the spill and aid recovery. Any acid spills should be diluted or neutralized carefully prior to attempting recovery. Berms of earthen or sorbent materials can be used to contain the leading edge of the spills. Drains or drainage areas should be blocked. All spill containment materials will be properly disposed. An EZ of 50-100 feet around the spill area should be established depending on the size and type of the spill.

The following steps should be taken by the Emergency Coordinator:

1. Determine the nature, identity, and amounts of major spill components;
2. Make sure all unnecessary persons are removed from the spill area;
3. Notify appropriate response teams and authorities;
4. Use proper PPE in consultation with the SM;
5. If a flammable liquid, gas, or vapor is involved, remove all ignition sources and use non-sparking and/or explosive proof equipment to contain or clean up the spill (diesel only vehicles, air operated pumps, etc.);
6. If possible, try to stop the leak with appropriate material;
7. Remove all surrounding materials that can react or compound with the spill; and
8. Notify the Site owner and determine who will report the spill to the NYSDEC Spills Hotline, as applicable.

12.12 Emergency Equipment

The following minimum emergency equipment shall be kept and maintained on-site:

- Industrial first aid kit;
- Portable eye washes;
- Fire extinguishers (one per vehicle and heavy equipment); and
- Absorbent material.

12.13 Postings

The following information shall be posted or be readily visible and available at conspicuous locations throughout the Site:

- Emergency telephone numbers; and
- Hospital Route Map (Figure 2).

12.14 Restoration and Salvage

After an emergency, prompt restoration of utilities, fire protection equipment, medical supplies, and other equipment will reduce the possibility of further losses. Some of the items that may need to be addressed are:

- Refilling fire extinguishers;
- Refilling medical supplies;
- Recharging eyewashes and/or showers;
- Replenishing spill control supplies; and
- Replacing used air horns.

12.15 Hospital Directions

The address and directions to the nearest hospital to the Site are provided in Table 6:

Table 6
Hospital Directions

Hospital Name:	Bronxcare Hospital Center - Emergency Room
Phone Number:	212-263-5550
Address/Location:	570 1st Avenue, New York, NY 10016
Directions:	1. Head southwest on Jerome Ave toward E 177th St 2. Turn left onto E 175th St 3. Turn right onto Walton Ave 4. Turn Left onto E Mt Eden Ave/Mt Eden Pkwy 5. Turn left onto Selwyn Ave 6. The entrance to the Emergency Room will be on the RIGHT.

Notes:
mi = mile
ft = feet

A map showing the Site evacuation meeting point and driving route to the hospital is provided as Figure 2.

12.16 Emergency Contacts

Table 7
Emergency Contacts

Company	Individual Name	Title	Contact Number
AKRF	Rebecca A. Kinal	Project Engineer	(914) 922-2362 (office)
	Deborah Shapiro	Project Director	646-388-9544 (office)
	Patrick Diggins	PESM	(603) 494-7090 (cell)
	Mike Bates	Site Manager	(914) 335-0693(cell)
2-6 East Tremont Avenue LLC	Jared Simon	Client Representative	212-620-0500 (office)
NYSDEC	Rafi Alam	BCP Project Manager	518-402-8606
Ambulance, Fire Department & Police Department	-	-	911
NYSDEC Spill Hotline	-	-	(800) 457-7362

The emergency contact list will be updated as needed.

13.0 TRAINING

13.1 General Health and Safety Training

In accordance with 29 CFR 1910.120, hazardous waste Site workers shall, at the time of job assignment, have received a minimum of 40 hours of initial health and safety training for hazardous waste Site operations, unless otherwise noted in the standard referenced above. At a minimum, the training will have consisted of instruction in the topics outlined in the standard referenced above. Personnel who have not met the requirements for initial training shall not be allowed to work in any Site activities during which they may be exposed to hazards (chemical or physical). Proof of training shall be submitted to the SM prior to the start of field activities. Other personnel involved in ancillary or support activities, including transportation of material for disposal, shall have the proper training as required by federal, state, and local regulations.

13.2 Annual Eight-Hour Refresher Training

Annual eight-hour refresher training will be required of hazardous waste Site field personnel working in the work zone to maintain their qualifications for fieldwork. The training will cover a review of 29 CFR 1910.120 requirements and related company programs and procedures.

13.3 Supervisor Training

Personnel acting in a supervisory capacity shall have received 8 hours of instruction in addition to the initial 40-hour training.

13.4 Site-Specific Training

Prior to commencement of field activities, all field personnel assigned to the project will have completed training that will specifically address the activities, procedures, monitoring, and equipment used in the Site operations. The training will cover Site and facility layout, hazards and emergency services, and all provisions contained within this HASP. This training will also allow field workers to clarify anything they do not understand and reinforce their responsibilities regarding safety and operations for their particular activity. The training should include the following topics:

- General requirements of this HASP;
- Review of the scope of work;
- Names of personnel responsible for Site safety and health;
- Potential hazards and acute effects of compounds present at the Site;
- Air monitoring procedures;
- Proper use of PPE;
- Safe use of ECs and equipment on the Site;
- Decontamination procedures; and
- Work practices by which the employee can minimize risk from hazards. This may include a specific review of heavy equipment safety, safety during inclement weather, changes in the escape rendezvous point, Site security measures, or other Site-specific issues that need to be addressed before work begins.

Personnel that have not received Site-specific training will not be allowed in the work zone.

13.5 On-Site Safety Briefings

Project personnel working in designated work zones on-site will be given health and safety briefings periodically by the SM to assist in safely conducting their work activities. The briefings will include information on new operations to be conducted, changes in work practices or changes in the Site's environmental conditions, and periodic reinforcement of previously discussed topics. The briefings will also provide a forum to facilitate conformance with safety requirements and to identify performance deficiencies related to safety during daily activities or as a result of safety inspections. The meetings will also be an opportunity to periodically update the crews on monitoring results.

14.0 LOGS, REPORTS, AND RECORD KEEPING

The following is a summary of required health and safety logs, reports, and record keeping.

14.1 Medical and Training Records

Copies or verification of training (40-hour, 8-hour, supervisor, and Site-specific training) and medical clearance for hazardous waste Site work and respirator use will be maintained by the SM.

14.2 On-Site Log

A log of personnel on-site each day will be kept by the SM in a field logbook.

14.3 Exposure Records

The SM will periodically notify the PESM of exposure monitoring results that require workers to upgrade to Level C PPE. All personal monitoring results, laboratory reports, calculations, and air sampling data sheets will be maintained by the SM during Site work.

14.4 Accident/Incident Reports

Incident reporting and investigation during Site work will be completed using an Incident Report Form, provided as Appendix D.

14.5 Hazard Communication Program/Agency for Toxic Substances and Disease Registry (ATSDR)

ATSDR Fact Sheets will be obtained for applicable substances and included in the Site hazard communication file. The hazard communication program will be maintained on-site in accordance with 29 CFR 1910.1200.

14.6 Work Permits

All work permits, including lockout/tagout, sidewalk, and debris container permits (if necessary), will be maintained in the project files. Copies of the work permits shall also be provided to the SM and the Site owner's representative.

15.0 FIELD PERSONNEL REVIEW

This form serves as documentation that field personnel have read, been informed of, and understand the provisions of this HASP for the Site at the Seton Brilla Charter School – 1956 Jerome Avenue, Bronx, New York. It will be maintained on-site by the SM as a project record. Each field team member shall sign this section after training in the contents of this HASP has been completed. Site workers must sign this form after Site-specific training is completed and before being permitted to work on-site.

AFFIDAVIT

I have read, or have been informed of, this Health and Safety Plan and understand the information presented. I have also completed Site-specific training for the work detailed in the project specifications. I will comply with the provisions contained therein.

Name (Print and Sign) and Company	Date

FIGURES

Service Layer Credits: USGS The National Map: 3d Elevation Program, Data Refreshed July, 2020

0 500 1,000

SCALE IN FEET

AKRF
440 Park Avenue South, New York, NY 10016

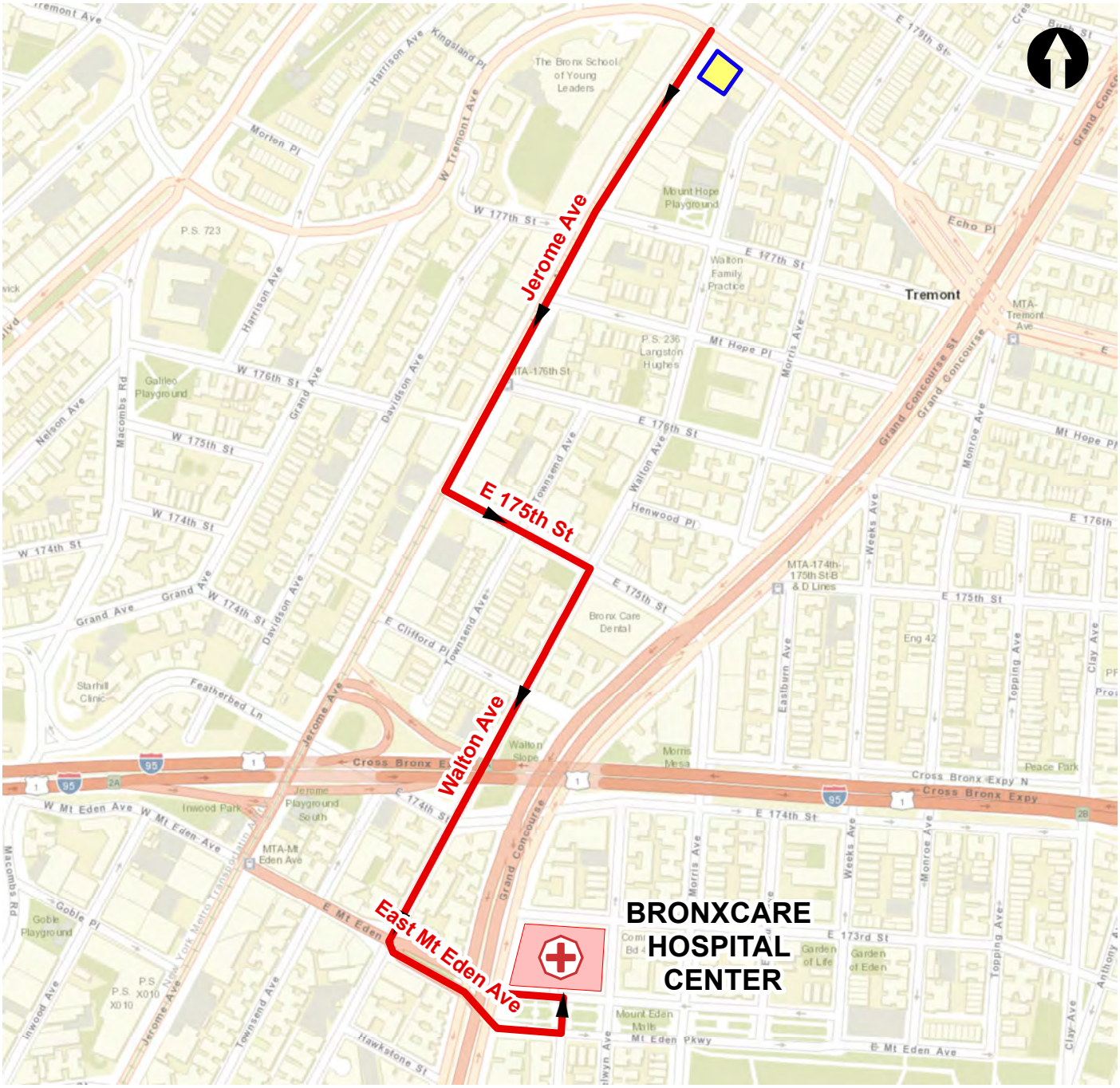
1956 Jerome Avenue
Bronx, New York

SITE LOCATION

DATE
9/20/2021

PROJECT NO.
210024

FIGURE
1



Service Layer Credits: ESRI World Street Map 2021

LEGEND

- PROJECT SITE BOUNDARY
- ROUTE TO HOSPITAL
- HOSPITAL LOCATION

Hospital address:
Bronxcare Hospital Center
1650 Grand Concourse, Bronx, NY 10457
+17185901800

0 500 1,000
SCALE IN FEET

AKRF
440 Park Avenue South, New York, NY 10016

1956 Jerome Avenue
Bronx, New York

HOSPITAL ROUTE MAP

DATE
10/15/2021

PROJECT NO.
210024

FIGURE
2

APPENDIX A
ATSDR FACT SHEETS

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 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 contaminated clothes and shoes. Get medical attention.

Inhalation Remove from exposure, lie down. Remove to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. Get medical attention.

Ingestion Do NOT induce vomiting. Clean mouth with water. Aspiration hazard. Get medical attention.

Most important symptoms and effects Difficulty in breathing. Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting

Notes to Physician Treat symptomatically

5. Fire-fighting measures

Suitable Extinguishing Media Water spray. Carbon dioxide (CO_2). Dry chemical. Water mist may be used to cool closed containers. Chemical foam.

Unsuitable Extinguishing Media No information available

Flash Point	59 °C / 138.2 °F
Method -	No information available
Autoignition Temperature	412 °C / 773.6 °F

Explosion Limits

Upper	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 hazards
0	2	0	N/A

6. Accidental release measures

Personal Precautions	Ensure adequate ventilation. Use personal protective equipment as required.
Environmental Precautions	See Section 12 for additional Ecological Information.
Methods for Containment and Clean Up	Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Keep in suitable, closed containers for disposal. Remove all sources of ignition. 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 mist/vapors/spray. Use spark-proof tools and explosion-proof equipment. Use only non-sparking tools.
Storage	Keep in a dry, cool and well-ventilated place. Refer product specification and/or product label for specific storage temperature requirement. Keep container tightly closed. Keep away from heat, sparks and flame.

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 by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard 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	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	
Upper	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 carcinogen.

Component	CAS-No	IARC	NTP	ACGIH	OSHA	Mexico
Butyl benzene	104-51-8	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 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 Disruptor 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, and national hazardous waste regulations to ensure complete and accurate classification.

14. Transport information

DOT
UN-No UN2709
Hazard Class 3
Packing Group III

TDG
UN-No UN2709
Hazard Class 3
Packing Group III

IATA
UN-No UN2709
Proper Shipping Name BUTYLBENZENES

Hazard Class	3
Packing Group	III

IMDG/IMO

UN-No	UN2709
Proper Shipping Name	BUTYLBENZENES
Hazard Class	3
Packing Group	III

15. Regulatory information

United States of America Inventory

Component	CAS-No	TSCA	TSCA Inventory notification - Active/Inactive	TSCA - EPA Regulatory Flags
Butyl benzene	104-51-8	X	ACTIVE	-

Legend:
TSCA - Toxic Substances Control Act, (40 CFR Part 710)
X - Listed
'-' - Not Listed

TSCA 12(b) - Notices of Export Not applicable

International Inventories
Canada (DSL/NDSL), Europe (EINECS/ELINCS/NLP), Philippines (PICCS), Japan (ENCS), Australia (AICS), China (IECSC), Korea (ECL).

Component	CAS-No	DSL	NDSL	EINECS	PICCS	ENCS	AICS	IECSC	KECL
Butyl benzene	104-51-8	X	-	203-209-7	X	X	X	X	-

U.S. Federal Regulations

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
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 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

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.

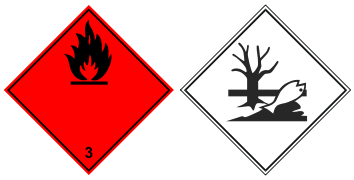
14.7 Transport in bulk according to Annex II of MARPOL and the IBC Code

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"

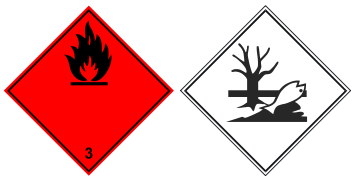


Environmental hazards	yes (hazardous to the aquatic environment)
Special provisions (SP)	274, 601
Excepted quantities (EQ)	E1
Limited quantities (LQ)	5 L
Transport category (TC)	3
Tunnel restriction code (TRC)	D/E
Hazard identification No	30
Emergency Action Code	3YE

• 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.

Material Safety Data Sheet

Version 5.0
Revision Date 12/18/2012
Print Date 11/20/2013

1. PRODUCT AND COMPANY IDENTIFICATION

Product name	:	1,3,5-Trimethylbenzene solution
Product Number	:	41103
Brand	:	Supelco
Supplier	:	Sigma-Aldrich 3050 Spruce Street SAINT LOUIS MO 63103 USA
Telephone	:	+1 800-325-5832
Fax	:	+1 800-325-5052
Emergency Phone # (For both supplier and manufacturer)	:	(314) 776-6555
Preparation Information	:	Sigma-Aldrich Corporation Product Safety - Americas Region 1-800-521-8956

2. HAZARDS IDENTIFICATION

Emergency Overview

OSHA Hazards
Flammable liquid, Target Organ Effect, Toxic by inhalation., Toxic by ingestion, Toxic by skin absorption

Target Organs

Eyes, Kidney, Liver, Heart, Central nervous system

GHS Classification
Flammable liquids (Category 2)
Acute toxicity, Oral (Category 3)
Acute toxicity, Inhalation (Category 3)
Acute toxicity, Dermal (Category 3)
Skin irritation (Category 2)
Eye irritation (Category 2A)
Specific target organ toxicity - single exposure (Category 1)

GHS Label elements, including precautionary statements

Pictogram

Signal word Danger

Hazard statement(s)

H225	Highly flammable liquid and vapour.
H301 + H311	Toxic if swallowed or in contact with skin
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H331	Toxic if inhaled.
H370	Causes damage to organs.

Precautionary statement(s)

P210	Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
P260	Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.
P280	Wear protective gloves/ protective clothing.

P301 + P310	IF SWALLOWED: Immediately call a POISON CENTER or 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.
P307 + P311	IF exposed: Call a POISON CENTER or doctor/ physician.

HMIS Classification

Health hazard:	2
Chronic Health Hazard:	*
Flammability:	3
Physical hazards:	0

NFPA Rating

Health hazard:	2
Fire:	3
Reactivity Hazard:	0

Potential Health Effects

Inhalation	Toxic if inhaled. Causes respiratory tract irritation.
Skin	Toxic if absorbed through skin. Causes skin irritation.
Eyes	Causes eye irritation.
Ingestion	Toxic if swallowed.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Synonyms : Mesitylenesolution

Component		Classification	Concentration
Methanol			
CAS-No.	67-56-1	Flam. Liq. 2; Acute Tox. 3; STOT SE 1; H225, H301 + H311 + H331, H370	90 - 100 %
EC-No.	200-659-6		
Index-No.	603-001-00-X		
Registration number	01-2119433307-44-XXXX		

For the full text of the H-Statements and R-Phrases mentioned in this Section, see Section 16

4. FIRST AID MEASURES

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

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

In case of skin contact
Wash off with soap and plenty of water. Take victim immediately to hospital. Consult a physician.

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

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

5. FIREFIGHTING MEASURES

Conditions of flammability
Flammable in the presence of a source of ignition when the temperature is above the flash point. Keep away from heat/sparks/open flame/hot surface. No smoking.

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

Special protective equipment for firefighters
Wear self contained breathing apparatus for fire fighting if necessary.

Hazardous combustion products
Hazardous decomposition products formed under fire conditions. - Carbon oxides

Further information
Use water spray to cool unopened containers.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions
Wear respiratory protection. Avoid breathing vapors, 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.

Environmental precautions
Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

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).

7. HANDLING AND STORAGE

Precautions for safe handling
Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.
Use explosion-proof equipment. Keep away from sources of ignition - No smoking. Take measures to prevent the build up of electrostatic charge.

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

Recommended storage temperature: 2 - 8 °C

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Components	CAS-No.	Value	Control parameters	Basis
Methanol	67-56-1	TWA	200 ppm	USA. ACGIH Threshold Limit Values (TLV)
Remarks	Headache Eye damage Substances for which there is a Biological Exposure Index or Indices (see BEI® section) Danger of cutaneous absorption			
		STEL	250 ppm	USA. ACGIH Threshold Limit Values (TLV)
	Headache Eye damage Substances for which there is a Biological Exposure Index or Indices (see BEI® section) Danger of cutaneous absorption			
		TWA	200 ppm 260 mg/m3	USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000
	Skin notation			
		STEL	250 ppm 325 mg/m3	USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000
	Skin notation			
		TWA	200 ppm 260 mg/m3	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
	The value in mg/m3 is approximate.			
		TWA	200 ppm 260 mg/m3	USA. NIOSH Recommended Exposure Limits

	Potential for dermal absorption			
		ST	250 ppm 325 mg/m3	USA. NIOSH Recommended Exposure Limits
	Potential for dermal absorption			

Personal protective equipment

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

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

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

Skin and body protection
Complete suit protecting against chemicals, 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.

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

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Form	liquid
Colour	colourless

Safety data

pH	no data available
Melting point/freezing point	Melting point/range: -98 °C (-144 °F)
Boiling point	64 - 65 °C (147 - 149 °F) at 1,013 hPa (760 mmHg)
Flash point	11 °C (52 °F) - closed cup
Ignition temperature	no data available
Auto-ignition temperature	385 °C (725 °F)
Lower explosion limit	6 %(V)
Upper explosion limit	36 %(V)
Vapour pressure	130.23 hPa (97.68 mmHg) at 20 °C (68 °F) 547 hPa (410 mmHg) at 50 °C (122 °F)
Density	0.791 g/cm3
Water solubility	completely miscible
Partition coefficient: n-octanol/water	no data available
Relative vapor density	no data available

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

10. STABILITY AND REACTIVITY

Chemical stability
Stable under recommended storage conditions.

Possibility of hazardous reactions

Vapours may form explosive mixture with air.

Conditions to avoid
Heat, flames and sparks. Extremes of temperature and direct sunlight.

Materials to avoid
Acids, Oxidizing agents, Alkali metals, Strong oxidizing agents, Acid chlorides, Acid anhydrides, Reducing agents

Hazardous decomposition products
Hazardous decomposition products formed under fire conditions. - Carbon oxides
Other decomposition products - no data available

11. TOXICOLOGICAL INFORMATION

Acute toxicity

Oral LD50
Inhalation LC50
Dermal LD50
Other information on acute toxicity
no data available

Skin corrosion/irritation
no data available

Serious eye damage/eye irritation
Eyes: no data available

Respiratory or skin sensitization
no data available

Germ cell mutagenicity
no data available

Carcinogenicity

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

Reproductive toxicity

no data available

Teratogenicity

no data available

Specific target organ toxicity - single exposure (Globally Harmonized System)
no data available

Specific target organ toxicity - repeated exposure (Globally Harmonized System)
no data available

Aspiration hazard
no data available

Potential health effects

Inhalation	Toxic if inhaled. Causes respiratory tract irritation.
Ingestion	Toxic if swallowed.
Skin	Toxic if absorbed through skin. Causes skin irritation.
Eyes	Causes eye irritation.

Signs and Symptoms of Exposure
Methyl alcohol may be fatal or cause blindness if swallowed., Cannot be made non-poisonous., Effects due to ingestion may include:, Nausea, Dizziness, Gastrointestinal disturbance, Weakness, Confusion., Drowsiness, Unconsciousness, May cause convulsions.

Synergistic effects
no data available

Additional Information
RTECS: Not available

12. ECOLOGICAL INFORMATION

Toxicity

no data available

Persistence and degradability
no data available

Bioaccumulative potential
no data available

Mobility in soil
no data available

PBT and vPvB assessment
no data available

Other adverse effects

no data available

13. DISPOSAL CONSIDERATIONS

Product
Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable. Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material.

Contaminated packaging
Dispose of as unused product.

14. TRANSPORT INFORMATION

DOT (US)
UN number: 1230 Class: 3 Packing group: II
Proper shipping name: Methanol, solution
Marine Pollutant: No
Poison Inhalation Hazard: No

IMDG

UN number: 1230 Class: 3 (6.1) Packing group: II EMS-No: F-E, S-D
Proper shipping name: METHANOL, SOLUTION
Marine Pollutant: No

IATA
UN number: 1230 Class: 3 (6.1) Packing group: II
Proper shipping name: Methanol, solution

15. REGULATORY INFORMATION

OSHA Hazards
Flammable liquid, Target Organ Effect, Toxic by inhalation., Toxic by ingestion, Toxic by skin absorption

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

SARA 313 Components
The following components are subject to reporting levels established by SARA Title III, Section 313:

	CAS-No.	Revision Date
Methanol	67-56-1	2007-07-01

SARA 311/312 Hazards
Fire Hazard, Acute Health Hazard, Chronic Health Hazard

Massachusetts Right To Know Components

	CAS-No.	Revision Date
Methanol	67-56-1	2007-07-01

Pennsylvania Right To Know Components

	CAS-No.	Revision Date
Methanol	67-56-1	2007-07-01

New Jersey Right To Know Components

	CAS-No.	Revision Date
Methanol	67-56-1	2007-07-01

California Prop. 65 Components
This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

16. OTHER INFORMATION

Text of H-code(s) and R-phrase(s) mentioned in Section 3

Acute Tox.	Acute toxicity
Flam. Liq.	Flammable liquids
H225	Highly flammable liquid and vapour.
H301 + H311 + H331	Toxic if swallowed, in contact with skin or if inhaled
H370	Causes damage to organs.
STOT SE	Specific target organ toxicity - single exposure

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. Sigma-Aldrich Corporation and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See www.sigma-aldrich.com and/or the reverse side of invoice or packing slip for additional terms and conditions of sale.

SAFETY DATA SHEET

Creation Date 27-Jan-2010 **Revision Date** 28-Nov-2019 **Revision Number** 7

1. Identification

Product Name **Methylene chloride**

Cat No. : **D37-1; D37-4; D37-20; D37-200; D37-200LC; D37-500; D37FB-19; D37FB-50; D37FB-115; D37FB-200; D37POP-19; D37POPB-50; D37POPB-200; D37RB-19; D37RB-50; D37RB-115; D37RB-200; D37RS-19; D37RS-28; D37RS-50; D37RS-115; D37RS-200; D37SK-4; D37SK-4LC; D37SS-28; D37SS-50; D37SS-115; D37SS-200; D37SS-1350; D37RS1000ASME; NC1485726; D37RE200ASME; NC1568702; NC1641358; XXMECLDOW2000; XXMECLDOW200LI**

CAS-No 75-09-2
Synonyms Dichloromethane; DCM

Recommended Use Laboratory chemicals.
Uses advised against . This chemical/product is not and cannot be distributed in commerce (as defined in TSCA section 3(5)) or processed (as defined in TSCA section 3(13)) for consumer paint or coating removal.

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)

Skin Corrosion/Irritation	Category 2
Serious Eye Damage/Eye Irritation	Category 2
Carcinogenicity	Category 1B
Specific target organ toxicity (single exposure)	Category 3
Target Organs - Central nervous system (CNS).	
Specific target organ toxicity - (repeated exposure)	Category 2
Target Organs - Liver, Kidney, Blood.	

Label Elements

Signal Word
Danger

Hazard Statements
Causes skin irritation
Causes serious eye irritation
May cause drowsiness or dizziness
May cause cancer
May cause damage to organs through prolonged or repeated exposure

Precautionary Statements
Prevention
Obtain special instructions before use
Do not handle until all safety precautions have been read and understood
Use personal protective equipment as required
Wash face, hands and any exposed skin thoroughly after handling
Wear eye/face protection
Do not breathe dust/fume/gas/mist/vapors/spray
Use only outdoors or in a well-ventilated area
Response
IF exposed or concerned: Get medical attention/advice
Inhalation
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
Skin
IF ON SKIN: Wash with plenty of soap and water
If skin irritation occurs: Get medical advice/attention
Take off contaminated clothing and wash 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
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)

WARNING. Cancer - https://www.p65warnings.ca.gov/.

3. Composition/Information on Ingredients

Component	CAS-No	Weight %
Methylene chloride	75-09-2	>99.5

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 plenty of water for at least 15 minutes. If skin irritation persists, call a physician.
Inhalation	Remove to fresh air. If not breathing, give artificial respiration. Get medical attention if symptoms occur.
Ingestion	Clean mouth with water and drink afterwards plenty of water.
Most important symptoms and effects	. Inhalation of high vapor concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting: Causes central nervous system depression: Continued or high exposures by inhalation will cause anaesthetic effects. This may result in a loss of consciousness and could prove fatal: Causes formation of carbon monoxide in the blood. Carbon monoxide may cause adverse effects on the cardiovascular system and the central nervous system
Notes to Physician	Treat symptomatically

5. Fire-fighting measures

Suitable Extinguishing Media	Water spray, carbon dioxide (CO2), dry chemical, alcohol-resistant foam.
Unsuitable Extinguishing Media	No information available
Flash Point	No information available
Method -	No information available
Autoignition Temperature	556 °C / 1032.8 °F
Explosion Limits	
Upper	23 vol %
Lower	13 vol %
Sensitivity to Mechanical Impact	No information available
Sensitivity to Static Discharge	No information available

Specific Hazards Arising from the Chemical
Thermal decomposition can lead to release of irritating gases and vapors. Keep product and empty container away from heat and sources of ignition.

Hazardous Combustion Products
Carbon monoxide (CO) Carbon dioxide (CO_2) Hydrogen chloride gas Phosgene
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
2	1	0	N/A

6. Accidental release measures

Personal Precautions	Use personal protective equipment as required. Ensure adequate ventilation.
Environmental Precautions	Should not be released into the environment.
Methods for Containment and Clean Up	Soak up with inert absorbent material. Keep in suitable, closed containers for disposal.

7. Handling and storage

Handling Wear personal protective equipment/face protection. Do not get in eyes, on skin, or on clothing. Avoid ingestion and inhalation. Vapors are heavier than air and may spread along floors. Handle product only in closed system or provide appropriate exhaust ventilation. Reacts with aluminum and its alloys.

Storage Keep containers tightly closed in a dry, cool and well-ventilated place. Do not store in aluminum containers.

8. Exposure controls / personal protection

Exposure Guidelines

Component	ACGIH TLV	OSHA PEL	NIOSH IDLH	Mexico OEL (TWA)
Methylene chloride	TWA: 50 ppm	(Vacated) TWA: 500 ppm (Vacated) STEL: 2000 ppm (Vacated) Ceiling: 1000 ppm TWA: 25 ppm STEL: 125 ppm	IDLH: 2300 ppm	TWA: 50 ppm

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 that eyewash stations and safety showers are close to the workstation 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 Standard 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	Colorless
Odor	sweet
Odor Threshold	No information available
pH	No information available
Melting Point/Range	-97 °C / -142.6 °F
Boiling Point/Range	39 °C / 102.2 °F
Flash Point	No information available
Evaporation Rate	No information available
Flammability (solid,gas)	Not applicable
Flammability or explosive limits	
Upper	23 vol %
Lower	13 vol %
Vapor Pressure	350 mbar @ 20°C
Vapor Density	2.93 (Air = 1.0)

Specific Gravity	1.33
Solubility	No information available
Partition coefficient; n-octanol/water	No data available
Autoignition Temperature	556 °C / 1032.8 °F
Decomposition Temperature	No information available
Viscosity	0.42 mPas @ 25°C
Molecular Formula	C H2 Cl2
Molecular Weight	84.93

10. Stability and reactivity

Reactive Hazard None known, based on information available

Stability Stable under normal conditions. Decomposes on exposure to light.

Conditions to Avoid Excess heat. Protect from direct sunlight.

Incompatible Materials Strong oxidizing agents, Strong acids, Amines

Hazardous Decomposition Products Carbon monoxide (CO), Carbon dioxide (CO_2), Hydrogen chloride gas, Phosgene

Hazardous Polymerization Hazardous polymerization does not occur.

Hazardous Reactions Forms a detonable mixture with nitric acid.

11. Toxicological information

Acute Toxicity

Product Information

Component Information

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Methylene chloride	> 2000 mg/kg (Rat)	> 2000 mg/kg (Rat)	53 mg/L (Rat) 6 h 76000 mg/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 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
Methylene chloride	75-09-2	Group 2A	Reasonably Anticipated	A3	X	A3

IARC: (International Agency for Research on Cancer)

IARC: (International Agency for Research on Cancer)
Group 1 - Carcinogenic to Humans
Group 2A - Probably Carcinogenic to Humans
Group 2B - Possibly Carcinogenic to Humans

NTP: (National Toxicity Program)

NTP: (National Toxicity Program)
Known - Known Carcinogen
Reasonably Anticipated - Reasonably Anticipated to be a Human Carcinogen

ACGIH: (American Conference of Governmental Industrial Hygienists)

A1 - Known Human Carcinogen
A2 - Suspected Human Carcinogen
A3 - Animal Carcinogen
ACGIH: (American Conference of Governmental Industrial Hygienists)

Mexico - Occupational Exposure Limits - Carcinogens

Mexico - Occupational Exposure Limits - Carcinogens
A1 - Confirmed Human Carcinogen
A2 - Suspected Human Carcinogen
A3 - Confirmed Animal Carcinogen

A4 - Not Classifiable as a Human Carcinogen
A5 - Not Suspected as a Human Carcinogen

Mutagenic Effects Mutagenic effects have occured in microorganisms.

Reproductive Effects No information available.

Developmental Effects No information available.

Teratogenicity No information available.

STOT - single exposure Central nervous system (CNS)
STOT - repeated exposure Liver Kidney Blood

Aspiration hazard No information available

Symptoms / effects,both acute and delayed Inhalation of high vapor concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting: Causes central nervous system depression: Continued or high exposures by inhalation will cause anaesthetic effects. This may result in a loss of consciousness and could prove fatal: Causes formation of carbon monoxide in the blood. Carbon monoxide may cause adverse effects on the cardiovascular system and the central nervous system

Endocrine Disruptor Information No information available

Other Adverse Effects Tumorigenic effects have been reported in experimental animals.

12. Ecological information

Ecotoxicity

.

Component	Freshwater Algae	Freshwater Fish	Microtox	Water Flea
Methylene chloride	EC50:>660 mg/L/96h	Pimephales promelas: LC50:193 mg/L/96h	EC50: 1 mg/L/24 h EC50: 2.88 mg/L/15 min	EC50: 140 mg/L/48h

Persistence and Degradability Persistence is unlikely based on information available.

Bioaccumulation/ Accumulation No information available.

Mobility Will likely be mobile in the environment due to its volatility.

Component	log Pow
Methylene chloride	1.25

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.

Component	RCRA - U Series Wastes	RCRA - P Series Wastes
Methylene chloride - 75-09-2	U080	-

14. Transport information

DOT

UN-No UN1593
Proper Shipping Name DICHLOROMETHANE
Hazard Class 6.1
Packing Group III

TDG

UN-No UN1593
Proper Shipping Name DICHLOROMETHANE

Hazard Class 6.1
Packing Group III

IATA
UN-No UN1593
Proper Shipping Name Dichloromethane
Hazard Class 6.1
Packing Group III

IMDG/IMO
UN-No UN1593
Proper Shipping Name Dichloromethane
Hazard Class 6.1
Packing Group III

15. Regulatory information

United States of America Inventory

Component	CAS-No	TSCA	TSCA Inventory notification - Active/Inactive	TSCA - EPA Regulatory Flags
Methylene chloride	75-09-2	X	ACTIVE	R

Legend:
TSCA - Toxic Substances Control Act, (40 CFR Part 710)
X - Listed
'-' - Not Listed
R - Indicates a substance that is the subject of a Section 6 risk management rule under TSCA.

Section 6(a) of the Toxic Substances Control Act (TSCA) This chemical/product is not and cannot be distributed in commerce (as defined in TSCA section 3(5)) or processed (as defined in TSCA section 3(13)) for consumer paint or coating removal.

TSCA 12(b) - Notices of Export Not applicable

International Inventories
Canada (DSL/NDSL), Europe (EINECS/ELINCS/NLP), Philippines (PICCS), Japan (ENCS), Australia (AICS), China (IECSC), Korea (ECL).

Component	CAS-No	DSL	NDSL	EINECS	PICCS	ENCS	AICS	IECSC	KECL
Methylene chloride	75-09-2	X	-	200-838-9	X	X	X	X	KE-23893

U.S. Federal Regulations

SARA 313

Component	CAS-No	Weight %	SARA 313 - Threshold Values %
Methylene chloride	75-09-2	>99.5	0.1

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
Methylene chloride	-	-	X	X

Clean Air Act

Component	HAPS Data	Class 1 Ozone Depletors	Class 2 Ozone Depletors
Methylene chloride	X		-

OSHA - Occupational Safety and Health Administration

Component	Specifically Regulated Chemicals	Highly Hazardous Chemicals
Methylene chloride	125 ppm STEL 12.5 ppm Action Level 25 ppm TWA	-

CERCLA This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302)

Component	Hazardous Substances RQs	CERCLA EHS RQs
Methylene chloride	1000 lb 1 lb	-

California Proposition 65 This product contains the following proposition 65 chemicals

Component	CAS-No	California Prop. 65	Prop 65 NSRL	Category
Methylene chloride	75-09-2	Carcinogen	200 µg/day 50 µg/day	Carcinogen

U.S. State Right-to-Know Regulations

Component	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island
Methylene chloride	X	X	X	X	X

U.S. Department of Transportation

Reportable Quantity (RQ): Y
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 27-Jan-2010
Revision Date 28-Nov-2019
Print Date 28-Nov-2019
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

ATSDR
AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY

BENZENE
CAS # 71-43-2

This fact sheet answers the most frequently asked health questions (FAQs) about benzene. For more information, call the ATSDR Information Center at 1-888-422-8737. This fact sheet is one in a series of summaries about hazardous substances and their health effects. This information is important because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

HIGHLIGHTS: Benzene is a widely used chemical formed from both natural processes and human activities. Breathing benzene can cause drowsiness, dizziness, and unconsciousness; long-term benzene exposure causes effects on the bone marrow and can cause anemia and leukemia. Benzene has been found in at least 813 of the 1,430 National Priorities List sites identified by the Environmental Protection Agency (EPA).

What is benzene?

(Pronounced bĕn′zēn′)

Benzene is a colorless liquid with a sweet odor. It evaporates into the air very quickly and dissolves slightly in water. It is highly flammable and is formed from both natural processes and human activities.

Benzene is widely used in the United States; it ranks in the top 20 chemicals for production volume. Some industries use benzene to make other chemicals which are used to make plastics, resins, and nylon and synthetic fibers. Benzene is also used to make some types of rubbers, lubricants, dyes, detergents, drugs, and pesticides. Natural sources of benzene include volcanoes and forest fires. Benzene is also a natural part of crude oil, gasoline, and cigarette smoke.

What happens to benzene when it enters the environment?

- Industrial processes are the main source of benzene in the environment.
- Benzene can pass into the air from water and soil.
- It reacts with other chemicals in the air and breaks down within a few days.
- Benzene in the air can attach to rain or snow and be carried back down to the ground.
- It breaks down more slowly in water and soil, and can pass through the soil into underground water.
- Benzene does not build up in plants or animals.

How might I be exposed to benzene?

- Outdoor air contains low levels of benzene from tobacco smoke, automobile service stations, exhaust from motor vehicles, and industrial emissions.
- Indoor air generally contains higher levels of benzene from products that contain it such as glues, paints, furniture wax, and detergents.
- Air around hazardous waste sites or gas stations will contain higher levels of benzene.
- Leakage from underground storage tanks or from hazardous waste sites containing benzene can result in benzene contamination of well water.
- People working in industries that make or use benzene may be exposed to the highest levels of it.
- A major source of benzene exposures is tobacco smoke.

How can benzene affect my health?

Breathing very high levels of benzene can result in death, while high levels can cause drowsiness, dizziness, rapid heart rate, headaches, tremors, confusion, and unconsciousness. Eating or drinking foods containing high levels of benzene can cause vomiting, irritation of the stomach, dizziness, sleepiness, convulsions, rapid heart rate, and death.

ToxFAQs Internet address via WWW is http://www.atsdr.cdc.gov/toxfaq.html

The major effect of benzene from long-term (365 days or longer) exposure is on the blood. Benzene causes harmful effects on the bone marrow and can cause a decrease in red blood cells leading to anemia. It can also cause excessive bleeding and can affect the immune system, increasing the chance for infection.

Some women who breathed high levels of benzene for many months had irregular menstrual periods and a decrease in the size of their ovaries. It is not known whether benzene exposure affects the developing fetus in pregnant women or fertility in men.

Animal studies have shown low birth weights, delayed bone formation, and bone marrow damage when pregnant animals breathed benzene.

How likely is benzene to cause cancer?

The Department of Health and Human Services (DHHS) has determined that benzene is a known human carcinogen. Long-term exposure to high levels of benzene in the air can cause leukemia, cancer of the blood-forming organs.

Is there a medical test to show whether I've been exposed to benzene?

Several tests can show if you have been exposed to benzene. There is test for measuring benzene in the breath; this test must be done shortly after exposure. Benzene can also be measured in the blood, however, since benzene disappears rapidly from the blood, measurements are accurate only for recent exposures.

In the body, benzene is converted to products called metabolites. Certain metabolites can be measured in the urine. However, this test must be done shortly after exposure and is not a reliable indicator of how much benzene you have been exposed to, since the metabolites may be present in urine from other sources.

Has the federal government made recommendations to protect human health?

The EPA has set the maximum permissible level of benzene in drinking water at 0.005 milligrams per liter (0.005 mgL). The EPA requires that spills or accidental releases into the environment of 10 pounds or more of benzene be reported to the EPA.

The Occupational Safety and Health Administration (OSHA) has set a permissible exposure limit of 1 part of benzene per million parts of air (1 ppm) in the workplace during an 8-hour workday, 40-hour workweek.

Glossary

Anemia: A decreased ability of the blood to transport oxygen.

Carcinogen: A substance with the ability to cause cancer.

CAS: Chemical Abstracts Service.

Chromosomes: Parts of the cells responsible for the development of hereditary characteristics.

Metabolites: Breakdown products of chemicals.

Milligram (mg): One thousandth of a gram.

Pesticide: A substance that kills pests.

References

This ToxFAQs information is taken from the 1997 Toxicological Profile for Benzene (update) produced by the Agency for Toxic Substances and Disease Registry, Public Health Service, U.S. Department of Health and Human Services, Public Health Service in Atlanta, GA.

Where can I get more information? For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology, 1600 Clifton Road NE, Mailstop E-29, Atlanta, GA 30333. Phone: 1-888-422-8737, FAX: 404-498-0093. ToxFAQs Internet address via WWW is http://www.atsdr.cdc.gov/toxfaq.html ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.

irregular heart beat, and some died. Ingestion of high concentrations of phenol has resulted in internal burns and death.

In animals, breathing air with high levels of phenol resulted in irritation of the lungs. Repeated exposures induced muscle tremors and loss of coordination. Exposure to high concentrations of phenol in the air for several weeks caused paralysis and severe injury to the heart, liver, kidneys, and lungs, and in some cases, death. Some animals that drank water with very high concentrations of phenol suffered muscle tremors and loss of coordination.

Phenol can have beneficial effects when used medically as an antiseptic or anesthetic.

How likely is phenol to cause cancer?

The International Agency for Research on Cancer (IARC) and the EPA have determined that phenol is not classifiable as to its carcinogenicity to humans.

How can phenol affect children?

Vomiting and lethargy were the most frequent signs of toxicity observed in children who accidentally ingested phenol and were treated at a poison control center. We do not know whether children would be more sensitive than adults to the effects of phenol.

Phenol has caused minor birth defects and low birth weight in animals generally at exposure levels that also were toxic to the pregnant mothers.

How can families reduce the risks of exposure to phenol?

- Avoiding environmental tobacco smoke, which contains phenol, will reduce phenol exposures.
- Always store household products and over-the-counter medications that contain phenol in their original labeled containers out of the reach of children.

Is there a medical test to determine whether I've been exposed to phenol?

Phenol can be measured in blood and urine. A higher-than-normal concentration of phenol in the urine may suggest recent exposure to phenol or to substances that are converted to phenol in the body.

The detection of phenol and/or its metabolites in your urine cannot be used to predict the kind of health effects that might develop from that exposure.

Has the federal government made recommendations to protect human health?

The EPA has determined that exposure to phenol in drinking water at concentrations of 6 mg/L for up to 10 days is not expected to cause any adverse effects in a child.

The EPA has determined that lifetime exposure to 2 mg/L phenol in drinking water is not expected to cause any adverse effects.

The Occupational Safety and Health Administration (OSHA) has set a limit of 5 parts per million (ppm) of phenol in air to protect workers during 8-hour work shifts.

References

Agency for Toxic Substances and Disease Registry (ATSDR). 2008. Toxicological Profile for Phenol. Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service.

Where can I get more information?

For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology and Human Health Sciences, 1600 Clifton Road NE, Mailstop F-57, Atlanta, GA 30329-4027.

Phone: 1-800-232-4636.

ToxFAQs™ Internet address via WWW is http://www.atsdr.cdc.gov/toxfaqs/index.asp.

ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.

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XYLENE

CAS # 1330-20-7

Division of Toxicology and Environmental Medicine ToxFAQs™ **August 2007**

This fact sheet answers the most frequently asked health questions (FAQs) about xylene. For more information, call the ATSDR Information Center at 1-800-232-4636. This fact sheet is one in a series of summaries about hazardous substances and their health effects. It is important you understand this information because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

HIGHLIGHTS: Exposure to xylene occurs in the workplace and when you use paint, gasoline, paint thinners and other products that contain it. People who breathe high levels may have dizziness, confusion, and a change in their sense of balance. Xylene has been found in at least 840 of the 1,684 National Priority List sites identified by the Environmental Protection Agency (EPA).

What is xylene?

There are three forms of xylene in which the methyl groups vary on the benzene ring: *meta*-xylene, *ortho*-xylene, and *para*-xylene (*m*-, *o*-, and *p*-xylene). These different forms are referred to as isomers.

Xylene is a colorless, sweet-smelling liquid that catches on fire easily. It occurs naturally in petroleum and coal tar. Chemical industries produce xylene from petroleum. It is one of the top 30 chemicals produced in the United States in terms of volume.

Xylene is used as a solvent and in the printing, rubber, and leather industries. It is also used as a cleaning agent, a thinner for paint, and in paints and varnishes. It is found in small amounts in airplane fuel and gasoline.

What happens to xylene when it enters the environment?

❏ Xylene evaporates quickly from the soil and surface water into the air.
❏ In the air, it is broken down by sunlight into other less harmful chemicals in a couple of days.
❏ It is broken down by microorganisms in soil and water.
❏ Only a small amount of it builds up in fish, shellfish, plants, and other animals living in xylene-contaminated water.

How might I be exposed to xylene?

❏ Using a variety of consumer products including gasoline, paint varnish, shellac, rust preventatives, and cigarette smoke. Xylene can be absorbed through the respiratory tract and through the skin.
❏ Ingesting xylene-contaminated food or water, although these levels are likely to be very low.
❏ Working in a job that involves the use of xylene such as painters, paint industry workers, biomedical laboratory workers, automobile garage workers, metal workers, and furniture refinishers.

How can xylene affect my health?

No health effects have been noted at the background levels that people are exposed to on a daily basis.

High levels of exposure for short or long periods can cause headaches, lack of muscle coordination, dizziness, confusion, and changes in one's sense of balance. Exposure of people to high levels of xylene for short periods can also cause irritation of the skin, eyes, nose, and throat; difficulty in breathing; problems with the lungs; delayed reaction time; memory difficulties; stomach discomfort; and possibly changes in the liver and kidneys. It can cause unconsciousness and even death at very high levels.

How likely is xylene to cause cancer?

Both the International Agency for Research on Cancer (IARC) and the EPA have found that there is insufficient information to determine whether or not xylene is carcinogenic.

How can xylene affect children?

The effects of xylene have not been studied in children, but it is likely that they would be similar to those seen in exposed adults. Although there is no direct evidence, children may be more sensitive to acute inhalation exposure than adults because their narrower airways would be more sensitive to swelling effects.

Studies of unborn animals indicate that high concentrations of xylene may cause increased numbers of deaths, and delayed growth and development. In many instances, these same concentrations also cause damage to the mothers. We do not know if xylene harms the unborn child if the mother is exposed to low levels of xylene during pregnancy

How can families reduce the risks of exposure to xylene?

❏ Exposure to xylene as solvents (in paints or gasoline) can be reduced if the products are used with adequate ventilation and if they are stored in tightly closed containers out of the reach of small children.
❏ Sometimes older children sniff household chemicals in attempt to get high. Talk with your children about the dangers of sniffing xylene.
❏ If products containing xylene are spilled on the skin, then the excess should be wiped off and the area cleaned with soap and water.

Is there a medical test to determine whether I've been exposed to xylene?

Laboratory tests can detect xylene or its breakdown products in exhaled air, blood, or urine. There is a high degree of agreement between the levels of exposure to xylene and the levels of xylene breakdown products in the urine. However, a urine sample must be provided very soon after exposure ends because xylene quickly leaves the body. These tests are not routinely available at your doctor's office because they require special equipment.

Has the federal government made recommendations to protect human health?

The EPA set a limit of 10 parts xylene per million parts drinking water (10 ppm).

The Occupational Safety and Health Administration (OSHA) has set limits of 100 parts xylene per million parts of workplace air (100 ppm) for 8 hour shifts and 40 hour work weeks.

References

Agency for Toxic Substances and Disease Registry (ATSDR). 2007. Toxicological Profile for Xylene (Update). Atlanta, GA: U.S. Department of Public Health and Human Services, Public Health Service.

Where can I get more information? For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology and Environmental Medicine, 1600 Clifton Road NE, Mailstop F-32, Atlanta, GA 30333. Phone: 1-800-232-4636, FAX: 770-488-4178. ToxFAQs Internet address via WWW is http://www.atsdr.cdc.gov/toxfaq.html. ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.

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BARIUM

CAS # 7440-39-3

Division of Toxicology and Human Health Sciences ToxFAQs™ **June 2013**

This fact sheet answers the most frequently asked health questions (FAQs) about barium and barium compounds. For more information, call the ATSDR Information Center at 1-800-232-4636. This fact sheet is one in a series of summaries about hazardous substances and their health effects. It is important you understand this information because these substances may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

HIGHLIGHTS: Exposure to barium occurs mostly in the workplace or from drinking contaminated water. Ingesting drinking water containing levels of barium above the EPA drinking water guidelines for relatively short periods of time can cause gastrointestinal disturbances and muscle weakness. Ingesting high levels for a long time can damage the kidneys. Barium and barium compounds have been found in at least 798 of the 1,684 National Priority List sites identified by the Environmental Protection Agency (EPA).

What is barium?

Barium is a silvery-white metal which exists in nature only in ores containing mixtures of elements. It combines with other chemicals such as sulfur or carbon and oxygen to form barium compounds.

Barium compounds are used by the oil and gas industries to make drilling muds. Drilling muds make it easier to drill through rock by keeping the drill bit lubricated. They are also used to make paint, bricks, ceramics, glass, and rubber.

Barium sulfate is sometimes used by doctors to perform medical tests and to take x-rays of the gastrointestinal tract.

What happens to barium when it enters the environment?

- Barium gets into the air during the mining, refining, and production of barium compounds, and from the burning of coal and oil.
- The length of time that barium will last in air, land, water, or sediments depends on the form of barium released.
- Barium compounds, such as barium sulfate and barium carbonate, which do not dissolve well in water, can last a long time in the environment.
- Barium compounds, such as barium chloride, barium nitrate, or barium hydroxide, that dissolve easily in water usually do not last in these forms for a long time in the environment. The barium in these compounds that is dissolved in water quickly combines with sulfate or carbonate that are naturally found in water and become the longer lasting forms (barium sulfate and barium carbonate).
- Fish and aquatic organisms can accumulate barium.

How might I be exposed to barium?

- Ingesting small amounts present in your food and water or breathing air containing very low levels of barium.
- Living in areas with unusually high natural levels of barium in the drinking water.
- Working in a job that involves barium production or use.
- Living or working near waste sites where barium has been disposed of.

How can barium affect my health?

The health effects of the different barium compounds depend on how well the compound dissolves in water or in the stomach contents. Barium compounds that do not dissolve well, such as barium sulfate, are not generally harmful.

Barium has been found to potentially cause gastrointestinal disturbances and muscular weakness when people are exposed to it at levels above the EPA drinking water standards for relatively short periods of time. Some people who eat or drink amounts of barium above background levels found in food and water for a short period may experience vomiting, abdominal cramps, diarrhea, difficulties in breathing, increased or decreased blood pressure, numbness around the face, and muscle weakness. Eating or drinking very large amounts of barium compounds that easily dissolve can cause changes in heart

rhythm or paralysis and possibly death. Animals that drank barium over long periods had damage to the kidneys, decreases in body weight, and some died.

How likely is barium to cause cancer?

The Department of Health and Human Services (DHHS) and the International Agency for Research on Cancer (IARC) have not classified barium as to its carcinogenicity. The EPA has determined that barium is not likely to be carcinogenic to humans following ingestion and that there is insufficient information to determine whether it will be carcinogenic to humans following inhalation exposure.

How can barium affect children?

We do not know whether children will be more or less sensitive than adults to barium toxicity. A study in rats that swallowed barium found a decrease in newborn body weight; we do not know if a similar effect would be seen in humans.

How can families reduce the risk of exposure to barium?

- The greatest potential source of barium exposure is through food and drinking water. However, the amount of barium in foods and drinking water are typically too low to be of concern.

Is there a medical test to determine whether I've been exposed to barium?

There is no routine medical test to determine whether you have been exposed to barium. Doctors can measure barium in body tissues and fluids, such as bones, blood, urine, and feces, using very complex instruments. These tests cannot be used to predict the extent of the exposure or potential health effects.

The geometric mean barium level measured in the U.S. general population aged 6 and older is reported by the Centers for Disease Control and Prevention (CDC) as 1.56 µg/g creatinine (measured in urine).

Has the federal government made recommendations to protect human health?

The EPA has set a limit of 2.0 milligrams of barium per liter of drinking water (2.0 mg/L), which is the same as 2 ppm.

The Occupational Safety and Health Administration (OSHA) has set Permissible Exposure Limits (PELs) of 0.5 milligrams of soluble barium compounds per cubic meter of workplace air (0.5 mg/m^3) for 8 hour shifts and 40 hour work weeks. The OSHA limits for barium sulfate dust are 15 mg/m^3 of total dust and 5 mg/m^3 for respirable fraction.

The National Institute for Occupational Safety and Health (NIOSH) has set Recommended Exposure Limits (RELs) of 0.5 mg/m^3 for soluble barium compounds. The NIOSH has set RELs of 10 mg/m^3 (total dust) for barium sulfate and 5 mg/m^3 (respirable fraction).

References

Agency for Toxic Substances and Disease Registry (ATSDR). 2007. Toxicological Profile for Barium and Compounds (*Update*). Atlanta, GA: U.S. Department of Public Health and Human Services, Public Health Service.

http://www.cdc.gov/exposurereport/pdf/FourthReport_UpdatedTables_Sep2012.pdf

Where can I get more information? For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology and Human Health Sciences, 1600 Clifton Road NE, Mailstop F-57, Atlanta, GA 30333. Phone: 1-800-232-4636, FAX: 770-488-4178. ToxFAQs Internet address via WWW is http://www.atsdr.cdc.gov/toxfaqs/index.asp. ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.

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ETHYLBENZENE
CAS # 100-41-4

Agency for Toxic Substances and Disease Registry ToxFAQs **June 1999**

This fact sheet answers the most frequently asked health questions (FAQs) about ethylbenzene. For more information, call the ATSDR Information Center at 1-888-422-8737. This fact sheet is one in a series of summaries about hazardous substances and their health effects. It's important you understand this information because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

HIGHLIGHTS: Ethylbenzene is a colorless liquid found in a number of products including gasoline and paints. Breathing very high levels can cause dizziness and throat and eye irritation. Ethylbenzene has been found in at least 731 of the 1,467 National Priorities List sites identified by the Environmental Protection Agency (EPA).

What is ethylbenzene?

(Pronounced ĕth′ əl bĕn′ zēn′)

Ethylbenzene is a colorless, flammable liquid that smells like gasoline. It is found in natural products such as coal tar and petroleum and is also found in manufactured products such as inks, insecticides, and paints.

Ethylbenzene is used primarily to make another chemical, styrene. Other uses include as a solvent, in fuels, and to make other chemicals.

What happens to ethylbenzene when it enters the environment?

- Ethylbenzene moves easily into the air from water and soil.
- It takes about 3 days for ethylbenzene to be broken down in air into other chemicals.
- Ethylbenzene may be released to water from industrial discharges or leaking underground storage tanks.
- In surface water, ethylbenzene breaks down by reacting with other chemicals found naturally in water.
- In soil, it is broken down by soil bacteria.

How might I be exposed to ethylbenzene?

- Breathing air containing ethylbenzene, particularly in areas near factories or highways.
- Drinking contaminated tap water.
- Working in an industry where ethylbenzene is used or made.
- Using products containing it, such as gasoline, carpet glues, varnishes, and paints.

How can ethylbenzene affect my health?

Limited information is available on the effects of ethylbenzene on people's health. The available information shows dizziness, throat and eye irritation, tightening of the chest, and a burning sensation in the eyes of people exposed to high levels of ethylbenzene in air.

Animals studies have shown effects on the nervous system, liver, kidneys, and eyes from breathing ethylbenzene in air.

How likely is ethylbenzene to cause cancer?

The EPA has determined that ethylbenzene is not classifiable as to human carcinogenicity.

ToxFAQs Internet address via WWW is http://www.atsdr.cdc.gov/toxfaq.html

No studies in people have shown that ethylbenzene exposure can result in cancer. Two available animal studies suggest that ethylbenzene may cause tumors.

How can ethylbenzene affect children?

Children may be exposed to ethylbenzene through inhalation of consumer products, including gasoline, paints, inks, pesticides, and carpet glue. We do not know whether children are more sensitive to the effects of ethylbenzene than adults.

It is not known whether ethylbenzene can affect the development of the human fetus. Animal studies have shown that when pregnant animals were exposed to ethylbenzene in air, their babies had an increased number of birth defects.

How can families reduce the risk of exposure to ethylbenzene?

Exposure to ethylbenzene vapors from household products and newly installed carpeting can be minimized by using adequate ventilation.

Household chemicals should be stored out of reach of children to prevent accidental poisoning. Always store household chemicals in their original containers; never store them in containers children would find attractive to eat or drink from, such as old soda bottles. Gasoline should be stored in a gasoline can with a locked cap.

Sometimes older children sniff household chemicals, including ethylbenzene, in an attempt to get high. Talk with your children about the dangers of sniffing chemicals.

Is there a medical test to show whether I've been exposed to ethylbenzene?

Ethylbenzene is found in the blood, urine, breath, and some body tissues of exposed people. The most common way to test for ethylbenzene is in the urine. This test measures substances formed by the breakdown of ethylbenzene. This test needs to be done within a few hours after exposure occurs, because the substances leave the body very quickly.

These tests can show you were exposed to ethylbenzene, but cannot predict the kind of health effects that might occur.

Has the federal government made recommendations to protect human health?

The EPA has set a maximum contaminant level of 0.7 milligrams of ethylbenzene per liter of drinking water (0.7 mg/L).

The EPA requires that spills or accidental releases into the environment of 1,000 pounds or more of ethylbenzene be reported to the EPA.

The Occupational Safety and Health Administration (OSHA) has set an occupational exposure limit of 100 parts of ethylbenzene per million parts of air (100 ppm) for an 8-hour workday, 40-hour workweek.

References

Agency for Toxic Substances and Disease Registry (ATSDR). 1999. Toxicological profile for ethylbenzene. Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service.

Where can I get more information? For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology, 1600 Clifton Road NE, Mailstop F-32, Atlanta, GA 30333. Phone: 1-888-422-8737, FAX: 770-488-4178. ToxFAQs Internet address via WWW is http://www.atsdr.cdc.gov/toxfaq.html ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.

Manganese - ToxFAQs™

CAS # 7439-96-5

This fact sheet answers the most frequently asked health questions (FAQs) about manganese. For more information, call the CDC Information Center at 1-800-232-4636. This fact sheet is one in a series of summaries about hazardous substances and their health effects. It is important you understand this information because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

HIGHLIGHTS: Manganese is a trace element and eating a small amount from food or water is needed to stay healthy. Exposure to excess levels of manganese may occur from breathing air, particularly where manganese is used in manufacturing, and from drinking water and eating food. At high levels, it can cause damage to the brain. Manganese has been found in at least 869 of the 1,669 National Priorities List (NPL) sites identified by the Environmental Protection Agency (EPA).

What is manganese?

Manganese is a naturally occurring metal that is found in many types of rocks. Pure manganese is silver-colored, but does not occur naturally. It combines with other substances such as oxygen, sulfur, or chlorine. Manganese occurs naturally in most foods and may be added to some foods.

Manganese is used principally in steel production to improve hardness, stiffness, and strength. It may also be used as an additive in gasoline to improve the octane rating of the gas.

What happens to manganese when it enters the environment?

- Manganese can be released to the air, soil, and water from the manufacture, use, and disposal of manganese-based products.
- Manganese cannot break down in the environment. It can only change its form or become attached to or separated from particles.
- In water, manganese tends to attach to particles in the water or settle into the sediment.
- The chemical state of manganese and the type of soil determine how fast it moves through the soil and how much is retained in the soil.
- The manganese-containing gasoline additive may degrade in the environment quickly when exposed to sunlight, releasing manganese.

How might I be exposed to manganese?

- The primary way you can be exposed to manganese is by eating food or manganese-containing nutritional supplements. Vegetarians, who consume foods rich in manganese such as grains, beans and nuts, as well as heavy tea drinkers, may have a higher intake of manganese than the average person.
- Certain occupations like welding or working in a factory where steel is made may increase your chances of being exposed to high levels of manganese.
- Manganese is routinely contained in groundwater, drinking water, and soil at low levels. Drinking water containing manganese or swimming or bathing in water containing manganese may expose you to low levels of this chemical.

How can manganese affect my health?

Manganese is an essential nutrient, and eating a small amount of it each day is important to stay healthy.

The most common health problems in workers exposed to high levels of manganese involve the nervous system. These health effects include behavioral changes and other nervous system effects, which include movements that may become slow and clumsy. This combination of symptoms when sufficiently severe is referred to as "manganism". Other less severe nervous system effects such as slowed hand movements have been observed in some workers exposed to lower concentrations in the work place.

Manganese

CAS # 7439-96-5

Exposure to high levels of manganese in air can cause lung irritation and reproductive effects.

Nervous system and reproductive effects have been observed in animals after high oral doses of manganese.

How likely is manganese to cause cancer?

The EPA concluded that existing scientific information cannot determine whether or not excess manganese can cause cancer.

How can manganese affect children?

Studies in children have suggested that extremely high levels of manganese exposure may produce undesirable effects on brain development, including changes in behavior and decreases in the ability to learn and remember. We do not know for certain that these changes were caused by manganese alone. We do not know if these changes are temporary or permanent. We do not know whether children are more sensitive than adults to the effects of manganese, but there is some indication from experiments in laboratory animals that they may be.

Studies of manganese workers have not found increases in birth defects or low birth weight in their offspring. No birth defects were observed in animals exposed to manganese.

How can families reduce the risk of exposure to manganese?

- Children are not likely to be exposed to harmful amounts of manganese in the diet. However, higher-than-usual amounts of manganese may be absorbed if their diet is low in iron. It is important to provide your child with a well-balanced diet.
- Workers exposed to high levels of airborne manganese in certain occupational settings may accumulate manganese dust on their work clothes. Manganese-contaminated work clothing should be removed before getting into your car or entering your home to help reduce the exposure hazard for yourself and your family.

Is there a medical test to determine whether I've been exposed to manganese?

Several tests are available to measure manganese in blood, urine, hair, or feces. Because manganese is normally present in our body, some is always found in tissues or fluids.

Because excess manganese is usually removed from the body within a few days, past exposures are difficult to measure with common laboratory tests.

Has the federal government made recommendations to protect human health?

The EPA has determined that exposure to manganese in drinking water at concentrations of 1 mg/L for up to 10 days is not expected to cause any adverse effects in a child.

The EPA has established that lifetime exposure to 0.3 mg/L manganese is not expected to cause any adverse effects.

The Food and Drug Administration (FDA) has determined that the manganese concentration in bottled drinking water should not exceed 0.05 mg/L.

The Occupational Health and Safety Administration (OSHA) has established a ceiling limit (concentration that should not be exceeded at any time during exposure) of 5 mg/m^3 for manganese in workplace air.

References

Agency for Toxic Substances and Disease Registry (ATSDR). 2012. Toxicological Profile for Manganese. Atlanta, GA: U.S. Department of Public Health and Human Services, Public Health Service.

Where can I get more information?

For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology and Human Health Sciences, 1600 Clifton Road NE, Mailstop F-57, Atlanta, GA 30329-4027.

Phone: 1-800-232-4636.

ToxFAQs™ Internet address via WWW is http://www.atsdr.cdc.gov/toxfaqs/index.asp.

ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.

ATSDR
AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY

METHYL *TERT*-BUTYL ETHER (MTBE) CAS # 1634-04-4

Agency for Toxic Substances and Disease Registry ToxFAQs **September 1997**

This fact sheet answers the most frequently asked health questions (FAQs) about methyl *tert*-butyl ether (MTBE). For more information, call the ATSDR Information Center at 1-888-422-8737. This fact sheet is one in a series of summaries about hazardous substances and their health effects. This information is important because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

HIGHLIGHTS: Methyl *tert*-butyl ether (MTBE) is a flammable liquid which is used as an additive in unleaded gasoline. Drinking or breathing MTBE may cause nausea, nose and throat irritation, and nervous system effects. MTBE has been found in at least 11 of the 1,430 National Priorities List sites identified by the Environmental Protection Agency (EPA).

What is methyl *tert*-butyl ether?

(Pronounced měthʹəl tūrʹshē-ĕrʹē byo͞otʹl ēʹthər)

Methyl *tert*-butyl ether (MTBE) is a flammable liquid with a distinctive, disagreeable odor. It is made from blending chemicals such as isobutylene and methanol, and has been used since the 1980s as an additive for unleaded gasolines to achieve more efficient burning.

MTBE is also used to dissolve gallstones. Patients treated in this way have MTBE delivered directly to their gall bladders through special tubes that are surgically inserted.

What happens to MTBE when it enters the environment?

- MTBE quickly evaporates from open containers and surface water, so it is commonly found as a vapor in the air.
- Small amounts of MTBE may dissolve in water and get into underground water.
- It remains in underground water for a long time.
- MTBE may stick to particles in water, which will cause it to eventually settle to the bottom sediment.
- MTBE may be broken down quickly in the air by sunlight.
- MTBE does not build up significantly in plants and animals.

How might I be exposed to MTBE?

- Touching the skin or breathing contaminated air while pumping gasoline.
- Breathing exhaust fumes while driving a car.
- Breathing air near highways or in cities.
- Drinking, swimming, or showering in water that has been contaminated with MTBE.
- Receiving MTBE treatment for gallstones.

How can MTBE affect my health?

Breathing small amounts of MTBE for short periods may cause nose and throat irritation. Some people exposed to MTBE while pumping gasoline, driving their cars, or working

in gas stations have reported having headaches, nausea, dizziness, and mental confusion. However, the actual levels of exposure in these cases are unknown. In addition, these symptoms may have been caused by exposure to other chemicals.

There are no data on the effects in people of drinking MTBE. Studies with rats and mice suggest that drinking MTBE may cause gastrointestinal irritation, liver and kidney damage, and nervous system effects.

How likely is MTBE to cause cancer?

There is no evidence that MTBE causes cancer in humans. One study with rats found that breathing high levels of MTBE for long periods may cause kidney cancer. Another study with mice found that breathing high levels of MTBE for long periods may cause liver cancer.

The Department of Health and Human Services (DHHS), the International Agency for Research on Cancer (IARC), and the EPA have not classified MTBE as to its carcinogenicity.

Is there a medical test to show whether I've been exposed to MTBE?

MTBE and its breakdown product, butyl alcohol, can be detected in your breath, blood, or urine for up to 1 or 2 days after exposure. These tests aren't available at most doctors' offices, but can be done at special laboratories that have the right equipment. There is no other test specific to determining MTBE exposure.

Has the federal government made recommendations to protect human health?

The EPA has issued guidelines recommending that, to protect children, drinking water levels of MTBE not exceed 4 milligrams per liter of water (4 mg/L) for an exposure of 1-10 days, and 3 mg/L for longer-term exposures.

The American Conference of Governmental Industrial Hygienists (ACGIH) has recommended an exposure limit of 40 parts of MTBE per million parts of air (40 ppm) for an 8-hour workday, 40-hour workweek.

Glossary

Carcinogenicity: Ability to cause cancer.

CAS: Chemical Abstracts Service.

Evaporate: To change into a vapor or gas.

Milligram (mg): One thousandth of a gram.

ppm: Parts per million.

Sediment: Mud and debris that have settled to the bottom of a body of water.

References

This ToxFAQs information is taken from the 1996 Toxicological Profile for Methyl *tert*-Butyl Ether produced by the Agency for Toxic Substances and Disease Registry, Public Health Service, U.S. Department of Health and Human Services, Public Health Service in Atlanta, GA.

Where can I get more information? For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology, 1600 Clifton Road NE, Mailstop F-32, Atlanta, GA 30333. Phone: 1-888-422-8737, FAX: 770-488-4178. ToxFAQs Internet address via WWW is http://www.atsdr.cdc.gov/toxfaq.html ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.

ATSDR
AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY

TETRACHLOROETHYLENE
CAS # 127-18-4

This fact sheet answers the most frequently asked health questions (FAQs) about tetrachloroethylene. For more information, call the ATSDR Information Center at 1-888-422-8737. This fact sheet is one in a series of summaries about hazardous substances and their health effects. It's important you understand this information because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

HIGHLIGHTS: Tetrachloroethylene is a manufactured chemical used for dry cleaning and metal degreasing. Exposure to very high concentrations of tetrachloroethylene can cause dizziness, headaches, sleepiness, confusion, nausea, difficulty in speaking and walking, unconsciousness, and death. Tetrachloroethylene has been found in at least 771 of the 1,430 National Priorities List sites identified by the Environmental Protection Agency (EPA).

What is tetrachloroethylene?

(Pronounced tĕt′rə-klôr′ ō-ĕth′ə-lēn′)

Tetrachloroethylene is a manufactured chemical that is widely used for dry cleaning of fabrics and for metal-degreasing. It is also used to make other chemicals and is used in some consumer products.

Other names for tetrachloroethylene include perchloroethylene, PCE, and tetrachloroethene. It is a nonflammable liquid at room temperature. It evaporates easily into the air and has a sharp, sweet odor. Most people can smell tetrachloroethylene when it is present in the air at a level of 1 part tetrachloroethylene per million parts of air (1 ppm) or more, although some can smell it at even lower levels.

What happens to tetrachloroethylene when it enters the environment?

- Much of the tetrachloroethylene that gets into water or soil evaporates into the air.
- Microorganisms can break down some of the tetrachloroethylene in soil or underground water.
- In the air, it is broken down by sunlight into other chemicals or brought back to the soil and water by rain.
- It does not appear to collect in fish or other animals that live in water.

How might I be exposed to tetrachloroethylene?

- When you bring clothes from the dry cleaners, they will release small amounts of tetrachloroethylene into the air.
- When you drink water containing tetrachloroethylene, you are exposed to it.

How can tetrachloroethylene affect my health?

High concentrations of tetrachloroethylene (particularly in closed, poorly ventilated areas) can cause dizziness, headache, sleepiness, confusion, nausea, difficulty in speaking and walking, unconsciousness, and death.

Irritation may result from repeated or extended skin contact with it. These symptoms occur almost entirely in work (or hobby) environments when people have been accidentally exposed to high concentrations or have intentionally used tetrachloroethylene to get a "high."

In industry, most workers are exposed to levels lower than those causing obvious nervous system effects. The health effects of breathing in air or drinking water with low levels of tetrachloroethylene are not known.

Results from some studies suggest that women who work in dry cleaning industries where exposures to tetrachloroethyl-

ene can be quite high may have more menstrual problems and spontaneous abortions than women who are not exposed. However, it is not known if tetrachloroethylene was responsible for these problems because other possible causes were not considered.

Results of animal studies, conducted with amounts much higher than those that most people are exposed to, show that tetrachloroethylene can cause liver and kidney damage. Exposure to very high levels of tetrachloroethylene can be toxic to the unborn pups of pregnant rats and mice. Changes in behavior were observed in the offspring of rats that breathed high levels of the chemical while they were pregnant.

How likely is tetrachloroethylene to cause cancer?

The Department of Health and Human Services (DHHS) has determined that tetrachloroethylene may reasonably be anticipated to be a carcinogen. Tetrachloroethylene has been shown to cause liver tumors in mice and kidney tumors in male rats.

Is there a medical test to show whether I've been exposed to tetrachloroethylene?

One way of testing for tetrachloroethylene exposure is to measure the amount of the chemical in the breath, much the same way breath-alcohol measurements are used to determine the amount of alcohol in the blood.

Because it is stored in the body's fat and slowly released into the bloodstream, tetrachloroethylene can be detected in the breath for weeks following a heavy exposure.

Tetrachloroethylene and trichloroacetic acid (TCA), a breakdown product of tetrachloroethylene, can be detected in the blood. These tests are relatively simple to perform. These tests aren't available at most doctors' offices, but can be performed at special laboratories that have the right equipment.

Because exposure to other chemicals can produce the same breakdown products in the urine and blood, the tests for breakdown products cannot determine if you have been exposed to tetrachloroethylene or the other chemicals.

Has the federal government made recommendations to protect human health?

The EPA maximum contaminant level for the amount of tetrachloroethylene that can be in drinking water is 0.005 milligrams tetrachloroethylene per liter of water (0.005 mg/L).

The Occupational Safety and Health Administration (OSHA) has set a limit of 100 ppm for an 8-hour workday over a 40-hour workweek.

The National Institute for Occupational Safety and Health (NIOSH) recommends that tetrachloroethylene be handled as a potential carcinogen and recommends that levels in workplace air should be as low as possible.

Glossary

Carcinogen: A substance with the ability to cause cancer.

CAS: Chemical Abstracts Service.

Milligram (mg): One thousandth of a gram.

Nonflammable: Will not burn.

References

This ToxFAQs information is taken from the 1997 Toxicological Profile for Tetrachloroethylene (update) produced by the Agency for Toxic Substances and Disease Registry, Public Health Service, U.S. Department of Health and Human Services, Public Health Service in Atlanta, GA.

Where can I get more information? For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology, 1600 Clifton Road NE, Mailstop F-32, Atlanta, GA 30333. Phone:1-888-422-8737, FAX: 770-488-4178. ToxFAQs Internet address via WWW is http://www.atsdr.cdc.gov/toxfaq.html ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.

ATSDR
AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY

TRICHLOROETHYLENE

CAS # 79-01-6

Division of Toxicology ToxFAQs™ **July 2003**

This fact sheet answers the most frequently asked health questions (FAQs) about trichloroethylene. For more information, call the ATSDR Information Center at 1-888-422-8737. This fact sheet is one in a series of summaries about hazardous substances and their health effects. This information is important because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

HIGHLIGHTS: Trichloroethylene is a colorless liquid which is used as a solvent for cleaning metal parts. Drinking or breathing high levels of trichloroethylene may cause nervous system effects, liver and lung damage, abnormal heartbeat, coma, and possibly death. Trichloroethylene has been found in at least 852 of the 1,430 National Priorities List sites identified by the Environmental Protection Agency (EPA).

What is trichloroethylene?

Trichloroethylene (TCE) is a nonflammable, colorless liquid with a somewhat sweet odor and a sweet, burning taste. It is used mainly as a solvent to remove grease from metal parts, but it is also an ingredient in adhesives, paint removers, typewriter correction fluids, and spot removers.

Trichloroethylene is not thought to occur naturally in the environment. However, it has been found in underground water sources and many surface waters as a result of the manufacture, use, and disposal of the chemical.

What happens to trichloroethylene when it enters the environment?

- Trichloroethylene dissolves a little in water, but it can remain in ground water for a long time.
- Trichloroethylene quickly evaporates from surface water, so it is commonly found as a vapor in the air.
- Trichloroethylene evaporates less easily from the soil than from surface water. It may stick to particles and remain for a long time.
- Trichloroethylene may stick to particles in water, which will cause it to eventually settle to the bottom sediment.
- Trichloroethylene does not build up significantly in plants and animals.

How might I be exposed to trichloroethylene?

- Breathing air in and around the home which has been contaminated with trichloroethylene vapors from shower water or household products such as spot removers and typewriter correction fluid.
- Drinking, swimming, or showering in water that has been contaminated with trichloroethylene.
- Contact with soil contaminated with trichloroethylene, such as near a hazardous waste site.
- Contact with the skin or breathing contaminated air while manufacturing trichloroethylene or using it at work to wash paint or grease from skin or equipment.

How can trichloroethylene affect my health?

Breathing small amounts may cause headaches, lung irritation, dizziness, poor coordination, and difficulty concentrating.

Breathing large amounts of trichloroethylene may cause impaired heart function, unconsciousness, and death. Breathing it for long periods may cause nerve, kidney, and liver damage.

ToxFAQs™ Internet address is http://www.atsdr.cdc.gov/toxfaq.html

Drinking large amounts of trichloroethylene may cause nausea, liver damage, unconsciousness, impaired heart function, or death.

Drinking small amounts of trichloroethylene for long periods may cause liver and kidney damage, impaired immune system function, and impaired fetal development in pregnant women, although the extent of some of these effects is not yet clear.

Skin contact with trichloroethylene for short periods may cause skin rashes.

How likely is trichloroethylene to cause cancer?

Some studies with mice and rats have suggested that high levels of trichloroethylene may cause liver, kidney, or lung cancer. Some studies of people exposed over long periods to high levels of trichloroethylene in drinking water or in workplace air have found evidence of increased cancer. Although, there are some concerns about the studies of people who were exposed to trichloroethylene, some of the effects found in people were similar to effects in animals.

In its 9th Report on Carcinogens, the National Toxicology Program (NTP) determined that trichloroethylene is "reasonably anticipated to be a human carcinogen." The International Agency for Research on Cancer (IARC) has determined that trichloroethylene is "probably carcinogenic to humans."

Is there a medical test to show whether I've been exposed to trichloroethylene?

If you have recently been exposed to trichloroethylene, it can be detected in your breath, blood, or urine. The breath test, if it is performed soon after exposure, can tell if you have been exposed to even a small amount of trichloroethylene.

Exposure to larger amounts is assessed by blood and urine tests, which can detect trichloroethylene and many of its breakdown products for up to a week after exposure. However, exposure to other similar chemicals can produce the same breakdown products, so their detection is not absolute proof of exposure to trichloroethylene. This test isn't available at most doctors' offices, but can be done at special laboratories that have the right equipment.

Has the federal government made recommendations to protect human health?

The EPA has set a maximum contaminant level for trichloroethylene in drinking water at 0.005 milligrams per liter (0.005 mg/L) or 5 parts of TCE per billion parts water.

The EPA has also developed regulations for the handling and disposal of trichloroethylene.

The Occupational Safety and Health Administration (OSHA) has set an exposure limit of 100 parts of trichloroethylene per million parts of air (100 ppm) for an 8-hour workday, 40-hour workweek.

Glossary

Carcinogenicity: The ability of a substance to cause cancer.
CAS: Chemical Abstracts Service.
Evaporate: To change into a vapor or gas.
Milligram (mg): One thousandth of a gram.
Nonflammable: Will not burn.
ppm: Parts per million.
Sediment: Mud and debris that have settled to the bottom of a body of water.
Solvent: A chemical that dissolves other substances.

References

This ToxFAQs information is taken from the 1997 Toxicological Profile for Trichloroethylene (update) produced by the Agency for Toxic Substances and Disease Registry, Public Health Service, U.S. Department of Health and Human Services, Public Health Service in Atlanta, GA.

Where can I get more information? For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology, 1600 Clifton Road NE, Mailstop F-32, Atlanta, GA 30333. Phone: 1-888-422-8737, FAX: 770-488-4178. ToxFAQs™ Internet address is http://www.atsdr.cdc.gov/toxfaq.html . ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.

ATSDR
AGENCY FOR TOXIC SUBSTANCES AND DISEASE REGISTRY

TOLUENE
CAS # 108-88-3

Division of Toxicology ToxFAQs™ **February 2001**

This fact sheet answers the most frequently asked health questions (FAQs) about toluene. For more information, call the ATSDR Information Center at 1-888-422-8737. This fact sheet is one in a series of summaries about hazardous substances and their health effects. It's important you understand this information because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

HIGHLIGHTS: Exposure to toluene occurs from breathing contaminated workplace air, in automobile exhaust, some consumer products paints, paint thinners, fingernail polish, lacquers, and adhesives. Toluene affects the nervous system. Toluene has been found at 959 of the 1,591 National Priority List sites identified by the Environmental Protection Agency

What is toluene?

Toluene is a clear, colorless liquid with a distinctive smell. Toluene occurs naturally in crude oil and in the tolu tree. It is also produced in the process of making gasoline and other fuels from crude oil and making coke from coal.

Toluene is used in making paints, paint thinners, fingernail polish, lacquers, adhesives, and rubber and in some printing and leather tanning processes.

What happens to toluene when it enters the environment?

❑ Toluene enters the environment when you use materials that contain it. It can also enter surface water and groundwater from spills of solvents and petrolieum products as well as from leasking underground storage tanks at gasoline stations and other facilities.

❑ When toluene-containing products are placed in landfills or waste disposal sites, the toluene can enter the soil or water near the waste site.

❑ Toluene does not usually stay in the environment long.

❑ Toluene does not concentrate or buildup to high levels in animals.

How might I be exposed to toluene?

❑ Breathing contaminated workplace air or automobile exhaust.

❑ Working with gasoline, kerosene, heating oil, paints, and lacquers.

❑ Drinking contaminated well-water.

❑ Living near uncontrolled hazardous waste sites containing toluene products.

How can toluene affect my health?

Toluene may affect the nervous system. Low to moderate levles can cause tiredness, confusion, weakness, drunken-type actions, memory loss, nausea, loss of appetite, and

hearing and color vision loss. These symptoms usually disappear when exposure is stopped.

Inhaling High levels of toluene in a short time can make you feel light-headed, dizzy, or sleepy. It can also cause unconsciousness, and even death.

High levels of toluene may affect your kidneys.

How likely is toluene to cause cancer?

Studies in humans and animals generally indicate that toluene does not cause cancer.

The EPA has determined that the carcinogenicity of toluene can not be classified.

How can toluene affect children?

It is likely that health effects seen in children exposed to toluene will be similar to the effects seen in adults. Some studies in animals suggest that babies may be more sensitive than adults.

Breathing very high levels of toluene during pregnancy can result in children with birth defects and retard mental abilities, and growth. We do not know if toluene harms the unborn child if the mother is exposed to low levels of toluene during pregnancy.

How can families reduce the risk of exposure to toluene?

❑ Use toluene-containing products in well-ventilated areas.

❑ When not in use, toluene-containing products should be tightly covered to prevent evaporation into the air.

Is there a medical test to show whether I've been exposed to toluene?

There are tests to measure the level of toluene or its breakdown products in exhaled air, urine, and blood. To determine if you have been exposed to toluene, your urine or blood must be checked within 12 hours of exposure. Several other chemicals are also changed into the same breakdown products as toluene, so some of these tests are not specific for toluene.

Has the federal government made recommendations to protect human health?

EPA has set a limit of 1 milligram per liter of drinking water (1 mg/L).

Discharges, releases, or spills of more than 1,000 pounds of toluene must be reported to the National Response Center.

The Occupational Safety and Health Administration has set a limit of 200 parts toluene per million of workplace air (200 ppm).

References

Agency for Toxic Substances and Disease Registry (ATSDR). 2000. Toxicological Profile for Toluene. Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service.

Where can I get more information? For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology, 1600 Clifton Road NE, Mailstop F-32, Atlanta, GA 30333. Phone: 1-888-422-8737, FAX: 770-488-4178. ToxFAQs™ Internet address is http://www.atsdr.cdc.gov/toxfaq.html . ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.

Polycyclic Aromatic Hydrocarbons (PAHs) - ToxFAQs™

This fact sheet answers the most frequently asked health questions (FAQs) about polycyclic aromatic hydrocarbons (PAHs). For more information, call the CDC Information Center at 1-800-232-4636. This fact sheet is one in a series of summaries about hazardous substances and their health effects. This information is important because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

HIGHLIGHTS: Exposure to polycyclic aromatic hydrocarbons usually occurs by breathing air contaminated by wild fires or coal tar, or by eating foods that have been grilled. PAHs have been found in at least 600 of the 1,430 National Priorities List (NPL) sites identified by the Environmental Protection Agency (EPA).

What are polycyclic aromatic hydrocarbons?

(Pronounced pŏl′ĭ-sī′klĭk ăr′ə-măt′ĭk hī′drə-kar′bənz)

Polycyclic aromatic hydrocarbons (PAHs) are a group of over 100 different chemicals that are formed during the incomplete burning of coal, oil and gas, garbage, or other organic substances like tobacco or charbroiled meat. PAHs are usually found as a mixture containing two or more of these compounds, such as soot.

Some PAHs are manufactured. These pure PAHs usually exist as colorless, white, or pale yellow-green solids. PAHs are found in coal tar, crude oil, creosote, and roofing tar, but a few are used in medicines or to make dyes, plastics, and pesticides.

What happens to PAHs when they enter the environment?

- PAHs enter the air mostly as releases from volcanoes, forest fires, burning coal, and automobile exhaust.
- PAHs can occur in air attached to dust particles.
- Some PAH particles can readily evaporate into the air from soil or surface waters.
- PAHs can break down by reacting with sunlight and other chemicals in the air, over a period of days to weeks.
- PAHs enter water through discharges from industrial and wastewater treatment plants.
- Most PAHs do not dissolve easily in water. They stick to solid particles and settle to the bottoms of lakes or rivers.
- Microorganisms can break down PAHs in soil or water after a period of weeks to months.
- In soils, PAHs are most likely to stick tightly to particles; certain PAHs move through soil to contaminate underground water.
- PAH contents of plants and animals may be much higher than PAH contents of soil or water in which they live.

How might I be exposed to PAHs?

- Breathing air containing PAHs in the workplace of coking, coal-tar, and asphalt production plants; smokehouses; and municipal trash incineration facilities.
- Breathing air containing PAHs from cigarette smoke, wood smoke, vehicle exhausts, asphalt roads, or agricultural burn smoke.
- Coming in contact with air, water, or soil near hazardous waste sites.
- Eating grilled or charred meats; contaminated cereals, flour, bread, vegetables, fruits, meats; and processed or pickled foods.
- Drinking contaminated water or cow's milk.
- Nursing infants of mothers living near hazardous waste sites may be exposed to PAHs through their mother's milk.

Polycyclic Aromatic Hydrocarbons

How can PAHs affect my health?

Mice that were fed high levels of one PAH during pregnancy had difficulty reproducing and so did their offspring. These offspring also had higher rates of birth defects and lower body weights. It is not known whether these effects occur in people.

Animal studies have also shown that PAHs can cause harmful effects on the skin, body fluids, and ability to fight disease after both short- and long-term exposure. But these effects have not been seen in people.

How likely are PAHs to cause cancer?

The Department of Health and Human Services (DHHS) has determined that some PAHs may reasonably be expected to be carcinogens.

Some people who have breathed or touched mixtures of PAHs and other chemicals for long periods of time have developed cancer. Some PAHs have caused cancer in laboratory animals when they breathed air containing them (lung cancer), ingested them in food (stomach cancer), or had them applied to their skin (skin cancer).

Is there a medical test to show whether I've been exposed to PAHs?

In the body, PAHs are changed into chemicals that can attach to substances within the body. There are special tests that can detect PAHs attached to these substances in body tissues or blood. However, these tests cannot tell whether any health effects will occur or find out the extent or source of your exposure to the PAHs. The tests aren't usually available in your doctor's office because special equipment is needed to conduct them.

Has the federal government made recommendations to protect human health?

The Occupational Safety and Health Administration (OSHA) has set a limit of 0.2 milligrams of PAHs per cubic meter of air (0.2 mg/m^3). The OSHA Permissible Exposure Limit (PEL) for mineral oil mist that contains PAHs is 5 mg/m^3 averaged over an 8-hour exposure period.

The National Institute for Occupational Safety and Health (NIOSH) recommends that the average workplace air levels for coal tar products not exceed 0.1 mg/m^3 for a 10-hour workday, within a 40-hour workweek. There are other limits for workplace exposure for things that contain PAHs, such as coal, coal tar, and mineral oil.

Glossary

Carcinogen: A substance that can cause cancer.

Ingest: Take food or drink into your body.

References

Agency for Toxic Substances and Disease Registry (ATSDR). 1995. Toxicological profile for polycyclic aromatic hydrocarbons. Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service.

Where can I get more information?

For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology and Human Health Sciences, 1600 Clifton Road NE, Mailstop F-57, Atlanta, GA 30329-4027.

Phone: 1-800-232-4636.

ToxFAQs™ Internet address via WWW is http://www.atsdr.cdc.gov/toxfaqs/index.asp.

ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.

APPENDIX B

COLD STRESS PROGRAM

1.0 PURPOSE & INTRODUCTION

The purpose of this document is to educate Site personnel about exposure to cold environments and the effects of hypothermia and other cold-related injuries. Through proper use of personal protective equipment (PPE), engineering and administrative controls, and education, cold injury—both to the extremities and the body's core temperature—can be prevented.

2.0 SCOPE

The program described herein is intended for use by employees engaged in work with the potential for exposure to cold environments. Training will be provided annually to all those potentially affected prior to the start of field work potentially involving cold exposure.

3.0 WORKING IN COLD ENVIRONMENTS

3.1 Metabolic Responses

The human body is designed to function best at a rectal temperature of 99-100 ºF. The body maintains this temperature in two ways: by gaining heat from food and muscular work; or, by losing it through radiation and sweating. By constricting blood vessels of the skin and/or shivering, the body uses its first line of cold defense.

Temperature control of the body is better understood by dividing the body into two main parts: the shell and the core. The shell is comprised of the skin, capillaries, nerves, muscles, and fat. Other internal organs such as the heart, lungs, brain, and kidneys make up the core.

During exposure to cold, the skin is first affected. Blood in the peripheral capillaries is cooled, sending a signal to a portion of the brain called the hypothalamus. Regulating body temperature is one of the many basic body functions of the hypothalamus. Acting like a thermostat, adjustments are performed to maintain normal body temperatures. When a chill signal is received, two processes are begun by the hypothalamus: conserve heat already in the body and generate new heat.

Heat conservation is performed through constriction of the blood vessels in the skin (shell), thus reducing heat loss from the shell and acting as an insulator for the core. Sweat glands are also inhibited, thus preventing heat loss by evaporation.

Additional fuel for the body is provided in the form of glucose. Glucose causes the heart to beat faster, sending oxygen and glucose-rich blood to the tissue where needed. In an attempt to produce heat, the muscles rapidly contract. This process is better known as "shivering," and generates heat similarly to that created by strenuous activity, raising the body's metabolic rate.

During physical activity and fatigue, the body is more prone to heat loss. As exhaustion approaches, blood vessels can suddenly enlarge, resulting in rapid loss of heat. Exposure to extreme cold causes nerve pulses to be slowed, resulting in fumbling, sluggish, and clumsy reactions.

4.0 COLD INJURIES

Cold injuries are classified into two categories: local and general. Local injuries include frostbite, frostnip, chilblain, and trenchfoot. General injuries include hypothermia and blood vessel abnormalities (genetically or chemically induced). Factors contributing to cold injury include: exposure to humidity and high winds;

contact with wetness or metal; inadequate clothing; age; and general health. Allergies, vascular disease, excessive smoking and/or drinking, and certain drugs and medicines are physical conditions that can compound the effects of exposure to a cold environment.

4.1 Hypothermia

Hypothermia is a condition of reduced body temperature. Most cases develop in air temperatures between 30-50 °F, not taking wind-chill factor in consideration.

Symptoms of hypothermia are uncontrolled shivering and the sensation of cold. The heartbeat slows and sometimes becomes irregular, weakening the pulse and changing blood pressure. Changes in the body chemistry cause severe shaking or rigid muscles; vague or slow slurred speech; memory lapses; incoherence; and drowsiness. Cool skin, slow irregular breathing, low blood pressure, apparent exhaustion, and fatigue after rest can be seen before complete collapse.

As the core temperature drops, the victim can become listless, confused, and make little or no effort to keep warm. Pain in the extremities can be the first warning of dangerous exposure to cold. Severe shivering must be taken as a sign of danger. At a core body temperature of about 85 °F, serious problems develop due to significant drops in blood pressure, pulse rate, and respiration. In some cases, the victim may die.

Sedative drugs and alcohol increase the risk of hypothermia. Sedative drugs interfere with the transmission of impulses to the brain. Alcohol dilates blood vessels near the skin's surface, increasing heat loss and lowering body temperature.

Table B1 provides information on the onset of hypothermia and metabolic responses at different body temperatures.

4.2 Raynaud's Phenomenon

Raynaud's Phenomenon is the abnormal constriction of the blood vessels of the fingers on exposure to cold temperatures, resulting in blanching of the ends of the fingers. Numbness, itching, tingling, or a burning sensation may occur during related attacks. The disease is also associated with the use of vibrating hand tools in a condition sometimes called White Finger Disease. Persistent cold sensitivity, ulceration, and amputations can occur in severe cases.

4.3 Acrocyanosis

Acrocyanosis is caused by exposure to the cold and reduces the level of hemoglobin in the blood, resulting in a slightly blue, purple, or gray coloring of the hands and/or feet.

4.4 Thromboangitis Obliterans

Thromboangitis obliterans is clotting of the arteries due to inflammation and fibrosis of connective tissue surrounding medium-sized arteries and veins. This is one of the many disabling diseases that can also result from tobacco use. Gangrene of the affected limb often requires amputation.

4.5 Frostbite

Frostbite is the freezing of the body tissues due to exposure to extremely low temperatures, resulting in damage to and loss of tissue. Frostbite occurs because of inadequate circulation and/or insulation, resulting in freezing of fluids around the cells of the body tissues. Most vulnerable parts of the body are the nose, cheeks, ears, fingers, and toes.

Frostbite can affect outer layers of skin or can include the tissues beneath. Damage can be serious, with permanent loss of movement in the affected parts, scarring, necrotic tissue, and amputation all possibilities. Skin and nails that slough off can grow back.

The freezing point of the skin is about 30 °F. As wind velocity increases, heat loss is greater and frostbite will set in more rapidly.

There are three degrees of frostbite: first degree, freezing without blistering and peeling; second degree, freezing with blistering and peeling; and third degree, freezing with death of skin tissues and possibly the deeper tissues.

The following are symptoms of frostbite:

1. Skin changes color to white or grayish-yellow, progresses to reddish-violet, and finally turns black as the tissue dies;
2. Pain may be felt at first, but subsides;
3. Blisters may appear; and
4. Affected part is cold and numb.

The first symptom of frostbite is usually an uncomfortable sensation of coldness followed by numbness. Tingling, stinging, cramping, and aching feelings will be experienced by the victim. Frostbite of the outer layer of the skin has a waxy or whitish look and is firm to the touch. Cases of deep frostbite cause severe injury. The tissues are cold, pale, and solid. The victim is often unaware of the frostbite until someone else observes these symptoms. It is therefore important to use the "buddy system" when working in cold environments, so that any symptoms of overexposure can be noted.

Table B2 describes the cooling power of wind on exposed flesh. This information can be used as a guide for determining equivalent chill temperatures when the wind is present in cold environments.

4.6 Trench Foot and Chilblains

Trench foot is swelling of the foot caused by long, continuous exposure to cold without freezing, combined with persistent dampness or immersion in water. Edema (swelling), tingling, itching and severe pain occurs, followed by blistering, necrotic tissue, and ulcerations. Chilblains have similar symptoms as trench foot, except that other areas of the body are affected.

4.7 Frostnip

Frostnip occurs when the face or extremities are exposed to a cold wind, causing the skin to turn white.

5.0 PREVENTION OF COLD STRESS

Cold stress can be prevented through a combination of various factors: acclimation; water and salt displacement; medical screening; proper clothing selection; and training and education. Through the use of engineering controls, work practices, work/rest schedules, environmental monitoring, and consideration of the wind-chill temperature, the employee can be protected.

5.1 Acclimation

Acclimation can be achieved to some degree. Sufficient exposure to cold causes the body to undergo changes to increase comfort and reduce the risk of injury. However, these changes are minor and require repeated exposure to cold and uncomfortable temperatures to induce them.

5.2 Dehydration

The dryness of cold air causes the body to lose a significant amount of water through the skin and lungs. It is essential that caffeine-free, non-alcoholic beverages be available at the worksite for fluid replacement. Dehydration also increases the risk of injury due to cold and affects blood flow to the extremities.

5.3 Diet

A well-balanced diet is important for employees working in cold environments. Diets restricted only to certain foods may not provide the necessary elements for the body to withstand cold stress, leaving the worker vulnerable.

5.4 Control Measures

When the wind chill factor results in an equivalent temperature of -26 °F, continuous exposure of the skin will not be permitted. Any worker exposed to temperatures of 36 °F or less who becomes immersed in water will be given dry clothing immediately and treated for hypothermia at the local hospital if any symptoms of hyperthermia are present. Notification of this incident will be provided to the Health and Safety Division immediately after sending the worker to the hospital.

5.5 Environmental Controls

The following are some ways that environmental controls can be used to reduce the effects of a cold environment:

1. General or spot heating should be used to increase temperature in certain areas in the workplace;
2. Warm air jets, radiant heaters, or contact warm plates can be used to warm the worker's hands if fine work is to be performed with bare hands for 10 to 20 minutes or more;
3. Shield the work area if air velocity at the worksite is increased by wind, draft, or ventilating equipment;
4. Metal handles of tools and control bars should be covered with thermal insulating material at temperatures below 30 °F;
5. Unprotected metal chair seats will not be used in cold environments;
6. When appropriate and feasible, equipment and processes will be substituted, isolated, relocated, or redesigned;
7. Power tools, hoists, cranes, or lifting aids will be used to reduce the metabolic workload;
8. Heated warming shelters will be made available for continuous work being performed in an equivalent temperature of 20 °F or below and workers will be encouraged to use the shelters regularly; and
9. Administrative work practice controls should be implemented.

Work practices and guidelines can be designed and developed to reduce exposure to cold stress. Some of these may include:

1. Create work-rest schedules to reduce the peak of cold stress;
2. Enforce scheduled breaks;
3. Enforce intake of caffeine-free, non-alcoholic beverages;

4. Schedule work that has potential exposure to cold stress for the warmest part of the day;
5. Move work to warmer areas, whenever possible;
6. Assign extra workers for high-demand tasks;
7. Provide relief workers for other workers needing breaks;
8. Teach basic principles of recognizing and preventing cold stress;
9. Use the buddy system for work at 10 °F or below, and keep within eyeshot;
10. Allow new employees to adjust to the conditions before they work full-time in cold environments;
11. Minimize sitting and standing in one place for long periods of time; and
12. Include weight and bulkiness of clothing when estimating work performance requirements and weights to be lifted.

Table B3 provides a work/warm-up schedule for cold environments, with wind chill taken into account.

5.6 Special Considerations

Older workers and workers with circulatory problems should be extra careful in cold environments. Sufficient sleep and good nutrition are important preventive measures for maintenance tolerance to the cold. Double shifts and overtime work should be avoided when working in cold environments.

If any of the following symptoms are observed on-site, the affected worker will immediately go to warm shelter:

- Onset of heavy shivering;
- Frostnip;
- Feeling of excessive fatigue;
- Drowsiness; and
- Euphoria.

After entering the warm shelter, the outer layer of clothing should be removed. If the clothing is wet from sweat and perspiration, dry clothing should be provided. If this is not feasible, then the clothing should be loosened to allow sweat to evaporate.

Anyone working in cold environments and on prescribed medication should consult their physician concerning any possible side effects due to cold stress. Those individuals suffering from diseases and/or taking medication that interferes with normal body temperature regulation or reduces the tolerance to cold will not be allowed to work in temperatures of 30 °F or below.

6.0 PERSONAL PROTECTIVE EQUIPMENT (PPE)

In choosing PPE for cold environments, it is important to maintain airspace between the body and outer layer of clothing to retain body heat. The more air pockets, the better the insulation. The clothing should also allow for the evaporation of sweat if the skin is wet.

The most important parts of the body to protect are the feet, hands, head, and face. Hands and feet become cooled most easily, because of their distance from the heart. Keeping the head covered is equally important. As much as 40% of body heat loss is through the head when it is exposed.

Ideal clothing for exposure to cold environments is made of wool, polypropylene, or other wicking fabrics. Loose-fitted clothing also aids in sweat evaporation. Recommended clothing may include the following:

1. Polypropylene under shirt and shorts under thermal underwear (preferably two-piece);
2. Wool socks;
3. Wool or thermal pants, lapped over boot tops to keep out snow and water;
4. Suspenders (belts can constrict and reduce circulation);
5. Insulated work boots, preferably waterproof. Safety toe, if necessary;
6. Wool or cotton shirt;
7. Parka;
8. Knit cap/hard hat liner;
9. Wool mittens or gloves (depending on the dexterity required); and
10. Face mask or scarf.

Dirty or greasy clothing loses much of its insulation value. Dirty clothing crushes air pockets, allowing air to escape more easily. Also, denim is not a good protective fabric. It is loosely woven and allows water to penetrate and wind to blow away body heat.

Table B1
Progressive Clinical Presentation of Hypothermia

Core Temperature		Clinical Signs
°C	°F	
37.6	99.6	"Normal" Rectal Temperature
37	98.6	"Normal" Oral Temperature
36	96.8	Metabolic rate increases in an attempt to compensate for heat loss
35	95.0	Maximum shivering
34	93.2	Victim conscious and responsive, with normal blood pressure
33	91.4	Severe hypothermia below this temperature
32	89.6	Consciousness clouded, blood pressure becomes difficult to obtain, pupils dilated but react to light, shivering ceases
31	87.8	
30	86.0	Progressive loss of consciousness, muscular rigidity increases, pulse and blood pressure difficult to obtain, respiratory rate decreases
29	84.2	
28	82.4	Ventricular fibrillation possible with myocardial irritability

Table B1
Progressive Clinical Presentation of Hypothermia

Core Temperature		Clinical Signs
°C	°F	
27	80.6	Voluntary motion ceases, pupils non-reactive to light, deep tendon and superficial reflexes absent
26	78.8	
25	77.0	Ventricular fibrillation may occur spontaneously
24	75.2	Pulmonary edema
22	71.6	Maximum risk of ventricular fibrillation
20	68.0	Cardiac standstill
18	64.4	Lowest accidental hypothermia victim to recover
17	62.6	Isoelectric electroencephalogram
9	48.2	Lowest artificially cooled hypothermia patient to recover
Presentations approximately related to core temperature. Reprinted from the January 1982 issue of American Family Physician, published by the American Academy of Family Physicians.		

Table B2
Cooling Power of Wind on Exposed Flesh as Equivalent Temperature

Estimated Wind Speed (mph)	Actual Temperature Reading (Degrees Fahrenheit)											
	50	40	30	20	10	0	-10	-20	-30	-40	-50	-60
	Equivalent Chill Temperature (°F)											
Calm	50	40	30	20	10	0	-10	-20	-30	-40	-50	-60
5	48	37	27	16	6	-5	-15	-26	-36	-47	-57	-68
10	40	28	16	4	-9	-24	-33	-46	-58	-70	-83	-95
15	36	22	9	-5	-18	-32	-45	-58	-72	-85	-99	-112
20	32	18	4	-10	-25	-39	-53	-67	-82	-96	-110	-121
25	30	16	0	-15	-29	-44	-59	-74	-88	-104	-118	-133
30	28	13	-2	-18	-33	-48	-63	-79	-94	-109	-125	-140
35	27	11	-4	-20	-35	-51	-67	-82	-98	-113	-129	-145
40	26	10	-6	-21	-37	-53	-69	-85	-100	-116	-132	-148
	LITTLE DANGER In < hr with dry skin. Maximum danger of false sense of security.				INCREASING DANGER Danger from freezing of exposed flesh within one minute.			GREAT DANGER Flesh may freeze within 30 seconds.				
Developed by the U.S. Army Research Institute of Environmental Medicine, Natick, MA. Wind speeds greater than 40 mph have little additional effect. Trenchfoot and immersion foot may occur at any point.												

Table B3
Threshold Limit Values Work/Warm-up Schedule for 4-Hour Shift

Air Temp. Sunny Sky		No Noticeable Wind		5 mph Wind		10 mph Wind		15 mph Wind		20 mph Wind	
˚C (approx)	˚F (approx)	Max. Work Period	No. of Breaks	Max. Work Period	No. of Breaks	Max. Work Period	No. of Breaks	Max. Work Period	No. of Breaks	Max. Work Period	No. of Breaks
-26˚ to -28˚	-15˚ to -19˚	(Norm. Breaks) 1		(Norm.Breaks) 1		75 min.	2	55 min.	3	40 min.	4
-29˚ to -31˚	-20˚ to -24˚	(Norm. Breaks) 1		75 min	2	55 min.	3	40 min.	4	30 min.	5
-32˚ to -34˚	-25˚ to -29˚	75 min	2	55 min.	3	40 min.	4	30 min.	5	Non-emergency work should cease	
-35˚ to -37˚	-30˚ to -34˚	55 min.	3	40 min.	4	30 min.	5	Non-emergency work should cease			
-38˚ to -39˚	-35˚ to -39˚	40 min.	4	30 min.	5	Non-emergency work should cease					
-40˚ to -42˚	-40˚ to -44˚	30 min.	5	Non-emergency work should cease							
-43˚ & below	-45˚ & below	Non-emergency work should cease									

Notes:
Schedule applies to moderate to heavy work activity with warm-up breaks of 10 minutes in a warm location. For light to moderate work (limited physical motion), apply the schedule one step lower. For example, at -30 °F with no noticeable wind (step 4, a worker at a job with little physical movement should have a maximum work period of 40 minutes with 4 breaks in a 4-hour period.
The following is suggested as a guide for estimating wind velocity if accurate information is not available: 5 mph, light flag moves; 10 mph, light flag fully extended; 15 mph, raises newspaper sheet; 20 mph, blowing drifting snow.
If only the wind chill cooling rate is available, a rough rule of thumb for applying it rather than the temperature and wind velocity factors given above would be: 1) special warm-up breaks should be initiated at a wind-chill cooling rate of about 17 watts per square meter (W/m^2); 2) all non-emergency work should have ceased at or before a wind-chill of 2250 W/m^2. In general, the warm-up schedule provided above slightly under-compensates for the wind at the warmer temperatures, assuming acclimatization and clothing appropriate for winter work. On the other hand, the chart over-compensates for the actual temperatures in the colder ranges, since windy conditions prevail at extremely low temperatures.
Threshold limit values (TLVs) apply only for workers in dry clothing.
Adapted from Occupational Health and Safety Division, Saskatchewan Department of Labor.

APPENDIX C

HEAT STRESS PROGRAM

1.0 INTRODUCTION

Heat stress is one of the most common (and potentially serious) illnesses at job sites. Although it is caused by a number of interacting factors, donning the proper personal protective equipment (PPE) puts the worker at a much higher risk during warmer environmental conditions. The results of heat stress range from fatigue to serious illness or death. Through regular fluid replacement and other preventive measures, heat stress can be controlled, leading to increased efficiency and a higher level of safety on the job.

2.0 PURPOSE

The purpose of this document is to create an awareness among employees concerning the body's physiologic responses to heat, different types of heat stress that can affect the body, recognition of signs and symptoms, first aid treatment, and preventive measures.

3.0 SOURCES OF HEAT

There are two sources of heat that are important to anyone working in a hot environment:

- Internally generated metabolic heat; and
- Externally imposed environmental heat.

4.0 PHYSIOLOGIC RESPONSES TO HEAT

The human body maintains a fairly constant internal temperature, even though it is exposed to varying environmental temperatures. To keep internal body temperatures within safe limits, the body must get rid of its excess heat, primarily through varying the rate and amount of blood circulation through the skin and the release of fluid onto the skin by the sweat glands. These automatic responses usually occur when the temperature of the blood exceeds 98.6 °F and are kept in balance and controlled by the brain. In this process of lowering internal body temperature, the heart begins to pump more blood, blood vessels expand to accommodate the increased flow, and the microscopic blood vessels (capillaries) which thread through the upper layers of the skin begin to fill with blood. The blood circulates closer to the surface of the skin, and the excess heat is lost to the cooler environment.

If the heat loss from increased blood circulation through the skin is not adequate, the brain continues to sense overheating and signals the sweat glands in the skin to release large quantities of sweat onto the skin surface. Evaporation of sweat cools the skin, eliminating large quantities of heat from the body.

As environmental temperatures approach normal skin temperature, cooling of the body becomes more difficult. If air temperature is as warm as or warmer than the skin, blood brought to the body surface cannot lose its heat. Under these conditions, the heart continues to pump blood to the body surface, the sweat gland pour liquids containing electrolytes onto the surface of the skin, and the evaporation of the sweat becomes the principal effective means of maintaining a constant body temperature. Sweating does not cool the body unless the moisture is removed from the skin by evaporation. In high humidity, the evaporation of sweat from the skin is decreased and the body's efforts to maintain an acceptable body temperature may be significantly impaired. These conditions adversely affect an individual's ability to work in the hot environment. With so much blood going to the external surface of the body, relatively less goes to the active muscles, the brain, and other internal organs; strength declines; and fatigue occurs sooner than it would otherwise. Alertness and mental capacity also may be affected. Workers who must perform delicate or

detailed work may find their accuracy suffering, and others may find their comprehension and retention of information lowered.

When temperature differences exist between two or more bodies, heat can be transferred. Net heat transfer is always from the body (or object) of higher temperature to that of lower temperature and occurs by one or more of the following mechanisms:

- Conduction: The transfer of heat from one point to another within the body, or from one body to another when both bodies are in physical contact. Conduction can be a localized source of discomfort from direct physical contact with a hot or cold surface; it is normally not a significant factor to total heat stress.
- Convection: The transfer of heat from one place to another by moving gas or liquid. Natural convection results from differences in density caused by temperature differences. Thus, warm air is less dense than cool air.
- Radiation: The process by which energy, electromagnetic (visible and infrared), is transmitted through space without the presence or movement of matter in or through this space.

5.0 PREDISPOSING FACTORS TO HEAT STRESS

Factors that may predispose an individual to heat stress vary according to the individual. These factors include:

- Lack of physical fitness;
- Lack of acclimatization;
- Age;
- Dehydration;
- Obesity;
- Drug/alcohol abuse;
- Infection;
- Sunburn;
- Diarrhea; and
- Chronic disease.

Predisposing factors and an increased risk of excessive heat stress are both directly influenced by the type and amount of PPE worn. PPE adds weight and bulk, reduces the body's access to normal heat exchange mechanisms (evaporation, convection, and radiation), and increases energy expenditure.

6.0 FORMS OF HEAT STRESS AND FIRST AID

The following excerpts were taken from National Institute for Occupational Safety and Health (NIOSH) Publication No. 86-112, Working in Hot Environments:

"Excessive exposure to a hot work environment can bring about a variety of heat-induced disorders. Among the most common are heat stroke, heat exhaustion, heat cramps, fainting and heat rash."

6.1 Heat Stroke

Heat Stroke is the most serious of health problems associated with working in hot environments. It occurs when the body's temperature regulatory system fails and sweating becomes inadequate. The body's only effective means of removing excess heat is compromised with little warning to the victim that a crisis stage has been reached.

A heat stroke victim's skin is hot, usually dry, and red or spotted. Body temperature is usually 105 °F or higher, and the victim is mentally confused, delirious, perhaps in convulsions, or unconscious. Unless the victim receives quick and appropriate treatment, death can occur.

Individuals with signs or symptoms of heat stroke require immediate hospitalization. First aid should be immediately administered. This includes removing the victim to a cool area, thoroughly soaking the clothing with water, and vigorously fanning the body to increase cooling. Further treatment, at a medical facility, should be directed to the continuation of the cooling process and the monitoring of complications that often accompany heat stroke. Early recognition and treatment are the only means of preventing permanent brain damage or death.

6.2 Heat Exhaustion

Heat exhaustion includes several clinical disorders having symptoms that may resemble the early symptoms of heat stroke. Heat exhaustion is caused by the loss of large amounts of fluid by sweating, sometimes with excessive loss of salt. A worker suffering from heat exhaustion still sweats but experiences weakness or fatigue, giddiness, nausea, or headache. In more serious cases, the victim may vomit or lose consciousness. The skin is clammy and moist, the complexion is pale or flushed, and the body temperature is normal or only slightly elevated.

In most cases, treatment involves having the victim rest in a cool place and drink plenty of liquids. Victims with mild cases of heat exhaustion usually recover spontaneously with this treatment. Those with severe cases may require extended care for several days. There are no known permanent effects.

6.3 Heat Cramps

Heat cramps are painful spasms of the muscles that occur among those who sweat profusely in heat, drink large quantities of water, but do not adequately replace the body's salt loss. The drinking of large amounts of water tends to dilute the body's fluids, while the body continues to lose salt. Shortly after, the low salt level in the muscles causes painful cramps. The affected muscles may be part of the arms, legs, or abdomen, but tired muscles (those used in performing the work) are usually the ones most susceptible to cramps. Cramps may occur during or after work hours and may be relieved by taking salted liquids by mouth.

6.4 Fainting

Fainting occurs in workers not accustomed to hot environments and who stand erect and immobile in the heat.

With enlarged blood vessels in the skin and in the lower part of the body due to the body's attempts to control internal temperature, blood may pool there rather than return to the heart to be pumped to the brain. Upon lying down, the worker should soon recover. By moving around, and thereby preventing blood from pooling, the patient can prevent further fainting.

6.5 Heat Rash (Prickly Heat)

Heat rash, also known as prickly heat, is likely to occur in hot, humid environments where sweat is not as easily removed from the surface of the skin by evaporation and the skin remains wet most

of the time. The sweat ducts become plugged, and a skin rash soon appears. When the rash is extensive or when it is complicated by infection, prickly heat can be very uncomfortable and may reduce a worker's performance. The worker can prevent this condition by resting in a cool place part of each day and by regularly bathing and drying the skin.

7.0 SELECTION OF PERSONAL PROTECTIVE EQUIPMENT (PPE)

During work periods where the increased risk of heat stress exists, each item's benefit will be carefully evaluated. Once the PPE is chosen, safe work durations/rest periods will be determined based on the following conditions:

- Anticipated work rate;
- Ambient temperature and humidity; and
- Level of protection.

8.0 PREVENTION OF HEAT STRESS

Prevention of heat stress will be addressed in the following manner:

- Adjustment of work schedules.
- Modification of work/rest schedules.
    1. Enforce work slowdowns, as needed.
    2. Rotate personnel to minimize overstress or overexertion.
    3. When possible, work will be scheduled and performed during cooler hours.
- Providing shelter or shaded areas to protect personnel during rest periods.
- Maintaining workers' body fluids at normal levels.
    1. Drink approximately 12 to 16 ounces of non-caffeinated liquids (preferably water, Gatorade or equivalent) prior to the start of work. Caffeinated fluids act to dehydrate the worker.
    2. Workers will be urged to drink a cup or two every 15 to 20 minutes, or at each break. A total of 1 to 1.5 gallons of water per individual per day is recommended for fluid replacement under heat stress conditions, but more may be required.
- Encouraging physical fitness among the workers.
- Gradually acclimatizing workers on-site to help build up an "immunity" to the conditions.
    1. Heat acclimatization can usually be induced in 5 to 7 days of exposure at a hot job. For workers with previous experience with the job, acclimatization will include exposures of 50% for day one, 60% for day two, 80% for day three, and 100% for the remaining additional days.
- Providing cooling devices during prolonged work or severe heat exposure.
    1. Supply field showers or hose down areas.
    2. Supply personnel with cooling jackets, vests, and suits.
- Training workers in recognition and treatment of heat stress.
- Using the buddy system that depends on the recognition of signs and symptoms of heat stress.
- Identifying heat-intolerant individuals through medical screening.

APPENDIX D

INCIDENT REPORT FORM

Incident Report Form

Supervisor's Name: _____

Basic Rules for Accident Investigation

- Find the cause to prevent future accidents - Use an unbiased approach during investigation.
- Interview witnesses & injured employees at the scene - conduct a walkthrough of the accident.
- Conduct interviews in private - Interview one witness at a time.
- Get signed statements from all involved.
- Take photos or make a sketch of the accident scene.
- What hazards are present - what unsafe acts contributed to accident?
- Ensure hazardous conditions are corrected immediately.

Date & Time		**Location**	
Task Performed		**Witnesses**	
Resulted In	___ **Injury** ___ **Fatality** ___ **Property Damage**	**Property Damage**	
Injured		**Injured**	
Describe Accident Facts & Events			

Supervisors Root Cause Analysis (Check ALL that apply to the accident)			
Unsafe Act		**Unsafe Conditions**	
Improper work technique		Poor workstation design	
Safety rule violation		Unsafe operation method	
Improper PPE or PPE not used		Improper maintenance	
Operating without authority		Lack of direct supervision	
Failure to warn or secure		Insufficient training	
Operating at improper speeds		Lack of experience	
By-passing Safety device		Insufficient knowledge of job	
Protective equipment not in use		Slippery conditions	
Improper loading or placement		Excessive noise	

Improper lifting		Inadequate guarding of hazards	
Servicing Machinery in motion		Defective tools/equipment	
Horseplay		Poor housekeeping	
Drug or alcohol use		Insufficient lighting	
Unsafe Acts require a written warning and re-training before the employee resumes work.			
Date		**Date**	
Retraining Assigned		**Unsafe Condition Guarded**	
Retraining Completed		**Unsafe Condition Corrected**	
Supervisor Signature		**Supervisor Signature**	

SETON BRILLA CHARTER SCHOOL

1956 JEROME AVENUE, BRONX, NEW YORK

Community Air Monitoring Plan

NYSDEC Site Number: C203152
OER Project Number: 21TMP1325X
E-Designation: E-442

Prepared for:

New York State Department of Environmental Conservation
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1.0 INTRODUCTION

1.1 Purpose

This Community Air Monitoring Plan (CAMP) was prepared by AKRF, Inc. (AKRF) on behalf of 2-6 East Tremont Avenue LLC for the Seton Brilla Charter School property (hereinafter referred to as the Site). The Site is an approximately 0.240-acre parcel located at 1956 Jerome Avenue in the Morris Heights section of the Bronx, New York. The Site is identified on the New York City Tax Map as Block 2853, Lot 22.

The Site was remediated to Track 4 New York State Department of Environmental Conservation (NYSDEC) Part 375 Restricted Residential Soil Cleanup Objectives (RRSCOs) and/or Protection of Groundwater Soil Cleanup Objectives (PGWSCOs) for VOCs in general accordance with the May 2022 NYSDEC-approved Remedial Action Work Plan (RAWP) and Decision Document. A Site Management Plan (SMP) was prepared to manage remaining contamination at the Site, as required by the Environmental Easement. The Environmental Easement is an Institutional Control (IC) restricting the type of use at the Site after completion of the remedial program under the RAWP. Details on the Site environmental history and remedial activities performed under the RAWP are provided in the SMP.

Engineering Controls (ECs) have been incorporated into the Site remedy to control exposure to remaining contamination during the use of the Site to ensure protection of public health and the environment. The following ECs were installed at the Site: (1) a cover system; (2) an active sub-slab depressurization system (SSDS); and (3) a contingency soil vapor extraction (SVE) system. An Environmental Easement granted to NYSDEC and recorded with the Bronx County Office of the City Register requires compliance with the SMP, and all ECs and ICs placed on the Site.

The ICs place restrictions on Site use and mandate operation, maintenance, monitoring, and reporting measures for all ECs and ICs. The SMP specifies the methods necessary to ensure compliance with all ECs and ICs required by the Environmental Easement for contamination that may remain at the Site. The SMP has been approved by NYSDEC, and compliance with the plan is required by the grantor of the Environmental Easement and the grantor's successors and assigns. The SMP may be revised only with the approval of NYSDEC.

This CAMP, which is an appendix to the SMP, details the procedures required for monitoring workspace air quality during any activities performed at the Site under the SMP that require management of residual contamination. All workers who participate in remediation-related activities at the Site that are under the direction of AKRF and/or the Site owner are required to comply with the provisions specified in this CAMP.

2.0 SITE HISTORY AND BACKGROUND

Historical records, including Sanborn maps and a city directory search, indicated that as early as 1950, the Site was occupied by a garage with automobile repair uses and two 550-gallon gasoline underground storage tanks (USTs). The Site was also listed with the following uses between 1927 and 2017: automobile repair, steam equipment manufacturing, appliance manufacturing, and janitorial supplies sales. During the Phase I Environmental Site Assessment (ESA) site reconnaissance, a hydraulic lift was observed in the southern portion of the facility, and the facility operator indicated that two fuel oil aboveground storage tanks (ASTs) had previously been located within the partial cellar in the northwestern corner of the Site.

The Site now consists of a multi-story charter school building, which is currently under construction.

Between September 2022 and August 2023, the Site was remediated in accordance with the NYSDEC-approved RAWP. The remedial elements performed consisted of the following:

1. Soil/fill was excavated and disposed of off-site to achieve a Track 4 remedy, including: approximately 1,280 tons (850 cubic yards) of source material associated with NYSDEC Spill No. 2103719 [down to approximately 2 feet below the water table, where petroleum-related volatile organic compounds (VOCs) exceeded PGWSCOs and/or RRSCOs], and approximately 860 tons (570 cubic yards) of soil/fill from the upper 2 feet Site-wide.
2. Four USTs, and the associated piping and appurtenances, were removed in accordance with the RAWP and applicable regulations.
3. A groundwater treatment program that included Modified Fenton's Reagent (MFR) was conducted in the southwestern portion of the Site. Following groundwater treatment, three post-remedial groundwater monitoring wells were installed at the Site to monitor benzene, toluene, ethylbenzene, and xylenes (collectively referred to as BTEX) concentrations. One round of post-remedial groundwater monitoring was conducted prior to receipt of the Certificate of Completion (COC). Subsequent rounds will be conducted under the SMP.
4. The subgrade components of a vapor mitigation system consisting of an active SSDS (with a 20-mil vapor barrier) was installed beneath the proposed new building to prevent vapor intrusion. The aboveground components will be installed under the SMP.
5. A Community Air Monitoring Plan (CAMP) was implemented during all intrusive Site activities to monitor levels of VOCs and airborne particulates within the active work zones and around the perimeter of the Site.
6. Fill that met the requirements of 6 New York Codes, Rules and Regulations (NYCRR) Part 375-6.7(d) was imported to install the ECs and establish the designed grades beneath the proposed Site-wide building slab.
7. Twenty-seven documentation samples were collected across the Site and analyzed to evaluate the performance of the remedy with respect to attainment of Track 4 RRSCOs and/or PGWSCOs (for VOCs only). Documentation sample frequency will be based on the sampling frequency outlined in Section 5.4 of DER-10.
8. A cover system consisting of a minimum six-inch concrete building slab was constructed across the Site.
9. An Environmental Easement was recorded with the New York City Office of the Registrar. The Environmental Easement requires the remedial parties/Site owners to: complete and submit a periodic certification of ICs and ECs to NYSDEC in accordance with NYCRR Part 375-1.8 (h)(3); allow for the future redevelopment and use of the Site for restricted residential use as defined by Part 375-1.8(g), although land use is subject to local zoning laws; prohibit the use of groundwater as a source of potable

or process water without necessary water quality treatment, as determined by the New York State Department of Health (NYSDOH); and require compliance with a Site-specific, NYSDEC-approved SMP.

10. A contingency SVE system was installed to prevent the off-site migration of soil vapor, if necessary, based on the results of a Soil Vapor Intrusion Evaluation (SVIE).
11. An SMP was prepared and will be implemented that identifies all use restrictions and ECs for the Site and details the steps and media-specific requirements necessary to ensure the ICs and ECs remain in place and effective. The SMP also includes an Excavation Work Plan (EWP).

3.0 AIR MONITORING

Community air monitoring will be conducted during all intrusive Site activities in compliance with the NYSDOH Generic CAMP and this Site-specific CAMP. The NYSDOH Generic CAMP is included as Attachment A. Real-time air monitoring for VOCs and dust at the perimeter of the exclusion zone will be performed as described below. Exceedances of CAMP action levels will be immediately reported to the NYSDEC and NYSDOH project managers, and CAMP reports will be included in the daily reports submitted to NYSDEC and NYSDOH.

3.1 Roving Air Monitoring

VOC Monitoring

Continuous monitoring for VOCs will be conducted during all ground intrusive activities, including excavation activities. Upwind concentrations will be measured at the start of each workday and periodically thereafter to establish background concentrations. VOCs will be monitored continuously at the downwind perimeter of the exclusion zone. Monitoring will be conducted with a photoionization detector (PID) equipped with a 10.6 electron Volt (eV) lamp capable of calculating 15-minute running average concentrations.

Periodic monitoring for VOCs will be conducted during any non-intrusive activities, such as the collection of excavation endpoint soil samples. Periodic monitoring may include obtaining measurements upon arrival at a location and upon leaving the location.

More frequent intervals of monitoring will be conducted if required, as determined by Site Manager (SM), the Project Environmental and Safety Manager (PESM), Project Director (PD), and/or Remedial Engineer (RE). All PID readings will be recorded and available for NYSDEC and NYSDOH personnel to review. Instantaneous readings, if any, will also be recorded.

Particulate Monitoring

Continuous monitoring for particulates will be conducted during all ground intrusive activities and will involve the measurement of respirable dust. Community air monitoring for dust particulates will be conducted using an MIE 1000 Personal DataRam or equivalent to measure the concentration of airborne respirable particulates less than 10 micrometers in size (PM_{10}). The dust monitor will be capable of calculating 15-minute running average concentrations and equipped with an audible alarm to indicate exceedance of action levels. Background readings and any readings that trigger response actions will be recorded in the project logbook, which will be available on-site for NYSDOH and/or NYSDEC review.

3.2 Fixed Air Monitoring Stations

Two fixed air monitoring stations will be operated at the Site during soil disturbing activities. One fixed air monitoring station each will be set up at the upwind and downwind perimeters of the exclusion zone during all ground intrusive activities and will continuously log VOC and particulate levels. Each fixed monitoring station will be fully enclosed and equipped with the following:

- A PID equipped with a 10.6 eV lamp capable of calculating 15-minute running average VOC concentrations;
- A TSI 8530 DustTrak II or equivalent dust monitor capable of measuring the concentration of airborne respirable particulates less than 10 micrometers in size (PM_{10}) and calculating 15-minute running average particulate concentrations; and

- A Netronix™ Thiamus™ ICU-820 or equivalent Global System for Mobile Communication (GSM)/Global Positioning System (GPS) device capable of recording air monitoring and location data.

Each monitoring station will be capable of sending e-mail alerts to the PESM and SM to indicate an exceedance of action levels. Additionally, the Site Safety Officer (SSO) will conduct an inspection of the monitoring stations on at least an hourly basis. Upon completion of Site activities, all air monitoring data will be available to download via the iEnvironet® website. All air monitoring data recorded at the fixed monitoring stations will be available for NYSDOH and/or NYSDEC review and will be included in the Final Engineering Report (FER).

Since work areas at this Site may be within 20 feet of potentially exposed populations, additional Site-specific CAMP air monitoring provisions will be implemented (as necessary) to ensure that residents of the northeast-adjacent structure are not exposed to Site-related contaminants during construction activities. The additional CAMP provisions include:

- Potential use of ECs such as vapor/dust barriers or special ventilation devices; and
- Attempting to implement planned activities when potentially exposed populations are at a minimum.

3.3 Community Air Monitoring Action Levels

VOC Action Levels

The following actions will be taken based on organic vapor levels measured:

- If total organic vapor levels exceed 5 parts per million (ppm) above background for the 15-minute average at the exclusion zone perimeter, work activities will be temporarily halted and monitoring continued. If levels readily decrease (per instantaneous readings) below 5 ppm above background, work activities will resume with continued monitoring.
- If total organic vapor levels at the downwind perimeter of the exclusion zone persist at levels in excess of 5 ppm above background but less than 25 ppm, work activities will be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities will resume provided that the total organic vapor level 200 feet downwind of the hot 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 above background for the 15-minute average.
- If the total organic vapor level is above 25 ppm at the perimeter of the exclusion zone, activities will be shutdown.

Particulate Action Levels

The following actions will be taken based on particulate levels measured:

- If the downwind particulate concentrations are greater than 100 micrograms per cubic meter ($\mu g/m^3$) above background (upwind concentrations), and no other obvious source is apparent, then it will be assumed that the elevated particulate concentrations are a result of Site activities. In such instances, dust suppression measures will be implemented and monitoring will be continued. Work will be allowed to continue with dust suppression if downwind particulate levels do not exceed 150 $\mu g/m^3$ above the background (upwind concentration) and provided that no visible dust is migrating from the work area.
- If particulate levels persist at 150 $\mu g/m^3$ above the background, work must be stopped until dust suppression measures bring particulate levels to below 150 $\mu g/m^3$ above background.

Major Vapor Emission Response Plan

If any organic levels greater than 5 ppm over background are identified 200 feet downwind from the Site, or half the distance to the nearest residential or commercial property, whichever is less, all work activities must be halted and/or vapor controls must be implemented.

If, following the cessation of the work activities, or as the result of an emergency, organic levels persist above 5 ppm above background 200 feet downwind or half the distance to the nearest residential or commercial property from the exclusion zone, then the air quality must be monitored within 20 feet of the perimeter of the nearest residential or commercial structure (20-foot zone).

If either of the following criteria is exceeded in the 20-foot zone, then the Major Vapor Emission Response Plan shall automatically be implemented:

- Sustained organic vapor levels approaching 1 ppm above background for a period of more than 30 minutes; or
- Organic vapor levels greater than 5 ppm above background for any time period.

Upon activation, the following activities shall be undertaken as part of the Major Vapor Emission Response Plan:

- NYSDEC, NYSDOH, and local police authorities will be immediately contacted by the SM or PESM and advised of the situation;
- Frequent air monitoring will be conducted at 30-minute intervals within the 20-foot zone. If two successive readings below action levels are measured, air monitoring may be halted or modified by the PESM and/or SM; and
- All emergency contacts will go into effect as appropriate.

All readings will be recorded and available for NYSDEC and NYSDOH personnel to review.

FIGURE

Service Layer Credits: USGS The National Map: 3d Elevation Program, Data Refreshed July, 2020

0 500 1,000

SCALE IN FEET

AKRF
440 Park Avenue South, New York, NY 10016

1956 Jerome Avenue
Bronx, New York

SITE LOCATION

DATE
9/20/2021

PROJECT NO.
210024

FIGURE
1

APPENDIX A
NYSDOH GENERIC CAMP

Appendix 1A
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 1B
Fugitive Dust and Particulate Monitoring

A program for suppressing fugitive dust and particulate matter monitoring at hazardous waste sites is a responsibility on the remedial party performing the work. These procedures must be incorporated into appropriate intrusive work plans. The following fugitive dust suppression and particulate monitoring program should be employed at sites during construction and other intrusive activities which warrant its use:

1. Reasonable fugitive dust suppression techniques must be employed during all site activities which may generate fugitive dust.

2. Particulate monitoring must be employed during the handling of waste or contaminated soil or when activities on site may generate fugitive dust from exposed waste or contaminated soil. Remedial activities may also include the excavation, grading, or placement of clean fill. These control measures should not be considered necessary for these activities.

3. Particulate monitoring must be performed using real-time particulate monitors and shall monitor particulate matter less than ten microns (PM10) with the following minimum performance standards:

(a) Objects to be measured: Dust, mists or aerosols;
(b) Measurement Ranges: 0.001 to 400 mg/m3 (1 to 400,000 :ug/m3);
(c) Precision (2-sigma) at constant temperature: +/- 10 :g/m3 for one second averaging; and +/- 1.5 g/m3 for sixty second averaging;
(d) Accuracy: +/- 5% of reading +/- precision (Referred to gravimetric calibration with SAE fine test dust (mmd= 2 to 3 :m, g= 2.5, as aerosolized);
(e) Resolution: 0.1% of reading or 1g/m3, whichever is larger;
(f) Particle Size Range of Maximum Response: 0.1-10;
(g) Total Number of Data Points in Memory: 10,000;
(h) Logged Data: Each data point with average concentration, time/date and data point number
(i) Run Summary: overall average, maximum concentrations, time/date of maximum, total number of logged points, start time/date, total elapsed time (run duration), STEL concentration and time/date occurrence, averaging (logging) period, calibration factor, and tag number;
(j) Alarm Averaging Time (user selectable): real-time (1-60 seconds) or STEL (15 minutes), alarms required;
(k) Operating Time: 48 hours (fully charged NiCd battery); continuously with charger;
(l) Operating Temperature: -10 to 50^{o} C (14 to 122^{o} F);
(m) Particulate levels will be monitored upwind and immediately downwind at the working site and integrated over a period not to exceed 15 minutes.

4. In order to ensure the validity of the fugitive dust measurements performed, there must be appropriate Quality Assurance/Quality Control (QA/QC). It is the responsibility of the remedial party to adequately supplement QA/QC Plans to include the following critical features: periodic instrument calibration, operator training, daily instrument performance (span) checks, and a record keeping plan.

5. The action level will be established at 150 ug/m3 (15 minutes average). While conservative,

this short-term interval will provide a real-time assessment of on-site air quality to assure both health and safety. If particulate levels are detected in excess of 150 ug/m3, the upwind background level must be confirmed immediately. If the working site particulate measurement is greater than 100 ug/m3 above the background level, additional dust suppression techniques must be implemented to reduce the generation of fugitive dust and corrective action taken to protect site personnel and reduce the potential for contaminant migration. Corrective measures may include increasing the level of personal protection for on-site personnel and implementing additional dust suppression techniques (see paragraph 7). Should the action level of 150 ug/m3 continue to be exceeded work must stop and DER must be notified as provided in the site design or remedial work plan. The notification shall include a description of the control measures implemented to prevent further exceedances.

6. It must be recognized that the generation of dust from waste or contaminated soil that migrates off-site, has the potential for transporting contaminants off-site. There may be situations when dust is being generated and leaving the site and the monitoring equipment does not measure PM10 at or above the action level. Since this situation has the potential to allow for the migration of contaminants off-site, it is unacceptable. While it is not practical to quantify total suspended particulates on a real-time basis, it is appropriate to rely on visual observation. If dust is observed leaving the working site, additional dust suppression techniques must be employed. Activities that have a high dusting potential--such as solidification and treatment involving materials like kiln dust and lime--will require the need for special measures to be considered.

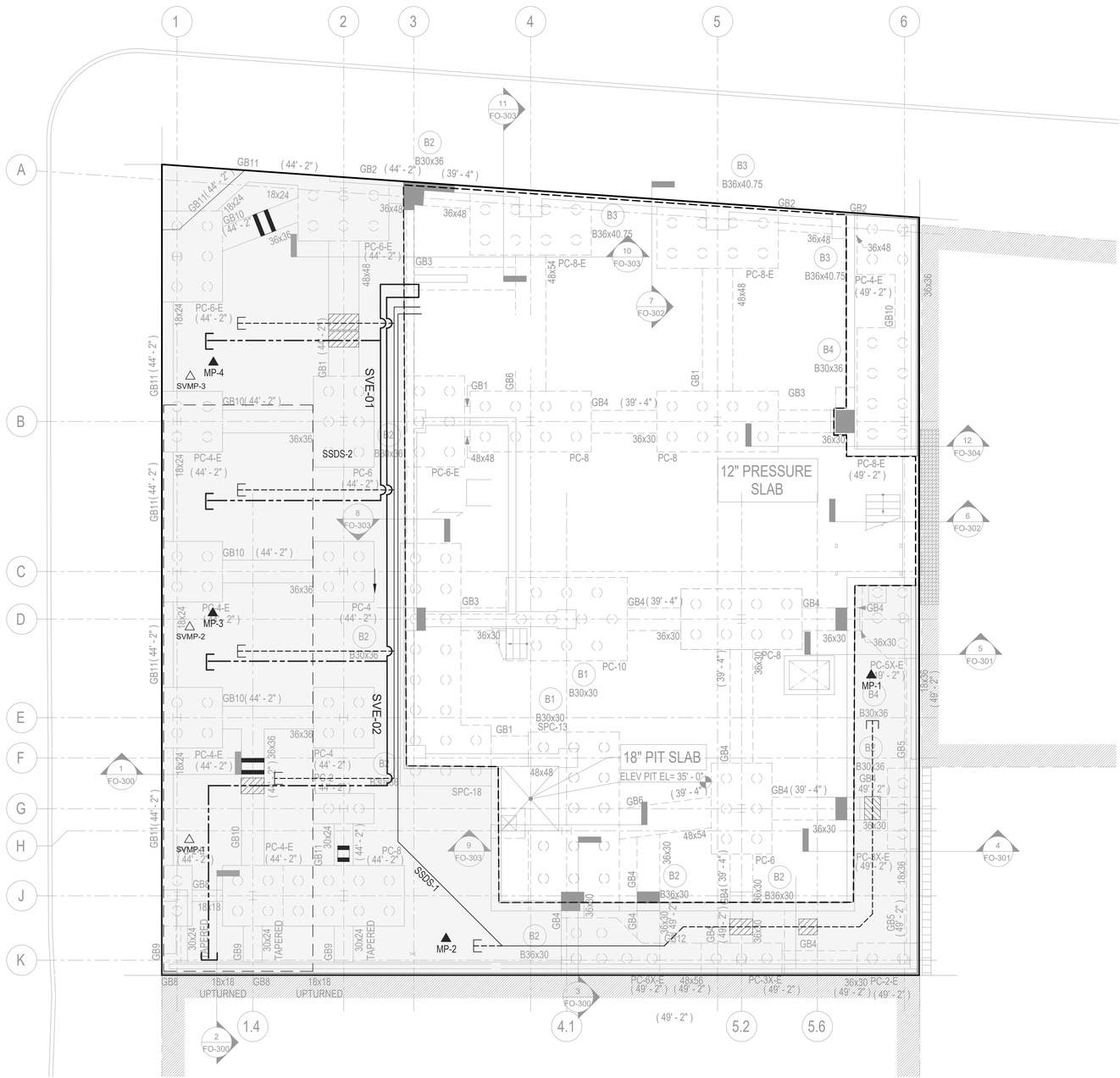
7. The following techniques have been shown to be effective for the controlling of the generation and migration of dust during construction activities:

(a) Applying water on haul roads;
(b) Wetting equipment and excavation faces;
(c) Spraying water on buckets during excavation and dumping;
(d) Hauling materials in properly tarped or watertight containers;
(e) Restricting vehicle speeds to 10 mph;
(f) Covering excavated areas and material after excavation activity ceases; and
(g) Reducing the excavation size and/or number of excavations.

Experience has shown that the chance of exceeding the 150ug/m3 action level is remote when the above-mentioned techniques are used. When techniques involving water application are used, care must be taken not to use excess water, which can result in unacceptably wet conditions. Using atomizing sprays will prevent overly wet conditions, conserve water, and provide an effective means of suppressing the fugitive dust.

8. The evaluation of weather conditions is necessary for proper fugitive dust control. When extreme wind conditions make dust control ineffective, as a last resort remedial actions may need to be suspended. There may be situations that require fugitive dust suppression and particulate monitoring requirements with action levels more stringent than those provided above. Under some circumstances, the contaminant concentration and/or toxicity may require additional monitoring to protect site personnel and the public. Additional integrated sampling and chemical analysis of the dust may also be in order. This must be evaluated when a health and safety plan is developed and when appropriate suppression and monitoring requirements are established for protection of health and the environment.

APPENDIX H
SSDS AND SVE SYSTEM AS-BUILTS



1 ENV-100 SUBSLAB DEPRESSURIZATION SYSTEM AND VAPOR BARRIER LAYOUT

SCALE IN FEET (0, 4, 8, 16)

NOTE: PIPE SPACING NOT TO SCALE

SVE MONITORING POINT LOCATIONS	
ID	**ROOM**
SVMP-1	104 ES MAIN OFFICE
SVMP-2	114 MS MAIN OFFICE
SVMP-3	HALLWAY (NE)

SSDS MONITORING POINT LOCATIONS	
ID	**ROOM**
MP-1	109B NON-FOOD STORAGE
MP-2	109A PACKAGE
MP-3	114 MS MAIN OFFICE
MP-4	HALLWAY (NE)

NOTES

1. THIS PLAN SHALL NOT TO BE USED FOR STRUCTURAL, ARCHITECTURAL OR OTHER REFERENCE PURPOSES EXCEPT FOR THE VENTING SYSTEM AND VAPOR BARRIER.

2. COORDINATE ALL WORK FOR VENTING SYSTEM INSTALLATION WITH OTHER TRADES BEFORE INSTALLATION.

3. THE FULL EXTENTS OF THE BUILDING CONSTRUCTION BENEATH THE FLOOR SLABS SHALL BE LINED WITH GAS PERMEABLE AGGREGATE AND VAPOR BARRIER EXCEPT AS NOTED ON THIS DRAWING AND AS REQUIRED BY FOUNDATION ELEMENT LAYOUTS IN STRUCTURAL PLANS. ALL DEVIATIONS SHALL BE PROPOSED IN SHOP DRAWING SUBMITTALS PRIOR TO INSTALLATION IN THE FIELD.

4. SLOPE SOLID HORIZONTAL VENTING SYSTEM PIPE A MINIMUM OF 1% UNIFORMLY TOWARDS THE VENTING SYSTEM SLOTTED PIPING OR CONDENSATE DRAIN/SUMP.

5. CONDENSATE DRAIN/SUMP LOCATIONS TO BE SUBMITTED BY CONTRACTOR AND APPROVED BY ENGINEER. CONTRACTOR TO SUBMIT SHOP DRAWINGS INDICATING PIPE INVERTS, CONDENSATE DRAIN/SUMP LOCATIONS, AND DRAIN/SUMP DETAILS TO ENGINEER FOR APPROVAL.

6. REFER TO DRAWINGS ENV-101 THROUGH ENV-105 FOR VENTING SYSTEM PIPING, RISER, GAS VAPOR BARRIER, GAS PERMEABLE AGGREGATE, AND EXHAUST STACK DETAILS AND SECTIONS.

7. CONTRACTORS TO SUPPLY SHOP DRAWINGS OF PROPOSED PIPE LAYOUTS & PIPE INVERTS IN COORDINATION WITH LATEST FOUNDATION PLANS TO ENSURE ACCEPTABLE PIPE PITCH & INSTALLATION DETAILS.

8. ALL DIMENSIONS AND ELEVATIONS SHALL BE CHECKED AGAINST ARCHITECTURAL AND BUILDING PLANS. NOTIFY ENGINEER OF ANY DISCREPANCY PRIOR TO CONSTRUCTION.

9. BASE MAP FROM GF55 ARCHITECTS, LLP "FOUNDATION PLAN", FO-100.00, DATED 06-29-2022.

10. GAS PERMEABLE AGGREGATE SHALL HAVE NOMINAL SIZE OF 1 INCH TO 1/2 INCH AND COMFORM TO ASTM C33 STANDARD SPECIFICATION FOR CONCRETE AGGREGATE SIZE #5 AS PER THE TABLE BELOW:

ASTM #5 AGGREGATE GRADATION
(FOR PIPE TRENCHES)

SIEVE SIZE	PERCENT FINER BY WEIGHT
1.5 inch	100
1 inch	90 to 100
3/4 inch	20 to 55
1/2 inch	0 to 10
3/8 inch	0 to 5

LEGEND

- BCP SITE BOUNDARY
- EXTENT OF 20-MIL VAPORBLOCK PLUS VAPOR BARRIER AND GAS-PERMEABLE AGGREGATE
- EXTENT OF E-PRO WATERPROOFING
- SVE TREATMENT ZONE - GAS PERMEABLE AGGREGATE UNDERLAIN BY 6-MIL PLASTIC SHEETING
- SOLID SSDS/SVE SCHEDULE 40 4" PVC PIPE
- SLOTTED SCHEDULE 40 4" PVC PIPE BENEATH SLAB WITH ENDCAP
- SVE 4" Ø SLOTTED SCHEDULE 40 PVC PIPE WITH PVC END CAP
- SSDS/SVE PIPE PENETRATION THROUGH VERTICAL FOUNDATION WALL
- PIPE SLEEVE THROUGH FOUNDATION ELEMENT
- COMMUNICATION SLEEVE THROUGH FOUNDATION ELEMENT
- MP-1 — SSDS MONITORING POINT LOCATION WITH ID
- SVMP-1 — SVE VACUUM MONITORING POINT

GF55

225 WEST 39TH STREET
NEW YORK, NY 10018
212 352 3099

MG A&D
MICHAEL GRAVES ARCHITECT, PC
341 NASSAU ST
PRINCETON, NJ 08540
TEL: 609.924.6409
FAX: 609.921.0129
MICHAELGRAVES.COM

SETON BRILLA CHARTER
1956 JEROME AVE
BRONX, NEW YORK
10453

BLOCK: 2853 Lot: 22
BOROUGH: BRONX
PROJECT: 2021104.00

DEVELOPER
BOLIVAR DEVELOPMENT

STRUCTURAL ENGINEER
McNamara Salvia Inc

MEP/FP ENGINEER
Ettinger Engineering

GEOTECHNICAL CONSULTANTS

OWNER

ISSUE

05/17/2021	50% DD
08/25/2021	DD PROGRESS
09/01/2021	100% DD
10/01/2021	DOB FILING
12/03/2021	50% CD
03/22/2022	100% CD
10/26/2022	BULLETIN SET - OCTOBER 2022

PROJECT
SETON BRILLA CHARTER
1956 JEROME AVE

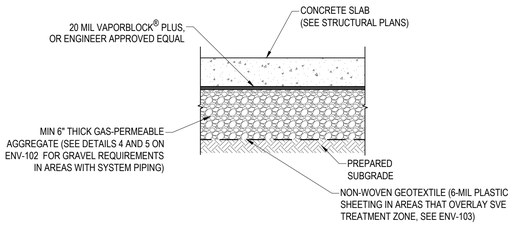
DOB NOW #
X00600819-S1

DRAWING
AS-BUILT SSDS, SVE, AND VAPOR BARRIER SITE PLAN

SEAL AND SIGNATURE

STATE OF NEW YORK
REBECCA A. KINAL
082046-1
LICENSED PROFESSIONAL ENGINEER

DATE: 06/10/2022
PROJECT NO: 2021104.00
DRAWING BY: MRV
CHK BY: EP
DWG NO: ENV-100
CAD FILE NO: OF I##



1 ENV-102 TYPICAL SECTION THROUGH BUILDING SUB-SLAB
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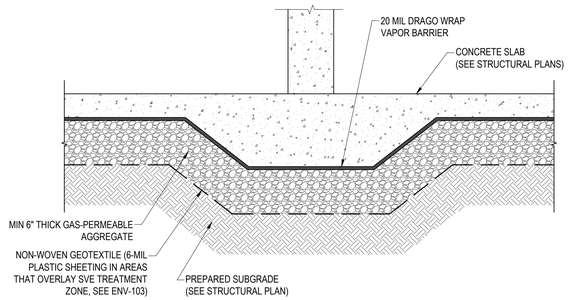

2 ENV-102 VAPOR BARRIER DETAIL AT SLAB ELEVATION CHANGE
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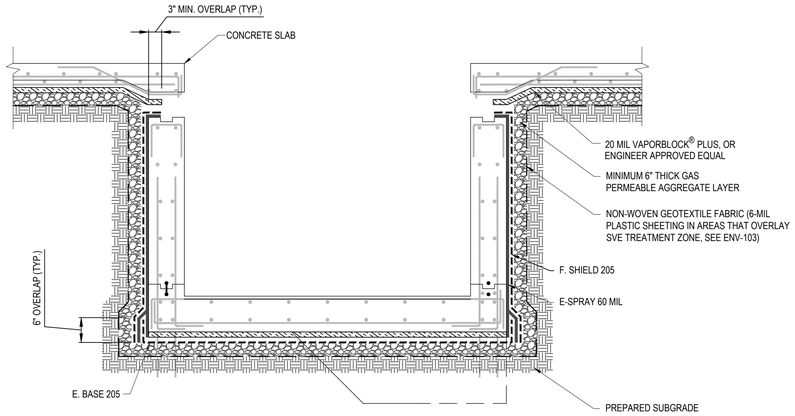

3 ENV-102 VAPOR BARRIER DETAIL AT TYPICAL PIT
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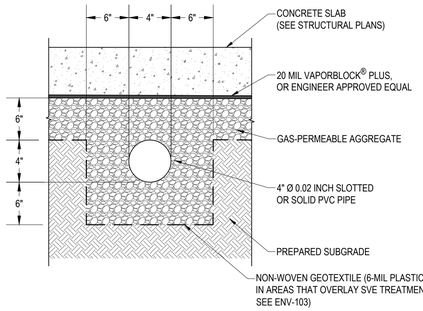
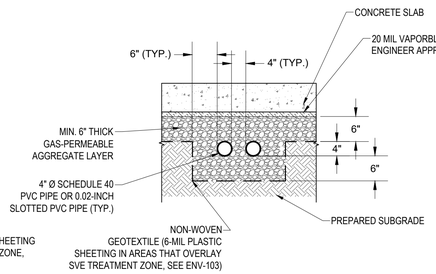
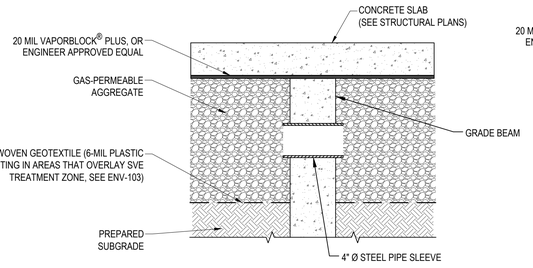


4 ENV-102 TYPICAL SSDS PIPE DETAIL
Not to Scale



5 ENV-102 TYPICAL SSDS PIPE TRENCH
Not to Scale



6 ENV-102 TYPICAL COMMUNICATION SLEEVE DETAIL
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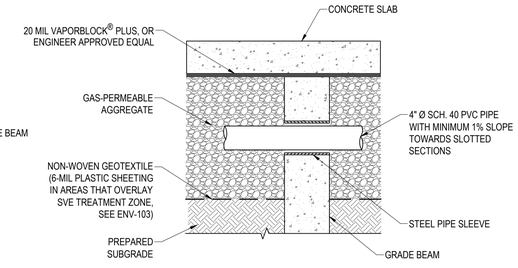

7 ENV-102 TYPICAL PIPE SLEEVE DETAIL
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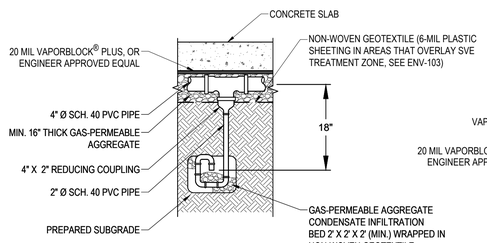
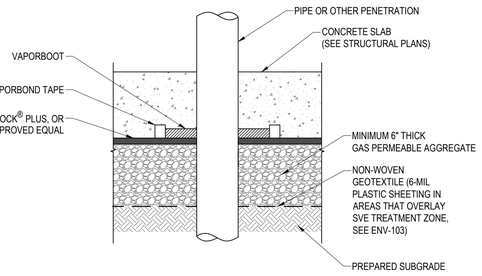


NOTE:

1. INSTALL, AS NECESSARY, AT ALL LOW POINTS IN SUB-SLAB DEPRESSURIZATION SYSTEM PIPING WHEN PIPING CANNOT BE SLOPED TO SLOTTED PIPING.

8 ENV-102 TYPICAL SSDS CONDENSATE DRAIN DETAIL
Not to Scale



9 ENV-102 TYPICAL VAPOR BARRIER PENETRATION
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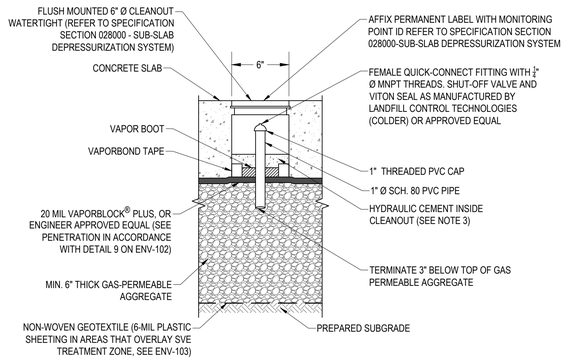

NOTES:

1. ANY DEVIATION FROM THIS INSTALLATION MUST BE SUBMITTED TO THE ENGINEER FOR APPROVAL.
2. REFER TO SECTION 028000 FOR TYPICAL MONITORING POINT ACCESS COVER SPECIFICATION.
3. THREE INCHES OF HYDRAULIC CEMENT TO BE POURED INSIDE CLEANOUT OVER PROPERLY SEALED PENETRATION.

10 ENV-102 TYPICAL MONITORING POINT
Not to Scale

GF55
225 WEST 39TH STREET
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212 352 3099

MG A&D
MICHAEL GRAVES ARCHITECT, PC
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SETON BRILLA CHARTER
1956 JEROME AVE
BRONX, NEW YORK
10453
BLOCK: 2853 Lot: 22
BOROUGH: BRONX
PROJECT: 2021104.00

DEVELOPER
BOLIVAR DEVELOPMENT

STRUCTURAL ENGINEER
McNamara Salvia Inc

MEP/FP ENGINEER
Ettinger Engineering

GEOTECHNICAL CONSULTANTS

OWNER

ISSUE

05/17/2021	50% DD
08/25/2021	DD PROGRESS
09/01/2021	100% DD
10/01/2021	DOB FILING
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03/22/2022	100% CD
10/26/2022	BULLETIN SET - OCTOBER 2022

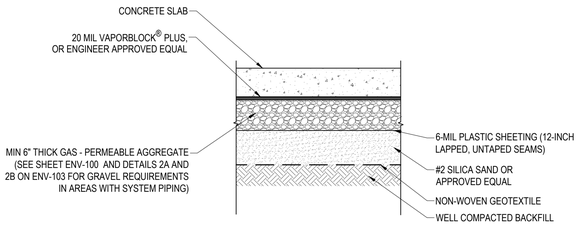
PROJECT
SETON BRILLA CHARTER
1956 JEROME AVE

DOB NOW #
X00600819-S1

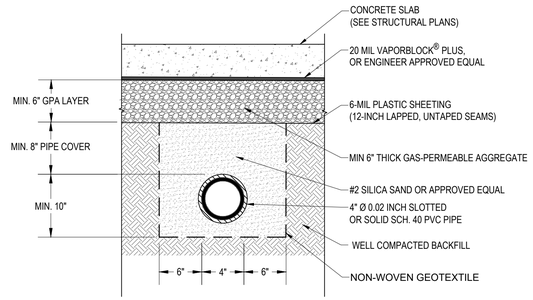
DRAWING
SSDS AND VAPOR BARRIER DETAILS

SEAL AND SIGNATURE
STATE OF NEW YORK REBECCA A. KINA 082046-1 PROFESSIONAL ENGINEER

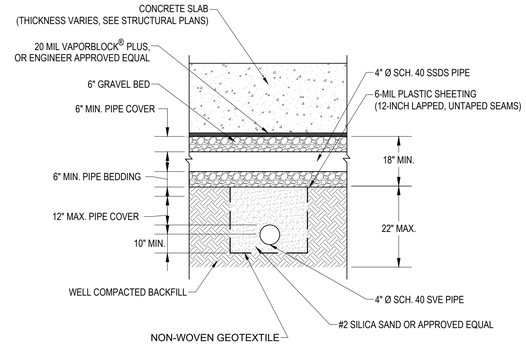
DATE: 06/10/2022
PROJECT NO: 2021104.00
DRAWING BY: MRV
CHK BY: EP
DWG NO: ENV-102
CAD FILE NO:
OF ##



1 ENV-103 TYPICAL SECTION THROUGH SSDS/SVE TREATMENT ZONE
Not to Scale



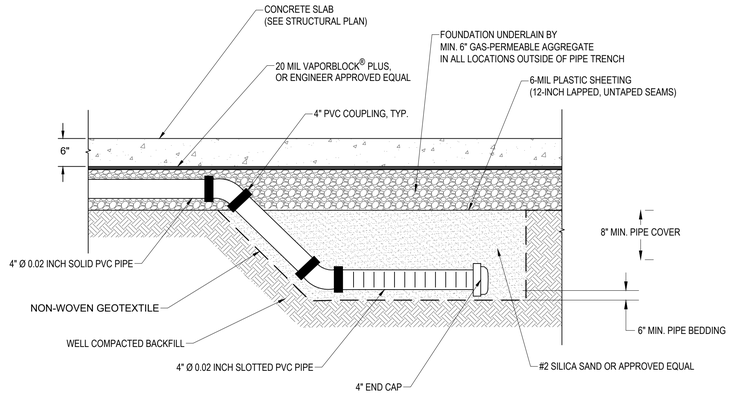
2a ENV-103 TYPICAL SECTION THROUGH SVE PIPE TRENCH
Not to Scale



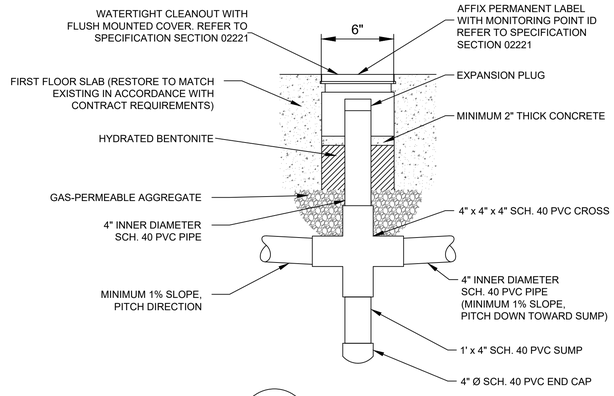
NOTE:

1. THE FULL EXTENTS OF THE SVE TREATMENT ZONE (APPROXIMATELY 1,300 SQUARE FEET) SHALL BE LINED WITH 6-MIL POLY SHEETING (LAPPED, BUT NOT TAPED AT ALL SEAMS) TO FORM A CONTINUOUS LAYER SEPARATING THE SVE TREATMENT ZONE SILICA SAND FROM THE SSDS AGGREGATE LAYER.

2b ENV-103 SVE-01 PIPE TRENCH CROSS-SECTION
Not to Scale



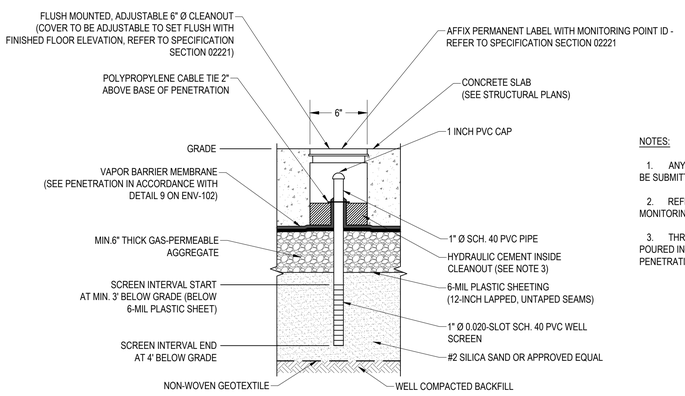
3 ENV-103 TYPICAL SVE PIPE ELEVATION CHANGE AT SLOTTED TO SOLID PIPE TRANSITION
Not to Scale



NOTES:

1. INSTALL AS NEEDED AT LOW POINTS IN SUB-SLAB SVE PIPING IF PIPING CANNOT MAINTAIN MINIMUM 1% SLOPE TO SVE WELL.
2. SEE SECTION 022221 (SOIL VAPOR EXTRACTION SYSTEM) FOR WATERTIGHT COVER REQUIREMENTS.

4 ENV-103 TYPICAL SVE CONDENSATE SUMP DETAIL
Not to Scale



NOTES:

1. ANY DEVIATION FROM THIS INSTALLATION MUST BE SUBMITTED TO THE ENGINEER FOR APPROVAL.
2. REFER TO SECTION 02 80 00 FOR TYPICAL MONITORING POINT ACCESS COVER SPECIFICATION.
3. THREE INCHES OF HYDRAULIC CEMENT TO BE POURED INSIDE CLEANOUT OVER PROPERLY SEALED PENETRATION.

5 ENV-104 TYPICAL SVE MONITORING POINT
Not to Scale

GF55

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10/26/2022	BULLETIN SET - OCTOBER 2022

PROJECT
SETON BRILLA CHARTER
1956 JEROME AVE

DOB NOW #
X00600819-S1

DRAWING
SVE DETAILS

SEAL AND SIGNATURE
STATE OF NEW YORK REBECCA A. KINAL 082046-1 LICENSED PROFESSIONAL ENGINEER

DATE: 06/10/2022
PROJECT NO: 2021104.00
DRAWING BY: MRV
CHK BY: EP
DWG NO: ENV-103
CAD FILE NO: OF ##

APPENDIX I

QUALITY ASSURANCE PROJECT PLAN

AND FIELD SAMPLING PLAN

SETON BRILLA CHARTER SCHOOL

1956 JEROME AVENUE, BRONX, NEW YORK

Quality Assurance Project Plan

NYSDEC BCP Site Number: C203152
OER Project Number: 21TMP1325X
E-Designation: E-442

Prepared for:

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

On Behalf Of:

2-6 East Tremont Avenue LLC
450 West 14th Street, 8th Floor
New York, New York 10014

Prepared by:

AKRF, Inc.
440 Park Avenue South, 7th Floor
New York, New York 10016
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DECEMBER 2023

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TABLES

ATTACHMENT

1.0 INTRODUCTION

This Quality Assurance Project Plan (QAPP) describes the protocols and procedures that will be followed during implementation of the Site Management Plan (SMP) and associated appendices at the Seton Brilla Charter School property (hereinafter referred to as the Site). The Site is an approximately 0.240-acre parcel located at 1956 Jerome Avenue in the Morris Heights section of the Bronx, New York. The Site, which is identified on the New York City Tax Map as Block 2853, Lot 22, was remediated under the New York State Department of Environmental Conservation (NYSDEC) Brownfield Cleanup Program (BCP) (BCP Site No. C203152).

The objective of this QAPP is to provide for Quality Assurance (QA) and maintain Quality Control (QC) during sampling performed to evaluate the performance and effectiveness of the remedy to reduce or mitigate contamination at the Site. Adherence to the QAPP will ensure that defensible data will be obtained to confirm the successful operation and maintenance of remedial systems.

2.0 PROJECT TEAM

The project team will be drawn from AKRF professional and technical personnel and AKRF's subcontractors. All field personnel and subcontractors will have completed a 40-hour training course and updated 8-hour refresher course that meets the Occupational Safety and Health Administration (OSHA) requirements of 29 Code of Federal Regulation (CFR) Part 1910. The following sections describe the key project personnel and their responsibilities.

2.1 Remedial Engineer (RE)

Ms. Rebecca A. Kinal, P.E. will serve as the RE for the project throughout site management. Ms. Kinal served as the RE during Site remediation and oversaw the design of all Institutional Controls (ICs) and Engineering Controls (ECs) at the Site. She will oversee operation and maintenance (O&M) of ECs under the SMP. Ms. Kinal's resume is included in Attachment A.

2.2 Project Manager

Mr. Patrick Diggins will serve as the Project Manager throughout site management. The project manager will be responsible for directing and coordinating all elements of the SMP. The project manager will prepare reports and participate in meetings with the Site owner and/or NYSDEC. Mr. Diggins's resume is included in Attachment A.

2.3 Field Team Leader

The field team leader will be responsible for supervising the daily sampling and health and safety activities in the field and will ensure adherence to the SMP. The field team leader will report to the project manager on a regular basis regarding daily progress and any deviations from the SMP. The field team leader will be a qualified, responsible person able to act professionally and promptly during required activities. The field team leader will be established for each task; however, Mr. Michael Bates is expected to be the field team leader for much of the work under the SMP. Mr. Bates's resume is included in Attachment A.

2.4 Project Quality Assurance/Quality Control (QA/QC) Officer

Ms. Deborah Shapiro will be the Project QA/QC Officer throughout site management. The QA/QC Officer will be responsible for adherence to this QAPP. The QA/QC officer will review the procedures with all personnel prior to commencing any fieldwork and will assess implementation of the required procedures. Ms. Shaprio's resume is included in Attachment A.

2.5 Laboratory Quality Assurance/Quality Control (QA/QC) Officer

The laboratory QA/QC officer will be responsible for QC procedures and checks in the laboratory and ensuring adherence to laboratory protocols. They will track the movement of samples from the time they are checked in at the laboratory to the time that analytical results are issued. The laboratory QA/QC officer will conduct a final check on the analytical calculations and sign off on the laboratory reports. The laboratory QA/QC officer will be determined upon selection of a contract laboratory(s) for the SMP.

3.0 STANDARD OPERATING PROCEDURES (SOPS)

The following sections describe the SOPs for the monitoring activities included in the SMP. During these operations, all field personnel will wear appropriate personal protective equipment (PPE) and safety monitoring will be performed as described in the Site-specific Health and Safety Plan (HASP) provided as Appendix G of the SMP. SMP implementation will include sampling associated with the O&M of the sub-slab depressurization system (SSDS) and contingency soil vapor extraction (SVE) system, if required. The SMP also requires inspections of the SSDS, Site cover system, and contingency SVE system, as well as an Excavation Work Plan (EWP) and other provisions and appropriate actions to be taken in the event that future renovation or redevelopment of the Site requires the breaching of the composite cover system and excavation/removal of underlying soil/fill.

In all instances, any atypical or unexpected findings noted during inspections, sampling events, or SMP-governed field work will be communicated immediately to the environmental professional managing the Site work and, as necessary, to the NYSDEC project manager or NYSDEC's successor agency.

3.1 Excavation and/or Site Cover System Disturbance

The procedures for excavation and/or other invasive work that may disturb remaining contamination beneath the Site cover system will be as follows:

- Soil removal and/or other invasive activities will be completed as needed in accordance with the SMP and EWP;
- Following invasive work, the demarcation layer will be replaced to provide a visual reference to the top of the residual management zone (RMZ);
- The Site cover system will be replaced to restore the condition that existed prior to the excavation. In general, the restoration types must match or exceed the existing material and thickness conditions of the Site cover types presented in the SMP to maintain cover system integrity across the entire Site; and
- All equipment used in cover system disturbance will be decontaminated as described in Sections 3.2 and 3.3 of this QAPP.

3.2 Decontamination of Sampling Equipment

All sampling equipment (drilling rods and casing, macrocore samplers, probe rods, etc.) will be either dedicated or decontaminated between sampling locations. The decontamination procedure will be as follows:

1. Scrub using a tap water/Alconox™ mixture and bristle brush.
2. Rinse with tap water.
3. Scrub again with a tap water/Alconox™ mixture and bristle brush.
4. Rinse with distilled water.
5. Air-dry the equipment, if possible.

Decontamination will be conducted within 55-gallon drums or on plastic sheeting (or equivalent) that is bermed to prevent discharge to the ground or drains.

3.3 Heavy Equipment Decontamination

Decontamination of chemically contaminated heavy equipment (e.g., augers, excavator buckets) will be accomplished using high-pressure steam or dry decontamination with brushes and shovels. Decontamination will take place on a decontamination pad and all liquids used in the

decontamination procedure will be collected, stored, and disposed of in accordance with federal, state, and local regulations. Vehicles or equipment brought into an exclusion zone will be treated as contaminated and will be decontaminated prior to removal. Personnel performing this task will wear the proper PPE as prescribed in the Site-specific HASP.

A decontamination area will be established around the planned excavation area, adjacent to the environmental enclosure. The floor of the decontamination area will be covered with 6-mil plastic sheeting, as necessary, and bermed to prevent spreading of decontamination fluids or potential discharge to the ground surface.

All equipment in direct contact with known or potentially contaminated material will be either dedicated or decontaminated prior to handling less contaminated material or removal from the Site.

3.4 Management of Investigation-Derived Waste (IDW) and Remedial Operation and Maintenance (O&M) Waste

Any IDW and remedial O&M waste will be containerized in New York State Department of Transportation (NYSDOT)-approved 55-gallon drums or other appropriate containers. The drums will be sealed at the end of each workday and labeled with the date, the well or boring number(s), the type of waste (i.e., drill cuttings, development water, or purge water), and the name of an AKRF point-of-contact. Drums will be staged in secure areas, away from public access, to the extent practicable.

Soil/fill samples collected from soil boring or excavation activities will be used for waste characterization of soil/fill, since such data would be biased towards areas which are expected to be most contaminated. Additional waste characterization soil or other samples may be collected, if requested by the disposal facility. All IDW and remedial waste will be disposed of or treated according to applicable local, state, and federal regulations.

4.0 SAMPLING AND LABORATORY PROCEDURES

4.1 Import Soil/Fill Sampling

Prior to importing soil/fill for use as backfill, the intended imported material will be evaluated using the following procedures:

- A segregated stockpile of the intended imported material will be made available for sampling at a frequency and for the required parameters as outlined in Section 5.4(e) 10 of NYSDEC DER-10, and/or the NYSDEC-issued Sampling, Analysis, and Assessment of PFAS, dated April 2023;
- Soil/fill sample(s) will be collected from the segregated stockpile for analysis in accordance with NYSDEC requirements, and sampling results will be submitted to NYSDEC for approval;
- No material will be added to or removed from the segregated stockpile intended for import following the sample collection;
- Samples will be collected into laboratory-supplied containers;
- Samples will be kept in an ice-filled cooler or refrigerator, with the exception of any asbestos samples, until receipt by the laboratory (blue ice cannot be used when sampling for PFAS);
- The clean soil/fill layer will be underlain by a demarcation layer such as orange snow fence to indicate the top of the original soil/fill; and
- All sampling equipment will be decontaminated between sampling locations, as described in Sections 3.2 and 3.3 of this QAPP.

4.2 Reuse Sampling

Prior to reuse as backfill, excavated material will be evaluated using the criteria below:

- Concrete or demolition debris that does not exhibit signs of contamination will be sampled for asbestos prior to reuse on-site;
- Soil/fill material proposed for reuse will be sampled at a frequency and for the required parameters as outlined in NYSDEC's DER-10, Table 5.4, and/or the NYSDEC-issued Sampling, Analysis, and Assessment of PFAS, dated April 2023;
- Samples will be collected into laboratory-supplied containers;
- Samples will be kept in an ice-filled cooler or refrigerator, with the exception of any asbestos samples, until receipt by the laboratory (blue ice cannot be used when sampling for PFAS); and
- All sampling equipment will be decontaminated between sampling locations, as described in Sections 3.2 and 3.3 of this QAPP.

4.3 Endpoint Soil Sampling

In the event that evidence of contamination [e.g., odors, staining, elevated photoionization detector (PID) readings, or analytical results of soil samples above NYSDEC Part 375 Restricted Residential Soil Cleanup Objectives (RRSCOs)] is identified during any breach to the cover system or excavation of soil/fill as part of the redevelopment or renovation of the Site, endpoint soil sampling activities will be performed in accordance with NYSDEC DER-10. Per NYSDEC DER-10 Section 5.4, sidewall samples will be collected at a minimum of one sample for every 30 linear feet and bottom samples will be collected at a frequency of one sample for every 900

square feet. Endpoint soil samples will be analyzed for NYSDEC Final Commissioner's Policy (CP) Soil Cleanup Guidance (CP-51) volatile organic compounds (VOCs) by United States Environmental Protection Agency (EPA) Method 8260C, target compound list (TCL) semivolatile organic compounds/base-neutrals (SVOCs/BNs) by EPA Method 8270D, and per- and polyfluoroalkyl substances (PFAS) by EPA Modified Method 537.

Soil sampling will be conducted according to the following procedures:

- Characterize the sample according to the modified Burmister soil classification system;
- After selecting which samples will be analyzed in the laboratory, fill the required laboratory-supplied sample jars with the soil from the selected sampling location. Seal and label the sample jars as described in Section 4.8 of this QAPP and place in an ice-filled cooler;
- Decontaminate any reusable soil sampling equipment between sample locations as described in Section 3.2 of this QAPP; and
- Record boring number, sample depth, and sample observations (evidence of contamination, PID readings, soil classification) in the field logbook and boring log data sheet, if applicable.

4.4 Groundwater Sampling

Post-remedial groundwater sampling will be conducted at the frequency specified in the SMP in accordance with the EPA low flow methodology. Groundwater sampling will be generally conducted as follows:

- Remove the well plug and immediately measure the vapor concentrations in the well headspace with a PID calibrated to the manufacturer's specifications;
- Measure the depth to water and total well depth, and check for the presence of non-aqueous phase liquid (NAPL) using an oil-water interface probe. Measure the thickness of NAPL, if any, and record the result in field book and well log. If present, collect a sample of NAPL using a disposable plastic weighted bailer or similar collection device. Groundwater samples will not be collected from wells containing measurable NAPL;
- Connect dedicated tubing to either a submersible or bladder pump and lower the pump such that the intake of the pump is set at the midpoint of the water column within the screened interval of the well. In accordance with the NYSDEC-issued April 2023 *Sampling, Analysis, and Assessment of PFAS* low-density polyethylene (LDPE) sampling bladders will be used when sampling for PFAS. Connect the discharge end of the tubing to the flow-through cell of a Horiba Quanta multi-parameter (or equivalent) meter. Connect tubing to the output of the cell and place the discharge end of the tubing in a five-gallon bucket;
- Activate the pump at the lowest flow rate setting of the pump;
- Measure the depth to water within the well. The pump flow rate may be increased such that the water level measurements do not change by more than 0.3 foot as compared to the initial static reading. The well-purging rate should be adjusted so as to produce a smooth, constant (laminar) flow rate and so as not to produce excessive turbulence in the well. The expected targeted purge rate will be approximately 0.5 liter and will be no greater than 3.8 liters per minute;
- Transfer discharged water from the 5-gallon buckets to 55-gallon drums designated for well-purge water;

- During purging, collect periodic samples and analyze for water quality indicators (e.g., turbidity, pH, temperature, dissolved oxygen, reduction-oxidation potential, and specific conductivity) with measurements collected approximately every five minutes; and
- Continue purging the well until turbidity is less than 50 nephthalometric turbidity units (NTU) and water quality indicators have stabilized to the extent practicable. The criteria for stabilization will be three successive readings for the following parameters and criteria:
  - Dissolved Oxygen - +/- 0.3 milligram per Liter (mg/L)
  - Turbidity - <50 NTU
  - ORP/Eh - +/- 10 millivolts (mV)
  - Specific Conductance - +/- 3% millisievert per centimeter (mS/cm)
  - PH - +/- 0.1 pH units

If the water quality parameters do not stabilize and/or turbidity is greater than 50 NTU within two hours, purging may be discontinued. Efforts to stabilize the water quality for the well must be recorded in the field book, and samples may then be collected as described herein.

After purging, disconnect the tubing to the inlet of the flow-through cell. Collect groundwater samples directly from the discharge end of the tubing and place into the required sample containers. Label the containers as described in Section 4.8 of this QAPP and place in an ice-filled cooler for shipment to the laboratory. Groundwater samples will be analyzed for VOCs by EPA Method 624.

Collect one final field sample and analyze for turbidity and water quality parameters (pH, temperature, dissolved oxygen, reduction-oxidation potential, and specific conductivity).

Record all measurements (depth to water, depth to NAPL, water quality parameters, turbidity), calculations (well volume), and observations in the project logbook and field data sheet, if applicable.

Once sampling is complete, remove the pump and tubing from the well. Dispose of the dedicated equipment and decontaminate reusable equipment, as described in Section 3.2. The purge water will be managed as described in Section 3.4 of this QAPP.

Sample collection for the emerging contaminants 1,4-dioxane and/or per- and polyfluoroalkyl Substances (PFAS) is not planned. If required, samples will be collected and handled in accordance with the NYSDEC-issued Sampling, Analysis, and Assessment of PFAS, dated April 2023.

4.5 Sub-Slab Depressurization System (SSDS) and Soil Vapor Extraction (SVE) System Operation and Maintenance (O&M) Sampling

Four SSDS vacuum monitoring points (MPs) and three SVE vapor monitoring points (SVMPs) were installed during remedial action implementation at strategic locations to inspect induced vacuum conditions during the operation of the SSDS and SVE system, respectively. The VMP and SVMP locations will be monitored at regular intervals as designated in the SMP.

4.5.1 SSDS Vacuum Monitoring

The procedures for instantaneously screening the MPs are as follows:

- Remove the access manhole cover;

- Attach the analog vacuum gauge or digital manometer with male Quick-Connect fitting to the female quick connect fitting at the monitoring point well head and document reading;
- Detach vacuum gauge/manometer and confirm that Quick-Connect female fitting is closed; and
- Replace the access manhole.

4.5.2 Soil Vapor and Indoor Air Sampling

Sub-slab soil vapor and indoor air quality sampling will be conducted at the Site as part of the Soil Vapor Intrusion Evaluation (SVIE), as described in the RAWP and SMP. Sampling will be conducted in accordance with the New York State Department of Health (NYSDOH) Vapor Intrusion Guidance Document.

Indoor Air/Ambient Air Sample Collection

The indoor air sampling is to be conducted following the completion of a pre-sampling inspection and chemical inventory of the Site building, in accordance with the following details:

- Place a labeled 6-Liter SUMMA® canister at the breathing zone level (3 to 4 feet above ground surface) in sampling locations established by NYSDEC and NYSDOH;
- Record the vacuum reading from the vacuum gauge on the canister at the beginning of the eight-hour sampling period;
- Open the valve of the canister and record the time in the field book. At the end of the eight-hour sampling period, close the valves, remove the flow-rate controllers and vacuum gauges, install caps on the canisters, and record the time; and
- Place SUMMA canisters in shipping containers for transportation to the laboratory.

Repeat these procedures for all of the sampling locations.

Sub-Slab Soil Vapor Sample Collection

Each sub-slab soil vapor sample point will be purged using a Gilair Plus pump at a rate of about 0.2 liters per minute (L/min) to evacuate a minimum of three sample tubing volumes prior to sample collection. As a QA/QC measure, an inert tracer gas (i.e., helium) will be introduced into an above-grade sampling chamber to ensure that the sample points are properly sealed, thereby preventing subsurface infiltration of ambient air. Direct readings of helium of less than 10 percent in the sampling tube will be considered sufficient to verify a tight seal. Once a sufficiently tight seal is verified at each sample point, the purged soil vapor will be monitored for VOCs using a PID.

After purging, sub-slab soil vapor samples and co-located indoor air samples will be collected into laboratory-supplied, batch-certified, 6-liter SUMMA® canisters calibrated to collect the samples over eight hours. The canisters will be labeled and transported under standard chain-of-custody (CoC) protocol to the laboratory for analysis of VOCs by EPA Method TO-15.

4.5.3 Continency SVE Influent/Effluent Vapor Sampling

If operation of the contingency SVE system is required, confirmatory vapor sampling for the system will be conducted following startup and 6 months of operation (and as

determined by the SMP and NYSDEC thereafter) as part of a reassessment of VOC emissions calculations, according to the following procedures:

- Confirmatory sampling will comprise grab samples from the combined SVE influent, intermediate, and effluent samples, as appropriate;
- A 1-Liter Tedlar® bag will be filled with extracted vapors by attaching dedicated silicon-lined or silicon tubing from the sampling port to the inlet of the Tedlar® bag fill port. The port will be opened and the 1-liter Tedlar® bag will be filled. The Tedlar® bag will be removed after its fill port has been closed;
- The Tedlar® bag will be properly labeled and enclosed in a zip-lock bag, which will be used as an added protection layer to ensure safety in transit to the laboratory;
- The silicone tubing will be replaced after each sample collected;
- The Tedlar® bags will be placed in a shipping container for transportation to the laboratory (do not put the Tedlar® bags on ice);
- Samples will be analyzed for VOCs by EPA Method TO-15; and
- Decontaminate all non-dedicated sampling equipment between sampling locations as described in Section 3.2 of this QAPP.

4.5.4 Carbon Sampling

Based on monitoring inspections performed during the operation of the contingency SVE system (if required), a representative grab sample of spent carbon may be collected and submitted for laboratory analysis prior to off-site disposal, according to the following procedures:

- Access the carbon treatment filter in accordance with manufacturer's specification and component manuals;
- Note any unusual or abnormal olfactory or visual field observations;
- Collect one aliquot of spent carbon material into a laboratory-supplied sampling container; and
- Relinquish the sealed sampling container to a certified laboratory for analysis of VOCs by EPA Method 8260.

4.5.5 Condensate Water Sampling

Based on monitoring inspections performed during the operation of the contingency SVE system (if required), a representative sample of condensate water may be collected and submitted for laboratory analysis prior to off-site disposal, according to the following procedures:

- Slowly remove the lid of the 55-gallon drum containing the collected condensate water and immediately measure the vapor concentrations in the well with a PID calibrated to the manufacturer's specifications;
- Lightly stir the water in the drum with clean, dedicated sample collection equipment or tubing to homogenize the collected condensate water; and
- Collect a representative sample directly from a dedicated bailer or tubing connected to a peristaltic pump and place it into the required sample container defined in

Section 4.6 of this QAPP. The sample should be collected for VOCs and submitted to a certified laboratory.

4.6 Laboratory Methods

Table 1 summarizes the laboratory methods that will be used to analyze field samples, as well as the sample container type, preservation, and applicable holding times. Other analytes may be added if required by the disposal facility. A NYSDOH Environmental Laboratory Approval Program (ELAP)-certified laboratory will be used for all chemical analyses in accordance with DER-10 2.1(b) and 2.1(f), including the NYSDEC July 2005 Analytical Services Protocol (ASP) Category B Deliverables.

Table 1
Laboratory Analytical Methods for Analysis Groups

Sample Type	Analysis	Method	Container Type	Preservative	Hold Time
Soil/Fill (Reuse/Backfill)	Target Compound List (TCL) Volatile Organic Compounds (VOCs)	8260C	3 EnCore® or TerraCore® samplers and 2 oz. plastic jar	≤ 6 °C	48 hours to extract, 14 days to analyze
	TCL Semivolatile Organic Compounds (SVOCs)	8270D	8 oz. Glass Jar	≤ 6 °C	14 days to extract, 40 days to analyze
	Total Analyte List (TAL) Metals, and Hexavalent Chromium	6000/7000 Series, 6010C, and 7196A	8 oz. Glass Jar	≤ 6 °C	6 months holding time; Mercury 28 days holding time; Hexavalent chromium 30 days to extract, 7 days to analyze
	Total Polychlorinated Biphenyls (PCBs)	8260C	3 EnCore® or TerraCore® samplers and 2 oz. plastic jar	≤ 6 °C	48 hours to extract, 14 days to analyze
	Pesticides	8081B	4 oz. clear glass jar	4 °C	5 days to extract, 49 days to analyze
	1,4-Dioxane	8270D plus Selective Ion Monitoring (SIM); 0.35 µg/L RL	1-liter amber jar	≤ 6 °C	7 days to extract, 40 days to analyze
	Per- and Polyfluoroalkyl Substances (PFAS)	EPA Method 1633; 0.2 ng/L RL	3 x 250mL Polypropylene Bottles	≤ 6 °C, Trizma	14 days to extract, 28 days to analyze

Sample Type	Analysis	Method	Container Type	Preservative	Hold Time
Soil/Fill (Endpoint Sampling)	CP-51 VOCs	8260	3 Encore samplers, 2 oz. plastic jar	4 ºC	48 hours
	TCL SVOCs/BNs	8270D	4 oz. clear glass jar	4 ºC	5 days to extract, 49 days to analyze
Groundwater Sampling	TCL VOCs	624	3 x 40 mL glass vials	HCL to pH < 2 and ≤ 6 ºC	14 days to analyze if preserved
Sub-Slab Soil Vapor/ Indoor Air / Ambient Air Sampling	VOCs	TO-15	6-liter SUMMA® canister	None	30 days
SVE System Total Influent, Intermediate, Effluent	TCL VOCs	TO-15	1-liter Tedlar® bags	None	14 days
Granular Activated Carbon	TCL and TCLP VOCs	8260C	EnCore sampler and 4 oz. clear glass jar	4 ºC	48 hours
Condensate Water	TCL VOCs	8260C	40 mL glass vial, septa top	4 ºC, HCL	14 days

Notes:
µg/L = micrograms per liter
ng/L = nanograms per liter
RL = Reporting Limit
HCL = Hydrochloric Acid

4.7 QA/QC Sampling

In addition to the laboratory analysis of the investigative soil and groundwater samples, additional analysis will be included for QA/QC measures, as required by the NYSDEC July 2005 ASP Category B sampling techniques. The QC samples will include field blanks, trip blanks, matrix spike/matrix spike duplicates (MS/MSD), and blind duplicate samples at a minimum frequency of one sample per 20 field samples collected or per sample delivery group (SDG). Table 2 provides a summary of the field samples and QA/QC samples to be analyzed by the laboratory.

Table 2
Field Sample and QC Sample Quantities

Sample Type	Parameters	Analytical Method[1]	Field Samples	QC Samples			
				Field Blank	Trip Blank[2]	MS/MSD[3]	Duplicate[3]
Soil	VOCs	EPA 8260C	TBD	1/20 (TBD)	1 (Laboratory-Supplied)	1/20 (TBD)	1/20 (TBD)
	SVOCs, TAL Metals, Mercury, PCBs, Pesticides, 1,4-Dioxane, and PFAS	EPA 8270D, 6010C/7471, 8082A, 081B, 8270D SIM, and Mod. 537	TBD	1/20	NA	1/20	1/20
Groundwater	VOCs	EPA 8260C	TBD	1/20 (TBD)	1 (Laboratory-Supplied)	1/20 (TBD)	1/20 (TBD)
Sub-Slab Soil Vapor/ Indoor Air/Ambient Air	TCL VOCs	TO-15	TBD	NA	NA	NA	NA
SVES Total Influent, Intermediate, Effluent	TCL VOCs	TO-15	TBD	NA	NA	NA	NA

Notes:
TBD = sampling to be determined based on work activities
NA = not applicable
[1] NYSDEC July 2005 ASP Category B deliverables
[2] One trip blank per shipment with VOC analyses
[3] One MS/MSD and duplicate sample per twenty field samples or sample shipment

4.8 Sample Handling

4.8.1 Sample Identification

All samples will be consistently identified in all field documentation, CoC documents, and laboratory reports. All samples will be amended with the collection date at the end of the sample name in a year, month, day (YYYYMMDD) format. Blind duplicate sample nomenclature will consist of the sample type, followed by an "X"; MS/MSD sample nomenclature will consist of the parent sample name only but triplicate sample volume will be collected and the CoC comment section will explain that the additional volume is for running the MS/MSD; and trip and field blanks will consist of "TB-" and "FB-", respectively, followed by a sequential number of the trip/field blanks collected within the SDG and the matrix (soil or groundwater). In accordance with NYSDEC Environmental Quality Information System (EQuIS™) protocol, special characters will not be used for sample nomenclature and sample IDs below 10 will be amended with a "0". Sample nomenclature examples are provided in Table 3.

Table 3
Examples of Sample Nomenclature

Sample Description	Sample Designation
Soil endpoint sample collected from 1 to 2 feet below grade at the north wall of an excavation	EP-N_1-2_ YYYYMMDD
Duplicate soil sample collected from 1 to 2 feet at the north wall of the excavation	EP-X_1-2_YYYYMMDD
Import soil sample collected from the first imported stockpile	ISP-1_YYYYMMDD
Reuse soil sample collected from the first on-site stockpile	SP-1_YYYYMMDD
Groundwater sample collected from a monitoring well	MW-01_YYYYMMDD
Sub-slab soil vapor sample	SV-1_YYYMMDD
Ambient air sample	AA-1_YYYYMMD
Indoor air sample	IA-1_YYYYMMDD
SVE system effluent sample collected from the carbon treatment system intermediate port	SVE-INT_YYYYMMDD
Granular activated carbon sample	GAC_YYYYMMDD
Condensate Water sample	COND_YYYYMMDD

4.8.2 Sample Labeling and Shipping

All sample containers will have labels containing the following information:

- Project identification;
- Sample identification;
- Date and time of collection;
- Analysis(es) to be performed;
- Sample preservative, if any; and
- Sampler's initials.

Once the samples are collected and labeled, they will be placed in chilled coolers and stored in a cool area away from direct sunlight to await shipment to the laboratory. All samples will be shipped to the laboratory at least twice per week. At the start and end of each workday, field personnel will add ice to the coolers as needed.

The samples will be prepared for shipment by placing each sample in a sealable plastic bag, then wrapping each container in bubble wrap to prevent breakage, adding freezer packs and/or fresh ice in sealable plastic bags, and including the CoC form. Tedlar® bags will be enclosed in a zip lock bag as an added protection prior to being placed in a cooler or shipment container without ice. SUMMA® canisters will also be placed into their appropriate shipment containers and do not require preservation with ice. All samples will be shipped overnight (e.g., Federal Express) or transported by a laboratory courier.

All coolers and shipment containers shipped to the laboratory will be sealed with mailing tape and a CoC seal to ensure that they remain sealed during delivery.

4.8.3 Sample Custody

Field personnel will be responsible for maintaining the sample coolers in a secured location until they are picked up and/or sent to the laboratory. The record of possession of samples from the time they are obtained in the field to the time they are delivered to the laboratory or shipped off-site will be documented on CoC forms. The CoC forms will contain the following information: project name; names of sampling personnel; sample number; date and time of collection and matrix; signatures of individuals involved in sample transfer; and the dates and times of transfers. Laboratory personnel will note the condition of the custody seal and sample containers at sample check-in.

4.9 Field Instrumentation

Field personnel will be trained in the proper operation of all field instruments at the start of the field program. Instruction manuals for the equipment will be on file at the Site for referencing proper operation, maintenance, and calibration procedures. The equipment will be calibrated according to the manufacturer's specifications at the start of each day of fieldwork, if applicable. If an instrument fails calibration, the project manager or QA/QC officer will be contacted immediately to obtain a replacement instrument. A calibration log will be maintained to record the date of each calibration, any failure to calibrate, and corrective actions taken. The PID will be calibrated each day using 100 parts per million (ppm) isobutylene standard gas.

4.10 Data Review

In accordance with DER-10, each of the samples collected will undergo a third-party data review process to ensure the usability of the data collected. Data usability summary reports documenting any issues with QA/QC will be prepared and included in the Periodic Review Report (PRR). The resume for Lori Beyer of L.A.B. Validation Corp., the anticipated third-party data reviewer, is included in Attachment A.

4.11 Reporting of Data

All data generated during the monitoring activities will be submitted in the appropriate EQuIS™ Electronic Data Deliverable (EDD) format.

ATTACHMENT A
RESUMES OF KEY PROJECT PERSONNEL

DEBORAH SHAPIRO, QEP

SENIOR VICE PRESIDENT

Deborah Shapiro is a Vice President in the Site Assessment and Remediation Department. Ms. Shapiro supervises project teams and manages all aspects of assessment and remediation projects across the New York Metropolitan Area. Ms. Shapiro works with developers, non-profit organizations, architects, local community groups, local businesses, and government agencies. Her projects fall under the regulatory oversight of NYSDEC, NYCDEP, and NYCOER including the New York State Brownfield Cleanup Program (BCP), New York City Voluntary Cleanup Program (VCP), NYSDEC petroleum spills program, RCRA/UIC closures, and NYCOER's E-designation program. Ms. Shapiro has also assisted commercial and industrial property owners with maintaining the integrity of their portfolios by providing compliance related cleanup and chemical storage management services. Ms. Shapiro has also been a moderator and panelist at numerous conferences.

Ms. Shapiro manages all aspects of redevelopment projects from the initial Phase I ESA, Phase II, and remediation through post-remedial site management. In addition, her experience includes groundwater investigations, monitoring, and sampling programs; Brownfield and hazardous waste site investigations; In-Situ Chemical Oxidation; underground storage tank studies, including soil contamination delineation, classification, removal and disposal; waste characterization sampling; exposure assessments; on-going remedial action (especially AS/SVE), and permitting.

BACKGROUND

Education

M.S., Environmental Science, American University, 2001
B.A., Environmental Studies, American University, 1998

Professional Licenses/Certifications

Qualified Environmental Professional
Health and Safety Operations at Hazardous Materials Sites 29 CFR 1910.120

OSHA 8 Hour HAZWOPER Supervisor

OSHA 10 Hour Occupational Construction Safety and Health

CPR

Professional Memberships

Past President, New York City Brownfield Partnership
Board Member, Residents for a More Beautiful Port Washington
Member, Institute of Professional Environmental Practitioners (IPEP)

Awards

Big Apple Brownfield Award recipient as part of the Elton Crossing redevelopment team 2017
Big Apple Brownfield Award recipient as part of the Courtlandt Crescent redevelopment team 2013
Big Apple Brownfield Award recipient as part of the Via Verde redevelopment team 2012
Big Apple Brownfield Award recipient as part of the Cornerstone B1 (LaTerraza) redevelopment team 2011

Years of Experience

Year started in company: 2013
Year started in industry: 1998

Relevant Experience

Elton Crossing, Bronx, NY

AKRF provided environmental consulting services in connection with the purchase and redevelopment of the Elton Crossing site at 899 Elton Avenue in the Bronx, NY. The work initially involved the preparation of a Phase II subsurface investigation including soil and soil vapor testing to determine if the site would be eligible for the New York State Brownfield Cleanup Program (NYSBCP). Upon completion of the investigation, AKRF prepared a NYCBCP Application and the site was accepted into the NYSBCP. AKRF managed all aspects of the brownfield cleanup including; development of Investigation Work Plans, performing Remedial Investigations and Reports, preparation of Phase I ESAs, preparation of a Citizen Participation Plan, distribution of public notices, preparation and implementation of a Remedial Action Work Plan (RAWP), design of a sub-slab depressurization system, preparation of the Final Engineering Report and Site Management Plan, and sampling and management of soil disposal. AKRF is in the midst of implementing the Site Management Plan. As project manager, Ms. Shapiro was responsible for managing all technical components of the project, communication with NYSDEC and the Client, and managing the budget.

Second Farms, Bronx, NY

AKRF, Inc. was initially contracted by the New York City Office of Environmental Remediation (NYCOER) to conduct a subsurface investigation of a 1.12-acre parcel in the Bronx, New York under the United States Environmental Protection Agency (USEPA) Brownfield Assessment Grant program. The investigation included a geophysical survey and utility mark-outs, and the collection and analysis of soil, groundwater, soil vapor, indoor air and ambient air samples. AKRF continued working on the project for the developer by preparing a Remedial Action Plan and Environmental Assessment Statement. AKRF is in the midst of implementing the remedy.As project manager, Ms. Shapiro was responsible for managing all technical components of the project, communication with OER, NYCDEP, and the Client, and managing the budget.

Bradhurst Cornerstone II Residences, Manhattan, NY

AKRF, Inc. prepared a Part 58 Environmental Assessment and a City Environmental Quality Review Environmental Assessment Statement for the Bradhurst Cornerstone II Apartments project. Issues of concern for the environmental review included the identification of project commitments for certain of the four sites related to historic resources, hazardous materials, air quality, and building attenuation. As part of the mitigation of hazardous materials, AKRF conducted a Phase II investigation, and prepared a Remedial Action Plan and Construction Health and Safety Plan. As project manager, Ms. Shapiro was responsible for managing all technical components of the hazardous materials portion of the project, communication with the regulatory agency and the Client, and managing the budget.

Lambert Houses, Bronx, NY

AKRF performed an EIS of the Lambert Houses affordable housing complex located in the West Farms section of the Bronx, NY. Lambert Houses consisted of multi-story apartment buildings, parking garage, and a multi-tenant retail/commercial building alongside the elevated NYC subway. AKRF also conducted a Phase I ESA with a vapor intrusion screen of the Property to satisfy HUD's vapor intrusion requirements. The Phase I and vapor intrusion screens were prepared in accordance with ASTM E1527-05, ASTM E2600, and EPA's All Appropriate Inquiry (AAI) rule. After completion of the EIS, an E designation for hazardous materials was placed on the Site. A Subsurface Investigation was conducted and a Remedial Action Work Plan was prepared under OER oversight. The Site was subsequently entered in the NYC Voluntary Cleanup Program. AKRF is in the midst of implementing the RAWP, which included remediation of a hydraulic oil spill. As project manager, Ms. Shapiro was responsible for managing all technical components of the hazardous materials portion of the project, communication with the regulatory agency and the Client, and managing the budget.

Brook 156, Bronx, NY

AKRF was retained to provide environmental consulting services in connection with the purchase and development of the Site. AKRF prepared a Phase I Environmental Site Assessment (ESA) of the NYC-owned former gasoline service station and a former railroad. A Tier 1 Vapor Encroachment Screening was also conducted to satisfy HUD's vapor intrusion requirements. AKRF prepared a Remedial Investigation Work Plan (RIWP) and conducted a Remedial Investigation (RI) at the site, which included the collection and analysis of soil, soil vapor, and groundwater. The results of the RI, which were documented in a Remedial Investigation Report (RIR), were used to prepare a New York City Brownfield Cleanup Program (NYCBCP) application. The site was accepted into the New York State Brownfield Cleanup Program (NYSBCP). AKRF prepared a Citizen Participation Plan (CPP), distributed public notices, and conducted multiple Remedial Investigations to further investigate soil, soil vapor, and groundwater at the site prior to redevelopment. The results of the investigations were used to prepare a Remedial Action Work Plan (RAWP), which is undergoing review and approval by NYSDEC. The proposed remedy includes excavation of soil, design and installation of a soil vapor extraction system and sub-slab depressurization system, contingent groundwater treatment program, and installation of a vapor barrier and composite cover system. As project manager, Ms. Shapiro is responsible for managing all technical components of the project, communication with NYSDEC and the Client, and managing the budget.

20568 On-Call Environmental Consulting Services (Various Locations), New York City Mayor's Office of Environmental Remediation (OER) (administered by NYCEDC)

Ms. Shapiro is managing an on-call contract with the OER for brownfields environmental assessment and remediation. The work has included conducting Phase I environmental site assessments (ESAs) and multi-media sampling of soil, groundwater, and soil vapor for various sites funded by EPA grants. The work plans and investigation reports were completed in accordance with OER and EPA requirements. AKRF also implemented a remedial plan for capping a park site in Staten Island. In addition, AKRF provided support to OER and an affordable housing developer to expedite an application for entry into the New York State Department of Environmental Conservation (NYSDEC) Brownfield Cleanup Program (BCP), as well as preparation and implementation of the remedial investigation and remedial plan.

Atlantic Chestnut, Brooklyn, NY

AKRF was retained to provide environmental consulting services in connection with the purchase and redevelopment of former burned manufacturing buildings encompassing an entire city block in Brooklyn, New York. As part of due diligence, AKRF prepared a Phase I Environmental Site Assessment (ESA) Report for the property. After acquisition, the property was divided into three separate sites (3264 Fulton Street, 235 Chestnut Street, and 3301 Atlantic Avenue). AKRF prepared a Subsurface (Phase II) Investigation Work Plans and conducted Phase IIs at each of the sites, which included the collection and analysis of soil, soil vapor, and groundwater samples. Based on the results of the Phase IIs, which were documented in Subsurface (Phase II) Reports, New York State Brownfield Cleanup Program (NYSBCP) applications were prepared for each of the sites. After acceptance into the NYSBCP, AKRF prepared Citizen Participation Plans (CPPs) and distributed public notices. AKRF prepared Remedial Investigation (RI) Work Plans (RIWPs) and implemented numerous Remediation Investigations for each of the sites to further investigate contaminated media at the site prior to redevelopment, and prepared the RI Reports (RIRs). AKRF is in the midst of preparing Interim Remedial Work Plans for each Site, which include installation of a Soil Vapor Extraction to prevent the off-site migration of contaminants. As project manager, Ms. Shapiro was responsible for managing all technical components of the project, communication with NYSDEC and the Client, and managing the budget.

REBECCA KINAL, P.E.

VICE PRESIDENT

Rebecca Kinal has over 20 years of experience in the assessment and remediation of soil and groundwater contamination and other hazardous/non-hazardous waste problems. Ms. Kinal's experience includes environmental due diligence, soil and groundwater investigations, leaking underground storage tank studies, soil gas/vapor intrusion surveys, and oversight of small- and large-scale remediation programs, including design of groundwater remediation systems and vapor mitigation systems. She has directed numerous Phase I and Phase II investigations and remediation programs, many of them in conjunction with commercial/residential developers, law firms, lending institutions, and public agencies. She is experienced in the cleanup of contaminated properties under New York State Brownfield Cleanup Program (BCP) regulations and the New York City "E-designation" program. As a part of this work, her duties have included technical and report review, proposal writing, scheduling, budgeting, and acting as liaison between clients and regulatory agencies, and project coordination with federal, state, and local authorities.

BACKGROUND

Education

M.S., Hydrogeology, Rensselaer Polytechnic Institute, 1995

B.S., Civil Engineering, Lafayette College, 1992

Licenses/Certifications

State of New York, P.E. Registration No. 082046, 2004

Years of Experience

Year started in company: 2000

Year started in industry: 1996

RELEVANT EXPERIENCE

White Plains Mall/Hamilton Green

Ms. Kinal managed environmental due diligence and remediation planning for the project, which included Phase I and II environmental assessments, a petroleum Spill investigation, preparation of remediation cost estimates, and application to the NYSDEC BCP.

New York City School Construction Authority On-Call Contracts for Environmental Consulting Services, Various Sites, NY

Ms. Kinal serves as the project manager for AKRF's on-call hazardous materials consulting contract with the New York City School Construction Authority for over 8 years. For potential new school sites, assignments include initial due diligence, Phase I environmental site assessments, (ESAs) and subsurface investigation of soil, groundwater, and soil vapor to determine the suitability of a site for development as a school, likely remediation requirements, and associated costs. For sites undergoing design and development, assignments include preparation of remediation plan, contract specifications, and design drawings. The work has also included conducting indoor air quality testing, vapor intrusion assessments, preparation of specifications, supervision of storage tank removals, and investigation and remediation of spills for existing schools. Due to the sensitivity of school sites, work under this contract is often conducted on short notice and during non-school hours.

USTA National Tennis Center, Queens, NY

AKRF prepared an EIS for the New York City Departments of City Planning (DCP) and Environmental Protection (DEP) as co-lead agencies to analyze the expansion of the National Tennis Center, which includes multiple improvements and construction projects at the USTA campus over several years. As part of the EIS requirements, AKRF prepared a Remedial Action Plan for implementation during the proposed project's construction. In accordance with the RAP, vapor mitigation systems were incorporated into the design for several of the proposed structures at the facility, including two new stadiums, a new transportation center, and several practice court facilities. Ms. Kinal prepared the specifications and design drawings for the vapor mitigation and is providing on-going construction support to review contractor submittals and inspect the vapor barrier and sub-slab depressurization system installations.

Montefiore Medical Center, Various Locations, NY

Ms. Kinal provides due diligence assistance to Montefiore Medical Center (MMC) for the ongoing expansion of their facilities, primarily in the Bronx and Westchester County. She conducts and manages environmental due diligence tasks related to their property transactions, including Phase I Environmental Site Assessments (ESAs), Phase II investigations, and geophysical surveys. She also assists MMC in making decisions with respect to environmental risk issues.

Queens West Development Project, Long Island City, NY

For over 20 years, AKRF has played a key role in advancing the Queens West development, which promises to transform an underused industrial waterfront property into one of largest and most vibrant mixed-use communities just across the East River from the United Nations. AKRF has prepared an Environmental Impact Statement that examines issues pertaining to air quality, land use and community character, economic impacts, historic and archaeological resources, and infrastructure. As part of the project, AKRF also undertook the largest remediation ventures completed to date under the NYSDEC Brownfields Cleanup Program (BCP). Ms. Kinal helped prepare the Remedial Work Plan (RWP) and oversaw the remediation of Parcel 9, a 1.8-acre former industrial site. Remediation includes installation of a sheet pile containment wall, excavation of coal tar- and petroleum-contaminated soil under a temporary structure to control odors during remediation, vapor mitigation for the future buildings, and institutional controls. Upon completion of the remediation activities, Ms. Kinal managed the preparation of a Final Engineering Report (FER) to document the clean-up activities. The NYSDEC issued a Certificate of Completion (COC) for the Parcel 9 site in December 2006. Ms. Kinal continues to oversee post-remediation monitoring and site management activities to ensure that the remedy remains in-place and effective.

Roosevelt Union Free School District, Roosevelt, NY

Ms. Kinal managed environmental investigation and remediation activities for the sites of three new elementary schools and a new middle school in Roosevelt, New York. Remediation activities include removal/closure of contaminated dry wells and underground petroleum storage tanks, and excavation and off-site disposal of petroleum- and pesticide-contaminated soil. Remediation of the new middle school site, which also included a sub-slab depressurization system, was conducted through coordination with the NYSDEC, NYSDOH, New York State Education Department (NYSED), and the local school district. Upon completion of the remediation and school construction, Ms. Kinal managed confirmatory indoor air testing and preparation of a Final Engineering Report to document the site clean-up. The NYSDEC issued a Certificate of Completion and the school was open for the Fall 2008 semester as planned.

Proposed NYC Public School Campus, Bronx, NY

Ms. Kinal provided environmental consulting services to the selected environmental remediation contractor for this former manufactured gas plant in the Mott Haven neighborhood of the Bronx, which was remediated under the NYSDEC BCP. These services included: preparation of an in situ sampling plan and excavation plan for waste

characterization and disposal; supervision of waste characterization sampling activities; development and implementation of a community air monitoring program during all remediation activities; and daily reporting to the NYC School Construction Authority.

National Grid – Halesite Manufactured Gas Plant Site, Town of Huntington, NY

Ms. Kinal served as the project manager for the remedial design and engineering work associated with remediation of National Grid's former manufactured gas plant (MGP) located in the Town of Huntington. The site is situated in a sensitive location along the waterfront, surround by commercial and residential properties, and half the property where the remediation was conducted is a steep slope. The remedy consisted of soil removal, oxygen injection, and non-aqueous phase liquid recovery. Ms. Kinal developed the remedial work plans, design/construction documents, and managed environmental oversight of the remedial work, including waste characterization and tracking, confirmatory endpoint sampling, air monitoring, and reporting to the NYSDEC. After the remediation work was completed, Ms. Kinal prepared appropriate close-out documentation in accordance with NYSDEC requirements.

Shell Service Station, Millwood, NY

Ms. Kinal planned and oversaw a Phase I Environmental Site Assessment and Phase II Subsurface Investigation of this active gasoline station in northern Westchester County. The Phase I/Phase II investigations were performed for the potential buyer of the property who wished to redevelop it with a more modern service station and convenience store. Ms. Kinal also prepared a conceptual remediation plan to address several areas of petroleum contamination identified during the Phase II. The plan, which was approved by NYSDEC, will be implemented in conjunction with the site redevelopment activities to achieve closure for several spills reported at the site.

Pelham Plaza Shopping Center Site Investigation & Remediation, Pelham Manor, NY

Ms. Kinal managed a Site Investigation at Pelham Plaza, an approximately ten-acre site that formerly contained a manufactured gas plant. The site was investigated under a voluntary clean-up agreement entered into with the NYSDEC by the site owner. The site investigation included advancing over 100 soil borings with continuous soil sampling to bedrock, installing monitoring and recovery wells, and conducting test pitting both indoor and outdoor locations to collect soil and groundwater samples and determine the extent of Non-Aqueous Phase Liquid (NAPL). The investigation also included: soil gas sampling to determine contaminant concentrations in the vapors beneath the foundation of an on-site retail store; sediment sampling in an adjacent creek to identify off-site impacts; and a tidal survey to determine tidal influence on groundwater levels at the site. Ms. Kinal also oversaw interim remedial measures, which include biweekly pumping of recovery wells to remove dense NAPL (DNAPL) from the site subsurface.

Shaws Supermarket Redevelopment Project, New Fairfield, CT

Ms. Kinal managed the Remedial Investigation (RI) for an approximately nine-acre shopping center site that was contaminated by releases from former dry cleaning operations. The site was being redeveloped with a new supermarket and separate retail stores. The investigation included the installation of monitoring wells in the intermediate overburden aquifer and bedrock aquifer, sampling of existing and newly installed wells, geophysical logging in bedrock wells, and pump testing in intermediate and bedrock wells. Ms. Kinal prepared a Remedial Action Work Plan (RAWP) based on results from the RI, which included a groundwater pump and treat system to contain a plume of perchlorethylene (PCE)-contaminated groundwater, and excavation and disposal of contaminated soil in the presumed source area. Following CTDEP approval of the RAWP, Ms. Kinal prepared bid specifications for soil excavation and remediation system installation, and oversaw their implementation. Ms. Kinal also prepared NPDES permit applications for discharges from construction dewatering and the groundwater remediation system, and conducted associated discharge monitoring.

Yankee Stadium, Bronx, NY

Ms. Kinal performed the hazardous materials analysis for the Draft Environmental Impact Statement for the proposed new Yankee Stadium. The analysis included a Phase I Environmental Site Assessment of the entire project area and Subsurface (Phase II) Investigation in areas where environmental conditions were identified. The Phase II investigation included geophysical surveys to search for potential underground storage tanks; and soil, soil gas, and groundwater sampling at over 40 locations to determine potential environmental impacts during and after the proposed construction. Ms. Kinal also developed an extensive community air monitoring plan and oversaw its implementation during deconstruction of the old Yankee Stadium.

Avalon on the Sound, New Rochelle, NY

Ms. Kinal oversaw environmental investigation and soil remediation during the construction of two luxury high-rise apartment buildings and an associated parking garage. Investigation activities included an electromagnetic survey to search for possible underground storage tanks, and subsurface sampling to characterize soil and groundwater. Remediation activities included removing underground storage tanks, excavating and disposing of soil contaminated with volatile and semi-volatile organic compounds, and collecting end-of-excavation confirmation samples.

Davids Island Environmental Audit, New Rochelle, NY

Ms. Kinal managed the hazardous materials portion of the audit of this undeveloped island site, including a Phase I Environmental Site Assessment (ESA) and Subsurface (Phase II) Investigation in areas where environmental conditions were identified. The Phase II investigation included collecting soil samples from more than 100 locations and analyzing them for targeted compounds, including volatile organic compounds, semi-volatile compounds, metals, pesticides, and polychlorinated biphenyls (PCBs). Ms. Kinal also oversaw an electromagnetic (EM) survey conducted to identify the location of suspected underground storage tanks on the island. Based on soil sample results, Ms. Kinal estimated the volume of contaminated soil requiring remediation and prepared cost estimates for soil excavation and for transportation and disposal of contaminated soil and hazardous materials.

Outlet City Site Investigation, Queens, NY

Ms. Kinal prepared a work plan for remedial investigation of the Outlet City site, a property in Long Island City that was formerly occupied by a manufacturer of industrial cleaners and pharmaceuticals. The site is being investigated and remediated under the NYSDEC voluntary clean-up program. In preparing the work plan, Ms. Kinal evaluated results from several previous investigations and conducted a limited groundwater sampling program to determine future data needs for designing remediation of creosote-contaminated soil and groundwater. The work plan included additional soil and groundwater sampling, a tidal survey to determine tidal influence on groundwater levels, and pilot free product recovery testing. Ms. Kinal also helped design a venting system for an on-site basement and performed exposure calculations for the vented vapors.

Yonkers Waterfront Redevelopment Project, Yonkers, NY

For this redevelopment along Yonkers' Hudson River waterfront, Ms. Kinal supervised the remediation of Parcels H and I that were contaminated with hazardous soil. During the remediation process, she reviewed the subcontractor health and safety plans, delineated the areas of excavation, and oversaw field activities to ensure compliance with the specifications and appropriate regulations. This property was remediated under the NYSDEC Environmental Restoration Program (ERP).

J. PATRICK DIGGINS, P.G.

Technical Director

Patrick Diggins has 11 years of environmental consulting experience in site investigation and remediation practice. His experience includes implementing Phase I Environmental Site Assessments, Subsurface (Phase II) Investigations, and Remedial Investigations; and developing and managing remedial action programs including soil excavation, remediation system design and installation, regulatory reporting, and post-remedial site management. Several of his New York City (NYC) projects have been successfully investigated and/or remediated under either the New York State Department of Environmental Conservation (NYSDEC) Brownfield, or NYC Office of Environmental Remediation (OER) (E) Designation or Voluntary Cleanup Programs (VCP). Prior to his work in New York City, he gained experience in the New England region implementing large-scale environmental investigation and groundwater remediation projects.

BACKGROUND

Education

M.S. Hydrogeology, University of Massachusetts - Amherst, 2009
B.S Geology, Beloit College, 2005

Certifications

New York State Certified Professional Geologist, NY – License No. 000288
OSHA 40 Hour HAZWOPER
OSHA 8 Hour Refresher

Professional Memberships

Member, American Institute for Professional Geologists (AIPG), 2018 – Present
Member, New York State Council of Professional Geologists (NYSCPG), 2016 – Present

Years of Experience

Year started at AKRF: 2016
Year started in the Industry: 2008

RELEVANT EXPERIENCE

Former Budweiser Facility, Long Island City, New York

AKRF was initially tasked with completion of Phase I Environmental Site Assessment (ESA), and implementation of a Subsurface (Phase II) Investigation and Groundwater Elevation Investigation. Mr. Diggins acted as project manager, overseeing field personnel implementing the Phase I ESA site reconnaissance and the subsurface investigation, as well as completing reports for delivery to the client. AKRF is now assisting the client with navigating City and State environmental regulators in preparation for remediation during redevelopment.

DOT Relocation Site, Long Island City, New York

AKRF was initially tasked with completion of Phase I ESA and implementation of a Subsurface (Phase II) Investigation. Mr. Diggins acted as project manager, overseeing field personnel implementing the Phase I ESA site reconnaissance and the subsurface investigation, as well as completing reports for delivery to the client. AKRF has now assisted the client with entering the proposed site redevelopment project into the New York State Brownfield Cleanup Program (BCP), completed a Remedial Investigation, and is preparing a Remedial Action Work Plan (RAWP). Mr. Diggins will work with NYSDEC and the property owner to obtain approval for and then implement the RAWP.

Queens Animal Shelter, Ridgewood, Queens, New York

AKRF was initially tasked with implementation of a Subsurface (Phase II) Investigation. Mr. Diggins acted as project manager, overseeing field personnel implementing the subsurface investigation, as well as completing reports for delivery to the client. AKRF has now assisted the client with entering the proposed site redevelopment project into the New York State BCP. The RAWP is complete and remediation and redevelopment began in December 2019. Mr. Diggins has managed implementation of the remedy, which is ongoing at the Site.

272 4th Avenue, Brooklyn

AKRF was tasked with completion of Phase I ESA and implementation of a Subsurface (Phase II) Investigation. Mr. Diggins acted as project manager, overseeing field personnel implementing the Phase I ESA site reconnaissance and the subsurface investigation, as well as completing reports for delivery to the client. Based on the results of the investigation, AKRF assisted the client with entering the proposed site redevelopment project into the New York State BCP, and submitted a Remedial Investigation Work Plan (RIWP), which was recently approved by NYSDEC.

1325 Jerome Avenue, Bronx, NY

The property is a New York City Mayor's Office of Environmental Remediation (NYC OER) (E) Designation site. AKRF performed the Remedial Investigation; prepared and received approval for the RAWP by the NYC OER and the NYSDEC Spills Project Manager, and is overseeing the successful implementation of remedial actions during redevelopment, which are ongoing. For this project, Mr. Diggins acted as project manager, overseeing field personnel, reviewing daily reports, coordinating with property owner, and regulators.

110-10 Astoria Boulevard (419Q), Queens, NY

The property is a future public school, and is enrolled in NYC OER (E) Designation program. AKRF is representing the New York City School Construction Authority (NYC SCA) and has performed the remedial investigation; developed remedial work plans for approval by the NYC OER, and is currently overseeing the implementation of remedial actions. For this project, Mr. Diggins is acting as project manager, overseeing field personnel and reviewing daily reports.

2581 Adam Clayton Powell Jr. Blvd (M010), New York, NY

The property is a Metropolitan Transit Authority (MTA) station with a NYC public school (Frederick Douglass Academy) constructed on a platform above. A petroleum spill was identified in the train station that appeared to have originated from within the school. AKRF represented NYC SCA and worked with MTA to investigate and remediate the spill.

11 Greene Street, New York, NY

The property is a NYC OER Voluntary Cleanup Program (VCP) site. AKRF performed the remedial investigation; developed remedial work plans for approval by the NYC OER, and oversaw the successful implementation of remedial actions during redevelopment. For this project, Mr. Diggins acted as project manager, overseeing field personnel, reviewing daily reports, coordinating with property owner and NYC OER. The remedial actions are complete and the building is expected to open in 2020.

East Side Coastal Resiliency, East River Waterfront/Lower Manhattan, New York

Mr. Diggins prepared cost estimates for construction of coastal resiliency structures in potentially contaminated areas of the East River waterfront, on behalf of NYC Department of Design and Construction (DDC). He evaluated field and laboratory data to assist the project manager in the report preparation, and represented AKRF at meetings with city officials.

29-39 East Fordham Road, Bronx, NY

The property has undergone remediation of a petroleum spill that originated in the facility basement. AKRF performed the spill investigation, developed remedial work plans for approval by the NYSDEC, and oversaw the implementation of remedial actions. For this project, Mr. Diggins acted as project manager overseeing field personnel and guiding the client over the regulatory hurdles.

MICHAEL BATES

GEOLOGIST – SITE ASSESSMENT AND REMEDIATION

Michael Bates is a Geologist/Environmental Professional II in AKRF's Site Assessment and Remediation group, with experience in environmental sampling and monitoring during site remediation, subsurface and vapor intrusion investigations, remediation system operation and maintenance, and technical reporting.

BACKGROUND

Role in Project
Junior Environmental Scientist

EDUCATION

B.A. Geology, SUNY Geneseo, May 2017

CERTIFICATIONS

OSHA 40-hour Hazardous Waste Operations and Emergency Response Training
OSHA 30-hour Construction Safety Training
EPA Lead Risk Assessor
NY Certified Asbestos Inspector

YEARS OF EXPERIENCE

2 years in the industry

6 months with AKRF

RELEVANT EXPERIENCE

New York City School Construction Authority On-Call Contracts for Environmental Consulting Services, Various Sites, NY

AKRF has undertaken various assignments under five consecutive hazardous materials on-call contracts, including environmental assessment, remedial design, construction support, plumbing disinfection, and potable water (lead) sampling consulting tasks. For potential new school sites, assignments include initial due diligence, Phase I environmental site assessments, and subsurface investigation of soil, groundwater, and soil vapor to determine the suitability of a site for development as a school, likely remediation requirements, and associated costs. For sites undergoing design and development, assignments include preparation of remediation plans, design of sub-slab depressurization systems and contract specifications, and construction oversight. The work also includes conducting indoor air quality testing, vapor intrusion assessments, preparation of specifications and construction management for petroleum storage tank removals, and investigation and remediation of spills for existing schools. Under the most recent contract, Michael Bates has completed waste characterization sampling for planned improvements at an existing school facility (K597) and conducted environmental oversight and community air monitoring during construction of a new school facility (X468).

Phipps Houses, Atlantic Chestnut, Brooklyn, NY

AKRF was retained to provide environmental consulting services in connection with the purchase and redevelopment of former burned manufacturing buildings encompassing an entire city block in Brooklyn, New York. AKRF conducted due diligence prior to acquisition, and facilitated entry into the New York State Brownfield Cleanup Program (NYSBCP) to delineate contamination in soil, groundwater, and soil vapor; and remediate the lots during redevelopment. AKRF designed and implemented several rounds of investigations and remedies. The first phase of the project received NYSDEC sign off in 2022 and the second phase of the project is currently being remediated and redeveloped. The remedies include groundwater injections and treatment, fuel oil recovery and tank closure, management of soil disposal, excavation and disposal of hazardous and non-hazardous waste streams, installation and operation of soil vapor extraction systems and sub-slab depressurization systems, and long-term groundwater and vapor monitoring and reporting to ensure compliance with the NYSBCP. Michael Bates served as an on-site environmental during the complex beginning stages of the second phase of remediation, and completed hazardous waste delineation sampling.

Newtown Creek Bud Site - North Block, Queens, NY

AKRF is providing environmental planning and site assessment/remediation services for a 575-unit, 34-story apartment building at 55-01 Second Street and an 812-unit, 39-story building at 2-10 54th Avenue in Long Island City. The buildings will total 1.43 million square feet. The site was investigated and is being remediated under the NYS Brownfield Cleanup Program. Michael Bates served as an on-site environmental monitor during construction to ensure compliance with the Remedial Action Work Plan. His duties included community and work zone air monitoring, soil disposal and import tracking, inspection of the sub-slab depressurization system installation, and associated reporting.

1100 Myrtle Avenue, Brooklyn, NY

AKRF prepared a Remedial Investigation Work Plan (RIWP) for New York City Mayor's Office of Environmental Remediation (OER) and performed the associated Remedial Investigation. Following, the site was accepted into the New York State Department of Environmental Conservation (NYSDEC) Brownfield Cleanup Program (BCP), after which AKRF conducted additional investigation and prepared a Remedial Action Work Plan (RAWP). Michael Bates conducted inspections during start-up of the sub-slab depressurization system and soil vapor extraction system, which were installed under the new building in accordance with the RAWP and associated design documents.

221 Glenmore Avenue, Brooklyn, New York

AKRF is conducting a large-scale Remedial Investigation at a former lighting company facility in support of a NYSDEC Brownfield Cleanup Program application and anticipated remediation. Michael Bates performed groundwater sampling of newly installed and existing monitoring wells at the Site in accordance with EPA low-flow sampling protocols and preformed soil vapor sampling from nested vapor points to determine the vertical distribution of chlorinated solvent contamination in the subsurface.

BESS, Astoria, Queens, New York

AKRF prepared and is implementing a Construction Health and Safety Plan (CHASP, approved by the New York Power Authority) during construction of a stand-alone new battery energy storage system at a Con Edison facility in Astoria Queens. Michael Bates served as an on-site environmental monitor during construction to ensure compliance with the CHASP. His duties included community and work zone air monitoring during utility clearance and waste characterization sampling.

PREVIOUS EXPERIENCE

As a Staff Geologist at two previous environmental consulting firms, Michael Bates conducted subsurface investigations, low-flow groundwater sampling, and soil vapor sampling, and prepared associated technical reports. He also conducted routine O&M and monitoring of large groundwater and soil vapor treatment

systems and sub-slab depressurization systems, and oversaw installation/rehabilitation of recovery wells for system upgrades.

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

Form **W-9**
(Rev. December 2011)
Department of the Treasury
Internal Revenue Service

Request for Taxpayer Identification Number and Certification

Give Form to the requester. Do not send to the IRS.

Print or type
See Specific Instructions on page 2.

Name (as shown on your income tax return)
L.A.B VALIOATION CORP

Business name/disregarded entity name, if different from above

Check appropriate box for federal tax classification:
☐ Individual/sole proprietor ☐ C Corporation ☒ S Corporation ☐ Partnership ☐ Trust/estate

☐ Limited liabilty company. Enter the tax classification (C=C corporation, S=S corporation, P=partnership) ▶

☐ Other (see instructions) ▶

☐ Exempt payee

Address (number, street, and apt. or suite no.)
14 WEST POINT DRIVE

Requester's name and address (optional)

City, state, and ZIP code
EAST NORTHPORT, New York 11731

List account number(s) here (optional)

Part I Taxpayer Identification Number (TIN)

Enter your TIN in the appropriate box. The TIN provided must match the name given on the "Name" line to avoid backup withholding. For individuals, this is your social security number (SSN). However, for a resident alien, sole proprietor, or disregarded entity, see the Part I instructions on page 3. For other entities, it is your employer identification number (EIN). If you do not have a number, see *How to get a TIN* on page 3.

Note. If the account is in more than one name, see the chart on page 4 for guidelines on whose number to enter.

Social security number
[ ][ ][ ] - [ ][ ] - [ ][ ][ ][ ]

Employer identification number
5 8 - 2 3 8 1 7 1 4

Part II Certification

Under penalties of perjury, I certify that:

1. The number shown on this form is my correct taxpayer identification number (or I am waiting for a number to be issued to me), and
2. I am not subject to backup withholding because: (a) I am exempt from backup withholding, or (b) I have not been notified by the Internal Revenue Service (IRS) that I am subject to backup withholding as a result of a failure to report all interest or dividends, or (c) the IRS has notified me that I am no longer subject to backup withholding, and
3. I am a U.S. citizen or other U.S. person (defined below).

Certification instructions. You must cross out item 2 above if you have been notified by the IRS that you are currently subject to backup withholding because you have failed to report all interest and dividends on your tax return. For real estate transactions, item 2 does not apply. For mortgage interest paid, acquisition or abandonment of secured property, cancellation of debt, contributions to an individual retirement arrangement (IRA), and generally, payments other than interest and dividends, you are not required to sign the certification, but you must provide your correct TIN. See the instructions on page 4.

Sign Here Signature of U.S. person ▶ Lou A. Bey Date ▶ 01/18/13

General Instructions

Section references are to the Internal Revenue Code unless otherwise noted.

Purpose of Form

A person who is required to file an information return with the IRS must obtain your correct taxpayer identification number (TIN) to report, for example, income paid to you, real estate transactions, mortgage interest you paid, acquisition or abandonment of secured property, cancellation of debt, or contributions you made to an IRA.

Use Form W-9 only if you are a U.S. person (including a resident alien), to provide your correct TIN to the person requesting it (the requester) and, when applicable, to:

1. Certify that the TIN you are giving is correct (or you are waiting for a number to be issued),
2. Certify that you are not subject to backup withholding, or
3. Claim exemption from backup withholding if you are a U.S. exempt payee. If applicable, you are also certifying that as a U.S. person, your allocable share of any partnership income from a U.S. trade or business is not subject to the withholding tax on foreign partners' share of effectively connected income.

Note. If a requester gives you a form other than Form W-9 to request your TIN, you must use the requester's form if it is substantially similar to this Form W-9.

Definition of a U.S. person. For federal tax purposes, you are considered a U.S. person if you are:

- An individual who is a U.S. citizen or U.S. resident alien,
- A partnership, corporation, company, or association created or organized in the United States or under the laws of the United States,
- An estate (other than a foreign estate), or
- A domestic trust (as defined in Regulations section 301.7701-7).

Special rules for partnerships. Partnerships that conduct a trade or business in the United States are generally required to pay a withholding tax on any foreign partners' share of income from such business. Further, in certain cases where a Form W-9 has not been received, a partnership is required to presume that a partner is a foreign person, and pay the withholding tax. Therefore, if you are a U.S. person that is a partner in a partnership conducting a trade or business in the United States, provide Form W-9 to the partnership to establish your U.S. status and avoid withholding on your share of partnership income.

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

James C. Todaro

Quality Assurance Officer

Qualifications Summary

- Over 30 years of experience in the environmental field and over 40 years in analytical laboratories
- Extensive experience involving management of environmental laboratory operations.
- Involvement with NELAC since its inception and member of "Accreditation Committee"
- ASTM committee member on D-34 "Waste Characterization and Disposal"
- Co-founder of Matrix Analytical, Inc.
- Diverse experience in laboratory from medical, industrial and environmental
- Lab Design for wastewater, water treatment, analytical & environmental facilities for existing & new labs, including equipment selection, casework, hood selection.
  Linear process flow for expansion considerations

Professional Affiliations

National Environmental Laboratory Accreditation Conference (NELAC)
American Chemical Society (ACS)
American Society for the Testing of Materials (ASTM)
Independent Testing Laboratory Association (ITLA)
Society of American Military Engineers (SAME)

Fields of Expertise

Laboratory Management – Environmental, Analytical, Medical
Marketing and Sales
Laboratory Design

Higher Education

B.A., Biology – Ricker College (1970)
M.T. A.S.C.P. – Norwood Hospital (1971)

Employment History

2007-Present	Alpha Analytical Labs – Quality Assurance Officer,
2005-2007	Alpha Analytical Labs – Laboratory Director - Mansfield
2000-2005	Alpha Analytical Labs – Laboratory Director - Westboro
1983-2000	Matrix Analytical Laboratory – Owner/Laboratory Director
1979-1983	NE Medical Laboratory – Laboratory Director
1976-1979	Corning Medical Diagnostics – Quality Assurance Officer
1974-1976	NE Deaconess Hospital – Emergency Lab Technologist
1971-1974	NE Medical Laboratory – Automated Chem Supervisor

Professional Training/Committees

NELAC/TNI Expert PT Committee

DoD Technical Advisory Group

MassDEP Laboratory Advisory Committee

NJDEP Environmental Laboratory Advisory Committee

ASTM D-34 Waste Management Committee

Certified Instructor 4 hr LEP and LSP CEU courses for: "Interpretation of Analytical Data", "Selection of Organic Methods".

James C. Todaro

Quality Assurance Officer

Qualifications Summary

- Over 30 years of experience in the environmental field and over 40 years in analytical laboratories
- Extensive experience involving management of environmental laboratory operations.
- Involvement with NELAC since its inception and member of "Accreditation Committee"
- ASTM committee member on D-34 "Waste Characterization and Disposal"
- Co-founder of Matrix Analytical, Inc.
- Diverse experience in laboratory from medical, industrial and environmental
- Lab Design for wastewater, water treatment, analytical & environmental facilities for existing & new labs, including equipment selection, casework, hood selection.
  Linear process flow for expansion considerations

Professional Affiliations

National Environmental Laboratory Accreditation Conference (NELAC)
American Chemical Society (ACS)
American Society for the Testing of Materials (ASTM)
Independent Testing Laboratory Association (ITLA)
Society of American Military Engineers (SAME)

Fields of Expertise

Laboratory Management – Environmental, Analytical, Medical
Marketing and Sales
Laboratory Design

Higher Education

B.A., Biology – Ricker College (1970)
M.T. A.S.C.P. – Norwood Hospital (1971)

Employment History

2007-Present	Alpha Analytical Labs – Quality Assurance Officer,
2005-2007	Alpha Analytical Labs – Laboratory Director - Mansfield
2000-2005	Alpha Analytical Labs – Laboratory Director - Westboro
1983-2000	Matrix Analytical Laboratory – Owner/Laboratory Director
1979-1983	NE Medical Laboratory – Laboratory Director
1976-1979	Corning Medical Diagnostics – Quality Assurance Officer
1974-1976	NE Deaconess Hospital – Emergency Lab Technologist
1971-1974	NE Medical Laboratory – Automated Chem Supervisor

Professional Training/Committees

NELAC/TNI Expert PT Committee

DoD Technical Advisory Group

MassDEP Laboratory Advisory Committee

NJDEP Environmental Laboratory Advisory Committee

ASTM D-34 Waste Management Committee

Certified Instructor 4 hr LEP and LSP CEU courses for: "Interpretation of Analytical Data", "Selection of Organic Methods".

SETON BRILLA CHARTER SCHOOL

1956 JEROME AVENUE, BRONX, NEW YORK

Field Sampling Plan

NYSDEC Site Number: C203152

Prepared for:

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

Prepared On Behalf Of:

2-6 East Tremont Avenue LLC
450 West 14th Street, 8th Floor
New York, New York 10014

Prepared by:

AKRF
440 Park Avenue South, 7th Floor
New York, New York 10016
212-696-0670

DECEMBER 2023

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IN-TEXT TABLES

FIGURES

1.0 INTRODUCTION

This Field Sampling Plan (FSP) describes the protocols and procedures that will be followed during implementation of the Site Management Plan (SMP) and associated appendices at the Seton Brilla Charter School property (hereinafter referred to as the Site). The Site is an approximately 0.240-acre parcel located at 1956 Jerome Avenue in the Morris Heights section of the Bronx, New York. The Site, which is identified on the New York City Tax Map as Block 2853, Lot 22, was remediated under the New York State Department of Environmental Conservation (NYSDEC) Brownfield Cleanup Program (BCP) (BCP Site No. C203152).

The objective of this FSP is to provide for the protocols and procedures during sampling performed to evaluate the performance and effectiveness of the remedy to reduce or mitigate contamination at the Site. Adherence to the FSP will ensure that defensible data will be obtained to confirm the successful operation and maintenance of remedial systems.

2.0 FIELD SAMPLING PLAN

2.1 General

This FSP describes the measures for evaluating the overall performance and effectiveness of the remedy. This Field Sampling Plan may only be revised with the approval of the NYSDEC project manager. Details regarding the sampling procedures, data quality usability objectives, analytical methods, etc. for all samples collected as part of site management for the Site are included in the Quality Assurance Project Plan (QAPP), included in Appendix I of the SMP.

This Field Sampling Plan describes the methods to be used for:

- Sampling and analysis of all appropriate media (e.g., soil vapor and soil);
- Assessing compliance with applicable NYSDEC Standards, Criteria, and Guidance (SCGs), particularly Ambient Water Quality Standards and Guidance Values (AWQSGVs) for groundwater; and
- Evaluating Site information periodically to confirm that the remedy continues to be effective in protecting public health and the environment.

To adequately address these issues, this FSP provides information on:

- Sampling locations, protocol, and frequency;
- Information on all designed monitoring systems;
- Analytical sampling program requirements; and
- Annual inspection and periodic certification.

Sampling protocols are also detailed in the QAPP, also included in Appendix I of the SMP. Reporting requirements are provided in Section 7.0 of the SMP.

2.2 Contingency Soil Vapor Extraction System (SVE)

A contingency SVE system was installed at the Site. If the results of the soil vapor intrusion evaluation (SVIE) determine the SVE system should be operated, the SVE system would continue to be maintained and operational until permission to discontinue operation is granted in writing by NYSDEC and the New York State Department of Health (NYSDOH). A proposal to discontinue the SVE system may be submitted by the owner based on SVE system operation history and effluent vapor sample data.

2.2.1 Vapor Sampling

Sampling of the SVE wells will be performed as identified in the SVE Monitoring/Inspection Schedule included as Table III of the SMP. Confirmatory extracted vapor sampling will be conducted following startup to reassess VOC emissions calculations and provide baseline volatile organic compound (VOC) concentrations at the onset of system operation. Influent, intermediate, and effluent vapor samples will be collected using 1-Liter Tedlar® bags in accordance with the FSP and analyzed for VOCs by a NYSDOH Environmental Laboratory Approval Program (ELAP)-certified laboratory using United States Environmental Protection Agency (EPA) Method TO-15. Additional sampling for scheduling of carbon change-outs will be conducted as described in Section 5.5.5 of the SMP. The applicable sampling log is provided in Appendix J of the SMP.

All effluent vapor VOC concentrations will be compared to the NYSDEC Division of Air Resources (DAR-1) publication Air Guide-1 (AG-1): Annual Guideline Concentrations (AGC)/Short-term Guideline Concentrations (SGC) Tables, updated October 18, 2010. The analysis will be performed using NYSDEC DAR-1 Air Guide-1 Policy (Policy DAR-1: Guidelines for the Control of Toxic Ambient Air Contaminants, November 12, 1997), which simulates the atmospheric processes that disperse pollutants from an emissions source to predict concentrations at selected downwind receptor locations. The procedures in the DAR-1 policy are used to model conservative, worst-case annual and short-term concentrations based on the laboratory analytical results and exhaust stack parameters to compare against the NYSDOH AGCs and SGCs.

2.2.2 Soil Vapor Intrusion Evaluation

An SVIE will be conducted for the newly constructed on-site building envelope to determine if operation of the contingency SVE system will be necessary and if the SSDS should remain as an active system or be converted to a passive system. Prior to building occupancy and during the heating season, if feasible, concurrent sub-slab soil vapor and indoor air samples will be collected in accordance with the October 2006 Guidance for Evaluating Soil Vapor Intrusion in the State of New York (with updates). Sub-slab soil vapor samples will be collected from five on-site vapor monitoring points (MP-1, MP-2, and SVMP-1 through SVMP-3). Seven indoor air samples will be collected during the SVIE. Five of the indoor air samples (IA-1 through IA-5) will be collected from the first floor of the new building and will be co-located with the sub-slab soil vapor samples. Two indoor air samples (IA-6 and IA-7) will be collected from within the second floor of the new building. All indoor air samples will be collected from the breathing zone, approximately four feet above the floor. Indoor air samples will be collected from the following locations within the new building:

- IA-01: First Floor, Room 109B, Non-Food Storage Room
- IA-02: First Floor, Room 109A, Package Room
- IA-03: First Floor, Room 104, Main Office
- IA-04: First Floor, Room 114, Main Office
- IA-05: First Floor, Northwest Hallway
- IA-06: Second Floor, Room 323, Music Room
- IA-07: Second Floor, Room 301, Performing Arts/Dance Room

One ambient (outdoor) air sample (AA-1) will be collected for Quality Assurance/Quality Control (QA/QC) purposes. The ambient air sample will also be collected from 3 to 4 feet above sidewalk grade to mimic the breathing zone. As the building will be used for commercial purposes, the sub-slab soil vapor, indoor air, and ambient air samples will be collected via 6-liter Summa Canisters over an 8-hour period with the flow rate not to exceed 0.0125 liters per minute. The samples will be submitted to an ELAP-certified laboratory for analysis of VOCs via TO-15.

The results of the SVIE will be documented in an SVIE report that will be submitted to NYSDEC and NYSDOH. All work will be completed in accordance with the QAPP and the Health and Safety Plan (HASP), included as Appendices I and G of the SMP, respectively. Proposed sub-slab soil vapor, indoor air, and ambient air samples are shown on Figures 1A and 1B.

2.3 Post-Remediation Media Monitoring and Sampling

Post-remediation groundwater samples will be collected from the monitoring wells on a routine basis. Sampling locations required analytical parameters, and a schedule are provided in Tables I and II, below. Modification to the frequency or sampling requirements will require approval from the NYSDEC project manager.

2.3.1 Groundwater Sampling

The network of monitoring wells, as shown on Figure 2, has been installed to monitor remaining groundwater contamination at upgradient, central, and downgradient locations across the Site. Table I summarizes each well's purpose, location, depth, diameter, and screened interval.

The remedial party will measure depth to the water table for each monitoring well in the network before sampling. Groundwater monitoring will be performed on a quarterly basis for one year, with one sample collected from each of the three groundwater monitoring wells (MW-01, MW-02, and MW-03). Modification to the frequency or sampling requirements will require approval from the NYSDEC project manager.

Table I
Monitoring Well Construction Details

Monitoring Well ID	Well Location	Coordinates (longitude/ latitude)[1]	Well Diameter (inches)	Depth to Top of Screen (ft bgs)	Depth to Bottom of Screen (ft bgs)	Elevation (above msl)
MW-01	Central	42.0996021°/ 065.4133013°	2	5	15	45.36
MW-02	Downgradient	42.0998740°/ 065.4130124°	2	5	15	45.01
MW-03	Upgradient	42.1003187°/ 065.4125454°	:2	5	15	45.48

Notes:

[1]All elevations are measured using North American Vertical Datum of 1988 (NAVD88) and locations are measured using the North American Datum of 1983 – Long Island Zone.

ft bgs = feet below ground surface, msl = mean sea level
° = degrees

Monitoring well construction logs are included in Appendix E of this SMP. Deliverables for the groundwater monitoring program are specified in Section 7.0 of the SMP.

The samples will be collected using EPA low flow techniques and then submitted to a NYSDOH ELAP-certified laboratory for analysis of Target Compound List (TCL) VOCs using Category B deliverables, as summarized in Table II. One blind duplicate, one field blank, one trip blank, and one matrix spike/matrix spike duplicate (MS/MSD) sample will be collected for QA/QC purposes. The groundwater data will be reviewed by a third-party validator and a DUSR will be prepared to document the usability and validity of the data. All purged groundwater will be containerized in 55-gallon drums for future off-site disposal at a permitted facility.

Table II
Post-Remediation Groundwater Sampling Requirements and Schedule

Sampling Location	Analytical Parameters	Reporting Limit (µg/L)	Schedule
MW-01	TCL VOCs (EPA Method 624)	AWQSGVs	Quarterly
MW-02	TCL VOCs (EPA Method 624)	AWQSGVs	Quarterly
MW-03	TCL VOCs (EPA Method 624)	AWQSGVs	Quarterly

Notes:
µg/L = micrograms per Liter
AWQSGVs = Ambient Water Quality Standards and Guidance Values

The groundwater analytical results will be reported to NYSDEC in a brief letter report, which will include a summary of the ongoing laboratory analytical results, a comparison to the baseline groundwater analytical results, and recommendations for additional groundwater treatment, if necessary. The first post-remediation groundwater sampling event occurred in July 2023. Quarterly sampling events will begin upon receipt of the COC in December 2023, and quarterly thereafter for one year (January, April, July, and October 2024).

Based on the post-remediation sampling results, additional groundwater treatment events may be required in the future. If supplemental groundwater treatment is required, based on the results of the first year of periodic groundwater monitoring, a groundwater treatment design report will be prepared and submitted to NYSDEC and NYSDOH for review and approval. Additional groundwater monitoring will be conducted if subsequent treatment events are requested. Modification to the frequency or sampling requirements will require approval from NYSDEC.

2.3.2 Monitoring and Sampling Protocol

All sampling activities will be recorded in a field book and associated sampling logs as provided in Appendix J of the SMP. Other observations (e.g., groundwater monitoring well integrity, etc.) will also be noted on the sampling log. The sampling log will serve as the inspection form for the monitoring network.

Prior to collecting the samples, but after removing the well cap, each well will be screened for the presence of VOCs using a photoionization detector (PID). The depth to groundwater will then be measured in the wells using an electronic oil/water interface probe attached to a measuring tape accurate to 0.01 foot; this will also be used to gauge potential measurable product on the surface of the water table. The water level data, well diameter, and depth to bottom will be used to calculate the volume of water in each well, and any separate-phase product will be documented, if present. The wells that do not contain separate-phase product will then be purged using low-flow purging techniques.

Groundwater samples will be collected using dedicated polyethylene tubing and placed directly into laboratory-supplied sample bottles. The samples will be analyzed by a NYSDOH ELAP-certified laboratory with NYSDEC Category B deliverables. For wells that contain separate-phase product (not anticipated), a sample of the product will be collected and analyzed for flashpoint. All non-dedicated sampling equipment (e.g., submersible pumps and oil/water interface probes) will be decontaminated between sampling locations using the following procedure:

1. Scrub equipment with a bristle brush using a tap water/Simple Green® or Alconox® solution.
2. Rinse with tap water.
3. Scrub again with a bristle brush using a tap water/Simple Green® or Alconox® solution.
4. Rinse with tap water.
5. Rinse with distilled water.
6. Air-dry the equipment.

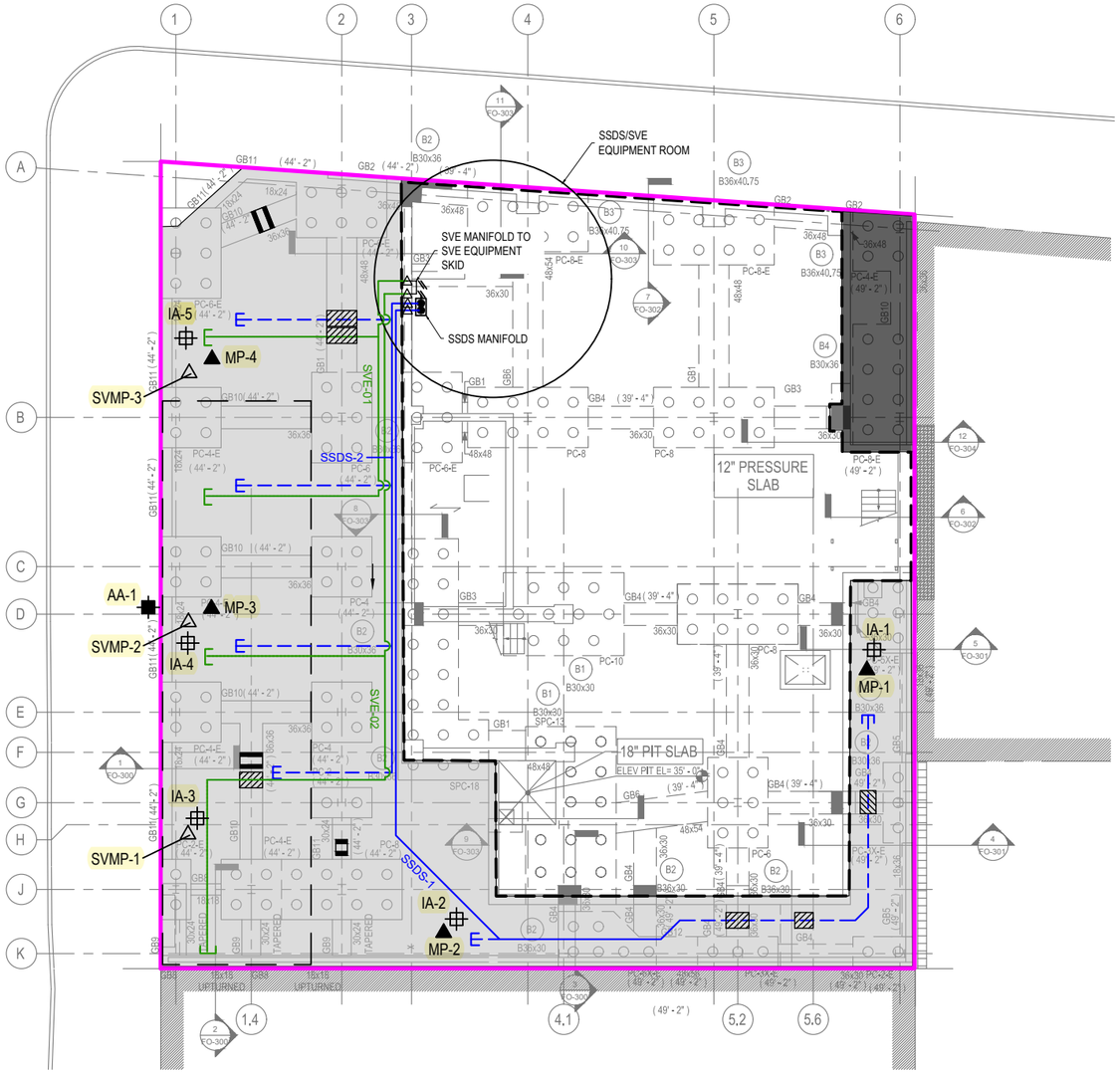
2.3.3 Monitoring Well Repairs and Decommissioning

If biofouling or silt accumulation occurs in the on-site monitoring wells, the wells will be physically agitated/surged and redeveloped. Additionally, if an event renders the wells unusable, the monitoring wells will be properly decommissioned and replaced. Repairs and/or replacement of wells in the monitoring well network will be performed based on assessments of structural integrity and overall performance.

NYSDEC will be notified prior to any repair or decommissioning of any monitoring well for the purpose of replacement, and the repair or decommissioning and replacement process will be documented in the subsequent PRR. Well decommissioning without replacement will be done only with the prior approval of NYSDEC. Well abandonment will be performed in accordance with NYSDEC's guidance entitled CP-43: Groundwater Monitoring Well Decommissioning Procedures. Monitoring wells that are decommissioned because they have been rendered unusable will be replaced in kind in the nearest available location, unless otherwise approved by NYSDEC.

The sampling frequency may only be modified with the approval of NYSDEC. This SMP will be modified to reflect changes in sampling plans approved by NYSDEC. Deliverables for the groundwater monitoring program are specified in Section 7.0 – Reporting Requirements.

FIGURES



LEGEND

- BCP SITE BOUNDARY
- SVE TREATMENT ZONE - GAS PERMEABLE AGGREGATE UNDERLAIN BY 6-MIL PLASTIC SHEETING
- SOLID SCHEDULE 40 4" PVC PIPE BENEATH SLAB
- SLOTTED SCHEDULE 40 4" PVC PIPE BENEATH SLAB WITH ENDCAP
- SVE 4" Ø SLOTTED SCHEDULE 40 PVC PIPE WITH PVC END CAP
- SSDSSVE PIPE PENETRATION THROUGH VERTICAL FOUNDATION WALL
- PIPE SLEEVE THROUGH FOUNDATION ELEMENT
- COMMUNICATION SLEEVE THROUGH FOUNDATION ELEMENT
- SSDS MANIFOLD
- MP-1 — MONITORING POINT LOCATION WITH ID
- SVMP-1 — SOIL VAPOR MONITORING POINT LOCATION WITH ID
- IA-1 — INDOOR AIR SAMPLE LOCATION
- AA-1 — AMBIENT AIR SAMPLE LOCATION
- EXTENT OF 20-MIL VAPORBLOCK PLUS VAPOR BARRIER AND GAS-PERMEABLE AGGREGATE
- EXTENT OF E-PRO WATERPROOFING

NOTE:
SUB-SLAB SOIL VAPOR SAMPLES WILL BE COLLECTED FROM MONITORING POINTS MP-1, MP-2, SVMP-1, SVMP-2, AND SVMP-3 PAIRED WITH INDOOR AIR SAMPLES.

SSDS MONITORING POINT LOCATIONS	
ID	**ROOM**
MP–1	109B NON–FOOD STORAGE
MP–2	109A PACKAGE
MP–3	114 MS MAIN OFFICE
MP–4	HALLWAY (NE)

SOURCE:
BASE MAP FROM GF55 ARCHITECTS, LLP "FOUNDATION PLAN", FO-100.00, DATED 06-29-2022.

0 10 20 40
SCALE IN FEET

AKRF
440 Park Avenue South, New York, NY 10016

1956 Jerome Avenue
Bronx, New York

PROPOSED SUB-SLAB SOIL VAPOR, AMBIENT AND INDOOR AIR SAMPLE LOCATIONS

DATE
11/29/2023

PROJECT NO.
210024

FIGURE
1A

2ND FLOOR PLAN

LEGEND

IA-05 PROPOSED INDOOR AIR SAMPLE LOCATION

0 10 20 40

SCALE IN FEET

Source:
Bolivar Development Revised Floor Plans, 7-13-2021

AKRF
440 Park Avenue South, New York, NY 10016

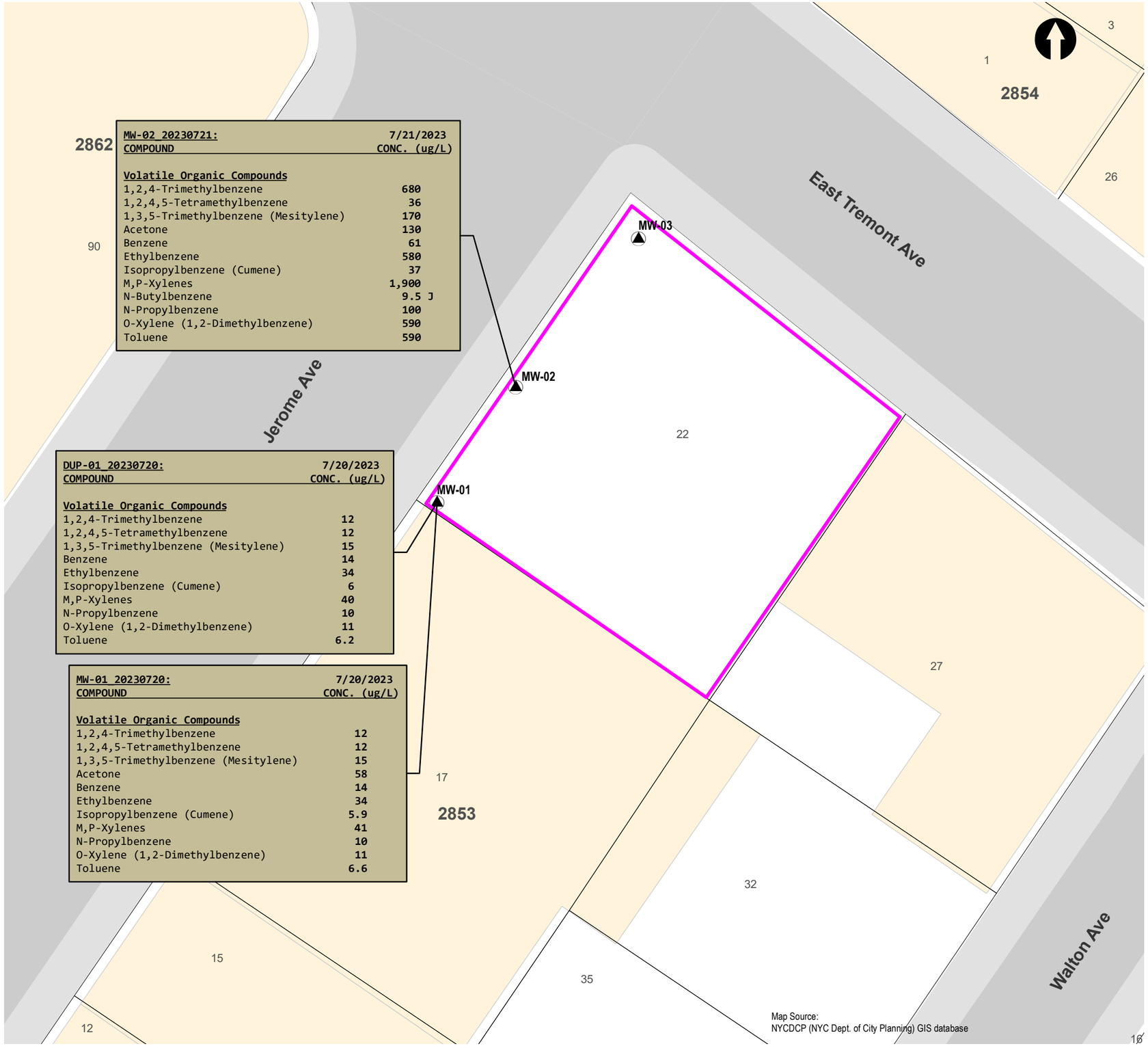
1956 Jerome Avenue
Bronx, New York

PROPOSED INDOOR AIR SAMPLE LOCATIONS

DATE
11/29/2023

PROJECT NO.
210024

FIGURE
1B



MW-02_20230721: 7/21/2023

COMPOUND	CONC. (ug/L)
Volatile Organic Compounds	
1,2,4-Trimethylbenzene	680
1,2,4,5-Tetramethylbenzene	36
1,3,5-Trimethylbenzene (Mesitylene)	170
Acetone	130
Benzene	61
Ethylbenzene	580
Isopropylbenzene (Cumene)	37
M,P-Xylenes	1,900
N-Butylbenzene	9.5 J
N-Propylbenzene	100
O-Xylene (1,2-Dimethylbenzene)	590
Toluene	590

DUP-01_20230720: 7/20/2023

COMPOUND	CONC. (ug/L)
Volatile Organic Compounds	
1,2,4-Trimethylbenzene	12
1,2,4,5-Tetramethylbenzene	12
1,3,5-Trimethylbenzene (Mesitylene)	15
Benzene	14
Ethylbenzene	34
Isopropylbenzene (Cumene)	6
M,P-Xylenes	40
N-Propylbenzene	10
O-Xylene (1,2-Dimethylbenzene)	11
Toluene	6.2

MW-01_20230720: 7/20/2023

COMPOUND	CONC. (ug/L)
Volatile Organic Compounds	
1,2,4-Trimethylbenzene	12
1,2,4,5-Tetramethylbenzene	12
1,3,5-Trimethylbenzene (Mesitylene)	15
Acetone	58
Benzene	14
Ethylbenzene	34
Isopropylbenzene (Cumene)	5.9
M,P-Xylenes	41
N-Propylbenzene	10
O-Xylene (1,2-Dimethylbenzene)	11
Toluene	6.6

LEGEND

- PROJECT SITE BOUNDARY
- 22 LOT BOUNDARY AND TAX LOT NUMBER
- 2853 BLOCK NUMBER
- BUILDING
- GROUNDWATER MONITORING WELL LOCATIONS

NYSDEC TOGS Class GA Ambient Water Quality Standard and Guidance Values (AWQSGVs):
New York State Department of Environmental Conservation (NYSDEC) Technical and Operational Guidance Series (TOGS) (1.1.1):

µg/L: micrograms per Liter = parts per billion (ppb)
ng/L :1 nanogram per Liter =1,000 parts per trillion (ppt)

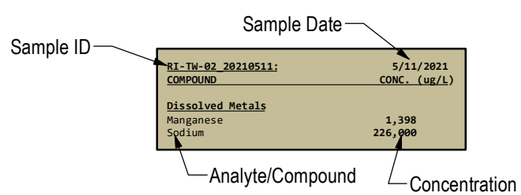
Exceedances of NYSDEC AWQSGVs and Exceedances of NYSDEC Screening Values are shown in bold font.

J: The concentration given is an estimated value.

DUP-01_20230720 is a blind duplicate of sample MW-01_20230720

	NYSDEC AWQSGVs µg/l
Volatile Organic Compounds	
1,2,4,5-Tetramethylbenzene	5
1,2,4-Trimethylbenzene	5
1,3,5-Trimethylbenzene (Mesitylene)	5
Acetone	50
Benzene	1
Ethylbenzene	5
Isopropylbenzene (Cumene)	5
N-Butylbenzene	5
N-Propylbenzene	5
O-Xylene (1,2-Dimethylbenzene)	5
Toluene	5
Xylenes, M,P	5

0 15 30 60
SCALE IN FEET



AKRF
440 Park Avenue South, New York, NY 10016

1956 Jerome Avenue
Bronx, New York

Post-Remedial Groundwater Sample Analytical Results Above AWQSGVs

DATE
9/26/2023

PROJECT NO.
210024

FIGURE
2

APPENDIX J

SITE MANAGEMENT FORMS AND LOGS

Annual Site-Wide Inspection

Overview of Annual Site-Wide Inspection requirements:

1) General Site conditions at time of inspection;

2) SMP-related Site Activities being conducted, upcoming SMP-related tasks;

3) Institutional Control (IC) Checklist (SMP, FMP maintained on-Site, routine SMP tasks being conducted);

4) Evaluation of Engineering Controls; and

5) Site Documentation.

---

1) General Site conditions at time of inspection:

NAME:	**DATE:**
TIME:	**WEATHER:**
Annual Inspection or Emergency Inspection (if emergency, specify nature)?	

Notes:_____

_____

_____

_____

2) Are any SMP-related site activities currently being conducted (SSDS and SVE Operation)?

☐ YES ☐ NO

Notes/Details:

_____

_____

_____

_____

_____

3) IC Checklist (SMP maintained on-Site, routine SMP tasks being conducted)

Copy of SMP on-Site?	☐ YES ☐ NO
Building Use Still Consistent with SMP (Restricted Residential)?	☐ YES ☐ NO

Have the required SMP tasks been conducted during the reporting period?

SSDS inspections/monitoring ☐ YES ☐ NO

SVE system monitoring ☐ YES ☐ NO

Quarterly groundwater monitoring/sampling ☐ YES ☐ NO

Notes:_____

_____

_____

_____

4) Evaluation of ECs

Environmental Control Type: SVE System	
Is the SVE system currently operating? If no, describe reason/alarm condition(s):	☐ YES ☐ NO
Are the various gauges and components of system and the digital control panel clean?	☐ YES ☐ NO
Have any problems occurred that require corrective action to the treatment system components or manifold? If yes, describe:	☐ YES ☐ NO

SVE System operations have also been documented using the applicable inspections logs (see attached) that will be provided as part of the PRR.

Notes:_____

_____

_____

_____

Environmental Control Type: Active SSDS	
Are there any unusual odors, spills or leaks near the SSDS piping in the basement? If yes, describe source and plans for repair:	☐ YES ☐ NO
Are the above grade components of the SSDS clean?	☐ YES ☐ NO
Is the SSDS blower running? If yes, describe:	☐ YES ☐ NO
Any evidence of SSDS piping tampering, vandalism or damage on the SSDS piping or system components? If yes, describe:	☐ YES ☐ NO

Notes:_____

_____

_____

_____

_____

Environmental Control Type: Composite Cover System	
Is the composite cover system intact? If there are significant cracks/breaks/openings, describe the size and location: _____ _____ _____	☐ YES ☐ NO
Are corrective actions required to address the condition of the composite cover system? If yes, describe: _____ _____ _____	☐ YES ☐ NO

The condition of the composite cover system is being documented in this inspection log, which will be provided as part of the PRR.

Notes:_____
_____
_____
_____

5) Site documentation

Including updates regarding notification to NYSDEC regarding any changes to Site conditions/operations, routine reporting to NYSDEC, etc.).

Notes:_____
_____
_____
_____
_____

SSDS MONITORING INSPECTION FORM
Seton Brilla Charter School - 1956 Jerome Avenue, Bronx, New York

Inspector Name:	**Date:**
Time In:	**Time Out:**

General

Weather:	Temperature:	Barometric Pressure:	

1. When was the last rain event?

2. Is the blower currently operating? Yes / No

   If no, please list reason/alarm condition:

3. Any evidence of system tampering, vandalism or damage in the first floor equipment room? -

4. Is air discharging from the exhaust piping to the roof? -

5. Any evidence of system tampering, vandalism, or damage to the exhaust stack? -

6. Were all cleanout/sampling port caps securely attached prior to system testing? -

   If no, list location and contact Project Manager/Project Director.

7. Is the concrete floor slab overlying all of the SSDS piping runs intact? -

   If no, list location and contact Project Manager/Project Director.

SSDS Operations

Blower Inlet PID (ppm)	

Monitoring Point (MP) or Riser Leg (RL) Identification	Location	Flow Rate[1] cfm	Applied Vacuum[1] in. H_2O	Induced Vacuum[2] in. H_2O	Notes
MP-01	Eastern portion of the Site	NA	NA		
MP-02	Southern portion of the Site	NA	NA		
MP-03	Western portion of the Site	NA	NA		
MP-04	Northwestern portion of the Site	NA	NA		
SSDS-1	Compactor/Recycle Room			NA	
SSDS-2				NA	
Combined applied vacuum on riser =		NA		NA	

Notes:

1. Normal system flow rates range from 40 to 100 cfm. Applied vacuum readings range from 1 to 15 in. H_2O. System readings will be obtained from each riser leg (SSDS-1and SSDS-2).
2. Normal system induced vacuum readings should be a minimum of 0.004 in. H_2O. System readings will be obtained from each monitoring point (MP-01 through MP-4).
3. If observations are confirmed to be outside of this range, inform emergency contacts in SMP and prepare corrective action plan, if necessary.

in. of H_2O - inches of water
cfm - cubic feet per minute
NA - not applicable

SSDS/SVE System Shutdown Log
TRACKING FORM

Seton Brilla Charter School - 1956 Jerome Avenue, Bronx, New York

Date	Time	SSDS or SVE	Message	Unusual conditions on arrival	Restart successful?	Description of persistant problem(s)
MM/DD/YY	HH:MM	SSDS	SSDS High Temperature Alarm	SSDS fan shutdown.	Yes	SVE blower temperature switches tripped, mainly caused by high ambient temperature. Discussed increasing temperature switch range with PM.

SVE INSPECTION LOG
MONTHLY SOIL VAPOR EXTRACTION SYSTEM INSPECTION
Seton Brilla Charter School - 1956 Jerome Avenue, Bronx, New York

Inspector Name:	**Date:**
Time IN:	**Time OUT:**

GENERAL

Weather:	Temperature:	Barometric Pressure:	Equipment Room Temperature:

When was the last rain event?

Is the SVE system being cycled on or off this month? On / Off (circle one)

If issues cycling system on or off, ALERT PROJECT MANAGER and please describe issue:

Is the SVE blower currently operating? Yes / No (circle one)

If no, ALERT PROJECT MANAGER and please list reason/alarm condition:

What is the VFD setting?

If under 30 Hz, ALERT PROJECT MANAGER:

Is condensate in the knockout tank gauge below the low-high float sensor? Yes / No (circle one)

If no, ALERT PROJECT MANAGER and manually drain knockout tank

Is transfer pump working? Yes / No (circle one)

If no, ALERT PROJECT MANAGER.

Is 55-gallon drum full? Yes / No (circle one)

If yes, acknowledge alarm on panel and ALERT PROJECT MANAGER.

Any evidence of system tampering, vandalism or damage? Yes / No (circle one)

If yes, ALERT PROJECT MANAGER and please note findings:

Any evidence of system tampering, vandalism or damage to the exhaust stack? Yes / No (circle one)

If yes, ALERT PROJECT MANAGER and please note findings:

Notes: This SVE Inspection Log should be completed along with the sampling log for each sampling event.
PID - Photoionization Detector; ppm - parts per million; NA - Not applicable; GAC - Granular Activated Carbon

Comments:

Emergency Contact Information		
Name	**Title**	**Contact Number**
Deborah Shapior	AKRF Project Director	646-388-9544 (office)
Patrick Diggins	Project Manager	914-922-2356 (office)
		603-494-7090 (cell)
TBD	Owner's Representative	TBD

SVE INSPECTION LOG
MONTHLY SOIL VAPOR EXTRACTION SYSTEM INSPECTION
Seton Brilla Charter School - 1956 Jerome Avenue, Bronx, New York

SVE Operation **CALL PROJECT MANAGER IF READING OUTSIDE ACCEPTABLE/TYPICAL RANGE (IN GRAY)**		
Pre-Blower Inlet Temperature (°F): 40-80°F	Post-Blower Outlet Temperature (°F): 70-110°F	Knockout Tank Vacuum (Inches of water column): 0-50 inH2O
Pre-filter Vacuum (Inches of water column): 0-50 inH2O	Post-filter Vacuum (Inches of water column): 0-50 inH2O	Post-Blower Pressure (Inches of water column): 0-20 inH2O
GAC Influent PID (ppm):	GAC Intermediate PID (ppm): Less than GAC Influent PID	GAC Effluent PID (ppm): <1 ppm

Monitoring Location	**Vacuum Reading "H2O** Between 0.1 and 5 "H2O	**Air Flow Reading "H2O** Between 0.000 and 0.010 "H2O	**Air Flow Reading CFM**	**Notes**
SVMP-01				
SVMP-02				
SVMP-03				

SVE TROUBLESHOOTING GUIDE

Seton Brilla Charter School - 1956 Jerome Avenue, Bronx, New York

Environmental Control Type: SVE System

Problem:

Blower Not Operating

Troubleshooting Guidance:

Confirm/Check:

By-Pass Valve Has Been Initiated to Passively Vent System to Exhaust Stack (if not, call Emer. Contact Immediately)

Electric service is operational at Site building and there is no sign of damage or vandalism to the System

Electric connections to the System are intact and have not been damaged

Status of All Alarms (see guidance sheets on alarm conditions)

If Problem Persists following Troubleshooting/Repair:

Call Emergency Site Contact Below

Emergency Contact Information

Name	***Title***	***Contact Numbers***
Patrick Diggins	AKRF Project Manager	914-922-2784 (office), 603-494-7090 (cell)
TBD	Owner's Representative	TBD

SOIL VAPOR EXTRACTION SYSTEM
EXTRACTED VAPOR SAMPLING
Seton Brilla Charter School - 1956 Jerome Avenue, Bronx, New York

Inspector Name:

Time IN:			**Time OUT:**		
Location	**Start Time**	**End Time**	**PID Field Screen**	**Sample ID**	**Notes**
SVE Carbon Influent					
SVE Carbon Intermediate					
SVE Carbon Effluent					

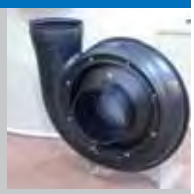
Comments:

Note: The SVE Inspection Log should also be completed for each sampling event. Samples to be collected and analyzed for VOCs by TO-15. Individual lines are not anticipated to be sampled in the routine sampling events. Sampling will be conducted as necessary at the discretion of the remedial engineer, in consultation with NYSDEC and NYSDOH.

Emergency Contact Information		
Name	**Title**	**Contact Number**
Patrick Diggins	AKRF Project Manager	914-922-2784 (office)
		603-494-7090 (cell)
TBD	Owner's Representative	TBD

APPENDIX K

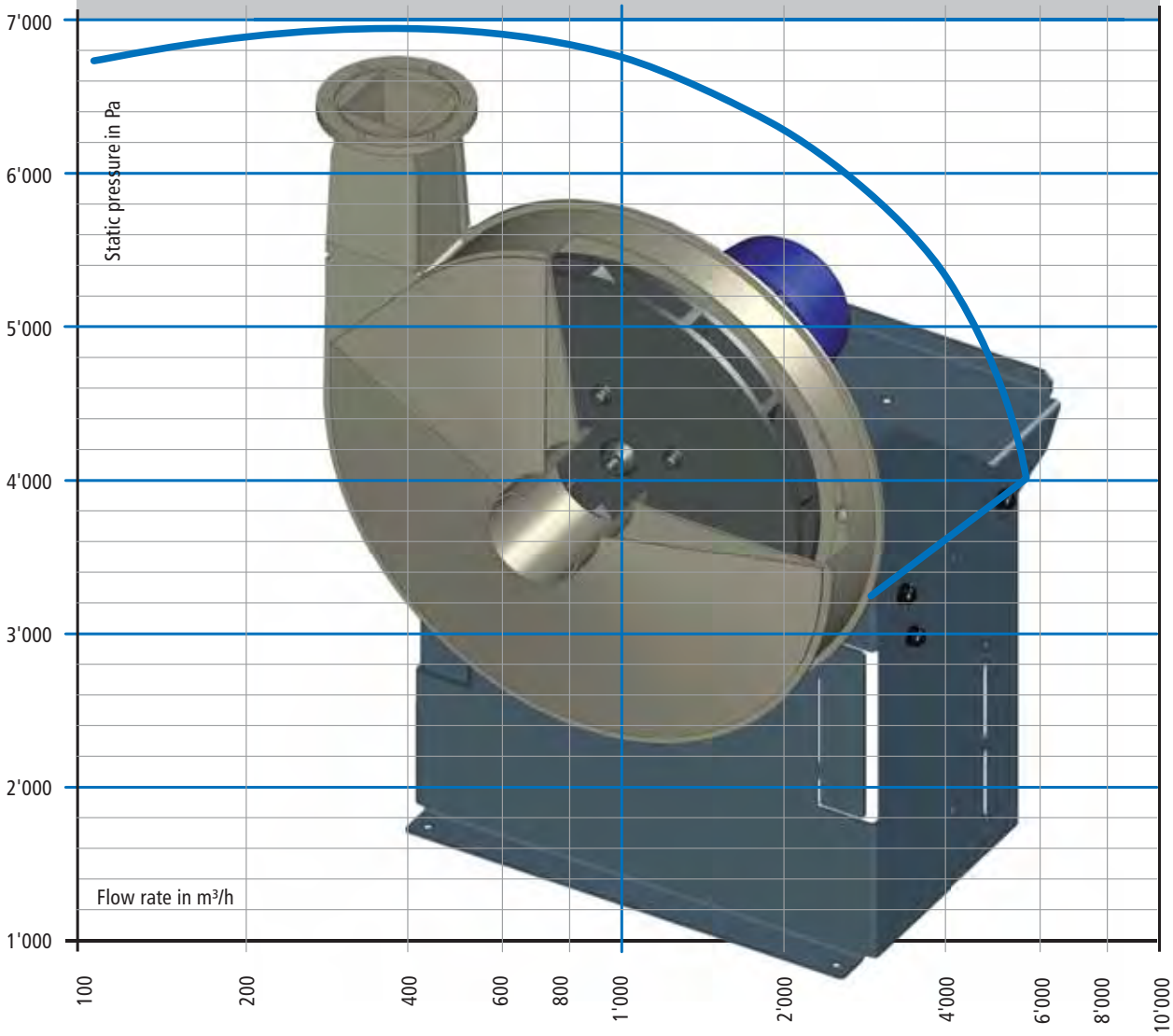
SSDS COMPONENT MANUFACTURER'S SPECIFICATIONS AND MANUALS



FANS

CHVS 63 - 250

High pressure
radial fan in plastic
Direct- or V-belt drive



COLASIT

www.colasit.com

High pressure radial fan in plastic — CHVS 63–250

Performance

Flow rate:	min. 60 m3/h to max. 5’300 m3/h
Static pressure:	min. 450 Pa to max. 7'000 Pa
Efficiency:	max. 77 %
Inlet-Ø:	63, 90, 125, 160, 200, 250 mm

Housing

- Self-supporting plastic construction, welded
- available in: PP, PPs, PPs-el, PE, PVC, PVDF
- 6 different outlet positions

Impeller

- 12 backward curved blades
- Mechanically welded
- available in: PP, PPs-el, PVDF

Support

- Dimensionally stable sheet metal
- Support and motor plate
  - powder-coated
  - stainless steel

Drive

Direct drive:
- Impeller is mounted directly onto the motor shaft

V-belt drive:
- Power transmission over v-belt with flange
- Simple tensioning system for easy adjustment or replacement of belts

Motor:
- Standard three-phase motor
  - one / multi-stage
  - foot motor

EX-Protection

In ATEX. Available in zone 1+2

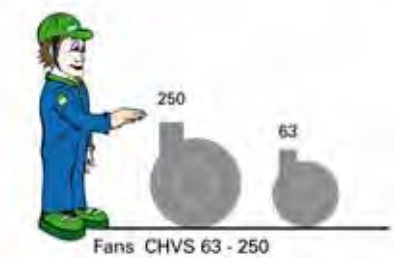
Hub Seal

- Standard hub seals
- Lip seal simple or double (V4A or Hastelloy)
- Back absorption
- Sealling gas
- Back plates

Accessories

- PVC sleeve with fixing bands, stainless
- PVC sleeve with flange
- Counterflange
- Drain
- Vibration absorber for ground erection or ceiling suspension
- Splinter protection
- Weather-proof motor cover for outside installation
- Frequency converter IP 66 / IP 54 / IP 20

Dimensions



Fans CHVS 63 - 250

COLASIT AG
Plastic construction
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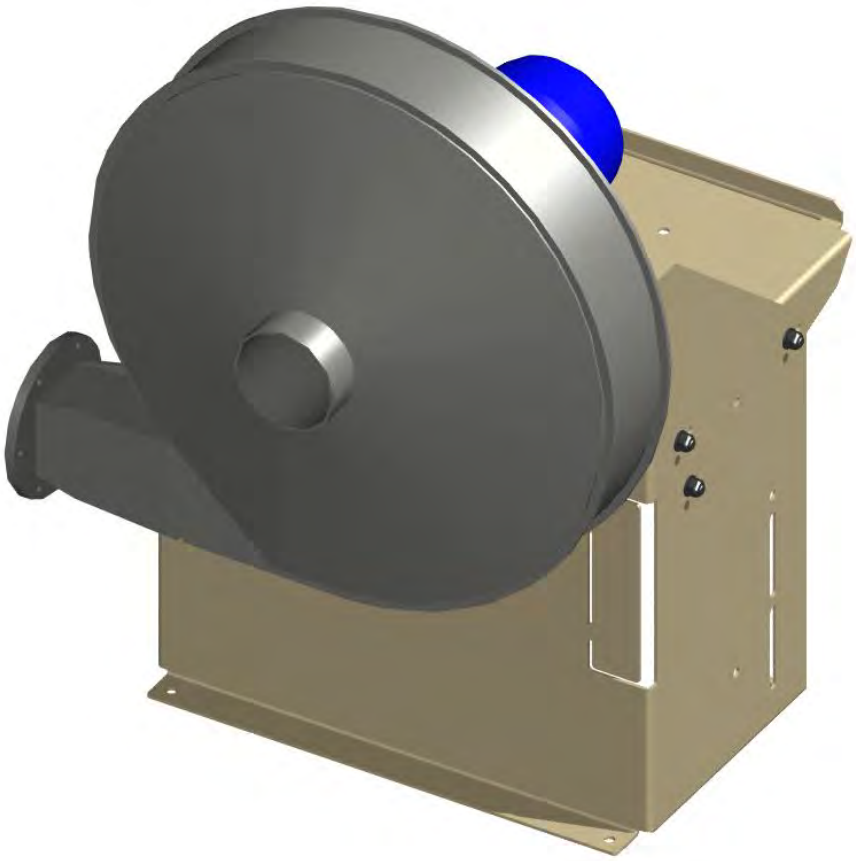
High pressure – Plastic industrial fan



Agent : COLASIT AG
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CH-3700 Spiez
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info@colasit.ch
www.colasit.ch

☐ For use in Ex zones

☐ Not for use in Ex zones

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Preface

This operating manual is the driver's license for the operation of this COLASIT fan. It is the main source of information and also the safety guideline. It deserves your full attention - please read it carefully.

The contents of this operating manual are subject to change without notice in order to take technical progress into account. In order to match this operating manual to your COLASIT fan, please register the following particulars of the fan below, whereby reference should be made to the manufacturer's nameplate.

Whilst reading this manual, you will be guided by symbols which indicate dangers and especially important references.

	Very important reference
	Generally valid danger warnings which concern your personal safety
	Reference to electrical dangers
	Reference to dangers resulting from the process environment

The entire operating manual consists of 3 parts

Part 1: General
Part 2: Components
Part 3: Certification

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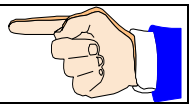
Part 1: General

1 General

OBLIGATIONS
Prior to any work done on or with the fan, we put you under an obligation to read this operating manual and any further contractors' operating instructions carefully and through to the end.
Should anything not be clear, please get in touch with us immediately. Do not put the fan into operation as long as uncertainties exist.
With the commissioning of the fan, you confirm that you have read and understood the operating manual.

After having become acquainted with the fan and its operational performance together with your production process, we recommend that you make a note of the different modes of operation in a "process instructions" document.



Together with this operating manual, any acceptance documents such as ATEX, works acceptance certificates and the EU declaration of conformity, the process instructions document forms part of the complete system documentation.

For the fan, a separate risk analysis was made as a prerequisite for writing this operating manual. Risks were evaluated and any remaining residual risks are pointed out in this operating manual.

When extracting aggressive gases, it is imperative to review the suitability of the materials:

- Once the principal or the operator has notified us of the gas mix and the maximum operating temperature, the suitability and any applicable restrictions will be confirmed in the data sheet of COLASIT AG.
- **In the absence of a written notification with regard to the extracted medium by the principal, the operator is responsible without limitation for assessing the suitability for the operation of the ventilator.**

1.1 Definition

The term "COLASIT fan" stands for a Swiss high-quality product and contains all those components and individual parts, as compiled in the purchase order or in the material parts list respectively, which, when assembled, form a functional unit.

1.2 Manufacture of COLASIT fans

The fan was manufactured using to modern manufacturing methods and was extensively tested both during manufacture and as a finished product by the COLASIT quality assurance system. The methods and procedures used for manufacture and production monitoring correspond to the state of the art. The personnel entrusted with the manufacture of the fan have the appropriate skills and possess valid qualifications.

All fans complete a successful test run in the manufacturer's facilities.

1.3 Warranty

The warranty ends on the date stated in the general terms of sale and delivery. Warranty is limited to the delivery of spare parts or the repair of defective parts in the manufacturer's works. Any further claims or the replacement of expendable items or of items subject to normal wear and tear are excluded.

We guarantee the availability of spare parts identical in construction to the original over a period of 10 years effective from the date of delivery.

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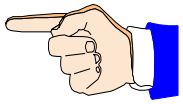
COLASIT only guarantees the stability of materials under the condition that technological data was available before production.

Any change in the conditions of use is only permissible after approval by COLASIT; otherwise this entails the loss of warranty.

Any changes or repair work during the warranty period may only be made by our fitters or with our written consent.

We refer to the limitation of warranty noted in the “drive“ section in the case where a frequency converter supplied by a third party is used.

The fan must be deployed and used in accordance with the conditions mentioned in this operating manual. Only in this way can its function be guaranteed and dangers for persons and material be excluded during operation. We accept no responsibility or guarantee claims for damages arising from non-observance of this manual or from inappropriate operation.



1.4 Safety review

After having installed the fan, we recommend checking out the entire operating situation by means of a risk analysis. In this way it can be guaranteed that neither the fan suffers damage nor that the fan causes any damage.

1.5 Qualification of personnel

The fan must only be put into operation, handled, operated, maintained and cleaned by trained personnel who are authorised (and competent) to carry out such work.

The personnel must possess the appropriate skills needed to operate the fan and be familiar with the effects of the reactions caused by the fan.

The personnel qualified for the operation of the fan must be able to react adequately and correctly in the case of a fault or an emergency.

1.6 Possible emergencies

An emergency results from the bursting or melting of plastic components as a result of mechanical damage or chemical and thermal influences. In this case, parts may fly off and vapours may be produced which could be hot, corrosive, poisonous, irritating or inflammable. (e.g. hydrochloric acid vapour if PVC gets burnt).

A danger of fire exists under certain conditions.

For the choice of the correct fire-extinguishing devices and the positioning of the fire-fighting equipment, please follow the recommendations of your official fire-prevention agency.

1.7 The safety inspector (So)

The function of the safety inspector or his representative is defined in the operating company’s organisational chart. The name of the person must be known to all personnel who are responsible for the fan.

The operating company defines his competencies and his area of responsibility.

The safety inspector approves the fan for operation.

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1.8 General risk matrix

Operation

The safety regulations in effect at the operator's location are mandatory and are to be observed at all times. During operation, parts of the body or objects must never be brought within the reach of the fan. Before making an intervention, the process must be stopped i.e. all mechanical movement is to be stopped and it is to be ensured that no self-acting motion can occur.

Missing protective equipment

If the fan is equipped with safety equipment, this equipment must neither be modified nor removed. Further protective devices of a suitable construction are to be mounted by the operator and are subject to his control.

Disregard of safety precautions

Please implement all safety measures, in order that the fan, together with its associated equipment, works properly and so that any danger to persons, materials and products can be excluded.

Decommissioning

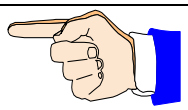
In the case of damage or malfunction of protective equipment, the fan is not to be used any more. It may only be put into operation again when the protective equipment is full functional again.

Electric power

When any work is done on the fan, the electric drive is to be isolated from the electrical supply and it is to be made sure that it cannot be reconnected. The main power switch has to be secured against operation by third parties using a lockable device (e.g. padlock) by the persons working on the fan. **The full disconnection of the motor is only permissible in case of complete removal!** The safety regulations for work on electrical equipment in effect at the place of operation must be observed at all times and be available at the place of operation.

Electrostatic charge

Because of media flowing in the plastic components, electrostatic charges can build up. These are harmless for persons who do not respond to electrical impulses in the body.



Unsuitable materials

Through the use of inappropriate materials, the fan and/or parts of it can be damaged or become non-operable. Please always use original spare parts and contact the manufacturer in any case of doubt.

Dangerous media

Depending on the mode of operation, fan parts are in contact with dangerous media. Work on the fan or the carrying out of maintenance work is not allowed during operation. Before carrying out any work, the system has to be freed from any dangerous media and, when required, to be neutralised and secured in such a way that an inflow of dangerous media is prevented.

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1.9 EU conformity of the COLASIT fan

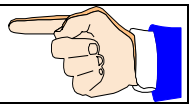
The fan was designed, built and tested to Directive 2006/42/EC.

In addition to this EU Directive and EN standards which have the equivalent status of a Swiss standard, Swiss safety and accident-prevention regulations have also been taken into account.

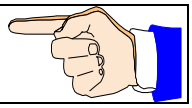
An EU Declaration of Conformity in terms of the EU guidelines 2006/42/EC on machines will be issued along with the fan.

1.10 Restrictions when commissioning

We stipulate that putting into operation is prohibited as long as the fan, including all parts belonging to it or equipment connected to it, has not been installed and checked out and until the operating manual has been read completely before commissioning.



We stipulate that the fan may only be put into operation when the safety inspector has given his approval. He is obliged to record this approval in a protocol.

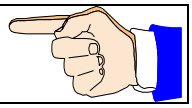


The disregard of these stipulations constitutes negligence.

1.11 General operating conditions

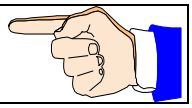
The permissible operating conditions are indicated on the manufacturer‘s plate.

The fan is not suitable for the transport of solids in the air flow. This operating mode will lead to the destruction of the fan.

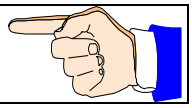


The ducts on the intake and delivery sides must always be open. A closed duct will lead to a rise in temperature which could cause the destruction of the fan.

The minimum air speed through the fan is 5 meters per second.

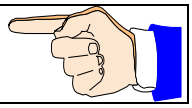


The maximum air speed may not exceed 30 meters per second through the fan.



The standard motors are designed for normal operating conditions (ambient temperature. +40°C, location under 1000 m above sea level, air pressure up to 1050 hPa). In the case of divergence from these conditions, please contact COLASIT.

Compliance with these operating conditions is the responsibility of the operator.



2 Explosion protection

COLASIT plastic fans are suitable for the conveyance of gases in Zone 1 or 2 (Equipment Category 2 or 3) depending on the model. COLASIT plastic fans are not suitable for the conveyance of gases in Zone 0 (Equipment Category 1).

The zone classification of the conveyed medium and the site of installation must be made known by the fan operator so that COLASIT can take the necessary measures to prevent the risk of ignition.

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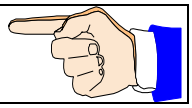
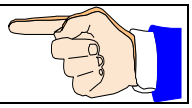
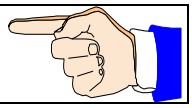
The explosion-proof COLASIT fans are not suitable for the conveyance of explosive dusts.



No modifications may be made to ATEX-certified fans. All work on the fan may only be carried out by ATEX-trained skilled personnel.
Otherwise the ATEX Certificate will lose its validity.



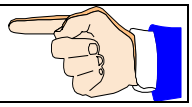
On ATEX certified fans, the external grounding terminal of the motor and fan must be connected to a potential equalization system.



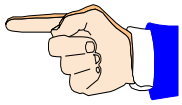
Motors with protection type "eb" are standard for using in the explosion-proof design of our fans. The standard version of the motors used complies with temperature class T3 (maximum surface temperature 200ºC).

As special-purpose design, motors with protection type "db (or db eb)" or motors with temperature class T4 (maximum surface temperature 135°C) are also available.

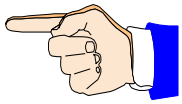
The user must define a suitable temperature class for his application that does not reach the ignition temperature of his conveyed medium.



Please also observe the specifications in the operating instructions of the motor manufacturer.
The thermal motor protection must be connected in compliance with the manufacturer's specifications (operating instructions).



If a frequency converter is fitted, you have to use pressure-proof enclosed motors. In addition, a certified PTC resistor releasing device must be fitted.
The following specifications must be included on the motor rating plate: min and max frequencies, min and max speeds, min and max torque or output, limit temperature PTC and PTC release time.



2.1 Fan EX marking

The Ex marking is located on the rating plate of each ATEX fan. On a fan of Equipment Category 2 (Zone 1), it looks like this:

CE Ex **II 2/3G Ex h IIB+H_2 T3 Gb/Gc**

CE	CE-marking
Ex	Marking denoting prevention of explosions
II	Equipment Category II, for all Ex applications which do not fall in Class I (mines and surface workings).
2/3G	Equipment Category inside/outside the fan Equipment Category 2 is the equivalent of Zone 1 and Equipment Category 3 is the equivalent of Zone 2 “G“ fan for the conveyance of explosive gases
Ex h	Protection type „design safety“
IIB+H_2	Equipment Category (gases)
T3	Temperature class T3: Max. surface temp. 200 °C T4: Max. surface temp. 135 °C
Gb/Gc	Equipment Protection Level (EPL)

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2.2 Correct installation of ATEX fan

The fan must be installed properly to guarantee trouble-free operation. To document proper installation, you will find a form on the last pages of this operating manual. The fitter must confirm the proper installation item for item on this form.

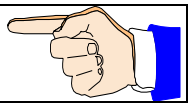
The signed form must be kept by the safety officer or operating company.

COLASIT also offers a comprehensive installation service for fans.

3 Shipping, unpacking, inspection, storage

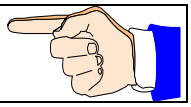
The fan is completely assembled and can be delivered in a closed film wrapping.
Please make sure the delivery corresponds to the shipping documents.

Please examine the packaging for external damage and report any damage immediately to the transport company, the supervisor and the manufacturer.

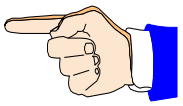


Please handle the fan with care. During transportation, only apply strain on the steel parts. Plastic is sensitive to impact and knocks, especially in the temperature range under +5°C.

When the film is removed, the intake and pressure nozzles are open and unprotected against the intrusion of foreign objects. Therefore, please do not remove the protective film until shortly before final installation.



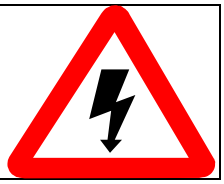
Storage
If the fans are not put into operation immediately, store them in a clean dry place where they are protected from impacts, vibrations, and temperature fluctuations and where the air humidity is under 90%.
If these storage conditions are not available, switch the fans on at regular intervals to exclude the risk of condensate forming. Before switching on, unscrew the condensate drain plugs each time and replace them afterwards.



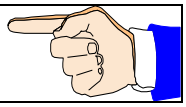
Store the fan in a dry, weather-protected place and cover with a tarpaulin to protect it from dust and soiling.
If stored for over one year, test whether the fan bearings rotate freely before putting into operation.

4 Installation, design

Before installation, check whether all the locking screws (including the motor screws) are tightened properly.
Check the electrical connections if wired at the factory.



Before installation, check that there are no foreign bodies in the coil or in the intake and pressure connections.



The fan must be installed at a location provided and prepared by the customer and must be secured and connected in such a way that any possible vibration occurring can be absorbed by the vibration dampers supplied by COLASIT.

If no ducting is foreseen on the intake side, the intake connection should be protected by a sturdy protective grating (10mm mesh) to be provided by the customer.

Connection ducting on the pressure side must be routed to prevent the backflow of foreign bodies, rainwater or condensate into the fan. To ensure this, please use the COLASIT condensate drain nozzles.

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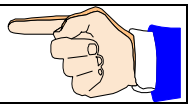
Due to the possibility of noise nuisance, we recommend that the fan should not be installed in the immediate vicinity of workplaces.

The fans of category 2 (zone 1) must be grounded.

5 Commissioning, initial start up, test run

The fan should only be put into operation after inspection and approval by the safety inspector has taken place.



5.1 Inspection of the installation and settings

Check list:

Prior to commissioning and initial start-up, it must be guaranteed that,

- ☐ the fan is installed vibration-free and mechanically secured,
- ☐ all components are cleaned both on the inside and the outside and are free from foreign bodies,
- ☐ all intake and delivery ducts are connected in a leak-proof and elastic manner,
- ☐ all rotating parts are protected against unintentional contact,
- ☐ the electrical connections are installed and their function tested,
- ☐ a lockable revision switch is available to which the fan is connected,
- ☐ the equipment is functionally tested,
- ☐ the safety inspector has made sure that safety equipment exists,
- ☐ the operating personnel is familiar with the operating manual,
- ☐ the safety inspector has given his approval for the operation of the installation and that no external persons are present in the plant area

If envisaged by procedural regulations provided by the operator, minutes have to be taken on the commissioning work, including the observance of the check list.

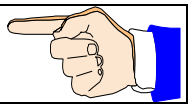
5.2 Drive

The fan is driven by an electrical motor which is connected either directly or via a v-belt to the impeller shaft.

Data on the electrical connection of the motor are indicated on the motor's data plate or in the motor manufacturer's data sheet.

When speed is controlled by means of a frequency converter, the maximum rotational speed is limited by COLASIT to the value indicated on the manufacturer's plate.

If the frequency converter is not provided by COLASIT, the operator is responsible for the observance of the maximum rotational speed limit. In this case, COLASIT does not assume any liability for damage that can be attributed to exceeding the maximum rotational speed.



In order not to overload the fan mechanically, 60sec. acceleration and braking times must be observed.

Depending on the maximum available starting current of the frequency inverter, a longer acceleration time may be necessary to avoid an error message.

5.3 Electrical installations

The electrical installations may only be carried out by an authorised electrician in accordance with the regulations valid at the site at which the fan is installed.

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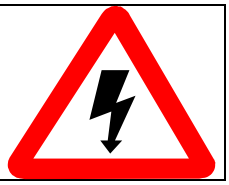
For the interruption of the power supply, a revision switch is to be provided. It is advisable that this switch be mounted in the vicinity of the emergency exit.

Please request confirmation from the in-house electrician that the electrical installations were carried out and tested in accordance with regulations, that all functions have been tested (or simulated) and that the rotational direction is correct.

Caution

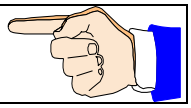
Do not turn power on or off without prior warning to persons in the area where the fan is operating. Switching operations must be co-ordinated with other functions in the working area of the fan.



6 Operation

6.1 Safety regulations

The fan is to be operated according to this manual. In doing so, you will avoid possible damage.



Supervision

The fan must not be operated unattended as long as it conveys substances, whose reactions are unknown or if unexpected reactions are to be anticipated.
If the supervision has to be withdrawn for operational reasons, this has to be reported to the safety inspector and the plant has to be secured in such a way that no unauthorised manipulation can be carried out. The safety inspector decides on questions regarding supervision.

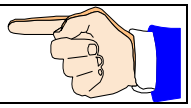
6.2 Decommissioning

An internal procedure instruction regulates the work to be carried out as well as the preparatory work for re-commissioning (e.g. cleaning).

7 Maintenance, repair, cleaning

7.1 Preparation

Before any work is carried out on the fan, it has to be brought into its "safety position".



The "safety position" is defined as follows:

- Drive is de-energised, the revision switch is secured against switching on,
- The fan impeller can be manually rotated,
- Fan flushed with fresh air and condensate-free,
- Fan is at room temperature,
- Personal protective equipment is available and its use is ordered. (Use of protective gloves because of sharp edges, ear protectors if necessary).
- A sign, e.g. “in revision", is to be attached to the plant,
- The safety devices may be removed,
- The work to be carried out must not be done under time pressure,
- The general and specific regulations on accident prevention as well as the EKAS guidelines (Switzerland) are to be observed,
- The safety inspector is informed about the nature and the course of the works.

If the intake and delivery ducts of the fan are dismounted for a longer period of time, the openings are to be closed off.

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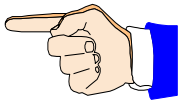
7.2 Performance

The fan must be maintained in accordance with the Maintenance Plan below. The maintenance work carried out must be noted down in the logbook (see the section on Logbook).

Every week	Every month	Every year
• Make a visual inspection of fan for damage, leaks, corrosion and attachment. • Check the smooth running of the fan and electric motor. • Check state and tension of the V-belt and replace if necessary.	• Check the impeller and casing for deposits and clean if necessary. • Check the shaft bearing for smooth running and vibrations. Bearing maintenance. • Remove any dust deposits on the fan and motor. • Check the flexible transitions from fan to duct system for leaks and state. • Check the function of the condensate nozzle. • Check the state of the vibration dampers. • Check the state of the hub gasket (if fitted).	• Carry out a thorough cleaning of the entire fan (including impeller). • Check the parts in contact with the conveyed medium for corrosion. • Check the minimum clearance between the impeller and casing (minimum 1% of intake diameter, maximum 20mm). • Measure the vibrations at bearings (KA) or motor (DA). Alarm according to ISO 14694: ≤ 3.7 kW, categorie BV-2: 14.0 mm/s (r.m.s.) or ≤ 300 kW, categorie BV-3: 11.8 mm/s (r.m.s.). • Check the safety devices (e.g. splinter protection or intake grating) for condition and function. • Check the stands for damage and stability. • Check all screw unions for firm seating.

Normally the bearings are designed for a service life of 40,000 hrs. After this period the bearings must be replaced. The service life of the bearings is reduced when subjected to increased requirements (e.g. high temperature, aggressive ambient air or operation with frequency converter).



On drives with V-belts, check the tension regularly and monitor the belts closely particularly during the first weeks of operation. This also applies after long periods of downtime. Excessive tension leads to bearing damage, insufficient tension leads to slip, wear and frictional heat.

After replacing a V-belt, check the tension after 1 to 4 hours of operation and retension as necessary.

Components which are not intended for repair by the operator must be sent to the manufacturer or agent for repair or replacement (e.g. damaged impeller).

Your agent or COLASIT
also offers customer services

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	Fax.: 0041 (0)33 654 81 61
	e-mail info@colasit.ch
Agent	see front page

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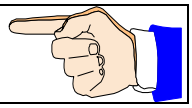
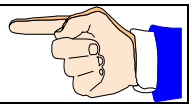
Deposits on the impeller and soiling lead to imbalance and as a result to vibrations with undesirable side effects.
If vibration occurs, switch the fan off immediately.



Contamination and encrustations should be removed with a soft tool without damaging the surface (e.g. with a wooden spatula or scraper). If possible, use water and a household cleaning agent.

Solvents can corrode the material. These may only be used with the written consent of COLASIT.



To carry out cleaning work, we recommend the production of a process instruction.

8 Spare parts

Please identify components by means of the item and drawing numbers as well as the order number and model designation.

Use only original spare parts. Our warranty is void if other or unapproved components are used.

Please address your spare parts order to our customer service department

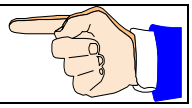
9 Operating instructions

For the operation of the fan, we recommend the preparation of process instructions documentation. Such documents simplify repetitive workflows, reduce the risk of incorrect operation and are a valuable aid when personnel changes occur and for training.

If the fan must be qualified, process instruction documents are required.

You will find important notes on the preparation of process instructions in various chapters of the operating manual.

To help ensure the safe operation of the fan, COLASIT offers, as a service, the review of process instruction documents prepared by the operator.



10 Log-book

For your own safety and as a contribution to personal responsibility, we recommend the keeping of a log book for the entire operation in which the fan is in use.

All events should be registered in the log book.

In the case of damage and also in the case of an accident, this document is the first source of information.

Please register the following together with, for example, date and signature:

- beginning and end of a work cycle
- special occurrences, even it these do not concern the fan itself (e.g. power failure, alarm)
- change of persons responsible for monitoring (e.g. in the case of shift operation)
- repairs carried out and spare parts installed
- decommissioning
- special instructions
- etc.

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11 Disposal

Before disposing of plastics and other components, (complete or as broken parts), please clean them as necessary to preclude any danger to the environment.

Dispose of the components correctly. Instruct a waste-management company to do this or return them to us for disposal.

12 Faults and fault clearance

If faults occur, we recommend that you identify and clear them using the following table.
If the fault cannot be cleared, please contact our customer service.

Operational fault	Possible causes	Remedy
Fan runs irregularly	Impeller is unbalanced	Re-balancing by a specialised company
	Impeller caked up	Clean carefully, re-balance if necessary
	Material corrosion on impeller caused by conveying aggressive media	Consult the manufacturer
	Deformation of impeller because temperature too high	Consult the manufacturer Install a new impeller Check bearings
	V-belt drive is not correctly lined up	Adjust belt drive
Drive belt torn or damaged	Normal wear and tear	Exchange complete sets of drive belts
	Drive belt is too strongly tensioned	Adjust belt drive
Drive belts slip	Wrong degree of tensioning	Check belt tension and re-tension if necessary
	Foreign objects or dirt in the grooves or the pulleys	Clean the pulleys and check drive belt profile
Leakage on the shaft bushing	Seal is not suitable for the mode of operation	Consult the manufacturer
Leakage on the sleeves	Sleeves are defective	Replace sleeves
	Tensioning straps are not firmly tightened	Tighten tensioning straps
Fan output too low	Wrong rotational direction of the impeller	Change direction of rotation
	Pressure loss in ducting too high	Different duct configuration
	Flow dampers are not or only partially opened	Check opening positions on the spot
	Inlet or delivery duct blocked	Remove obstacles
Fan does not reach its rated speed	Electrical control mechanisms are wrongly adjusted	Check adjustment of the motor protective device and if necessary re-adjust
	Motor winding is defective	Please consult manufacturer
	Drive motor is not correctly dimensioned	Please consult manufacturer for the purpose of checking starting torque
Grating noises during operation of the fan or when it runs down	Inlet duct is installed in a distorted way	Remove inlet duct and re-mount it

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Operational fault	Possible causes	Remedy
Temperature rise of the roller bearings	Bearing was not lubricated	Change bearing and lubricate regularly according to maintenance instructions

13 Retrofittable original accessories

If not already a part of our delivery, these original parts are available ex-stock for further ordering.

- Frequency converters
- Elastic sleeves
- Vibration dampers
- Condensate drains
- Engine cover for outdoor installations
- Splinter protection
- Wall console

14 Fan identification

The following rating plate is affixed to each COLASIT fan:

1 Manufacturer
2 Field for CE marking and applicable standards
3 ATEX-identification, for details see the section on Explosion Protection
4 Fan specifications: fan type, casing design, material of casing and impeller, order number and date of manufacture.
5 Technical specifications

Part 2: Components

15 Design and function CHVS

All impellers of this series are balanced out to better than G 6.3 according to ISO 21940.

The casing with its thermoplastic rear panel is screwed onto the support base and can be easily dismantled for inspection or cleaning purposes.

The fans are available in 2 standard designs:

Direct drive:
V-belt drive:

As a basic principle, plastics fans are to be installed on the intake side in order to avoid leakage.

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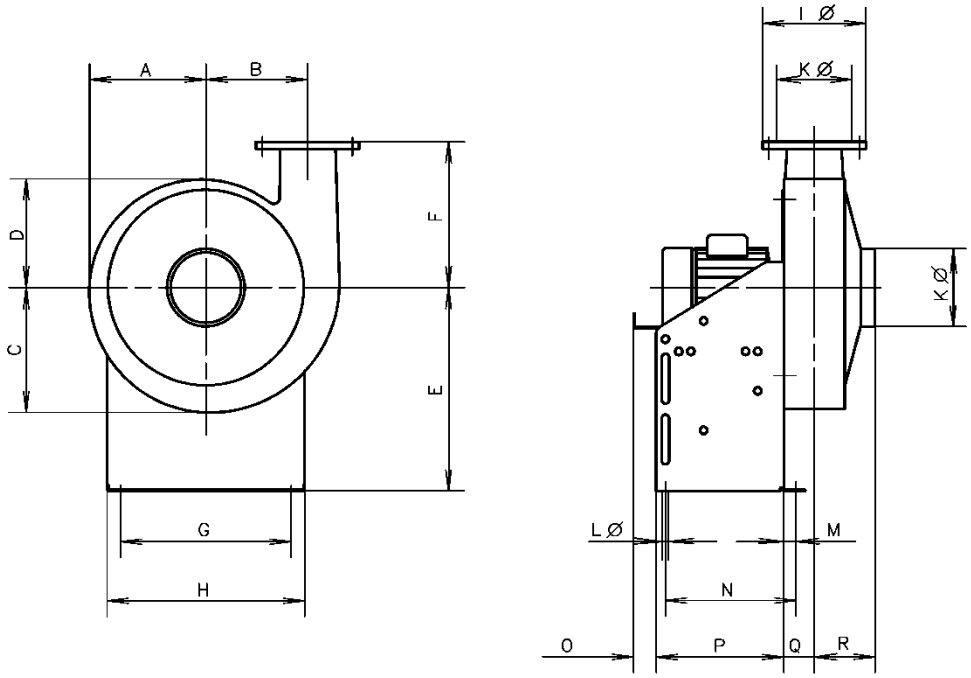
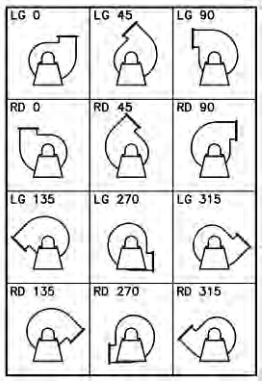
16 Dimension

16.1 Dimension of the CHVS with direct drive



CHVS	63	90	125	160	200	250
A	309	317	327	338	351	361
B	275	281	289	298	307	318
C	311	323	339	356	375	395
D	307	311	315	320	327	327
E	630	630	630	630	630	630
F	400	400	400	400	400	400
G	545	545	545	545	545	545
H	615	615	615	615	615	615
I Ø	120	150	185	220	260	310
K Ø	63	90	125	160	200	250
L Ø	12	12	12	12	12	12
M	30	30	30	30	30	30
N	335	335	335	335	335	335
O	110	110	110	110	110	110
P	325	325	325	325	325	325
Q	59	62	65.5	69.5	73.5	80
R	180	180	180	180	180	180



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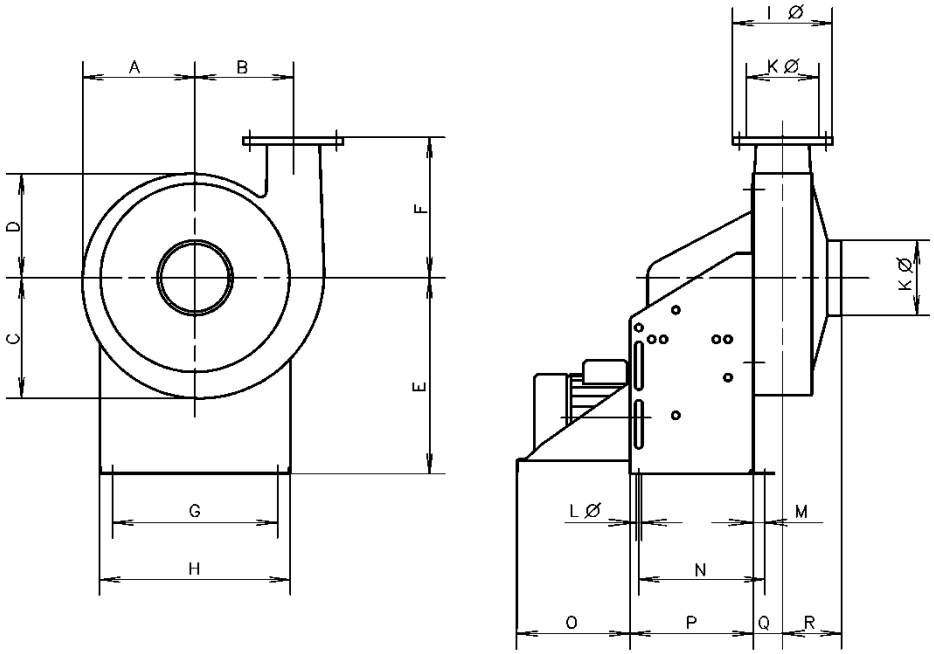
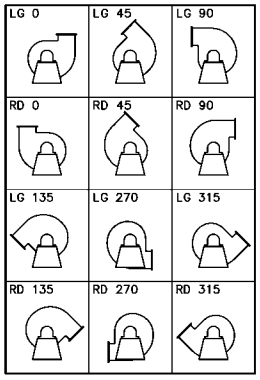
16.2 Dimension of the CHVS with V-belt drive



CHVS	63	90	125	160	200	250
A	309	317	327	338	351	361
B	275	281	289	298	307	318
C	311	323	339	356	375	395
D	307	311	315	320	327	327
E	630	630	630	630	630	630
F	400	400	400	400	400	400
G	545	545	545	545	545	545
H LG/RD 0	615	615	615	615	615	615
I Ø	120	150	185	220	260	310
K	63	90	125	160	200	250
L	12	12	12	12	12	12
M	30	30	30	30	30	30
N	335	335	335	335	335	335
O	394	394	394	394	394	394
P	325	325	325	325	325	325
Q	59	62	65.5	69.5	73.5	80
R Ø	180	180	180	180	180	180



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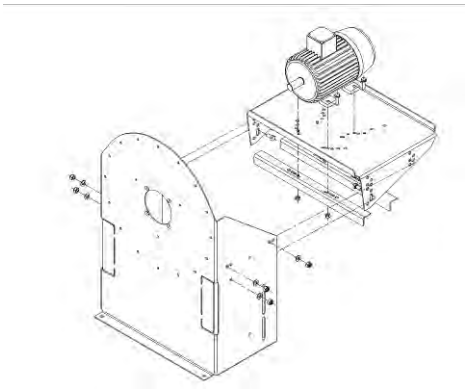
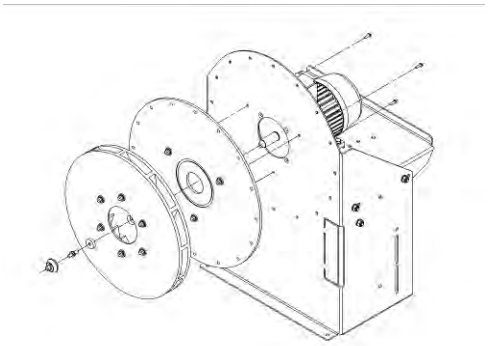
17 Assembly instructions

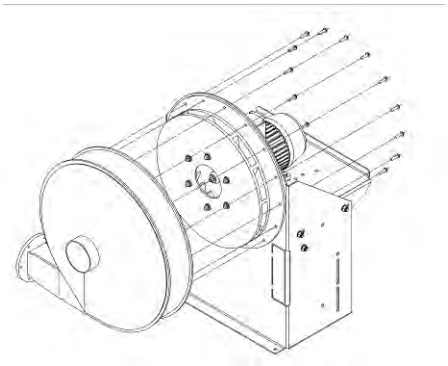
17.1 Assembly instructions for CHVS with direct drive



1. Bolt motor bracket together and attach motor



2. Mount back plate and impeller



3. Install casing

Dismantle in the same way but in reverse order

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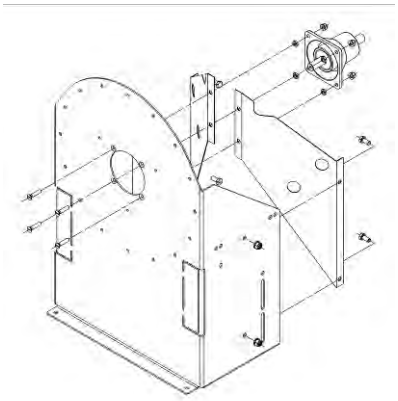
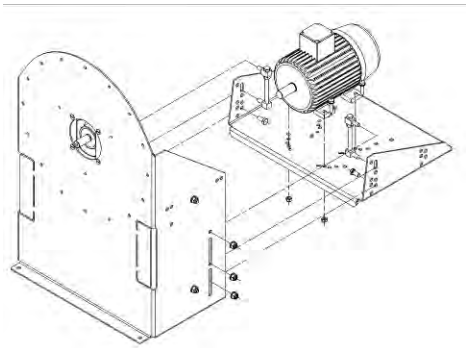
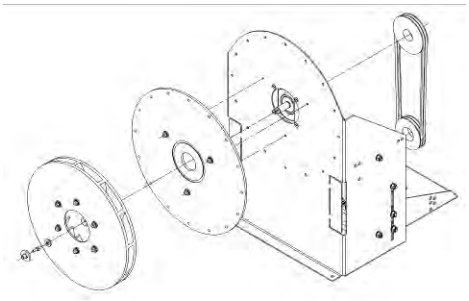
17.2 Assembly instructions for CHVS with V-belt drive



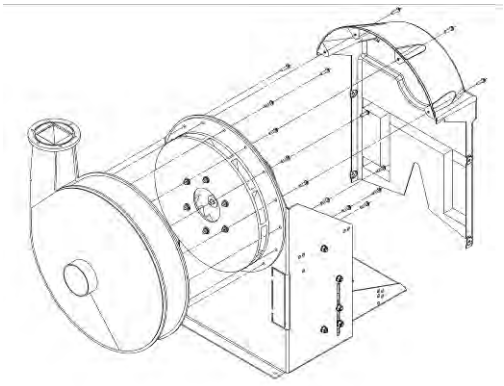
1. Install flanged bearings and reinforcement plates



2. Bolt motor bracket together and attach motor



3. Install V-belt drive. Tension drive belts. Mount back plate and impeller



4. Install casing and V-belt protection

Dismantle in the same way but in reverse order

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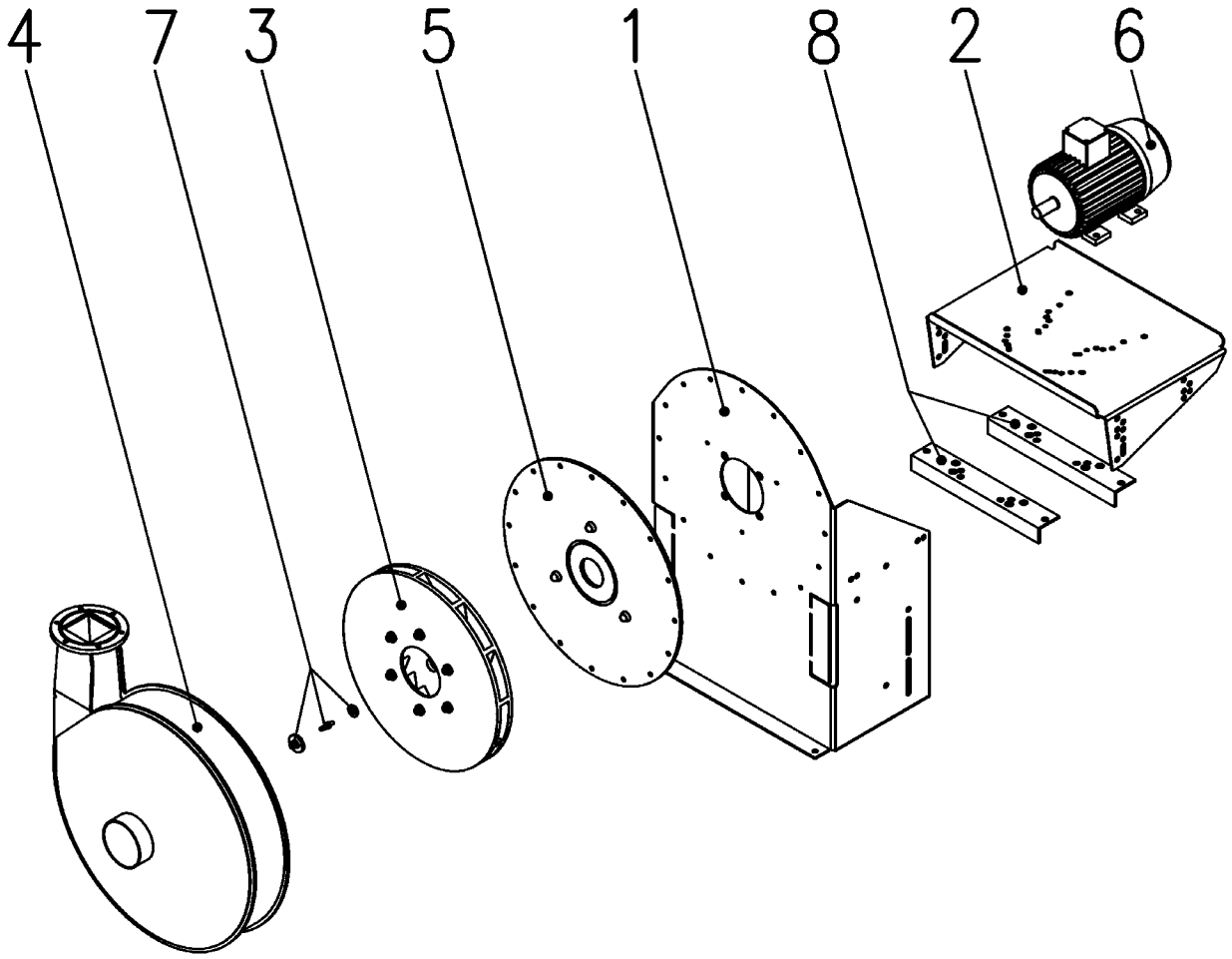
18 Spare parts list

18.1 Spare parts list for CHVS with direct drive



1 Support
2 Motor plate
3 Impeller
4 Casing
5 Back plate
6 Motor
7 Fixing screws and hub cap
8 Reinforcement bracket

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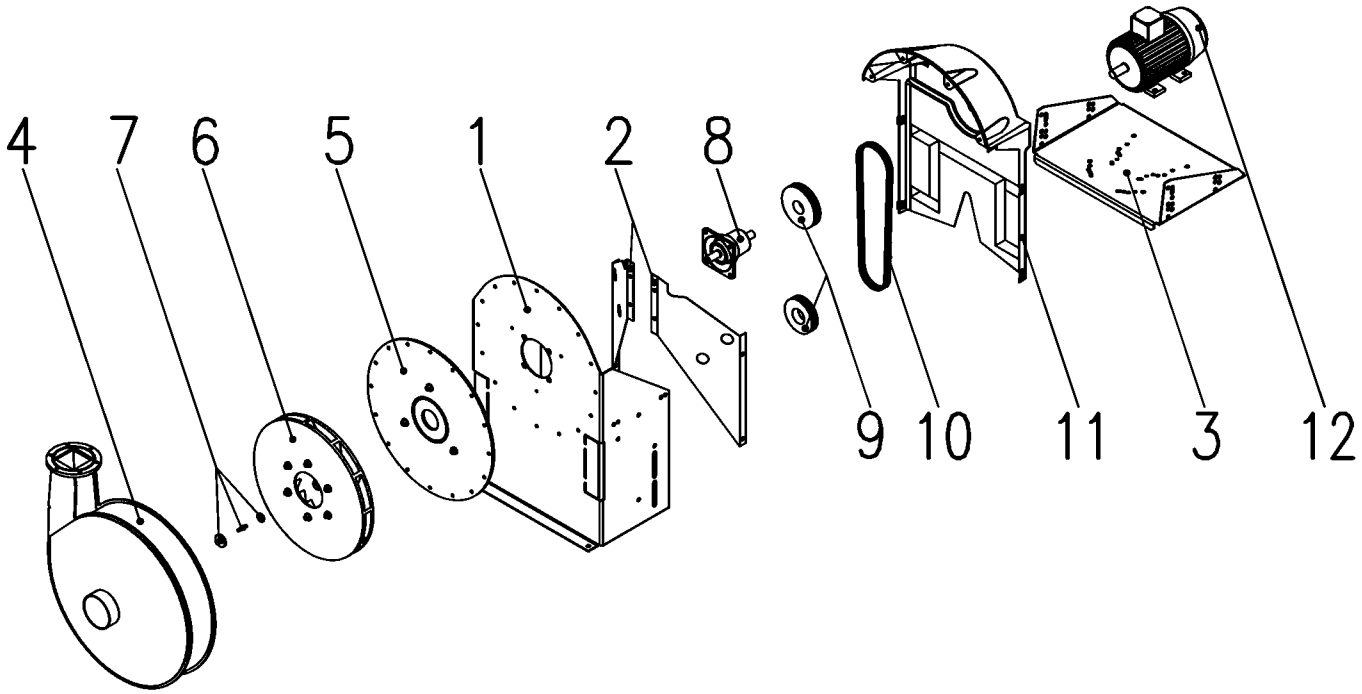
18.2 Spare parts list for CHVS with V-belt drive



1. Support
2. Reinforcement plates
3. Motor plate
4. Casing
5. Back plate
6. Impeller
7. Hub cap
8. Flange bearing unit
9. Pulleys
10. V-belt
11. V-belt protection
12. Motor

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Editione 05/2021, Subject of alteration

COLASIT AG
Plastic construction
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Part 3: Certification

19 Certification

19.1 EU Declaration of Conformity

EU-Konformitätserklärung
Déclaration UE de conformité
EU declaration of conformity

Wir
Nous
We

COLASIT AG
Faulenbachweg 63
CH-3700 Spiez

erklären in alleiniger Verantwortung, dass das Produkt
déclarons de notre seule responsabilité que le produit
bearing sole responsibility, hereby declare that the product

Kunststoff-Industrieventilator
Ventilateur industriel en plastique
Plastic industrial fan
CHVS 63-250

auf das sich diese Erklärung bezieht, mit der/den folgenden Norm(en) oder normativen Dokumenten übereinstimmt:
auquel se rapporte la présente déclaration est conforme aux normes ou aux documents normatifs suivants:
referred to by this declaration is in conformity with the following standards or normative documents:

Bestimmungen der Richtlinie Désignation de la directive Provisions of the directive	**Titel und/oder Nummer sowie Ausgabedatum der Norm(en):** Titre et/ou numéro ainsi que date d'émission de la/des norme(s): Title and/or number and date of issue of the standard(s):
2006/42/EG: Maschinensicherheit 2006/42/CE: Sûreté des machines 2006/42/EC: Machinery safety	**EN ISO 12100: 2010** **EN ISO 13857: 2019** **EN 60204-1: 2018**
2014/30/EU: Elektromagnetische Verträglichkeit 2014/30/UE: Compatibilité électromagnétique 2014/30/EU: Electromagnetic compatibility	**EN IEC 61000-6-2: 2016**
Name und Adresse des Dokumentationsverantwortlichen: Nom et addresse de la personne responsable de la documentation: Name and address of the person authorised to compile the relevant technical documentation:	**Andreas Roth** **COLASIT AG** **Faulenbachweg 63** **CH-3700 Spiez**
Bei Verwendung im Ex-Bereich Pour utilisation dans zone Ex For use in Ex zones	
2014/34/EU: Geräte und Schutzsysteme zur bestimmungsgemässen Verwendung in explosionsgefährdeten Bereichen 2014/34/UE: Appareils et système de protection destinés à une utilisation correcte en atmosphère explosibles 2014/34/EU: Equipment and protective systems intended for use in potentially explosive atmospheres	**EN 1127-1: 2019** **EN 80079-36: 2016** **EN 80079-37: 2016** **EN 14986: 2017**
Ex-Kennzeichnung: Marquage Ex: Ex Marking:	**II 3/- G Ex h IIB+H_2 T3 T4 Gc/-** **II 3/3 G Ex h IIB+H_2 T3 oder/ou/or T4 Gc** **II 2/3 G Ex h IIB+H_2 T3 T4 Gb/Gc** **II 2/2 G Ex h IIB+H_2 T3 T4 Gb** T3/T4 gem. Typenschild T3/T4 selon la plaque signalétique T3/T4 acc. to the rating plate

Spiez, 31.05.2021

.....
U.Moser (Geschäftsführer/directeur/chief executive officer)

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19.2 ATEX Declaration of Conformity

ATEX Declaration of Conformity

Equipment, components and protection systems for use for their intended purpose in explosion protected zones – **Directive RL 2014/34/EU (ATEX)**

Document number:	**TD-000 807**
Product designation:	High pressure radial fan CHVS 63-250 ATEX
Manufacturer:	COLASIT AG Faulenbachweg 63 3700 Spiez
Product description:	Plastic industrial fan for the conveyance of chemically aggressive gases, vapour or correspondingly contaminated air.

The conformity assessment process was conducted in compliance with Directive 2014/34/EU (ATEX). The results are recorded in the confidential **Test Report TD-610-22-3**. All related documents are kept at the centres named below:

notified body 1258
Eurofins Electric & Electronic Product Testing AG
Luppmenstrasse 3
CH – 8320 Fehraltdorf

COLASIT hereby certifies compliance with the basic health and safety requirements for the design and manufacture of equipment and protection systems for use for their intended purpose in explosive atmospheres in compliance with Annex II of the Directive.

The following harmonised standards were applied:

EN 1127-1: Explosive atmospheres – Explosion protection, Part 1, 2019
EN ISO 80079-36: Non-electrical equipment for potentially explosive atmospheres, Part 36, 2016
EN ISO 80079-37: Non-electrical equipment for potentially explosive atmospheres, Part 37, 2016
EN 14986: Design of fans working in potentially explosive atmospheres, 2017

The marking on the appliance must comprise the following information:

- Ⓔx II 3/-G Ex h IIB+H_2 T3 or T4 Gc/- (conveyed medium Zone 2, site of installation no Zone)
- Ⓔx II 3/3G Ex h IIB+H_2 T3 or T4 Gc (conveyed medium Zone 2, site of installation Zone 2)
- Ⓔx II 2/3G Ex h IIB+H_2 T3 or T4 Gb/Gc (conveyed medium Zone 1, site of installation Zone 2)
- Ⓔx II 2/2G Ex h IIB+H_2 T3 or T4 Gb (conveyed medium Zone 1, site of installation Zone 1)

The associated operating instructions contain important safety instructions and regulations for putting the named equipment into operation in compliance with Directive 2014/34/EU (ATEX).

Changes to the named equipment are prohibited except with the manufacturer's express approval in writing.

If the named equipment is built into a higher level machine, the new risks ensuing from the integration must be assessed by the manufacturer of the new machine.

Spiez, 31.05.2021

Andreas Roth
Authorised representative for documentation

Urs Moser
On behalf of the executive management

TD-000 680-E
Editione 05/2021, Subject of alteration

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Enclosure

Declaration of Conformity No. TD-000 807

Description of appliance or protective system:

The radial fans CHVS 63-250 ATEX (rated widths: 63/90/125/160/200/225)
with direct drive and V-belt drive extract room air or process exhaust air. They are directly or indirectly driven by electric motors via V-belts.

Special conditions: If the fans are operated within explosive atmospheres in Zone 1 or 2, they may only be driven by motors for which an appropriate approval (EC type examination certificate) has already been issued.

Temperature Class T4: If the site of installation is Zone 1/2, an explosion proof motor with temperature class T4 must be fitted. If an explosion proof motor with temperature class T3 is used, temperature class 3 shall apply to the entire fan.

Ambient temperature: T -20 - 40°C
Maximum temperature of intake medium: 60°C

The minimum flow velocity through the fan must be minimum 5m/s.

On versions with V-belt drive, only V-belts may be used if they conform with the requirements of EN 80079-37 Chap. 5.8.2 and possess an appropriate factory certificate in compliance with EN 10204-2.1.
All service and repair work must be carried out by trained service personnel.

Additional information: The radial fans of Equipment Category 3 may only be used to extract gases where the frequency of occurrence of combustible or explosive atmospheres is equivalent to Ex-Zone 2.

Basic safety and health requirements:

Fulfilled by standards.

This certificate may only be copied in full without any changes.

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19.3 Other certificates

The following certificates are enclosed with this operating manual:

- Datasheet of the fan

If ATEX version additionally:

- ATEX Certification/Inspection report for fan (see 19.2)
- ATEX Certification/Inspection report for electric motor (if this was supplied by COLASIT)

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20 Form for the correct assembly of ATEX fans

With ATEX-certified fans, this form must be completed by the fitting team.
It serves to verify the proper mounting of the fan and its operating conditions.
The completed form must be kept by the safety officer or operating company.
It forms the basis of a test voucher quality system which is stipulated by standard EN 14986 (Design of fans for use in explosive atmospheres).

The fitting team shall certify that they have properly executed the following work:

- ☐ The fan is mounted on suitable vibration dampers. They are mechanically secured so that the fan cannot slip away or wander.
- ☐ For the transitions from the fan to the duct system, elastic sleeves were used to prevent any vibrations from being transferred to the fan.
- ☐ The intake and pressure ducting are connected close to the fan.
- ☐ With free intake/blow off fans, a protective grating with a mesh width of 10mm is fitted.
- ☐ The clearance between the impeller and the casing is min 5mm and max 20mm.
- ☐ All rotating parts are protected against unintentional contact.
- ☐ The fan is installed so that the motor is supplied with sufficient cooling air (distance to walls, etc.)
- ☐ The motor is properly connected in accordance with the manufacturer's instructions (operating manual). The same applies to the PTC resistor, if fitted.
- ☐ The motor and the fan is connected to a potential equalisation system.

Test run:

- ☐ The minimum air flow through the fan is min 5m/s and max 30m/s.
- ☐ The maximum vibration velocity in operation is not greater than 5.1mm/s measured at the bearings (V-belt drive) or the motor (direct drive).
- ☐ The operating temperature is lower than the maximum permitted operating temperature specified on the rating plate.
- ☐ The motor current draw is lower than the rated current specified on the rating plate.

If one or more of the works listed above cannot be carried out, please contact the supplier of the manufacturer.

Company name: .....

Order number: .....

Fan type:.....

Name of fitter: .....

Place and date:.....

Signature: .....

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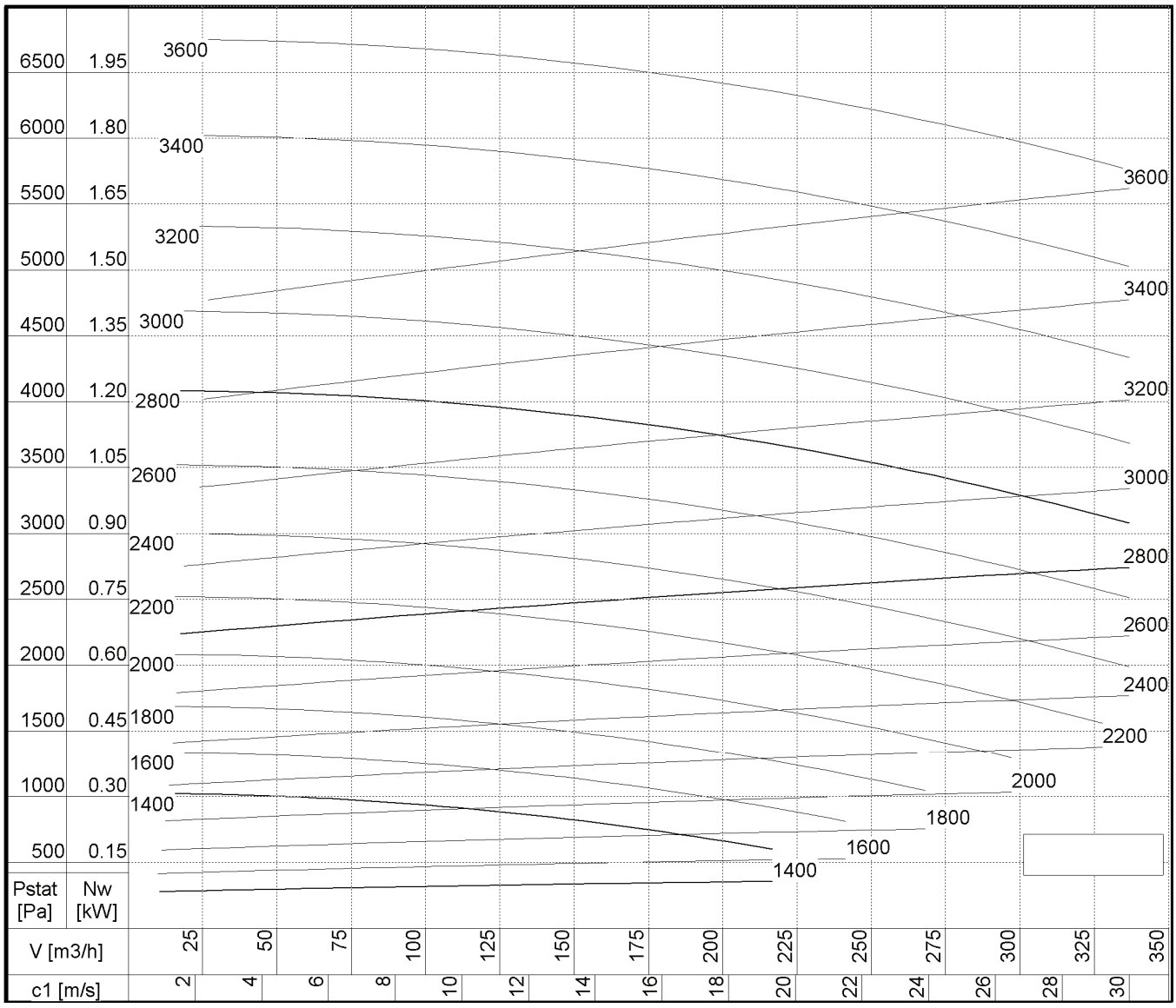
Performance curves CHVS 63



Sound power level Lw_A dB(A)					**Sound pressure $Lp_A = Lw_A - 7$ dB(A)**				**Dist. 1 m**
ISO 5136.2									
n	**Lw_A**				**Hz**				
min –1	**dB(A)**	**63**	**125**	**250**	**500**	**1000**	**2000**	**4000**	**8000**
1600	67	51	54	56	63	63	54	50	39
1800	70	54	57	59	66	66	57	53	42
2000	72	56	59	61	68	68	59	55	44
2200	74	58	61	63	70	70	61	57	46
2400	76	60	63	65	72	72	63	59	48
2600	78	62	65	67	74	74	65	61	50
2800	80	64	67	69	76	76	67	63	52
3000	81	65	68	70	77	77	68	64	53
3200	82	66	69	71	78	78	69	65	54
3400	84	68	71	73	80	80	71	67	56
3600	85	69	72	74	81	81	72	68	57

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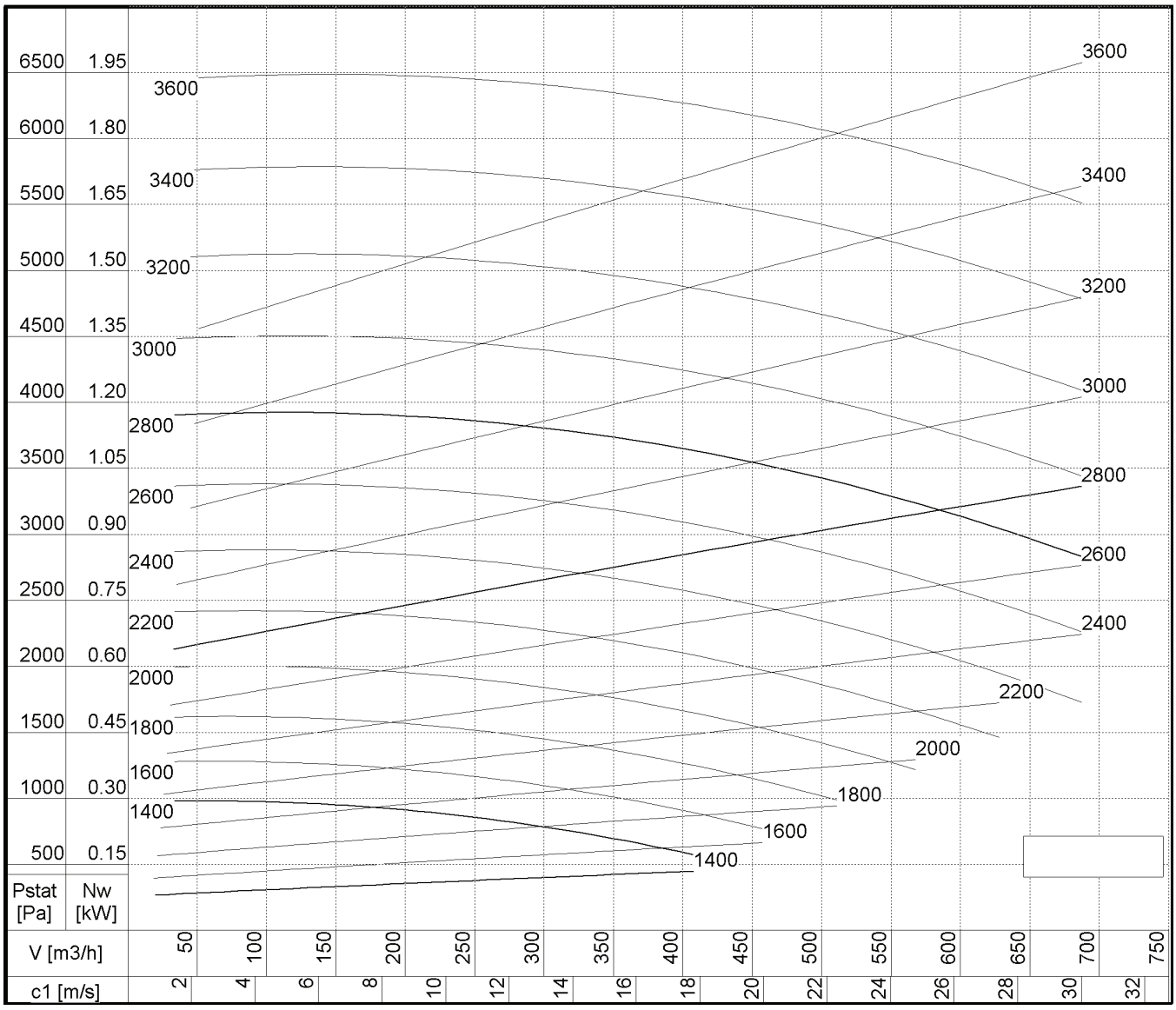
Performance curves CHVS 90



Sound power level Lw_A dB(A)				**Sound pressure $Lp_A = Lw_A - 7$ dB(A)**				**Dist. 1 m**
ISO 5136.2								
n	**Lw_A**			**Hz**				
min –1	**dB(A)**	**63**	**125**	**250**	**500**	**1000**	**2000**	**4000**	**8000**
1600	70	53	58	61	67	65	58	54	45
1800	73	56	61	64	70	68	61	57	48
2000	75	58	63	66	72	70	63	59	50
2200	77	60	65	68	74	72	65	61	52
2400	79	62	67	70	76	74	67	63	54
2600	81	64	69	72	78	76	69	65	56
2800	83	66	71	74	80	78	71	67	58
3000	84	67	72	75	81	79	72	68	59
3200	85	68	73	76	82	80	73	69	60
3400	87	70	75	78	84	82	75	71	62
3600	88	71	76	79	85	83	76	72	63

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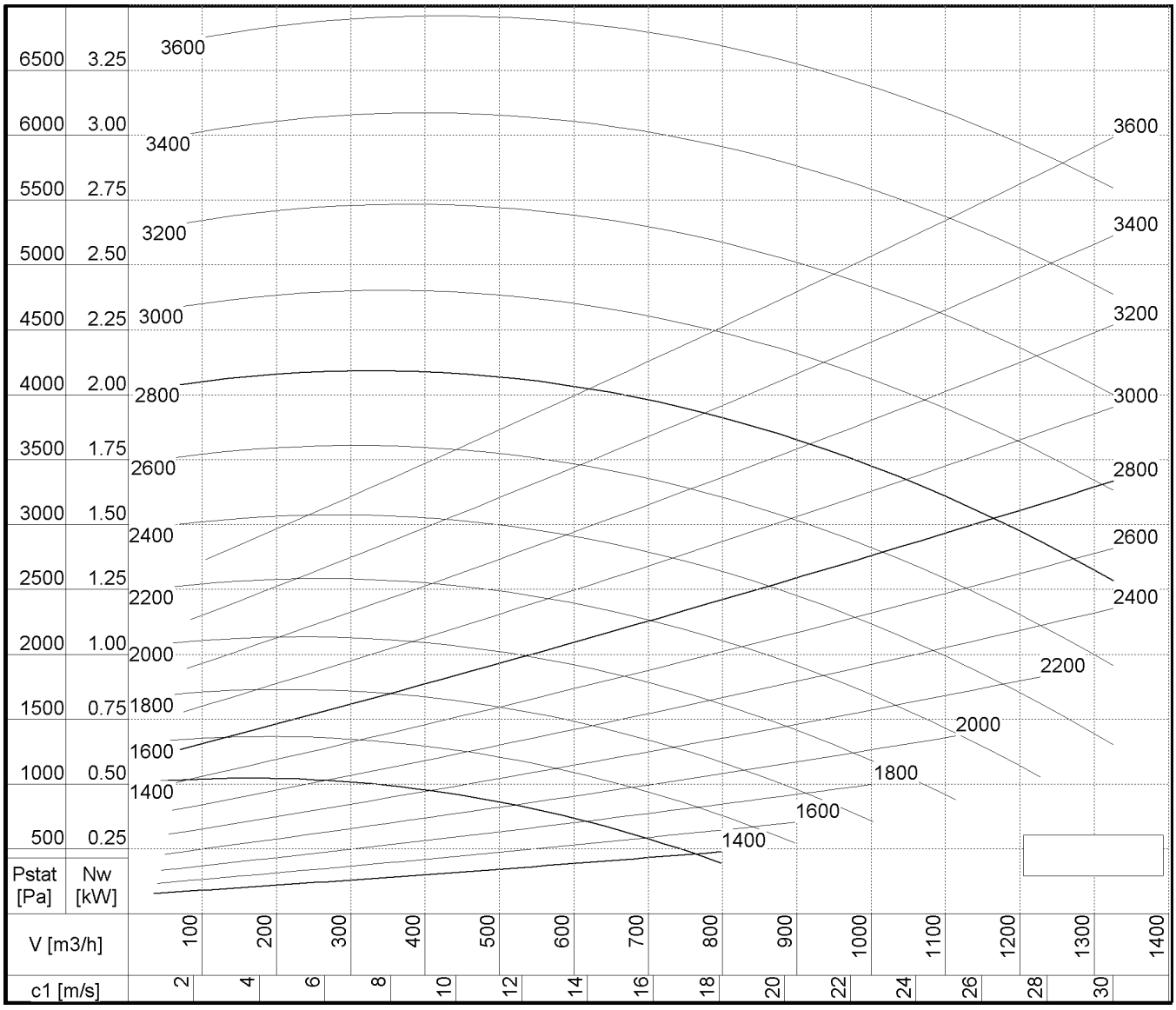
Performance curves CHVS 125



Sound power level Lw_A dB(A)				**Sound pressure $Lp_A = Lw_A - 7$ dB(A)**				**Dist. 1 m**
ISO 5136.2								
n	**Lw_A**			**Hz**				
min –1	**dB(A)**	**63**	**125**	**250**	**500**	**1000**	**2000**	**4000**	**8000**
1600	73	55	61	65	70	66	62	57	49
1800	76	58	64	68	73	69	65	60	52
2000	78	60	66	70	75	71	67	62	54
2200	80	62	68	72	77	73	69	64	56
2400	82	64	70	74	79	75	71	66	58
2600	84	66	72	76	81	77	73	68	60
2800	86	68	74	78	83	79	75	70	62
3000	87	69	75	79	84	80	76	71	63
3200	88	70	76	80	85	81	77	72	64
3400	90	72	78	82	87	83	79	74	66
3600	91	73	79	83	88	84	80	75	67

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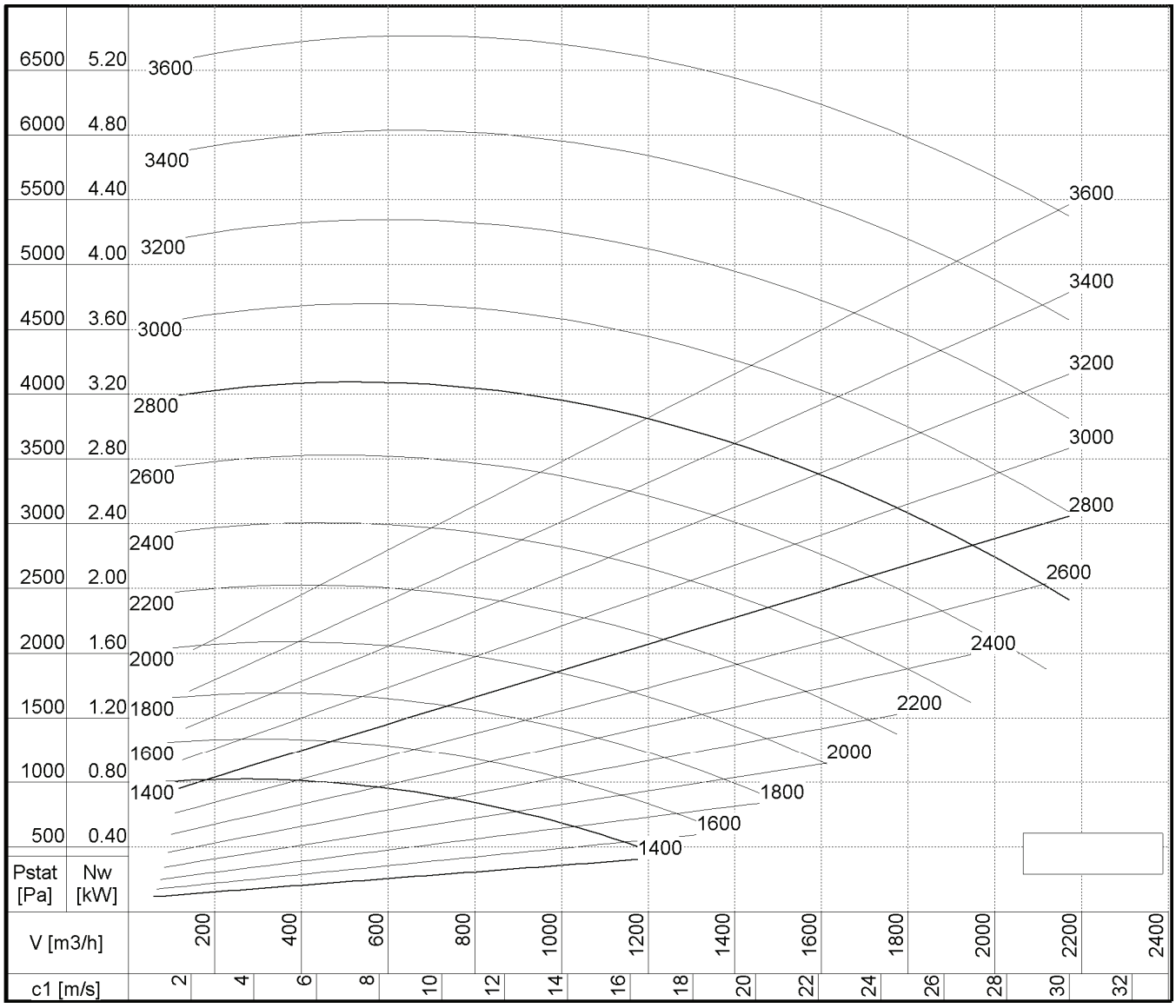
Performance curves CHVS 160



Sound power level Lw_A dB(A)				**Sound pressure $Lp_A = Lw_A - 7$ dB(A)**				**Dist. 1 m**
ISO 5136.2								
n	**Lw_A**			**Hz**				
min –1	**dB(A)**	**63**	**125**	**250**	**500**	**1000**	**2000**	**4000**	**8000**
1600	75	56	62	68	72	67	64	59	52
1800	78	59	65	71	75	70	67	62	55
2000	80	61	67	73	77	72	69	64	57
2200	82	63	69	75	79	74	71	66	59
2400	84	65	71	77	81	76	73	68	61
2600	86	67	73	79	83	78	75	70	63
2800	88	69	75	81	85	80	77	72	65
3000	89	70	76	82	86	81	78	73	66
3200	90	71	77	83	87	82	79	74	67
3400	92	73	79	85	89	84	81	76	69
3600	93	74	80	86	90	85	82	77	70

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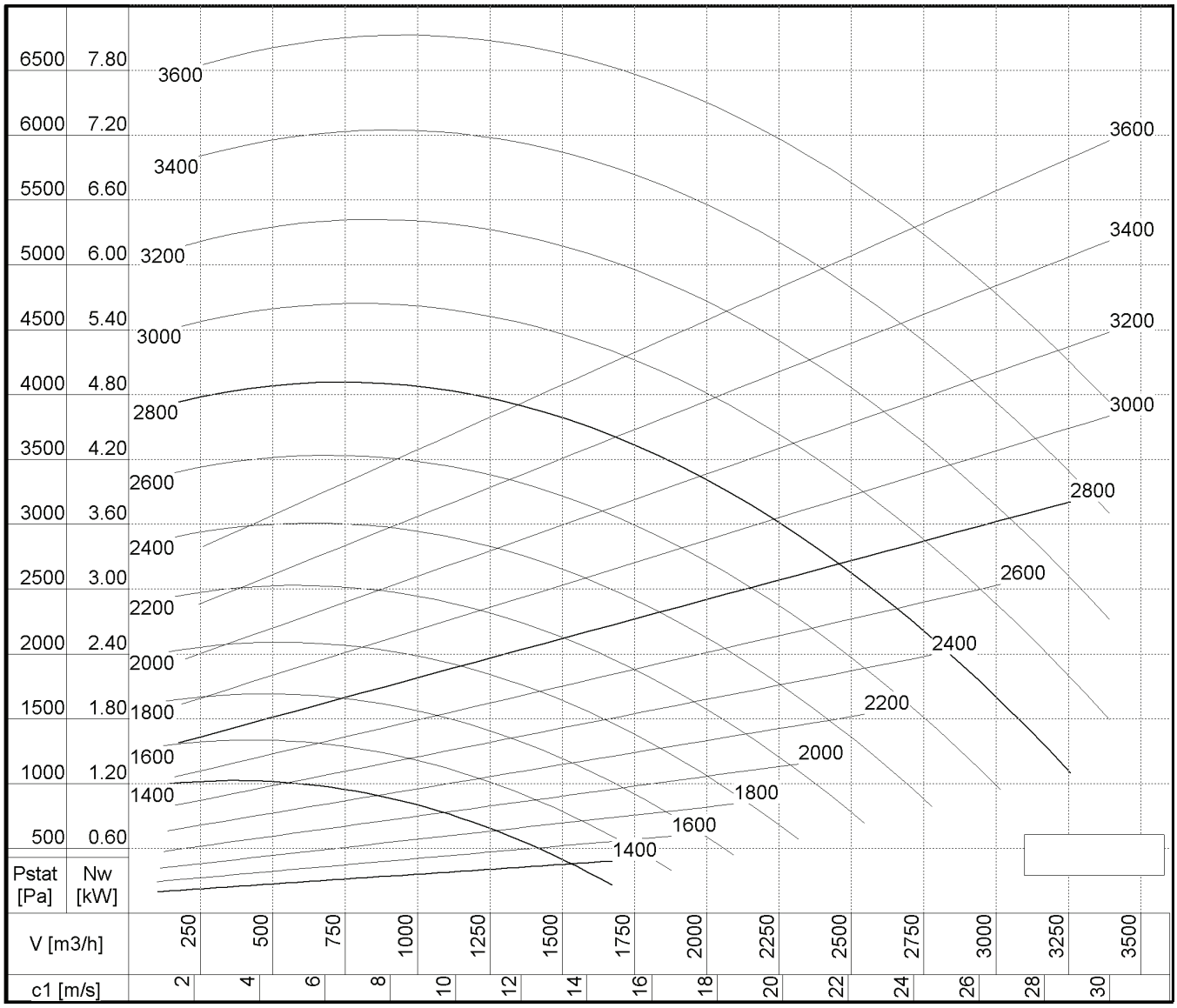
Performance curves CHVS 200



Sound power level Lw_A dB(A) **Sound pressure $Lp_A = Lw_A - 7$ dB(A)** **Dist. 1 m**

ISO 5136.2

n	Lw_A	Hz							
min –1	dB(A)	63	125	250	500	1000	2000	4000	8000
1600	76	57	63	69	73	68	65	60	53
1800	79	60	66	72	76	71	68	63	56
2000	81	62	68	74	78	73	70	65	58
2200	83	64	70	76	80	75	72	67	60
2400	85	66	72	78	82	77	74	69	62
2600	87	68	74	80	84	79	76	71	64
2800	89	70	76	82	86	81	78	73	66
3000	90	71	77	83	87	82	79	74	67
3200	91	72	78	84	88	83	80	75	68
3400	93	74	80	86	90	85	82	77	70
3600	94	75	81	87	91	86	83	78	71

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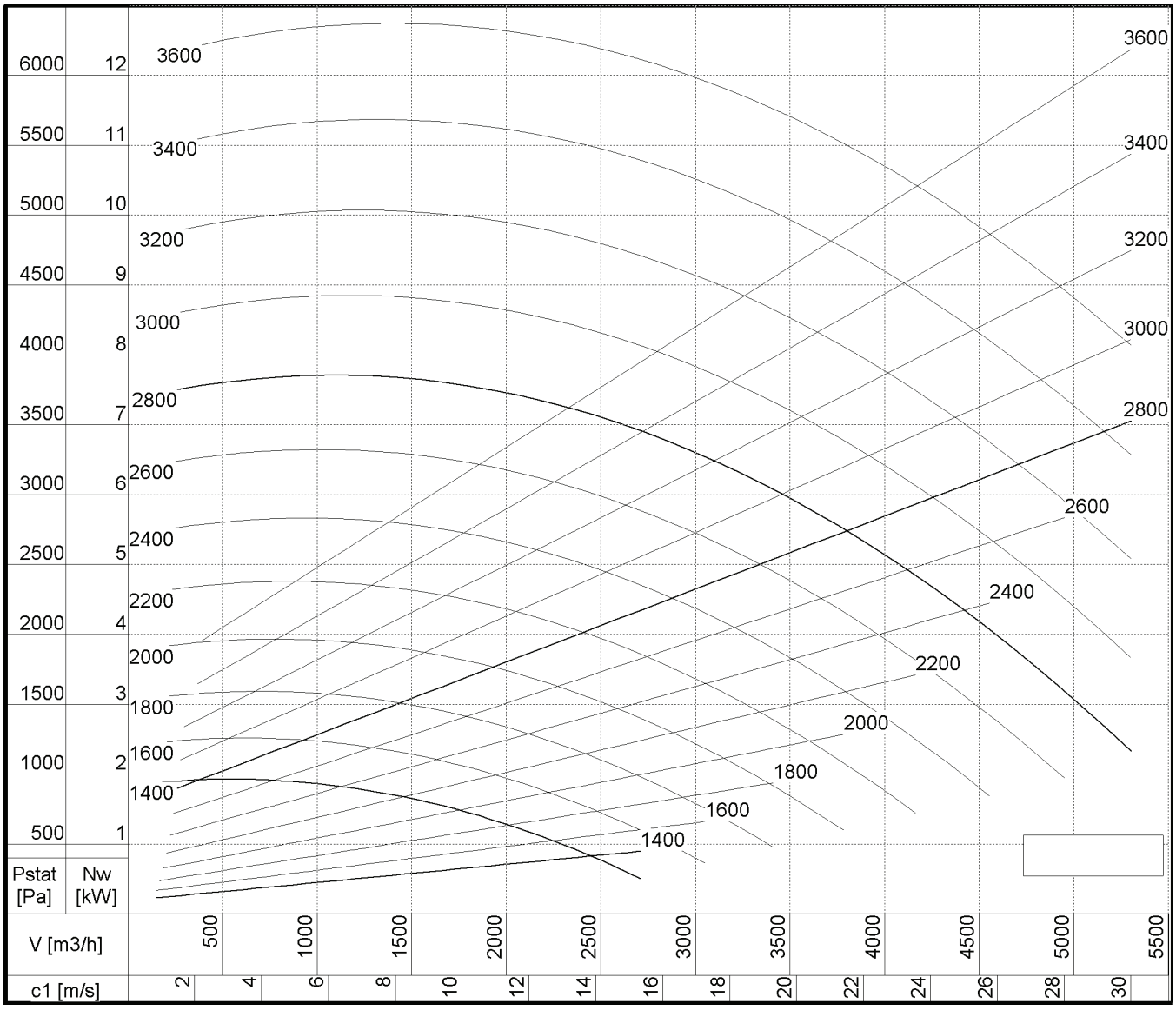
Performance curves CHVS 250



Sound power level Lw_A dB(A)				**Sound pressure $Lp_A = Lw_A - 7$ dB(A)**				**Dist. 1 m**
ISO 5136.2								
n	**Lw_A**			**Hz**				
min –1	**dB(A)**	**63**	**125**	**250**	**500**	**1000**	**2000**	**4000**	**8000**
1600	79	59	66	72	76	70	68	63	56
1800	82	62	69	75	79	73	71	66	59
2000	84	64	71	77	81	75	73	68	61
2200	86	66	73	79	83	77	75	70	63
2400	88	68	75	81	85	79	77	72	65
2600	90	70	77	83	87	81	79	74	67
2800	92	72	79	85	89	83	81	76	69
3000	93	73	80	86	90	84	82	77	70
3200	94	74	81	87	91	85	83	78	71
3400	96	76	83	89	93	87	85	80	73
3600	97	77	84	90	94	88	86	81	74

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ATEX / Ex protection information sheet

The ATEX product directive 2014/34/EU governs the marketing of products used in hazardous, explosive areas.

The purpose of the directive is to protect people who work in explosive areas.

The term ATEX stands for the French abbreviation 'Atmosphère explosible' and is used as a synonym for the two European Union directives in the field of explosion protection, the ATEX Directive 2014/34/EU and the ATEX Directive 1999/92/EC.

Explosive areas are divided into zones depending on the frequency and duration of the occurrence of hazardous explosive atmospheres. The zones are defined as shown in the table below.

Classification of explosive areas	
	Zone 0 is an area in which explosive atmospheres as a mixture of air and flammable gases, vapours or mists are present either constantly, over long periods or frequently. The term 'frequently' is used in the send of 'most of the time', in other words, Zone 0 classification is assigned to explosive areas when an explosive atmosphere is present for more than 50% of system operating time. Generally, this is only the case with the interior of pipes and tanks.
Gases	**Zone 1** is an area in which explosive atmospheres as a result of a mixture of air and flammable gases may occur occasionally during normal operative conditions, vapours or mist. If the existence of an explosive atmosphere exceeds a time period of approx. 30 minutes per years, or if this occurs occasionally, i.e. daily, but remains less than 50% of system operating time, the area is generally considered as zone 1.
	Zone 2 is an area in which explosive atmospheres as a result of a mixture of air and flammable gases, vapours or mist do not normally occur or occur for a short time only during normal operating conditions. Experts generally agree that the term 'short time' corresponds to a period of approx. 30 minutes per year. It is also established that explosive atmospheres during normal operating conditions in such areas are not normally to be expected. If an explosive atmosphere occurs for a short time once per year, the area should be classified as zone 2.

COLASIT offers plastic ventilation units for ex zones 1 and 2.

All atex fans meet the standard temperature class T3 (200-300ºC). A version with temperature class T4 (135-200ºC) is also available as an option.

COLASIT fans are suitable for the extraction of explosive gases from group II G (explosion groups IIA, IIB and hydrogen), in accordance with EN14986.

Issued 4/2016 / Subject to change

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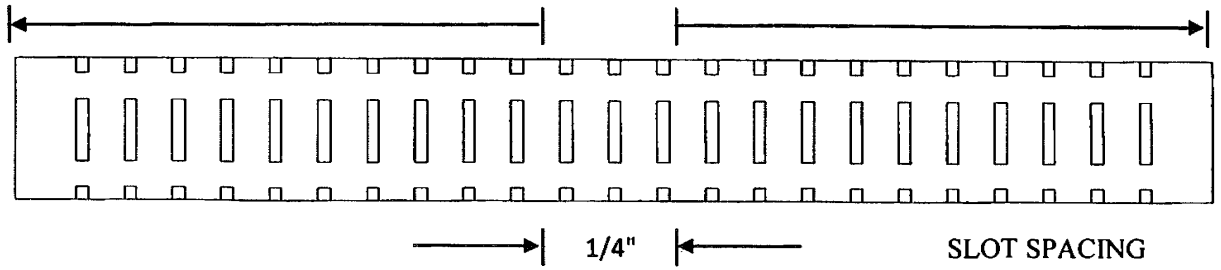


PIPE SPECIFICATIONS:

1"X10'X.020 SCH40 PVC PRESSURE PIPE MEETS OR EXCEEDS THE SPECIFICATIONS OF ASTM D 1785 ALSO CONFORMS TO ASM F480
1/4" SPACING BETWEEN EA SLOT 2 ROWS TOP AND BOTTOM PLAIN X PLAIN ENDS
4"X10' OR 20' SCH40 PVC PRESSURE PIPE MEETS OR EXCEEDS THE SPECIFICATIONS OF ASTM D 1785 ALSO CONFORMS TO ASTM F40 PLAIN ENDS
1/4" SPACING BETWEEN EA SLOT .020 . CAN DO 3ROWS OF SLOTS

Pattern_A

APPROVED BY: _____

COMPANY: _____

DATE: _____

ATLANTIC SCREEN & MFG., INC.
142 BROADKILL ROAD
MILTON, DE 19968
TEL: 302-684-3197 FAX: 302-684-0643
www.atlantic-screen.com
Email: atlantic@ce.net

CHARLOTTE
PIPE AND FOUNDRY COMPANY

SUBMITTAL FOR CHARLOTTE PIPE®
PVC SCHEDULE 40 PRESSURE PIPE AND FITTING SYSTEM

Date: _____

Job Name: _____ Location: _____

Engineer: _____ Contractor: _____

Scope:
This specification covers PVC Schedule 40 pipe and fittings for pressure applications. This system is intended for pressure applications where the operating temperature will not exceed 140° F.

Specification:
Pipe and fittings shall be manufactured from virgin rigid PVC (polyvinyl chloride) vinyl compounds with a cell class of 12454 as identified in ASTM D 1784.

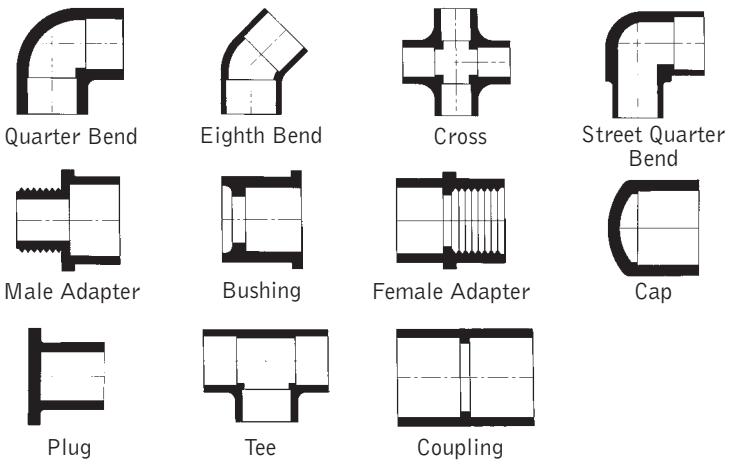
PVC Schedule 40 pipe shall be Iron Pipe Size (IPS) conforming to ASTM D 1785. Injection molded PVC Schedule 40 fittings shall conform to ASTM D 2466. Pipe and fittings shall be manufactured as a system and be the product of one manufacturer. All pipe and fittings shall be manufactured in the United States. Pipe and fittings shall conform to NSF International Standard 61 and the health-effects portion of NSF Standard 14.

Installation:
Installation shall comply with the latest installation instructions published by Charlotte Pipe and Foundry and shall conform to all applicable plumbing, fire, and building code requirements. Buried pipe shall be installed in accordance with ASTM F 1668. Solvent cement joints shall be made in a two-step process with primer conforming to ASTM F 656 and solvent cement conforming to ASTM D 2564. The system shall be protected from chemical agents, fire-stopping materials, thread sealant, plasticized-vinyl products or other aggressive chemical agents not compatible with PVC compounds. The system shall be hydrostatically tested after installation. **WARNING!** Never test with or transport/store compressed air or gas in PVC pipe or fittings. Doing so can result in explosive failures and cause severe injury or death.

Referenced Standards:

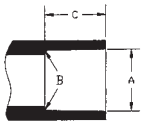
ASTM D 1784: Rigid Vinyl Compounds
ASTM D 1785: PVC Plastic Pipe, Schedule 40
ASTM D 2466: PVC Plastic Fittings, Schedule 40
ASTM D 2564: Solvent Cements for PVC Pipe and Fittings
ASTM F 1668: Procedures for Buried Plastic Pipe
NSF Standard 14: Plastic Piping Components & Related Materials
NSF Standard 61: Drinking Water System Components – Health Effects

MADE IN U.S.A.



Not all fitting patterns shown

Schedule 40
Tapered Socket Dimensions



PVC SCHEDULE 40 - ASTM D 2466

Nominal Size	Schedule 80 and Schedule 40 Socket Diameter Entrance A	Bottom B	Tolerance	Schedule 80 Socket Length C (Minimum)	Schedule 40 Socket Length C (Minimum)
½	0.848	0.836	±0.004	0.875	0.688
¾	1.058	1.046	±0.004	1.000	0.719
1	1.325	1.310	±0.005	1.125	0.875
1¼	1.670	1.655	±0.005	1.250	0.938
1½	1.912	1.894	±0.006	1.375	1.094
2	2.387	2.369	±0.006	1.500	1.156
2½	2.889	2.868	±0.007	1.750	1.750
3	3.516	3.492	±0.008	1.875	1.875
4	4.518	4.491	±0.009	2.250	2.000
6	6.647	6.614	±0.011	3.000	3.000
8	8.655	8.610	±0.015	4.000	4.000
10	10.780	10.735	±0.015	5.000	5.000
12	12.780	12.735	±0.015	6.000	6.000

PIPE REFERENCE GUIDE

Product	Sizes Available ½	¾	1	1¼	1½	2	2½	3	4	5	6	8	10	12	14	16
PVC Schedule 40	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•

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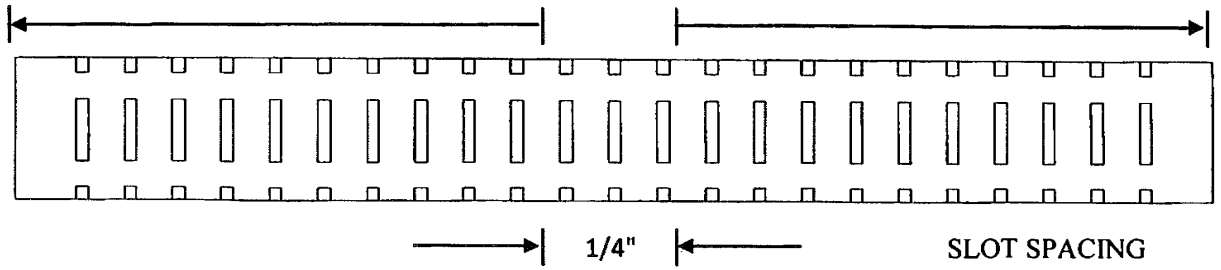
APPENDIX L

SVE SYSTEM COMPONENT MANUFACTURER' SPECIFICATIONS AND MANUALS



PIPE SPECIFICATIONS:

1"X10'X.020 SCH40 PVC PRESSURE PIPE MEETS OR EXCEEDS THE SPECIFICATIONS OF ASTM D 1785 ALSO CONFORMS TO ASM F480
1/4" SPACING BETWEEN EA SLOT 2 ROWS TOP AND BOTTOM PLAIN X PLAIN ENDS
4"X10' OR 20' SCH40 PVC PRESSURE PIPE MEETS OR EXCEEDS THE SPECIFICATIONS OF ASTM D 1785 ALSO CONFORMS TO ASTM F40 PLAIN ENDS
1/4" SPACING BETWEEN EA SLOT .020 . CAN DO 3ROWS OF SLOTS

Pattern_A

APPROVED BY: _____

COMPANY: _____

DATE: _____

ATLANTIC SCREEN & MFG., INC.
142 BROADKILL ROAD
MILTON, DE 19968
TEL: 302-684-3197 FAX: 302-684-0643
www.atlantic-screen.com
Email: atlantic@ce.net

CHARLOTTE
PIPE AND FOUNDRY COMPANY

SUBMITTAL FOR CHARLOTTE PIPE®
PVC SCHEDULE 40 PRESSURE PIPE AND FITTING SYSTEM

Date: _____

Job Name: _____ Location: _____

Engineer: _____ Contractor: _____

Scope:
This specification covers PVC Schedule 40 pipe and fittings for pressure applications. This system is intended for pressure applications where the operating temperature will not exceed 140° F.

Specification:
Pipe and fittings shall be manufactured from virgin rigid PVC (polyvinyl chloride) vinyl compounds with a cell class of 12454 as identified in ASTM D 1784.

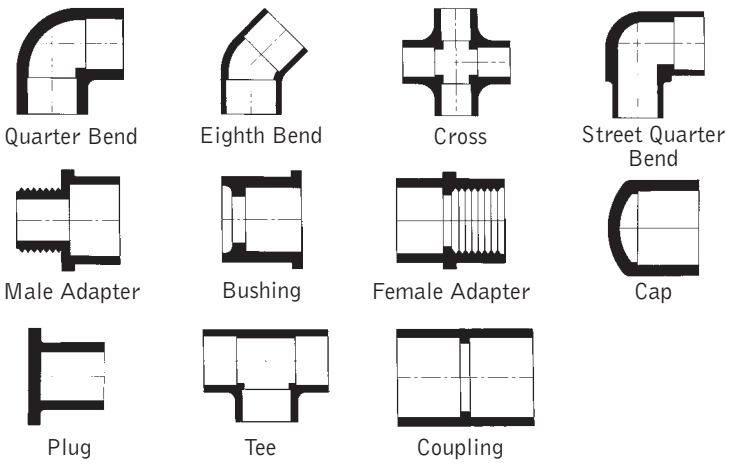
PVC Schedule 40 pipe shall be Iron Pipe Size (IPS) conforming to ASTM D 1785. Injection molded PVC Schedule 40 fittings shall conform to ASTM D 2466. Pipe and fittings shall be manufactured as a system and be the product of one manufacturer. All pipe and fittings shall be manufactured in the United States. Pipe and fittings shall conform to NSF International Standard 61 and the health-effects portion of NSF Standard 14.

Installation:
Installation shall comply with the latest installation instructions published by Charlotte Pipe and Foundry and shall conform to all applicable plumbing, fire, and building code requirements. Buried pipe shall be installed in accordance with ASTM F 1668. Solvent cement joints shall be made in a two-step process with primer conforming to ASTM F 656 and solvent cement conforming to ASTM D 2564. The system shall be protected from chemical agents, fire-stopping materials, thread sealant, plasticized-vinyl products or other aggressive chemical agents not compatible with PVC compounds. The system shall be hydrostatically tested after installation. **WARNING!** Never test with or transport/store compressed air or gas in PVC pipe or fittings. Doing so can result in explosive failures and cause severe injury or death.

Referenced Standards:

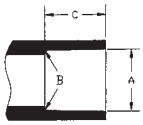
ASTM D 1784: Rigid Vinyl Compounds
ASTM D 1785: PVC Plastic Pipe, Schedule 40
ASTM D 2466: PVC Plastic Fittings, Schedule 40
ASTM D 2564: Solvent Cements for PVC Pipe and Fittings
ASTM F 1668: Procedures for Buried Plastic Pipe
NSF Standard 14: Plastic Piping Components & Related Materials
NSF Standard 61: Drinking Water System Components – Health Effects

MADE IN U.S.A.



Not all fitting patterns shown

Schedule 40
Tapered Socket Dimensions



PVC SCHEDULE 40 - ASTM D 2466

Nominal Size	Schedule 80 and Schedule 40 Socket Diameter Entrance A	Bottom B	Tolerance	Schedule 80 Socket Length C (Minimum)	Schedule 40 Socket Length C (Minimum)
½	0.848	0.836	±0.004	0.875	0.688
¾	1.058	1.046	±0.004	1.000	0.719
1	1.325	1.310	±0.005	1.125	0.875
1¼	1.670	1.655	±0.005	1.250	0.938
1½	1.912	1.894	±0.006	1.375	1.094
2	2.387	2.369	±0.006	1.500	1.156
2½	2.889	2.868	±0.007	1.750	1.750
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6	6.647	6.614	±0.011	3.000	3.000
8	8.655	8.610	±0.015	4.000	4.000
10	10.780	10.735	±0.015	5.000	5.000
12	12.780	12.735	±0.015	6.000	6.000

PIPE REFERENCE GUIDE

Product	Sizes Available ½	¾	1	1¼	1½	2	2½	3	4	5	6	8	10	12	14	16
PVC Schedule 40	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•

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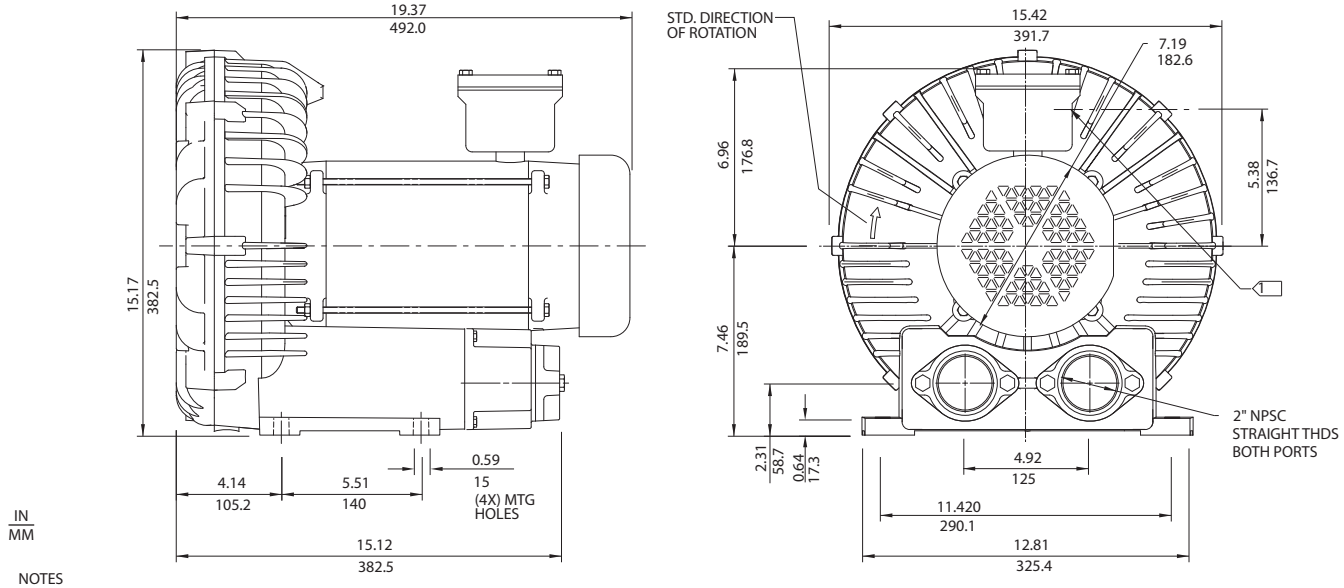
EN 656 & CP 656

ROTRON®

3.0 HP Sealed Regenerative w/Explosion-Proof Motor



NOTES
1. TERMINAL BOX CONNECTOR HOLE 3/4" NPT.
2. DRAWING NOT TO SCALE, CONTACT FACTORY FOR SCALE CAD DRAWING.
3. CONTACT FACTORY FOR BLOWER MODEL LENGTHS NOT SHOWN.

		Part/Model Number			
		EN656M5XL	EN656M72XL	EN656M86XL	CP656FU72XLR
Specification	Units	080060	080059	080058	080142
Motor Enclosure - Shaft Mtl.	-	Explosion-proof-CS	Explosion-proof-CS	Explosion-proof-CS	CHEM XP-SS
Horsepower	-	3	3	3	3
Phase - Frequency	-	Single-60 hz	Three-60 hz	Three-60 hz	Three-60 hz
Voltage	AC	208-230	208-230/460	575	208-230/460
Motor Nameplate Amps	Amps (A)	15.5-14.5	7.4/3.7	3.0	7.4/3.7
Max. Blower Amps	Amps (A)	17	10/5	4.1	10/5
Locked Rotor Amps	Amps (A)	95-86	54/27	21.6	54/27
Service Factor	-	1	0/0	0	0/0
Starter Size	-	1.0	1.0	1.0	1.0
Thermal Protection	-	Class B - Pilot Duty	Class B - Pilot Duty	Class B - Pilot Duty	Class B - Pilot Duty
XP Motor Class - Group	-	I-D, II-F&G	I-D, II-F&G	I-D, II-F&G	I-D, II-F&G
Shipping Weight	Lbs	142	117	117	117
	Kg	64.4	53.1	53.1	53.1

Voltage - ROTRON motors are designed to handle a broad range of world voltages and power supply variations. Our dual voltage 3 phase motors are factory tested and certified to operate on both: **208-230/415-460 VAC-3 ph-60 Hz** and **190-208/380-415 VAC-3 ph-50 Hz**. Our dual voltage 1 phase motors are factory tested and certified to operate on both: **104-115/208-230 VAC-1 ph-60 Hz** and **100-110/200-220 VAC-1 ph-50 Hz**. All voltages above can handle a ±10% voltage fluctuation. Special wound motors can be ordered for voltages outside our certified range.

Operating Temperatures - Maximum operating temperature: Motor winding temperature (winding rise plus ambient) should not exceed 140°C for Class F rated motors or 120°C for Class B rated motors. Blower outlet air temperature should not exceed 140°C (air temperature rise plus inlet temperature). Performance curve maximum pressure and suction points are based on a 40°C inlet and ambient temperature. Consult factory for inlet or ambient temperatures above 40°C.

Maximum Blower Amps - Corresponds to the performance point at which the motor or blower temperature rise with a 40°C inlet and/or ambient temperature reaches the maximum operating temperature.

XP Motor Class - Group - See Explosive Atmosphere Classification Chart in Section I

AMETEK DYNAMIC FLUID SOLUTIONS
75 North Street, Saugerties, NY 12477
USA: +1 215-256-6601 - Europe: +49 7703 930909 - Asia: +86 21 5763 1258
Customer Service Fax: +1 215.256.1338
www.ametekdfs.com

AMETEK®
PRECISION MOTION CONTROL
DYNAMIC FLUID SOLUTIONS

EN 656 & CP 656

ROTRON®

3.0 HP Sealed Regenerative w/Explosion-Proof Motor

FEATURES

- Manufactured in the USA - ISO 9001 and NAFTA compliant
- Maximum flow: 212 SCFM
- Maximum pressure: 75 IWG
- Maximum vacuum: 73 IWG
- Standard motor: 3.0 HP, explosion-proof
- Cast aluminum blower housing, impeller , cover & manifold; cast iron flanges (threaded); teflon® lip seal
- UL & CSA approved motor with permanently sealed ball bearings for explosive gas atmospheres Class I Group D minimum
- Sealed blower assembly
- Quiet operation within OSHA standards

MOTOR OPTIONS

- International voltage & frequency (Hz)
- Chemical duty, high efficiency, inverter duty or industry-specific designs
- Various horsepowers for application-specific needs

BLOWER OPTIONS

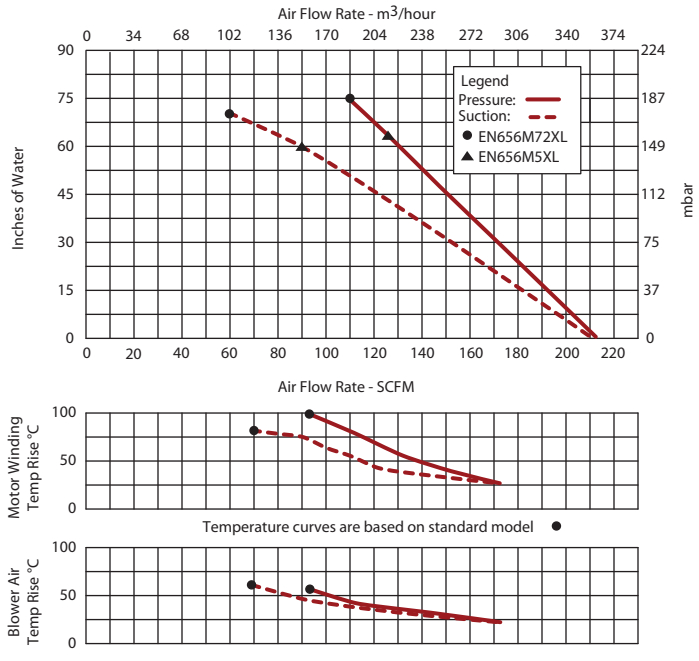
- Corrosion resistant surface treatments & sealing options
- Remote drive (motorless) models
- Slip-on or face flanges for application-specific needs

ACCESSORIES

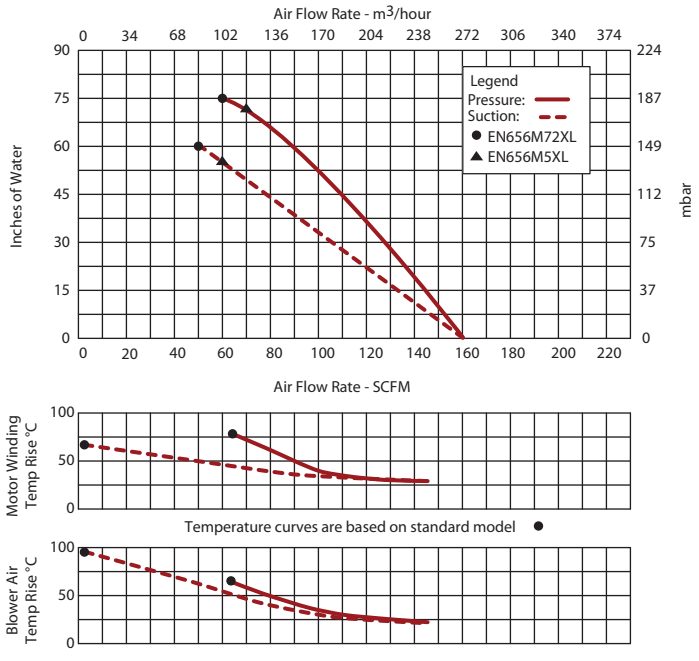
- Flowmeters reading in SCFM
- Filters & moisture separators
- Pressure gauges, vacuum gauges, & relief valves
- Switches - air flow, pressure, vacuum, or temperature
- External mufflers for additional silencing
- Air knives (used on blow-off applications)
- Variable frequency drive package

Blower Performance at Standard Conditions

60 Hz



50 Hz



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www.ametekdfs.com

AMETEK®
PRECISION MOTION CONTROL
DYNAMIC FLUID SOLUTIONS

APPENDIX M

REQUEST TO IMPORT/REUSE FILL OR SOIL FORM

NEW YORK STATE
DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Request to Import/Reuse Fill or Soil

This form is based on the information required by DER-10, Section 5.4(e). Use of this form is not a substitute for reading the applicable Technical Guidance document.

SECTION 1 – SITE BACKGROUND

The allowable site use is: Choose an item

Have Ecological Resources been identified? Choose an item

Is this soil originating from the site? Choose an item

How many cubic yards of soil will be imported/reused? Choose an item

If greater than 1000 cubic yards will be imported, enter volume to be imported:

SECTION 2 – MATERIAL OTHER THAN SOIL

Is the material to be imported gravel, rock or stone? Choose an item

Does it contain less than 10%, by weight, material that would pass a size 80 sieve? Choose an item

Is this virgin material from a permitted mine or quarry? Choose an item

Is this material recycled concrete or brick from a DEC registered processing facility? Choose an item

SECTION 3 - SAMPLING

Provide a brief description of the number and type of samples collected in the space below:

Example Text: 5 discrete samples were collected and analyzed for VOCs. 2 composite samples were collected and analyzed for SVOCs, Inorganics & PCBs/Pesticides.

If the material meets requirements of DER-10 section 5.4(e)5 (other material), no chemical testing needed.

SECTION 3 CONT'D - SAMPLING

Provide a brief written summary of the sampling results or attach evaluation tables (compare to DER-10, Appendix 5):

Example Text: Arsenic was detected up to 17 ppm in 1 (of 5) samples; the allowable level is 16 ppm.

If Ecological Resources have been identified use the "If Ecological Resources are Present" column in Appendix 5.

SECTION 4 – SOURCE OF FILL

Name of person providing fill and relationship to the source:

Location where fill was obtained:

Identification of any state or local approvals as a fill source:

If no approvals are available, provide a brief history of the use of the property that is the fill source:

Provide a list of supporting documentation included with this request:

The information provided on this form is accurate and complete.

_____ _____

Signature Date

_____

Print Name

_____

Firm

Revised August 2014