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Interim Remedial Measures Work Plan

Rye Lake Water Filtration Plant

Westchester County Airport

BCP Site No. C360174

August 2025
File No. 41.0162892.01



PREPARED FOR

WESTCHESTER JOINT WATER WORKS Filtration

1625 Mamaroneck Avenue
Mamaroneck, NY 10543

PREPARED BY

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August 21, 2025
GZA File No. 41.0162892.01

Greta Kowalski, P.G.
Project Manager, Remediation Bureau C
New York State Department of Environmental Conservation
625 Broadway
Albany, NY 12233-7014

Re: BCP Site No.: C360174
Westchester Country Airport
Interim Remedial Measure Work Plan
Westchester Joint Water Works Water Filtration Plant

Dear Ms. Kowalski:

On behalf of Hazen and Sawyer (Hazen) for construction of Westchester Joint Water Works' (WJWW) Rye Lake Water Filtration Plant (WFP), Goldberg-Zoino Associates of New York, PC d/b/a GZA GeoEnvironmental of New York (GZA) is pleased to submit this Interim Remedial Measure (IRM) Work Plan for the construction of the WFP on the above-referenced Brownfield Cleanup Program (BCP) Site. This construction is to be completed on a portion of block and lot 0971.-8 along the western boundary of the Westchester County Airport (Airport). Due to the parcel's inclusion in the existing BCP Site boundary associated with the Airport, the construction area is subject to the requirements of the Brownfield Cleanup Agreement and its governing documents.

This IRM Work Plan was prepared for the conformance with the NYSDEC BCP requirements, and for the concurrence of the New York State Department of Health (NYSDOH). This IRM Work Plan was prepared to allow for the supplemental remedial investigation, remediation, and construction of the WFP on a 13.48-acre portion of the 693-acre Airport BCP Site.

If you have any questions, please contact Mr. Kline at (212) 594-8140, or Stephen.kline@gza.com.

Very truly yours,
GZA GEOENVIRONMENTAL OF NEW YORK

Zachary Landis
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LIST OF ACRONYMS

Acronym	Definition
AOC	Area of Concern
AGV	Air Guidance Values
ASTM	American Society for Testing and Materials
AWQS	Ambient Water Quality Standards
BCA	Brownfield Clean-up Agreement
BGS	Below Ground Surface
BOA	Brownfield Opportunity Area
CAMP	Community Air Monitoring Plan
CCR	Construction Completion Report
CHASP	Construction Health and Safety Plan
COC	Contaminants of Concern
COPC	Chemicals of Potential Concern
CSOP	Contractors Site Operation Plan
CVOCs	Chlorinated Volatile Organic Compounds
DCR	Declaration of Covenants and Restrictions
DER	Department of Environmental Remediation
DNAPL	Dense Non-Aqueous Phase Liquid
DUSR	Data Usability Summary Report
ECs/ICs	Engineering and Institutional Controls
EPA	Environmental Protection Agency
ESA	Environmental Site Assessment
FER	Final Engineering Report
ft	Feet
ft^2	Square Feet
GC	General Contractor
GPS	Global Positioning System
GZA	GZA GeoEnvironmental of New York
HASP	Health and Safety Plan
HAZWOPER	Hazardous Waste Operations and Emergency Response
IRM	Interim Remedial Measure
ISMP	Interim Site Management Plan
LNAPL	Light Non-Aqueous Phase Liquid
MCG/M^3	Micrograms per Cubic Meter
NOC	Notice of Completion
NYC VCP	New York City Voluntary Clean-up Program
NYC DEP	New York City Department of Environmental Protection
NYC DOB	New York City Department of Buildings

Acronym	Definition
NYC DOF	New York City Department of Finance
NYC OER	New York City Office of Environmental Remediation
NYCRR	New York Codes Rules and Regulations
NYS DEC	New York State Department of Environmental Conservation
NYS DOH	New York State Department of Health
NYS DOT	New York State Department of Transportation
NYS ELAP	Environmental Laboratory Accreditation Program
OSHA	United States Occupational Health and Safety Administration
PBS	Petroleum Bulk Storage
PCBs	Polychlorinated Biphenyls
PCE	Tetrachloroethene
PE	Professional Engineer
PID	Photo Ionization Detector
PPE	Personal Protective Equipment
PPM	Parts Per Million
QA/QC	Quality Assurance/ Quality Control
QEP	Qualified Environmental Professional
QHHEA	Qualitative Human Health Exposure Assessment
RAOs	Remedial Action Objectives
RAWP	Remedial Action Work Plan
RECs	Recognized Environmental Condition
RI	Remedial Investigation
RIR	Remedial Investigation Report
RMZ	Residual Management Zone
SCOs	Soil Cleanup Objectives
SCG	Standards, Criteria and Guidance
SIRM	Supplemental Interim Remedial Measure
SHWS	Solid Hazardous Waste Site
SMMP	Soils/ Materials Management Plan
SQ FT	Square Feet
SMP	Site Management Plan
SRI	Supplemental Remedial Investigation
SVI	Soil Vapor Intrusion (Guideline)
SVOC	Semi-Volatile Organic Compound
TCE	Trichloroethene
TOGS	Technical and Operational Guidance Series
TCLP	Toxicity Characteristic Leaching Procedure
UST	Underground Storage Tank

Acronym	Definition
VOC	Volatile Organic Compound

CERTIFICATIONS

I, Stephen M. Kline, certify that I am currently a NYS registered professional engineer and that this Supplemental Interim Remedial Measure Plan was prepared in accordance with applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10).

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

Stephen M. Kline	August 21, 2005	
NYS Professional Engineer #080431	Date	Signature



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

1.0 INTRODUCTION

The County of Westchester (Participant), entered into an agreement with the New York State Department of Environmental Conservation (NYSDEC) under the New York State Brownfield Cleanup Program (BCP) to investigate and remediate the Westchester County Airport property located at 240 Airport Road in West Harrison, New York (a.k.a. the Airport). The BCP site includes the following 36 parcels.

Municipality	Section, Block, and Lot	Municipality	Section, Block, and Lot
Harrison	0971.-2	North Castle	119.03-1-6
Harrison*	0971.-8	North Castle	119.03-1-6
Harrison	0971.-8.1 (portion of)	Rye Brook	119.70-1-1
Harrison	0971.-8.2	Rye Brook	119.70-1-2
North Castle	119.03-1-3.1	Rye Brook	119.79-1-1
North Castle	119.03-1-3.2	Rye Brook	119.79-1-2
North Castle	119.03-1-3.3	Rye Brook	124.23-1-3
North Castle	119.03-1-3.4	Rye Brook	124.31-1-1
North Castle	119.03-1-3.5	Rye Brook	124.31-1-3
North Castle	119.03-1-3.6	Rye Brook	124.31-1-4
North Castle	119.03-1-3.7	Rye Brook	124.31-1-5
North Castle	119.03-1-3.8	Rye Brook	124.31-1-6
North Castle	119.03-1-3.9	Rye Brook	124.31-1-7
North Castle	119.03-1-3.10	Rye Brook	124.31-1-8
North Castle	119.03-1-3.11	Rye Brook	124.31-1-9
North Castle	119.03-1-3.12	Rye Brook	124.31-1-10
North Castle	119.03-1-4	Rye Brook	124.40-1-1
North Castle	119.03-1-5	Rye Brook	124.55-1-1

*A 13.48-acre portion is the IRM Site

On behalf of Hazen and Sawyer (Hazen) for construction of Westchester Joint Water Works' (WJWW) Rye Lake Water Filtration Plant (WFP), Goldberg-Zoino Associates of New York, PC d/b/a GZA GeoEnvironmental of New York (GZA) prepared this Interim Remedial Measure (IRM) Work Plan for the portion of the Airport related to the construction of the WFP. This construction is to be completed on a 13.48-acre portion of block and lot 0971.-8 (IRM Site) along the southwestern boundary of the 693-acre BCP Site. WJWW received this portion of the parcel for the construction of the WFP from the Participant through a land transaction in 2024. Due to the parcel's inclusion in the existing BCP property boundary associated with the Airport, the construction area is subject to the requirements of the Brownfields Cleanup Agreement (BCA) and its governing documents. This IRM Work Plan was prepared to allow for the Supplemental Remedial Investigation (SRI), remediation, and construction of the WFP.

1.1 Site Location and Description

The IRM Site is located on a 13.48-acre parcel in the southwest corner of the 693-acre Westchester County Airport property. The IRM Site consists of wooded and undeveloped areas and is bounded by Tower Road to the south, Westchester County Airport to the east, Purchase Street to the west, and wooded area to the north. The IRM Site is located within 1,000 feet of Rye Lake to the west. A stream that drains north towards Rye Lake is located east of the IRM Site along a fence that separates the IRM Site from Westchester County (White Plains) Airport. Existing ground surface at the IRM Site ranges from approximately El. 414 to El. 396, generally sloping down from south to north and east to west. A United States Geological Survey (USGS) topographic map showing the location of the IRM Site is provided as **Figure 1**. A recent Aerial Photograph showing the location of the proposed IRM Site located on the southwestern side of the BCP Site boundary is presented as **Figure 2**.

1.2 Redevelopment Plan

WJWW is planning to construct a new 30-million gallons per day (MGD) WFP. Water is currently pumped from Rye Lake (north of the IRM Site) through a water main along Purchase Street (west of the IRM Site) to water tanks about 800 feet south of Tower Road (south of the IRM Site). The construction would redirect the water from Rye Lake to the new filtration plant through a new water main that will enter the IRM Site from Purchase Street. A copy of the proposed construction plans is included in **Appendix A.**

During the IRM, the proposed construction area will be investigated prior to construction for verification of potential presence of Contaminants Of Concern (COCs) associated with the Airport property. The construction will include the excavation up to 35 feet below ground surface (ft bgs) within the proposed WFP building footprint, up 15 feet bgs within the footprint of stormwater management improvements and up to 5 feet bgs within the remaining areas of the limits of disturbance for the construction.

1.3 Description of Surrounding Properties

The IRM Site is located adjacent to the Westchester County Airport along its eastern and southern boundaries. A Quaker Friends Meeting is adjacent to the north of the IRM Site and Purchase Street is adjacent to the west with residential dwellings across. The Airport was originally constructed in 1942 and utilized by the United States military during World War II. The Airport was utilized as a commercial and military airport up until 1983 when military operations were transitioned to Stewart Air Force Base.

1.4 Objectives

GZA developed this IRM Work Plan to provide details on what measures the project will implement during the Supplemental Remedial Investigation (SRI) and WFP construction at the IRM Site. The IRM Work Plan is designed to reduce the potential for exposure to Chemicals of Potential Concern (COPCs) during construction.

This IRM Work Plan was developed based on IRM Site data compiled to date, including the waste characterization soil sampling conducted by GZA in May and June 2021, and the existing governing documents for the Westchester County Airport BCP Site C360174. Previous IRM Site investigation results are provided on **Figure 3**.

An Interim Site Management Plan (ISMP) dated June 2025 for the Airport outlines soil, soil vapor, and groundwater handling practices to minimize exposure. This IRM Work Plan described in this document

provides for the protection of public health and the environment, and complies with the ISMP and applicable environmental standards, criteria and guidance and applicable laws and regulations. The IRM Work Plan is a component of, but does not constitute, the overall remedy for the Airport BCP Site. The IRM Site conditions remaining following completion of the IRM will be documented in the Construction Completion Report (CCR). The final remedy for the Airport BCP Site will be outlined in the Westchester County Airport Remedial Action Work Plan (RAWP) prepared by the County of Westchester and its contractors.

1.5 Summary of the Supplemental Remedial Investigation and Interim Remedial Measures

The proposed IRM is consistent with protection of public health and the environment for the intended future use of the property. The IRM will consist of the following:

1. An SRI for COPCs in soil, soil vapor, groundwater, sediment, and surface water within the proposed construction area and wetlands on the IRM Site. Proposed samples to be collected are provided in **Table 1** and proposed sample locations are shown on **Figure 4**.
2. Site mobilization involving Site security set-up, equipment mobilization, utility mark outs, marking/staking excavation areas, and elevation control points.
3. Implementation of stormwater pollution prevention measures in compliance with the Site-specific Stormwater Pollution Prevention Plan (SWPPP) and applicable laws and regulations.
4. Performance of a Community Air Monitoring Program (CAMP) for particulates and volatile organic compounds.
5. The construction excavation will be performed at proposed limits of excavation for the proposed new building foundation, stormwater management features, paved areas, and utilities. The proposed excavation applies to the excavations shown on **Figure 5** and described as follows:
    - Excavation down to between 20-35 ft bgs across the proposed WFP building footprint.
    - Excavation down to between 20-35 ft bgs across the WFP supporting infrastructure footprint, i.e., stormwater management and utility connections.
    - Excavations down to a maximum of 5 ft bgs across the remaining areas within the limits of disturbance for construction.

    The construction excavations will be generate up to approximately 52,000 cubic yards (CY) of excavated material. The portion of this excavation that will be considered for remedial purposes will be determined during the SRI should contamination requiring remediation be found at the IRM Site.
6. Documentation endpoint samples will be collected if contamination is found to be present during the SRI. If no contamination is found during the SRI, documentation endpoint samples will not be collected. If required due to the presence of contamination, endpoint samples will be collected at a frequency of one per every 900 square feet of excavation bottom above the groundwater table, and every 60 feet along excavation sidewalls.
7. Management of excavated materials will be conducted and will include temporarily stockpiling and segregating materials in accordance with defined material types and to limit comingling of contaminated material and non-contaminated. Excavated materials will not be stockpiled for greater than 30 days from date of accumulation prior to transportation off-site.

8. Transportation and off-Site disposal of IRM Site soil will be at permitted facilities in accordance with applicable state and federal requirements for handling, transport, and disposal.
9. Performance of activities required for the IRM, including permitting as and to the extent required by applicable laws and regulations.
10. Daily and Monthly field reports to the NYSDEC and the NYSDOH will be submitted during the IRM activities.
11. A contingency plan to dewater excavation areas below the water table. Dewatering activities will be performed by the excavation contractor with a State Pollution Elimination Discharge System (SPDES) permit approved by the NYSDEC. All dewatering fluids will be treated prior discharge.

All deviations from this IRM Work Plan will be reported to NYSDEC and NYSDOH. Deviations must be approved by NYSDEC.

2.0 DESCRIPTION OF PREVIOUS INVESTIGATION FINDINGS

In the late 1990s, because historical firefighting and training activities used inflammables such as aviation fuel as the accelerant, concerns were raised regarding the potential environmental impacts to soil and groundwater in and around the former New York Air National Guard (NYANG) Burn Pit areas. In or about October 1999, the Airports environmental consultant, First Environment, conducted a detailed site reconnaissance of the Airport Property that included a site visit and a review of historic aerial photographs of the Airport. The reconnaissance identified the location of a former NYANG Burn Pit west of Building 10 and its boundaries. ARFF training activities consisted of the repeated burning and extinguishing of aviation fuel. According to the County, the Air National Guard conducted the training activities. ARFF training activities reported to have been conducted in this area are identified in aerial photographs, and these activities were suspected to have impacted soil and groundwater. ARFF training activities at the NYANG Burn Pit area of the Site were permanently discontinued prior to earlier investigation and remediation that occurred in 1999.

On December 22, 1999, the initial investigation of the NYANG Burn Pit Area was conducted including the investigation of the soil, sediments, surface water and groundwater near the Pit. Laboratory analyses of soil and groundwater samples collected in this area identified impacts above NYSDEC regulatory levels for VOCs and SVOCs. PFAS were neither recognized nor identified as environmental contaminants of concern at that time.

In early 2000, 39 study areas were identified as possible contaminant sources at the Airport and investigated to determine their potential impact, if any, on environmental media. The IRM Site for the proposed Rye Lake WFP is not included as one of the 39 areas that was identified. The investigations included a review of available documentation; interviews with Airport personnel and NYANG personnel in Latham, New York; as well as intrusive investigations consisting of soil and/or groundwater sampling. In 2001, after the preliminary investigations, it was determined that no pervasive groundwater plume or groundwater pollution threat to Rye Lake and the surrounding environment.

The Airport conducted a voluntary groundwater monitoring program from 2001 to 2011 from the monitoring well network installed during the investigations. None of these wells were installed on the IRM Site for the proposed WFP construction. In 2017 the NYSDOH sampled raw water intakes and finished water outlets in the area near the Airport and identified multiple locations with PFAS concentrations

exceeding the combined action level of 70 parts per trillion PFOA and PFOS. As a result, monitoring wells on the Airport property were sampled for PFAS the same year. Eight wells across the Airport property were found to contain PFAS and the voluntary groundwater monitoring program was restarted in 2018.

The Airport BCP Site began site characterization activities February 2020 with a higher focus on areas around Rye Lake Drainage Area where the Airport's surface water and groundwater enter the lake. The Site characterization activities were completed in 2021, and additional investigations were conducted on the Airport's northern parcel along New King Street and offsite near this area. The Airport is currently completing a Remedial Investigation to fill in data gaps and define the nature and extent of the PFAS in shallow and deep groundwater on and off the property.

The area designated for WFP construction has not been included in these previous investigations under the BCP program as it was not an area of concern identified from the Airport's historical activities. Limited investigations in support of the planning for WFP construction have been completed, including a waste characterization investigation and geotechnical investigation.

The site characterization investigations completed by the Airport and its environmental contractor, First Environmental, soil, sediment, groundwater, surface water, and soil vapor investigations across the Airport in areas of concern based on former activities, such as burn pits, aircraft rescue and firefighting operations, and use of aqueous film forming foam (AFFF). Primary contaminants of concern identified for the Airport include perfluorooctane sulfonate (PFOS) and perfluorooctanoic acid (PFOA).

GZA performed the waste characterization investigation in May and June 2021 to characterize soils within the excavation footprint for preparations of offsite disposal of excavated soils. GZA collected 18 soils samples in total with six samples from the top five feet of soil and the remaining 12 samples collected from between 5 and 23 feet below grade. Shallow samples included grab samples analyzed for Volatile Organic Compounds (VOCs) and composite samples analyzed for Semi-Volatile Organic Compounds (SVOCs), Target Analyte List (TAL) metals, Toxicity Characteristic Leaching Procedure (TCLP) metals, polychlorinated biphenyls (PCBs), pesticides, herbicides, ignitibility, corrosivity, and reactivity. Deeper samples included grab samples analyzed for VOCs and composite samples analyzed for SVOCs, TAL Metals, PCBs, and pesticides.

GZA performed a geotechnical investigation for the IRM Site from May to August of 2021 to prepare engineering recommendations for the proposed WFP construction. A majority of the sampling completed during this investigation was specific to geotechnical parameters; however, three groundwater monitoring wells were sampled as well. The three wells were between 25 and 35 feet in depth with the bottom 10 feet being the screened interval. Each well was purged and sampled for analysis of VOCs, SVOCs, TAL metals, pesticides, herbicides, and PCBs. Copies of these previous investigations are included in **Appendix B**.

2.1 Significant Threat

At the time of the preparation of this IRM Work Plan, a significant threat determination has not been made for the Westchester County Airport BCP Site.

2.2 Site History

Westchester County Airport was initially constructed by the U.S. Army Corps of Engineers in 1942 on land owned by the County of Westchester and leased to the United States government "for the duration" of

World War II for use by the U.S. Army Air Force. Before the end of the war, the U.S. government surrendered its lease and in February 1945 the Westchester County Airport opened as a public Airport. However, the Army Air Force never completely abandoned its presence at the Airport. In 1947, following the creation of the United States Air Force and the NYANG, the NYANG leased the northeast section of the Airport from Westchester County.

The NYANG subsequently constructed air-support facilities on the leasehold and continuously occupied its leasehold until 1983 when the unit moved to Stewart Air Force Base. As part of its operations, the NYANG performed aircraft rescue and firefighting (ARFF) operations on a regular basis. These firefighting exercises and training activities were performed at a "Burn Pit" that was located near the NYANG's former hanger on County property adjacent to the NYANG's leasehold. The NYANG conducted these exercises from as early as 1968 until 1983 when the NYANG left the Airport. The NYANG, as part of its firefighting exercises, used AFFF, which historically contained concentrations of PFAS. Only recently has there been a reduction in the use of PFAS chemicals in AFFF. The duration of AFFF use at the NYANG Burn Pit and the fact that the NYANG Burn Pit was unlined likely resulted in PFAS impacting the groundwater at the Site. The PFAS source location is supported by the fact that the highest PFAS concentrations are identified at the former Burn Pit location.

According to Airport operations personnel, following the departure of the NYANG in 1983, the County continued airport fire-fighting training through the 1990s at the Burn Pit (north airport area) before fire-training exercises were moved in the late 1990s to the southeastern corner of the property, inside South Airport Loop Road. Based on information provided by Airport operations, the training activities used water, not AFFF, post-NYANG operations. A concrete containment burn pit was designed with propane burners inside the containment area to allow for a safe environmental training area.

After 1983, Westchester County Airport stored firefighting equipment and AFFF at the main Airport Terminal. In the late 1990s, storage of AFFF was moved to the Airport Block House where it is stored in five-gallon containers. In an effort to move to more environmentally friendly AFFF, the Airport discontinued the use of foams containing PFOA and PFOS. However, the Airport still uses AFFF that contain other PFAS chemicals in accordance with FAA requirements. In addition to the County's storage of AFFF, as described above, the Airport is aware of 10 tenants that store Class B foams at the Airport in varying sized pressurized containment devices.

2.3 Geological Conditions

Based on the 2021 Geotechnical Investigation for the IRM Site, The existing ground surface elevation (El.) ranges from approximately 396 to 141 feet in reference to the North American Vertical Datum of 1988 (NAVD88). The ground surface generally slopes down from south to north and east to west. The IRM Site consists of wooded and undeveloped areas with Rye Lake located approximately 1,000 feet to the northwest.

The geologic stratigraphy at the IRM Site consists of Glacial Till deposits, typically consisting of a mixture of sand, gravel, silt, clay and cobbles/boulders of various textures and clasts. Glacial Till deposits overly decomposed rock and bedrock of the Paleozoic Upper to Middle Ordovician deposits of the Manhattan Formation.

2.3.1 Soil and Rock Conditions

Soils observed in the geotechnical investigation logs indicate that the subsurface soil at the IRM Site consisted of the following:

- Surface cover consisting of 1-inch to 12-inches of topsoil that was encountered at all the test borings and test pits.
- Silty Sand was encountered in most of the borings to depths ranging between 2 feet and 10 feet. The Silty Sand generally consisted of brown, fine to medium grained sand, containing up to 50 percent silt, up to 20 percent gravel, and up to 10 percent clay with trace amounts of roots. The Silty Sand stratum was generally very loose to dense with SPT N-values ranging between 2 and 35 bpf (blows per foot), and average N-value of 13 bpf.
- Glacial Till was encountered in most of the borings to depths ranging between 18.5 feet and 43.5 feet. Glacial Till consisting of brown, fine to medium grained sand, containing up to 35 percent silt and up to 35 percent gravel, encountered below the Silty Sand stratum. The Glacial Till was generally medium dense to very dense with SPT N-values ranging from 12 to 100 bpf, and average N-value of 37 bpf.
- Decomposed Rock, consisting of gray to brown, fine to medium grained sand, containing up to 50 percent silt, and up to 35 percent gravel, was encountered below Glacial Till stratum. Decomposed Rock is identified as dense to very dense material that has retained the parent rock structure. The SPT N-values were generally ranging from 25 to 100 bpf, and average N-value of 79 bpf.

2.3.2 Groundwater Conditions

Temporary groundwater observation wells were installed during the geotechnical investigation to depths of approximately 27 feet and 25 feet below grade, respectively. GZA measured the depth to groundwater over a four-month period. Two Solinst Barologger 5 piezometers were installed in the temporary groundwater observation wells located within test borings to monitor groundwater levels. The piezometers were installed on August 4, 2021, and collect water level readings at a 30-minute interval until August 10, 2021.

Groundwater was observed fluctuating in the observation wells over the course of a four-month period. Water readings in the observation well outside of the proposed WFP building footprint were recorded at elevations of approximately El. 379 to El. 382 feet. Water readings in the observation well located within the footprint of the proposed WFP structure, were recorded at elevations of approximately El. 396.4 to El. 403.3 feet. The groundwater level readings recorded at this IRM Site are indicative of seasonal fluctuation. Groundwater level readings were as shallow as 3.7 feet below ground surface (bgs) observed in June and as deep as 17.8 feet bgs observed in November.

2.4 Contamination Conditions

Contamination at the IRM Site is not well defined due to the limited sampling completed within the area of the WFP construction. Site characterization and remedial investigation activities performed and ongoing by the Airport. Data specific to the IRM Site is from the waste characterization and geotechnical

investigations completed by GZA in 2021 and Haley & Aldrich of New York (H&A) in 2019 in support of the WFP construction planning.

During these investigations two soil samples were collected from a test pit between one and three feet below grade by H&A, six composite soil samples were collected by GZA for waste characterization from the top five feet in six borings; 12 composite soil samples were collected by GZA for beneficial reuse sampling from up to 25 feet below grade in 12 borings; 30 discrete VOC soil samples were collected by GZA from between one and 25 feet below grade in 15 borings; three groundwater samples were collected by GZA from three observation wells installed to 35 feet, 27 feet, and 25 feet below grade; and one groundwater sample was collected by H&A from the 35 foot observation well. GZA's soil samples were analyzed for VOCs, SVOCs, metals, TCLP metals, PCBs, herbicides, pesticides, Resource Conservation and Recovery Act (RCRA) Characteristics (reactivity, ignitability, and corrosivity). H&A's soil samples were analyzed for the same parameters with the addition of diesel- and gasoline-range organic compounds. GZA's groundwater samples were analyzed for VOCs, SVOCs, total metals, pesticides, herbicides, and PCBs. H&A's groundwater sample was analyzed for VOCs, SVOCs, and PFAS.

All soil samples were either non-detect or below Unrestricted Use SCOs for VOCs, SVOCs, metals, PCBs, herbicides, pesticides, and diesel- and gasoline range organic compounds. Soil samples were also below their respective hazardous limits for RCRA characteristics and TCLP metals. Groundwater samples were compared to NYSDEC Technical Operational Guidance Series (TOGS) 1.1.1 - Ambient Water Quality Standards & Guidance Values and Groundwater Effluent Limitations. Groundwater samples were either non-detected or below applicable TOGS standards for VOCs, herbicides, pesticides, PCBs, and PFAS. One groundwater sample collected from the northern side of the proposed WFP construction footprint was found to have TOGS exceedances for multiple unfiltered (i.e., total) metals including aluminum, barium, chromium, copper, iron, lead, magnesium, manganese, nickel, selenium, and thallium. One groundwater sample collected from the northeastern edge of the IRM Site outside of the proposed WFP footprint was found to have several SVOC exceedances above TOGS standards, including benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, and indeno(1,2,3-cd)pyrene. A summary of the groundwater exceedances during previous investigations is included in **Table 2**.

2.4.1 Identification of Standards, Criteria and Guidance

The following Standards, Criteria, and Guidance (SCGs) documents were used to assess contamination conditions:

- 6 NYCRR Part 375 - Environmental Remediation Programs, Effective December 14, 2006;
- CP-51: Soil Cleanup Guidance Policy - Issued October 21, 2010; Effective December 03, 2010;
- DER-10: Technical Guidance for Site Investigation and Remediation, Issued May 3, 2010; Effective June 18, 2010;
- Guidelines for Sampling and Analysis of PFAS, Issued January 6, 2021;
- Technical Operational Guidance Series (TOGS) 1.1.1 - Ambient Water Quality Standards & Guidance Values and Groundwater Effluent Limitations;
- Public Water Systems and NYS Drinking Water Standards for PFAS and Other Emerging Contaminants, July 2022;
- Technical Fact Sheet: Drinking Water Health Advisories for Four PFAS (PFOA, PFOS, GenX chemicals, and PFBS), June 2022; and
- NYSDOH Guidance for Evaluating Soil Vapor Intrusion in the State of New York, October 2006

2.5 Environmental and Public Heath Assessments

The objective of the environmental and public health assessment is to evaluate how the environment and the public might be exposed to Site-related contaminants. Further sampling is required to fully complete these health assessments; however, the following is based on the currently available sampling completed at the IRM Site.

2.5.1 Qualitative Human Health Exposure Assessment

A Qualitative Human Health Exposure Assessment (QHHEA) for the IRM Site has been prepared in accordance with the requirements of DER-10/Technical Guidance for Site Investigation and Remediation, Appendix 3B, May 2010, and is presented in the following subsections. The QHHEA characterizes the exposure setting, identifies potentially complete exposure pathways, and qualitatively evaluates potential fate and transport of constituents from one medium to another (i.e., soil-to-air or soil-to-groundwater).

Site Setting

The IRM Site is located on the western boundary of the Westchester County Airport along Purchase Street in Harrison, New York. The IRM Site encompasses 13.4 acres and is bounded by Tower Road to the south, Westchester County Airport to the east, Purchase Street to the west, and wooded area to the north.

The New King Street Water Main Construction Completion Report (CCR) is currently being prepared and includes an evaluation for use of groundwater in the area of the IRM Site. The CCR for the water main project will determine if there is a potential groundwater exposure pathway associated with the entire BCP Site, including the IRM Site.

The proposed future use of the IRM Site will consist of WFP for treatment of surface water from Rye Lake for a WJWW public water supply. The proposed building footprint would be less than one acre in area. The proposed impervious features, including the filtration plant building, a driveway, parking lot, walkways, and supporting utilities and ancillary facilities, would total approximately 2.4 acres.

Exposure Assessment and Chemicals of Potential Concern

An exposure pathway is the way that humans or the environment come into contact with chemicals of potential concern (COPC). An exposure pathway is considered complete when the following five conditions are met:

1. Source (i.e., metals, PAHs, and chlorinated solvents etc.);
2. Release and transport mechanism from source to environmental media (i.e., into the subsurface or volatilization to the air of an overlying building);
3. Point of human exposure (i.e., surface soil);
4. A route of exposure (i.e., ingestion, dermal contact, or inhalation); and
5. A receptor population (i.e., on-Site workers or residents).

An exposure assessment will identify these pathways and includes a review of the potential sources of COPC and their release mechanisms, and identification of potential human receptors.

Soil

No constituents of potential concern were identified in IRM Site soils above Unrestricted Use SCOs. However, PFOA and PFOS are common contaminants found across the Airport property and are constituents of potential concern at the IRM Site.

Groundwater

Constituents of potential concern identified in groundwater above TOGS include:

- SVOCs
  - Polycyclic aromatic hydrocarbons (PAHs) - benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, and indeno(1,2,3-cd)pyrene
- Metals
  - Aluminum, barium, chromium, copper, iron, lead, magnesium, nickel, selenium, and thallium

Soil Vapor

Soil vapor has not been investigated within the IRM Site.

Potential Release Mechanisms

The use of AFFF across the Airport property has historically been for firefighting and training purposes with no specific documented releases on the IRM Site. While PFAS contamination has not yet been found at the IRM Site, potential transportation from historical releases is possible through natural deposition of PFAS-impacted dust or dirt from aeolian or fluvial erosion or through the migration of groundwater from upgradient portions of the Airport property.

PAH and metals appear to be located within the groundwater at the IRM Site. There is no historical or geophysical evidence that suggests an onsite source from historical uses or releases. A monitoring well installed as a part of the Characterization Investigation on the Airport property to the south of the IRM Site had several groundwater exceedances for metals above TOGS, including barium, chromium, magnesium, manganese, and nickel. This well is located upgradient of the IRM Site and the IRM Site is along the groundwater's understood flow towards Rye Lake. Based on the foregoing, the SVOC and metals impacts found in groundwater at the IRM Site appear to be from one or more offsite sources.

Potential Human Receptors and Exposure Pathways

Based on the identified potential release mechanisms, GZA evaluated on-Site and off-site exposures.

Potential On-Site Exposures: Inhalation, ingestion and dermal contact are the possible routes of exposure to potential receptors with respect to impacted groundwater and impacted soil potentially on IRM Site. Under current site conditions, the potentially exposed populations to the IRM Site groundwater and soil include construction and utility workers who are engaged in the excavation activities and dewatering at the IRM Site.

A site-specific Construction Health and Safety Plan (CHASP) has been developed to identify and minimize the potential hazards to on-Site workers. IRM Site trespassers could also be exposed to impacted groundwater or soil during construction via the excavation and the dewatering treatment system;

however, security measures including an 8-foot high construction fence and 24-hour security will minimize potential exposure to IRM Site trespassers.

Potential Off-Site Exposures: Off-Site residents could also be exposed to dust or vapors during the excavation of potentially impacted soil. A site-specific Community Air Monitoring Plan (CAMP) has been developed to identify and minimize the potential for off-site exposure to residents through continuous air monitoring during excavation activity. The CAMP will include two downwind and one upwind continuous air monitoring stations. The locations of the stations are shown on **Figure 6**. The locations of the CAMP stations may be adjusted based on daily wind conditions.

QHHEA Conclusions

A summary of the QHHEA is provided in the table below. The QHHEA identified soil, groundwater and soil vapor as the impacted media and the primary potential sources of COPCs. Construction or utility workers conducting intrusive subsurface activates could be exposed to COPCs in IRM Site soils and groundwater.

Environmental Media & Exposure Route	Human Exposure Assessment
Direct Contact with Surface Soils (and incidental ingestion)	• A site-specific Construction Health and Safety Plan (CHASP) has been developed and appended to the IRMWP, to identify and minimize the potential hazards to on-Site workers. • People will not contact the impacted soil unless they complete ground intrusive work at the IRM Site. This exposure is, therefore, limited to construction and utility workers as will be outlined in the Site Management Plan. • Future Site use people are not coming into contact with residual soils because composite site cover during construction of new building on IRM Site.
Ingestion of Groundwater	• The New King Street Water Main CCR will determine the potential groundwater exposure pathways related to the entire BCP Site, including the IRM Site.
Inhalation of Air	• A site-specific CHASP has been developed and appended to the IRMWP, to identify and minimize the potential hazards to on-Site workers.

3.0 DESCRIPTION OF INTERIM REMEDIAL MEASURES

The proposed IRM is consistent with protection of public health and the environment for the intended future use of the property and is consistent with the ISMP implemented at the Airport Property and approved by NYSDEC. GZA developed this IRM Work Plan to describe the remedial measures to be implemented during earthwork and installation of building foundation for the WFP IRM Area.

This IRM is designed to reduce the potential for exposure to hazardous substances during construction, and to continue remediation according to the redevelopment project schedule. This IRM is a component of, but does not constitute, the overall remedy for the Airport property and covers the actions to be completed on the property owned and operated by WJWW. The IRM Site conditions remaining following

completion of the IRM will be documented in the Construction Completion Report (CCR). The final remedy for the IRM Site is anticipated to be Track 4 Site-specific SCOs.

The proposed IRM is consistent with protection of public health and the environment for the intended future use of the property. The IRM will consist of the following:

1. An SRI for COPCs in soil, soil vapor, groundwater, sediment, and surface water within the proposed construction area and wetlands on the IRM Site. Proposed samples to be collected are provided in **Table 1**, and sample locations are shown on **Figure 4**.
2. Site mobilization involving Site security set-up, equipment mobilization, utility markouts, marking/staking excavation areas, and elevation control points.
3. Implementation of stormwater pollution prevention measures in compliance with the Site-specific Stormwater Pollution Prevention Plan (SWPPP) and applicable laws and regulations.
4. Performance of a CAMP for particulates and volatile organic compounds.
5. The construction excavation will be performed at proposed limits of excavation for the proposed new building foundation, stormwater management features, paved areas, and utilities. The proposed excavation applies to the excavations shown on **Figure 5** and described as follows:
    - Excavation down to between 20-35 ft bgs across the proposed WFP building footprint.
    - Excavation down to between 20-35 ft bgs across the WFP supporting infrastructure footprint, i.e., stormwater management and utility connections.
    - Excavations down to a maximum of 5 ft bgs across the remaining areas within the limits of disturbance for construction.

    The construction excavations will be generate up to approximately 52,000 cubic yards (CY) of excavated material. The portion of this excavation that will be considered for remedial purposes will be determined during the SRI should contamination requiring remediation be found at the IRM Site.
6. Documentation endpoint samples will be collected if contamination is found to be present during the SRI. If no contamination is found during the SRI, documentation endpoint samples will not be collected. If required due to the presence of contamination, endpoint samples will be collected at a frequency of one per every 900 square feet of excavation bottom above the groundwater table, and every 60 feet along excavation sidewalls.
7. Management of excavated materials will be conducted and will include temporarily stockpiling and segregating materials in accordance with defined material types and to limit comingling of contaminated material and non-contaminated. Excavated materials will not be stockpiled for greater than 30 days from date of accumulation prior to transportation off-site.
8. Transportation and off-Site disposal IRM Site soil will be at permitted facilities in accordance with applicable state and federal requirements for handling, transport, and disposal.
9. Performance of activities required for the IRM, including permitting as and to the extent required by applicable laws and regulations.
10. Daily and Monthly field reports to the NYSDEC and the NYSDOH will be submitted during the IRM activities.

11. A contingency plan to dewater excavation areas below the water table. Dewatering activities will be performed by the excavation contractor with a SPDES permit approved by the NYSDEC. All dewatering fluids will be treated prior discharge.

All deviations from this IRM Work Plan will be reported to NYSDEC and NYSDOH. Deviations must be approved by NYSDEC.

3.1 General IRM Information

Agency Notification

The NYSDEC will be notified in writing at least seven (7) business days prior to the initiation of the on-Site work and during the course of the fieldwork. Changes to fieldwork scheduling will be provided via email. All applicable local agencies will also be notified prior to the initiation of site work. NYSDEC will have the opportunity to participate in all remediation project status meetings (adequate notice of these meetings will be provided).

Prior to the implementation of any ground intrusive activities, a request for a complete utility mark-out of the subject property will be submitted as required by New York State Department of Labor regulations. Confirmation of underground utility locations will be secured and a field check of the utility mark-out will be conducted prior to the initiation of work. Any utilities on the IRM Site will be protected (as necessary) by the contractor.

Work Hours

The hours for operation of remedial construction will conform to the Town of Harrison's Building Department construction code requirements or according to specific variances issued by that agency. NYSDEC will be notified of any variances issued. No remedial work will be conducted on the weekend (Saturday or Sunday) unless expressly permitted by NYSDEC. NYSDEC reserves the right to deny alternate remedial construction hours.

Site Security

IRM Site access will be controlled by a construction entrance and site management. A construction fence will be an 8-foot-high driven post chain link fence with fabric. The construction entrance will be along Purchase Street at the western side of the IRM Site. The construction entrance will be locked, and a security guard will be present at the entrance on weekdays during working hours.

Agency Approvals

All permits or government approvals required for remedial construction have been or will be obtained prior to the start of remedial construction. Approval of this IRM Work Plan by NYSDEC does not constitute satisfaction of these requirements and will not be a substitute for any required permit. Deviation from work plans will be reviewed and approved by the NYSDEC prior to performing the remedial tasks.

3.2 Governing Documents

The governing documents are discussed in the May 2025 Interim Site Management Plan established for the Airport BCP Site and include the procedures included in the Site-specific Construction Health and

Safety Plan (CHASP), a Community Air Monitoring Plan (CAMP), a Citizen Participation Plan (CPP), an Excavation and Soil Materials Management Plan (SMMP), a Quality Assurance Project Plan (QAPP), and New York State applicable Standards, Criteria, and Guidance (SCG) documents.

3.2.1 Standards Criteria and Guidance

The following Standards, Criteria, and Guidance (SCGs) documents were used to assess contamination conditions.

3.2.1.1 Standards and Criteria Typically Applicable to UST Closures

- 6 NYCRR Part 613 - Petroleum Bulk Storage
- 6 NYCRR Part 371 - Identification and Listing of Hazardous Wastes
- 6 NYCRR Subpart 374-2 - Standards for the Management of Used Oil
- 6 NYCRR Parts 700-706 - Water Quality Standards
- 40 CFR Part 280 - Technical Standards and Corrective Action Requirements for Owners and Operators of Underground Storage Tanks

3.2.1.2 Guidance Typically Applicable to UST Closures

- STARS #1 - Petroleum-Contaminated Soil Guidance Policy (1992) (Sections III and IV have been replaced CP-51)
- STARS #2 - Biocell and Biopile Designs for Small-Scale Petroleum-Contaminated Soil Projects (1996)
- CP-51- Soil Cleanup Guidance (2010)
- Spill Response Guidance Manual (1995)
- Permanent Closure of Petroleum Storage Tanks (2003)
- TAGM 3028 - "Contained In" Criteria for Environmental Media: Soil Action Levels (August 1997)
- TOGS 1.1.1 - Ambient Water Quality Standards & Guidance Values and Groundwater Effluent Limitations (1998, Addenda 2000 and 2004)
- DAR-1 (formerly Air Guide 1) (1997) - Guidelines for the Control of Toxic Ambient Air Contaminants
- NYSDOH Environmental Health Manual CSFP-530 - “Individual Water Supplies - Activated Carbon Treatment Systems”

3.2.1.3 Standards and Criteria Typically Applicable to Remedial Actions:

- 29 CFR Part 1910.120 - Hazardous Waste Operations and Emergency Response
- 40 CFR Part 144 - Underground Injection Control Program
- 10 NYCRR Part 67 - Lead Poisoning Prevention and Control
- 12 NYCRR Part 56 - Industrial Code Rule 56 (Asbestos)
- 6 NYCRR Part 175 - Special Licenses and Permits--Definitions and Uniform Procedures
- 6 NYCRR Part 361 - Siting of Industrial Hazardous Waste Facilities
- 6 NYCRR Part 371 - Identification and Listing of Hazardous Wastes
- 6 NYCRR Part 372 - Hazardous Waste Manifest System and Related Standards for Generators, Transporters and Facilities

- 6 NYCRR Subpart 373-4 - Facility Standards for the Collection of Household Hazardous Waste and Hazardous Waste from Conditionally Exempt Small Quantity Generators
- 6 NYCRR Subpart 374-1 - Standards for the Management of Specific Hazardous Wastes and Specific Types of Hazardous Waste Management Facilities
- 6 NYCRR Subpart 374-3 - Standards for Universal Waste
- 6 NYCRR Part 375 - Environmental Remediation Programs
- 6 NYCRR Part 376 - Land Disposal Restrictions
- 19 NYCRR Part 600-603 - Waterfront Revitalization of Coastal Areas and Inland Waterways
- 6 NYCRR Part 608 - Use and Protection of Waters
- 6 NYCRR Part 661 - Tidal Wetlands - Land Use Regulations
- 6 NYCRR Part 663 - Freshwater Wetlands - Permit Requirements
- 6 NYCRR Parts 700-706 – Classifications and Standards of Quality and Purity
- 6 NYCRR Part 750 - State Pollutant Discharge Elimination System (SPDES) Permits
- Screening and Assessment of Contaminated Sediment (Division of Fish, Wildlife and Marine Resources, June 2014)

3.2.1.4 Guidance Typically Applicable to Remedial Actions:

- CP – 51 – Soil Cleanup Guidance (2010)
- DER-2 - Making Changes to Selected Remedies (Revised April 2008)
- STARS #1 - Petroleum-Contaminated Soil Guidance Policy (1992) (Sections III and IV have been replaced CP-51)
- STARS #2 - Biocell and Biopile Designs for Small-Scale Petroleum-Contaminated Soil Projects
- TAGM 3028 - "Contained In" Criteria for Environmental Media: Soil Action Levels (August 1997)
- DER-23 – Citizen Participation Handbook for Remedial Programs (March 2010)
- TOGS 1.1.1 - Ambient Water Quality Standards & Guidance Values and Groundwater Effluent Limitations
- TOGS 1.3.8 - New Discharges to Publicly Owned Treatment Works
- TOGS 2.1.2 - Underground Injection/Recirculation (UIR) at Groundwater Remediation Sites
- DAR-1 (formerly Air Guide 1) - Guidelines for the Control of Toxic Ambient Air Contaminants (1997)
- NYSDOS State Coastal Management Program
- U.S. EPA OSWER Directive 9200.4-17 - Use of Monitored Natural Attenuation at Superfund, RCRA Corrective Action, and Underground Storage Tank Sites (December 1997)
- NYSDOH Environmental Health Manual CSFP-530 - “Individual Water Supplies - Activated Carbon Treatment Systems”
- CP-43 – Commissioner Policy on Groundwater Monitoring Well Decommissioning (December 2009)
- DER-10 – Technical Guidance for Site Investigation and Remediation (May 2010 as amended)
- Sampling, Analysis, and Assessment of Per- and Polyfluoroalkyl Substances (PFAS) Under NYSDEC’s Part 375 Remedial Programs (April 2023)

3.2.2 Supplemental Remedial Investigation (SRI) Work Plan

A Supplemental Remedial Investigation (SRI) for COPCs in soil, soil vapor, groundwater, sediment, and surface water within the proposed WFP construction area, and wetlands on the IRM Site. Proposed samples to be collected are provided in **Table 1**, and sample locations are shown on **Figure 4**. An SRI Work Plan to be conducted as part of the IRM is attached as **Appendix C**.

3.2.3 Site Specific Construction Health & Safety Plan

The information contained in the Construction Health and Safety Plan (CHASP) pertains directly to the remedial activities presented in this IRM Work Plan and does not include general or Site-specific construction related or general industry safety information. The General Contractor (GC) is responsible for the safety of IRM Site construction personnel during and after the remedial activities are completed. The construction Site Safety Coordinator will be a qualified representative of the GC or appointee.

During remedial activities, a representative of GZA will be present for additional health and safety observation. The Applicant and GZA will have the authority to address any issue of concern which includes the ability to require the immediate cessation of any remediation work that is being improperly performed or that is resulting in excessive dust or other potential issues of concern. Remedial work performed under this work plan will be in compliance with applicable health and safety laws and regulations, including Site and United States Occupational Health and Safety Administration (OSHA) worker safety requirements and Hazardous Waste Operations and Emergency Response (HAZWOPER) requirements. Confined space entry, if any, will comply with OSHA requirements and industry standards and will address potential health and safety risks. The parties performing the remedial construction work will document that performance of the work is in compliance with the CHASP and applicable laws and regulations. The CHASP pertains to remedial and invasive work performed at the IRM Site under this IRM Work Plan. The CHASP is included as **Appendix D**.

Field personnel involved in remedial activities will participate in training required under 29 CFR 1910.120, including 40-hour Hazardous Waste Operations and Response Training (HAZWOPER) and annual 8-hour refresher training. A designated Site Safety Officer will be responsible for maintaining workers training records. Other intrusive site work training requirements will be evaluated for chemical exposures during the Job Hazard Analyses.

Personnel entering any remediation work area (exclusion zone) will be trained in the provisions of the CHASP and be required to sign a CHASP acknowledgment form. Site-specific training will be provided to field personnel and additional safety training may be added depending on the tasks performed. Emergency telephone numbers will be posted at the IRM Site location before any remedial work begins. A safety meeting will be conducted before each shift begins. Topics to be discussed include task hazards and protective measures (physical, chemical, environmental); emergency procedures; PPE levels and other relevant safety topics. Meetings will be documented in a logbook or other specific form.

An emergency contact sheet with names and phone numbers is included in the CHASP. That document will define the specific project contacts for use in case of emergency.

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

WJWW and associated parties preparing the remedial documents submitted to the State and those performing the construction work are completely responsible for the preparation of an appropriate Health and Safety Plan and for the appropriate performance of work according to that plan and applicable laws.

The CHASP and requirements defined in this IRM Work Plan pertain to all remedial and invasive work performed at the IRM Site until the issuance of a Certificate of Completion. The Site Safety Coordinator will be Zachary Landis (GZA). A resume will be provided to NYSDEC prior to the start of remedial activities. Confined space entry will comply with all OSHA requirements to address the potential risk posed by combustible and toxic gases.

3.2.4 Quality Assurance Project Plan (QAPP)

A QAPP has been prepared in accordance with DER-10 that describes the quality control components and will ensure the proposed remedy accomplishes the remedial action objectives. The QAPP is included as **Appendix E**.

3.2.5 Construction Quality Assurance Plan (CQAP)

The CQAP details the methodologies, systems, and controls that the IRM Site has put in place to monitor the quality of construction project. The quality of the IRM Implementation will be dictated by the quality assurance / quality control protocols that the General Contractor has set in place in coordination with the Remedial Engineer. The CQAP is included as **Appendix F**.

3.2.6 Soils/Materials Management Plan (SMMP)

The SMMP includes detailed plans for managing soils/materials that are disturbed at the IRM Site, including excavation, handling, storage, transport, and disposal, and includes the controls that will be applied to these efforts to assure effective, and environmentally protective performance in compliance with applicable Federal, State, and local requirements. If contamination is found during the SRI, after completion of excavation and any other invasive remedial activities, and prior to backfilling, the top of the residual soil/fill will be defined (demarcation) by one of three methods described in the SMMP. Contaminant source removal areas, if any, will be surveyed at the completion of excavation. This information will be provided on plans in the CCR. The SMMP is included in **Appendix G**.

Management of excavated materials will include temporarily stockpiling and segregating materials in accordance with defined material types and to limit comingling of contaminated material and non-contaminated material. Transportation and off-site disposal of excavated soils at permitted facilities will occur in accordance with applicable state and federal requirements for handling, transport, and disposal. Sampling and analysis of excavated media, as required by disposal facilities, will be conducted. Soils will be either live loaded into trucks or placed in temporary stockpiles near the excavation area and subsequently placed in trucks for off-site disposal. The SMMP (see **Appendix G**) provides additional detail on soil management procedures including soil stockpiling, materials excavation and load out, off-site materials transport, dust control measures, etc.

3.2.6.1 Soil Screening Methods

Visual, olfactory, and photoionization (PID) soil screening and assessment will be performed under the supervision of a Qualified Environmental Professional (QEP) and will be reported in the CCR. Soil screening

will be performed during invasive work performed during the remedy and redevelopment phases prior to issuance of the Notice of Completion.

Visual, olfactory and PID soil screening and assessment will be performed by a qualified environmental professional or experienced field geologist under the direction of the Remedial Engineer during all remedial action and construction excavations into known or potentially contaminated material. Soil screening will be performed regardless of when the invasive work is done and will include all excavation and invasive work performed during the remedy and during development phase, such as excavations for foundations and utility work, prior to issuance of the COC.

All primary contaminant sources, if any, identified during the SRI will be surveyed by a surveyor licensed to practice in the State of New York. This information will be provided on maps in the CCR.

Qualified environmental professionals will perform screening. Resumes will be provided for all personnel responsible for field screening (i.e., those representing the Remedial Engineer) of invasive work for unknown contaminant sources during remediation and redevelopment work.

3.2.6.2 Stockpile Methods

Excavated soil from suspected areas of contamination (e.g., USTs, drains, etc.) will be stockpiled separately and will be segregated from clean soil and construction materials. Stockpiles will be used only when necessary and will be removed as soon as practicable. While stockpiles are in place, they will be inspected daily, and before and after every storm event. Results of inspections will be recorded in a logbook and maintained at the IRM Site and available for inspection by NYSDEC. Excavated soils will be stockpiled on, at minimum, double layers of 8-mil minimum sheeting, will be kept covered at all times with appropriately anchored plastic tarps, and will be routinely inspected. Broken or ripped tarps will be promptly replaced.

All stockpile activities will be compliant with applicable laws and regulations. Soil stockpile areas will be appropriately graded to control run-off in accordance with applicable laws and regulations. Stockpiles of excavated soils and other materials shall be located at least 50 feet from the property boundaries, where possible. Silt fence or equivalent will surround soil stockpiles except for areas where access by equipment is required. Silt fencing and hay bales will be used as needed near catch basins, surface waters and other discharge points.

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

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

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

Water will be available on-Site at suitable supply and pressure for use in dust control.

3.2.6.3 Materials Excavation and Load Out

The Professional Engineer (PE)/Qualified Environmental Professional (QEP) overseeing the remedial action will:

- Observe and document remedial work and the excavation and load-out of excavated material;

- Ensure that there is a party responsible for the safe execution of invasive and other work performed under this IRM Work Plan;
- Ensure that IRM Site development activities and development-related grading cuts will not interfere with, or otherwise impair or compromise the remedial activities proposed in this IRM Work Plan;
- Ensure that the presence of utilities and easements on the IRM Site has been investigated and that any identified risks from work proposed under this plan are properly addressed by appropriate parties;
- Ensure that all loaded outbound trucks are inspected and cleaned (if necessary) before leaving the IRM Site;
- Ensure that all egress points for truck and equipment transport from the IRM Site will be kept clean of Site-derived materials during Site remediation.

Locations where vehicles exit the IRM Site shall be inspected daily for evidence of soil tracking off premises. Cleaning of the adjacent streets will be performed as needed to maintain a clean condition with respect to Site-derived materials.

Open and uncontrolled mechanical processing of historical fill and contaminated soil on-Site will not be performed without prior NYSDEC approval.

The Remedial Engineer or a qualified environmental professional under his/her supervision will oversee all invasive work and the excavation and load-out of all excavated material.

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

The presence of utilities and easements on the IRM Site has been investigated by the Remedial Engineer. There has been no previous development on the IRM Site. The Site Civil drawings for the WFP are included in **Appendix A**. Hazen has identified the closest existing utilities are associated with Purchase Street to the west of the IRM Site. It has been determined that no risk or impediment to the planned work under this IRM Work Plan is posed by existing utilities or easements on the IRM Site. In 2021, the IRM Site was investigated with a geotechnical program that included 28 test borings and 13 test pits, which did not identify any subsurface utilities (see **Appendix B**).

Loaded vehicles leaving the IRM 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). Vehicles leaving the IRM Site will not be overloaded. The Remedial Engineer's representative will make reasonable efforts to ensure that vehicles are not loaded beyond their NYSDOT weight rating and that all material is secured beneath the truck bed cover.

A truck wash will be operated on-Site. The Remedial Engineer will be responsible for ensuring that all outbound trucks will be washed at the truck wash before leaving the IRM Site until the remedial activities are complete.

Locations where vehicles enter or exit the IRM Site shall be inspected daily for evidence of off-Site sediment tracking.

The Remedial Engineer will be responsible for ensuring that all egress points for truck and equipment transport from the IRM Site will be clean of dirt and other materials derived from the IRM Site during Site remediation and redevelopment. Cleaning of the adjacent streets will be performed as needed to maintain a clean condition with respect to Site-derived materials.

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

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

Each remedial excavation location and structure to be remediated (USTs, vaults and associated piping, transformers, etc.) will be removed and end-point remedial excavation performance sampling completed, as needed.

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

Mechanical processing of historical fill and contaminated soil on-Site is prohibited.

All primary contaminant sources (including, but not limited to, tanks and remedial excavations) identified during the SRI will be surveyed by a surveyor licensed to practice in the State of New York. The survey information will be shown on maps to be reported in the CCR.

3.2.6.4 Materials Transport Off-Site

Loaded vehicles leaving the IRM Site will comply with all applicable materials transportation requirements (including appropriate covering, manifests, and placards) in accordance with applicable laws and regulations, including use of licensed haulers in accordance with 6 NYCRR Part 364. If loads contain wet material capable of causing leakage from trucks, truck liners will be used. Queuing of trucks will be performed on-Site, when possible, in order to minimize off-Site disturbance. Off-Site queuing will be minimized. No queueing will be allowed on Purchase Street, and all trucks will enter the IRM Site from the north.

All outgoing trucks will head north on purchase street to access Interstate 684 heading north or south bound.

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.

All trucks loaded with IRM Site materials will exit the vicinity of the IRM Site using only these approved truck routes. This is the most appropriate route and takes into account: (a) limiting transport through residential areas and past sensitive sites; (b) minimizing off-Site queuing of trucks entering the IRM Site; (c) limiting total distance to major highways; (d) promoting safety in access to highways; (e) overall safety in transport; and (f) community input.

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

Queuing of trucks will be performed on-Site in order to minimize off-Site disturbance. Off-Site queuing will be minimized. Truck idling shall be limited to a maximum of three consecutive minutes.

Material transported by trucks exiting the IRM 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.

All trucks will be washed prior to leaving the IRM Site. Truck wash waters will be collected and disposed of off-Site in an appropriate manner.

3.2.6.5 Materials Disposal Off-Site

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

Material that does not meet Track 1 Unrestricted Use Soil Cleanup Objectives (UUSCO) is prohibited from being taken to a New York State recycling facility (6NYCRR Part 360-.165 Registration Facility).

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

Non-hazardous historic fill and contaminated soils taken off-Site will be handled, at minimum, as a Municipal Solid Waste per 6NYCRR Part 360-1.

Historical fill and contaminated soils from the IRM Site are prohibited from being disposed at Part 360-1.156 Registration Facilities (also known as Soil Recycling Facilities).

Soils that are contaminated but non-hazardous and are being removed from the IRM Site are considered by the Division of Materials Management (DMM) in NYSDEC to be Construction and Demolition (C/D) materials with contamination not typical of virgin soils. These soils may be sent to a permitted Part 360 landfill. They may be sent to a permitted C/D processing facility without permit modifications only upon prior notification of NYSDEC Region 2 DMM. This material is prohibited from being sent or redirected to a Part 360-165 Registration Facility. In this case, as dictated by DMM, special procedures will include, at a minimum, a letter to the C/D facility that provides a detailed explanation that the material is derived from a DER remediation Site, that the soil material is contaminated and that it must not be redirected to on-Site or off-Site Soil Recycling Facilities. The letter will provide the project identity and the name and phone

number of the Remedial Engineer. The letter will include as an attachment a summary of all chemical data for the material being transported.

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

Bill of Lading system or equivalent will be used for off-Site movement of non-hazardous wastes and contaminated soils. This information will be reported in the CCR.

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

Appropriately licensed haulers will be used for material removed from this IRM Site and will be in full compliance with all applicable local, State and Federal regulations.

3.2.6.6 Materials Reuse On-Site

The project anticipates limited reuse of materials on-site. A "Request to Import/Reuse Fill Material" form will be filed with the NYSDEC project manager for review and approval prior to material reuse on the IRM Site. A copy of the form is presented in **Appendix H.**

The Remedial Engineer will ensure that procedures defined for materials reuse in this IRMWP are followed and that unacceptable material will not remain on-Site.

Acceptable demolition material proposed for reuse on-Site, if any, will be sampled for asbestos. Concrete crushing or processing on-Site is prohibited, unless NYSDEC has specifically approved on-site processing and reuse of acceptable demolition material.

Organic matter (wood, roots, stumps, etc.) or other solid waste derived from clearing and grubbing of the IRM Site is prohibited for reuse on-Site.

Contaminated on-Site material, including historic fill and contaminated soil, removed for grading or other purposes will not be reused within a cover soil layer, within landscaping berms, or as backfill for subsurface utility lines. This will be expressed in the final Site Management Plan.

3.2.6.7 Fluids Management

Dewatering will be required during excavation of the building foundation. Extracted groundwater will be treated prior to disposal. The groundwater will be extracted as required by the dewatering design. The water from the drainage pumps will be pumped to an on-Site treatment system. The water will be periodically sampled, as required by the SPDES permit, prior to discharge. If required, the treatment system will include a settling tank, oil/water separator, bag filters, and/or carbon steel vessels. The quantity of groundwater to be extracted and treated will be determined based upon the following factors:

- Duration of excavation work below the water table;
- Depth of excavation beneath the water table; and
- Hydrogeologic factors including hydraulic permeability, hydraulic gradient, and rate of recharge into the excavation.

Extracted and treated groundwater will serve to reduce toxicity, mobility, and volume of contaminated groundwater beneath the IRM Site.

All liquids to be removed from the IRM Site, including dewatering fluids, will be handled, transported, and disposed in accordance with applicable local, State, and Federal regulations. Discharge of water generated during construction to surface waters (i.e., a local pond, stream, or river and/or storm sewer) is prohibited without a SPDES permit. In addition, no liquids discharged into the municipal sewer system without an approved permit to discharge.

3.2.6.8 Demarcation

If contaminated soils are present after the completion of soil removal and any other invasive remedial activities and prior to backfilling, a New York State licensed surveyor will perform a land survey. The survey will define the top elevation of residual contaminated soils, if any. A physical demarcation layer, consisting of orange snow fencing material or equivalent material will be placed on this surface to provide a visual reference, as needed. This demarcation layer will constitute the top of the 'Residuals Management Zone,' the zone that requires adherence to special conditions for disturbance of contaminated residual soils defined in the Site Management Plan. The survey will measure the grade covered by the demarcation layer before the placement of cover soils, pavement and sub-soils, structures, or other materials. This survey and the demarcation layer placed on this grade surface will constitute the physical and written record of the upper surface of the 'Residuals Management Zone' in the Site Management Plan. A map showing the survey results will be included in the CCR.

3.2.6.9 Backfill from Off-Site Sources

Import of soils (e.g., gravel, rock, stone, etc.) onto the property will be performed as needed. Backfill materials used at the IRM Site will meet the requirements of 6 NYCRR Part 375-6.7(d) for use as backfill. Backfill materials will also be suitable for the Track 4 Engineering Controls (SSDS) should they be determined as necessary during the SRI.

Quarry material (gravel and stone) will not be tested prior to placement. Soils imported to the IRM Site will be tested at the point of origin and imported as outlined in the SMMP (**Appendix G**) and in accordance with DER-10. Soils will be approved for use as backfill by NYSDEC prior to transport to the IRM Site unless exempt from DER-10.

All materials proposed for import onto the IRM Site will be approved by the Remedial Engineer and will be in compliance with provisions in this IRM Work Plan prior to receipt at the IRM Site.

Material from industrial sites, spill sites, other environmental remediation sites or other potentially contaminated sites will not be imported to the IRM Site. Solid waste will not be imported onto the IRM Site.

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

All imported soils will meet NYSDEC approved backfill or cover soil quality objectives for this IRM Site. These NYSDEC approved backfill or cover soil quality objectives are the lower of the protection of groundwater or the protection of public health soil cleanup objectives as set forth in Table 375-6.8(b) of 6 NYCRR Part 375. Therefore, soils exceeding those standards are not defined as Type 2 or Type 3 fill and are not suitable for general beneficial reuse.

Non-compliant soils will not be imported onto the IRM Site without prior approval by NYSDEC. Nothing in the IRM Work Plan or its approval by NYSDEC should be construed as an approval for this purpose.

A "Request to Import/Reuse Fill Material" form will be filed with the NYSDEC project manager for review and approval prior to import to the IRM Site. A copy of the form is presented in **Appendix H**.

This contingency plan is developed for the remedial construction to address the discovery of unknown structures or contaminated media during excavation. Identification of unknown contamination source areas during invasive Site work will be promptly communicated to NYSDEC's Project Manager.

If USTs or other previously unidentified contaminant sources are found during on-Site excavation or redevelopment related construction, sampling will be performed on product, sediment, and surrounding soils. Chemical analytical work will be for full scan parameters (TAL metals; TCL volatiles and semi-volatiles, TCL pesticides, PCBs, and PFAS). Analyses will not be otherwise limited without NYSDEC approval.

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

Petroleum spills will be reported to the NYSDEC Spill Hotline. These findings will be included in the daily report. If previously unidentified contaminant sources are found during on-Site redevelopment-related excavation, sampling will be performed on contaminated source material and surrounding soils and reported to NYSDEC. Chemical analytical testing will be performed for TAL metals, TCL volatiles and semi-volatiles, TCL pesticides and PCBs, PFAS, as appropriate.

3.2.7 Odor, Dust, and Nuisance Control Plan

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

3.2.7.1 Odor Control Plan

This odor control plan is capable of controlling emissions of nuisance odors off-Site (we note that there will not be residents or tenants on the property during the IRM). Odor controls will be employed to prevent on- and off-Site odor nuisances, as needed. If odors are present, the minimum procedures will include: (a) limiting the area of open excavations; (b) shrouding open excavations with tarps and other covers; and (c) use of odor suppressants to cover exposed odorous soils. If nuisance odors develop and cannot otherwise be controlled, additional means to eliminate them will include: (d) direct load-out of soils to trucks for off-Site disposal; and (e) use of chemical odorant suppressants in spray or misting systems.

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

3.2.7.2 Dust Control Plan

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

- Water will be available on-Site at suitable supply and pressure for use in dust control.
- Clearing and grubbing of larger sites will be done in stages to limit the area of exposed, unvegetated soils vulnerable to dust production.
- Gravel will be used on roadways to provide a clean and dust-free road surface.
- On-Site roads will be limited in total area to minimize the area required for water spraying.

3.2.7.3 Other Nuisances

A plan for rodent control will be developed and utilized by the contractor prior to and during IRM Site clearing and grubbing, and during redevelopment work.

A plan will be developed and utilized by the contractor for all remedial work and will conform, at a minimum, to local ordinances for noise control standards.

3.2.8 Stormwater Pollution Prevention Plan (SWPPP)

A SWPPP will be prepared for the IRM Site and finalized prior to the commencement of remedial activities. The SWPPP addresses requirements of New York State Stormwater Management Regulations including physical methods to control and/or divert surface water flows and to limit the potential for erosion and migration of IRM Site soils, via wind or water, will accommodate the construction sequencing and staging areas. The erosion and sediment controls outlined in the SWPPP are in conformance with requirements presented in the New York State Guidelines for Urban Erosion and Sediment Control.

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

Barriers and hay bale checks will be installed and inspected once a week and after every storm event. Results of inspections will be recorded in a logbook and maintained at the IRM 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.

The manufacturer's recommendations will be followed to replace silt fencing damaged due to weathering. Erosion and sediment control measures identified in the SWPPP shall be observed to ensure that they are operating correctly. Where discharge locations or points are accessible, they shall be inspected to ascertain whether erosion control measures are effective in preventing significant impacts to receiving waters. Silt fencing or hay bales will be installed around the entire perimeter of the construction area.

A copy of the SWPPP will be provided to NYSDEC electronically through an electronic Notice of Intent submission on NYSDEC's eBusiness portal.

3.2.9 Community Air Monitoring Plan (CAMP)

Real-time air monitoring for VOCs and particulate levels at the perimeter of the exclusion zone or work area will be performed in accordance with the CAMP (see also **Appendix I**).

Continuous air monitoring will be required during ground intrusive activities and other activities where equipment is disturbing the ground surface. Ground intrusive activities include, but are not limited to, soil/fill excavation and handling, test pitting or trenching, grading of existing IRM Site soils and the installation of soil borings, or monitoring wells.

VOC Monitoring, Response Levels, and Actions

VOCs will be monitored at the IRM Site perimeter on a continuous basis during earthwork activities unless otherwise specified in the CAMP. Upwind concentrations will be measured at the start of each workday and periodically thereafter to establish background conditions, particularly if wind direction changes. The VOC monitoring work will be performed using equipment appropriate to measure the types of contaminants known or suspected to be present. The equipment will be calibrated at least daily for the contaminant(s) of concern or for an appropriate surrogate. The equipment will be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below.

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 will be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities will 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 will be halted, the source of vapors will be identified, corrective actions will be taken to abate emissions, and monitoring will be continued. After these steps, work activities will 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 will be shut down until the source of the problem is identified and corrective action is taken to reduce organic vapor levels.

4. Fifteen-minute readings will be recorded and be available for State (NYSDEC and NYSDOH) personnel to review. Instantaneous readings, if any, used for decision purposes will also be recorded.

Particulate Monitoring, Response Levels, and Actions

Particulate concentrations will be monitored at the IRM Site perimeter and in work zones on a continuous basis during earthwork. The particulate monitoring will 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 will be equipped with an audible alarm to indicate exceedance of the action level. In

addition, fugitive dust migration will be visually assessed during all work activities. Visible dust from the work area will trigger the initiation of dust suppression procedures.

1. If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/m3) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques will be employed. Work will continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 mcg/m3 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/m3 above the upwind level, work will be stopped, and a re-evaluation of activities initiated. Work will resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 mcg/m3 of the upwind level and in preventing visible dust migration.

3. Readings will be recorded and be available for the NYSDEC and NYSDOH to review.

Any exceedances of CAMP action levels and corrective measures taken must be reported to NYSDEC and NYSDOH project managers, within 24 hours of occurring. In addition, the Daily Reports with note all action level exceedances and corrective actions with CAMP data summary tables.

3.2.10 Contractors Site Operations Plan

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

3.2.11 Citizen Participation Plan (CPP)

A CPP has been prepared by the Airport for the BCP Site. The CCP, including an overview of the NYS BCP program, background of the Site, a summary of the investigative findings for the Site, and citizen participation activities, is included as **Appendix J**.

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

- **Westchester County Airport Environmental Department**
  Main Terminal, Suite 202
  White Plains, NY 10604
- **New York State Department of Environmental Conservation**
  Division of Environmental Remediation - Region 3
  21 South Putt Corners Road
  New Paltz, NY 12561
  845-256-3146
- Access project documents online through the DECinfo Locator:

  https://extapps.dec.ny.gov/data/DecDocs/C360174/

3.3 Remedial Performance Evaluation

The QHHEA identified groundwater and potentially soil as the impacted media and the potential sources of COPC with further delineation to be completed under this IRM. The SMMP will detail the soil management procedures including soil stockpiling, materials excavation and load out, off-Site materials transport, dust control measures, etc. Extracted groundwater will be containerized and treated, as necessary. The groundwater will be extracted as required by the dewatering design. The water from the drainage pumps will be pumped to either an on-Site wastewater storage tank or an on-Site treatment system. The water will be periodically sampled, as required by the permits, and treated prior to discharge. The Interim Site Management Plan (ISMP) for the Airport outlines soil, soil vapor, and groundwater handling practices to minimize exposure. The BCP Site soil is identified as the primary impacted media and the primary potential sources of COPCs. Documentation end-point soil samples will be collected to evaluate the performance of the remedy, if needed.

3.3.1 Estimated Material Removal Quantities

The following construction excavation will be performed at proposed limits of excavation for the proposed new building and supporting infrastructure (see **Figure 5** – Excavation Plan):

- Excavation down to between 20-35 ft bgs across the proposed WFP building footprint.
- Excavation down to between 20-35 ft bgs across the WFP supporting infrastructure footprint, i.e., stormwater management and utility connections.
- Excavations down to a maximum of 5 ft bgs across the remaining areas within the limits of disturbance for construction.

The construction excavation is anticipated to generate approximately 52,000 CY of excavated material. The portion of this excavation that will be considered for remedial purposes will be determined during the SRI should contamination requiring remediation be found at the IRM Site. The excavated material will be logged and tracked, and the information will be included in the CCR.

3.3.2 Soil Cleanup Objectives

The IRM will be a Track 4 remedy utilizing Site Specific SCOs.

3.3.3 Confirmatory Endpoint Sampling

For excavations, GZA will collect endpoint samples from the bottom of excavation areas found to have contamination during the SRI. Endpoint samples will be collected from the bottom of excavation at a frequency of one sample per every 900 square feet. In addition, sidewall samples will be collected at frequency of one sample for every 30 linear feet of sidewall (with a minimum of one sample per sidewall). Endpoint samples will be analyzed for contaminants identified during the SRI. Recommendations for endpoint sampling locations will be made in the Supplemental Remedial Investigation Report (RIR).

3.3.3.1 Methodology

End-point sample soils from the sidewall and bottom of the excavation will be screened in-situ for organic vapors using a calibrated photoionization detector (PID) equipped with a 10.6 electron volt lamp. The samples will be examined for staining, discoloration, and odors. All field observations will be recorded in a field logbook.

Soil samples for VOCs will be collected using 5-gram Terracore™ samplers. Sampling personnel will wear nitrile gloves during sampling and make every effort to avoid contact between the gloves with the sample. VOC soil duplicates will not be mixed but collected within as close proximity of each other as site conditions permit. Additional sample volume may be collected for samples slated for MS/MSD analysis.

Soil samples will be collected in laboratory provided containers and transported to a NYSDOH Environmental Laboratory Approval Program (ELAP) certified laboratory, under chain-of-custody procedures for analysis. Once the sample containers are filled, they will be immediately placed in the cooler with ice (in Ziploc plastic bags to prevent leaking) to maintain the samples at below 4^{o}C. Synthetic ice packs are not to be used in coolers carrying samples for PFAS analysis.

A New York State Environmental Laboratory Accreditation Program (NYS ELAP) certified labs will be used for all end-point sample analyses. Labs for end-point sample analyses will be reported in the CCR. The CCR will provide a tabular and map summary of all end-point sample results and will include all data including non-detects and applicable standards and/or guidance values. End-point samples will be analyzed for compounds and elements as described below utilizing the following methodology, as needed:

- TCL VOCs by EPA Method 8260C
- TCL SVOCs by EPA Method 8270D
- TAL Metals by EPA Method 6010C and 7000
- TCL Pesticides and PCBs by EPA Method 8081B and 8082A
- 1,4-Dioxane by EPA Method 8270,
- Per- and polyfluoroalkyl substances (PFAS) by EPA Method 1633

3.3.3.2 Reporting of Results

End-point soil sample results will be compared to Part 375 Unrestricted Use Soil Cleanup Objectives and Protection of Groundwater Soil Cleanup Objectives, as appropriate.

3.3.3.3 Quality Assurance / Quality Control

A QAPP was prepared for the Airport BCP Site to ensure that field sampling procedures, selected analytical methods, and chemical analytical data are of sufficient quality to meet the intended usage. The sampling program has been designed to evaluate endpoint soil samples.

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

GZA will collect Quality Assurance/Quality Control (QA/QC) samples to: (1) check sample bottle preparation; (2) evaluate contamination introduced during transport; (3) evaluate the effectiveness of field decontamination procedures; and (4) evaluate the "reproducibility and accuracy of the laboratory analytical procedures. QA/QC samples will be collected at the frequency outlined in **Appendix E**.

3.3.3.4 Data Usability Summary Report (DUSR)

The DUSR provides a thorough evaluation of analytical data without third party data validation. The primary objective of a DUSR is to determine whether or not the data, as presented, meets the site/project specific criteria for data quality and data use. Verification and/or performance monitoring samples collected under IRMWP will be reviewed and evaluated in accordance with the Guidance for the Development of Data Usability Summary Reports as presented in Appendix 2B of DER-10. The completed DUSR for verification/performance samples collected during implementation of this IRMWP will be included in the CCR.

Chemical labs used for all end-point sample results and contingency sampling will be NYSDOH ELAP certified. End point sampling, including bottom and side-wall sampling, will be performed in accordance with DER-10 sample frequency requirements. The CCR will provide a tabular and map summary of all end-point sample results and exceedances of SCOs.

The SMMP (see **Appendix G**) provides additional detail on soil management procedures including soil stockpiling, materials excavation and load out, off-Site materials transport, dust control measures, etc.

3.4 Engineering Controls

The intent of this project is to achieve a Track 4 Site-specific SCOs within the IRM area. If necessary, partial elements of the Engineering Controls such as composite cover and demarcation layers will be installed in the IRM Area to address residual soil contamination remaining at the IRM Site after the IRM.

3.5 Remedial Performance Evaluation

The Qualitative Human Health Exposure Assessment (QHHEA) identified groundwater, and potentially soil, as the impacted media and the potential sources of COPC. The SMMP will detail the soil management procedures including soil stockpiling, materials excavation and load out, off-Site materials transport, dust control measures. The ISMP for the Airport BCP Site will outline soil, soil vapor, and groundwater handling practices to minimize exposure. On the BCP Site groundwater is identified as the primary impacted media and the primary potential sources of COPCs. Documentation end-point soil samples will be collected, as needed, to evaluate the performance of the remedy. If groundwater impacts are identified during the SRI (see **Section 3.2.2** and **Appendix C**), then a post-remedial groundwater monitoring program will be proposed in the SMP.

A soil vapor intrusion (SVI) evaluation will be performed, and system components acting as engineering control will be installed in the event mitigation of contaminated soil vapors on the IRM Site is determined to be required. If required, the system start-up and system controls will be documented accordingly as part of the remedial design. A vapor intrusion investigation consisting of sub-slab soil gas samples, indoor air samples and background samples will be conducted to evaluate system performance will be conducted as detailed in the SMP. The operation, monitoring, and maintenance requirements for system components will be described in a SMP.

3.6 Reporting and Record Keeping

All daily and monthly reports will be included in the CCR.

3.6.1 Daily Reports

Daily field reports providing a general summary of activities for each day of active remedial work will be emailed to the NYSDEC Project Manager by the end of the following day. The daily reports will include:

- Project number and statement of the activities and an update of progress made, and locations of work performed;
- Quantities of material imported and exported from the IRM Site;
- Status of on-Site soil/fill stockpiles;
- A summary of all citizen complaints, with relevant details (basis of complaint; actions taken; etc.);
- Emergencies related to the IRM Site, if any;
- A summary of CAMP data, noting any action level exceedances, corrective actions taken; and,
- Photograph of notable IRM Site conditions and activities.

The frequency of the reporting period may be revised in consultation with the NYSDEC Project Manager based on planned project tasks. Daily email reports are not intended to be the primary mode of communication for notification to NYSDEC of emergencies (accidents, spills), requests for changes to the IRMWP or other sensitive or time critical information. However, such information will be included in the daily reports. Emergency conditions and changes to the IRM Work Plan will be communicated directly to the NYSDEC project manager by personal communication. Monthly reports will be submitted to the NYSDEC and NYSDOH on the 10th day of the following month. Monthly reports will provide an update of progress made during the reporting period, a summary of the daily reports, any analytical data received during the reporting period and a summary of activities scheduled for the next reporting period.

Daily reports will be included as attachments to the CCR.

3.6.2 Record Keeping and Photo Documentation

Job-site record keeping for all remedial work will be performed. These records will be maintained on-Site during the project and will be available for inspection by NYSDEC staff. Representative photographs will be taken of the IRM Site prior to any remedial activities and during major remedial activities to illustrate remedial program elements and contaminant source areas. Photographs will be submitted at the completion of the project in the CCR in digital format.

3.6.3 Construction Completion Report

Detailed information regarding the IRM (e.g., general description of the construction activities, waste disposal documentation, backfill documentation, photographic documentation, etc.) and the IRM will be included in the CCR to be prepared following receipt of all data, the DUSRs (if data requiring 3rd party review are generated), and all final disposal documentation. The CCR will be submitted within approximately 30 days after the completion of IRM activities.

3.7 Green and Sustainable Remediation

According to the NYSDEC DER-31 Green Remediation guidance document, green remediation approaches will be considered during site remediation. GZA, the general contractor, and other subcontractors will incorporate sustainability practices to reduce the environmental footprint of the investigation and cleanup. In accordance with ASTM E2893-16e1, the Green and Sustainable Remediation (GSR) goals for the project include the following:

- To minimize total energy use and maximize use of renewable energy,
- To minimize air pollutants and greenhouse gas emissions,
- To minimize water, use and impact to water resources,
- To reduce, reuse and recycle materials and waste; and
- To protect land and ecosystems.

GZA will incorporate best management practices to lower our environmental footprint during the investigation and remediation phase of the project. GZA will incorporate the following practicable measures during the planned scope of work:

1. Limit the use of generators, excavation equipment, and vehicles to reduce emissions.
2. Minimize truck travel for disposal of waste generated during the IRM implementation by selecting local disposal facilities.
3. Minimize waste disposal by reusing soil/fill that does not exhibit visual, olfactory, or PID evidence of contamination to backfill excavated areas.
4. Manage onsite resources and materials efficiently.
5. Use local subcontractors during IRM implementation to minimize vehicle emissions during commute.
6. Request IRM implementation subcontractors to use clean diesel equipment to reduce emissions.
7. Request project staff and subcontractors to use public transportation during IRM implementation to the extent practicable.

8. Reducing waste, increasing recycling, and increasing reuse of materials that otherwise be considered waste.

A climate screen checklist and an environmental footprint analysis have been completed for the project and are attached in **Appendix K**.

4.0 SCHEDULE

The table below presents a schedule for the IRM and reporting. If the schedule for IRM and redevelopment activities changes, it will be updated and submitted to NYSDEC, as necessary.

Schedule Milestone	Duration (weeks)	Weeks from Approval	Anticipated Start Date	Anticipated End Date
NYSDEC Review and Approval of IRM Work Plan and SRI Work Plan	6	-6	July 30, 2025	September 12, 2025
Completion of the SRI Field Work	1	1	September 15, 2025	September 19, 2025
IRM Kick-off Meeting	1	2	September 22, 2025	September 26, 2025
Submit Supplemental RIR and Remedial Excavation Plan	3	4	September 22, 2025	October 3, 2025
Site Preparation	8	10	September 29, 2025	November 21, 2025
NYSDEC Review and Approval of Supplemental RIR and Remedial Excavation Plan	6	10	October 6, 2025	November 14, 2025
Mobilization for IRM	2	12	November 17, 2025	November 28, 2025
Building Excavation	80	91	December 1, 2025	June 11, 2027
Site Restoration	32	123	June 14, 2027	January 21, 2028
Submit IRM Construction Completion Report	4	127	January 24, 2028	February 18, 2028
NYSDEC Approves IRM Construction Completion Report	6	133	February 21, 2028	March 31, 2028
Water Filtration Plant Commissioned	25	152	January 24, 2028	July 21, 2028
Note: Schedule is subject to adjustment based on NYSDEC approval process and scheduling of construction.				

TABLES

Table 1 - Supplemental Remedial Investigation Sample Summary
Rye Lake Water Filtration Plant
Westchester County, New York
BCP Site No. C360174

Sample Matrix	Sample ID	Sample Location	Depth	Rationale	Sample Analyses
Soil	B-31	Northern portion of the IRM Site adjacent to existing MW-29	Soil with evidence of contamination, or from the interval just above the water table interface if there are no obvious impacts.	To assess the soil quality at the site	VOCs by EPA Method 8260 SVOCs by EPA Method 8270 TAL Metals by EPA Method 6010C/7471B Pesticides by EPA Method 8081 PCBs by EPA Method 8082A 1,4-Dioxane by EPA Method 8270 PFAS by EPA Method 1633 (contingent)
			0-2 inches, 2-12 inches, 12-24 inches bgs, and one contingent above water table interface		PFAS by EPA Method 1633
Soil	B-32	Central portion of the proposed northern bioretention footprint	Soil with evidence of contamination, or from the interval just above the water table interface if there are no obvious impacts.	To assess the soil quality at the site	VOCs by EPA Method 8260 SVOCs by EPA Method 8270 TAL Metals by EPA Method 6010C/7471B Pesticides by EPA Method 8081 PCBs by EPA Method 8082A 1,4-Dioxane by EPA Method 8270 PFAS by EPA Method 1633 (contingent)
			0-2 inches, 2-12 inches, 12-24 inches bgs, and one contingent above water table interface		PFAS by EPA Method 1633
Soil	B-33	Central portion of the proposed eastern bioretention footprint	Soil with evidence of contamination, or from the interval just above the water table interface if there are no obvious impacts.	To assess the soil quality at the site	VOCs by EPA Method 8260 SVOCs by EPA Method 8270 TAL Metals by EPA Method 6010C/7471B Pesticides by EPA Method 8081 PCBs by EPA Method 8082A 1,4-Dioxane by EPA Method 8270 PFAS by EPA Method 1633 (contingent)
			0-2 inches, 2-12 inches, 12-24 inches bgs, and one contingent above water table interface		PFAS by EPA Method 1633

Table 1 - Supplemental Remedial Investigation Sample Summary
Rye Lake Water Filtration Plant
Westchester County, New York
BCP Site No. C360174

Sample Matrix	Sample ID	Sample Location	Depth	Rationale	Sample Analyses
Soil	B-34	Northern portion of the proposed building footprint for the filtration plant	Soil with evidence of contamination, or from the interval just above the water table interface if there are no obvious impacts.	To assess the soil quality at the site	VOCs by EPA Method 8260 SVOCs by EPA Method 8270 TAL Metals by EPA Method 6010C/7471B Pesticides by EPA Method 8081 PCBs by EPA Method 8082A 1,4-Dioxane by EPA Method 8270 PFAS by EPA Method 1633 (contingent)
			0-2 inches, 2-12 inches, 12-24 inches bgs, and one contingent above water table interface		PFAS by EPA Method 1633
Soil	B-35	Southern portion of the proposed building footprint for the filtration plant	Soil with evidence of contamination, or from the interval just above the water table interface if there are no obvious impacts.	To assess the soil quality at the site	VOCs by EPA Method 8260 SVOCs by EPA Method 8270 TAL Metals by EPA Method 6010C/7471B Pesticides by EPA Method 8081 PCBs by EPA Method 8082A 1,4-Dioxane by EPA Method 8270 PFAS by EPA Method 1633 (contingent)
			0-2 inches, 2-12 inches, 12-24 inches bgs, and one contingent above water table interface		PFAS by EPA Method 1633
Soil	B-36	Central portion of the proposed generator pad footprint	Soil with evidence of contamination, or from the interval just above the water table interface if there are no obvious impacts.	To assess the soil quality at the site	VOCs by EPA Method 8260 SVOCs by EPA Method 8270 TAL Metals by EPA Method 6010C/7471B Pesticides by EPA Method 8081 PCBs by EPA Method 8082A 1,4-Dioxane by EPA Method 8270 PFAS by EPA Method 1633 (contingent)
			0-2 inches, 2-12 inches, 12-24 inches bgs, and one contingent above water table interface		PFAS by EPA Method 1633

Table 1 - Supplemental Remedial Investigation Sample Summary
Rye Lake Water Filtration Plant
Westchester County, New York
BCP Site No. C360174

Sample Matrix	Sample ID	Sample Location	Depth	Rationale	Sample Analyses
Soil	B-37	Southern portion of the Site footprint within the boundary of the RI's Southwestern Corner Area	Soil with evidence of contamination, or from the interval just above the water table interface if there are no obvious impacts.	To assess the soil quality at the site	VOCs by EPA Method 8260 SVOCs by EPA Method 8270 TAL Metals by EPA Method 6010C/7471B Pesticides by EPA Method 8081 PCBs by EPA Method 8082A 1,4-Dioxane by EPA Method 8270 PFAS by EPA Method 1633 (contingent)
			0-2 inches, 2-12 inches, 12-24 inches bgs, and one contingent above water table interface		PFAS by EPA Method 1633
Sediment	SED-01	Between construction and airport in the wetland area	0-6 inches	To assess the sediment quality at the site	1,4-Dioxane by EPA Method 8270 PFAS by EPA Method 1633
Sediment	SED-01	Between construction and airport in the wetland area	0-6 inches	To assess the sediment quality at the site	1,4-Dioxane by EPA Method 8270 PFAS by EPA Method 1633
Sediment	SED-03	At the stream heading off property	0-6 inches	To assess the sediment quality leaving the site	VOCs by EPA Method 8260 SVOCs by EPA Method 8270 TAL Metals by EPA Method 6010C/7471B Pesticides by EPA Method 8081 PFAS by EPA Method 1633 PCBs by EPA Method 8082A 1,4-Dioxane by EPA Method 8270
Surface water (if present)	SW-01	Between construction and airport in the wetland area	N/A	To assess the surface water quality co-located with SED-01	1,4-Dioxane by EPA Method 8270 PFAS by EPA Method 1633
Surface water (if present)	SW-02	Between construction and airport in the wetland area	N/A	To assess the surface water quality co-located with SED-02	1,4-Dioxane by EPA Method 8270 PFAS by EPA Method 1633
Surface water (if present)	SW-03	At the stream heading off property	N/A	To assess the surface water quality leaving the site co-located with SED-03	VOCs by EPA Method 8260 SVOCs by EPA Method 8270 TAL Metals by EPA Method 6010C/7471B Pesticides by EPA Method 8081 PFAS by EPA Method 1633 PCBs by EPA Method 8082A 1,4-Dioxane by EPA Method 8270

Table 1 - Supplemental Remedial Investigation Sample Summary
Rye Lake Water Filtration Plant
Westchester County, New York
BCP Site No. C360174

Sample Matrix	Sample ID	Sample Location	Depth	Rationale	Sample Analyses
GW	MW-01	Central portion of the proposed eastern bioretention footprint	25 - 35 ft bgs	To assess the groundwater quality at the site	VOCs by EPA Method 8260 SVOCs by EPA Method 8270 1,4-Dioxane by EPA Method 8270 PFAS by EPA Method 1633
GW	MW-3A	Southern portion of the proposed building footprint for the filtration plant	17 - 27 ft bgs	To assess the groundwater quality at the site	VOCs by EPA Method 8260 SVOCs by EPA Method 8270 1,4-Dioxane by EPA Method 8270 PFAS by EPA Method 1633
GW	MW-29	Northern portion of the proposed limits of disturbance for the IRM	15 - 25 ft bgs	To assess the groundwater quality at the site	VOCs by EPA Method 8260 SVOCs by EPA Method 8270 1,4-Dioxane by EPA Method 8270 PFAS by EPA Method 1633
GW	WJMW-01	Central portion of the proposed eastern bioretention footprint	Screen sections will straddle the water table interface, as determined in the field	Contingent Well to assess the groundwater quality upgradient of IRM Area	VOCs by EPA Method 8260 SVOCs by EPA Method 8270 1,4-Dioxane by EPA Method 8270 PFAS by EPA Method 1633
GW	WJMW-02	Central portion of the proposed generator pad footprint	Screen sections will straddle the water table interface, as determined in the field	Contingent Well to assess the groundwater quality upgradient of IRM Area	VOCs by EPA Method 8260 SVOCs by EPA Method 8270 1,4-Dioxane by EPA Method 8270 PFAS by EPA Method 1633
Soil vapor	SV-01	Central portion of the proposed eastern bioretention footprint	4 ft bgs	To assess the soil vapor quality at the site	VOCs by EPA TO-15
Soil vapor	SV-02	Southern portion of the proposed building footprint for the filtration plant	4 ft bgs	To assess the soil vapor quality at the site	VOCs by EPA TO-15
Soil vapor	SV-03	Central portion of the proposed generator pad footprint	4 ft bgs	To assess the soil vapor quality at the site	VOCs by EPA TO-15

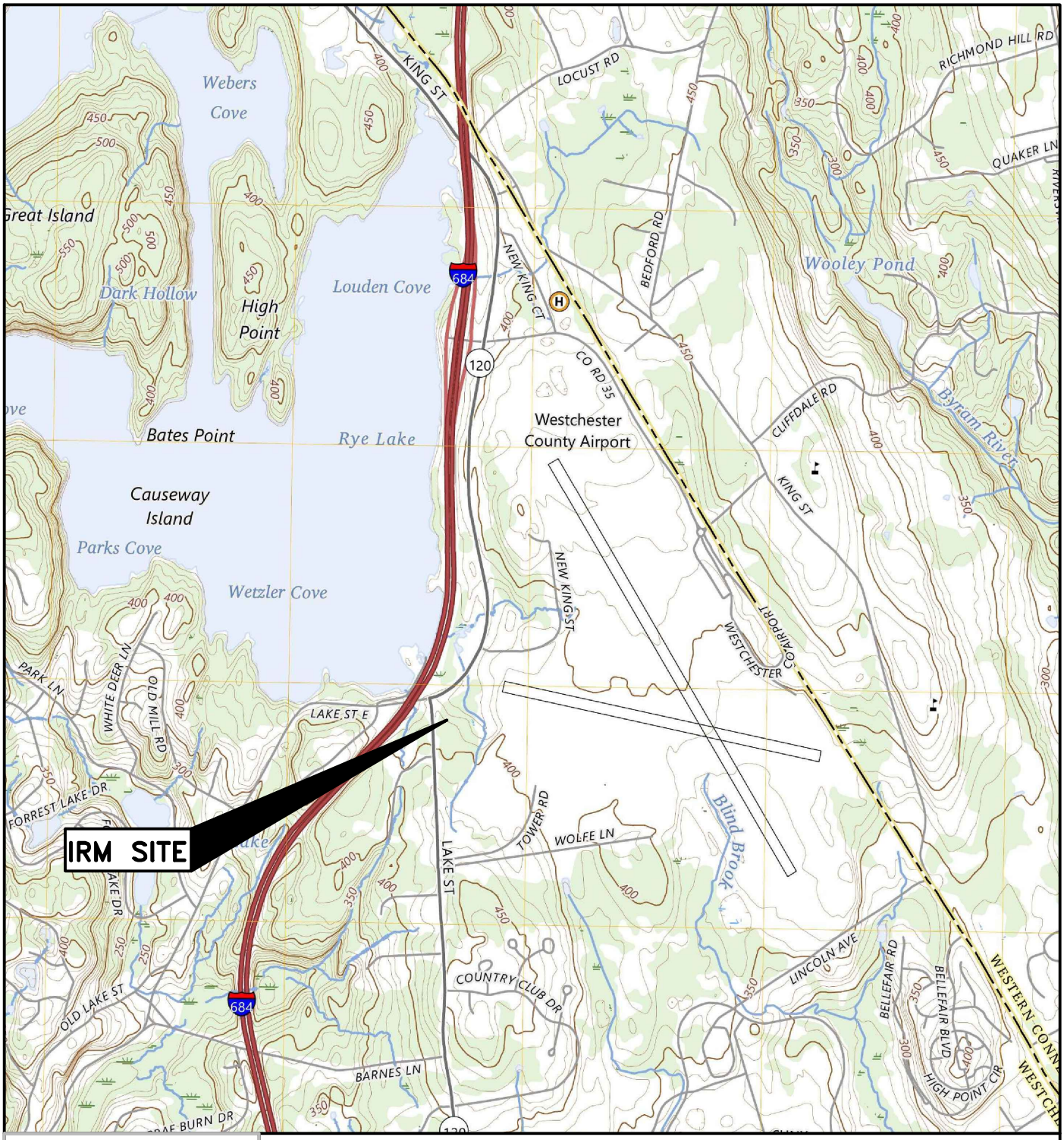
Table 2 - Previous Investigation Groundwater Data Summary
Rye Lake Water Filtration Plant
Westchester County, New York
BCP Site No. C360174

Groundwater Summary Table				
Analytes > AWQS	Sample Collected	Detections > AWQS	Maximum Detection (ppb)	AWQS (ppb)
Benzo(a)anthracene	3	1	0.05	0.002
Benzo(a)pyrene	3	1	0.05	0.002
Benzo(b)fluoranthene	3	1	0.06	0.002
Benzo(k)fluoranthene	3	1	0.03	0.002
Chrysene	3	1	0.04	0.002
Indeno(1,2,3-cd)pyrene	3	1	0.07	0.002
Aluminum, Total	3	1	81800	5
Barium, Total	3	1	1782	5
Chromium, Total	3	1	285	5
Copper, Total	3	1	230.2	10
Iron, Total	3	1	164000	5
Lead, Total	3	1	37.86	5
Magnesium, Total	3	1	63300	5
Manganese, Total	3	1	4120	5
Nickel, Total	3	1	177.3	5
Selenium, Total	3	1	10.7	5
Thallium, Total	3	1	1.81	5

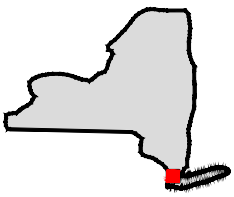
Notes:

Analytes > AWQS: Displays analytes that exceed the NYSDEC Technical and Operational Guidance Series (1.1.1) Ambient Water Quality Standards and Guidance Values.
Detections > AWQS: Number of detections over the applicable AWQS.
Maximum Detection (ppb): Maximum detection in parts per billion.
AWQS (ppb): Ambient Water Quality Standard and Guidance Value in parts per billion.

FIGURES



NEW YORK



QUADRANGLE LOCATION

SOURCE:

USGS TOPOGRAPHIC MAPS: GLENVILLE, CT (2024). CONTOUR INTERVAL 10FT., NAVD-1988, ORIGINAL SCALE 1:24,000 (1IN.=2,000FT.).

N W E S

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WESTCHESTER JOIN WATER WORKS
WATER FILTRATION PLANT

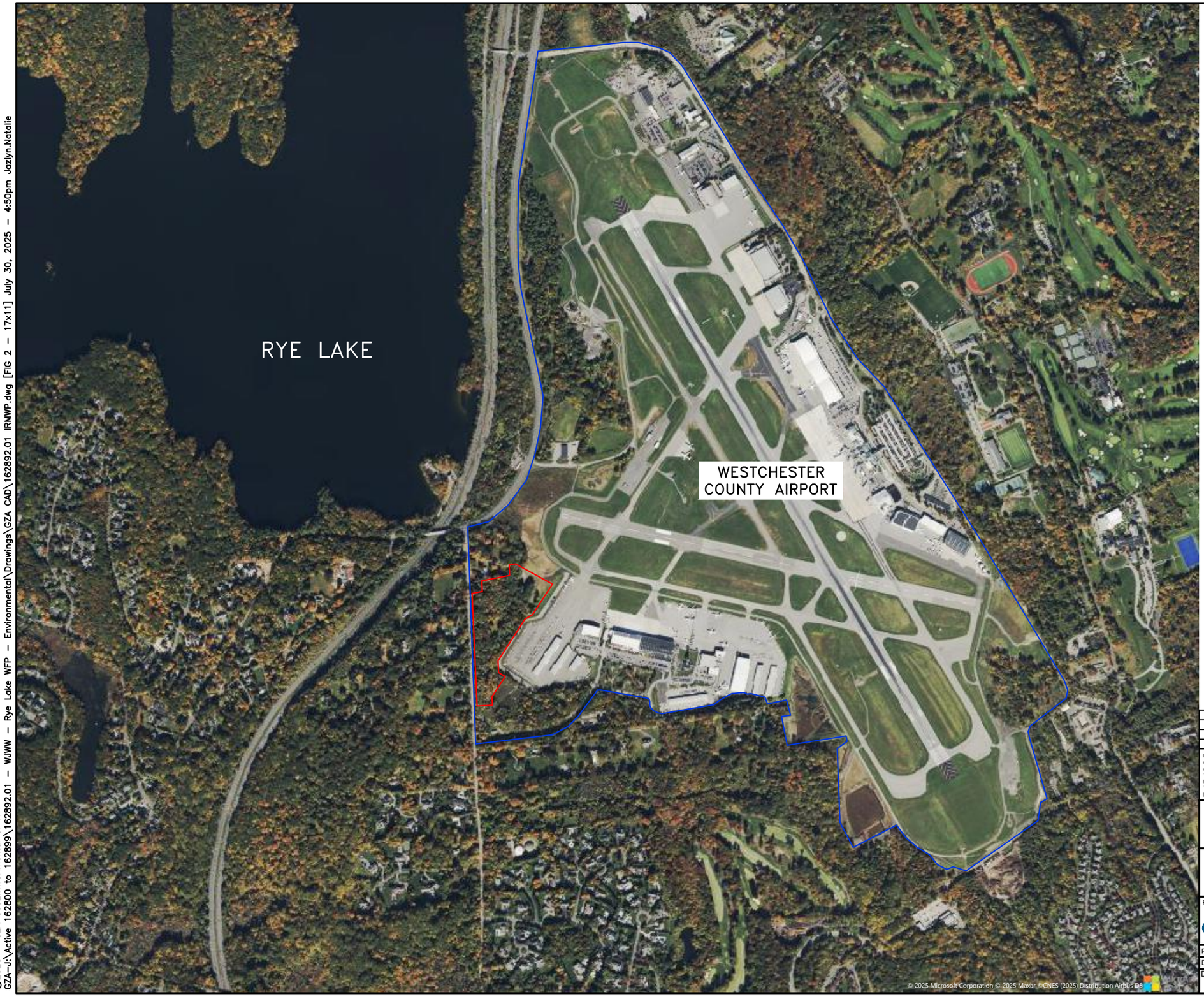
PREPARED BY:
GZA GeoEnvironmental of NY
Engineers and Scientists
www.gza.com

PREPARED FOR:
WESTCHESTER JOINT WATER WORKS

SITE LOCATION MAP

PROJ MGR: ZL	REVIEWED BY: ZL	CHECKED BY: SK	FIGURE 1
DESIGNED BY: SG	DRAWN BY: SG	SCALE: 1"=2000'	
DATE: JULY 2025	PROJECT NO. 41.0162892.01	REVISION NO. -	SHEET NO.

© 2025 – GZA GeoEnvironmental of NY.
GZA–J:\Active 162800 to 162899\162892.01 – WJWW – Rye Lake WFP – Environmental\Drawings\GZA CAD\162892.01 IRMWP.dwg [FIG 1 8.5x11] July 30, 2025 – 4:47pm Jazlyn.Natalie



GENERAL NOTES

1. AERIAL IMAGERY DEVELOPED FROM © 2025 MICROSOFT CORPORATION © 2025 MAXAR © CNES (2025) DISTRIBUTION AIRBUS DS.

LEGEND

- APPROXIMATE IRM SITE BOUNDARY
- APPROXIMATE BROWNFIELD CLEANUP PROGRAM SITE C360174 BOUNDARY

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NO.	ISSUE/DESCRIPTION	BY	DATE

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WESTCHESTER JOINT WATER WORKS
WATER FILTRATION PLANT

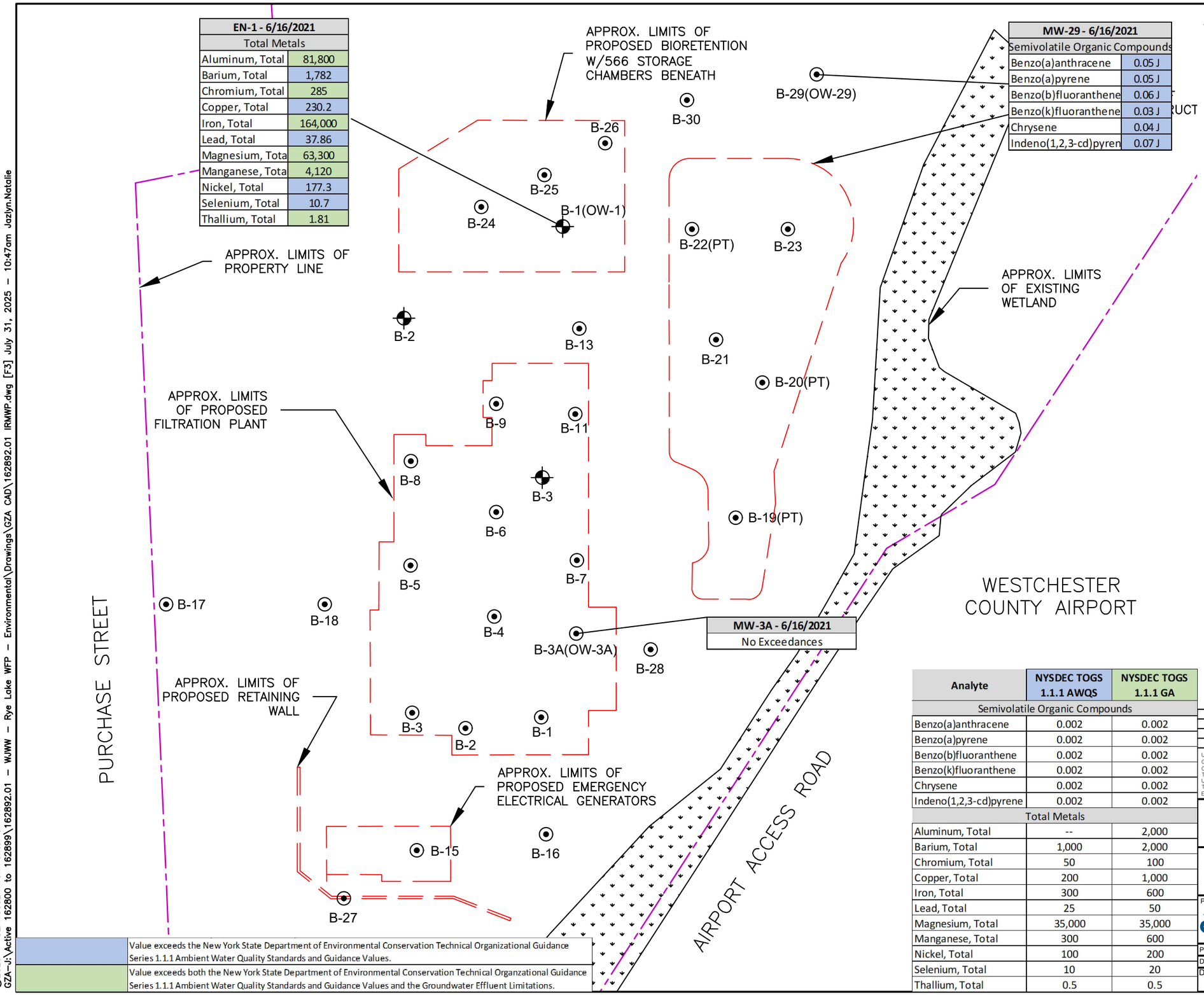
AERIAL MAP

PREPARED BY:
GZA GeoEnvironmental of NY
Engineers and Scientists
www.gza.com

PREPARED FOR:
WESTCHESTER JOINT WATER WORKS

PROJ MGR: ZL	REVIEWED BY: ZL	CHECKED BY: SK	FIGURE 2
DESIGNED BY: SG	DRAWN BY: SG	SCALE: 1" = 1000'	
DATE: JULY 2025	PROJECT NO. 41.0162892.01	REVISION NO.	SHEET NO.

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G:\Active 162800 to 162899\162892.01 – WJWW – Rye Lake WFP – Environmental\Drawings\GZA CAD\162892.01 IRMWP.dwg [FIG 2 – 17x11] July 30, 2025 – 4:50pm Jazlyn.Natalie



GENERAL NOTES

1. BASE MAP DEVELOPED FROM TOPOGRAPHIC SURVEY, PREPARED BY GEORGE J. MOTTARELLA, DATED APRIL 17, 2021 AND FROM DRAWING C–101, C–121, & C–122 TITLED, PREPARED BY, HAZEN & SAWYER, DATED JANUARY, 2023.
2. EXPLORATION LOCATIONS WERE SURVEYED AND MARKED OUT BY HAZEN & SAWYER.
3. SEE LABORATORY REPORTS FOR ADDITIONAL INFORMATION, INCLUDING QUALIFIER DESCRIPTIONS.
4. ALL CONCENTRATIONS SHOWN ARE IN MICROGRAMS PER LITER.
5. ONLY EXCEEDANCES OF NYSDEC TOGS 1.1.1 AWQS AND GA ARE SHOWN.

LEGEND

- APPROXIMATE IRM SITE BOUNDARY
- APPROXIMATE LIMITS OF PROPOSED STRUCTURES
- APPROXIMATE LIMITS OF EXISTING WETLAND
- B-X: APPROXIMATE TEST BORING LOCATION; (OW) INDICATES OBSERVATION WELL INSTALLED IN BORING; (PT) INDICATES IN–SITU PERMEABILITY TESTING PERFORMED IN BORING; PERFORMED BY GZA IN 2021.
- B-X: APPROXIMATE TEST BORING LOCATION; (OW) INDICATES OBSERVATION WELLINSTALLED IN BORING; PERFORMED BY GENERAL BORINGS, INC. IN 2019.

Analyte	NYSDEC TOGS 1.1.1 AWQS	NYSDEC TOGS 1.1.1 GA
Semivolatile Organic Compounds		
Benzo(a)anthracene	0.002	0.002
Benzo(a)pyrene	0.002	0.002
Benzo(b)fluoranthene	0.002	0.002
Benzo(k)fluoranthene	0.002	0.002
Chrysene	0.002	0.002
Indeno(1,2,3-cd)pyrene	0.002	0.002
Total Metals		
Aluminum, Total	--	2,000
Barium, Total	1,000	2,000
Chromium, Total	50	100
Copper, Total	200	1,000
Iron, Total	300	600
Lead, Total	25	50
Magnesium, Total	35,000	35,000
Manganese, Total	300	600
Nickel, Total	100	200
Selenium, Total	10	20
Thallium, Total	0.5	0.5

Value exceeds the New York State Department of Environmental Conservation Technical Organizational Guidance Series 1.1.1 Ambient Water Quality Standards and Guidance Values.

Value exceeds both the New York State Department of Environmental Conservation Technical Organzational Guidance Series 1.1.1 Ambient Water Quality Standards and Guidance Values and the Groundwater Effluent Limitations.

NO.	ISSUE/DESCRIPTION	BY	DATE

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WESTCHESTER JOINT WATER WORKS
WATER FILTRATION PLANT

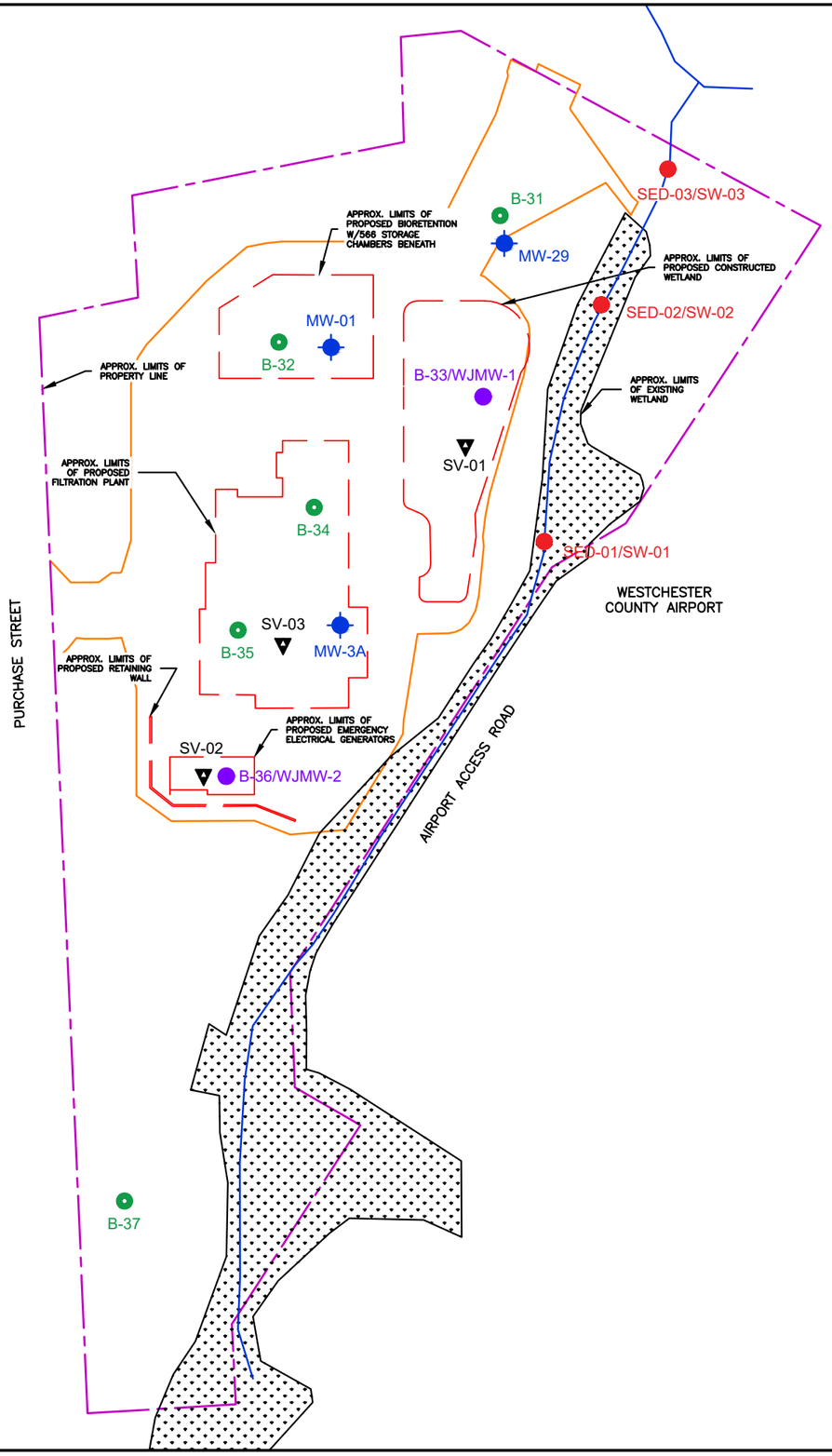
PREVIOUS GROUNDWATER RESULTS

PREPARED BY:
GZA GeoEnvironmental of NY
Engineers and Scientists
www.gza.com

PREPARED FOR:
WESTCHESTER JOINT WATER WORKS

PROJ MGR: ZL	REVIEWED BY: ZL	CHECKED BY: SK	FIGURE
DESIGNED BY: SG	DRAWN BY: SG	SCALE: 1" = 70'	3
DATE: JULY 2025	PROJECT NO. 41.0162892.01	REVISION NO. -	SHEET NO.

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GZA–J:\Active 162800 to 162899\162892.01 – WJWW – Rye Lake WFP – Environmental\Drawings\GZA CAD\162892.01 IRMWP.dwg [F3] July 31, 2025 – 10:47am Jazlyn.Natalie



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GENERAL NOTES

1. BASE MAP DEVELOPED FROM TOPOGRAPHIC SURVEY, PREPARED BY GEORGE J. MOTTARELLA, DATED APRIL 17, 2021 AND FROM DRAWING C–101, C–121, & C–122 TITLED, PREPARED BY, HAZEN & SAWYER, DATED JANUARY, 2023.

LEGEND

- APPROXIMATE IRM SITE BOUNDARY
- APPROXIMATE LIMITS OF PROPOSED STRUCTURES
- APPROXIMATE INTERMITTENT STREAM BED
- APPROXIMATE LIMITS OF EXISTING WETLAND
- APPROXIMATE LIMITS OF DISTURBANCE
- B-31 — PROPOSED SOIL BORING LOCATION
- MW-01 — EXISTING MONITORING WELL LOCATION (TO BE SAMPLED)
- B-33/WJMW-1 — PROPOSED SOIL BORING AND CONTINGENCY GROUNDWATER SAMPLING LOCATION
- SED-01/SW-01 — PROPOSED SEDIMENT AND SURFACE WATER SAMPLING LOCATION
- SV-01 — PROPOSED SOIL VAPOR SAMPLE LOCATION

0 75 150 300

SCALE IN FEET

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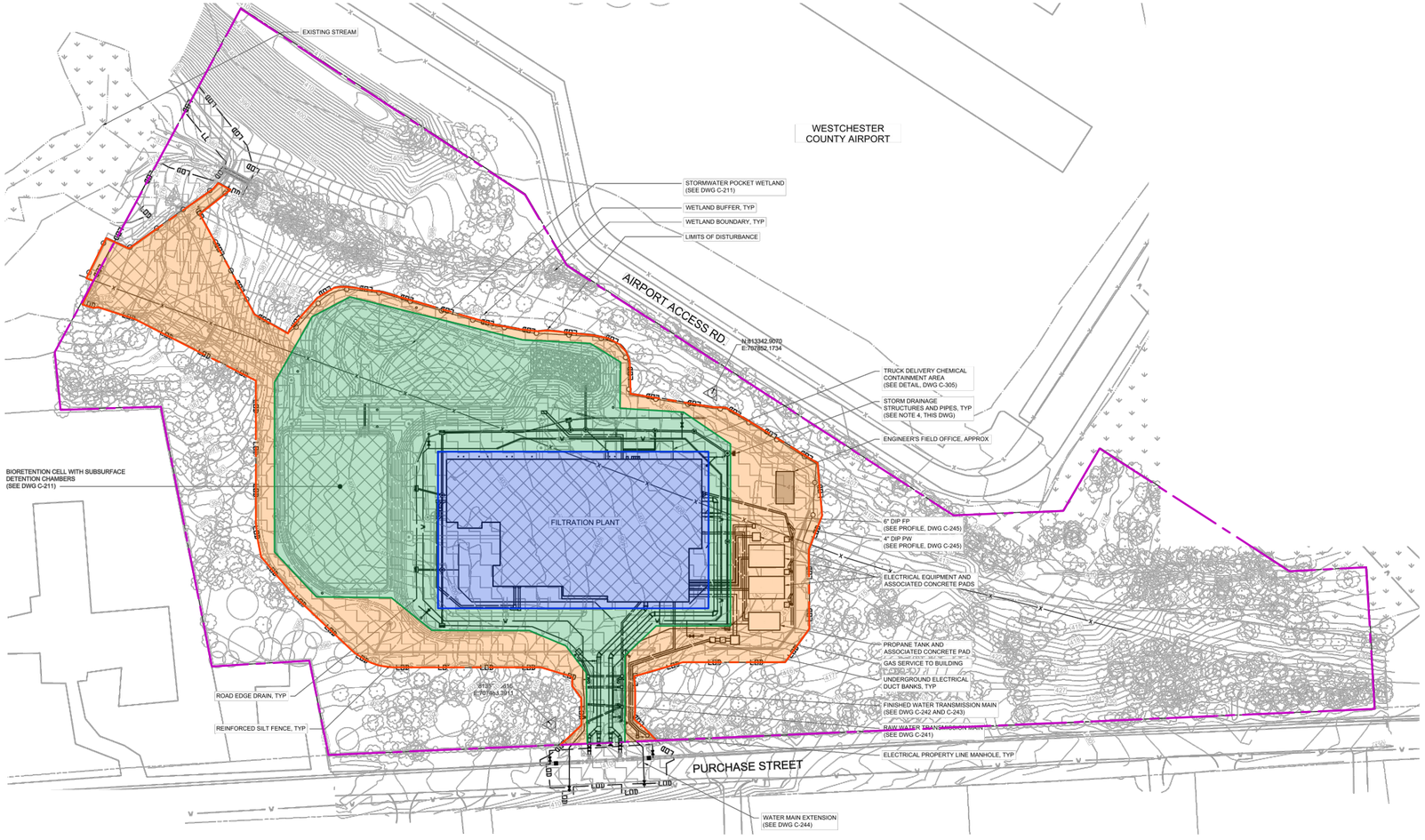
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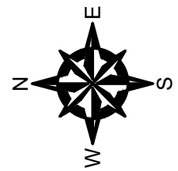
WESTCHESTER JOINT WATER WORKS
WATER FILTRATION PLANT

SUPPLEMENTAL RI SAMPLE LOCATION PLAN

PREPARED BY: GZA GeoEnvironmental of NY Engineers and Scientists www.gza.com		PREPARED FOR: WESTCHESTER JOINT WATER WORKS	
PROJ MGR: ZL	REVIEWED BY: ZL	CHECKED BY: SK	FIGURE 4
DESIGNED BY: SG	DRAWN BY: SG	SCALE: 1" = 150'	
DATE: JULY 2025	PROJECT NO. 41.0162892.01	REVISION NO.	SHEET NO.

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GZA–\\GZANYMan1\Jobs\Active 162800 to 162899\162892.01 – WJWW – Rye Lake WFP – Environmental\Drawings\GZA CAD\162892.01 IRMWP.dwg [F4] August 20, 2025 – 9:55am MIRANDA.BANDELI





GENERAL NOTES

1. BASE MAP DEVELOPED FROM DRAWING PREPARED BY HAZEN AND SAWYER, TITLED "CIVIL EROSION AND SEDIMENT CONTROL PHASING PLAN – PHASE IV", DATED FEBRUARY 2025, ORIGINAL SCALE 1" = 50'.

LEGEND

- APPROXIMATE IRM SITE BOUNDARY
- APPROXIMATE LIMITS OF DISTURBANCE
- APPROXIMATE LIMITS OF DISTURBANCE 0–5' DEEP
- APPROXIMATE EXCAVATION LOCATION 5–15' DEEP
- APPROXIMATE EXCAVATION LOCATION 20–35' DEEP

0 75 150 300

SCALE IN FEET

NO.	ISSUE/DESCRIPTION	BY	DATE

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WESTCHESTER JOINT WATER WORKS
WATER FILTRATION PLANT

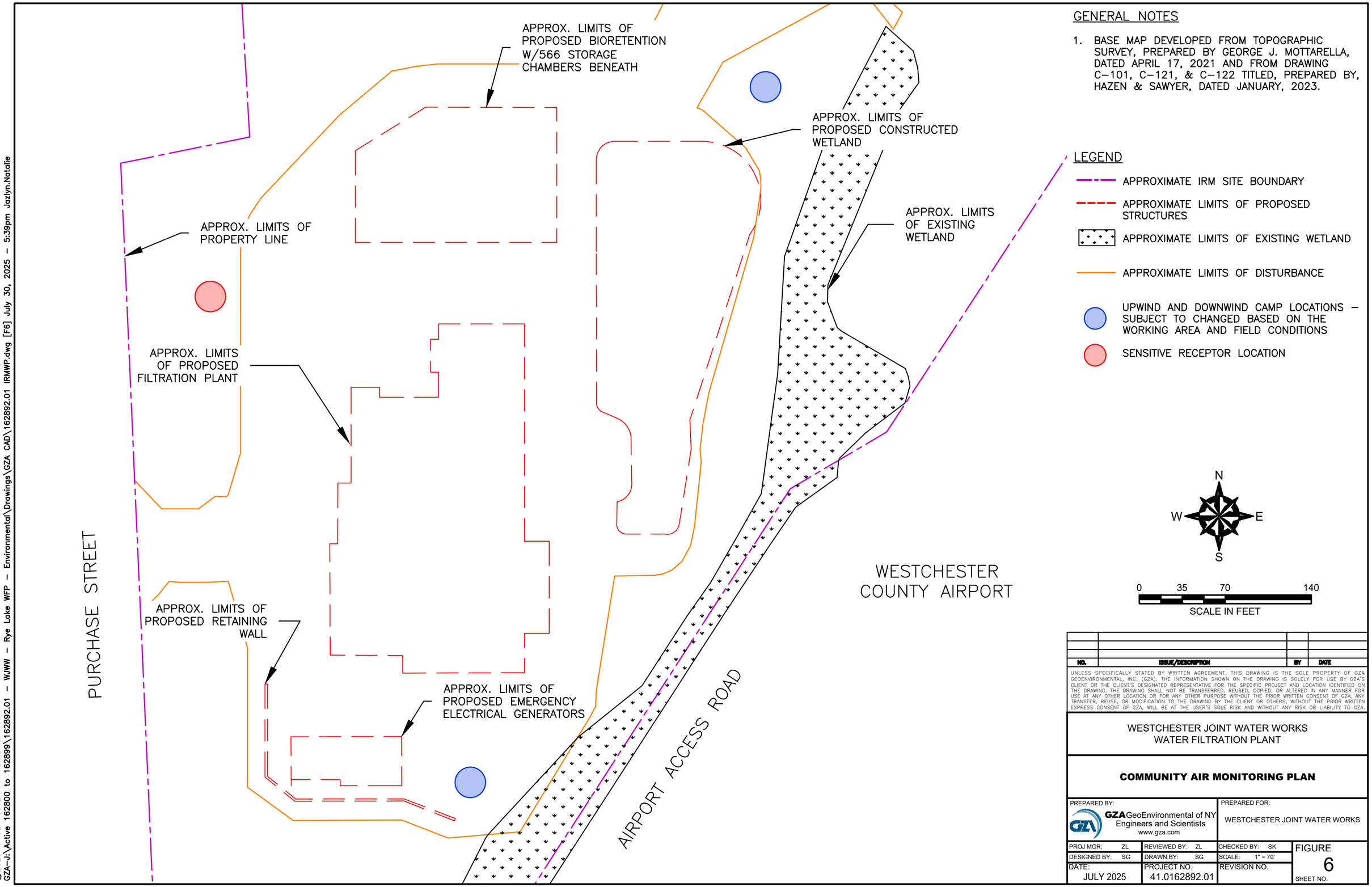
EXCAVATION PLAN

PREPARED BY:
GZA GeoEnvironmental of NY
Engineers and Scientists
www.gza.com

PREPARED FOR:
WESTCHESTER JOINT WATER WORKS

PROJ MGR: ZL	REVIEWED BY: ZL	CHECKED BY: SK	FIGURE 5
DESIGNED BY: SG	DRAWN BY: SG	SCALE: 1" = 150'	
DATE: JULY 2025	PROJECT NO. 41.0162892.01	REVISION NO. -	SHEET NO.

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GZA–J:\Active 162800 to 162899\162892.01 – WJWW – Rye Lake WFP – Environmental\Drawings\GZA CAD\162892.01 IRMWP.dwg [F5] July 30, 2025 – 5:30pm Jazlyn.Natalie



GENERAL NOTES

1. BASE MAP DEVELOPED FROM TOPOGRAPHIC SURVEY, PREPARED BY GEORGE J. MOTTARELLA, DATED APRIL 17, 2021 AND FROM DRAWING C–101, C–121, & C–122 TITLED, PREPARED BY, HAZEN & SAWYER, DATED JANUARY, 2023.

LEGEND

- APPROXIMATE IRM SITE BOUNDARY
- APPROXIMATE LIMITS OF PROPOSED STRUCTURES
- APPROXIMATE LIMITS OF EXISTING WETLAND
- APPROXIMATE LIMITS OF DISTURBANCE
- UPWIND AND DOWNWIND CAMP LOCATIONS – SUBJECT TO CHANGED BASED ON THE WORKING AREA AND FIELD CONDITIONS
- SENSITIVE RECEPTOR LOCATION

NO.	ISSUE/DESCRIPTION	BY	DATE

UNLESS SPECIFICALLY STATED BY WRITTEN AGREEMENT, THIS DRAWING IS THE SOLE PROPERTY OF GZA GEOENVIRONMENTAL, INC. (GZA). THE INFORMATION SHOWN ON THE DRAWING IS SOLELY FOR USE BY GZA'S CLIENT OR THE CLIENT'S DESIGNATED REPRESENTATIVE FOR THE SPECIFIC PROJECT AND LOCATION IDENTIFIED ON THE DRAWING. THE DRAWING SHALL NOT BE TRANSFERRED, REUSED, COPIED, OR ALTERED IN ANY MANNER FOR USE AT ANY OTHER LOCATION OR FOR ANY OTHER PURPOSE WITHOUT THE PRIOR WRITTEN CONSENT OF GZA. ANY TRANSFER, REUSE, OR MODIFICATION TO THE DRAWING BY THE CLIENT OR OTHERS, WITHOUT THE PRIOR WRITTEN EXPRESS CONSENT OF GZA, WILL BE AT THE USER'S SOLE RISK AND WITHOUT ANY RISK OR LIABILITY TO GZA.

WESTCHESTER JOINT WATER WORKS
WATER FILTRATION PLANT

COMMUNITY AIR MONITORING PLAN

PREPARED BY: GZA GeoEnvironmental of NY Engineers and Scientists www.gza.com		PREPARED FOR: WESTCHESTER JOINT WATER WORKS	
PROJ MGR: ZL	REVIEWED BY: ZL	CHECKED BY: SK	FIGURE 6
DESIGNED BY: SG	DRAWN BY: SG	SCALE: 1" = 70'	
DATE: JULY 2025	PROJECT NO. 41.0162892.01	REVISION NO.	SHEET NO.

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GZA–J:\Active 162800 to 162899\162892.01 – WJWW – Rye Lake WFP – Environmental\Drawings\GZA CAD\162892.01 IRMWP.dwg [F6] July 30, 2025 – 5:39pm Jazlyn.Natalie

APPENDIX A

SITE REDEVELOPMENT PLAN

GENERAL NOTES:

1. SITE INFORMATION TAKEN FROM SITE SURVEY CONDUCTED BY GEORGE J. MOTTARELLA, PE, LS, PC, DATED 7-21-2021.

2. HORIZONTAL CONTROL IS REFERENCED TO THE NEW YORK STATE PLANE COORDINATE SYSTEM, EAST ZONE, BASED ON THE NORTH AMERICAN DATUM OF 1983 (NAD 83). VERTICAL CONTROL IS REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88).

3. CONTRACTOR SHALL VERIFY FIELD CONDITIONS BEFORE COMMENCEMENT OF ANY CONSTRUCTION ACTIVITIES. CONTRACTOR SHALL VERIFY EXISTING ELEVATIONS AND DIMENSIONS WHERE NEW WORK WILL MATCH EXISTING. DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER FOR RESOLUTION PRIOR TO THE COMMENCEMENT OF WORK.

4. CONTRACTOR SHALL OBTAIN ALL THE NECESSARY PERMITS FROM THE APPROPRIATE AUTHORITIES, DEPARTMENTS, AND/OR AGENCIES HAVING JURISDICTION PRIOR TO COMMENCING WORK.

5. CONTRACTOR SHALL TAKE CARE TO AVOID DAMAGE TO EXISTING PAVEMENT, TREES, VEGETATION, STRUCTURES, AND UTILITIES NOT INDICATED TO BE DEMOLISHED OR REMOVED. ANY DAMAGE TO EXISTING PAVEMENT, TREES, VEGETATION, STRUCTURES, AND UTILITIES NOT INDICATED TO BE DEMOLISHED OR REMOVED SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.

6. UTILITIES HAVE BEEN PLOTTED FROM AVAILABLE GIS INFORMATION, RECORD DRAWINGS, AND SITE SURVEY. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THEIR EXACT LOCATION AND TO AVOID DAMAGE TO THEM. THE CONTRACTOR SHALL CONTACT DIG SAFELY NEW YORK AT PHONE NUMBER 811 OR 1-800-962-7962 TO REQUEST UNDERGROUND UTILITY LOCATION MARK-OUT AT LEAST TWO (2) WORKING DAYS BUT NO MORE THAN TEN (10) WORKING DAYS PRIOR TO BEGINNING EXCAVATION, INCLUDING SOIL DRILLING. THE CONTRACTOR SHALL ALSO CONTACT AND REQUEST UTILITY LOCATION MARK-OUT FROM BURIED UTILITY OWNERS WITH UTILITIES ON THE PROJECT SITE THAT ARE NOT PARTICIPANTS OF DIG SAFELY NEW YORK.

7. WHERE PROPOSED WORK IS IN THE VICINITY OF UTILITY POLES, SUCH THAT SUPPORT OF THE POLE(S) WILL BE REQUIRED, THE CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING THE UTILITY OF THE WORK. IT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO COORDINATE WITH THE UTILITY FOR SUPPORT OF THE POLE.

8. WHERE OVERHEAD POWER LINES ARE PRESENT, CONTRACTOR MUST CONTACT THE UTILITY PRIOR TO CONSTRUCTION ACTIVITIES TO DETERMINE THE MINIMUM REQUIRED EQUIPMENT CLEARANCE (MEC) DISTANCE BASED UPON LINE STRENGTH.

9. DURING STRUCTURAL EXCAVATION AND PLACEMENT OF UTILITIES THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE SAFETY REGULATIONS, INCLUDING BUT NOT LIMITED TO 29 CFR 1926 SUBPART P EXCAVATIONS AND NYS CR 753 DIG SAFELY NY REGULATIONS, AND SHALL SUBMIT TO THE ENGINEER FOR APPROVAL SHEET PILING, SHORING AND/OR BRACING DESIGNS, PREPARED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF NEW YORK, AS MAY BE NECESSARY TO COMPLY WITH THESE REGULATIONS.

10. GROUNDWATER FROM ALL DEWATERING OPERATIONS SHALL BE DISCHARGED THROUGH AN APPROVED SEDIMENT FILTERING DEVICE TO AN ENVIRONMENTALLY ACCEPTABLE LOCATION IN ACCORDANCE WITH THE CONTRACT DOCUMENTS, OR AS DIRECTED BY THE ENGINEER.

11. ALL TEMPORARY FACILITIES ARE SUBJECT TO THE SAME HEALTH AND SAFETY REQUIREMENTS AS PERMANENT FACILITIES, AS SPECIFIED IN THE CONTRACT DOCUMENTS AND HEALTH SAFETY PLAN (HASP).

12. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF ALL DEBRIS GENERATED DURING THE PROJECT OFF SITE AT A PROPERLY PERMITTED DISPOSAL FACILITY.

13. CONTRACTOR SHALL MAKE EVERY EFFORT TO SAVE AND MAINTAIN ALL PROPERTY IRONS, MONUMENTS, OTHER PERMANENT POINTS AND LINES OF REFERENCE AND CONSTRUCTION STAKES. A STATE OF NEW YORK REGISTERED LAND SURVEYOR AT THE CONTRACTOR'S EXPENSE SHALL REPLACE PROPERTY IRONS, MONUMENTS, AND OTHER PERMANENT POINTS OF REFERENCE DESTROYED BY THE CONTRACTOR.

14. CONTRACTOR IS REQUIRED TO UTILIZE HAND DIGGING OR HYDROEXCAVATION TO A DEPTH OF 4 FEET IN AREAS WHERE UNDERGROUND UTILITIES ARE PRESENT.

ABBREVIATIONS

ACF	ANNUAL CHANCE FLOOD	FP	FIRE PROTECTION	OF	OVERFLOW	SAN	SANITARY DRAIN
BFV	BUTTERFLY VALVE	FUD	FOUNDATION UNDERDRAIN	OHE	OVERHEAD ELECTRIC	SD	STORM DRAIN
℄	CENTER LINE	G	GAS	ℙ	PROPERTY LINE	SHWT	SEASONALLY HIGH WATER TABLE
CMP	CORRUGATED METAL PIPE	GD	GALLERY DRAIN	PP	POWER POLE	TP	TEST PIT
DIP	DUCTILE IRON PIPE	GV	GATE VALVE	PPE	POLYPROPYLENE	UGE	UNDERGROUND ELECTRIC
EOP	EDGE OF PAVEMENT	LF	LINEAR FEET	PVC	POLYVINYL CHLORIDE	W	WATER
FDC	FIRE DEPARTMENT CONNECTION	LOC	LIMITS OF CONSTRUCTION	PW	POTABLE WATER	WCA	WESTCHESTER COUNTY AIRPORT
FM	FORCE MAIN	LP	LIGHT POLE	RCP	REINFORCED CONCRETE PIPE	WWR	WASHWATER RECYLE
FOC	FIBER OPTIC CABLE	MH	MANHOLE	RECM	ROLLED EROSION CONTROL MATTING	WWW	WASTE WASHWATER

LEGEND

SYMBOLS

- TP–1 — TEST BORING LOCATION
- B–3 — SOIL BORING LOCATION
- EXISTING FIRE HYDRANT
- YARD VALVE
- P — SUMP PUMP
- PST — PORTABLE SEDIMENT TANK
- INLET PROTECTION

NEW	DEMO	EXISTING	
			BUILDING/STRUCTURE
			BITUMINOUS PAVEMENT
			CONCRETE CURB AND GUTTER
			CONCRETE PAD/PAVING
			CONCRETE SIDEWALK
x		x	CHAIN LINK FENCE LINE
			ORNAMENTAL FENCE LINE
			AIRPORT FENCE LINE

NEW	EXISTING	
300	300	CONTOUR
×302.00	302.00 ×	SPOT ELEVATION
		PROPERTY LINE
OHE	OHE	OVERHEAD ELECTRIC
W	W	WATER PIPING
		ELECTRIC DUCTBANK
	UGT	UNDERGROUND COMMUNICATION
	UGE	UNDERGROUND ELECTRIC
GAS		GAS LINE
SD		STORM LINE

NEW	DEMO	EXISTING	
			APPROXIMATE WOODLINE
			YARD PIPING
			MANHOLE
			YARD INLET
			FLARED END SECTION
			CURB INLET
			STORM DRAIN LINE

- EXISTING DITCH LINE
- EXISTING WETLAND AREA
- WETLAND OR DITCH BUFFER
- STABILIZED OUTLET FOR SILT FENCE
- YARD INLET PROTECTION
- GRAVEL CONSTRUCTION ENTRANCE
- SF — SILT FENCE
- TPF — TREE PROTECTION FENCE
- LOD — LIMITS OF DISTURBANCE

WARNING
IT IS A VIOLATION OF SECTION 7209.2 OF THE NEW YORK STATE EDUCATION LAW FOR ANY PERSON, UNLESS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER IN ANY WAY PLANS, SPECIFICATIONS, PLATS OR REPORTS TO WHICH THE SEAL OF A PROFESSIONAL ENGINEER HAS BEEN APPLIED. IF AN ITEM BEARING THE SEAL OF A PROFESSIONAL ENGINEER IS ALTERED, THE ALTERING ENGINEER SHALL AFFIX TO THE ITEM HIS SEAL AND THE NOTATION "ALTERED BY" FOLLOWED BY HIS SIGNATURE, THE DATE, AND A SPECIFIC DESCRIPTION OF THE ALTERATION.

REV	ISSUED FOR	DATE	BY

PROJECT ENGINEER: R. FROST
DESIGNED BY: J. TANNER
DRAWN BY: J. TANNER
CHECKED BY: D. SHEERAN
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE 0 1/2" 1"

BID SET

STATE OF NEW YORK — CLIFFORD JAMES SHEERAN — 088955 — LICENSED PROFESSIONAL ENGINEER

Hazen
HAZEN AND SAWYER
498 SEVENTH AVENUE, 11th FLOOR
NEW YORK, NEW YORK 10018

WESTCHESTER JOINT WATER WORKS
MAMARONECK, NY

RYE LAKE WATER FILTRATION PLANT
HARRISON, NY

CIVIL
GENERAL NOTES, LEGEND AND ABBREVIATIONS

DATE: FEB 2025
HAZEN NO.: 90388-000
CONTRACT NO.: A1364-A
DRAWING NUMBER: C-001

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PLOT DATE: 3/26/2025 6:33 PM BY: JTANNER

C112
C122
C132
C142

C111
C121
C131
C141

AREA 2

AREA 1

WESTCHESTER
COUNTY AIRPORT

AIRPORT ACCESS RD.

PURCHASE STREET

FILTRATION
PLANT
FFE: 407.0

END OF 4" SANITARY
FORCE MAIN AT PROPERTY LINE
(CONTINUED BY OTHERS)

100' REAR YARD SETBACK

50' REAR
YARD
BUFFER

PROPERTY LINE, TYP

WETLAND BUFFER, TYP

WETLANDS, TYP

30" GALLERY DRAIN
OUTFALL

EX. GRAVEL ROAD

STORMWATER POCKET
WETLAND (W-4)

SANITARY PUMP STATION
(SEE MECH DWGS)

CHEMICAL DELIVERY
SECONDARY CONTAINMENT PAD

POCKET WETLAND
OUTLET STRUCTURE

STORMWATER
OVERFLOW OUTFALL

STORMWATER
OUTFALL W/ HEADWALL

CONCRETE ENCASEMENT, TYP
(FOR DETAIL SEE DWG C-251)

CP2

100' SIDE YARD SETBACK

50' SIDE
YARD
BUFFER

FENCE, TYP

GENERATOR LOAD BANK

EMERGENCY ELECTRICAL
GENERATORS

SITE LIGHTING, TYP

RETAINING WALL

SUBSURFACE STORMWATER
OUTFALL

BIORETENTION CELL WITH
SUBSURFACE DETENTION
CHAMBERS

VEGETATED MAINTENANCE
ROAD (GRASS)

AUTOMATED ACCESS GATE
WITH ARCHITECTURAL COLUMNS

CP1

PROPANE TANK PAD

ELECTRICAL EQUIP
(SEE ELEC DWGS)

COMMUNICATION MANHOLE
(SEE ELEC DWGS)

ELECTRICAL MANHOLE
(SEE ELEC DWGS)

SEE DRAWING C-306 FOR MAINTENANCE OF
TRAFFIC RELATED TO PIPE INSTALLATION IN
PURCHASE STREET

EX. WATER

WETLAND BOUNDARY,
SEE NOTE 2

EX. GRAVEL ROAD

SETBACK, TYP

100' PURCHASE ST BUFFER

OVERLAPPING SETBACK
AND BUFFER

50' SIDE
YARD
BUFFER

75' SIDE YARD
SETBACK

BUFFER, TYP

100' PURCHASE ST BUFFER

50' FRONT YARD
SETBACK AND
BUFFER

PLAN
SCALE: 1" = 50'

SCALE: 1" = 50'

50 25 0 50'

NOTES:

1. EXISTING BUILDINGS AND STRUCTURES ON ADJACENT PROPERTIES ARE APPROXIMATE AND WERE OVERLAID FROM AVAILABLE AERIAL IMAGERY FROM NYS GIS CLEARINGHOUSE AND GOOGLE EARTH IMAGERY.
2. EXISTING WETLANDS AND STREAM ARE BASED ON FIELD WORK PERFORMED BY HAZEN AND SAWYER IN JUNE 2021.

CONTROL POINTS (CONC. MONUMENT)

Point #	Elevation	Northing	Easting	Description
1	406.63	813522.0616	707483.3911	CP1
2	406.46	813342.9070	707852.1734	CP2

BULK TABLE, ZONE SB-0

MINIMUM	REQUIRED	PROVIDED
LOT AREA (ACRES)	5 ACRES	13.4 ACRES
LOT WIDTH (FEET)	300	1165
FRONT YARD (FEET)	50	100
SIDE YARD (FEET)		
ADJOINING A RESIDENCE DISTRICT	100	287
ADJOINING A BUSINESS DISTRICT	75	755
REAR YARD (FEET)	100	100
BUFFER STRIPS (FEET)		
FRONT YARD		
ADJOINING A RESIDENCE DISTRICT	50	100
ADJOINING A BUSINESS DISTRICT	25	100
SIDE AND REAR YARD		
ADJOINING A RESIDENCE DISTRICT	50	100
ADJOINING A BUSINESS DISTRICT	50	100
MAXIMUM		
LOT COVERAGE (%)		
BUILDING COVERAGE	20	6
BUILDING HEIGHT		
FEET	55*	30
STORIES	4	2

* FOR BUILDINGS OR STRUCTURES MORE THAN 10 FEET FROM THE STREET LINE AT THE FRONT OF THEIR LOT, THE VERTICAL DISTANCE MEASURED IN FEET OR STORIES FROM THE AVERAGE FINISHED GRADES MEASURED ALONG A LINE OFFSET 10 FEET FROM THE PERIPHERY OF THE BUILDING OR STRUCTURE TO THE TOP OF A FLAT ROOF OR OF A MANSARD ROOF OR THE AVERAGE HEIGHT OF A PITCHED ROOF.

WARNING
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REV	ISSUED FOR	DATE	BY

PROJECT ENGINEER: R. FROST
DESIGNED BY: J. TANNER
DRAWN BY: J. TANNER
CHECKED BY: D. SHEERAN

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BID SET

STATE OF NEW YORK
DANIEL JAMES SHEERAN
088955
LICENSED PROFESSIONAL ENGINEER

Hazen

HAZEN AND SAWYER
498 SEVENTH AVENUE, 11th FLOOR
NEW YORK, NEW YORK 10018

WESTCHESTER JOINT WATER WORKS
MAMARONECK, NY

RYE LAKE WATER FILTRATION PLANT
HARRISON, NY

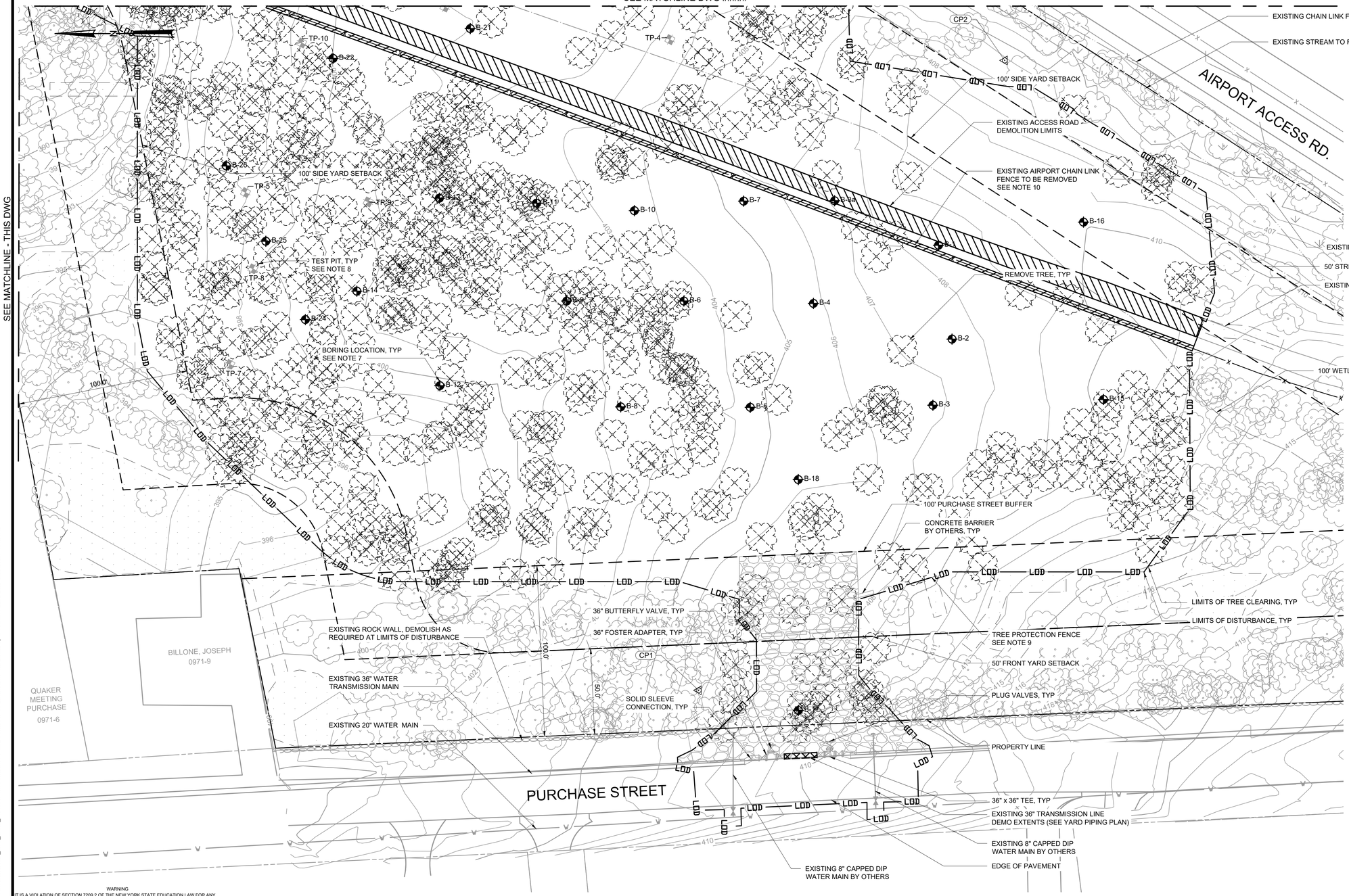
CIVIL
OVERALL SITE PLAN

DATE: FEB 2025
HAZEN NO.: 90388-000
CONTRACT NO.: A1364-A
DRAWING NUMBER: C-101

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PLOT DATE: 3/26/2025 6:33 PM BY: JTANNER

SEE MATCHLINE DWG #####

SEE MATCHLINE - THIS DWG



EXISTING CONDITION AND DEMOLITION NOTES:

1. TREES REMOVED UNDER SEPARATE CONTRACT. CONTRACTOR SHALL REMOVE REMAINING STUMPS AND ROOTS. SEE SPECIFICATION SECTION 31 10 00 - CLEARING, GRUBBING, AND SITE PREPARATION.
2. GROUND COVER WITHIN LIMIT OF DISTURBANCE IS APPROXIMATELY SIX INCHES OF WOODCHIPS. CONTRACTOR SHALL REMOVE WOOD AND DISPOSE OF THEM OFFSITE AS REQUIRED TO COMPLETE THEIR CONSTRUCTION ACTIVITIES.
3. CONTRACTOR TO VERIFY LOCATION OF ALL UTILITIES PRIOR TO START OF WORK.
4. BASE MAPPING INFORMATION BASED ON SITE SURVEY PERFORMED BY GEORGE J. MOTARELLA, PE, PS, PC DATED 7-21-2021
5. ALL TREES ROOTED WITHIN THE LIMITS OF DISTURBANCE ARE TO BE CLEARED AND GRUBBED.
6. ALL DEMOLITION WORK MUST BE PERFORMED IN ACCORDANCE WITH 29 CFR 1926 SUBPART T DEMOLITION AND 1926.1153 RESPIRABLE CRYSTALLINE SILICA.
7. SOIL BORINGS PERFORMED BY GZA MAY AND JUNE 2021.
8. TEST PITS 1-6 PERFORMED IN AUGUST 2021 AND TEST PITS 7-13 PERFORMED IN NOVEMBER 2021 BY GZA.
9. CONTRACTOR SHALL USE AREA OF TREE PLANTING AND VEGETATIVE INFILL FOR THE WORK SHOWN ON THE LANDSCAPE DWGS ONLY. HAND DIGGING SHALL BE PREFORMED WITHIN THE LIMITS OF THE TREE PROTECTION ZONE. USE FOR ANY OTHER CONSTRUCTION ACTIVITIES IS PROHIBITED.
10. EXISTING AIRPORT FENCE SHALL NOT BE REMOVED UNTIL RELOCATED FENCE HAS BEEN INSTALLED. SEE DWGS C-111, C-141, AND C-142.

AREA OF TREE PLANTING AND VEGETATIVE INFILL ONLY SEE LANDSCAPE DWGS

SEE MATCHLINE - THIS DWG

SCALE: 1" = 30'

30 15 0 30'

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DRAWN BY:	J. TANNER
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STATE OF NEW YORK — DANIEL JAMES SHEERAN — 088955 — LICENSED PROFESSIONAL ENGINEER

Hazen

HAZEN AND SAWYER
498 SEVENTH AVENUE, 11th FLOOR
NEW YORK, NEW YORK 10018

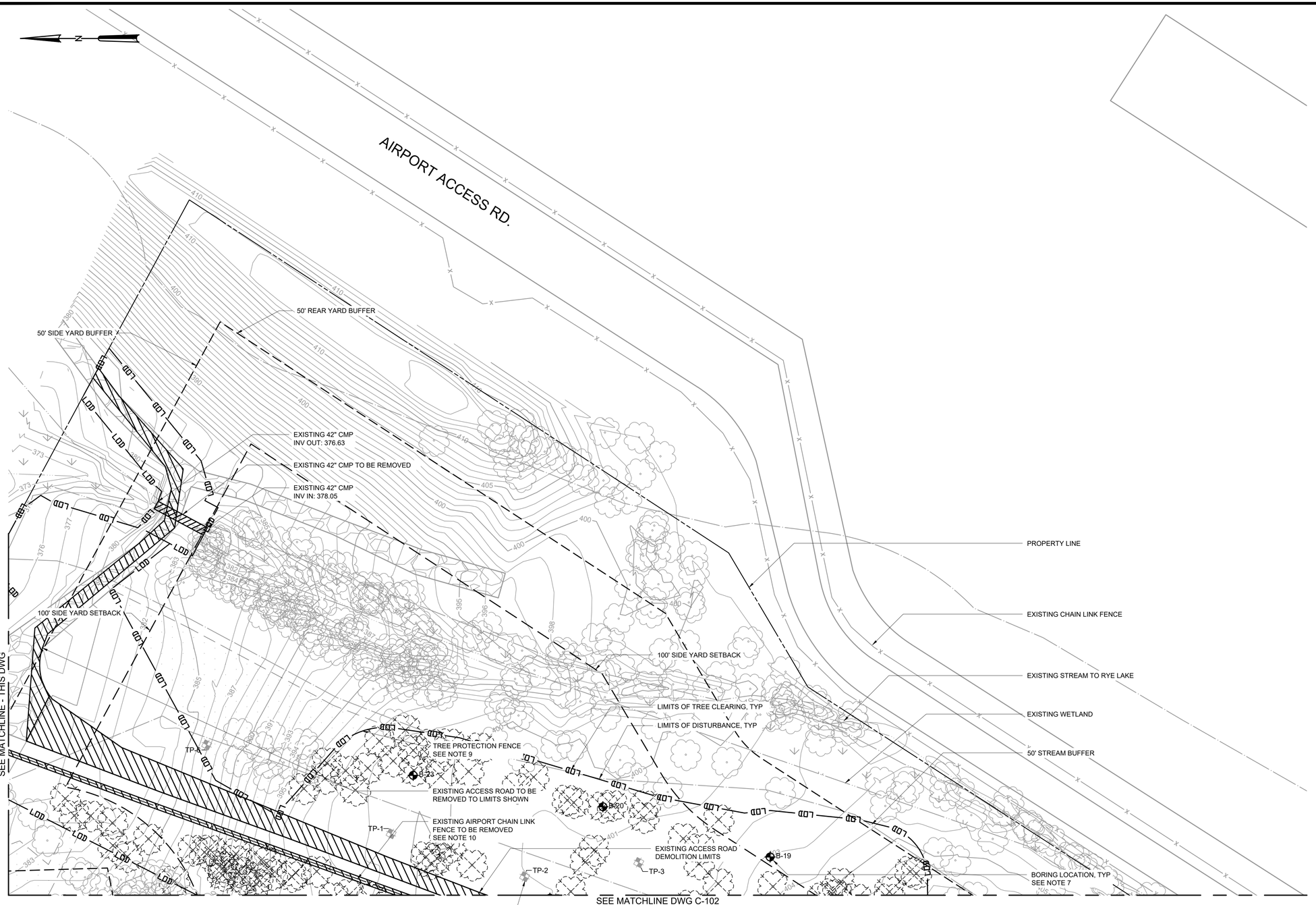
WESTCHESTER JOINT WATER WORKS
MAMARONECK, NY

RYE LAKE WATER FILTRATION PLANT
HARRISON, NY

CIVIL
EXISTING CONDITIONS AND DEMOLITION PLAN - AREA 1

DATE:	FEB 2025
HAZEN NO.:	90388-000
CONTRACT NO.:	A1364-A
DRAWING NUMBER:	C-102

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EXISTING CONDITION AND DEMOLITION NOTES:

1. TREES REMOVED UNDER SEPARATE CONTRACT. CONTRACTOR SHALL REMOVE REMAINING STUMPS AND ROOTS. SEE SPECIFICATION SECTION 31 10 00 - CLEARING, GRUBBING, AND SITE PREPARATION.
2. GROUND COVER WITHIN LIMIT OF DISTURBANCE IS APPROXIMATELY SIX INCHES OF WOODCHIPS. CONTRACTOR SHALL REMOVE WOOD AND DISPOSE OF THEM OFFSITE AS REQUIRED TO COMPLETE THEIR CONSTRUCTION ACTIVITIES.
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8. TEST PITS 1-6 PERFORMED IN AUGUST 2021 AND TEST PITS 7-13 PERFORMED IN NOVEMBER 2021 BY GZA.
9. CONTRACTOR SHALL USE AREA OF TREE PLANTING AND VEGETATIVE INFILL FOR THE WORK SHOWN ON THE LANDSCAPE DWGS ONLY. HAND DIGGING SHALL BE PREFORMED WITHIN THE LIMITS OF THE TREE PROTECTION ZONE. USE FOR ANY OTHER CONSTRUCTION ACTIVITIES IS PROHIBITED.
10. EXISTING AIRPORT FENCE SHALL NOT BE REMOVED UNTIL RELOCATED FENCE HAS BEEN INSTALLED. SEE DWGS C-111, C-141, AND C-142.

AREA OF TREE PLANTING AND VEGETATIVE INFILL ONLY
SEE LANDSCAPE DWGS

SCALE: 1" = 30'

30 15 0 30'

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PROJECT ENGINEER:	R. FROST
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DRAWN BY:	J. TANNER
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BID SET

STATE OF NEW YORK DANIEL JAMES SHEERAN 088955 LICENSED PROFESSIONAL ENGINEER

Hazen
HAZEN AND SAWYER
498 SEVENTH AVENUE, 11th FLOOR
NEW YORK, NEW YORK 10018

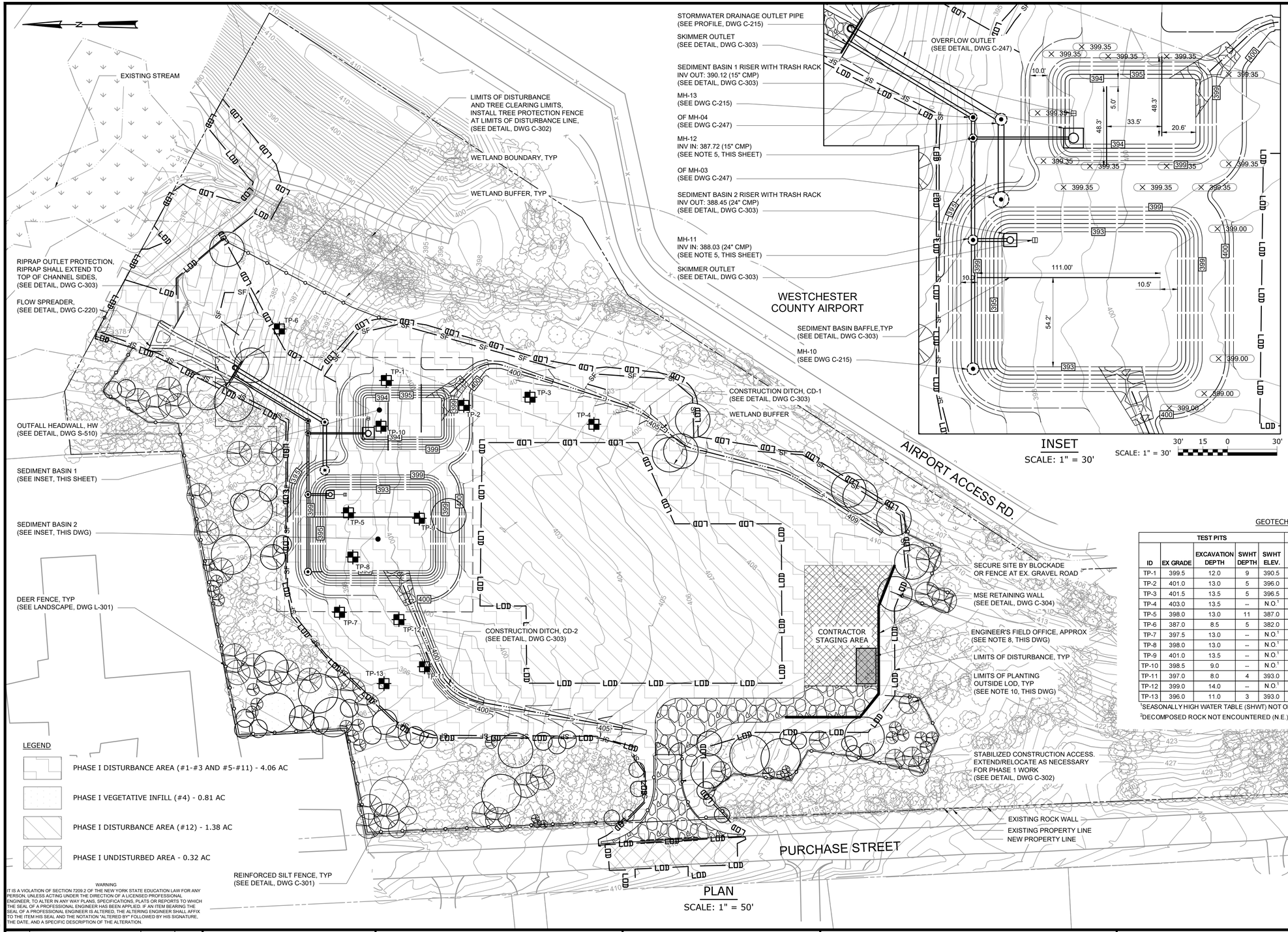
WESTCHESTER JOINT WATER WORKS
MAMARONECK, NY

RYE LAKE WATER FILTRATION PLANT
HARRISON, NY

CIVIL
EXISTING CONDITIONS AND DEMOLITION PLAN - AREA 2

DATE:	FEB 2025
HAZEN NO.:	90388-000
CONTRACT NO.:	A1364-A
DRAWING NUMBER:	C-103

File: C:\USERS\JTANNER\DOCUMENTS\ACCDOCS\HAZEN AND SAWYER\90388-000_RYE_LAKE_FILTRATION\PROJECT FILES\PROJECTWISE\CIVIL\C-103 Saved by JTANNER Save date: 2/6/2025 3:51 PM
PLOT DATE: 2/26/2025 6:34 PM BY: JTANNER



PLAN
SCALE: 1" = 50'

INSET
SCALE: 1" = 30'

SCALE: 1" = 50'

SCALE: 1" = 30'

EROSION AND SEDIMENT CONTROL - PHASE I - SITE PREPARATION

1. CONTRACTOR SIGNS ONTO SWPPP.
2. CONTRACTOR TO NOTIFY NYC DEP OF CONSTRUCTION ACTIVITIES.
3. INSTALL SILT FENCE, TREE PROTECTION FENCE, AND STABILIZED CONSTRUCTION ACCESS.
4. INSTALL TREE PLANTING, VEGETATIVE INFILL, AND DEER FENCE.
5. INSTALL AIRPORT FENCE. DEMOLISH EXISTING AIRPORT FENCE.
6. CLEAR AND GRUB STAGING AREA AND AREAS FOR SEDIMENT BASINS.
7. INSTALL OUTFALL HEADWALL, FLOW SPREADER, AND RIPRAP OUTLET PROTECTION.
8. INSTALL STORM DRAIN AND OVERFLOW PIPING AND STRUCTURES AS FOLLOWS:
   - STORM BETWEEN HW AND MH-10
   - OVERFLOW BETWEEN HW AND OH MH-03
9. EXCAVATE AND INSTALL TEMPORARY SEDIMENT BASINS.
10. CONNECT SEDIMENT BASIN RISER STRUCTURES TO STORM DRAIN MANHOLES MH-11 AND MH-12.
11. INSTALL CONSTRUCTION DITCHES.
12. CONSTRUCT MSE RETAINING WALL.
13. PERFORM CLEARING AND GRUBBING FOR REMAINDER OF SITE.

NOTES

1. A PRE-CONSTRUCTION MEETING SHALL BE SCHEDULED WITH NYC DEP, THE ENGINEER, AND WJWW TWO WEEKS PRIOR TO COMMENCEMENT OF CONSTRUCTION ACTIVITIES. NYC DEP SHALL BE NOTIFIED 48 HOURS PRIOR TO COMMENCEMENT OF CONSTRUCTION ACTIVITIES.
2. SEE DRAWINGS C-301 - C-303 FOR EROSION CONTROL DETAILS.
3. CONTRACTOR SHALL NOT STORE EXCAVATED MATERIAL INSIDE THE WETLAND BUFFER.
4. CONSTRUCTION PHASING AS SHOWN IS SUGGESTED AND FOR THE PURPOSES OF EROSION AND SEDIMENT CONTROL. CONTRACTOR MAY PERFORM WORK IN ALTERNATIVE PHASES OR SEQUENCE PROVIDED CONTRACT RESTRICTIONS ARE FOLLOWED AND SEQUENCE IS APPROVED BY THE ENGINEER.
5. CONTRACTOR SHALL TEMPORARILY CONNECT SEDIMENT BASIN OUTLET PIPES TO STORM DRAIN MANHOLES, MH-11 AND MH-12. UPON COMPLETION OF STORMWATER POCKET WETLAND AND BIORETENTION CELLS, SEDIMENT BASIN OUTLET PIPE SHALL BE REMOVED AND PENETRATION IN MANHOLES SEALED.
6. TREES NOT SHOWN FOR CLARITY, REFERENCE CIVIL DWG C-102 - C-103 AND LANDSCAPE DWG L-101 - L-102.
7. ANY STOCKPILED MATERIALS SHALL BE WITHIN THE STAGING AREA DURING ALL PHASES OF CONSTRUCTION.
8. CONTRACTOR SHALL PROVIDE ENGINEER'S FIELD OFFICE IN ACCORDANCE WITH SPECIFICATION SECTION 01 52 00 - CONSTRUCTION FACILITIES.
9. CONTRACTOR SHALL PROVIDE BIRD DETERRENT SYSTEM FOR SEDIMENT BASIN. SEE DETAIL ON DWG C-221 AND SPECIFICATION SECTION 33 46 01.
10. IN-FILL PLANTING OUTSIDE THE LOD SHOULD BE CONDUCTED IN THE FIRST PLANTING SEASON DURING THE CONSTRUCTION PERIOD. SEE LAND DWGS.

GEOTECHNICAL TEST PIT AND BORING SUMMARY TABLE

TEST PITS					BORINGS				SEDIMENT BASINS			
ID	EX GRADE	EXCAVATION DEPTH	SWHT DEPTH	SWHT ELEV.	ID	EX GRADE	ROCK DEPTH	ROCK ELEV.	BASIN NO.	BASIN BOTTOM ELEV.	SHWT SEPARATION	ROCK SEPARATION
TP-1	399.5	12.0	9	390.5	B-23	399.0	N.E.[2]	N.E.[2]	1	394.0	3.5	N.E.[2]
TP-2	401.0	13.0	5	396.0	B-21	401.0	18.5	382.5	--	--	--	--
TP-3	401.5	13.5	5	396.5	B-20	401.0	N.E.[2]	N.E.[2]	--	--	--	--
TP-4	403.0	13.5	--	N.O.[1]	B-19	403.0	N.E.[2]	N.E.[2]	--	--	--	--
TP-5	398.0	13.0	11	387.0	B-26	397.0	18.5	378.5	2	393.00	6.0	14.5
TP-6	387.0	8.5	5	382.0	B-29	389.0	N.E.[2]	N.E.[2]	--	--	--	--
TP-7	397.5	13.0	--	N.O.[1]	B-24	399.0	N.E.[2]	N.E.[2]	--	--	--	--
TP-8	398.0	13.0	--	N.O.[1]	B-25	398.0	N.E.[2]	N.E.[2]	2	393.00	N.O.[1]	N.E.[2]
TP-9	401.0	13.5	--	N.O.[1]	B-1	401.0	23.5	377.5	2	393.00	N.O.[1]	15.5
TP-10	398.5	9.0	--	N.O.[1]	B-22	399.0	18.5	380.5	1	394.00	N.O.[1]	13.5
TP-11	397.0	8.0	4	393.0	B-2	398.5	23.5	375.0	--	--	--	--
TP-12	399.0	14.0	--	N.O.[1]	B-24	399.0	N.E.[2]	N.E.[2]	--	--	--	--
TP-13	396.0	11.0	3	393.0	B-2	398.5	23.5	374.5	--	--	--	--

[1]SEASONALLY HIGH WATER TABLE (SHWT) NOT OBSERVED (N.O.) PRIOR TO TEST PIT TERMINATION
[2]DECOMPOSED ROCK NOT ENCOUNTERED (N.E.) PRIOR TO TEST BORING TERMINATION AT 22' BELOW GRADE

LEGEND

- PHASE I DISTURBANCE AREA (#1-#3 AND #5-#11) - 4.06 AC
- PHASE I VEGETATIVE INFILL (#4) - 0.81 AC
- PHASE I DISTURBANCE AREA (#12) - 1.38 AC
- PHASE I UNDISTURBED AREA - 0.32 AC

LIMIT OF DISTURBANCE LEGEND

LINETYPE	DESCRIPTION	AREA (AC)
LOD	WFP LOD	5.76
	VEGETATIVE INFILL WITH DEER FENCE LOD	0.81
	OVERALL LOD	6.57

WARNING
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REV	ISSUED FOR	DATE	BY

PROJECT ENGINEER:	R. FROST
DESIGNED BY:	J. TANNER
DRAWN BY:	J. TANNER
CHECKED BY:	D. SHEERAN

IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE 0 1/2" 1"

BID SET

STATE OF NEW YORK — DANIEL JAMES SHEERAN — 088955 — LICENSED PROFESSIONAL ENGINEER

Hazen

HAZEN AND SAWYER
498 SEVENTH AVENUE, 11th FLOOR
NEW YORK, NEW YORK 10018

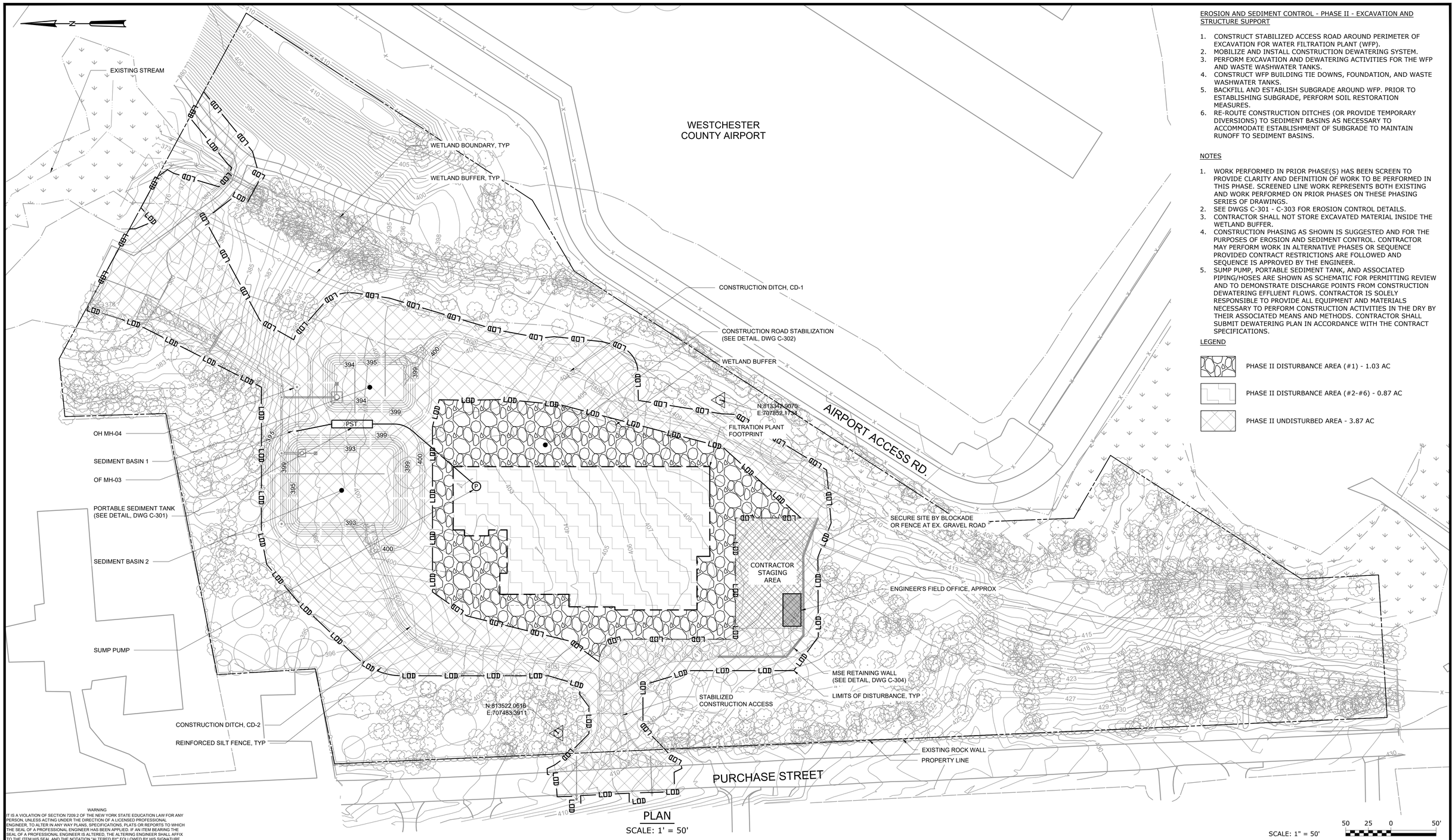
WESTCHESTER JOINT WATER WORKS
MAMARONECK, NY

RYE LAKE WATER FILTRATION PLANT
HARRISON, NY

CIVIL
EROSION AND SEDIMENT CONTROL PHASING PLAN - PHASE I

DATE:	FEB 2025
HAZEN NO.:	90388-000
CONTRACT NO.:	A1364-A
DRAWING NUMBER:	C-111

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PLAN

SCALE: 1' = 50'

SCALE: 1" = 50'

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EROSION AND SEDIMENT CONTROL - PHASE II - EXCAVATION AND STRUCTURE SUPPORT

1. CONSTRUCT STABILIZED ACCESS ROAD AROUND PERIMETER OF EXCAVATION FOR WATER FILTRATION PLANT (WFP).
2. MOBILIZE AND INSTALL CONSTRUCTION DEWATERING SYSTEM.
3. PERFORM EXCAVATION AND DEWATERING ACTIVITIES FOR THE WFP AND WASTE WASHWATER TANKS.
4. CONSTRUCT WFP BUILDING TIE DOWNS, FOUNDATION, AND WASTE WASHWATER TANKS.
5. BACKFILL AND ESTABLISH SUBGRADE AROUND WFP. PRIOR TO ESTABLISHING SUBGRADE, PERFORM SOIL RESTORATION MEASURES.
6. RE-ROUTE CONSTRUCTION DITCHES (OR PROVIDE TEMPORARY DIVERSIONS) TO SEDIMENT BASINS AS NECESSARY TO ACCOMMODATE ESTABLISHMENT OF SUBGRADE TO MAINTAIN RUNOFF TO SEDIMENT BASINS.

NOTES

1. WORK PERFORMED IN PRIOR PHASE(S) HAS BEEN SCREEN TO PROVIDE CLARITY AND DEFINITION OF WORK TO BE PERFORMED IN THIS PHASE. SCREENED LINE WORK REPRESENTS BOTH EXISTING AND WORK PERFORMED ON PRIOR PHASES ON THESE PHASING SERIES OF DRAWINGS.
2. SEE DWGS C-301 - C-303 FOR EROSION CONTROL DETAILS.
3. CONTRACTOR SHALL NOT STORE EXCAVATED MATERIAL INSIDE THE WETLAND BUFFER.
4. CONSTRUCTION PHASING AS SHOWN IS SUGGESTED AND FOR THE PURPOSES OF EROSION AND SEDIMENT CONTROL. CONTRACTOR MAY PERFORM WORK IN ALTERNATIVE PHASES OR SEQUENCE PROVIDED CONTRACT RESTRICTIONS ARE FOLLOWED AND SEQUENCE IS APPROVED BY THE ENGINEER.
5. SUMP PUMP, PORTABLE SEDIMENT TANK, AND ASSOCIATED PIPING/HOSES ARE SHOWN AS SCHEMATIC FOR PERMITTING REVIEW AND TO DEMONSTRATE DISCHARGE POINTS FROM CONSTRUCTION DEWATERING EFFLUENT FLOWS. CONTRACTOR IS SOLELY RESPONSIBLE TO PROVIDE ALL EQUIPMENT AND MATERIALS NECESSARY TO PERFORM CONSTRUCTION ACTIVITIES IN THE DRY BY THEIR ASSOCIATED MEANS AND METHODS. CONTRACTOR SHALL SUBMIT DEWATERING PLAN IN ACCORDANCE WITH THE CONTRACT SPECIFICATIONS.

LEGEND

PHASE II DISTURBANCE AREA (#1) - 1.03 AC

PHASE II DISTURBANCE AREA (#2-#6) - 0.87 AC

PHASE II UNDISTURBED AREA - 3.87 AC

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REV	ISSUED FOR	DATE	BY

PROJECT ENGINEER: R. FROST
DESIGNED BY: J. TANNER
DRAWN BY: J. TANNER
CHECKED BY: D. SHEERAN
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE 0 1/2" 1"

BID SET

STATE OF NEW YORK · DANIEL JAMES SHEERAN · 088955 · LICENSED PROFESSIONAL ENGINEER

Hazen
HAZEN AND SAWYER
498 SEVENTH AVENUE, 11th FLOOR
NEW YORK, NEW YORK 10018

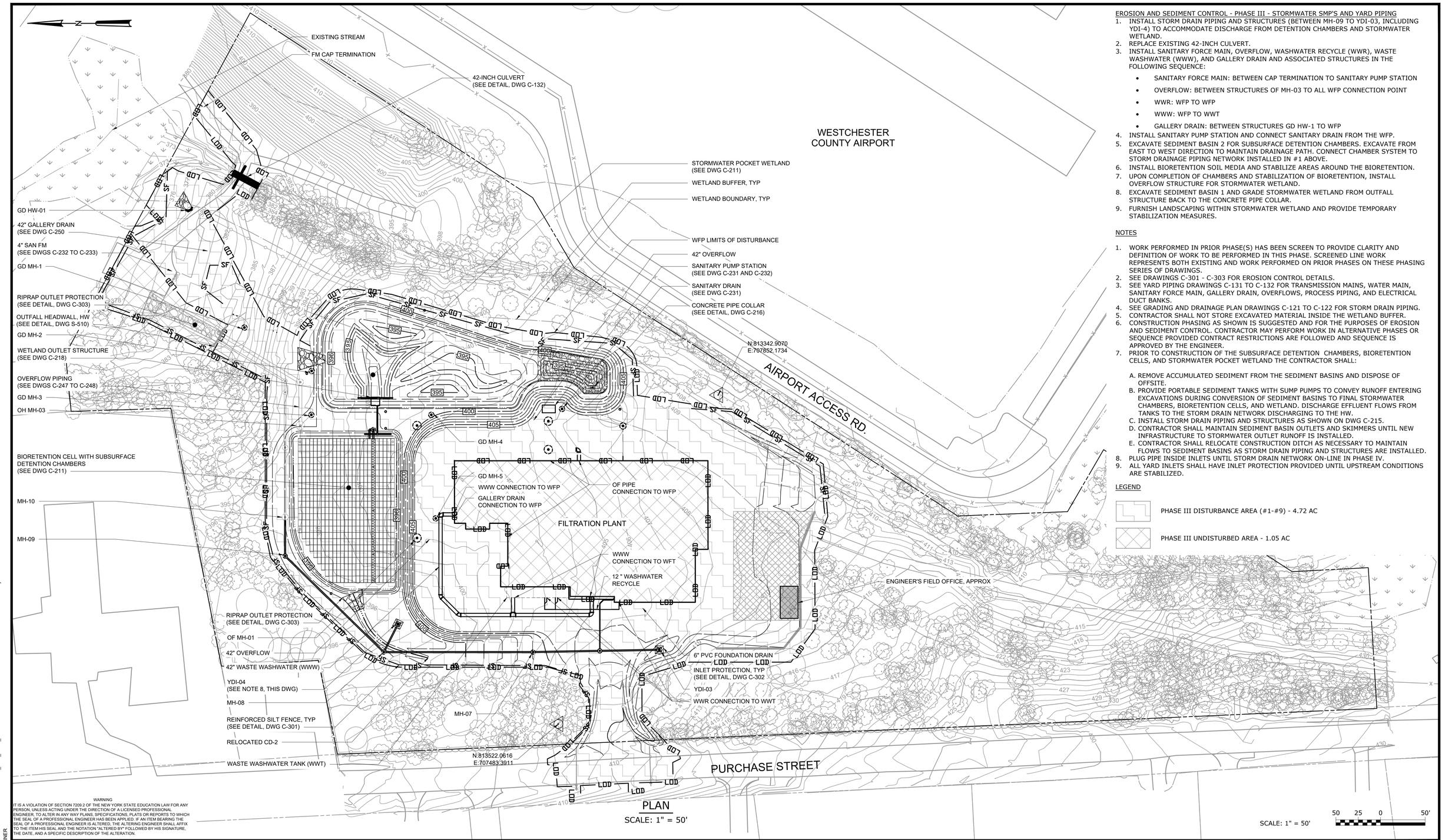
WESTCHESTER JOINT WATER WORKS
MAMARONECK, NY

RYE LAKE WATER FILTRATION PLANT
HARRISON, NY

CIVIL
EROSION AND SEDIMENT CONTROL PHASING PLAN - PHASE II

DATE: FEB 2025
HAZEN NO.: 90388-000
CONTRACT NO.: A1364-A
DRAWING NUMBER: C-112

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PLAN

SCALE: 1" = 50'

SCALE: 1" = 50'

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EROSION AND SEDIMENT CONTROL - PHASE III - STORMWATER SMP'S AND YARD PIPING

1. INSTALL STORM DRAIN PIPING AND STRUCTURES (BETWEEN MH-09 TO YDI-03, INCLUDING YDI-4) TO ACCOMMODATE DISCHARGE FROM DETENTION CHAMBERS AND STORMWATER WETLAND.
2. REPLACE EXISTING 42-INCH CULVERT.
3. INSTALL SANITARY FORCE MAIN, OVERFLOW, WASHWATER RECYCLE (WWR), WASTE WASHWATER (WWW), AND GALLERY DRAIN AND ASSOCIATED STRUCTURES IN THE FOLLOWING SEQUENCE:
   - SANITARY FORCE MAIN: BETWEEN CAP TERMINATION TO SANITARY PUMP STATION
   - OVERFLOW: BETWEEN STRUCTURES OF MH-03 TO ALL WFP CONNECTION POINT
   - WWR: WFP TO WFP
   - WWW: WFP TO WWT
   - GALLERY DRAIN: BETWEEN STRUCTURES GD HW-1 TO WFP
4. INSTALL SANITARY PUMP STATION AND CONNECT SANITARY DRAIN FROM THE WFP.
5. EXCAVATE SEDIMENT BASIN 2 FOR SUBSURFACE DETENTION CHAMBERS. EXCAVATE FROM EAST TO WEST DIRECTION TO MAINTAIN DRAINAGE PATH. CONNECT CHAMBER SYSTEM TO STORM DRAINAGE PIPING NETWORK INSTALLED IN #1 ABOVE.
6. INSTALL BIORETENTION SOIL MEDIA AND STABILIZE AREAS AROUND THE BIORETENTION.
7. UPON COMPLETION OF CHAMBERS AND STABILIZATION OF BIORETENTION, INSTALL OVERFLOW STRUCTURE FOR STORMWATER WETLAND.
8. EXCAVATE SEDIMENT BASIN 1 AND GRADE STORMWATER WETLAND FROM OUTFALL STRUCTURE BACK TO THE CONCRETE PIPE COLLAR.
9. FURNISH LANDSCAPING WITHIN STORMWATER WETLAND AND PROVIDE TEMPORARY STABILIZATION MEASURES.

NOTES

1. WORK PERFORMED IN PRIOR PHASE(S) HAS BEEN SCREEN TO PROVIDE CLARITY AND DEFINITION OF WORK TO BE PERFORMED IN THIS PHASE. SCREENED LINE WORK REPRESENTS BOTH EXISTING AND WORK PERFORMED ON PRIOR PHASES ON THESE PHASING SERIES OF DRAWINGS.
2. SEE DRAWINGS C-301 - C-303 FOR EROSION CONTROL DETAILS.
3. SEE YARD PIPING DRAWINGS C-131 TO C-132 FOR TRANSMISSION MAINS, WATER MAIN, SANITARY FORCE MAIN, GALLERY DRAIN, OVERFLOWS, PROCESS PIPING, AND ELECTRICAL DUCT BANKS.
4. SEE GRADING AND DRAINAGE PLAN DRAWINGS C-121 TO C-122 FOR STORM DRAIN PIPING.
5. CONTRACTOR SHALL NOT STORE EXCAVATED MATERIAL INSIDE THE WETLAND BUFFER.
6. CONSTRUCTION PHASING AS SHOWN IS SUGGESTED AND FOR THE PURPOSES OF EROSION AND SEDIMENT CONTROL. CONTRACTOR MAY PERFORM WORK IN ALTERNATIVE PHASES OR SEQUENCE PROVIDED CONTRACT RESTRICTIONS ARE FOLLOWED AND SEQUENCE IS APPROVED BY THE ENGINEER.
7. PRIOR TO CONSTRUCTION OF THE SUBSURFACE DETENTION CHAMBERS, BIORETENTION CELLS, AND STORMWATER POCKET WETLAND THE CONTRACTOR SHALL:
   A. REMOVE ACCUMULATED SEDIMENT FROM THE SEDIMENT BASINS AND DISPOSE OF OFFSITE.
   B. PROVIDE PORTABLE SEDIMENT TANKS WITH SUMP PUMPS TO CONVEY RUNOFF ENTERING EXCAVATIONS DURING CONVERSION OF SEDIMENT BASINS TO FINAL STORMWATER CHAMBERS, BIORETENTION CELLS, AND WETLAND. DISCHARGE EFFLUENT FLOWS FROM TANKS TO THE STORM DRAIN NETWORK DISCHARGING TO THE HW.
   C. INSTALL STORM DRAIN PIPING AND STRUCTURES AS SHOWN ON DWG C-215.
   D. CONTRACTOR SHALL MAINTAIN SEDIMENT BASIN OUTLETS AND SKIMMERS UNTIL NEW INFRASTRUCTURE TO STORMWATER OUTLET RUNOFF IS INSTALLED.
   E. CONTRACTOR SHALL RELOCATE CONSTRUCTION DITCH AS NECESSARY TO MAINTAIN FLOWS TO SEDIMENT BASINS AS STORM DRAIN PIPING AND STRUCTURES ARE INSTALLED.
8. PLUG PIPE INSIDE INLETS UNTIL STORM DRAIN NETWORK ON-LINE IN PHASE IV.
9. ALL YARD INLETS SHALL HAVE INLET PROTECTION PROVIDED UNTIL UPSTREAM CONDITIONS ARE STABILIZED.

LEGEND

PHASE III DISTURBANCE AREA (#1-#9) - 4.72 AC

PHASE III UNDISTURBED AREA - 1.05 AC

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DESIGNED BY:	J. TANNER
DRAWN BY:	J. TANNER
CHECKED BY:	D. SHEERAN

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BID SET

STATE OF NEW YORK DANIEL JAMES SHEERAN LICENSED PROFESSIONAL ENGINEER 088955

Hazen

HAZEN AND SAWYER
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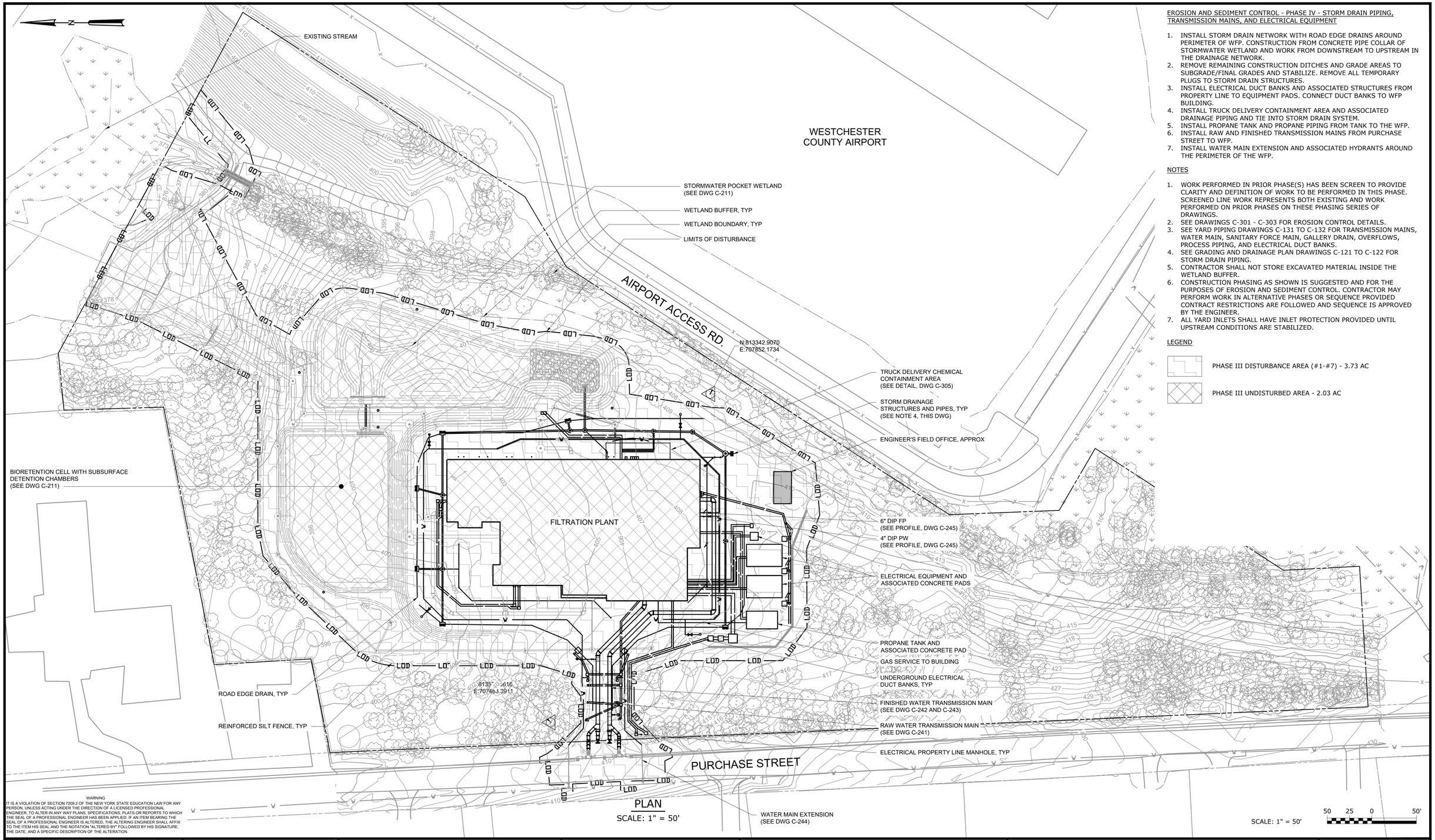
WESTCHESTER JOINT WATER WORKS
MAMARONECK, NY

RYE LAKE WATER FILTRATION PLANT
HARRISON, NY

CIVIL
EROSION AND SEDIMENT CONTROL PHASING PLAN - PHASE III

DATE:	FEB 2025
HAZEN NO.:	90388-000
CONTRACT NO.:	A1364-A
DRAWING NUMBER:	C-113

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PLAN

SCALE: 1" = 50'

SCALE: 1" = 50'

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EROSION AND SEDIMENT CONTROL - PHASE IV - STORM DRAIN PIPING, TRANSMISSION MAINS, AND ELECTRICAL EQUIPMENT

1. INSTALL STORM DRAIN NETWORK WITH ROAD EDGE DRAINS AROUND PERIMETER OF WFP. CONSTRUCTION FROM CONCRETE PIPE COLLAR OF STORMWATER WETLAND AND WORK FROM DOWNSTREAM TO UPSTREAM IN THE DRAINAGE NETWORK.
2. REMOVE REMAINING CONSTRUCTION DITCHES AND GRADE AREAS TO SUBGRADE/FINAL GRADES AND STABILIZE. REMOVE ALL TEMPORARY PLUGS TO STORM DRAIN STRUCTURES.
3. INSTALL ELECTRICAL DUCT BANKS AND ASSOCIATED STRUCTURES FROM PROPERTY LINE TO EQUIPMENT PADS. CONNECT DUCT BANKS TO WFP BUILDING.
4. INSTALL TRUCK DELIVERY CONTAINMENT AREA AND ASSOCIATED DRAINAGE PIPING AND TIE INTO STORM DRAIN SYSTEM.
5. INSTALL PROPANE TANK AND PROPANE PIPING FROM TANK TO THE WFP.
6. INSTALL RAW AND FINISHED TRANSMISSION MAINS FROM PURCHASE STREET TO WFP.
7. INSTALL WATER MAIN EXTENSION AND ASSOCIATED HYDRANTS AROUND THE PERIMETER OF THE WFP.

NOTES

1. WORK PERFORMED IN PRIOR PHASE(S) HAS BEEN SCREEN TO PROVIDE CLARITY AND DEFINITION OF WORK TO BE PERFORMED IN THIS PHASE. SCREENED LINE WORK REPRESENTS BOTH EXISTING AND WORK PERFORMED ON PRIOR PHASES ON THESE PHASING SERIES OF DRAWINGS.
2. SEE DRAWINGS C-301 - C-303 FOR EROSION CONTROL DETAILS.
3. SEE YARD PIPING DRAWINGS C-131 TO C-132 FOR TRANSMISSION MAINS, WATER MAIN, SANITARY FORCE MAIN, GALLERY DRAIN, OVERFLOWS, PROCESS PIPING, AND ELECTRICAL DUCT BANKS.
4. SEE GRADING AND DRAINAGE PLAN DRAWINGS C-121 TO C-122 FOR STORM DRAIN PIPING.
5. CONTRACTOR SHALL NOT STORE EXCAVATED MATERIAL INSIDE THE WETLAND BUFFER.
6. CONSTRUCTION PHASING AS SHOWN IS SUGGESTED AND FOR THE PURPOSES OF EROSION AND SEDIMENT CONTROL. CONTRACTOR MAY PERFORM WORK IN ALTERNATIVE PHASES OR SEQUENCE PROVIDED CONTRACT RESTRICTIONS ARE FOLLOWED AND SEQUENCE IS APPROVED BY THE ENGINEER.
7. ALL YARD INLETS SHALL HAVE INLET PROTECTION PROVIDED UNTIL UPSTREAM CONDITIONS ARE STABILIZED.

LEGEND

PHASE III DISTURBANCE AREA (#1-#7) - 3.73 AC

PHASE III UNDISTURBED AREA - 2.03 AC

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DESIGNED BY: J. TANNER
DRAWN BY: J. TANNER
CHECKED BY: D. SHEERAN

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STATE OF NEW YORK · DANIEL JAMES SHEERAN · 088955 · LICENSED PROFESSIONAL ENGINEER

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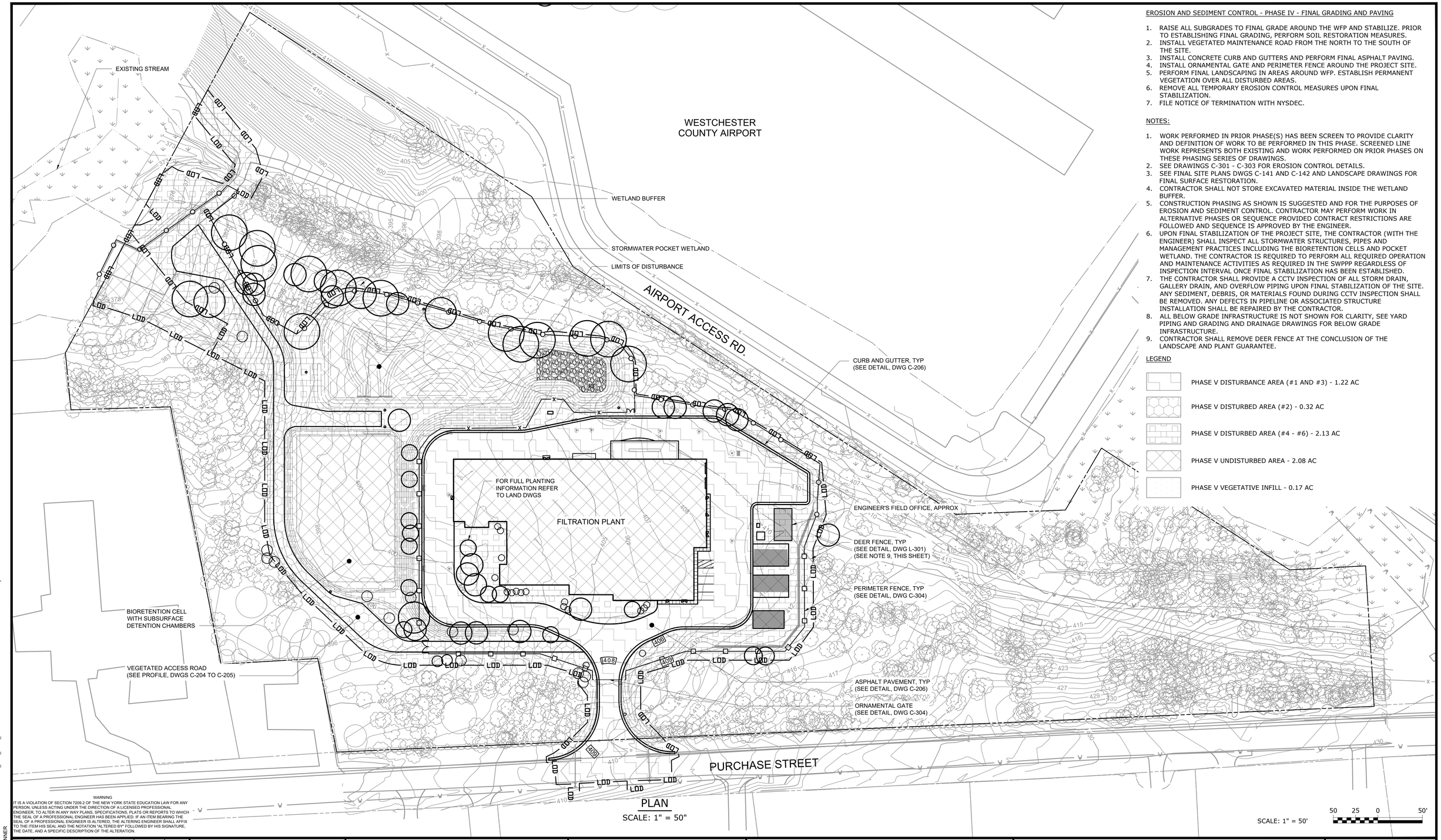
WESTCHESTER JOINT WATER WORKS
MAMARONECK, NY

RYE LAKE WATER FILTRATION PLANT
HARRISON, NY

CIVIL
EROSION AND SEDIMENT CONTROL PHASING PLAN - PHASE IV

DATE: FEB 2025
HAZEN NO.: 90388-000
CONTRACT NO.: A1364-A
DRAWING NUMBER: C-114

File: C:\USERS\JTANNER\DOCACCDOCS\HAZEN AND SAWYER\90388-000_RYE_LAKE_FILTRATION\PROJECT FILES\PROJECTWISE\CIVIL\C-114 Saved by JTANNER Save date: 2/11/2025 1:12 PM
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PLAN
SCALE: 1" = 50"

SCALE: 1" = 50'

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EROSION AND SEDIMENT CONTROL - PHASE IV - FINAL GRADING AND PAVING

1. RAISE ALL SUBGRADES TO FINAL GRADE AROUND THE WFP AND STABILIZE. PRIOR TO ESTABLISHING FINAL GRADING, PERFORM SOIL RESTORATION MEASURES.
2. INSTALL VEGETATED MAINTENANCE ROAD FROM THE NORTH TO THE SOUTH OF THE SITE.
3. INSTALL CONCRETE CURB AND GUTTERS AND PERFORM FINAL ASPHALT PAVING.
4. INSTALL ORNAMENTAL GATE AND PERIMETER FENCE AROUND THE PROJECT SITE.
5. PERFORM FINAL LANDSCAPING IN AREAS AROUND WFP. ESTABLISH PERMANENT VEGETATION OVER ALL DISTURBED AREAS.
6. REMOVE ALL TEMPORARY EROSION CONTROL MEASURES UPON FINAL STABILIZATION.
7. FILE NOTICE OF TERMINATION WITH NYSDEC.

NOTES:

1. WORK PERFORMED IN PRIOR PHASE(S) HAS BEEN SCREEN TO PROVIDE CLARITY AND DEFINITION OF WORK TO BE PERFORMED IN THIS PHASE. SCREENED LINE WORK REPRESENTS BOTH EXISTING AND WORK PERFORMED ON PRIOR PHASES ON THESE PHASING SERIES OF DRAWINGS.
2. SEE DRAWINGS C-301 - C-303 FOR EROSION CONTROL DETAILS.
3. SEE FINAL SITE PLANS DWGS C-141 AND C-142 AND LANDSCAPE DRAWINGS FOR FINAL SURFACE RESTORATION.
4. CONTRACTOR SHALL NOT STORE EXCAVATED MATERIAL INSIDE THE WETLAND BUFFER.
5. CONSTRUCTION PHASING AS SHOWN IS SUGGESTED AND FOR THE PURPOSES OF EROSION AND SEDIMENT CONTROL. CONTRACTOR MAY PERFORM WORK IN ALTERNATIVE PHASES OR SEQUENCE PROVIDED CONTRACT RESTRICTIONS ARE FOLLOWED AND SEQUENCE IS APPROVED BY THE ENGINEER.
6. UPON FINAL STABILIZATION OF THE PROJECT SITE, THE CONTRACTOR (WITH THE ENGINEER) SHALL INSPECT ALL STORMWATER STRUCTURES, PIPES AND MANAGEMENT PRACTICES INCLUDING THE BIORETENTION CELLS AND POCKET WETLAND. THE CONTRACTOR IS REQUIRED TO PERFORM ALL REQUIRED OPERATION AND MAINTENANCE ACTIVITIES AS REQUIRED IN THE SWPPP REGARDLESS OF INSPECTION INTERVAL ONCE FINAL STABILIZATION HAS BEEN ESTABLISHED.
7. THE CONTRACTOR SHALL PROVIDE A CCTV INSPECTION OF ALL STORM DRAIN, GALLERY DRAIN, AND OVERFLOW PIPING UPON FINAL STABILIZATION OF THE SITE. ANY SEDIMENT, DEBRIS, OR MATERIALS FOUND DURING CCTV INSPECTION SHALL BE REMOVED. ANY DEFECTS IN PIPELINE OR ASSOCIATED STRUCTURE INSTALLATION SHALL BE REPAIRED BY THE CONTRACTOR.
8. ALL BELOW GRADE INFRASTRUCTURE IS NOT SHOWN FOR CLARITY, SEE YARD PIPING AND GRADING AND DRAINAGE DRAWINGS FOR BELOW GRADE INFRASTRUCTURE.
9. CONTRACTOR SHALL REMOVE DEER FENCE AT THE CONCLUSION OF THE LANDSCAPE AND PLANT GUARANTEE.

LEGEND

- PHASE V DISTURBANCE AREA (#1 AND #3) - 1.22 AC
- PHASE V DISTURBED AREA (#2) - 0.32 AC
- PHASE V DISTURBED AREA (#4 - #6) - 2.13 AC
- PHASE V UNDISTURBED AREA - 2.08 AC
- PHASE V VEGETATIVE INFILL - 0.17 AC

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REV	ISSUED FOR	DATE	BY

PROJECT ENGINEER:	R. FROST
DESIGNED BY:	J. TANNER
DRAWN BY:	J. TANNER
CHECKED BY:	D. SHEERAN

IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE (0 1/2" 1")

BID SET

STATE OF NEW YORK · CHRISTOPHER JAMES SHEERAN · 088955 · LICENSED PROFESSIONAL ENGINEER

Hazen

HAZEN AND SAWYER
498 SEVENTH AVENUE, 11th FLOOR
NEW YORK, NEW YORK 10018

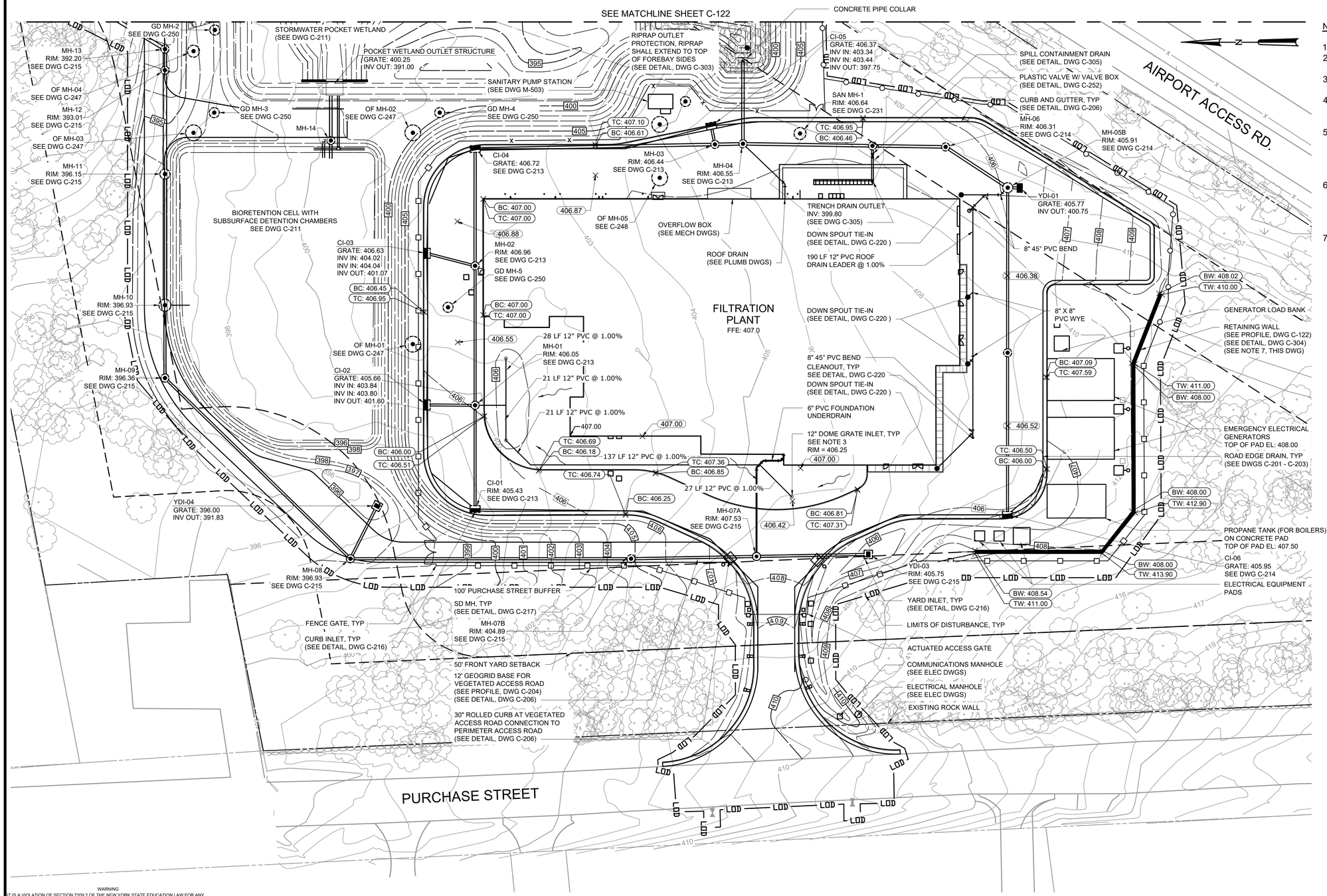
WESTCHESTER JOINT WATER WORKS
MAMARONECK, NY

RYE LAKE WATER FILTRATION PLANT
HARRISON, NY

CIVIL
EROSION AND SEDIMENT CONTROL PHASING PLAN - PHASE V

DATE:	FEB 2025
HAZEN NO.:	90388-000
CONTRACT NO.:	A1364-A
DRAWING NUMBER:	C-115

File: C:\USERS\JTANNER\DC\ACCDOCS\HAZEN AND SAWYER\90388-000_RYE_LAKE_FILTRATION\PROJECT FILES\PROJECTWISE\CIVIL\C-115 Saved by: JTANNER Save date: 2/7/2025 2:44 PM
PLOT DATE: 3/27/2025 11:27 AM BY: JTANNER



NOTES:

1. SEE DWG C-131 FOR YARD PIPING.
2. REFER TO DWG C-213 THROUGH C-215 FOR STORM DRAIN PROFILES.
3. INLET SHALL CONSIST OF A NYLOPLAST INLINE DRAIN WITH 12" DOME GRATE COVER, OR APPROVED EQUAL.
4. DIP STORM DRAIN PIPING SHALL BE OF GRADE 70 50 05 DUCTILE IRON IN ACCORDANCE WITH ANSI A21.51 (AWWA C151) AND BE LEAKAGE TESTED TO 50 PSI MIN.
5. HDPE STORM DRAIN PIPING AND FITTINGS SHALL BE SMOOTH LINED CORRUGATED WATERTIGHT HIGH-DENSITY POLYETHYLENE PIPE, AS MANUFACTURED BY HANCOR, INC., N-12 WT IB (WATERTIGHT) PIPE BY ADS, OR APPROVED EQUAL.
6. REINFORCED CONCRETE PIPE (RCP) FOR STORM DRAINS SHALL CONFIRM TO ASTM STANDARD C76, CLASS III, WALL THICKNESS B. PIPE JOINTS SHALL BE DESIGNED PER ASTM C-443-19A AND ASTM C-1628-19. PIPE SHALL BE PROVIDED WITH BELL AND SPIGOT ENDS.
7. TOP AND BOTTOM OF WALL ELEVATIONS IN PLAN VIEW REPRESENT THE GRADE AT THE TOP AND BOTTOM OF WALL AND NOT THE TOP AND BOTTOM OF THE STRUCTURE. SEE PROFILE ON DWG C-122 AND DETAIL ON DWG C-304.

PLAN
SCALE: 1" = 30'

SCALE: 1" = 30'
30 15 0 30'

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CHECKED BY:	D. SHEERAN
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BID SET



Hazen

HAZEN AND SAWYER
498 SEVENTH AVENUE, 11th FLOOR
NEW YORK, NEW YORK 10018

WESTCHESTER JOINT WATER WORKS
MAMARONECK, NY

RYE LAKE WATER FILTRATION PLANT
HARRISON, NY

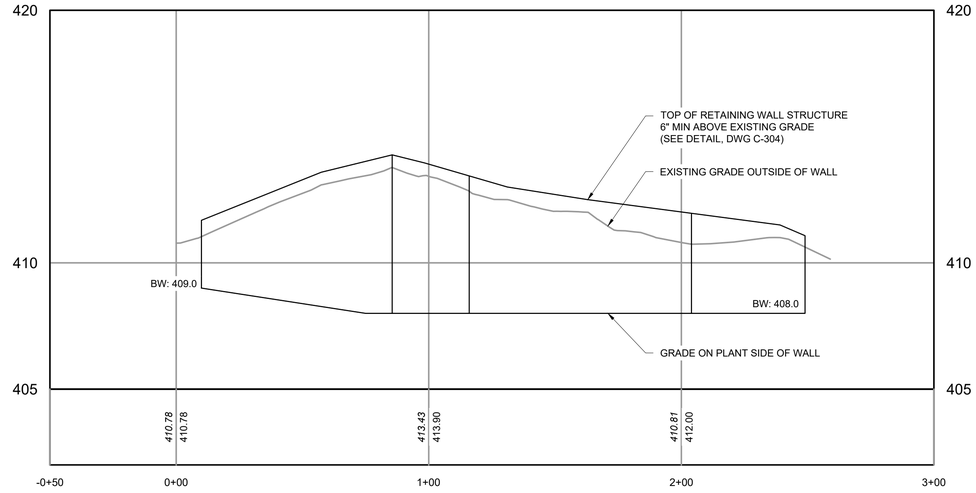
CIVIL
GRADING AND DRAINAGE PLAN - AREA 1

DATE:	FEB 2025
HAZEN NO.:	90388-000
CONTRACT NO.:	A1364-A
DRAWING NUMBER:	C-121

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PLOT DATE: 3/27/2025 2:54 PM BY: JTANNER

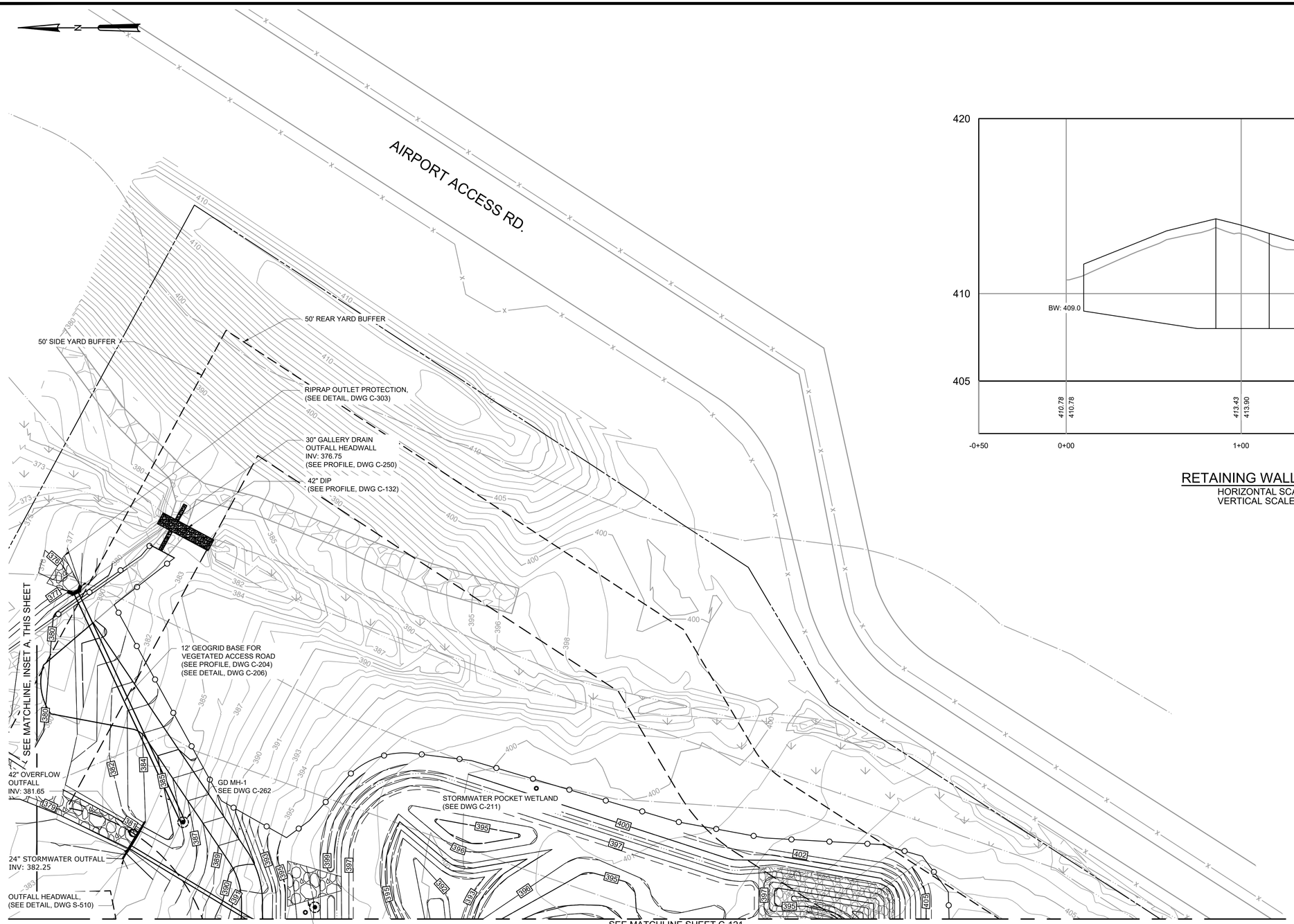
NOTES:

1. SEE DWG C-132 FOR YARD PIPING
2. REFER TO DWG C-213 THROUGH C-215 FOR STORM DRAIN PROFILES.



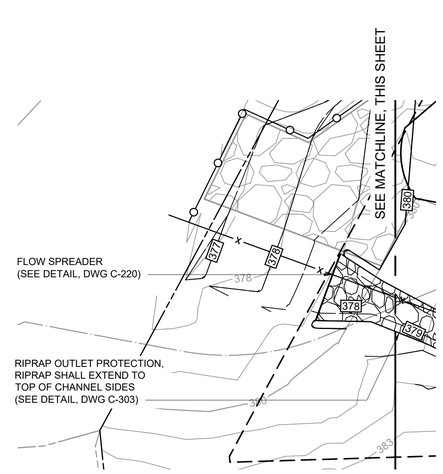
RETAINING WALL PROFILE

HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 3'



PLAN

SCALE: 1" = 30'



INSET A

SCALE: 1" = 30'

SCALE: 1" = 30' 30 15 0 30'

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BID SET



Hazen

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498 SEVENTH AVENUE, 11th FLOOR
NEW YORK, NEW YORK 10018

WESTCHESTER JOINT WATER WORKS
MAMARONECK, NY

RYE LAKE WATER FILTRATION PLANT
HARRISON, NY

CIVIL
GRADING AND DRAINAGE PLAN - AREA 2

DATE:	FEB 2025
HAZEN NO.:	90388-000
CONTRACT NO.:	A1364-A
DRAWING NUMBER:	C-122

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PLOT DATE: 3/26/2025 6:38 PM BY: JTANNER

SEE MATCHLINE SHEET C-132

SANITARY PUMP STATION (SEE DWGS M-503 & M-504)

STORMWATER POCKET WETLAND (SEE DWG C-211)

CONCRETE PIPE COLLAR (SEE DETAIL, DWG C-216)

8" PVC SAN DRAIN (SEE PROFILE DWG C-231)

FIRE HYDRANT WITH VALVE (SEE DETAIL DWG C-252)

4" PVC SAN FM (SEE PROFILE DWGS C-232 & C-233)

WETLAND OUTLET STRUCTURE, (SEE DWG C-211)

18" SD

ELECTRICAL DUCTBANK

FIRE HYDRANT WITH VALVE (SEE DETAIL, DWG C-252)

AIRPORT ACCESS RD

15" SD

8" SD

18" SD

18" SD

18" SD

CONCRETE ENCASEMENT, TYP (SEE DETAIL, DWG C-251)

30" GD

30" GD

7+00

8+00

6+00

100' WETLAND BUFFER

2 - 45° BEND

42" DIP OF

16" SD

22.5° BEND

4" PVC SS

8" PVC SS

CHEMICAL CONNECTION, TYP (SEE MECH DWGS)

OVERFLOW BOX (SEE MECH DWGS)

2 - 45° BEND

5+00

9+00

90° BEND

42" DIP OF

30" DIP OF

BIORETENTION CELL WITH SUBSURFACE DETENTION CHAMBERS (SEE DWG C-211)

FILTRATION PLANT

FFE: 407.0

FDC

6" DIP FP (SEE PROFILE DWG C-245)

4" DIP PW (SEE PROFILE DWG C-245)

8" X 6" TEE

8" X 4" TEE

ELECTRICAL DUCT BANK (TYP)

PORTABLE GENERATOR DOCKING PAD

RETAINING WALL

GENERATOR LOAD BANK

OF MH, TYP (SEE DETAIL, DWG C-234)

SD MH, TYP (SEE DETAIL, DWG C-217)

14" SD

42" DIP WWW (SEE PROFILE DWG C-249)

12" DIP WWR (SEE PROFILE DWG C-244)

4+00

10+00

90° BEND

90° BEND

45° BEND

2 - 45° BEND

1+00

0+00

EMERGENCY ELECTRICAL GENERATORS

FIRE HYDRANT WITH VALVE (SEE DETAIL, DWG C-252)

PROPANE TANK (FOR BOILERS) ON CONCRETE PAD

3+00

2+00

11+00

GAS

42" DIP OF

2 - 45° BEND

18" SD

2 - 45° BEND

12" BLOW-OFF (SEE DETAIL, DWG C-241)

48" DIP FINISHED WATER TRANSMISSION MAIN (SEE PROFILE DWGS C-242 & C-243)

ELECTRICAL EQUIPMENT

FIRE HYDRANT WITH VALVE (SEE DETAIL, DWG C-252)

4" PPE PROPANE LINE

2 - 45° BEND

24" W x 24" H ELECTRICAL DUCTBANK (SEE DETAIL B, DWG E-601)

16" W x 8" H COMMUNICATIONS DUCTBANK (SEE DETAIL D, DWG E-601)

6" BLOW-OFF (SEE DETAIL, DWG C-243)

COMMUNICATIONS MANHOLE (SEE ELEC DWGS)

ELECTRICAL MANHOLE (SEE ELEC DWGS)

12+00

1+00

VEGETATED ACCESS ROAD (SEE DWG C-204)

SEE GRADING AND DRAINAGE PLANS C-121 AND C-122 FOR STORM DRAIN PIPING

ACTUATED ACCESS GATE

48" DIP RAW WATER TRANSMISSION MAIN (SEE PROFILE DWG C-241)

36" DIP RAW WATER TRANSMISSION MAIN

VALVE BOX, TYP (SEE DETAIL DWG C-252)

EXISTING ROCK WALL

SEE ENLARGED PLAN (THIS DWG)

CONNECT TO EXISTING 8" WATER MAIN

36" DIP FINISHED WATER TRANSMISSION MAIN

13+00

CONNECT TO EX. 36" BFV (SEE NOTE 3, THIS DWG)

CONNECT TO EX. 36" BFV (SEE NOTE 3, THIS DWG)

PURCHASE STREET

EX. 36" WATER MAIN

13+31

0+00

8" DIP WATER MAIN (SEE PROFILE DWG C-244)

EX. 20" DIP WATER MAIN

8" DIP WATER MAIN (SEE PROFILE DWG C-244)

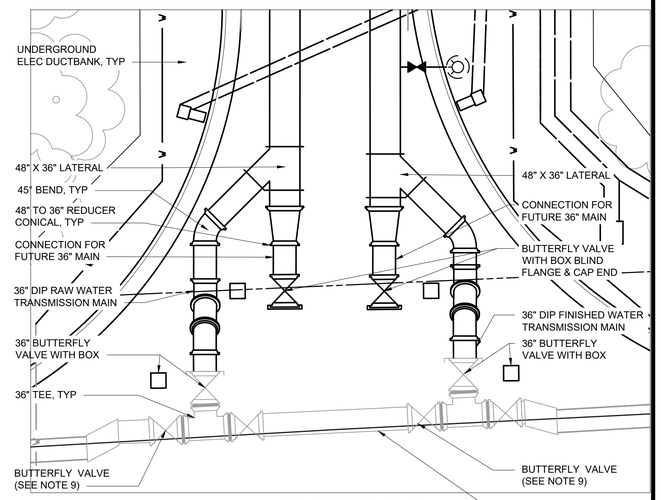
CONNECTION TO EXISTING 20" WATER MAIN BY OTHERS

SCALE: 1" = 30'

30 15 0 30'

PLAN

SCALE: 1" = 30'



SCALE: 1" = 10'

10 5 0 10'

ENLARGED PLAN

SCALE: 1" = 10'

NOTES:

1. EXISTING AND FINAL CONTOURS NOT SHOWN FOR CLARITY. SEE DWG C-121 FOR CONTOURS.
2. REFER TO DWGS C-121, C-213-C-215, & C-211 FOR STORM DRAINAGE SYSTEM INFORMATION. STORM DRAINAGE SHOWN ON THIS SHEET SCREENED FOR INFORMATION ONLY.
3. CONTRACTOR SHALL REMOVE EXISTING CAPS AND CONNECT TRANSMISSION MAINS TO EXISTING BUTTERFLY VALVES.
4. REFER TO MECHANICAL DRAWINGS FOR YARD PIPING CONNECTIONS AT STRUCTURES.
5. ALL VALVES SHALL BE GATE UNLESS OTHERWISE NOTED.
6. GATE VALVES ON TRANSMISSION MAINS SHALL BE INSTALLED HORIZONTALLY. SEE DETAIL SHEET C-252.
7. ALL DIP SHALL BE SPECIAL THICKNESS CLASS 53 WITH MECHANICAL JOINT FITTINGS AND RESTRAINED JOINTS GLANDS. ALL JOINTS SHALL BE RESTRAINED. ALL DIP SHALL BE DOUBLE CEMENT LINED ON THE INSIDE.
8. UPON ACCEPTANCE OF THE WATER MAIN INSTALLATION AND PRIOR TO STARTUP, CONTRACTOR SHALL REMOVE THE 36" BUTTERFLY VALVES AND CONNECTING LENGTH OF PIPE AND INSTALL PLUGS ON THE EXPOSED SIDE OF THE 36"x36" TEES. THE RAW WATER AND FINISHED WATER TRANSMISSION MAINS SHALL NOT BE USED UNTIL THE INTERCONNECTION HAS BEEN REMOVED.

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STATE OF NEW YORK · DANIEL JAMES SHEERAN · 088955 · LICENSED PROFESSIONAL ENGINEER

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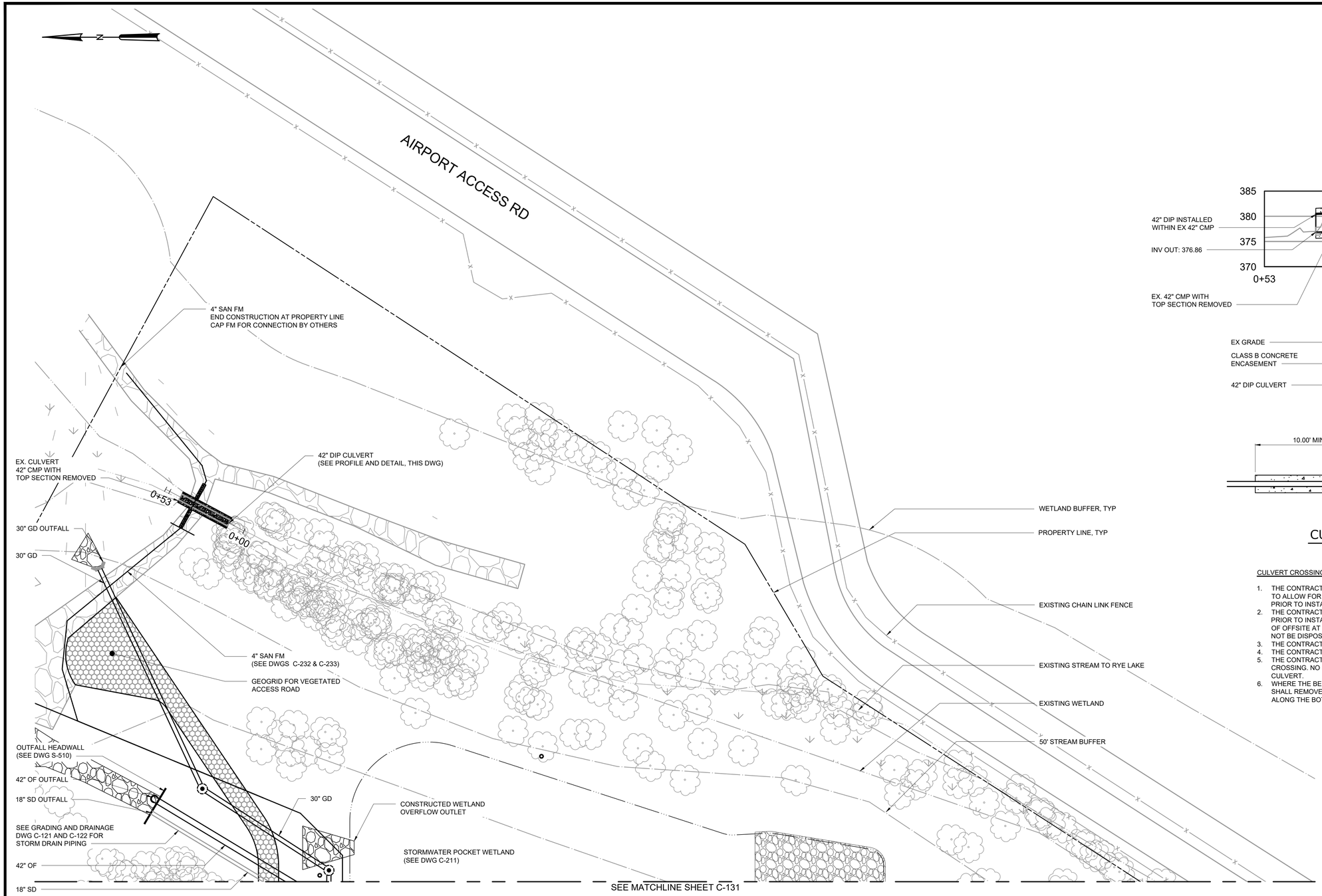
WESTCHESTER JOINT WATER WORKS
MAMARONECK, NY

RYE LAKE WATER FILTRATION PLANT
HARRISON, NY

CIVIL
YARD PIPING PLAN - AREA 1

DATE:	FEB 2025
HAZEN NO.:	90388-000
CONTRACT NO.:	A1364-A
DRAWING NUMBER:	C-131

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PLOT DATE: 3/27/2025 10:26 AM BY: JTANNER

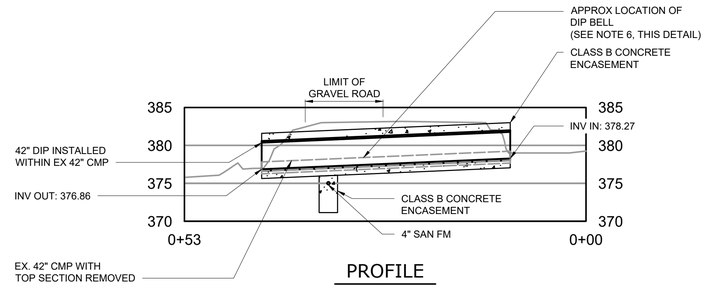


PLAN

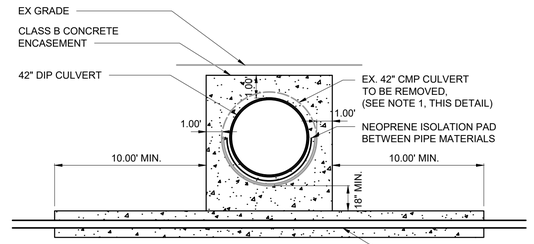
SCALE: 1" = 30'

NOTES:

1. EXISTING AND FINAL CONTOURS NOT SHOWN FOR CLARITY. SEE DWG C-122 FOR CONTOURS.
2. REFER TO DWG C-122, C-213-C-215, & C-211 FOR STORM DRAINAGE SYSTEM INFORMATION.



PROFILE



SECTION

CULVERT CROSSING DETAIL

SCALE: NTS

CULVERT CROSSING NOTES:

1. THE CONTRACTOR SHALL HAND DIG EXISTING CULVERT AND REMOVE CROWN OF CMP TO ALLOW FOR INSTALLATION OF DIP CULVERT. DIP CULVERT SHALL BE INSTALLED PRIOR TO INSTALLATION OF SANITARY FORCE MAIN.
2. THE CONTRACTOR SHALL REMOVE ALL DEBRIS AND SEDIMENT FROM THE CULVERT PRIOR TO INSTALLATION OF DIP CULVERT. DEBRIS AND SEDIMENT SHALL BE DISPOSED OF OFFSITE AT THE APPLICABLE DISPOSAL FACILITIES. DEBRIS AND SEDIMENT SHALL NOT BE DISPOSED OF WITHIN ADJACENT WETLANDS.
3. THE CONTRACTOR SHALL MAINTAIN FLOW THROUGH THE CULVERT AT ALL TIMES.
4. THE CONTRACTOR SHALL PERFORM WORK ON CULVERT DURING DRY WEATHER ONLY.
5. THE CONTRACTOR SHALL INSTALL ONE FILL LENGTH OF PIPE CENTERED ON THE CROSSING. NO PIPE JOINTS OR FITTINGS SHALL BE INSTALLED UNDERNEATH THE CULVERT.
6. WHERE THE BELL OF THE DIP CULVERT INTERFACES WITH THE CMP, THE CONTRACTOR SHALL REMOVE A SECTION OF THE CMP TO ALLOW PLACEMENT OF THE DIP FLUSH ALONG THE BOTTOM OF THE EXISTING CULVERT TO MATCH THE EXISTING SLOPE.

SCALE: 1" = 30'

30 15 0 30'

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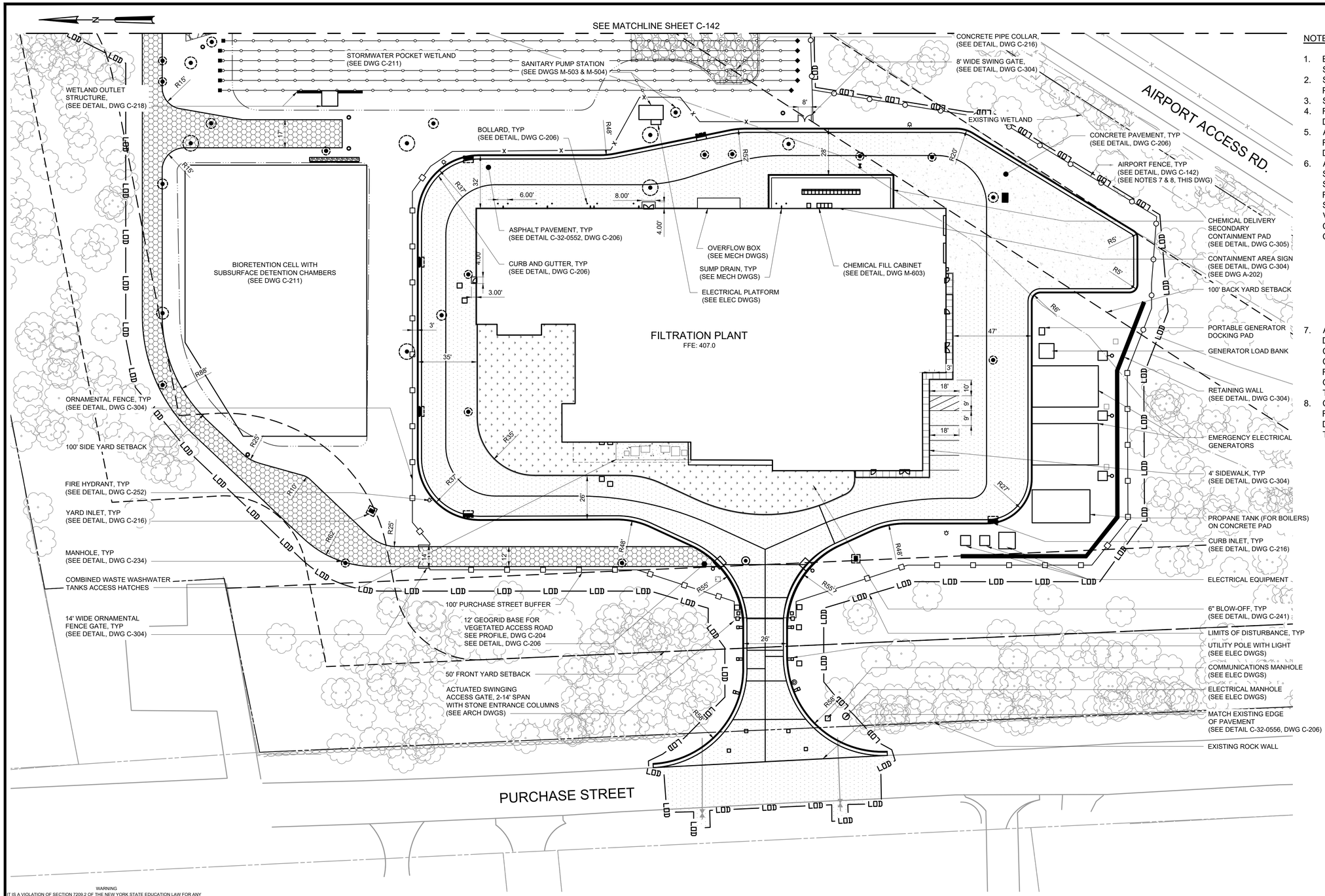
WESTCHESTER JOINT WATER WORKS
MAMARONECK, NY

RYE LAKE WATER FILTRATION PLANT
HARRISON, NY

CIVIL
YARD PIPING PLAN - AREA 2

DATE:	FEB 2025
HAZEN NO.:	90388-000
CONTRACT NO.:	A1364-A
DRAWING NUMBER:	C-132

File: C:\USERS\JTANNER\DOCACCDOCS\HAZEN AND SAWYER\90388-000_RYE_LAKE_FILTRATION\PROJECT FILES\PROJECTWISE\CIVIL\C-132 Saved by JTANNER Save date: 2/11/2025 1:22 PM
PLOT DATE: 3/26/2025 11:21 PM BY: JTANNER



PLAN

SCALE: 1" = 30'

SCALE: 1" = 30'

30' 15' 0 30'

NOTES:

1. EXISTING AND FINAL CONTOURS NOT SHOWN FOR CLARITY. SEE SHEET C-121 FOR TOPOGRAPHIC INFORMATION.
2. SEE SHEET C-121 FOR UNDERGROUND STORMWATER PIPING.
3. SEE SHEET C-131 FOR YARD PIPING.
4. REFER TO SHEETS C-213 THROUGH C-215 FOR STORM DRAIN PROFILES.
5. ALL DISTURBED AREAS THAT ARE NOT PAVED SHALL BE RESTORED BY TOPSOIL AND SEEDING. SEE LANDSCAPE DWGS.
6. ALL AREAS DESIGNATED FOR LANDSCAPE RESTORATION SHALL HAVE SOILS RESTORED IN ACCORDANCE WITH THE SOIL RESTORATION TABLE ON DRAWING C-301. SOIL RESTORATION IS NOT REQUIRED FOR AREAS OF STRUCTURES, BUILDING, EQUIPMENT PADS, RIP RAP, VEGETATED AND PAVED ROADWAYS. ALL AREAS SHALL BE CONSIDERED AREAS OF CUT OR FILL WITH THE EXCEPTION OF THE FOLLOWING:
   A. THE BIORETENTION CELL SHALL BE CONSIDERED AN AREA OF RUNOFF REDUCTION PRACTICES ARE APPLIED.
   B. THE INFILL AREAS (SEE DWG C-102 AND LANDSCAPE DWGS) SHALL BE CONSIDERED MINIMAL SOIL DISTURBANCE.
7. AIRPORT FENCE SHALL BE REVIEWED BY WCA OFFICIALS DURING INITIAL INSTALLATION AND PRIOR TO SUBSTANTIAL COMPLETION. ANY DAMAGE TO THE FENCE DURING THE COURSE OF CONSTRUCTION ACTIVITIES SHALL BE REPLACED AND RESTORED TO THE SATISFACTION OF THE OWNER, ENGINEER AND WCA AT NO ADDITIONAL COST TO THE OWNER.
8. CONTRACTOR SHALL ASSUME AN ADDITIONAL 50-FEET OF FENCE REPLACEMENT BEYOND WHAT IS SHOWN ON THE DRAWINGS TO ACCOMMODATE FIELD CONDITIONS AND TRANSITION OF EXISTING FENCE TO NEW FENCE.

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DRAWN BY: J. TANNER
CHECKED BY: D. SHEERAN
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE 0 1/2" 1"

BID SET

STATE OF NEW YORK DANIEL JAMES SHEERAN 088955 LICENSED PROFESSIONAL ENGINEER

Hazen

HAZEN AND SAWYER
498 SEVENTH AVENUE, 11th FLOOR
NEW YORK, NEW YORK 10018

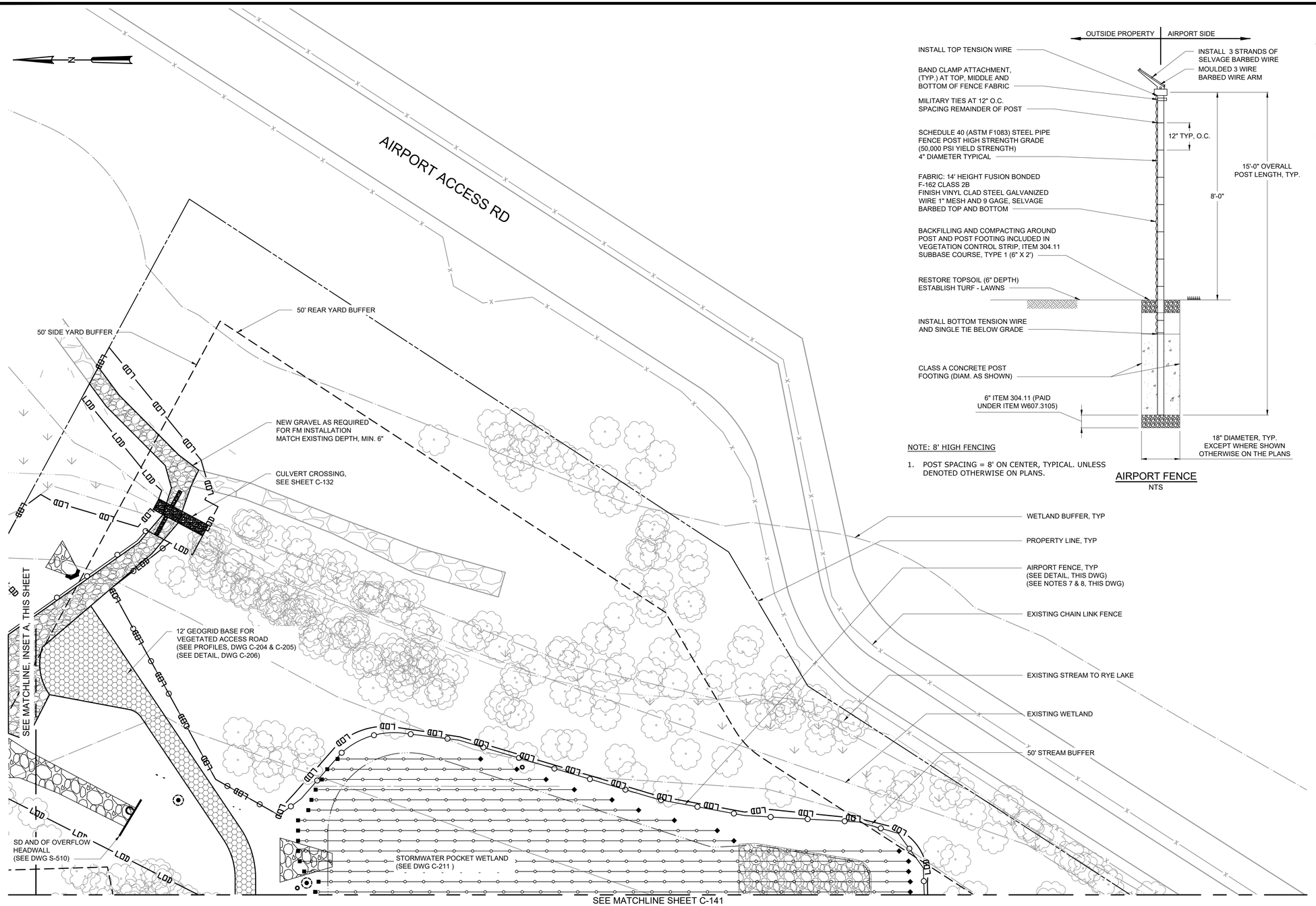
WESTCHESTER JOINT WATER WORKS
MAMARONECK, NY

RYE LAKE WATER FILTRATION PLANT
HARRISON, NY

CIVIL
FINAL SITE PLAN - AREA 1

DATE: FEB 2025
HAZEN NO.: 90388-000
CONTRACT NO.: A1364-A
DRAWING NUMBER: C-141

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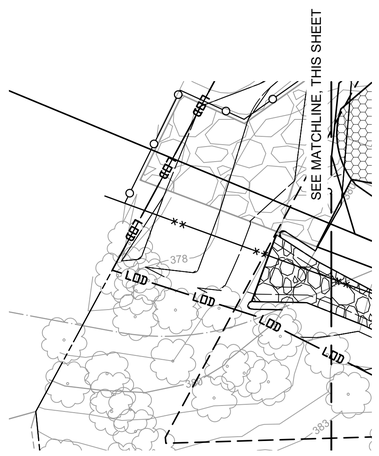


PLAN
SCALE: 1" = 30'

NOTE: 8' HIGH FENCING

1. POST SPACING = 8' ON CENTER, TYPICAL. UNLESS DENOTED OTHERWISE ON PLANS.

AIRPORT FENCE
NTS



INSET A
SCALE: 1" = 30'

SCALE: 1" = 30'

30 15 0 30'

NOTES:

1. EXISTING AND FINAL CONTOURS NOT SHOWN FOR CLARITY. SEE SHEET C-121 FOR TOPOGRAPHIC INFORMATION.
2. SEE SHEET C-121 FOR UNDERGROUND STORMWATER PIPING.
3. SEE SHEET C-131 FOR YARD PIPING.
4. REFER TO SHEETS C-213 THROUGH C-215 FOR STORM DRAIN PROFILES.
5. ALL DISTURBED AREAS THAT ARE NOT PAVED SHALL BE RESTORED BY TOPSOIL AND SEEDING. SEE LANDSCAPE DWGS.
6. ALL AREAS DESIGNATED FOR LANDSCAPE RESTORATION SHALL HAVE SOILS RESTORED IN ACCORDANCE WITH THE SOIL RESTORATION TABLE ON DRAWING C-301. SOIL RESTORATION IS NOT REQUIRED FOR AREAS OF STRUCTURES, BUILDING, EQUIPMENT PADS, RIP RAP, VEGETATED AND PAVED ROADWAYS. ALL AREAS SHALL BE CONSIDERED AREAS OF CUT OR FILL WITH THE EXCEPTION OF THE FOLLOWING:
   A. THE BIORETENTION CELL SHALL BE CONSIDERED AN AREA OF RUNOFF REDUCTION PRACTICES ARE APPLIED.
   B. THE INFILL AREAS (SEE DWG C-102 AND LANDSCAPE DWGS) SHALL BE CONSIDERED MINIMAL SOIL DISTURBANCE.
7. AIRPORT FENCE SHALL BE REVIEWED BY WCA OFFICIALS DURING INITIAL INSTALLATION AND PRIOR TO SUBSTANTIAL COMPLETION. ANY DAMAGE TO THE FENCE DURING THE COURSE OF CONSTRUCTION ACTIVITIES SHALL BE REPLACED AND RESTORED TO THE SATISFACTION OF THE OWNER, ENGINEER AND WCA AT NO ADDITIONAL COST TO THE OWNER.
8. CONTRACTOR SHALL ASSUME AN ADDITIONAL 50-FEET OF FENCE REPLACEMENT BEYOND WHAT IS SHOWN ON THE DRAWINGS TO ACCOMMODATE FIELD CONDITIONS AND TRANSITION OF EXISTING FENCE TO NEW FENCE.

WARNING
IT IS A VIOLATION OF SECTION 7209.2 OF THE NEW YORK STATE EDUCATION LAW FOR ANY PERSON, UNLESS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER IN ANY WAY PLANS, SPECIFICATIONS, PLATS OR REPORTS TO WHICH THE SEAL OF A PROFESSIONAL ENGINEER HAS BEEN APPLIED. IF AN ITEM BEARING THE SEAL OF A PROFESSIONAL ENGINEER IS ALTERED, THE ALTERING ENGINEER SHALL AFFIX TO THE ITEM HIS SEAL AND THE NOTATION "ALTERED BY" FOLLOWED BY HIS SIGNATURE, THE DATE, AND A SPECIFIC DESCRIPTION OF THE ALTERATION.

REV	ISSUED FOR	DATE	BY

PROJECT ENGINEER:	R. FROST
DESIGNED BY:	C. MCNICOL
DRAWN BY:	J. TANNER
CHECKED BY:	D. SHEERAN

IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE 0 1/2" 1"

BID SET

STATE OF NEW YORK DANIEL JAMES SHEERAN 088955 LICENSED PROFESSIONAL ENGINEER

Hazen

HAZEN AND SAWYER
498 SEVENTH AVENUE, 11th FLOOR
NEW YORK, NEW YORK 10018

WESTCHESTER JOINT WATER WORKS
MAMARONECK, NY

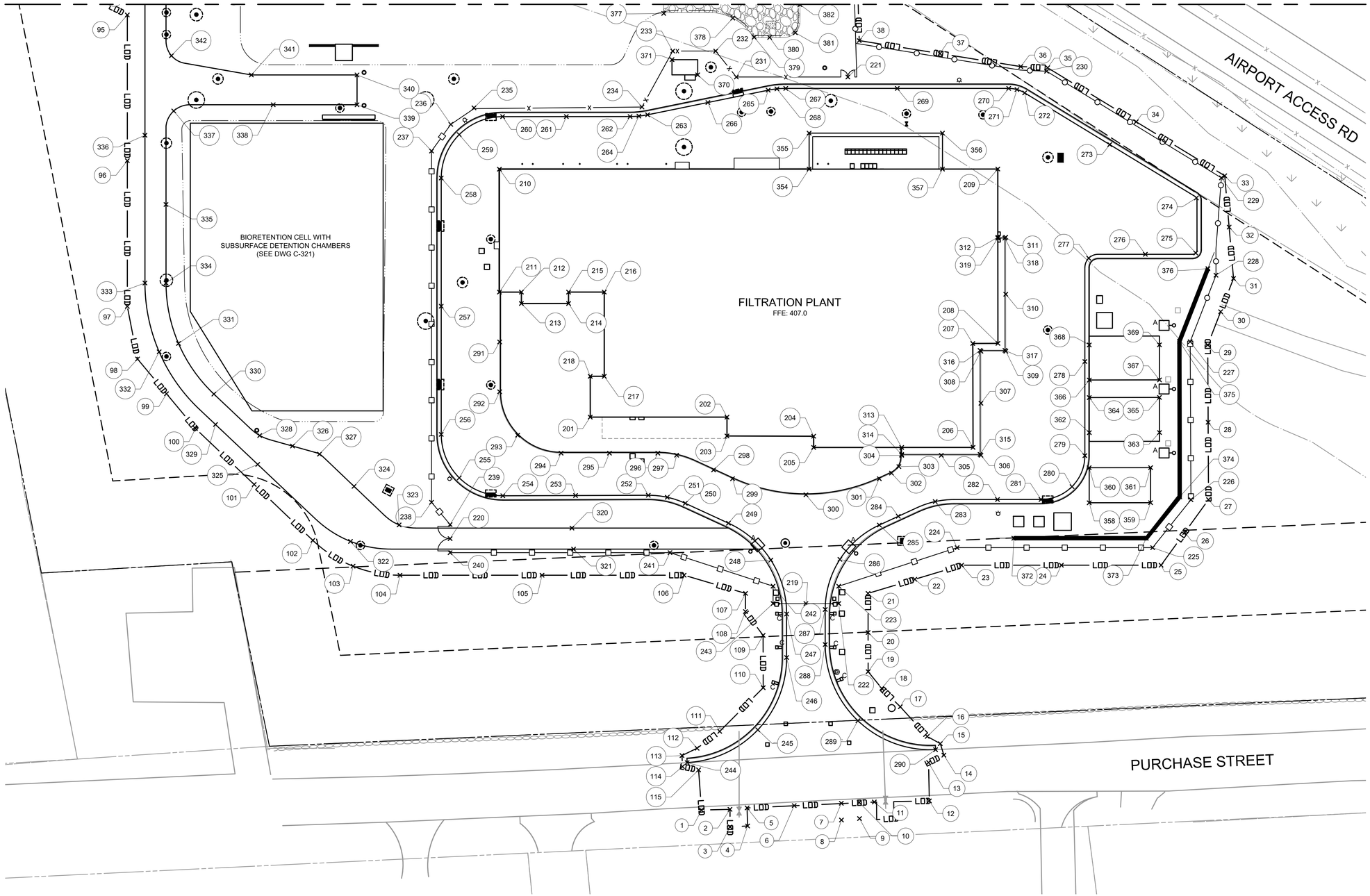
RYE LAKE WATER FILTRATION PLANT
HARRISON, NY

CIVIL
FINAL SITE PLAN - AREA 2

DATE:	FEB 2025
HAZEN NO.:	90388-000
CONTRACT NO.:	A1364-A
DRAWING NUMBER:	C-142

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PLOT DATE: 3/26/2025 11:22 PM BY: JTANNER

SEE MATCHLINE SHEET C-152



PLAN
SCALE: 1" = 30'

SCALE: 1" = 30'

30' 15' 0 30'

WARNING
IT IS A VIOLATION OF SECTION 7209.2 OF THE NEW YORK STATE EDUCATION LAW FOR ANY PERSON, UNLESS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER IN ANY WAY PLANS, SPECIFICATIONS, PLATS OR REPORTS TO WHICH THE SEAL OF A PROFESSIONAL ENGINEER HAS BEEN APPLIED. IF AN ITEM BEARING THE SEAL OF A PROFESSIONAL ENGINEER IS ALTERED, THE ALTERING ENGINEER SHALL AFFIX TO THE ITEM HIS SEAL AND THE NOTATION "ALTERED BY" FOLLOWED BY HIS SIGNATURE, THE DATE, AND A SPECIFIC DESCRIPTION OF THE ALTERATION.

REV	ISSUED FOR	DATE	BY

PROJECT ENGINEER:	R. FROST
DESIGNED BY:	K. ROBBINS
DRAWN BY:	K. ROBBINS
CHECKED BY:	D. SHEERAN

IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE 0 1/2" 1"

BID SET

STATE OF NEW YORK · CHRISTOPHER JAMES SHEERAN · 088955 · LICENSED PROFESSIONAL ENGINEER

Hazen
HAZEN AND SAWYER
498 SEVENTH AVENUE, 11th FLOOR
NEW YORK, NEW YORK 10018

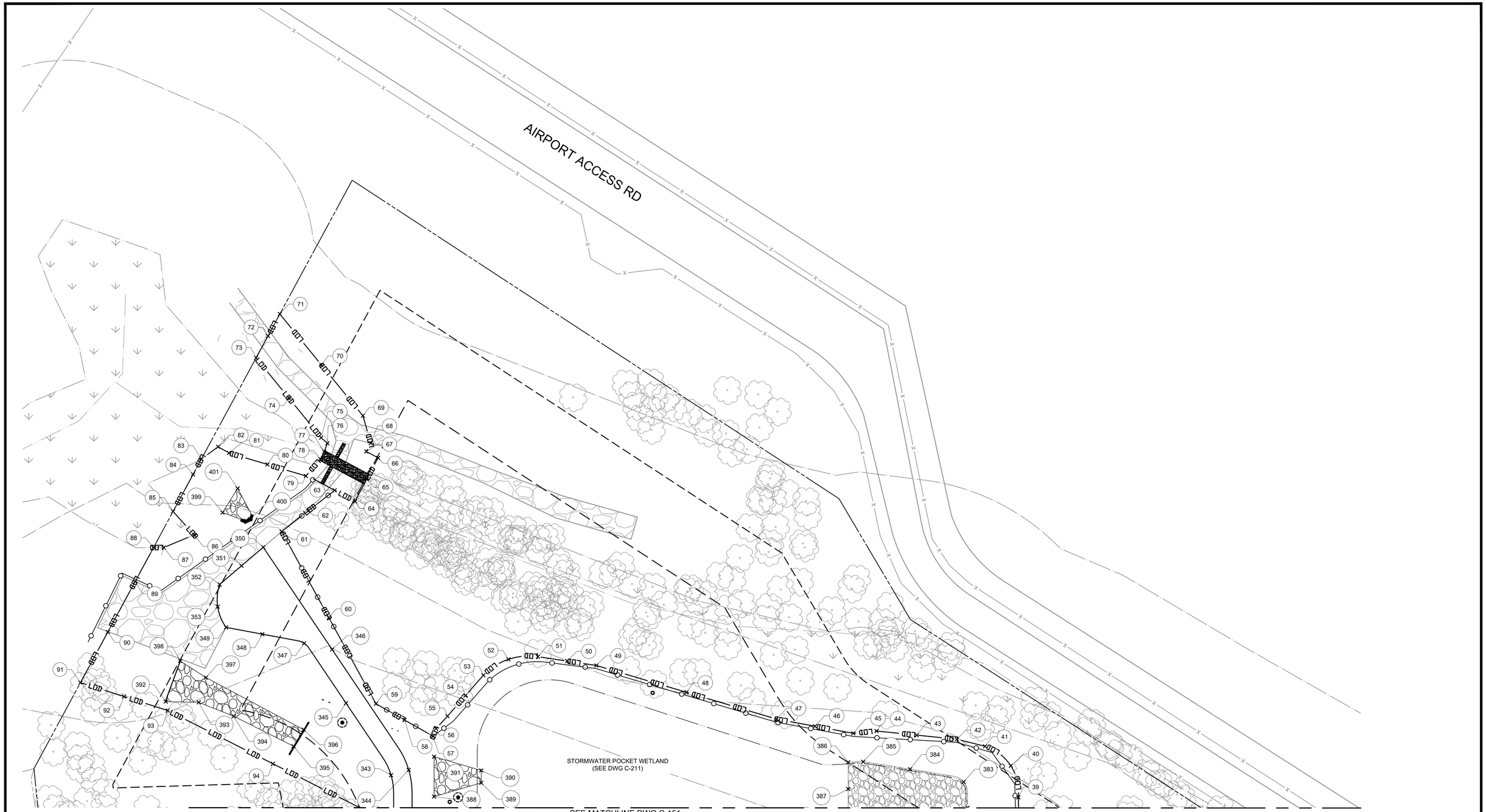
WESTCHESTER JOINT WATER WORKS
MAMARONECK, NY

RYE LAKE WATER FILTRATION PLANT
HARRISON, NY

CIVIL
STAKING PLAN - AREA 1

DATE:	FEB 2025
HAZEN NO.:	90388-000
CONTRACT NO.:	A1364-A
DRAWING NUMBER:	C-151

File: C:\USERS\JTANNER\DC\ACCDOCS\HAZEN AND SAWYER\90388-000_RYE_LAKE_FILTRATION\PROJECT FILES\PROJECTWISE\CIVIL\C-151_STAKING Saved by: JTANNER Save date: 2/11/2025 1:37 PM
PLOT DATE: 3/27/2025 11:29 AM BY: JTANNER



PLAN
SCALE: 1" = 30'

SCALE: 1" = 30'

30 15 0 30'

WARNING
IT IS A VIOLATION OF SECTION 7209.2 OF THE NEW YORK STATE EDUCATION LAW FOR ANY PERSON, UNLESS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER IN ANY WAY PLANS, SPECIFICATIONS, PLATS OR REPORTS TO WHICH THE SEAL OF A PROFESSIONAL ENGINEER HAS BEEN APPLIED. IF AN ITEM BEARING THE SEAL OF A PROFESSIONAL ENGINEER IS ALTERED, THE ALTERING ENGINEER SHALL AFFIX TO THE ITEM HIS SEAL AND THE NOTATION "ALTERED BY" FOLLOWED BY HIS SIGNATURE, THE DATE, AND A SPECIFIC DESCRIPTION OF THE ALTERATION.

REV	ISSUED FOR	DATE	BY

PROJECT ENGINEER:	R. FROST
DESIGNED BY:	K. ROBBINS
DRAWN BY:	K. ROBBINS
CHECKED BY:	D. SHEERAN

IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE 0 1/2" 1"

BID SET

STATE OF NEW YORK · CHRISTOPHER JAMES SHEERAN · 088955 · LICENSED PROFESSIONAL ENGINEER

Hazen
HAZEN AND SAWYER
498 SEVENTH AVENUE, 11th FLOOR
NEW YORK, NEW YORK 10018

WESTCHESTER JOINT WATER WORKS
MAMARONECK, NY

RYE LAKE WATER FILTRATION PLANT
HARRISON, NY

CIVIL
STAKING PLAN - AREA 2

DATE:	FEB 2025
HAZEN NO.:	90388-000
CONTRACT NO.:	A1364-A
DRAWING NUMBER:	C-152

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PLOT DATE: 3/26/2025 11:23 PM BY: JTANNER

STAKING TABLE

POINT #	NORTHING	EASTING	DESCRIPTION
1	813521.69	707411.73	LIMIT OF DISTURBANCE
2	813505.45	707412.11	LIMIT OF DISTURBANCE
3	813505.40	707402.11	LIMIT OF DISTURBANCE
4	813495.43	707402.66	LIMIT OF DISTURBANCE
5	813495.71	707412.94	LIMIT OF DISTURBANCE
6	813468.85	707414.26	LIMIT OF DISTURBANCE
7	813441.99	707415.58	LIMIT OF DISTURBANCE
8	813441.92	707406.04	LIMIT OF DISTURBANCE
9	813431.63	707406.87	LIMIT OF DISTURBANCE
10	813431.79	707416.08	LIMIT OF DISTURBANCE
11	813423.20	707416.32	LIMIT OF DISTURBANCE
12	813391.82	707416.95	LIMIT OF DISTURBANCE
13	813392.26	707438.80	LIMIT OF DISTURBANCE
14	813383.54	707443.03	LIMIT OF DISTURBANCE
15	813385.60	707449.57	LIMIT OF DISTURBANCE
16	813393.02	707453.70	LIMIT OF DISTURBANCE
17	813408.38	707470.60	LIMIT OF DISTURBANCE
18	813418.92	707481.05	LIMIT OF DISTURBANCE
19	813426.70	707490.64	LIMIT OF DISTURBANCE
20	813426.73	707512.94	LIMIT OF DISTURBANCE
21	813426.76	707535.23	LIMIT OF DISTURBANCE
22	813400.09	707543.27	LIMIT OF DISTURBANCE
23	813373.41	707551.30	LIMIT OF DISTURBANCE
24	813316.57	707551.30	LIMIT OF DISTURBANCE
25	813259.74	707551.30	LIMIT OF DISTURBANCE
26	813246.22	707569.99	LIMIT OF DISTURBANCE
27	813232.71	707588.67	LIMIT OF DISTURBANCE
28	813232.92	707632.76	LIMIT OF DISTURBANCE
29	813233.13	707676.86	LIMIT OF DISTURBANCE
30	813225.79	707695.79	LIMIT OF DISTURBANCE
31	813218.45	707714.73	LIMIT OF DISTURBANCE
32	813220.95	707744.00	LIMIT OF DISTURBANCE
33	813223.45	707773.28	LIMIT OF DISTURBANCE
34	813273.92	707804.07	LIMIT OF DISTURBANCE
35	813324.39	707834.85	LIMIT OF DISTURBANCE
36	813339.71	707835.53	LIMIT OF DISTURBANCE
37	813385.75	707842.94	LIMIT OF DISTURBANCE
38	813431.80	707850.35	LIMIT OF DISTURBANCE
39	813432.56	707877.72	LIMIT OF DISTURBANCE
40	813437.43	707898.24	LIMIT OF DISTURBANCE
41	813454.24	707910.98	LIMIT OF DISTURBANCE
42	813472.50	707915.53	LIMIT OF DISTURBANCE
43	813498.66	707918.20	LIMIT OF DISTURBANCE
44	813524.83	707920.88	LIMIT OF DISTURBANCE
45	813539.90	707919.38	LIMIT OF DISTURBANCE
46	813564.85	707924.01	LIMIT OF DISTURBANCE
47	813589.81	707928.64	LIMIT OF DISTURBANCE
48	813648.42	707946.08	LIMIT OF DISTURBANCE
49	813707.04	707963.52	LIMIT OF DISTURBANCE
50	813726.02	707966.37	LIMIT OF DISTURBANCE

STAKING TABLE

POINT #	NORTHING	EASTING	DESCRIPTION
51	813745.01	707969.21	LIMIT OF DISTURBANCE
52	813764.21	707967.50	LIMIT OF DISTURBANCE
53	813780.49	707957.19	LIMIT OF DISTURBANCE
54	813792.18	707943.87	LIMIT OF DISTURBANCE
55	813803.87	707930.55	LIMIT OF DISTURBANCE
56	813811.28	707922.44	LIMIT OF DISTURBANCE
57	813813.19	707917.51	LIMIT OF DISTURBANCE
58	813831.78	707928.05	LIMIT OF DISTURBANCE
59	813850.38	707938.59	LIMIT OF DISTURBANCE
60	813881.03	707994.62	LIMIT OF DISTURBANCE
61	813911.69	708050.66	LIMIT OF DISTURBANCE
62	813894.45	708064.04	LIMIT OF DISTURBANCE
63	813877.22	708077.42	LIMIT OF DISTURBANCE
64	813863.98	708070.36	LIMIT OF DISTURBANCE
65	813856.37	708084.63	LIMIT OF DISTURBANCE
66	813848.93	708098.58	LIMIT OF DISTURBANCE
67	813856.68	708102.69	LIMIT OF DISTURBANCE
68	813853.78	708108.10	LIMIT OF DISTURBANCE
69	813858.88	708125.95	LIMIT OF DISTURBANCE
70	813885.88	708159.03	LIMIT OF DISTURBANCE
71	813912.89	708192.10	LIMIT OF DISTURBANCE
72	813920.61	708177.84	LIMIT OF DISTURBANCE
73	813928.33	708163.57	LIMIT OF DISTURBANCE
74	813907.16	708137.61	LIMIT OF DISTURBANCE
75	813886.00	708111.66	LIMIT OF DISTURBANCE
76	813881.98	708108.08	LIMIT OF DISTURBANCE
77	813884.04	708102.47	LIMIT OF DISTURBANCE
78	813886.59	708097.68	LIMIT OF DISTURBANCE
79	813895.95	708086.78	LIMIT OF DISTURBANCE
80	813920.97	708094.26	LIMIT OF DISTURBANCE
81	813945.99	708101.74	LIMIT OF DISTURBANCE
82	813953.06	708105.77	LIMIT OF DISTURBANCE
83	813963.92	708097.76	LIMIT OF DISTURBANCE
84	813969.33	708087.77	LIMIT OF DISTURBANCE
85	813982.35	708063.69	LIMIT OF DISTURBANCE
86	813968.58	708048.46	LIMIT OF DISTURBANCE
87	813988.41	708040.23	LIMIT OF DISTURBANCE
88	813995.07	708040.19	LIMIT OF DISTURBANCE
89	814006.99	708018.14	LIMIT OF DISTURBANCE
90	814024.78	707985.26	LIMIT OF DISTURBANCE
91	814042.57	707952.37	LIMIT OF DISTURBANCE
92	814014.21	707943.29	LIMIT OF DISTURBANCE
93	813985.84	707934.21	LIMIT OF DISTURBANCE
94	813917.40	707899.58	LIMIT OF DISTURBANCE
95	813848.96	707864.96	LIMIT OF DISTURBANCE
96	813848.96	707781.89	LIMIT OF DISTURBANCE
97	813848.96	707698.82	LIMIT OF DISTURBANCE
98	813843.14	707668.86	LIMIT OF DISTURBANCE
99	813826.62	707649.03	LIMIT OF DISTURBANCE
100	813810.11	707629.20	LIMIT OF DISTURBANCE

STAKING TABLE

POINT #	NORTHING	EASTING	DESCRIPTION
101	813776.66	707597.33	LIMIT OF DISTURBANCE
102	813743.21	707565.45	LIMIT OF DISTURBANCE
103	813720.29	707550.73	LIMIT OF DISTURBANCE
104	813693.54	707545.58	LIMIT OF DISTURBANCE
105	813612.57	707545.58	LIMIT OF DISTURBANCE
106	813531.61	707545.59	LIMIT OF DISTURBANCE
107	813496.61	707535.23	LIMIT OF DISTURBANCE
108	813496.65	707524.87	LIMIT OF DISTURBANCE
109	813486.58	707511.29	LIMIT OF DISTURBANCE
110	813486.52	707481.47	LIMIT OF DISTURBANCE
111	813511.29	707456.58	LIMIT OF DISTURBANCE
112	813524.22	707446.96	LIMIT OF DISTURBANCE
113	813532.81	707442.81	LIMIT OF DISTURBANCE
114	813532.56	707436.47	LIMIT OF DISTURBANCE
115	813523.34	707434.62	LIMIT OF DISTURBANCE
201	813585.10	707635.71	FILTRATION PLANT
202	813507.17	707635.71	FILTRATION PLANT
203	813507.17	707624.97	FILTRATION PLANT
204	813457.76	707624.82	FILTRATION PLANT
205	813457.76	707618.42	FILTRATION PLANT
206	813366.91	707618.44	FILTRATION PLANT
207	813367.06	707677.69	FILTRATION PLANT
208	813352.73	707677.75	FILTRATION PLANT
209	813352.81	707777.11	FILTRATION PLANT
210	813636.87	707777.03	FILTRATION PLANT
211	813636.85	707706.97	FILTRATION PLANT
212	813624.35	707706.97	FILTRATION PLANT
213	813624.35	707700.47	FILTRATION PLANT
214	813597.45	707700.48	FILTRATION PLANT
215	813597.46	707706.98	FILTRATION PLANT
216	813577.12	707706.98	FILTRATION PLANT
217	813577.11	707658.98	FILTRATION PLANT
218	813585.11	707658.98	FILTRATION PLANT
219	813462.18	707529.44	GATE
220	813664.98	707566.46	GATE
221	813438.26	707829.58	GATE
222	813443.47	707529.44	FENCE
223	813443.47	707539.33	FENCE
224	813375.99	707561.30	FENCE
225	813264.54	707561.30	FENCE
226	813242.71	707588.62	FENCE
227	813243.14	707678.70	FENCE
228	813228.45	707716.60	FENCE
229	813225.36	707772.10	FENCE
230	813325.00	707832.88	FENCE
231	813501.83	707829.58	FENCE
232	813513.61	707844.38	FENCE
233	813538.09	707844.38	FENCE
234	813555.63	707812.47	FENCE
235	813651.38	707812.00	FENCE

STAKING TABLE

POINT #	NORTHING	EASTING	DESCRIPTION
236	813664.59	707802.57	FENCE
237	813675.55	707787.38	FENCE
238	813675.55	707587.14	FENCE
239	813664.98	707574.45	FENCE
240	813664.99	707558.46	FENCE
241	813539.64	707558.47	FENCE
242	813480.89	707539.35	FENCE
243	813480.89	707529.44	FENCE
244	813529.87	707438.78	EDGE OF ROAD
245	813489.59	707457.45	EDGE OF ROAD
246	813473.18	707498.69	EDGE OF ROAD
247	813473.18	707523.48	EDGE OF ROAD
248	813482.18	707554.23	EDGE OF ROAD
249	813506.34	707575.26	EDGE OF ROAD
250	813530.93	707586.58	EDGE OF ROAD
251	813541.22	707590.02	EDGE OF ROAD
252	813552.02	707591.16	EDGE OF ROAD
253	813593.47	707591.01	EDGE OF ROAD
254	813634.92	707590.87	EDGE OF ROAD
255	813659.75	707601.07	EDGE OF ROAD
256	813670.05	707625.87	EDGE OF ROAD
257	813670.05	707698.93	EDGE OF ROAD
258	813670.05	707772.00	EDGE OF ROAD
259	813659.81	707796.74	EDGE OF ROAD
260	813635.07	707807.00	EDGE OF ROAD
261	813598.73	707807.02	EDGE OF ROAD
262	813562.39	707807.04	EDGE OF ROAD
263	813552.42	707808.05	EDGE OF ROAD
264	813557.38	707807.29	EDGE OF ROAD
265	813483.66	707822.07	EDGE OF ROAD
266	813518.04	707815.06	EDGE OF ROAD
267	813473.67	707823.08	EDGE OF ROAD
268	813478.69	707822.83	EDGE OF ROAD
269	813410.13	707823.08	EDGE OF ROAD
270	813346.60	707823.08	EDGE OF ROAD
271	813341.88	707822.43	EDGE OF ROAD
272	813337.51	707820.54	EDGE OF ROAD
273	813289.00	707791.05	EDGE OF ROAD
274	813239.61	707760.65	EDGE OF ROAD
275	813240.00	707729.25	EDGE OF ROAD
276	813268.72	707728.52	EDGE OF ROAD
277	813300.98	707726.33	EDGE OF ROAD
278	813303.18	707667.39	EDGE OF ROAD
279	813303.18	707613.75	EDGE OF ROAD
280	813310.50	707596.08	EDGE OF ROAD
281	813328.17	707588.76	EDGE OF ROAD
282	813352.99	707588.75	EDGE OF ROAD
283	813388.49	707587.58	EDGE OF ROAD
284	813409.52	707579.17	EDGE OF ROAD
285	813420.34	707574.19	EDGE OF ROAD

STAKING TABLE

POINT #	NORTHING	EASTING	DESCRIPTION
286	813442.81	707554.63	EDGE OF ROAD
287	813451.18	707526.05	EDGE OF ROAD
288	813451.18	707506.08	EDGE OF ROAD
289	813432.56	707462.64	EDGE OF ROAD
290	813388.27	707446.15	EDGE OF ROAD
291	813636.74	707678.57	EDGE OF ROAD
292	813636.74	707650.16	EDGE OF ROAD
293	813626.49	707625.41	EDGE OF ROAD
294	813601.74	707615.16	EDGE OF ROAD
295	813574.16	707615.16	EDGE OF ROAD
296	813546.58	707615.16	EDGE OF ROAD
297	813535.88	707614.00	EDGE OF ROAD
298	813514.83	707605.59	EDGE OF ROAD
299	813503.99	707600.60	EDGE OF ROAD
300	813462.18	707591.44	EDGE OF ROAD
301	813420.36	707600.60	EDGE OF ROAD
302	813413.41	707603.80	EDGE OF ROAD
303	813409.17	707607.49	EDGE OF ROAD
304	813407.59	707613.93	EDGE OF ROAD
305	813385.00	707613.94	EDGE OF ROAD
306	813362.41	707613.94	EDGE OF ROAD
307	813362.42	707643.60	EDGE OF ROAD
308	813362.43	707673.25	EDGE OF ROAD
309	813348.22	707673.25	EDGE OF ROAD
310	813348.26	707705.75	EDGE OF ROAD
311	813348.29	707738.25	EDGE OF ROAD
312	813352.77	707738.25	EDGE OF ROAD
313	813407.59	707618.43	LIMITS OF SIDEWALK
314	813407.59	707614.43	LIMITS OF SIDEWALK
315	813362.91	707614.44	LIMITS OF SIDEWALK
316	813362.93	707673.75	LIMITS OF SIDEWALK
317	813348.73	707673.75	LIMITS OF SIDEWALK
318	813348.79	707737.75	LIMITS OF SIDEWALK
319	813352.77	707737.75	LIMITS OF SIDEWALK
320	813595.54	707572.46	EDGE OF ROAD
321	813594.62	707560.46	EDGE OF ROAD
322	813721.75	707564.85	EDGE OF ROAD
323	813694.06	707574.25	EDGE OF ROAD
324	813719.75	707596.26	EDGE OF ROAD
325	813774.64	707608.76	EDGE OF ROAD
326	813754.81	707619.22	EDGE OF ROAD
327	813739.43	707614.61	EDGE OF ROAD
328	813773.51	707625.20	EDGE OF ROAD
329	813798.71	707631.49	EDGE OF ROAD
330	813799.62	707648.85	EDGE OF ROAD
331	813819.79	707677.69	EDGE OF ROAD
332	813830.81	707672.94	EDGE OF ROAD
333	813838.90	707712.15	EDGE OF ROAD
334	813826.90	707712.15	EDGE OF ROAD
335	813826.90	707756.91	EDGE OF ROAD

STAKING TABLE

POINT #	NORTHING	EASTING	DESCRIPTION
336	813838.90	707796.37	EDGE OF ROAD
337	813822.52	707810.23	EDGE OF ROAD
338	813765.80	707813.76	EDGE OF ROAD
339	813718.02	707813.76	EDGE OF ROAD
340	813718.02	707830.76	EDGE OF ROAD
341	813778.26	707830.76	EDGE OF ROAD
342	813823.81	707841.72	EDGE OF ROAD
343	813840.57	707892.16	EDGE OF ROAD
344	813829.08	707895.61	EDGE OF ROAD
345	813869.84	707939.02	EDGE OF ROAD
346	813878.91	707973.95	EDGE OF ROAD
347	813897.11	707977.90	EDGE OF ROAD
348	813924.27	707983.88	EDGE OF ROAD
349	813947.86	707988.29	EDGE OF ROAD
350	813923.68	708040.42	EDGE OF ROAD
351	813937.86	708028.32	EDGE OF ROAD
352	813952.04	708016.22	EDGE OF ROAD
353	813953.32	708001.75	EDGE OF ROAD
354	813460.34	707777.09	CONTAINMENT PAD
355	813460.34	707797.59	CONTAINMENT PAD
356	813384.34	707797.59	CONTAINMENT PAD
357	813384.34	707777.09	CONTAINMENT PAD
358	813300.71	707586.88	PROPANE TANK
359	813265.71	707586.92	PROPANE TANK
360	813300.71	707606.85	PROPANE TANK
361	813265.71	707606.90	PROPANE TANK
362	813300.64	707626.86	EMERGENCY GENERATOR
363	813260.64	707626.93	EMERGENCY GENERATOR
364	813300.68	707646.85	EMERGENCY GENERATOR
365	813260.68	707646.93	EMERGENCY GENERATOR
366	813300.64	707656.86	EMERGENCY GENERATOR
367	813260.64	707656.93	EMERGENCY GENERATOR
368	813300.68	707676.85	EMERGENCY GENERATOR
369	813260.68	707676.93	EMERGENCY GENERATOR
370	813523.84	707830.81	SANITARY PUMP STATION
372	813343.66	707566.68	RETAINING WALL
373	813268.16	707566.68	RETAINING WALL
374	813249.13	707590.25	RETAINING WALL
375	813249.28	707678.89	RETAINING WALL
376	813233.05	707720.36	RETAINING WALL
377	813543.23	707865.84	OVERFLOW
378	813503.84	707863.11	OVERFLOW
379	813491.66	707852.27	OVERFLOW
380	813482.85	707852.15	OVERFLOW
381	813468.19	707854.83	OVERFLOW
382	813465.56	707870.88	OVERFLOW
383	813468.15	707887.77	OVERFLOW
384	813502.97	707896.07	OVERFLOW
385	813533.48	707900.90	OVERFLOW
386	813543.23	707900.52	OVERFLOW

STAKING TABLE

POINT #	NORTHING	EASTING	DESCRIPTION
387	813543.23	707883.18	OVERFLOW
388	813812.58	707878.20	OVERFLOW
389	813781.89	707887.18	OVERFLOW
390	813781.89	707895.21	OVERFLOW
391	813812.58	707904.21	OVERFLOW
392	813987.14	707940.02	OVERFLOW
393	813965.63	707939.53	OVERFLOW
394	813943.01	707930.53	OVERFLOW
395	813903.95	707910.99	OVERFLOW
396	813897.45	707921.80	OVERFLOW
397	813960.99	707955.66	OVERFLOW
398	813977.63	707966.40	OVERFLOW
399	813950.14	708063.00	OVERFLOW
400	813932.37	708058.67	OVERFLOW
401	813940.31	708078.67	OVERFLOW

WARNING
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REV	ISSUED FOR	DATE	BY

PROJECT ENGINEER: R. FROST
DESIGNED BY: K. ROBBINS
DRAWN BY: K. ROBBINS
CHECKED BY: D. SHEERAN

IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE 0 1/2" 1"

BID SET



Hazen
HAZEN AND SAWYER
498 SEVENTH AVENUE, 11th FLOOR
NEW YORK, NEW YORK 10018

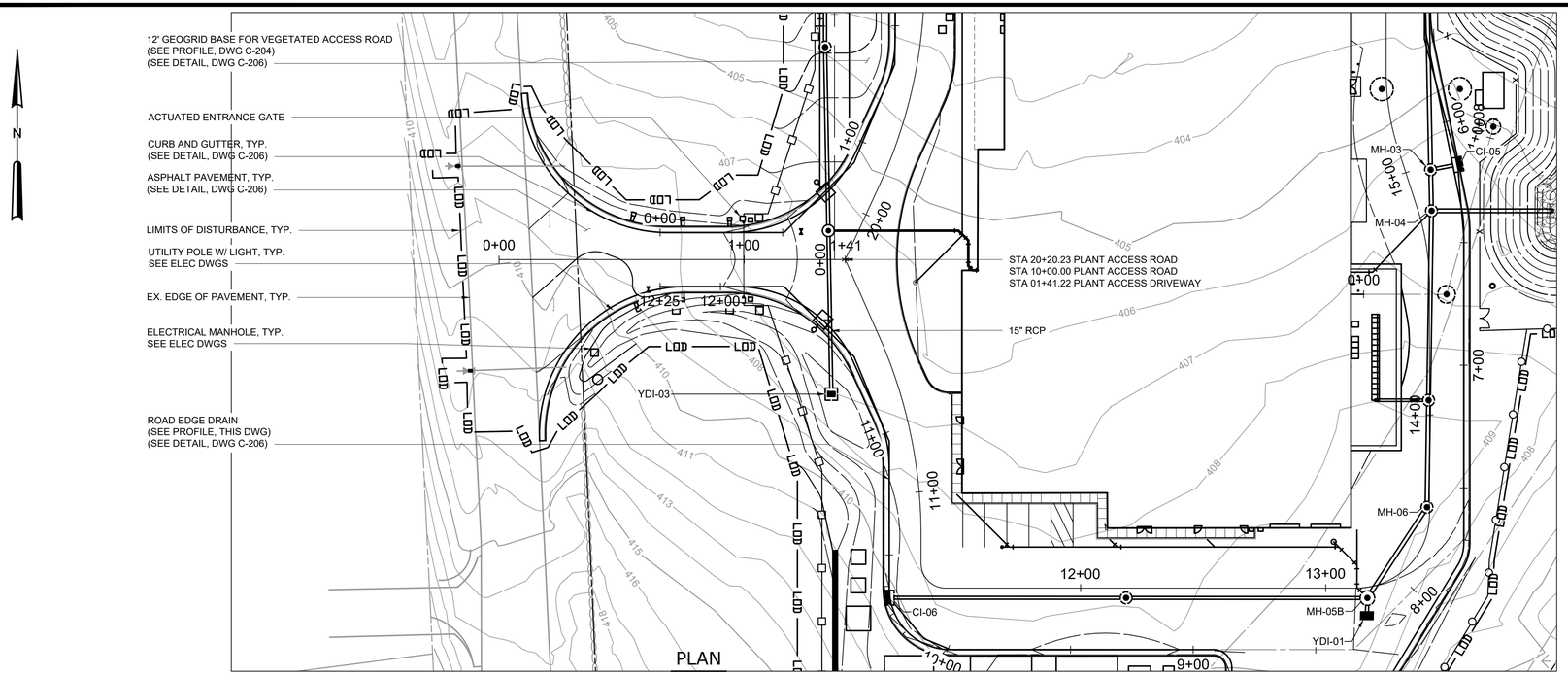
WESTCHESTER JOINT WATER WORKS
MAMARONECK, NY

RYE LAKE WATER FILTRATION PLANT
HARRISON, NY

CIVIL
STAKING TABLES

DATE: FEB 2025
HAZEN NO.: 90388-000
CONTRACT NO.: A1364-A
DRAWING NUMBER: C-153

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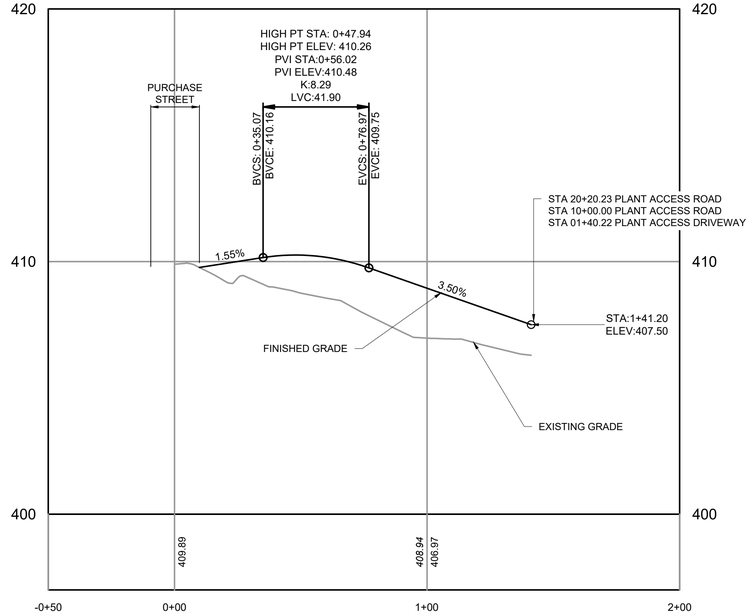


PLAN

SCALE: 1" = 30'

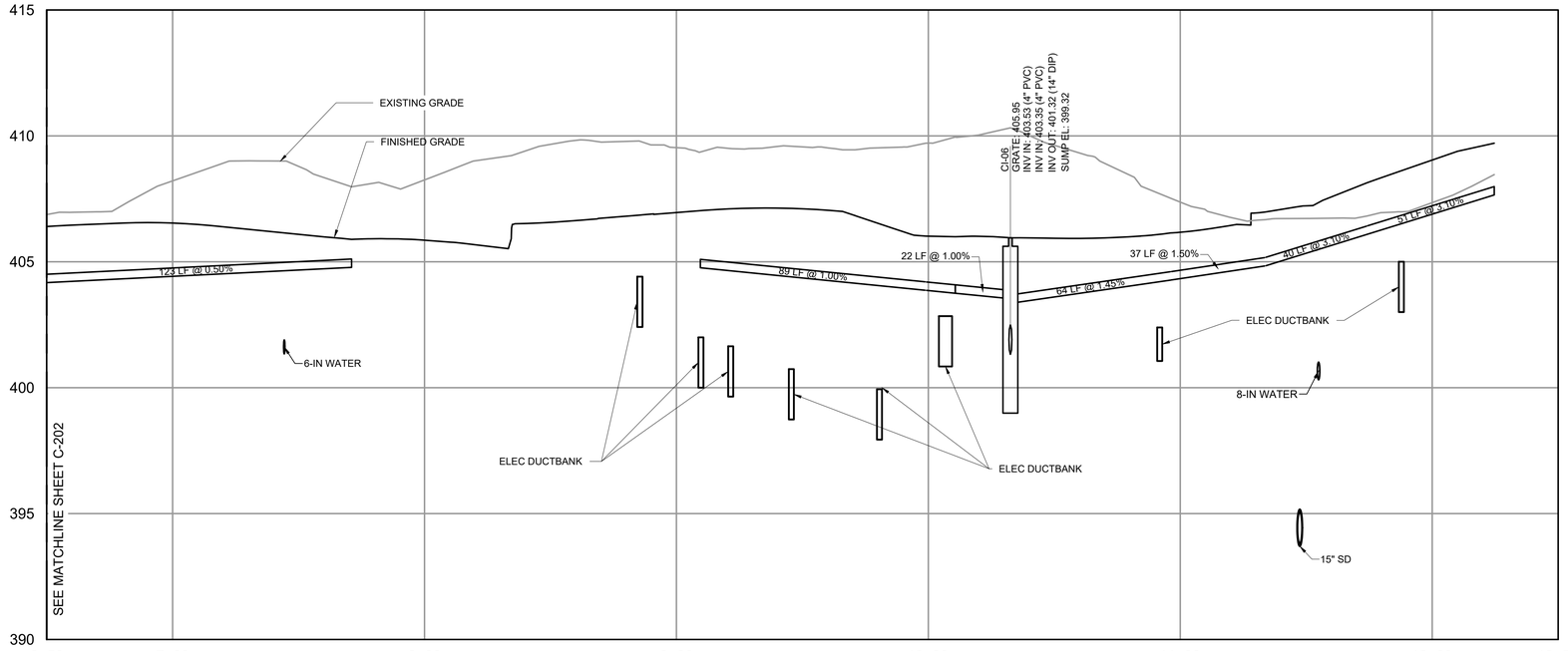
NOTES:

1. YARD PIPING NOT SHOWN FOR CLARITY. SEE DWGS C-131 & C-132 FOR BELOW GRADE PIPING AND STRUCTURES.
2. ROAD EDGE DRAINS SHALL CONSIST OF 4" PERFORATED PVC PIPE.



PLANT ACCESS DRIVEWAY PROFILE

HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1"= 3'



ROAD EDGE DRAIN PROFILE

HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1"= 3'

HORIZONTAL SCALE: 1" = 30'

VERTICAL SCALE: 1" = 30'

WARNING
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REV	ISSUED FOR	DATE	BY

PROJECT ENGINEER:	R. FROST
DESIGNED BY:	J. TANNER
DRAWN BY:	J. TANNER
CHECKED BY:	D. SHEERAN

IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE (0, 1/2", 1")

BID SET

DANIEL JAMES SHEERAN — STATE OF NEW YORK — 088955 — LICENSED PROFESSIONAL ENGINEER

Hazen
HAZEN AND SAWYER
498 SEVENTH AVENUE, 11th FLOOR
NEW YORK, NEW YORK 10018

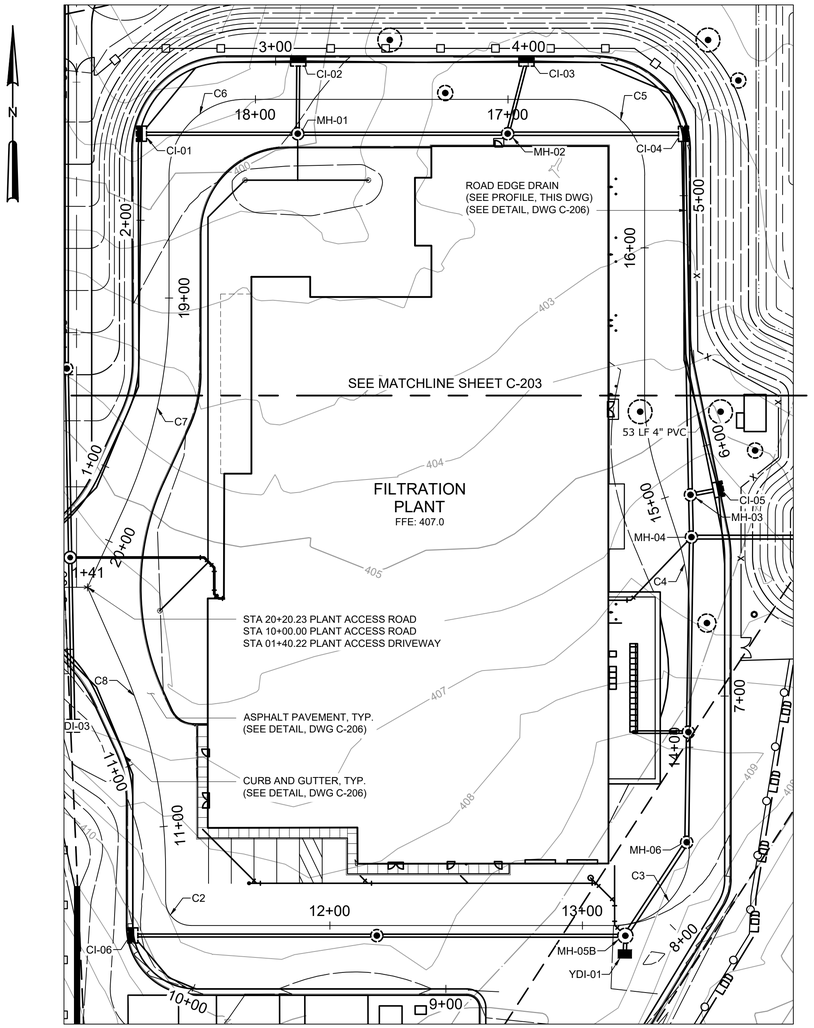
WESTCHESTER JOINT WATER WORKS
MAMARONECK, NY

RYE LAKE WATER FILTRATION PLANT
HARRISON, NY

CIVIL
PLANT ACCESS DRIVEWAY PLAN AND PROFILE

DATE:	FEB 2025
HAZEN NO.:	90388-000
CONTRACT NO.:	A1364-A
DRAWING NUMBER:	C-201

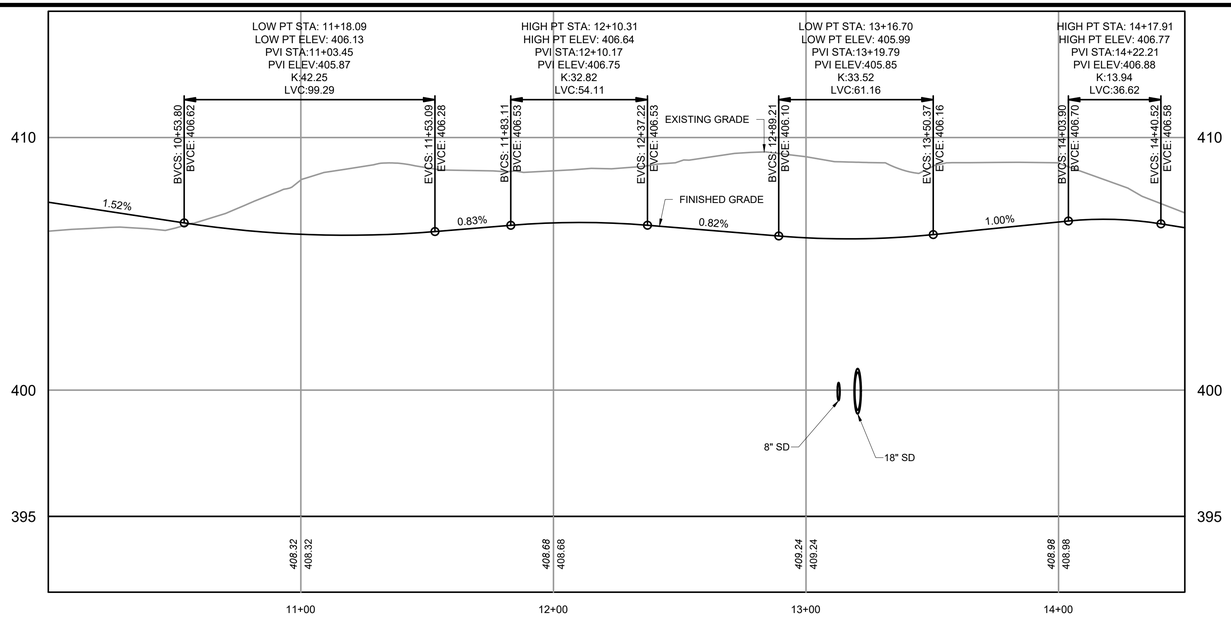
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PLOT DATE: 3/27/2025 1:27 PM BY: JTANNER



PLAN

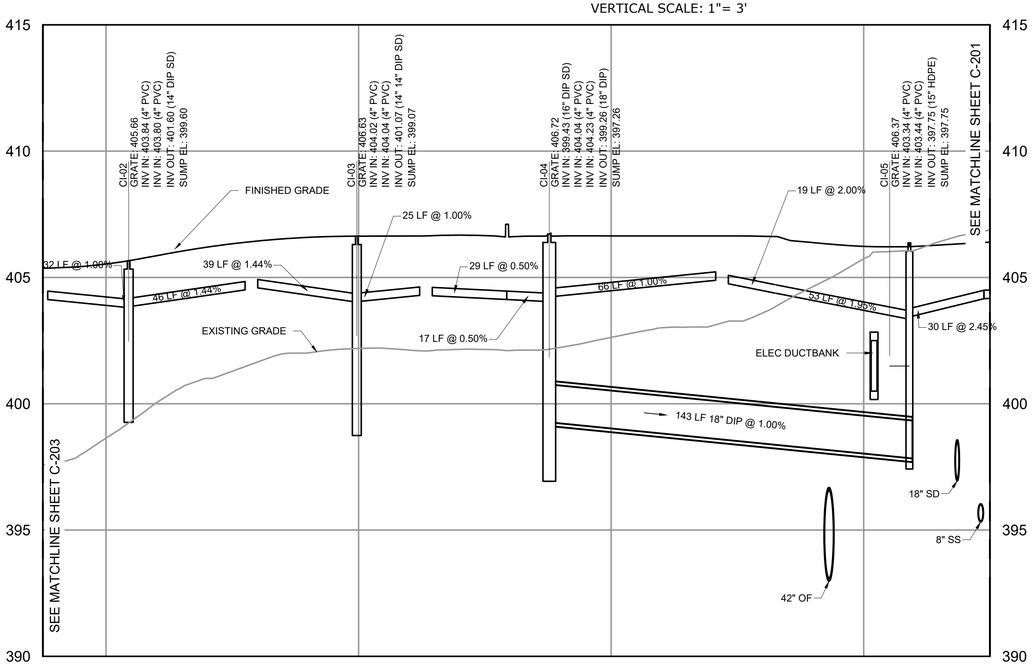
SCALE: 1" = 30'

Curve Table: Alignments					
Curve #	Radius	Length	Chord Direction	Start Point	End Point
C2	10.00	15.71	S45° 00' 00.00"E	(707603.15,813339.89)	(707613.15,813329.89)
C3	30.00	47.12	N45° 00' 00.00"E	(707780.50,813329.89)	(707810.50,813359.89)
C4	100.00	31.27	N8° 57' 28.31"W	(707810.50,813453.64)	(707805.65,813484.40)
C5	30.00	47.12	N44° 59' 38.56"W	(707792.83,813626.97)	(707762.84,813656.97)
C6	30.00	47.13	S45° 00' 21.44"W	(707634.52,813657.00)	(707604.51,813627.00)
C7	200.00	86.23	S12° 21' 05.65"W	(707604.51,813577.78)	(707586.21,813494.19)
C8	200.00	83.26	S11° 55' 35.85"E	(707586.06,813432.52)	(707603.15,813351.65)



PLANT ACCESS ROAD PROFILE

HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1"= 3'



ROAD EDGE DRAIN PROFILE

HORIZONTAL SCALE: 1"=30'
VERTICAL SCALE: 1"= 3'

NOTES:

1. YARD PIPING NOT SHOWN FOR CLARITY. SEE DWGS C-131 & C-132 FOR BELOW GRADE PIPING AND STRUCTURES.
2. ROAD EDGE DRAINS SHALL CONSIST OF 4" PERFORATED PVC PIPE.

HORIZONTAL SCALE: 1" = 30'
30 15 0 30'
3 1.5 0 3
VERTICAL SCALE: 1" = 3'

WARNING
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REV	ISSUED FOR	DATE	BY

PROJECT ENGINEER: R. FROST
DESIGNED BY: J. TANNER
DRAWN BY: J. TANNER
CHECKED BY: D. SHEERAN
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE 0 1/2" 1"

BID SET



Hazen

HAZEN AND SAWYER
498 SEVENTH AVENUE, 11th FLOOR
NEW YORK, NEW YORK 10018

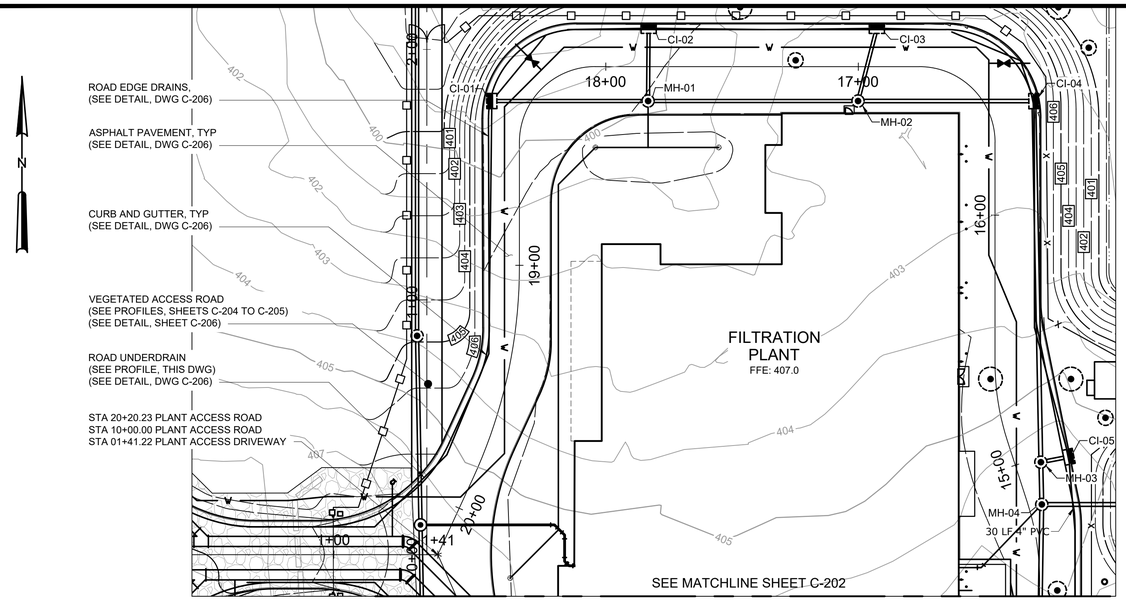
WESTCHESTER JOINT WATER WORKS
MAMARONECK, NY

RYE LAKE WATER FILTRATION PLANT
HARRISON, NY

CIVIL
PLANT ACCESS ROAD PLAN AND PROFILE - STA 10+00 TO STA 14+50

DATE: FEB 2025
HAZEN NO.: 90388-000
CONTRACT NO.: A1364-A
DRAWING NUMBER: C-202

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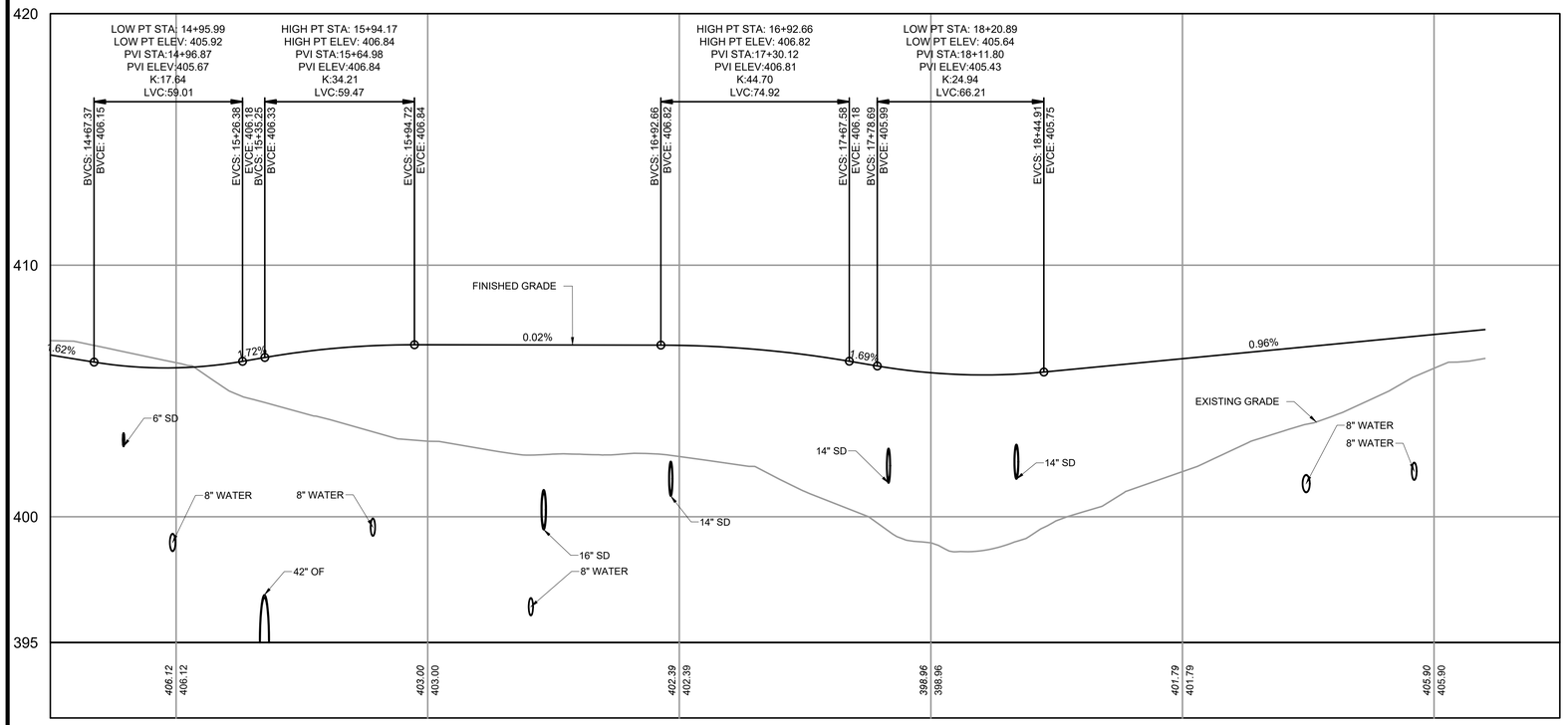


PLAN

SCALE: 1" = 30'

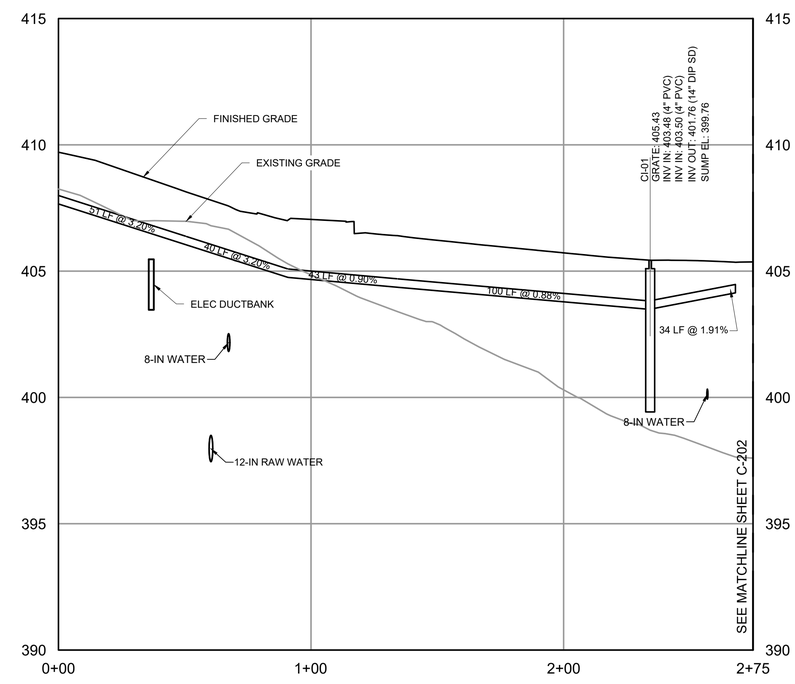
NOTE:

1. YARD PIPING NOT SHOWN FOR CLARITY. SEE DWGS C-131 & C-132 FOR BELOW GRADE PIPING AND STRUCTURES.
2. ROAD EDGE DRAINS SHALL CONSIST OF 4" PERFORATED PVC PIPE.



PLANT ACCESS ROAD PROFILE

HORIZONTAL SCALE: 1"=30'
VERTICAL SCALE: 1"= 3'



ROAD EDGE DRAIN PROFILE

HORIZONTAL SCALE: 1"=30'
VERTICAL SCALE: 1"= 3'

HORIZONTAL SCALE: 1" = 30'

30 15 0 30'

3 1.5 0 3

VERTICAL SCALE: 1"=3'

WARNING
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REV	ISSUED FOR	DATE	BY

PROJECT ENGINEER: R. FROST
DESIGNED BY: J. TANNER
DRAWN BY: J. TANNER
CHECKED BY: D. SHEERAN
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE 0 1/2" 1"

BID SET

STATE OF NEW YORK · DANIEL JAMES SHEERAN · 088955 · LICENSED PROFESSIONAL ENGINEER

Hazen

HAZEN AND SAWYER
498 SEVENTH AVENUE, 11th FLOOR
NEW YORK, NEW YORK 10018

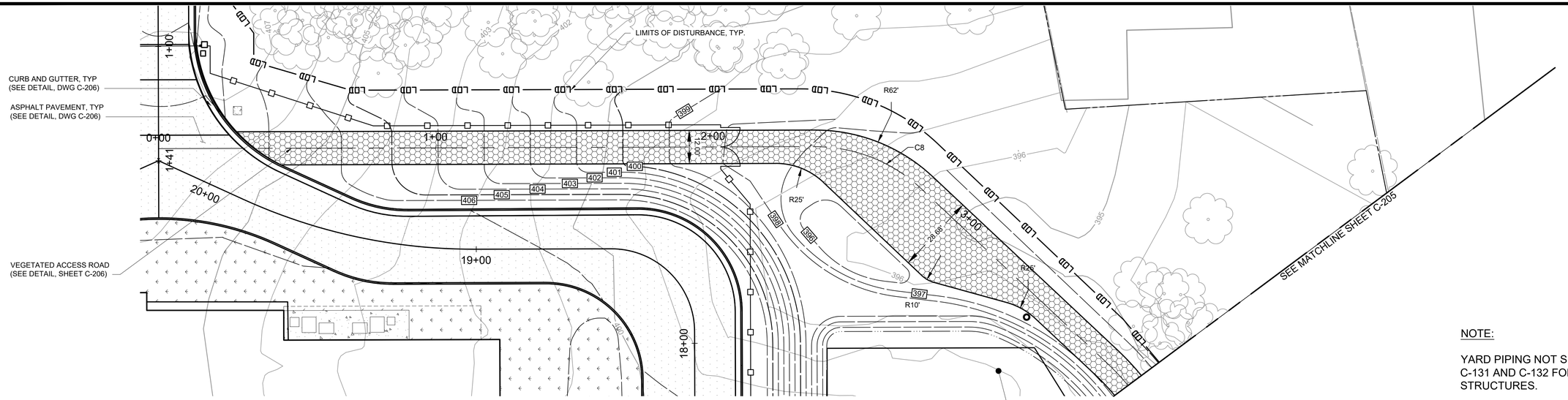
WESTCHESTER JOINT WATER WORKS
MAMARONECK, NY

RYE LAKE WATER FILTRATION PLANT
HARRISON, NY

CIVIL
PLANT ACCESS ROAD PLAN AND PROFILE - STA 14+50 TO STA 20+20

DATE: FEB 2025
HAZEN NO.: 90388-000
CONTRACT NO.: A1364-A
DRAWING NUMBER: C-203

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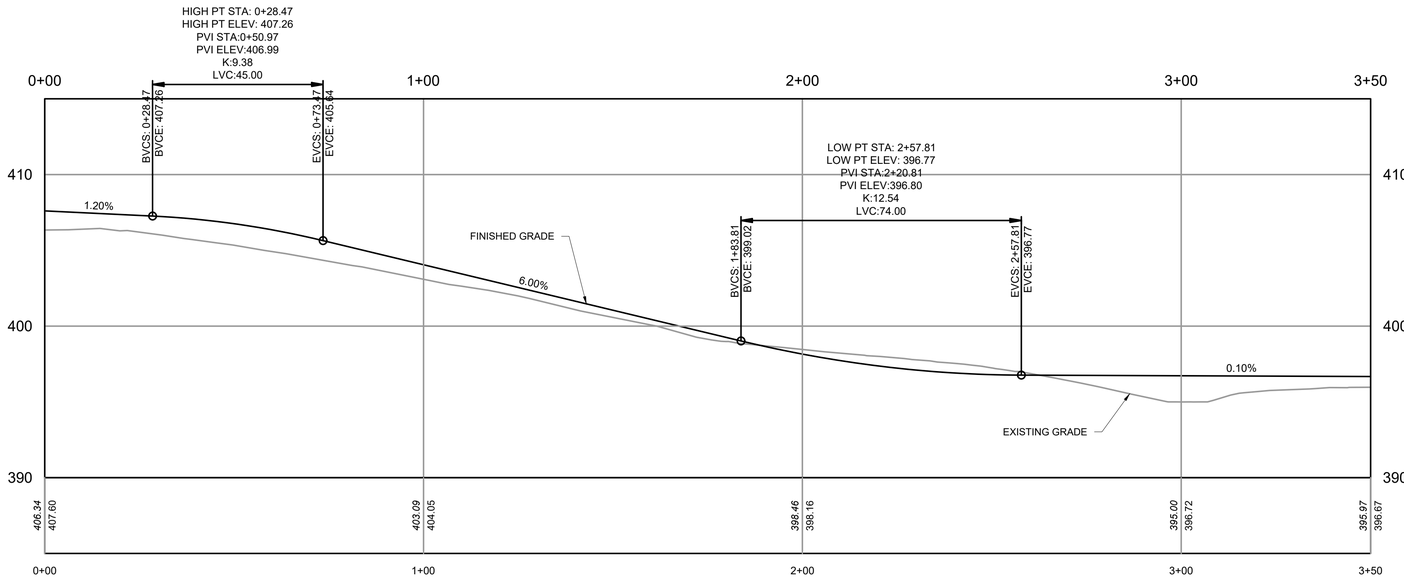
PLAN

SCALE: 1" = 20'

NOTE:

YARD PIPING NOT SHOWN FOR CLARITY. SEE DWGS C-131 AND C-132 FOR BELOW GRADE PIPING AND STRUCTURES.

Curve Table: Alignments					
Curve #	Radius	Length	Chord Direction	Start Point	End Point
C8	56.00	42.38	N21° 40' 49.76"E	(707567.88,813700.48)	(707583.16,813738.93)



VEGETATED ACCESS ROAD PROFILE

HORIZONTAL SCALE: 1" = 20'
VERTICAL SCALE: 1"=5'

HORIZONTAL SCALE: 1" = 20'

20 10 0 20'

5 0 5

VERTICAL SCALE: 1"=5'

WARNING
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REV	ISSUED FOR	DATE	BY

PROJECT ENGINEER: R. FROST
DESIGNED BY: J. TANNER
DRAWN BY: J. TANNER
CHECKED BY: D. SHEERAN
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE 0 1/2" 1"

BID SET

STATE OF NEW YORK · DANIEL JAMES SHEERAN · 088955 · LICENSED PROFESSIONAL ENGINEER

Hazen

HAZEN AND SAWYER
498 SEVENTH AVENUE, 11th FLOOR
NEW YORK, NEW YORK 10018

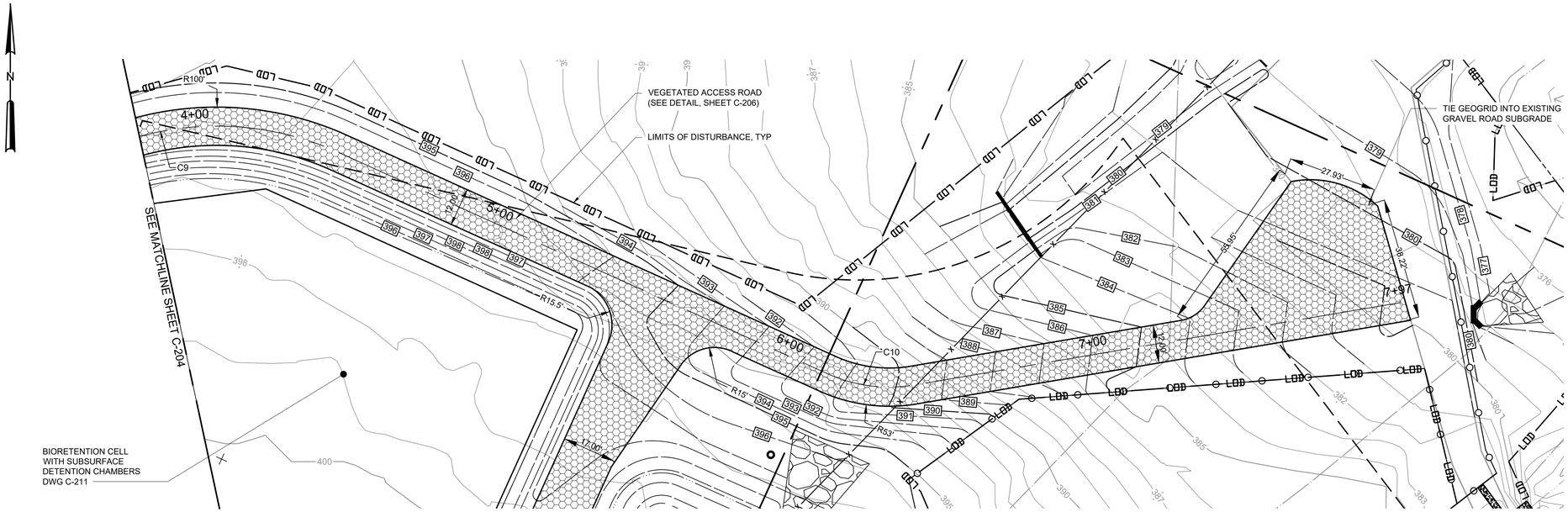
WESTCHESTER JOINT WATER WORKS
MAMARONECK, NY

RYE LAKE WATER FILTRATION PLANT
HARRISON, NY

CIVIL
VEGETATED ACCESS ROAD PLAN AND PROFILE - SHEET 1 OF 2

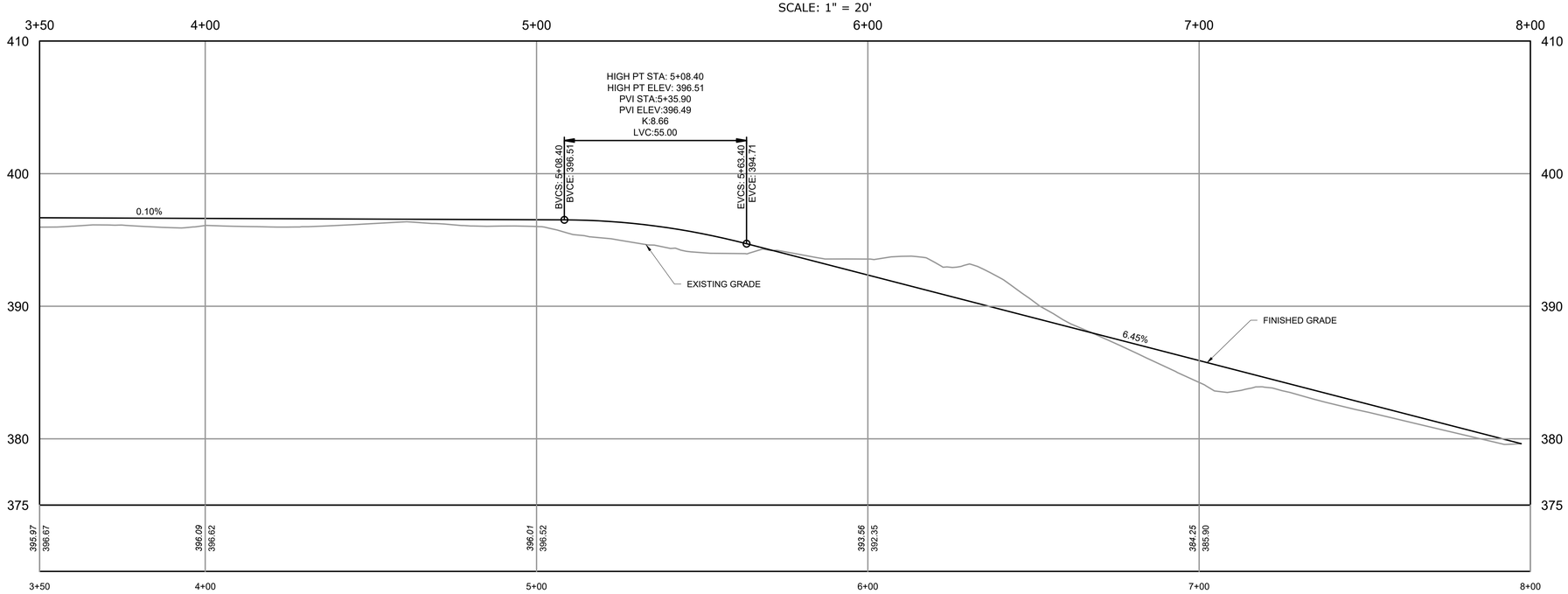
DATE: FEB 2025
HAZEN NO.: 90388-000
CONTRACT NO.: A1364-A
DRAWING NUMBER: C-204

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PLOT DATE: 3/27/2025 1:50 PM BY: JTANNER



PLAN

SCALE: 1" = 20'



VEGETATED ACCESS ROAD PROFILE

HORIZONTAL SCALE: 1" = 20'
VERTICAL SCALE: 1"=5'

NOTE:

YARD PIPING NOT SHOWN FOR CLARITY. SEE DWGS C-131 AND C-132 FOR BELOW GRADE PIPING AND STRUCTURES.

Curve Table: Alignments					
Curve #	Radius	Length	Chord Direction	Start Point	End Point
C9	92.65	75.42	N66° 40' 50.44"E	(707646.03,813805.49)	(707713.39,813834.53)
C10	46.90	27.81	N73° 00' 55.75"E	(707882.02,813834.53)	(707908.22,813842.54)

HORIZONTAL SCALE: 1" = 20'

20 10 0 20'

5 0 5

VERTICAL SCALE: 1"=5'

WARNING
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REV	ISSUED FOR	DATE	BY

PROJECT ENGINEER:	R. FROST
DESIGNED BY:	J. TANNER
DRAWN BY:	J. TANNER
CHECKED BY:	D. SHEERAN

IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE 0 1/2" 1"

BID SET



Hazen
HAZEN AND SAWYER
498 SEVENTH AVENUE, 11th FLOOR
NEW YORK, NEW YORK 10018

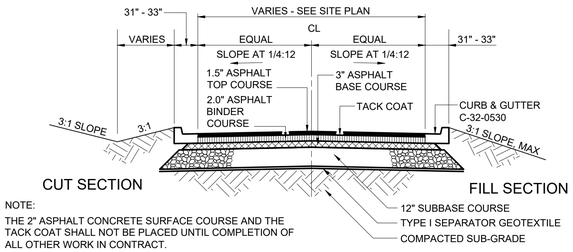
WESTCHESTER JOINT WATER WORKS
MAMARONECK, NY

RYE LAKE WATER FILTRATION PLANT
HARRISON, NY

CIVIL
VEGETATED ACCESS ROAD PLAN AND PROFILE - SHEET 2 OF 2

DATE:	FEB 2025
HAZEN NO.:	90388-000
CONTRACT NO.:	A1364-A
DRAWING NUMBER:	C-205

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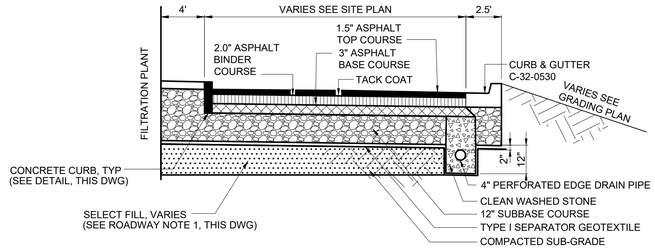


CUT SECTION FILL SECTION

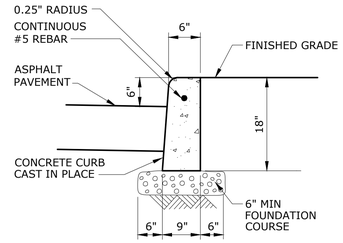
NOTE:
THE 2" ASPHALT CONCRETE SURFACE COURSE AND THE TACK COAT SHALL NOT BE PLACED UNTIL COMPLETION OF ALL OTHER WORK IN CONTRACT.

TYPICAL PLANT ACCESS DRIVEWAY SECTION

C-32-0552

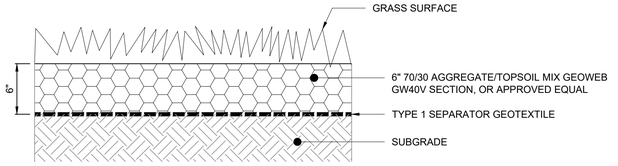


TYPICAL PLANT ACCESS ROAD SECTION WITH SIDEWALK



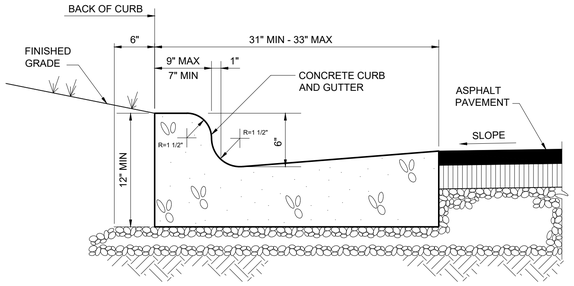
CONCRETE CURB DETAIL

NTS



VEGETATED ACCESS ROAD

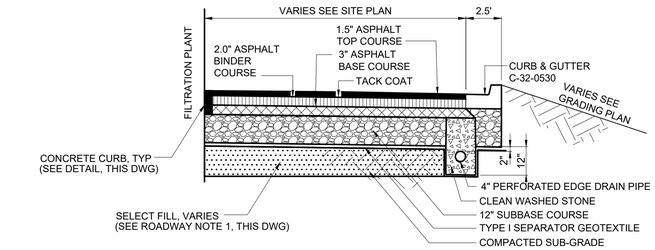
SCALE: NTS



NOTES:
1. CONTRACTION JOINTS SHALL BE PLACED AT 10 FOOT INTERVALS, OR 15 FOOT INTERVALS WHEN A MACHINE IS USED TO PLACE THE CURB.
2. EXPANSION JOINTS SHALL BE PLACED AT 90 FOOT INTERVALS AND ADJACENT TO ALL RIGID OBJECTS.

CURB AND GUTTER

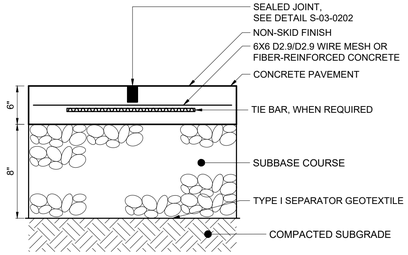
C-32-0530



TYPICAL PLANT ACCESS ROAD SECTION WITHOUT SIDEWALK

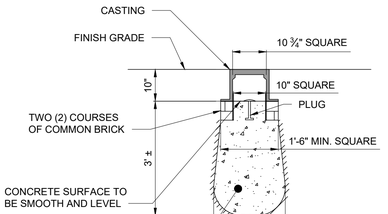
ROADWAY NOTE:

1. WHERE ROADWAYS ARE REQUIRED TO BE INSTALLED ABOVE EXISTING GRADE, THE CONTRACTOR SHALL PROVIDE SELECT FILL TO ESTABLISH SUBGRADE.



CONCRETE PAVEMENT

C-32-0560



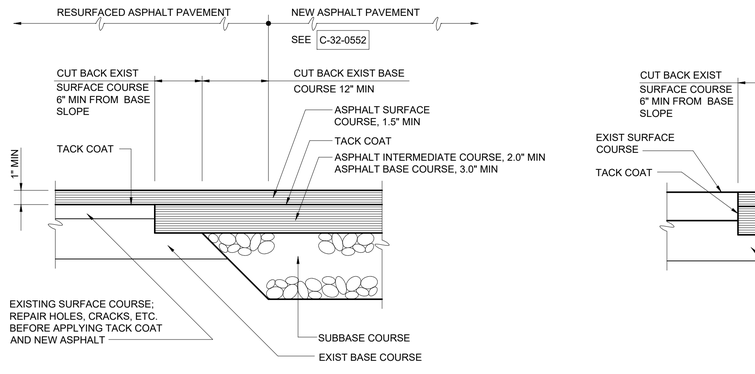
BASELINE

NOTES:

1. UNLESS OTHERWISE SPECIFIED, MONUMENTS ARE TO BE SET BY A SURVEYOR LICENSED BY THE STATE OF NEW YORK IN ACCORDANCE WITH THE SPECIFICATIONS.
2. ALL CONCRETE WILL BE CLASS "B" POURED AGAINST UNDISTURBED MATERIAL.

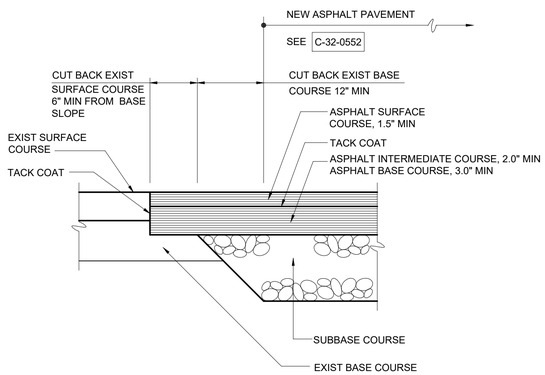
SURVEY MONUMENTS

N.T.S.



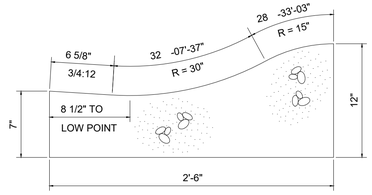
TYPICAL PAVEMENT JUNCTION WITH RESURFACING OF EXISTING PAVEMENT

C-32-0555



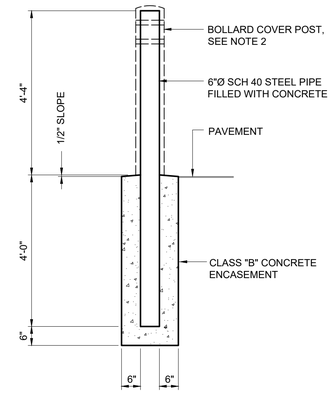
TYPICAL PAVEMENT JUNCTION

C-32-0556



STANDARD 30" ROLLED CURB SECTION

C-32-0531



BOLLARD TYPE 1

NOTES:

1. UNLESS OTHERWISE NOTED, ALL BOLLARDS SHALL BE TYPE 1.
2. BOLLARD COVER SHALL BE POST GUARD MODEL CL1386F 7"Øx52" HIGH, YELLOW WITH REFLECTIVE RED STRIPES, OR APPROVED EQUAL AND SECURED TO STEEL PIPE WITH COMPRESSIVE FOAM STRIPS.

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REV	ISSUED FOR	DATE	BY

PROJECT ENGINEER:	R. FROST
DESIGNED BY:	J. TANNER
DRAWN BY:	J. TANNER
CHECKED BY:	D. SHEERAN

IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE 0 1/2" 1"

BID SET

DANIEL JAMES SHEERAN — 088955 — LICENSED PROFESSIONAL ENGINEER — STATE OF NEW YORK

Hazen

HAZEN AND SAWYER
498 SEVENTH AVENUE, 11th FLOOR
NEW YORK, NEW YORK 10018

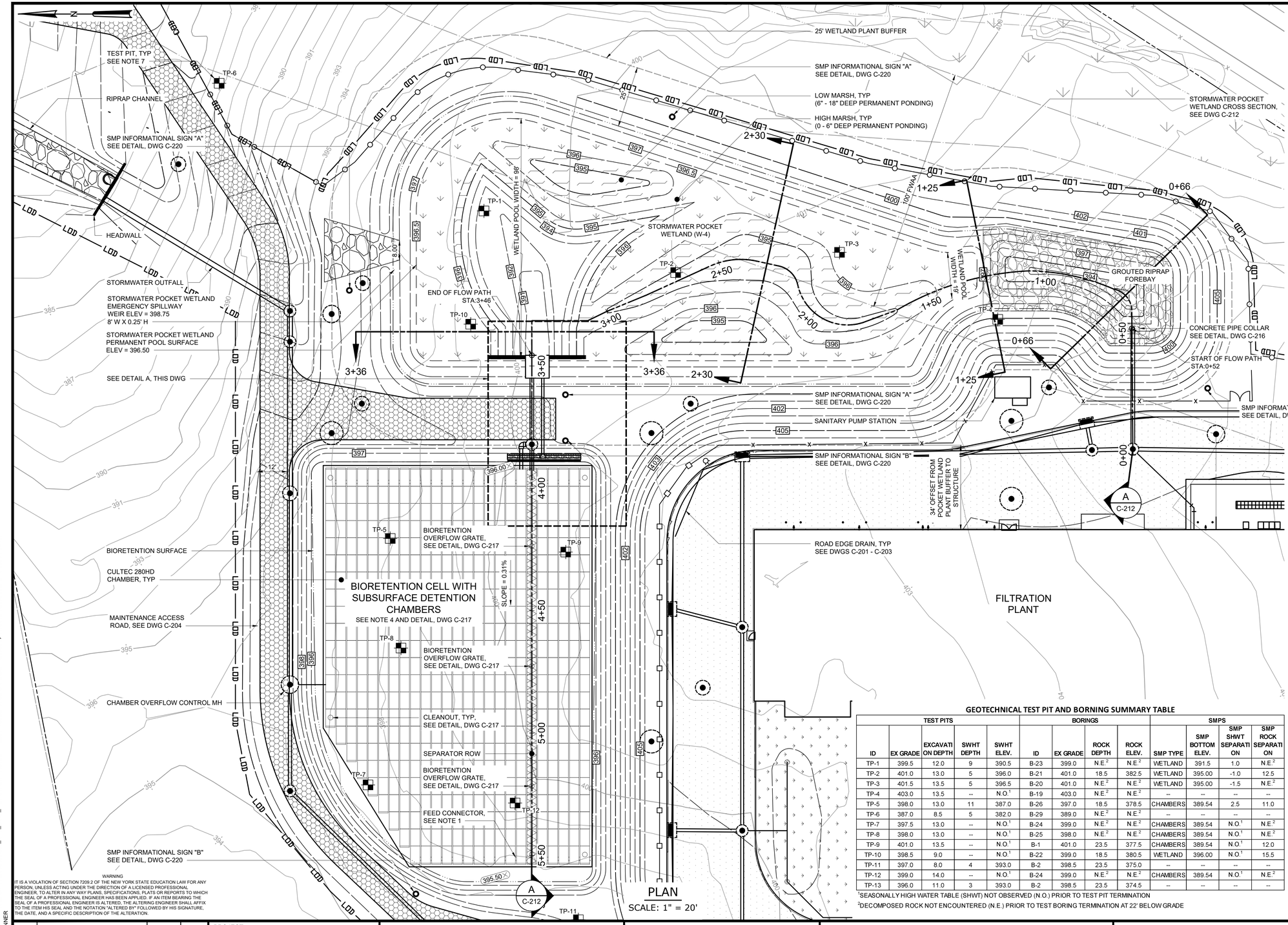
WESTCHESTER JOINT WATER WORKS
MAMARONECK, NY

RYE LAKE WATER FILTRATION PLANT
HARRISON, NY

CIVIL
ROADWAY DETAILS

DATE:	FEB 2025
HAZEN NO.:	90388-000
CONTRACT NO.:	A1364-A
DRAWING NUMBER:	C-206

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PLAN
SCALE: 1" = 20'

NOTES:

1. FEED CONNECTOR SHALL BE LOCATED ON FIRST AND LAST CHAMBER OF EVERY ROW. SEPARATOR ROW SHALL ONLY HAVE FEED CONNECTOR ON THE LAST CHAMBER OF THE ROW. PROVIDE NON-WOVEN GEOTEXTILE UNDER ALL FEED CONNECTORS FOR SCOUR PROTECTION.
2. NON-WOVEN GEOTEXTILE SHALL BE PLACED BENEATH SEPARATOR ROW CHAMBERS. SEPARATOR ROW CHAMBERS, INCLUDING CHAMBER BOTTOMS, SHALL ALSO BE WRAPPED IN NON-WOVEN GEOTEXTILE.
3. NON-WOVEN GEOTEXTILE SHALL BE PLACED BENEATH AT SEPARATOR ROW BYPASS CHAMBERS FOR SCOUR PROTECTION. GEOTEXTILE SHALL EXTEND TO END OF ROW.
4. CONTRACTOR SHALL PROVIDE 539 CULTEC 280HD CHAMBERS FOR A TOTAL STATIC CHAMBER VOLUME OF 22,936 CF. TOTAL SYSTEM STORAGE INCLUDING SURROUNDING STONE SHALL BE 35,612 CF.
5. MH-11 TO SERVE AS THE SEPARATOR ROW BYPASS MANHOLE FOR LARGER STORM EVENTS. MH-11 SHALL ALSO SERVE AS THE DETENTION SYSTEM ACCESS POINT FOR JET-VAC MAINTENANCE.
6. SEE L-101 AND L-102 FOR BIORETENTION CELL AND STORMWATER POCKET WETLAND PLANTING PLAN.
7. TEST PITS PERFORMED BY GZA GEOENVIRONMENTAL OF NEW YORK TO DETERMINE THE SEASONALLY HIGH WATER TABLE. SEE JANUARY 27, 2022 REPORT ENTITLED "WESTCHESTER JOINT WATER WORKS (WJWW) - PROPOSED FILTRATION PLANT" FOR ADDITIONAL INFORMATION.

STORMWATER POCKET WETLAND CROSS SECTION, SEE DWG C-212

GEOTECHNICAL TEST PIT AND BORNING SUMMARY TABLE

TEST PITS					BORINGS				SMPS			
ID	EX GRADE	EXCAVATION DEPTH	SWHT DEPTH	SWHT ELEV.	ID	EX GRADE	ROCK DEPTH	ROCK ELEV.	SMP TYPE	SMP BOTTOM ELEV.	SMP SHWT SEPARATION	SMP ROCK SEPARATION
TP-1	399.5	12.0	9	390.5	B-23	399.0	N.E.[2]	N.E.[2]	WETLAND	391.5	1.0	N.E.[2]
TP-2	401.0	13.0	5	396.0	B-21	401.0	18.5	382.5	WETLAND	395.00	-1.0	12.5
TP-3	401.5	13.5	5	396.5	B-20	401.0	N.E.[2]	N.E.[2]	WETLAND	395.00	-1.5	N.E.[2]
TP-4	403.0	13.5	--	N.O.[1]	B-19	403.0	N.E.[2]	N.E.[2]	--	--	--	--
TP-5	398.0	13.0	11	387.0	B-26	397.0	18.5	378.5	CHAMBERS	389.54	2.5	11.0
TP-6	387.0	8.5	5	382.0	B-29	389.0	N.E.[2]	N.E.[2]	--	--	--	--
TP-7	397.5	13.0	--	N.O.[1]	B-24	399.0	N.E.[2]	N.E.[2]	CHAMBERS	389.54	N.O.[1]	N.E.[2]
TP-8	398.0	13.0	--	N.O.[1]	B-25	398.0	N.E.[2]	N.E.[2]	CHAMBERS	389.54	N.O.[1]	N.E.[2]
TP-9	401.0	13.5	--	N.O.[1]	B-1	401.0	23.5	377.5	CHAMBERS	389.54	N.O.[1]	12.0
TP-10	398.5	9.0	--	N.O.[1]	B-22	399.0	18.5	380.5	WETLAND	396.00	N.O.[1]	15.5
TP-11	397.0	8.0	4	393.0	B-2	398.5	23.5	375.0	--	--	--	--
TP-12	399.0	14.0	--	N.O.[1]	B-24	399.0	N.E.[2]	N.E.[2]	CHAMBERS	389.54	N.O.[1]	N.E.[2]
TP-13	396.0	11.0	3	393.0	B-2	398.5	23.5	374.5	--	--	--	--

[1]SEASONALLY HIGH WATER TABLE (SHWT) NOT OBSERVED (N.O.) PRIOR TO TEST PIT TERMINATION
[2]DECOMPOSED ROCK NOT ENCOUNTERED (N.E.) PRIOR TO TEST BORING TERMINATION AT 22' BELOW GRADE

DETAIL A / C-211
SCALE: 1" = 10'

SCALE: 1" = 10' (10 5 0 10')
SCALE: 1" = 20' (20 10 0 20')

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REV	ISSUED FOR	DATE	BY

PROJECT ENGINEER: R. FROST
DESIGNED BY: C. MCNICOL
DRAWN BY: C. MCNICOL
CHECKED BY: D. SHEERAN
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE (0 1/2" 1")

BID SET

STATE OF NEW YORK · DANIEL JAMES SHEERAN · 088955 · LICENSED PROFESSIONAL ENGINEER

Hazen
HAZEN AND SAWYER
498 SEVENTH AVENUE, 11th FLOOR
NEW YORK, NEW YORK 10018

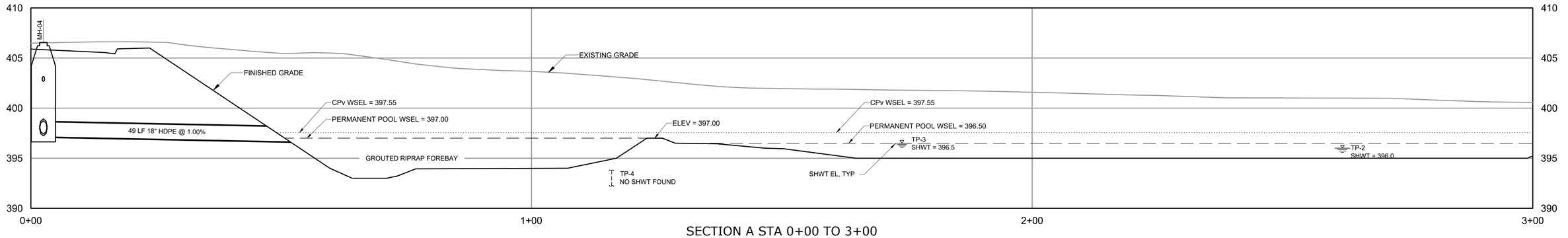
WESTCHESTER JOINT WATER WORKS
MAMARONECK, NY

RYE LAKE WATER FILTRATION PLANT
HARRISON, NY

CIVIL
STORMWATER MANAGEMENT PLAN

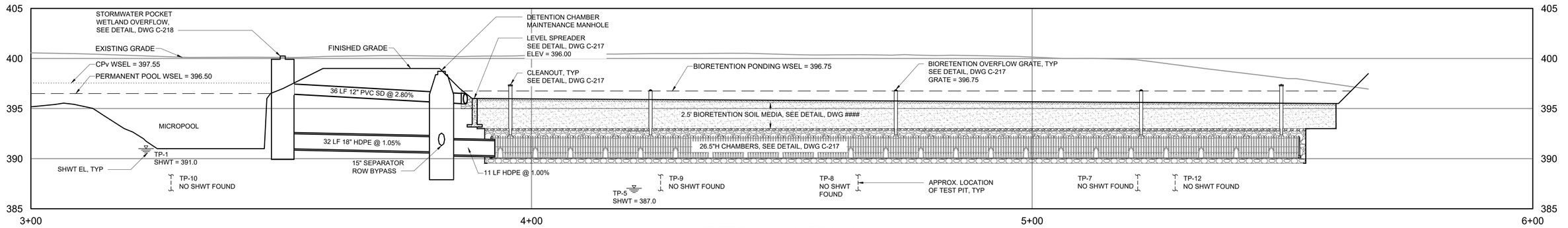
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HAZEN NO.: 90388-000
CONTRACT NO.: A1364-A
DRAWING NUMBER: C-211

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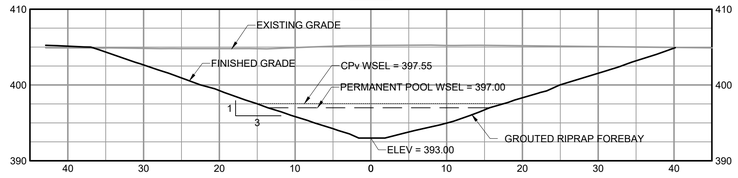
SECTION A STA 0+00 TO 3+00

HORIZONTAL SCALE: 1" = 10'
VERTICAL SCALE: 1"=5'



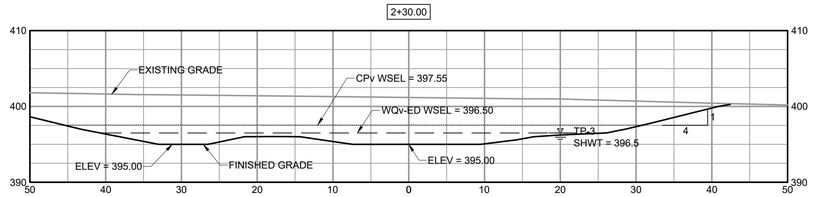
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VERTICAL SCALE: 1"=5'



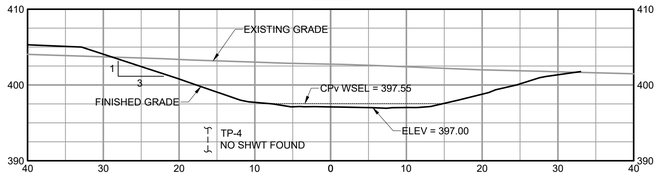
SECTION 0+63

HORIZONTAL SCALE: 1" = 10'
VERTICAL SCALE: 1"= 10'



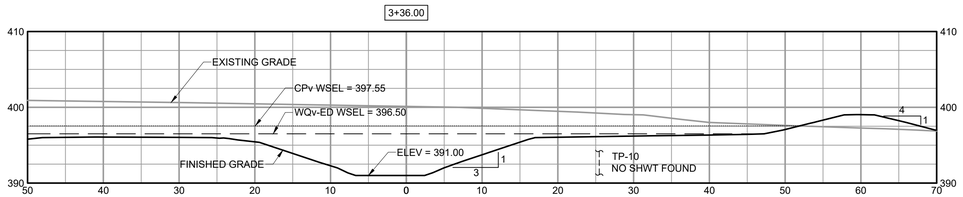
SECTION 2+15

HORIZONTAL SCALE: 1" = 10'
VERTICAL SCALE: 1"= 10'



SECTION 1+17

HORIZONTAL SCALE: 1" = 10'
VERTICAL SCALE: 1"=10'



SECTION 3+31

HORIZONTAL SCALE: 1" = 10'
VERTICAL SCALE: 1"=10'

HORIZONTAL SCALE: 1" = 10'
10 5 0 10'
5 0 5
VERTICAL SCALE: 1"=5'

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REV	ISSUED FOR	DATE	BY

PROJECT ENGINEER:	R. FROST
DESIGNED BY:	C. MCNICOL
DRAWN BY:	C. MCNICOL
CHECKED BY:	D. SHEERAN

IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE — 0 1/2" 1"

BID SET

STATE OF NEW YORK — JAMES SHEER — 088955 — REGISTERED PROFESSIONAL ENGINEER

Hazen
HAZEN AND SAWYER
498 SEVENTH AVENUE, 11th FLOOR
NEW YORK, NEW YORK 10018

WESTCHESTER JOINT WATER WORKS
MAMARONECK, NY

RYE LAKE WATER FILTRATION PLANT
HARRISON, NY

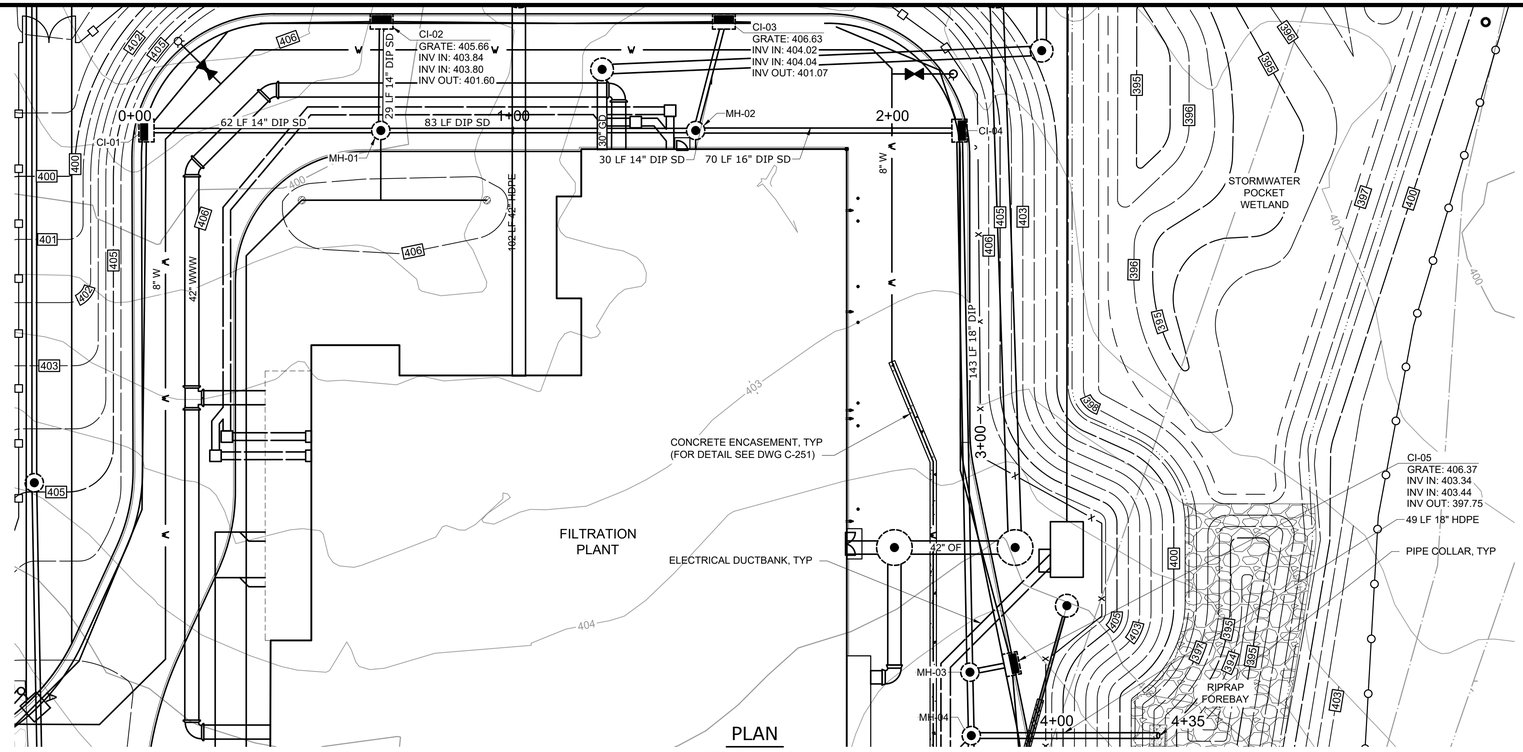
CIVIL
STORMWATER MANAGEMENT
CROSS SECTIONS

DATE:	FEB 2025
HAZEN NO.:	90388-000
CONTRACT NO.:	A1364-A
DRAWING NUMBER:	C-212

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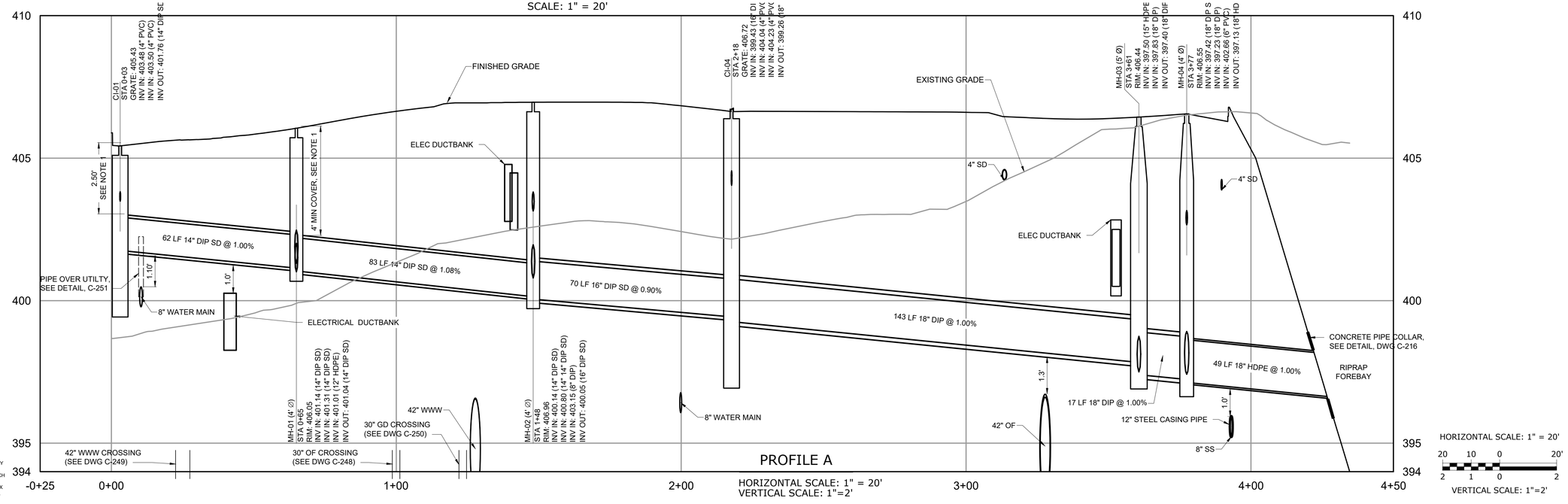
NOTES:

1. ALL STORM DRAINS SHALL HAVE A MINIMUM COVER OF 4' UNLESS SHOWN OTHERWISE.



PLAN

SCALE: 1" = 20'



HORIZONTAL SCALE: 1" = 20'
VERTICAL SCALE: 1"=2'

PROFILE A

HORIZONTAL SCALE: 1" = 20'
VERTICAL SCALE: 1"=2'

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Hazen

HAZEN AND SAWYER
498 SEVENTH AVENUE, 11th FLOOR
NEW YORK, NEW YORK 10018

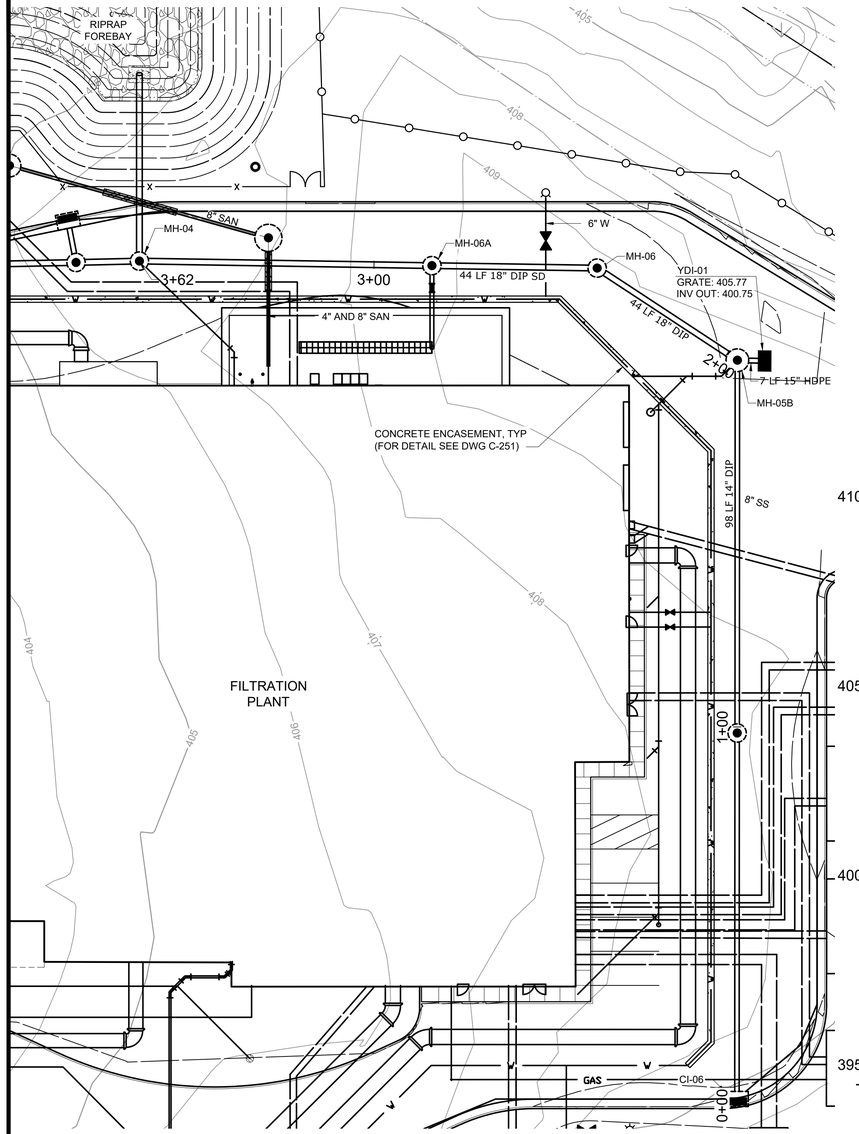
WESTCHESTER JOINT WATER WORKS
MAMARONECK, NY

RYE LAKE WATER FILTRATION PLANT
HARRISON, NY

CIVIL
STORMWATER DRAINAGE PROFILES -
SHEET 1 OF 3

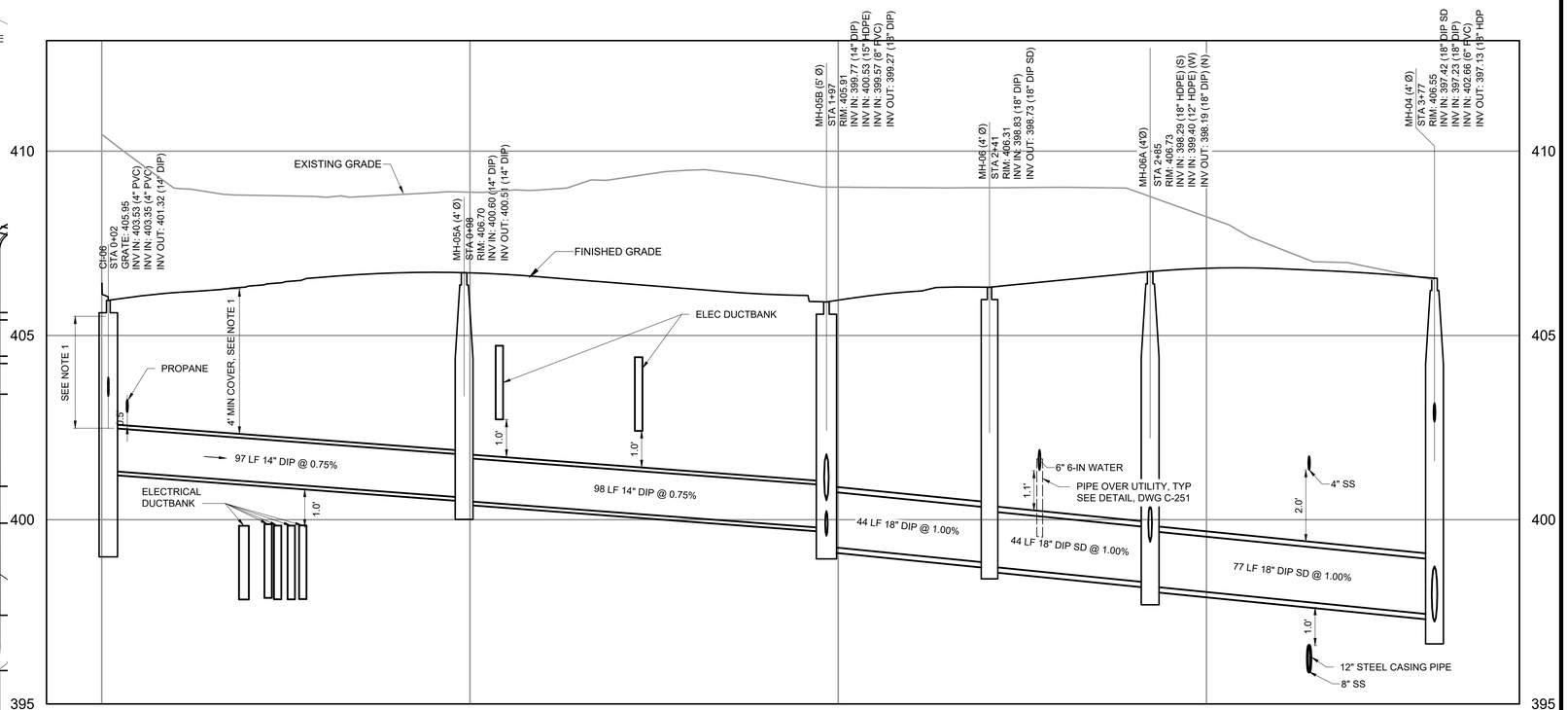
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HAZEN NO.:	90388-000
CONTRACT NO.:	A1364-A
DRAWING NUMBER:	C-213

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PLOT DATE: 2/26/2025 11:34 PM BY: JTANNER



PLAN

SCALE: 1" = 20'



PROFILE B

HORIZONTAL SCALE: 1" = 20'
VERTICAL SCALE: 1"=2'

NOTES:

1. ALL STORM DRAINS SHALL HAVE A MINIMUM COVER OF 4' UNLESS SHOWN OTHERWISE.
2. CONTRACTOR SHALL LEAKAGE TEST ALL DIP STORM PIPING TO A TEST PRESSURE OF 50 PSI MINIMUM.

HORIZONTAL SCALE: 1" = 20'
20 10 0 20'
VERTICAL SCALE: 1"=2'
2 1 0 2

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REV	ISSUED FOR	DATE	BY

PROJECT ENGINEER:	R. FROST
DESIGNED BY:	C. MCNICOL
DRAWN BY:	C. MCNICOL
CHECKED BY:	D. SHEERAN
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	0 1/2" 1"

BID SET



Hazen

HAZEN AND SAWYER
498 SEVENTH AVENUE, 11th FLOOR
NEW YORK, NEW YORK 10018

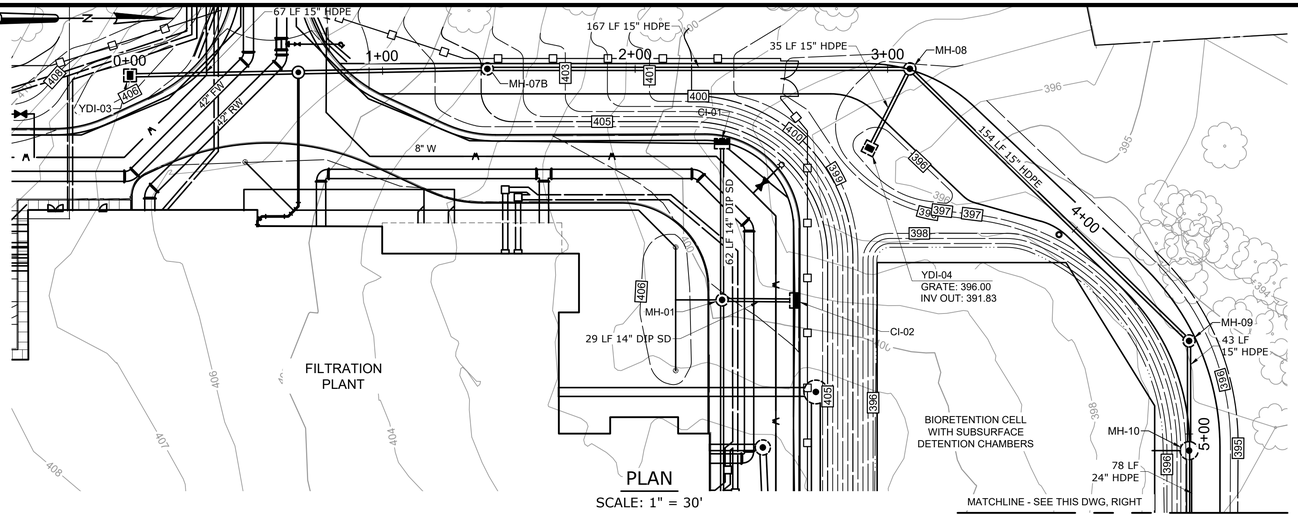
WESTCHESTER JOINT WATER WORKS
MAMARONECK, NY

RYE LAKE WATER FILTRATION PLANT
HARRISON, NY

CIVIL
STORMWATER DRAINAGE PROFILES - SHEET 2 OF 3

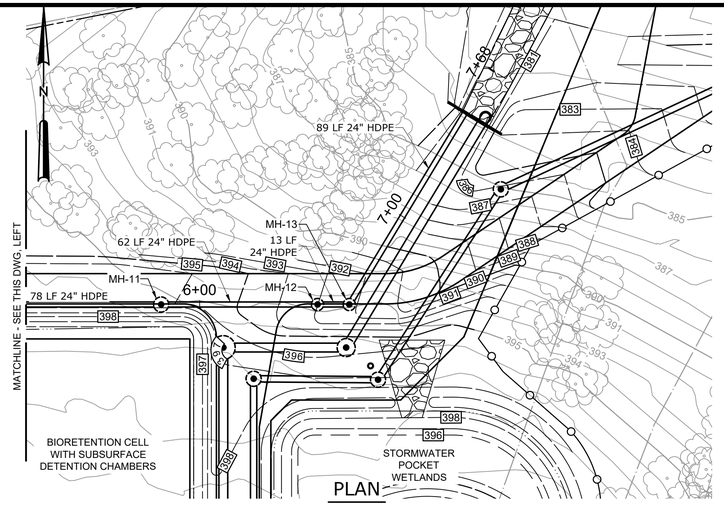
DATE:	FEB 2025
HAZEN NO.:	90388-000
CONTRACT NO.:	A1364-A
DRAWING NUMBER:	C-214

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PLOT DATE: 3/27/2025 12:58 PM BY: JTANNER



PLAN

SCALE: 1" = 30'

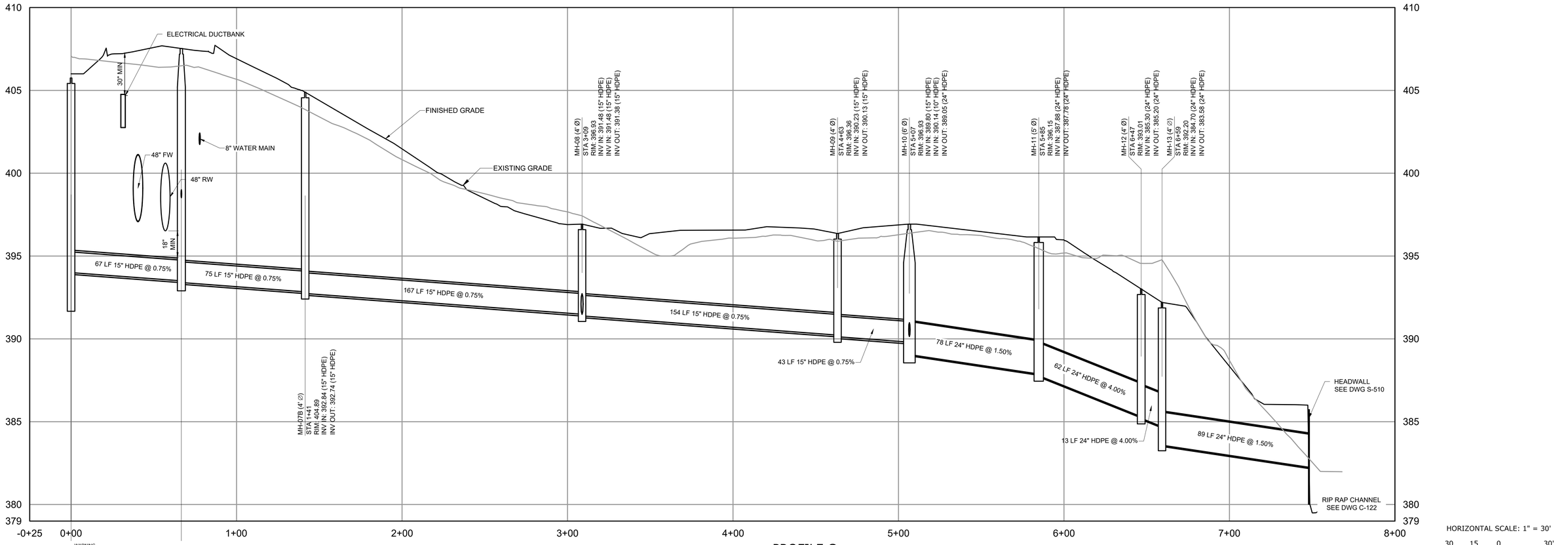


PLAN

SCALE: 1" = 30'

NOTES:

1. ALL STORM DRAINS SHALL HAVE A MINIMUM COVER OF 4' UNLESS SHOWN OTHERWISE.



PROFILE C

HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1"= 3'

HORIZONTAL SCALE: 1" = 30'

30 15 0 30'

VERTICAL SCALE: 1"=3'

WARNING
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REV	ISSUED FOR	DATE	BY

PROJECT ENGINEER:	R. FROST
DESIGNED BY:	C. MCNICOL
DRAWN BY:	C. MCNICOL
CHECKED BY:	D. SHEERAN

IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE 0 1/2" 1"

BID SET

STATE OF NEW YORK — JAMES SHEET — 088955 — REGISTERED PROFESSIONAL ENGINEER

Hazen

HAZEN AND SAWYER
498 SEVENTH AVENUE, 11th FLOOR
NEW YORK, NEW YORK 10018

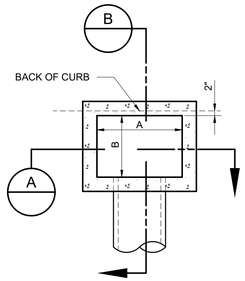
WESTCHESTER JOINT WATER WORKS
MAMARONECK, NY

RYE LAKE WATER FILTRATION PLANT
HARRISON, NY

CIVIL
STORMWATER DRAINAGE PROFILES -
SHEET 3 OF 3

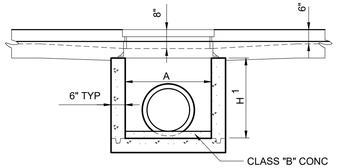
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HAZEN NO.:	90388-000
CONTRACT NO.:	A1364-A
DRAWING NUMBER:	C-215

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PLAN

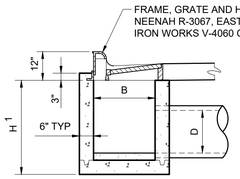
NOT TO SCALE



12" TO 24" PIPE

SECTION A

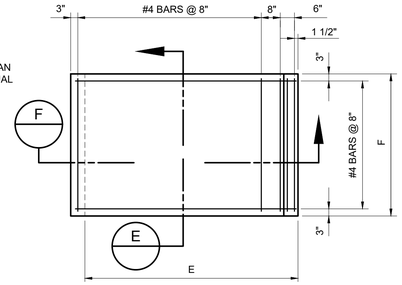
NOT TO SCALE



12" TO 24" PIPE

SECTION B

NOT TO SCALE

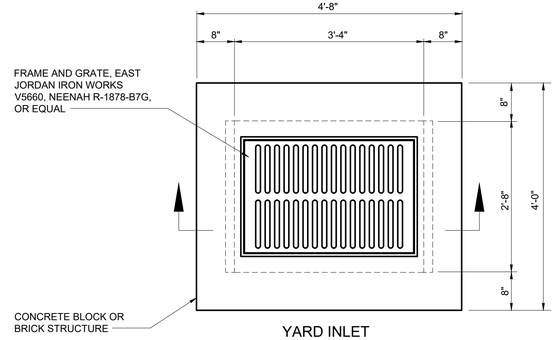


PLAN

NOT TO SCALE

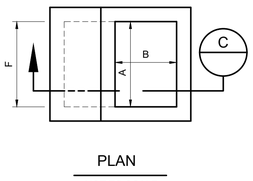
CURB INLET AND YARD INLET STRUCTURE TABLE

STRUCTURE TABLE				
STRUCTURE ID:	NORTHING	EASTING	DETAIL DWG	INNER DIMENSION (INCHES)
YDI-04	813701.82	707595.44	C-216	SEE DETAIL
YDI-03	813408.96	707566.57	C-216	SEE DETAIL
CI-05	813502.55	707822.01	C-216	SEE DETAIL
CI-04	813643.36	707808.23	C-216	SEE DETAIL
CI-03	813672.14	707746.02	C-216	SEE DETAIL
CI-02	813672.17	707655.68	C-216	SEE DETAIL
CI-06	813325.96	707590.17	C-216	SEE DETAIL
YDI-01	813318.65	707784.98	C-216	SEE DETAIL
CI-01	813643.39	707593.61	C-216	SEE DETAIL



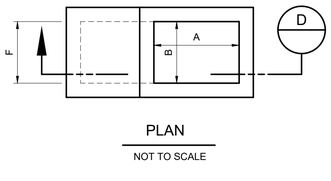
YARD INLET

C-22-0300



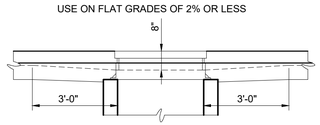
PLAN

NOT TO SCALE



PLAN

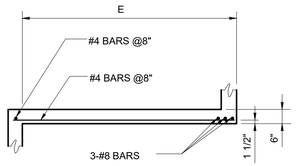
NOT TO SCALE



ELEVATION

NORMAL CURB AND GUTTER ON LIGHT GRADES

NOT TO SCALE



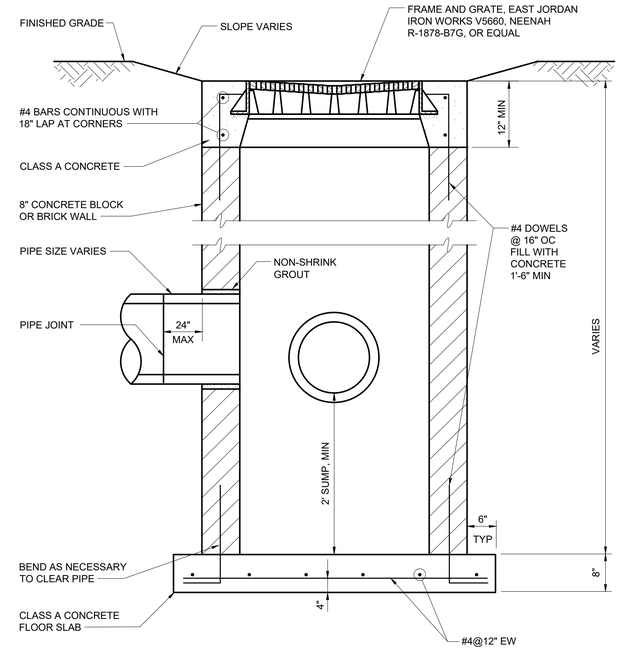
TOP SLAB

SECTION F

NOT TO SCALE

NOTE:

1. STRUCTURAL GEOMETRY AND REINFORCEMENT SHOWN ON THIS DRAWING ARE FOR REFERENCE PURPOSES ONLY. CONTRACTOR SHALL BE RESPONSIBLE FOR THE STRUCTURAL DESIGN OF ALL UTILITY STRUCTURE ELEMENTS PER SPECIFICATION SECTION 33 05 61.



YARD INLET

SCALE: NTS

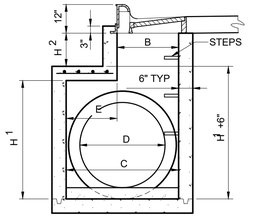
NOTE:
YARD INLET MAY BE PRECAST
CONCRETE - SEE SPECIFICATIONS

MINIMUM DIMENSIONS FOR CONCRETE CURB INLETS

DIMENSIONS OF BOX AND PIPE							COVER DIMENSIONS	
PIPE	SPAN	WIDTH	WIDTH	SPAN	HEIGHT	HEIGHT		
D	A	B	C	G	MIN H [1]	H [2]	E	F
12"	3'-0"	2'-2"	—	—	2'-6"	—	—	—
15"	3'-0"	2'-2"	—	—	2'-9"	—	—	—
18"	3'-0"	2'-2"	—	—	3'-1"	—	—	—
24"	3'-0"	2'-2"	—	—	3'-7"	—	—	—
30"	3'-0"	2'-2"	3'-4"	3'-4"	3'-6"	VARIABLE	1'-8"	4'-0"
36"	3'-0"	2'-2"	3'-10"	3'-10"	4'-1"		2'-2"	4'-0"
42"	3'-0"	2'-2"	—	4'-5"	4'-10"		1'-11"	3'-2"
48"	3'-0"	2'-2"	—	5'-0"	5'-4"		2'-6"	3'-2"
54"	3'-0"	2'-2"	—	5'-7"	5'-11'		3'-1"	3'-2"

CONCRETE CURB INLET NOTES:

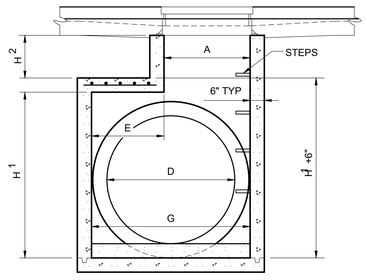
1. CLASS "A1" CONCRETE TO BE USED THROUGHOUT.
2. ALL WALLS SHALL BE REINFORCED WITH #4 BARS @ AT 12" EACH WAY PLACED AT MID-DEPTH. BARS SHALL BE BENT AT CORNERS WITH STD. 90° HOOKS. BOTTOM SLAB SHALL BE REINFORCED WITH #5@12" EACH WAY AT MID-DEPTH.
3. ALL CURB INLETS OVER 3'-6" IN DEPTH TO BE PROVIDED WITH STEPS 14" OC. STEPS SHALL BE IN ACCORDANCE WITH SPECIFICATIONS.
4. FOR 8'-0" IN HEIGHT OR LESS USE 6" WALLS AND BOTTOM SLAB. OVER 8'-0" AND UP TO 15'-0" USE 8" WALLS AND BOTTOM SLAB.



30" TO 36" PIPE

SECTION C

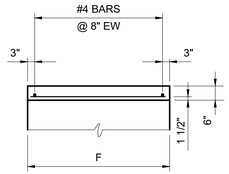
NOT TO SCALE



42" TO 54" PIPE

SECTION D

NOT TO SCALE



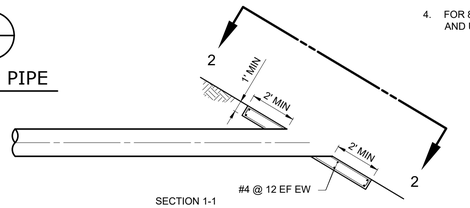
TOP SLAB

SECTION E

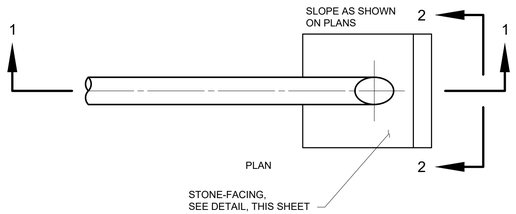
NOT TO SCALE

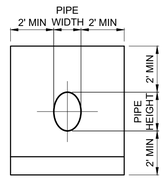
STANDARD CONCRETE CURB INLET 12" THROUGH 54" PIPE

SCALE: NTS



SECTION 1-1

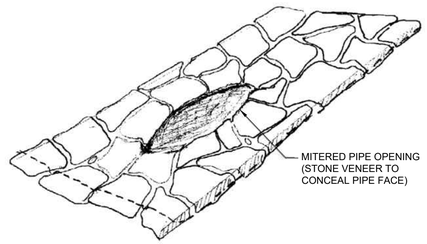




SECTION 2-2

CONCRETE PIPE COLLAR

SCALE: NTS



NOTES:

1. STONE VENEER SHALL BE SUBMITTED TO ENGINEER FOR APPROVAL. STONE VENEER SHALL BE CONSTRUCTED OF QUARTZITE SANDSTONE, COMMONLY KNOWN AS PENNSYLVANIA COLONIAL FIELD STONE OR NATURAL LOCAL STONE AS APPROVED BY THE ENGINEER.
2. ALL STONES SHALL HAVE A GENERAL MINIMUM LENGTH OF 1'-6" AND A MINIMUM HEIGHT OF 6". ALL STONES SHALL HAVE A GENERAL MAXIMUM LENGTH OF 3'-0" AND A MAXIMUM HEIGHT OF 12". STONE WIDTHS SHALL GENERALLY BE NO MORE THAN 12". ALL STONES SHALL BE FREE OF SOIL AND DEBRIS IN ORDER TO ACHIEVE SECURE BOND WITH MORTAR.
3. LAY STONE WITH NO LESS THAN 1" AND NO MORE THAN 2" OF MORTAR BETWEEN THE STONE AND CONCRETE. MORTAR AND GROUT SHALL BE PER SPECIFICATION SECTION 04 05 13 AND 04 05 16.

PIPE COLLAR STONE-FACING DETAILS

SCALE: NTS

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REV	ISSUED FOR	DATE	BY

PROJECT ENGINEER: R. FROST
DESIGNED BY: C. MCNICOL
DRAWN BY: C. MCNICOL
CHECKED BY: D. SHEERAN
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE 0 1/2" 1"

BID SET

STATE OF NEW YORK · DANIEL JAMES SHEERAN · 088955 · LICENSED PROFESSIONAL ENGINEER

Hazen

HAZEN AND SAWYER
498 SEVENTH AVENUE, 11th FLOOR
NEW YORK, NEW YORK 10018

WESTCHESTER JOINT WATER WORKS
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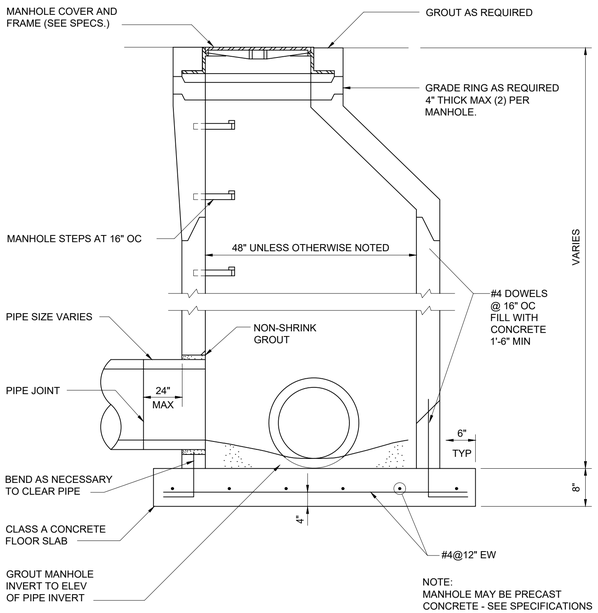
CIVIL
STORMWATER DETAILS - SHEET 1 OF 6

DATE: FEB 2025
HAZEN NO.: 90388-000
CONTRACT NO.: A1364-A
DRAWING NUMBER: C-216

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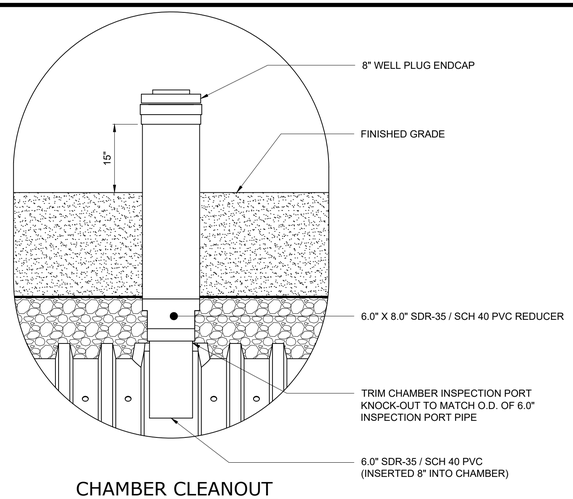
STORMWATER MANHOLE STRUCTURE TABLE

STRUCTURE TABLE				
STRUCTURE ID:	NORTHING	EASTING	DETAIL DWG	INNER DIMENSION (INCHES)
MH-06	813362.85	707809.49	C-217	48
POCKET WETLAND OUTLET STRUCTURE	813729.40	707845.02	C-218	???
MH-02	813643.39	707738.58	C-217	48
MH-05A	813325.90	707686.78	C-217	48
MH-06A	813406.47	707810.14	C-217	48
MH-12	813828.30	707855.21	C-217	SEE DETAIL
MH-11	813828.30	707793.30	C-217	60
MH-04	813483.68	707811.35	C-217	48
MH-05B	813325.84	707785.18	C-217	60
MH-01	813643.39	707655.46	C-217	48
MH-14	813729.40	707813.30	C-217	48
MH-03	813500.41	707810.97	C-217	60
MH-07B	813550.42	707564.00	C-217	48
MH-08	813717.72	707563.99	C-217	48
MH-09	813828.28	707671.70	C-217	48
MH-10	813828.30	707715.13	C-219	72
MH-13	813828.30	707867.79	C-217	48
MH-07A	813475.59	707565.36	C-217	48



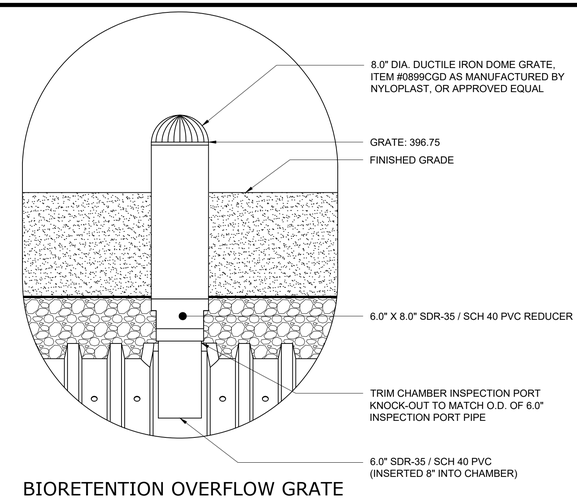
STORMWATER MANHOLE

SCALE: NTS



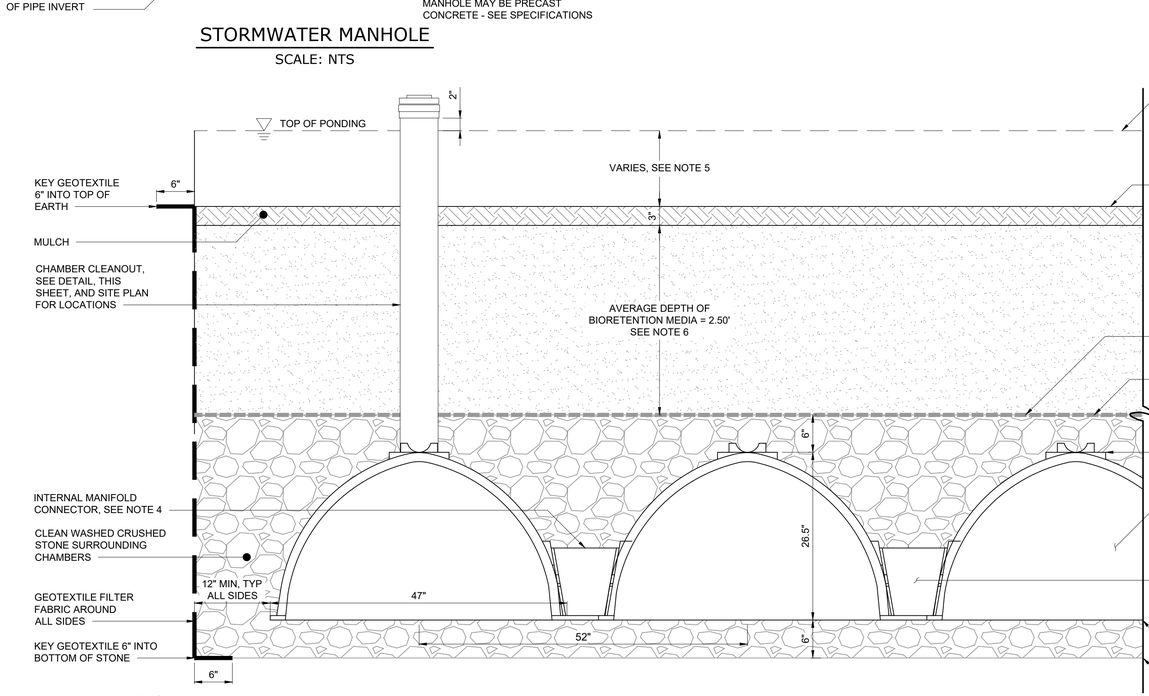
CHAMBER CLEANOUT

SCALE: NTS



BIORETENTION OVERFLOW GRATE

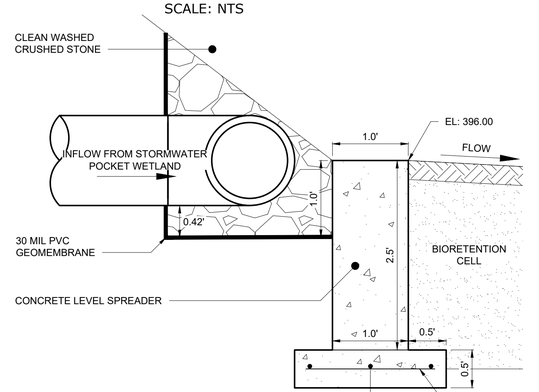
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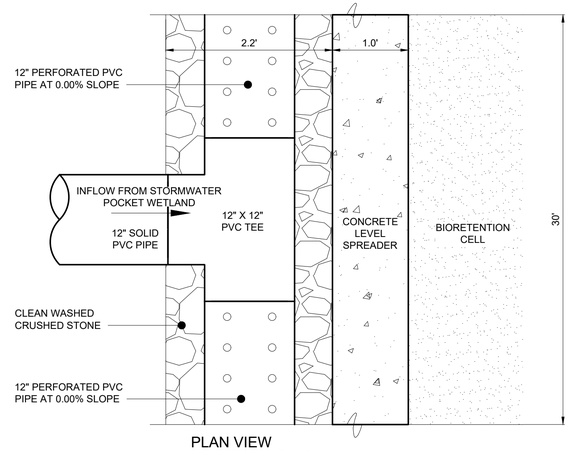
SUBSURFACE STORAGE CHAMBERS

SCALE: 1" = 1'

NOTES:
1. CONTRACTOR TO INSTALL CULTEC 280HD CHAMBERS, AS MANUFACTURED BY CULTEC, OR APPROVED EQUAL. REFER TO MANUFACTURER'S CURRENT RECOMMENDED INSTALLATION GUIDELINES.
2. ALL UNDERGROUND STORAGE CHAMBERS MUST BE INSTALLED IN ACCORDANCE WITH ALL APPLICABLE LOCAL, STATE AND FEDERAL REGULATIONS.
3. CROSS SECTION SHOWN IS A TYPICAL CROSS SECTION FOR THE CHAMBERS, REFER TO C-211 FOR THE STORAGE VOLUME AND NUMBER OF CHAMBERS REQUIRED.
4. INTERNAL MANIFOLD CONNECTION SHALL ONLY BE INSTALLED ON THE FIRST AND LAST CHAMBER OF EACH ROW, OR PER MANUFACTURER REQUIREMENTS.
5. BIORETENTION PONDING DEPTH VARIES DUE TO SLOPE OF BIORETENTION (SEE DWG C-211). BIORETENTION HAS BEEN SIZED WITH AN AVERAGE PONDING DEPTH OF SIX INCHES. SEE DWG C-217 FOR BIORETENTION OVERFLOW GRATE ELEVATIONS. GRATE ELEVATIONS ABOVE SURFACE OF BIORETENTION IS GREATER THAN SIX INCHES TO ACCOMMODATE THE AVERAGE DEPTH ABOVE FINISHED GRADE.
6. SEE SPECIFICATION SECTION 33 46 00 - BIORETENTION CELL FOR BIORETENTION MEDIA REQUIREMENTS.



SECTION VIEW



PLAN VIEW

LEVEL SPREADER

SCALE: 1:1

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PROJECT ENGINEER:	R. FROST
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BID SET

STATE OF NEW YORK · DANIEL JAMES SHEERAN · 088955 · LICENSED PROFESSIONAL ENGINEER

Hazen

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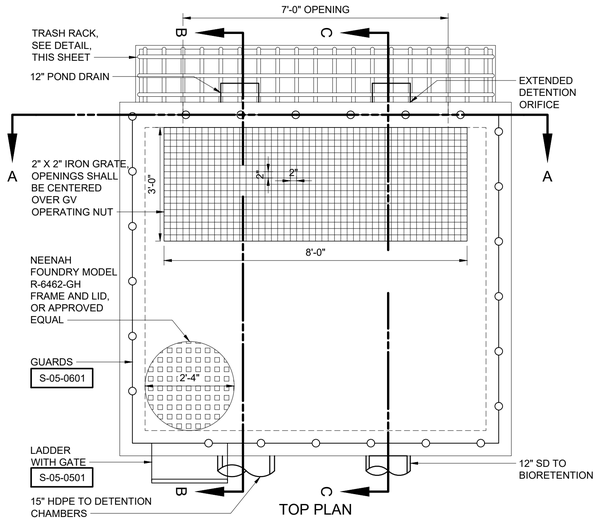
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RYE LAKE WATER FILTRATION PLANT
HARRISON, NY

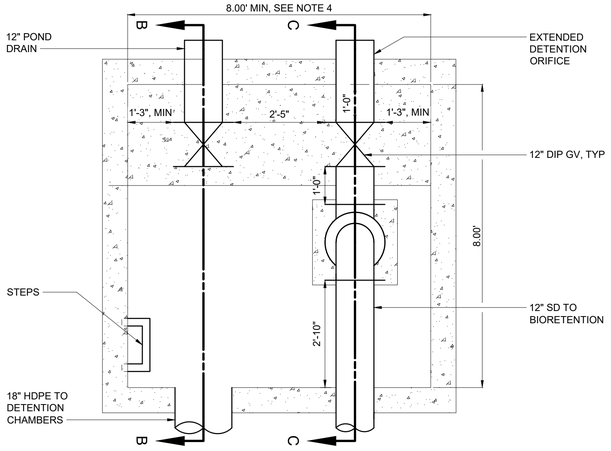
CIVIL
STORMWATER DETAILS - SHEET 2 OF 6

DATE:	FEB 2025
HAZEN NO.:	90388-000
CONTRACT NO.:	A1364-A
DRAWING NUMBER:	C-217

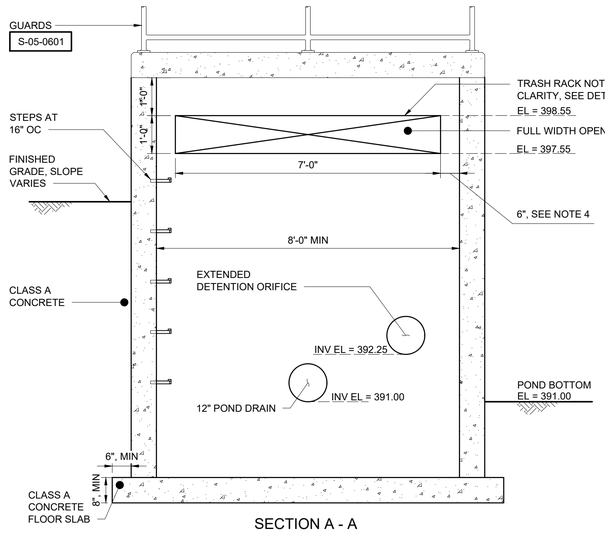
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PLOT DATE: 3/26/2025 11:36 PM BY: JTANNER



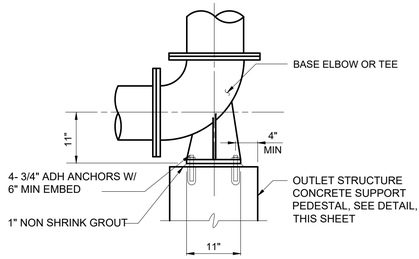
TOP PLAN



BOTTOM PLAN

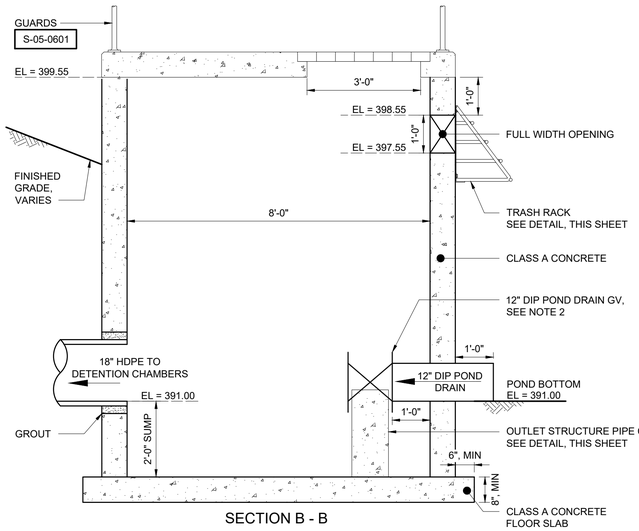


SECTION A - A

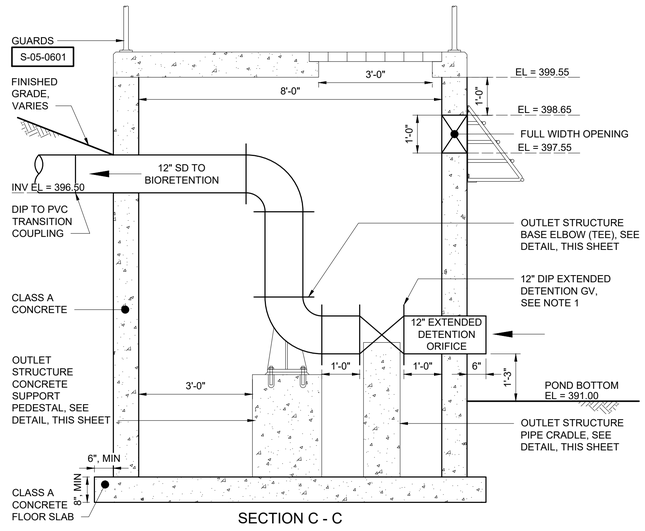


OUTLET STRUCTURE ELBOW (TEE)

SCALE: N.T.S.



SECTION B - B



SECTION C - C

STORMWATER POCKET WETLAND OUTLET STRUCTURE

SCALE: 1" = 2'

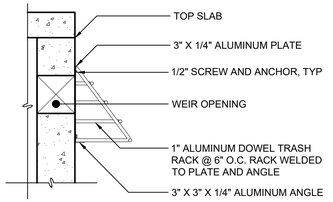
NOTES:

1. SEE C-219 FOR STRUCTURE OPENING SIZES AND ELEVATIONS IN TABULAR FORM.
2. EXTENDED DETENTION ORIFICE 12" GV SHALL BE OPENED TO THE EQUIVALENT AREA OF A 2.75" DIAMETER ORIFICE.
3. POND DRAIN 12" GV SHALL BE NORMALLY CLOSED.
4. MINIMUM DISTANCE BETWEEN WEIR OPENING AND STRUCTURE WALL SHALL BE 6". DIMENSION MAY BE INCREASED AS REQUIRED BY PRECAST STRUCTURAL REQUIREMENTS, HOWEVER WEIR OPENING SIZING SHALL NOT BE ALTERED. TRASH RACK WIDTH SHALL BE MODIFIED AS NEEDED TO ADHERE TO STRUCTURE, BUT NO LESS THEN THE MINIMUM STATED WIDTH.
5. FULL POST-CONSTRUCTION INSPECTION AND MAINTENANCE REQUIREMENTS ARE PROVIDED IN THE "WJWW RYE LAKE WFP, INSPECTION AND MAINTENANCE OF POST CONSTRUCTION STORMWATER MANAGEMENT PRACITCS" MANUAL PREPARED BY HAZEN AND SAWYER. THIS MANUAL IS PROVIDED AS AN APPENDIX TO THE PROJECT SWPPP. IF BIORETENTION OR POCKET WETLAND MAINTENANCE IS REQUIRED DURING CONSTRUCTION, THE FOLLOWING PROCEDURES SHOULD BE FOLLOWED:

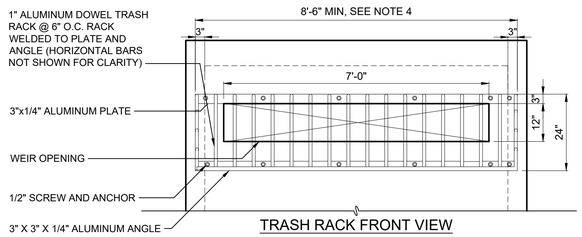
5.1. ALL MAINTENANCE ACTIVITIES SHALL BE PERFORMED WHEN DRY WEATHER IS FORECASTED FOR THE NEXT 48 HOURS, OR THE ENTIRE DURATION OF THE MAINTENANCE ACTIVITY, WHICH EVER IS GREATER.

5.2. DETENTION CHAMBERS: TEMPORARILY CLOSE EXTENDED DETENTION VALVE TO SHUT OFF FLOW TO THE BIORETENTION CELL SURFACE. ADDITIONALLY, TEMPORARILY PLUG THE 15" PIPE, SHUTTING OFF FLOW TO THE DETENTION CHAMBERS. IMMEDIATELY UPON MAINTENANCE COMPLETION, UNPLUG THE 15" PIPE, AND RETURN THE EXTENDED DETENTION VALVE TO THE OPENING SIZE INDICATED ON THE DESIGN DRAWINGS.

5.3. BIORETENTION CELL: TEMPORARILY CLOSE EXTENDED DETENTION VALVE TO SHUT OFF FLOW TO THE BIORETENTION CELL SURFACE. IF MAINTENANCE ACTIVITIES PERMIT IT, 15" PIPE TO DETENTION CHAMBERS MAY REMAIN UNOBSTRUCTED.



TRASH RACK SECTION VIEW



TRASH RACK FRONT VIEW

TRASH RACK

SCALE: 1" = 2'

SCALE: 1" = 2'

2 1 0 2'

WARNING
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REV	ISSUED FOR	DATE	BY

PROJECT ENGINEER:	R. FROST
DESIGNED BY:	C. MCNICOL
DRAWN BY:	C. MCNICOL
CHECKED BY:	D. SHEERAN

IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE 0 1/2" 1"

BID SET

STATE OF NEW YORK — JAMES SHEEHAN — LICENSED PROFESSIONAL ENGINEER — 088955

Hazen

HAZEN AND SAWYER
498 SEVENTH AVENUE, 11th FLOOR
NEW YORK, NEW YORK 10018

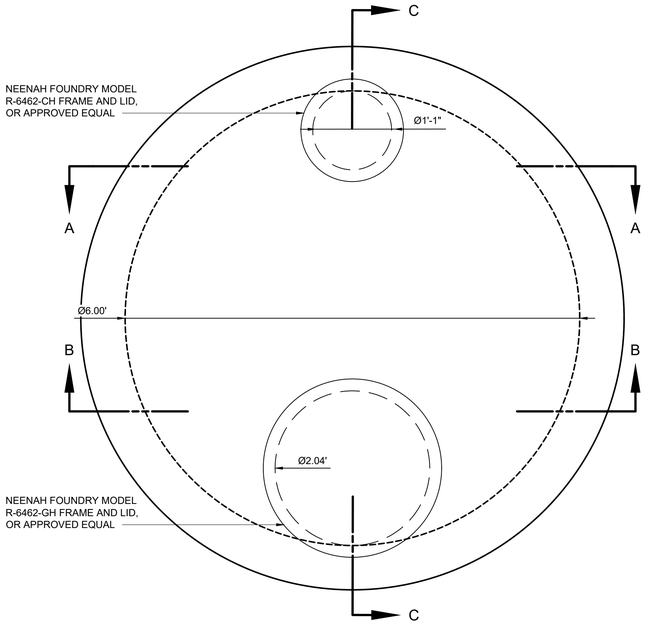
WESTCHESTER JOINT WATER WORKS
MAMARONECK, NY

RYE LAKE WATER FILTRATION PLANT
HARRISON, NY

CIVIL
STORMWATER DETAILS - SHEET 3 OF 6

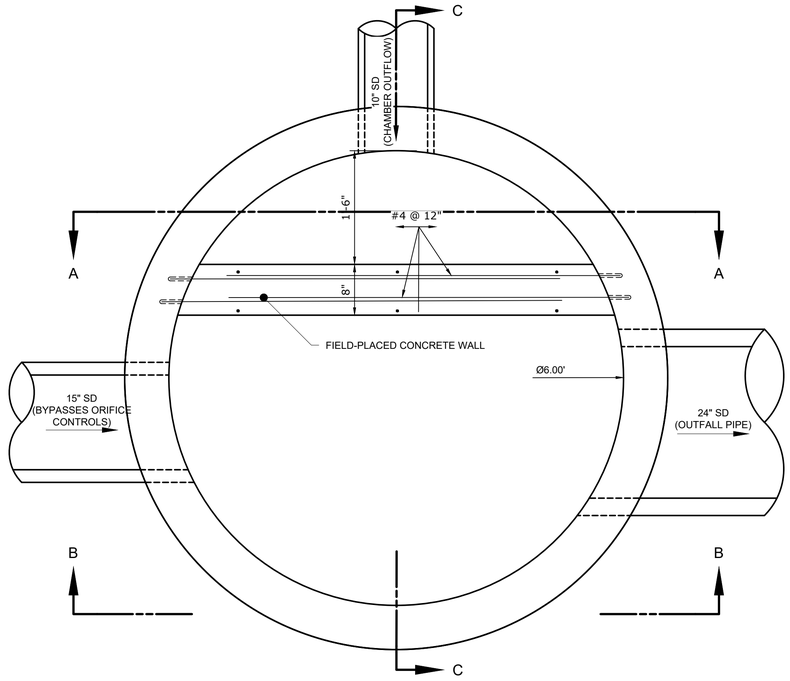
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HAZEN NO.:	90388-000
CONTRACT NO.:	A1364-A
DRAWING NUMBER:	C-218

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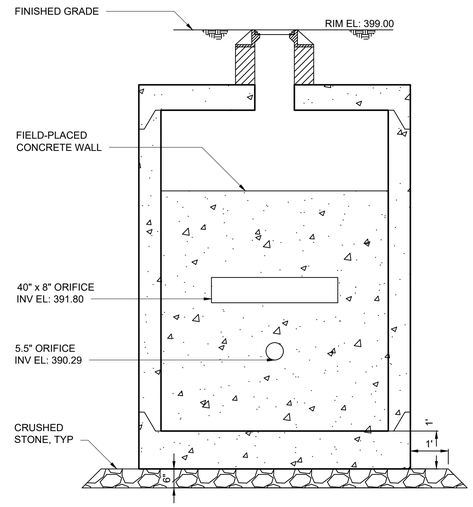
TOP PLAN

SCALE: 1" = 1'



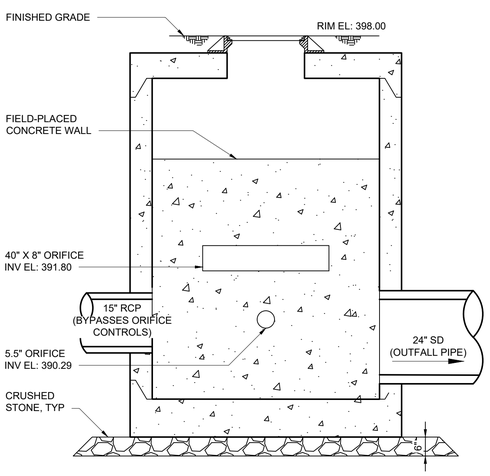
BOTTOM PLAN

SCALE: 1" = 1'



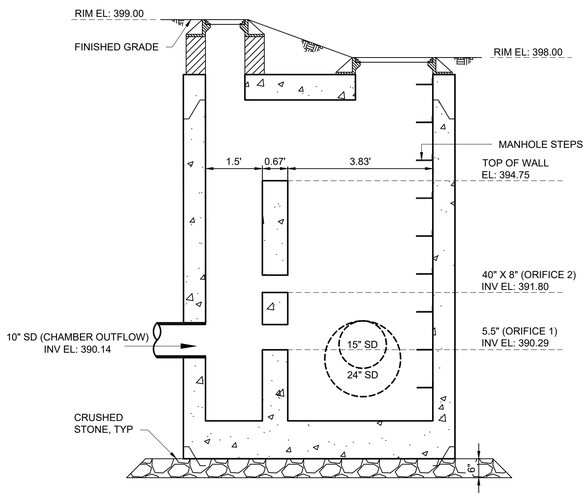
SECTION A-A

SCALE: 1" = 2'



SECTION B-B

SCALE: 1" = 2'



SECTION C-C

SCALE: 1" = 2'

OUTLET SUMMARY TABLE

OPENING DESC.	SIZE	INV IN EL	INV OUT EL	STRUCTURE	DRAWING	FUNCTION
POND DRAIN	12" DIA. PIPE	391.00	N/A	WETLAND OUTLET STRUCTURE	C-218	NORMALLY CLOSED, PROVIDED FOR MAINTANENCE
EXTENDED DETENTION	12" DIA. PIPE[1]	392.25	396.50[2]	WETLAND OUTLET STRUCTURE	C-218	SENDS WQv TO BIORETENTION SURFACE
OVERFLOW WEIR	7' W X 1' H	397.55	N/A	WETLAND OUTLET STRUCTURE	C-218	DIRECTS FLOWS GREATER THAN THE 1-YR TO DETENTION CHAMBERS
PIPE TO DETENTION CHAMBERS	18" DIA PIPE	N/A	391.00	WETLAND OUTLET STRUCTURE	C-218	DIRECTS FLOWS GREATER THAN THE 1-YR TO DETENTION CHAMBERS
EMERGENCY SPILLWAY	8' WIDE WEIR	398.75	398.75	WETLAND EMBANKMENT	C-211	EMERGENCY SPILLWAY FOR STORMS GREATER THAN 500-YR
CHAMBER OUTFLOW PIPE	10" DIA PIPE	390.14	N/A	DETENTION CHAMBER OUTLET STRUCTURE	C-219	PIPED CONNECTION BETWEEN CHAMBERS AND OUTLET STRUCTURE
NON-SMP INFLOW PIPE	15" DIA PIPE	389.80	N/A	DETENTION CHAMBER OUTLET STRUCTURE	C-219	CONVEYS FLOWS FROM NON-SMP DRAINAGE AREAS AND BYPASSES THE ORIFICE CONTROLS WITHIN OUTLET STRUCTURE
ORIFICE 1	5.5" DIA	390.29	N/A	DETENTION CHAMBER OUTLET STRUCTURE	C-219	STORMS LESS THAN 10-YR EVENT
ORIFICE 2	40" W X 8" H	391.80	N/A	DETENTION CHAMBER OUTLET STRUCTURE	C-219	ACTIVATED DURING 10-YR STORM AND GREATER
OUTFALL PIPE	24" DIA. PIPE	N/A	389.05	DETENTION CHAMBER OUTLET STRUCTURE	C-219	CONVEYS FLOWS FROM CHAMBERS TO SITE OUTFALL
BIORETENTION OVERFLOW GRATE	(3) 6" DIA OPENINGS	396.75	N/A	BIORETENTION	C-211 AND C-217	CONNECTS BIORETENTION PONDING TO CHAMBERS

1. 12" GV PROVIDED ON PIPE INTERNAL TO OUTLET STRUCTURE. SEE NOTE 1, THIS DRAWING FOR EQUAVILENT AREA OPENING REQUIREMENT
2. INV OUT SERVES AS THE EFFECTIVE INV IN FOR THE EXTENDED DETENTION ORIFICE

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DETENTION CHAMBER OUTLET STRUCTURE

REV	ISSUED FOR	DATE	BY

PROJECT ENGINEER: R. FROST
DESIGNED BY: J. TANNER
DRAWN BY: J. TANNER
CHECKED BY: D. SHEERAN
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE 0 1/2" 1"

BID SET



Hazen
HAZEN AND SAWYER
498 SEVENTH AVENUE, 11th FLOOR
NEW YORK, NEW YORK 10018

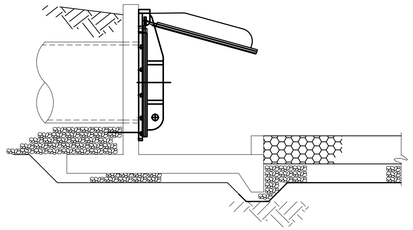
WESTCHESTER JOINT WATER WORKS
MAMARONECK, NY

RYE LAKE WATER FILTRATION PLANT
HARRISON, NY

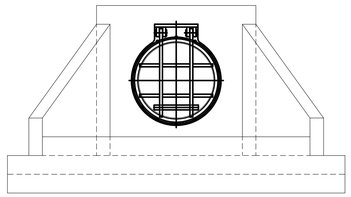
CIVIL
STORMWATER DETAILS - SHEET 4 OF 6

DATE: FEB 2025
HAZEN NO.: 90388-000
CONTRACT NO.: A1364-A
DRAWING NUMBER: C-219

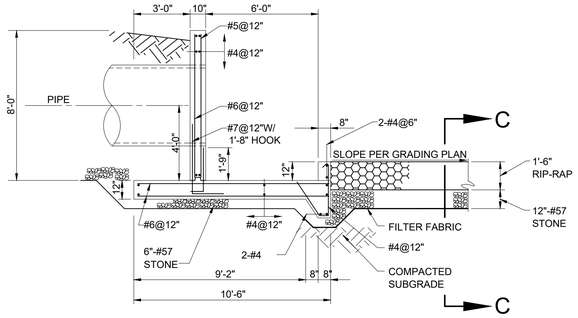
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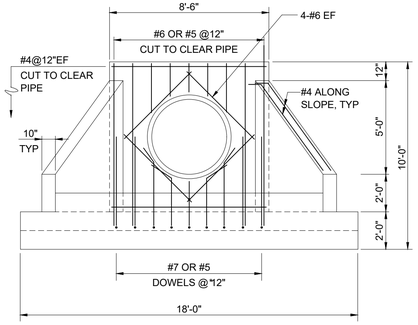
SECTION WITH FLAP GATE



ELEVATION WITH FLAP GATE



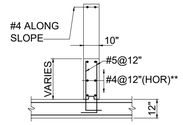
SECTION A-A



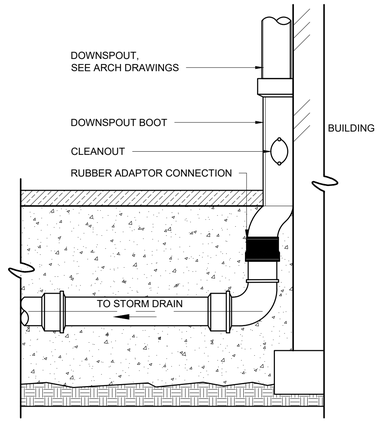
NOTE: OTHER REINFORCING NOT SHOWN FOR CLARITY

ELEVATION

* BEND AS SHOWN TO CLEAR PIPE

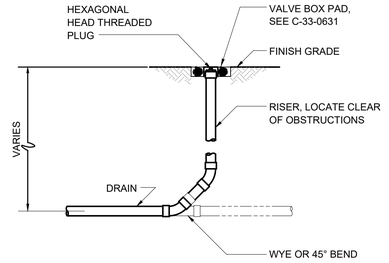


SECTION B-B



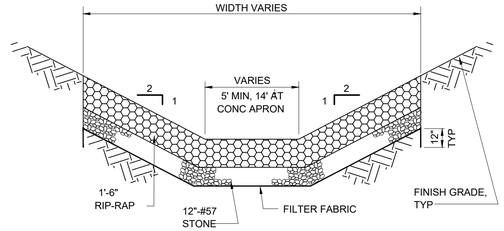
DOWN SPOUT TIE-IN

SCALE: N.T.S.

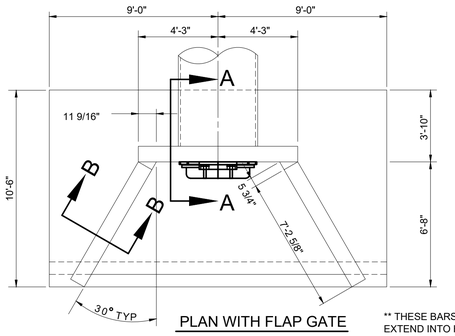


CLEANOUT FOR GRAVITY LINES

SCALE: N.T.S.



SECTION C-C

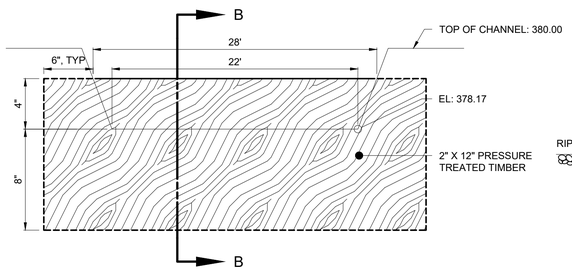


PLAN WITH FLAP GATE

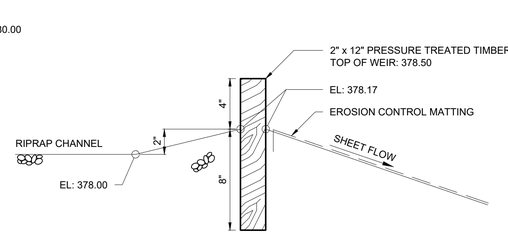
** THESE BARS SHALL EXTEND INTO HEADWALL 8" W/ STD 90° HOOKS

HEADWALL WITH FLAP GATE

SCALE: N.T.S.



SECTION A - A



SECTION B - B

FLOW SPREADER

SCALE: N.T.S.

FRONT

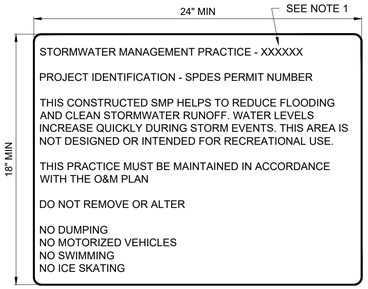
STEEL SIGN POST WITH RIGID ALUMINUM SIGN

NTS

REAR DETAIL

SMP INFORMATIONAL SIGN

NTS



NOTES:

1. REFER TO DRAWING C-211 FOR THE SIGN TYPE.
   1.1. SIGN TYPE A SHALL SAY "STORMWATER POCKET WETLAND"
   1.2. SIGN TYPE B SHALL SAY "BIORETENTION CELL WITH SUBSURFACE DETENTION CHAMBERS"
2. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING THE CORRECT SPDES PERMIT NUMBER FOR THE SIGN.
3. SEE STEEL SIGN POST DETAIL ON THIS DWG FOR MOUNTING OF SIGN.

STORMWATER PRACTICE WARNING SIGN

NTS

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REV	ISSUED FOR	DATE	BY

PROJECT ENGINEER:	R. FROST
DESIGNED BY:	J. TANNER
DRAWN BY:	J. TANNER
CHECKED BY:	D. SHEERAN

IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE 0 1/2" 1"

BID SET

DANIEL JAMES SHEERAN — STATE OF NEW YORK — 088955 — LICENSED PROFESSIONAL ENGINEER

Hazen

HAZEN AND SAWYER
498 SEVENTH AVENUE, 11th FLOOR
NEW YORK, NEW YORK 10018

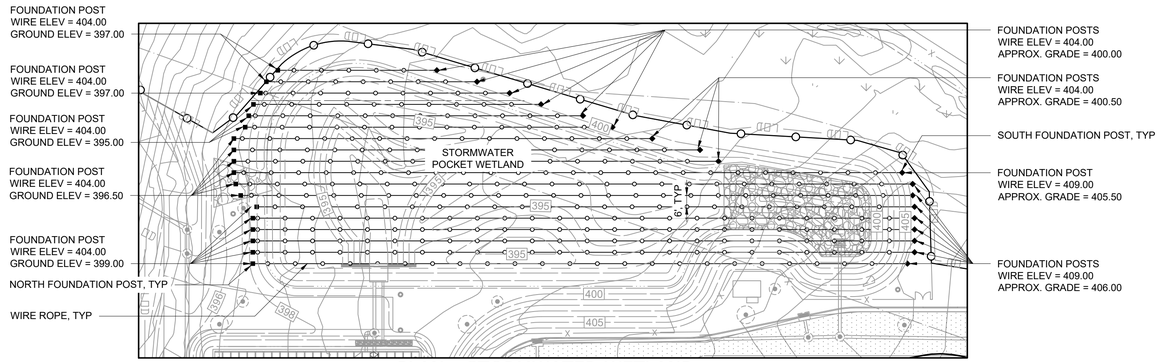
WESTCHESTER JOINT WATER WORKS
MAMARONECK, NY

RYE LAKE WATER FILTRATION PLANT
HARRISON, NY

CIVIL
STORMWATER DETAILS - SHEET 5 OF 6

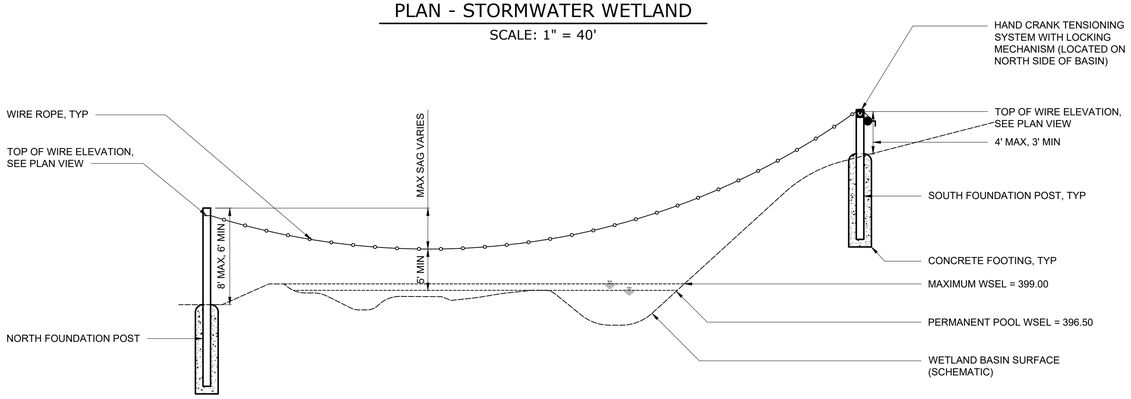
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HAZEN NO.:	90388-000
CONTRACT NO.:	A1364-A
DRAWING NUMBER:	C-220

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PLOT DATE: 3/26/2025 11:36 PM BY: JTANNER



PLAN - STORMWATER WETLAND

SCALE: 1" = 40'



SCHEMATIC PROFILE - STORMWATER WETLAND

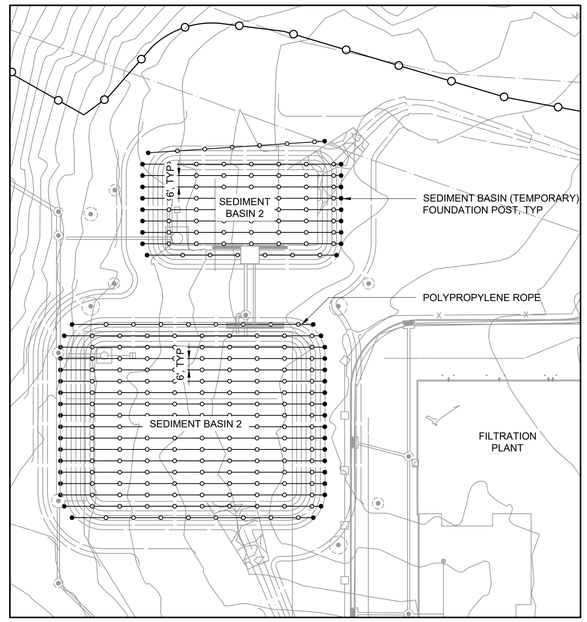
SCALE: N.T.S.

NOTES:

1. PLAN VIEWS HAVE ALL NEW CONSTRUCTION WITH THE EXCEPTION OF THE BIRD DETERRENT SYSTEM SCREENED FOR CLARITY.
2. CONTRACTOR SHALL NOT DISCHARGE STORMWATER TO THE STORMWATER POCKET WETLAND UNTIL THE BIRD DETERRENT SYSTEM IS INSTALLED. ANY WATER THAT MAY ACCUMULATE DURING CONSTRUCTION SHALL BE SUMP PUMPED TO THE OUTFALL TO MITIGATE BIRD AND WATERFOWL FROM ENTERING THE WETLAND. CONTRACTOR SHALL PROVIDE MEANS OF PROVIDING NON-TURBID DISCHARGES.
3. BIRD DETERRENT SYSTEM SHALL BE IMPLEMENTED IMMEDIATELY AFTER SEDIMENT BASINS ARE CONSTRUCTED. SEDIMENT BASIN BIRD DETERRENT SYSTEM IS INTENDED TO BE TEMPORARY, AND SHOULD BE REMOVED WHEN THE SEDIMENT BASINS ARE REMOVED.
4. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTENANCE OF THE SEDIMENT BASIN AND WETLAND BIRD DETERRENT SYSTEMS FOR THE DURATION OF CONSTRUCTION
5. THE CONTRACTOR IS PROHIBITED FROM RE-USING ANY OF THE SEDIMENT BASIN BIRD DETERRENT SYSTEMS IN THE FINAL CONDITIONS OF THE STORMWATER WETLAND.

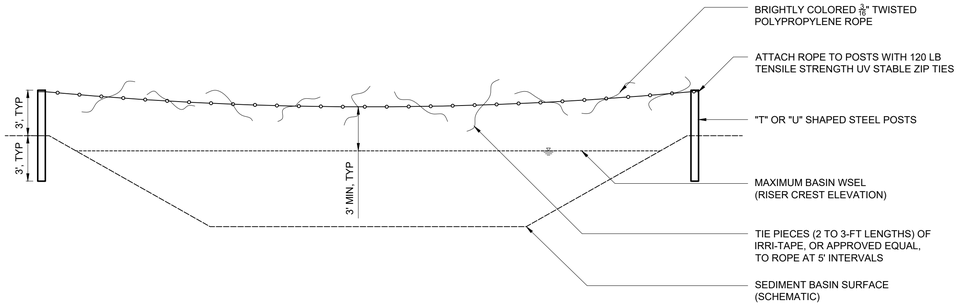
FOUNDATION POST LEGEND

- ■ NORTH FOUNDATION POST
- ◆ SOUTH FOUNDATION POST
- ● SEDIMENT BASIN (TEMPORARY) FOUNDATION POST



PLAN - SEDIMENT BASINS

SCALE: 1" = 40'



SCHEMATIC PROFILE - SEDIMENT BASINS

SCALE: N.T.S.

BIRD DETERRENT FOR STORMWATER SYSTEMS

SCALE: AS SHOWN

WARNING
IT IS A VIOLATION OF SECTION 7209.2 OF THE NEW YORK STATE EDUCATION LAW FOR ANY PERSON, UNLESS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER IN ANY WAY PLANS, SPECIFICATIONS, PLATS OR REPORTS TO WHICH THE SEAL OF A PROFESSIONAL ENGINEER HAS BEEN APPLIED. IF AN ITEM BEARING THE SEAL OF A PROFESSIONAL ENGINEER IS ALTERED, THE ALTERING ENGINEER SHALL AFFIX TO THE ITEM HIS SEAL AND THE NOTATION "ALTERED BY" FOLLOWED BY HIS SIGNATURE, THE DATE, AND A SPECIFIC DESCRIPTION OF THE ALTERATION.

REV	ISSUED FOR	DATE	BY

PROJECT ENGINEER:	R. FROST
DESIGNED BY:	C. MCNICOL
DRAWN BY:	C. MCNICOL
CHECKED BY:	D. SHEERAN

IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE (0, 1/2", 1")

BID SET



Hazen
HAZEN AND SAWYER
498 SEVENTH AVENUE, 11th FLOOR
NEW YORK, NEW YORK 10018

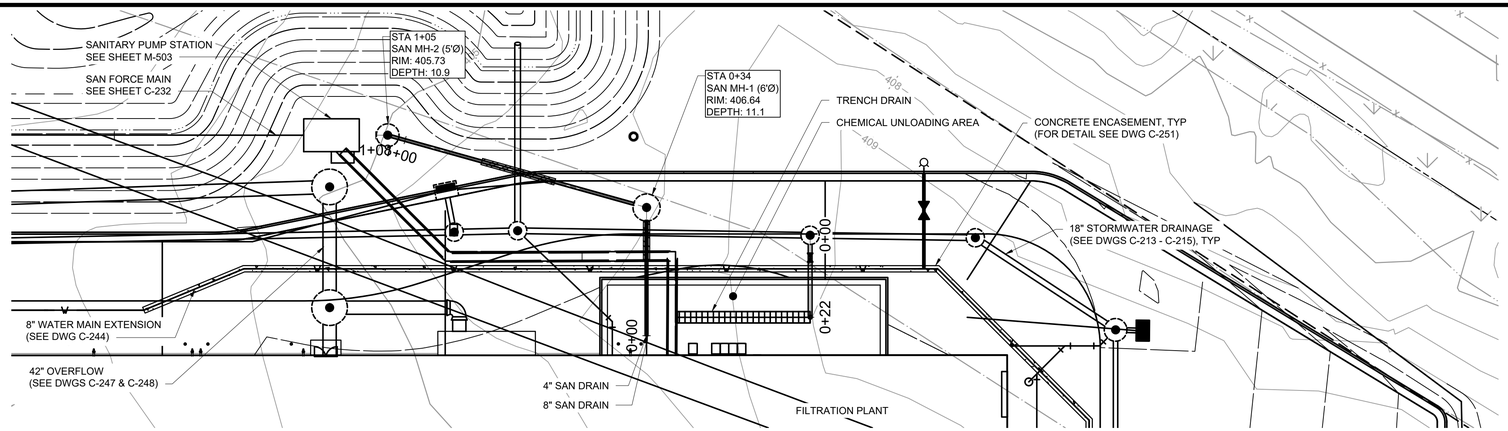
WESTCHESTER JOINT WATER WORKS
MAMARONECK, NY

RYE LAKE WATER FILTRATION PLANT
HARRISON, NY

CIVIL
STORMWATER DETAILS - SHEET 6 OF 6

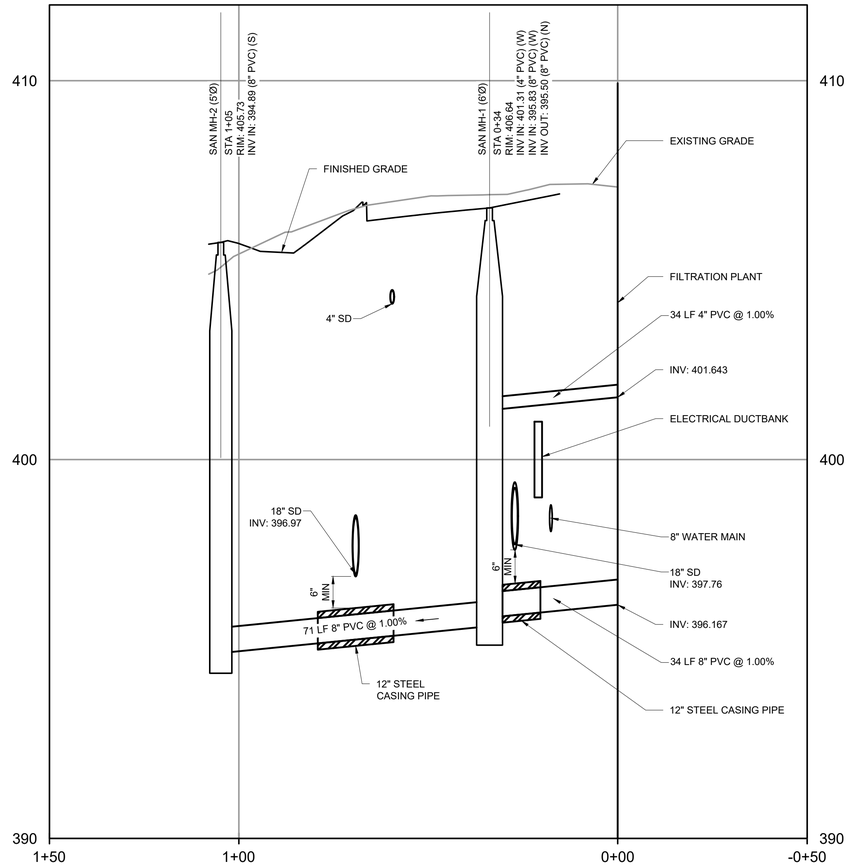
DATE:	FEB 2025
HAZEN NO.:	90388-000
CONTRACT NO.:	A1364-A
DRAWING NUMBER:	C-221

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PLOT DATE: 3/27/2025 12:53 PM BY: JTANNER



PLAN

SCALE: 1" = 20'



PROFILE

HORIZONTAL SCALE: 1" = 20'
VERTICAL SCALE: 1"=4'

WCDOH NOTE:

THE SANITARY FORCE MAIN DESIGN WILL BE SUBMITTED UNDER SEPARATE COVER AS PART OF THE WESTCHESTER COUNTY AIRPORT SEWER PROJECT.

HORIZONTAL SCALE: 1" = 20'

20 10 0 20'
4 2 0 4

VERTICAL SCALE: 1"=4'

WARNING
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REV	ISSUED FOR	DATE	BY

PROJECT ENGINEER: R. FROST
DESIGNED BY: J. TANNER
DRAWN BY: J. TANNER
CHECKED BY: D. SHEERAN
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE 0 1/2" 1"

BID SET

STATE OF NEW YORK — JAMES MICHAEL SHEERAN — 088955 — LICENSED PROFESSIONAL ENGINEER

Hazen

HAZEN AND SAWYER
498 SEVENTH AVENUE, 11th FLOOR
NEW YORK, NEW YORK 10018

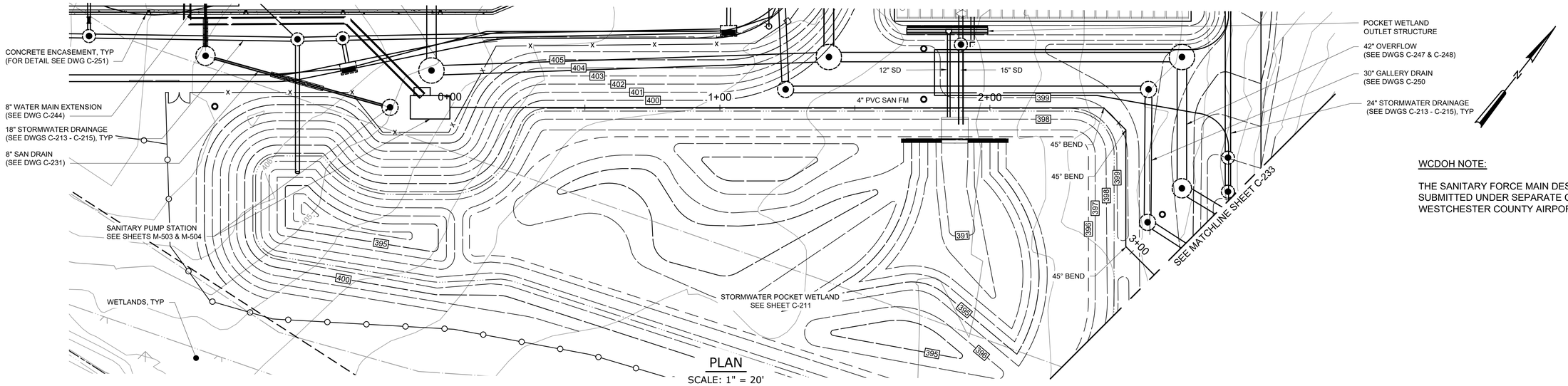
WESTCHESTER JOINT WATER WORKS
MAMARONECK, NY

RYE LAKE WATER FILTRATION PLANT
HARRISON, NY

CIVIL
SANITARY DRAIN PLAN AND PROFILE

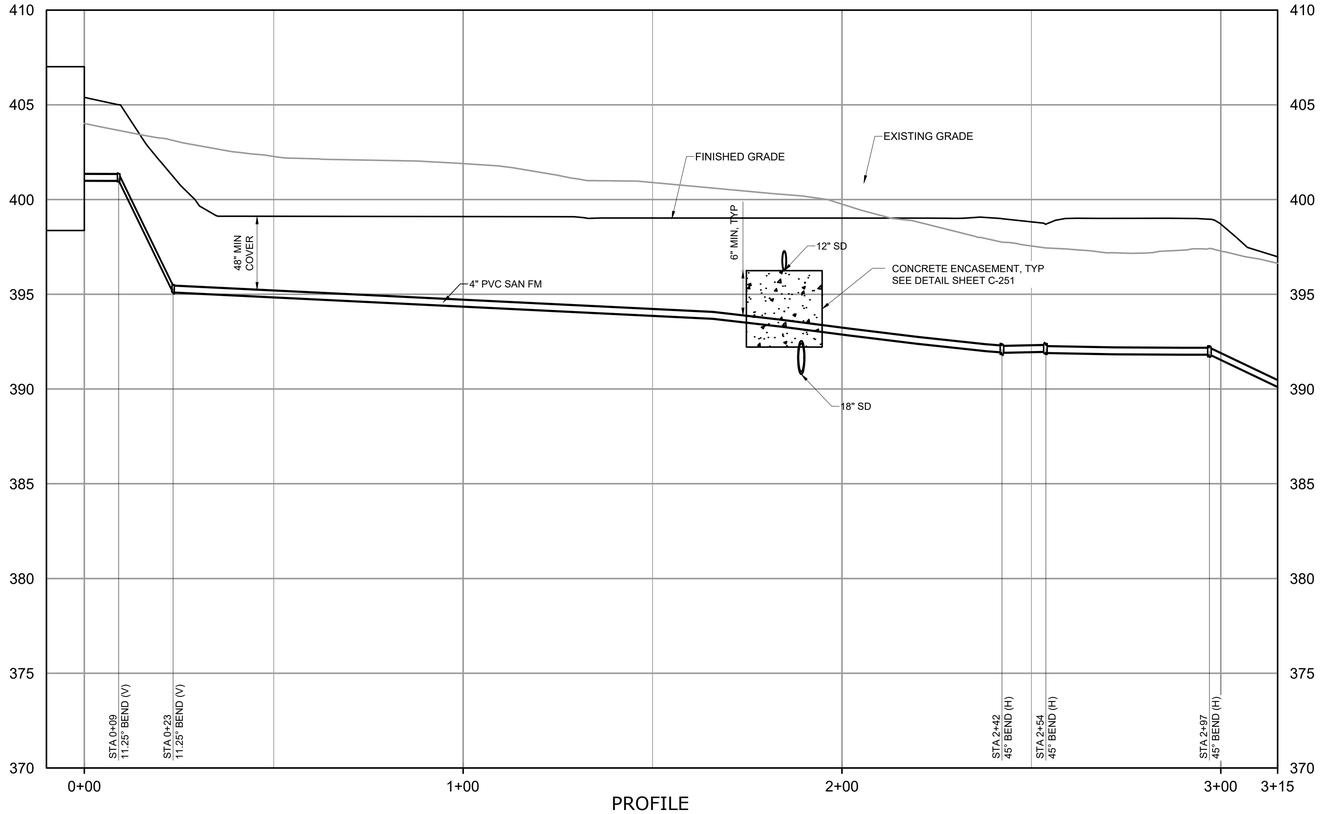
DATE: FEB 2025
HAZEN NO.: 90388-000
CONTRACT NO.: A1364-A
DRAWING NUMBER: C-231

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PLOT DATE: 3/27/2025 12:48 PM BY: JTANNER



PLAN

SCALE: 1" = 20'



PROFILE

HORIZONTAL SCALE 1"=20'
VERTICAL SCALE: 1"=4'

WCDOH NOTE:

THE SANITARY FORCE MAIN DESIGN WILL BE SUBMITTED UNDER SEPARATE COVER AS PART OF THE WESTCHESTER COUNTY AIRPORT SEWER PROJECT.

HORIZONTAL SCALE: 1" = 20'

20 10 0 20'

4 2 0 4

VERTICAL SCALE: 1"=4'

WARNING
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REV	ISSUED FOR	DATE	BY

PROJECT ENGINEER: R. FROST
DESIGNED BY: J. TANNER
DRAWN BY: J. TANNER
CHECKED BY: D. SHEERAN
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE 0 1/2" 1"

BID SET

STATE OF NEW YORK · STEVEN JAMES SHEERAN · 088955 · LICENSED PROFESSIONAL ENGINEER

Hazen

HAZEN AND SAWYER
498 SEVENTH AVENUE, 11th FLOOR
NEW YORK, NEW YORK 10018

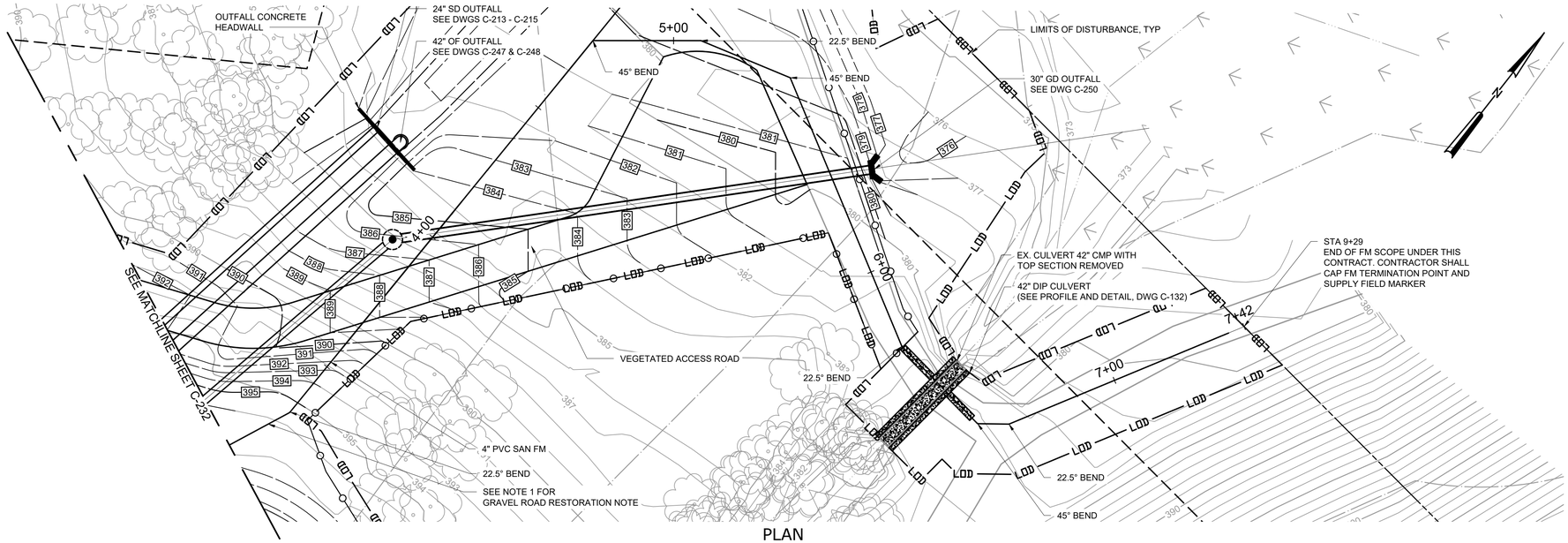
WESTCHESTER JOINT WATER WORKS
MAMARONECK, NY

RYE LAKE WATER FILTRATION PLANT
HARRISON, NY

CIVIL
SANITARY FM
(SHEET 1 OF 2)

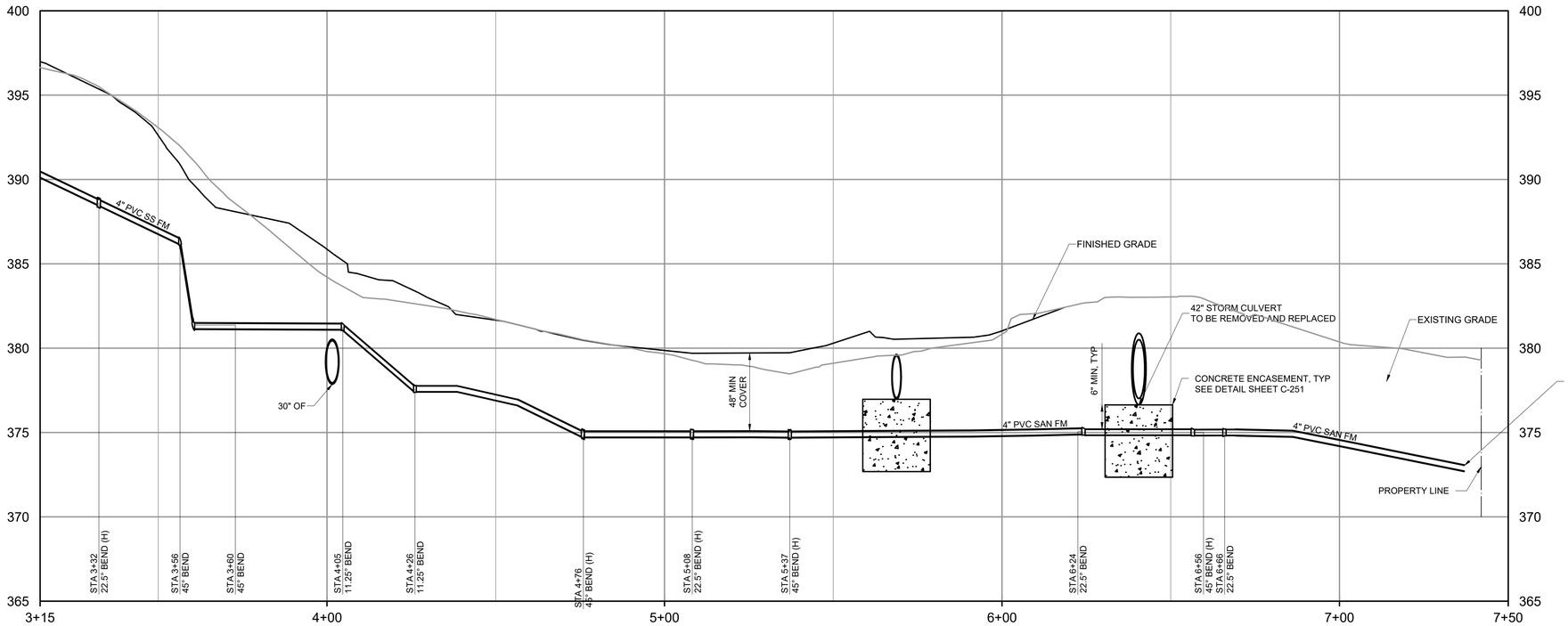
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CONTRACT NO.: A1364-A
DRAWING NUMBER: C-232

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PLOT DATE: 3/27/2025 3:28 PM BY: LWALLACE



PLAN

SCALE: 1" = 20'



PROFILE

HORIZONTAL SCALE 1"=20'
VERTICAL SCALE: 1"=4'

HORIZONTAL SCALE: 1" = 20'

20 10 0 20'

4 2 0 4

VERTICAL SCALE: 1"=4'

NOTES:

1. RESTORE GRAVEL ROAD TO EXISTING TYPE AND DEPTH OF MATERIAL AS REQUIRED FOR FORCEMAIN INSTALLATION.

WCDOH NOTE:

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WARNING
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REV	ISSUED FOR	DATE	BY

PROJECT ENGINEER: R. FROST
DESIGNED BY: J. TANNER
DRAWN BY: J. TANNER
CHECKED BY: D. SHEERAN

IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE 0 1/2" 1"

BID SET

STATE OF NEW YORK · DANIEL JAMES SHEERAN · 088955 · LICENSED PROFESSIONAL ENGINEER

Hazen

HAZEN AND SAWYER
498 SEVENTH AVENUE, 11th FLOOR
NEW YORK, NEW YORK 10018

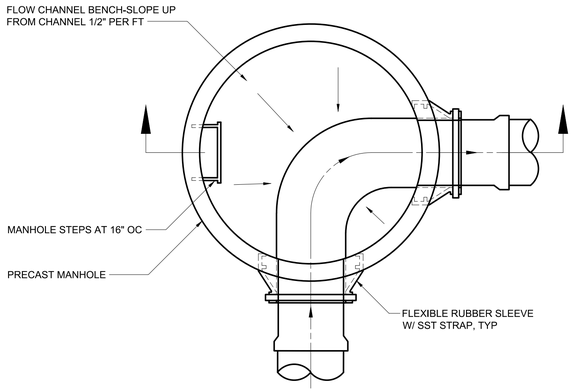
WESTCHESTER JOINT WATER WORKS
MAMARONECK, NY

RYE LAKE WATER FILTRATION PLANT
HARRISON, NY

CIVIL
SANITARY FM
(SHEET 2 OF 2)

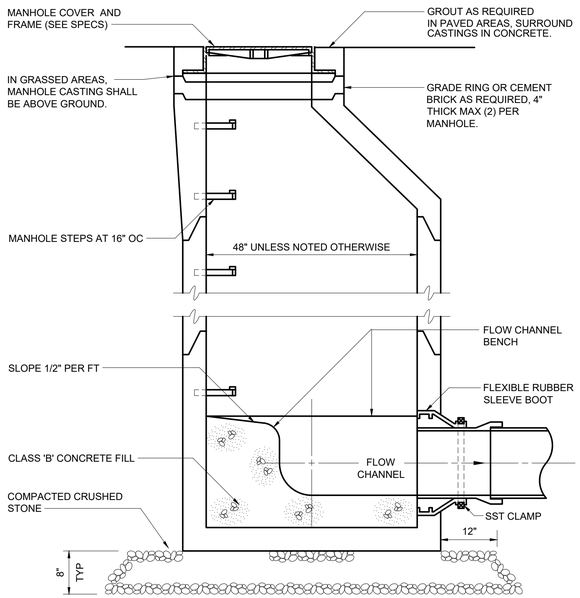
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HAZEN NO.: 90388-000
CONTRACT NO.: A1364-A
DRAWING NUMBER: C-233

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MANHOLE PLAN

C-33-0600



MANHOLE SECTION

C-33-0601

OVERFLOW AND GALLERY DRAIN STRUCTURE TABLE

STRUCTURE TABLE				
STRUCTURE ID:	NORTHING	EASTING	DETAIL DWG	INNER DIMENSION (INCHES)
OF MH-01	813680.50	707691.90	C-234	96
OF MH-02	813680.50	707817.92	C-234	96
OF MH-03	813811.27	707817.92	C-234	96
GD MH-5	813659.51	707713.88	C-234	48
GD MH-3	813798.91	707829.92	C-234	48
OF MH-04	813811.25	707866.55	C-234	SEE DETAIL
GD MH-2	813798.55	707879.18	C-234	60
GD MH-1	813873.90	707927.78	C-234	60
OF MH-05	813533.32	707791.04	C-234	96
GD MH-4	813664.47	707829.92	C-234	60
OF MH-06	813533.32	707822.91	C-234	96

SANITARY SEWER STRUCTURE TABLE

STRUCTURE TABLE				
STRUCTURE ID:	NORTHING	EASTING	DETAIL DWG	INNER DIMENSION (INCHES)
SAN MH-2	813517.97	707836.56	M-503 & M-504	60
SAN MH-1	813449.64	707817.48	C-234	72

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REV	ISSUED FOR	DATE	BY

PROJECT ENGINEER: R. FROST
DESIGNED BY: J. TANNER
DRAWN BY: J. TANNER
CHECKED BY: D. SHEERAN
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE 0 1/2" 1"

BID SET

DANIEL JAMES SHEERAN — STATE OF NEW YORK — 088955 — LICENSED PROFESSIONAL ENGINEER

Hazen
HAZEN AND SAWYER
498 SEVENTH AVENUE, 11th FLOOR
NEW YORK, NEW YORK 10018

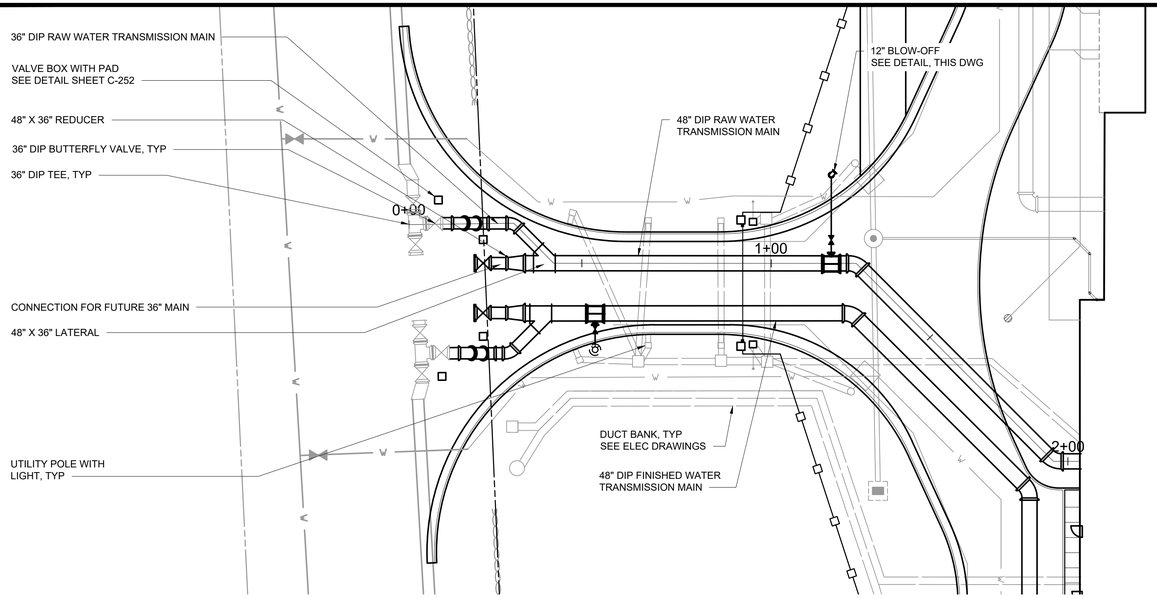
WESTCHESTER JOINT WATER WORKS
MAMARONECK, NY

RYE LAKE WATER FILTRATION PLANT
HARRISON, NY

CIVIL
SANITARY AND STORM DRAIN DETAILS

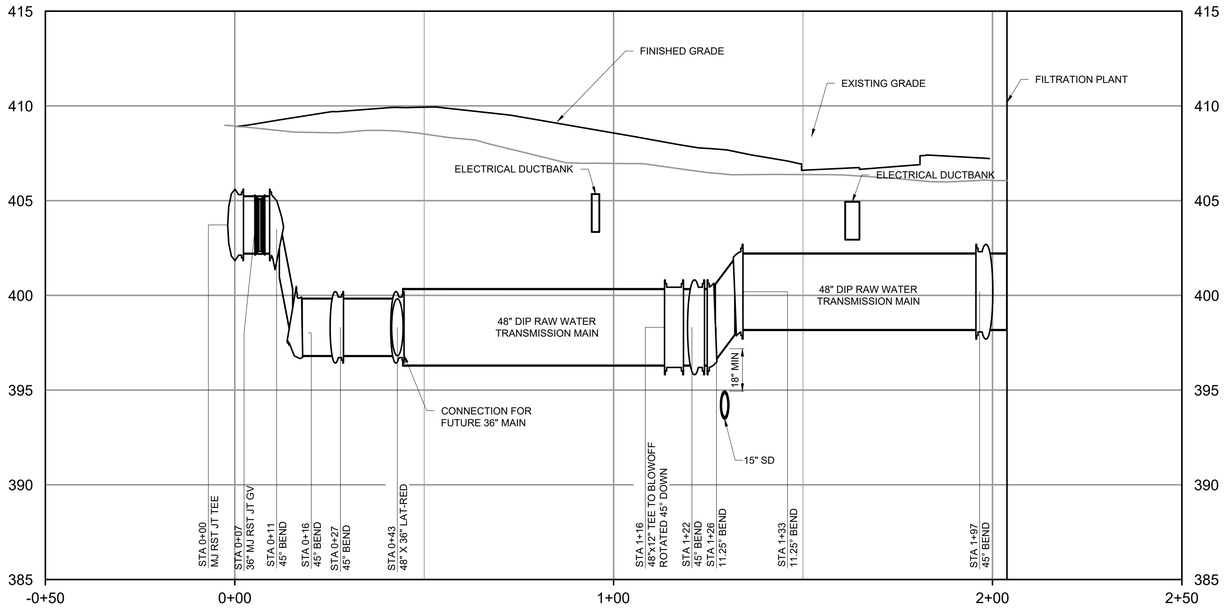
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HAZEN NO.: 90388-000
CONTRACT NO.: A1364-A
DRAWING NUMBER: C-234

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PLAN

SCALE: 1" = 20'

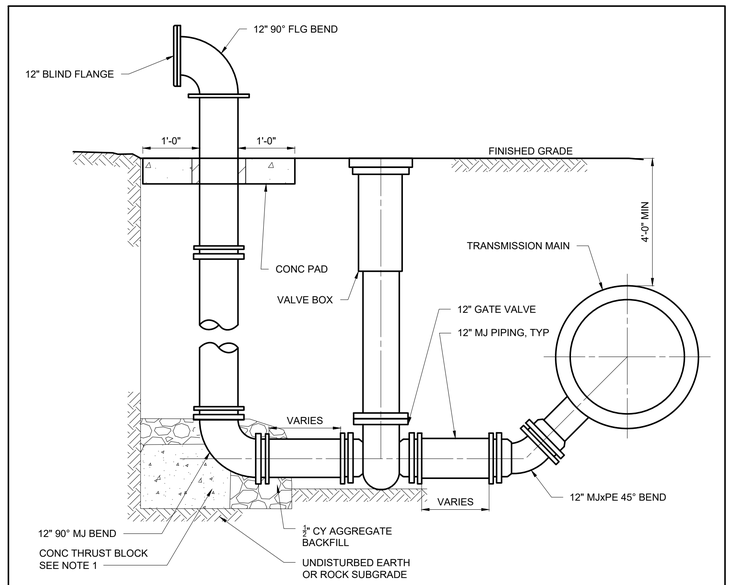


PROFILE

HORIZONTAL SCALE: 1" = 20'
VERTICAL SCALE: 1"=4'

NOTES:

1. ALL VALVES SHALL BE GATE UNLESS OTHERWISE NOTED.
2. GATE VALVES ON TRANSMISSION MAINS SHALL BE INSTALLED HORIZONTALLY. SEE DETAIL SHEET C-252.
3. CONTRACTOR SHALL PROVIDE ADEQUATE THRUST BLOCKING OR JOINT RESTRAINT TO PROTECT EXISTING TRANSMISSION MAIN. BYPASS LINE SHALL BE 36".
4. ALL DIP SHALL BE SPECIAL THICKNESS CLASS 53 WITH MECHANICAL JOINT FITTINGS AND RESTRAINED JOINTS GLANDS. ALL JOINTS SHALL BE RESTRAINED. ALL DIP PIPES SHALL BE DOUBLE CEMENT LINED ON THE INSIDE.
5. THE TEMPORARY 36" BUTTERFLY VALVES AND CONNECTING DIP BETWEEN THE RAW WATER AND FINISHED WATER TRANSMISSION HAVE BEEN REMOVED FOR CLARITY. SEE DRAWING C-131 FOR ADDITIONAL INFORMATION.



NOTES:

1. PROVIDE A MINIMUM OF 3 SF BEARING AREA.
2. ALL JOINTS TO BE RESTRAINED.
3. AFTER USE OF BLOW-OFF, SECTION OF PIPE BETWEEN 90° BEND AND VALVE SHALL BE PUMPED OUT TO MITIGATE FREEZING. BLIND FLANGE SHALL BE CONNECTED TO BEND AT ALL TIMES WHEN BLOW-OFF NOT IN USE.

12" BLOW-OFF DETAIL

NTS

HORIZONTAL SCALE: 1" = 20'
20 10 0 20'
4 2 0 4
VERTICAL SCALE: 1"=4'

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REV	ISSUED FOR	DATE	BY

PROJECT ENGINEER:	R. FROST
DESIGNED BY:	J. TANNER
DRAWN BY:	J. TANNER
CHECKED BY:	D. SHEERAN

IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE (0 1/2" 1")

BID SET

STATE OF NEW YORK — DANIEL JAMES SHEERAN — 088955 — LICENSED PROFESSIONAL ENGINEER

Hazen
HAZEN AND SAWYER
498 SEVENTH AVENUE, 11th FLOOR
NEW YORK, NEW YORK 10018

WESTCHESTER JOINT WATER WORKS
MAMARONECK, NY

RYE LAKE WATER FILTRATION PLANT
HARRISON, NY

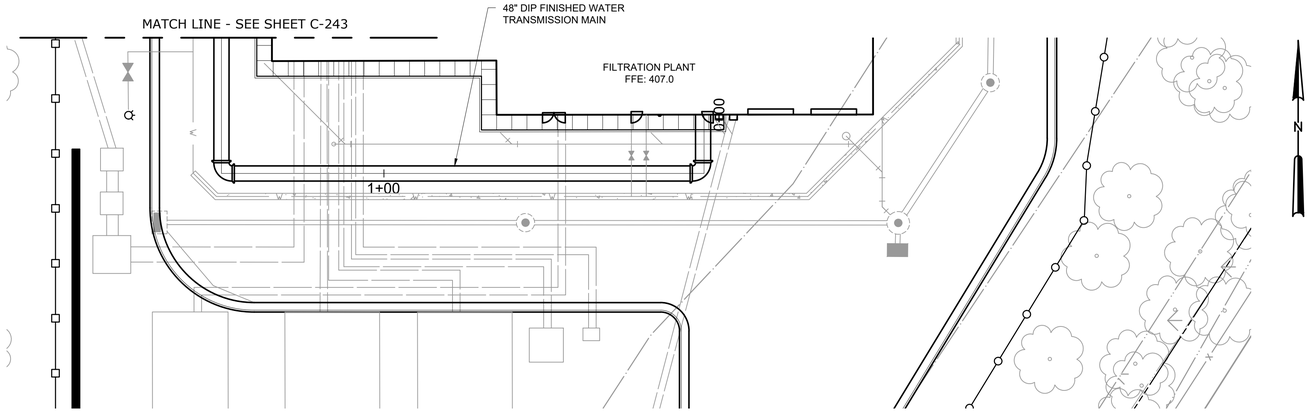
CIVIL
RAW WATER TRANSMISSION MAIN
PLAN AND PROFILE

DATE:	FEB 2025
HAZEN NO.:	90388-000
CONTRACT NO.:	A1364-A
DRAWING NUMBER:	C-241

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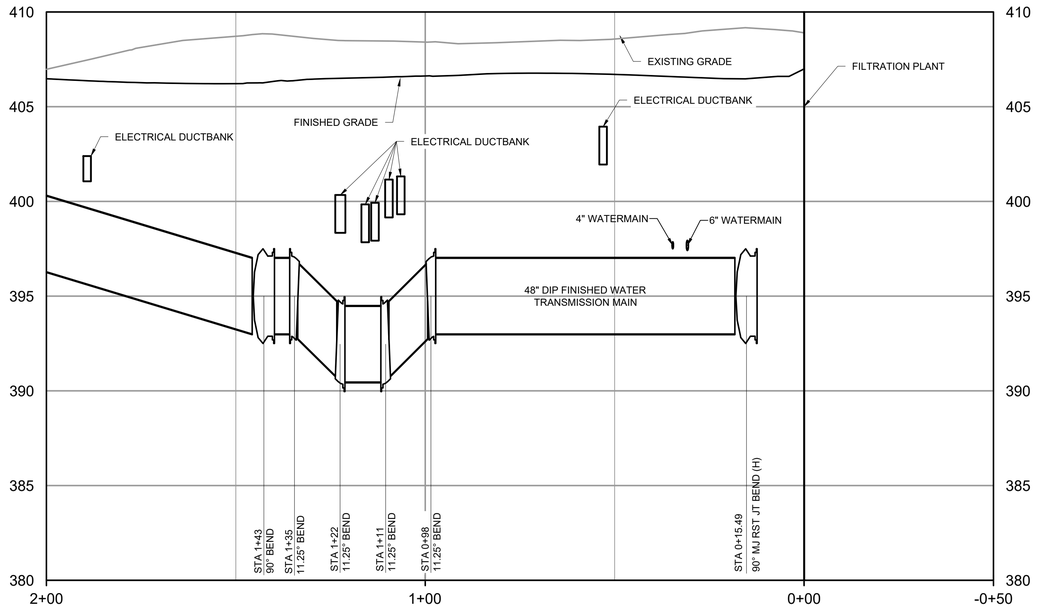
NOTES:

1. ALL VALVES SHALL BE GATE UNLESS OTHERWISE NOTED.
2. GATE VALVES ON TRANSMISSION MAINS SHALL BE INSTALLED HORIZONTALLY. SEE DETAIL SHEET C-252.
3. CONTRACTOR SHALL PROVIDE ADEQUATE THRUST BLOCKING OR JOINT RESTRAINT TO PROTECT EXISTING TRANSMISSION MAIN. BYPASS LINE SHALL BE 36".
4. ALL DIP SHALL BE SPECIAL THICKNESS CLASS 53 WITH MECHANICAL JOINT FITTINGS AND RESTRAINED JOINTS GLANDS. ALL JOINTS SHALL BE RESTRAINED. ALL DIP PIPES SHALL BE DOUBLE CEMENT LINED ON THE INSIDE.



PLAN

SCALE: 1" = 20'



PROFILE

HORIZONTAL SCALE: 1" = 20'
VERTICAL SCALE: 1"=4'

HORIZONTAL SCALE: 1" = 20'

20 10 0 20'

4 2 0 4

VERTICAL SCALE: 1"=4'

WARNING
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REV	ISSUED FOR	DATE	BY

PROJECT ENGINEER:	R. FROST
DESIGNED BY:	J. TANNER
DRAWN BY:	M. SEEBOLD
CHECKED BY:	D. SHEERAN
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	0 1/2" 1"

BID SET

STATE OF NEW YORK — MICHAEL JAMES SHEERAN — 088955 — LICENSED PROFESSIONAL ENGINEER

Hazen

HAZEN AND SAWYER
498 SEVENTH AVENUE, 11th FLOOR
NEW YORK, NEW YORK 10018

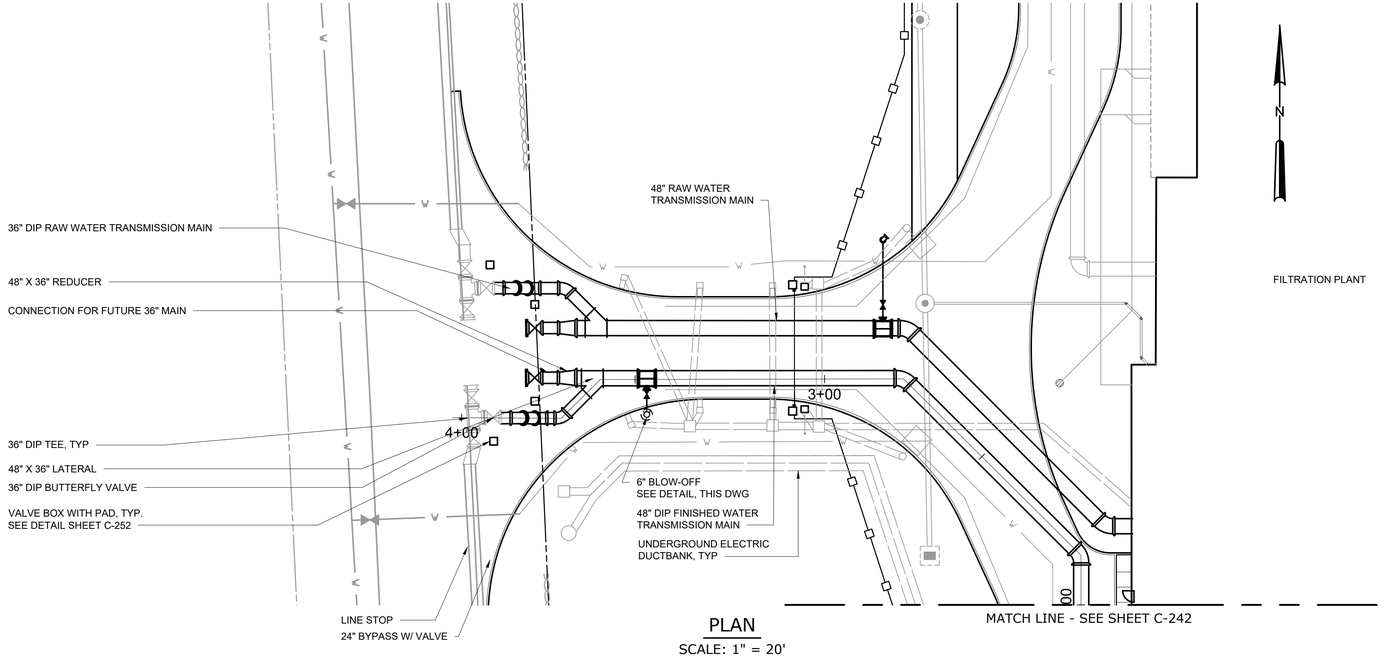
WESTCHESTER JOINT WATER WORKS
MAMARONECK, NY

RYE LAKE WATER FILTRATION PLANT
HARRISON, NY

CIVIL
FINISHED WATER TRANSMISSION MAIN PLAN AND PROFILE - SHEET 1 OF 2

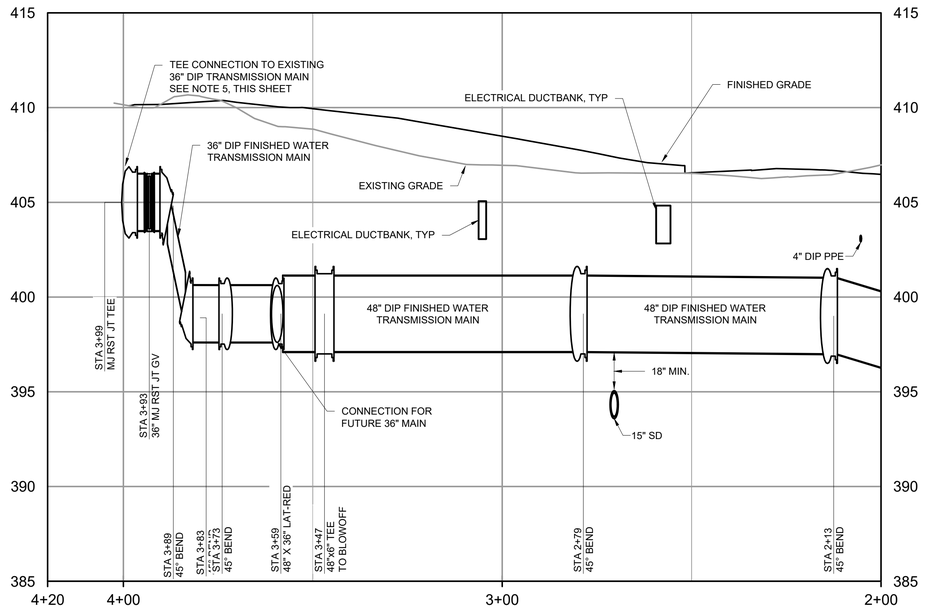
DATE:	FEB 2025
HAZEN NO.:	90388-000
CONTRACT NO.:	A1364-A
DRAWING NUMBER:	C-242

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PLOT DATE: 3/27/2025 2:25 PM BY: LWALLACE



PLAN

SCALE: 1" = 20'

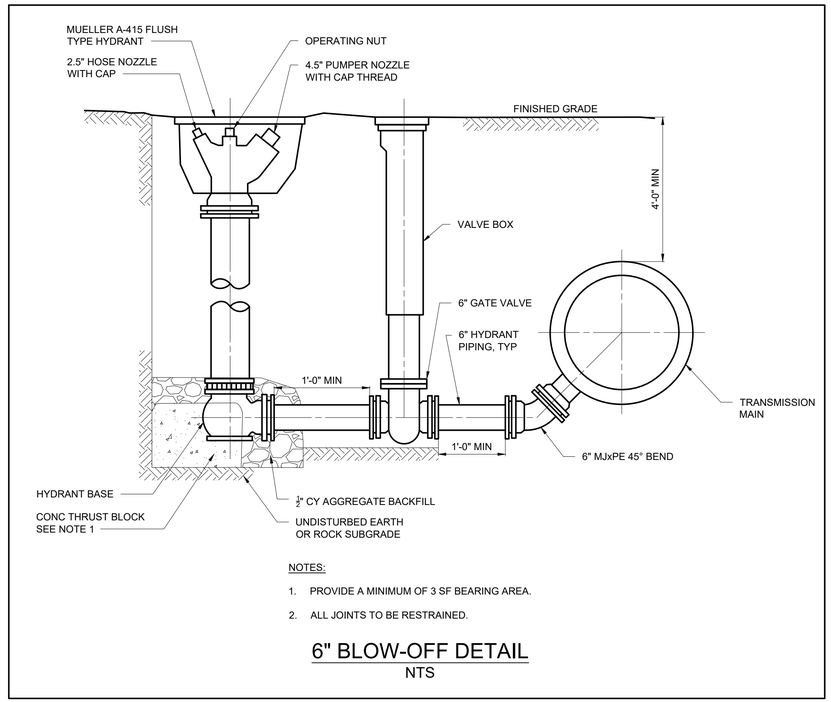


PROFILE

HORIZONTAL SCALE: 1" = 20'
VERTICAL SCALE: 1"=4'

NOTES:

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2. GATE VALVES ON TRANSMISSION MAINS SHALL BE INSTALLED HORIZONTALLY. SEE DETAIL SHEET C-252.
3. CONTRACTOR SHALL PROVIDE ADEQUATE THRUST BLOCKING OR JOINT RESTRAINT TO PROTECT EXISTING TRANSMISSION MAIN. BYPASS LINE SHALL BE 36".
4. ALL DIP SHALL BE SPECIAL THICKNESS CLASS 53 WITH MECHANICAL JOINT FITTINGS AND RESTRAINED JOINTS GLANDS. ALL JOINTS SHALL BE RESTRAINED. ALL DIP PIPES SHALL BE DOUBLE CEMENT LINED ON THE INSIDE.
5. SEE YARD PIPING PLAN C-131 FOR LINESTOP AND BYPASS REQUIREMENTS FOR CONNECTION TO EXISTING 36" TRANSMISSION MAIN.
6. THE TEMPORARY 36" BUTTERFLY VALVES AND CONNECTING DIP BETWEEN THE RAW WATER AND FINISHED WATER TRANSMISSION HAVE BEEN REMOVED FOR CLARITY. SEE DRAWING C-131 FOR ADDITIONAL INFORMATION.



NOTES:

1. PROVIDE A MINIMUM OF 3 SF BEARING AREA.
2. ALL JOINTS TO BE RESTRAINED.

6" BLOW-OFF DETAIL

NTS

HORIZONTAL SCALE: 1" = 20'

20 10 0 20'

4 2 0 4

VERTICAL SCALE: 1"=4'

WARNING
IT IS A VIOLATION OF SECTION 7209.2 OF THE NEW YORK STATE EDUCATION LAW FOR ANY PERSON, UNLESS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER IN ANY WAY PLANS, SPECIFICATIONS, PLATS OR REPORTS TO WHICH THE SEAL OF A PROFESSIONAL ENGINEER HAS BEEN APPLIED. IF AN ITEM BEARING THE SEAL OF A PROFESSIONAL ENGINEER IS ALTERED, THE ALTERING ENGINEER SHALL AFFIX TO THE ITEM HIS SEAL AND THE NOTATION "ALTERED BY" FOLLOWED BY HIS SIGNATURE, THE DATE, AND A SPECIFIC DESCRIPTION OF THE ALTERATION.

REV	ISSUED FOR	DATE	BY

PROJECT ENGINEER:	R. FROST
DESIGNED BY:	J. TANNER
DRAWN BY:	M. SEEBOLD
CHECKED BY:	D. SHEERAN

IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE (0, 1/2", 1")

BID SET

STATE OF NEW YORK — JAMES SHEERAN — 088955 — LICENSED PROFESSIONAL ENGINEER

Hazen

HAZEN AND SAWYER
498 SEVENTH AVENUE, 11th FLOOR
NEW YORK, NEW YORK 10018

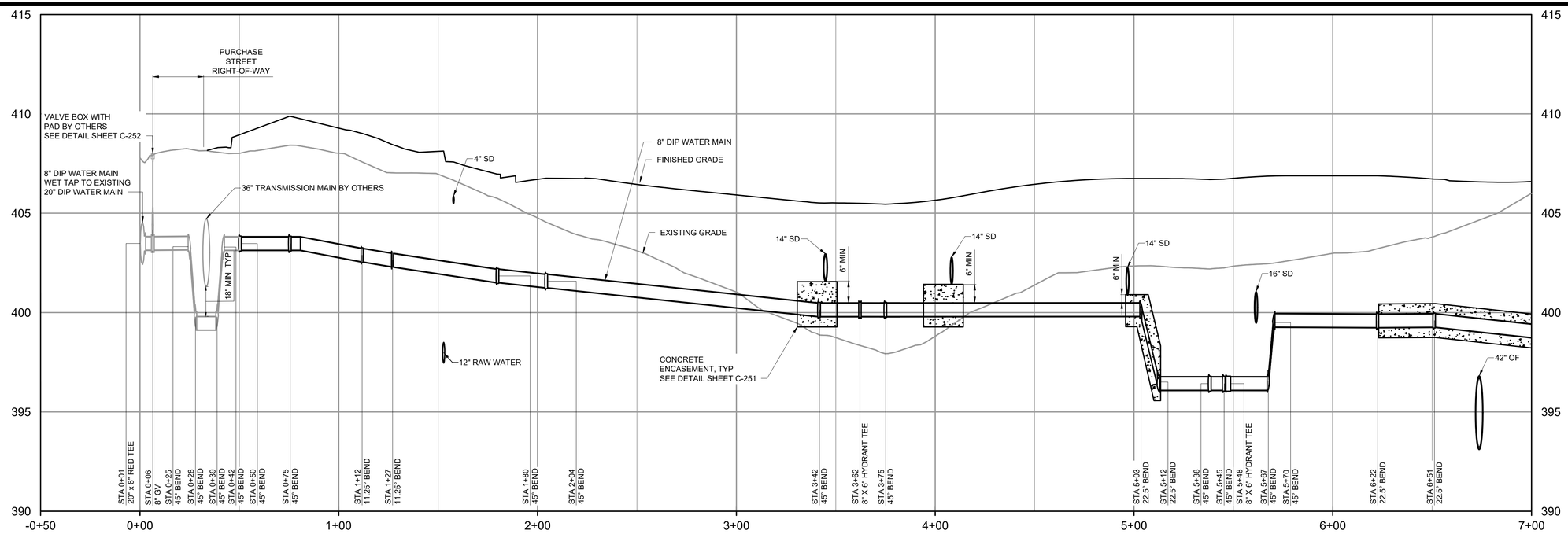
WESTCHESTER JOINT WATER WORKS
MAMARONECK, NY

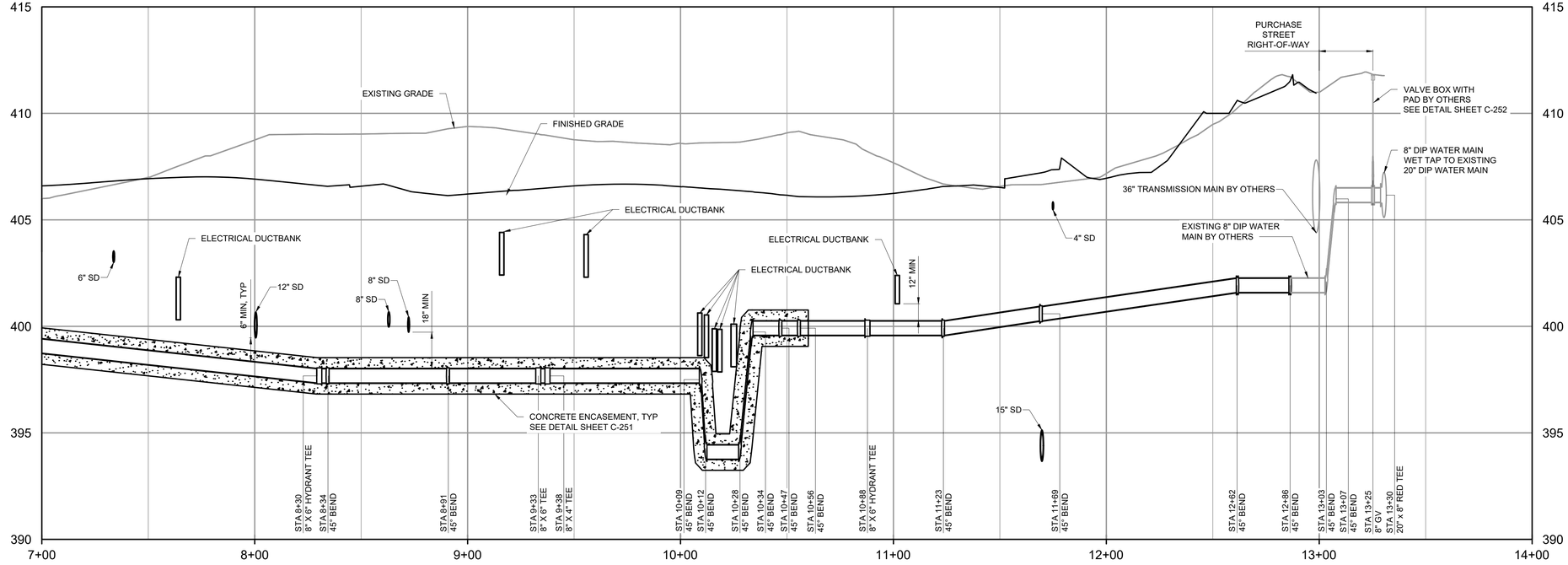
RYE LAKE WATER FILTRATION PLANT
HARRISON, NY

CIVIL
FINISHED WATER TRANSMISSION MAIN PLAN AND PROFILE - SHEET 2 OF 2

DATE:	FEB 2025
HAZEN NO.:	90388-000
CONTRACT NO.:	A1364-A
DRAWING NUMBER:	C-243

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PLOT DATE: 3/27/2025 4:36 PM BY: LWALLACE





WARNING
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WATER MAIN EXTENSION PROFILE

HORIZONTAL SCALE: 1"= 30'
VERTICAL SCALE: 1"= 4'

HORIZONTAL SCALE: 1" = 30'
30 15 0 30'
4 2 0 4
VERTICAL SCALE: 1"=4'

REV	ISSUED FOR	DATE	BY

PROJECT ENGINEER:	R. FROST
DESIGNED BY:	J. TANNER
DRAWN BY:	J. TANNER
CHECKED BY:	D. SHEERAN
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	0 1/2" 1"

BID SET

STATE OF NEW YORK DANIEL JAMES SHEERAN 088955 LICENSED PROFESSIONAL ENGINEER

Hazen

HAZEN AND SAWYER
498 SEVENTH AVENUE, 11th FLOOR
NEW YORK, NEW YORK 10018

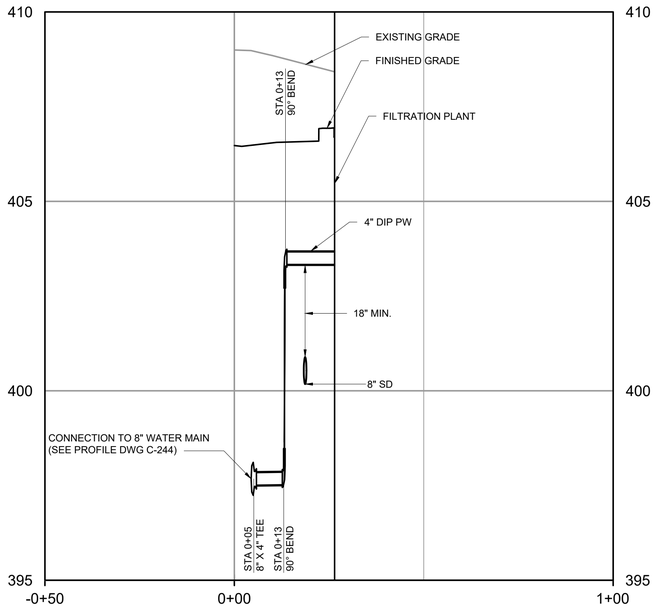
WESTCHESTER JOINT WATER WORKS
MAMARONECK, NY

RYE LAKE WATER FILTRATION PLANT
HARRISON, NY

CIVIL
WATER MAIN EXTENSION PROFILE

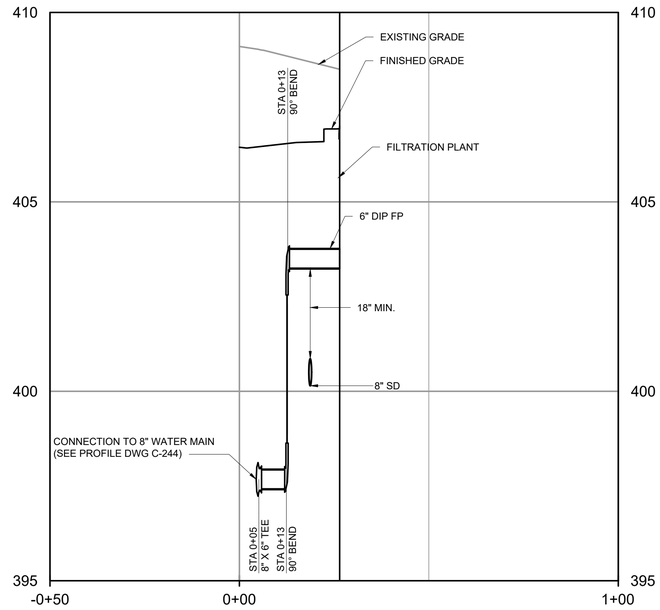
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HAZEN NO.:	90388-000
CONTRACT NO.:	A1364-A
DRAWING NUMBER:	C-244

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PLOT DATE: 3/27/2025 10:56 AM BY: JTANNER



POTABLE WATER (PW) PROFILE

HORIZONTAL SCALE: 1"= 20'
VERTICAL SCALE: 1"= 2'



FIRE PROTECTION SERVICE (FP) PROFILE

HORIZONTAL SCALE: 1"= 20'
VERTICAL SCALE: 1"= 2'

WARNING
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HORIZONTAL SCALE: 1" = 20'
20 10 0 20'
2 1 0 2
VERTICAL SCALE: 1"=2'

REV	ISSUED FOR	DATE	BY

PROJECT ENGINEER:	R. FROST
DESIGNED BY:	J. TANNER
DRAWN BY:	J. TANNER
CHECKED BY:	D. SHEERAN

IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE
0 1/2" 1"

BID SET



Hazen
HAZEN AND SAWYER
498 SEVENTH AVENUE, 11th FLOOR
NEW YORK, NEW YORK 10018

WESTCHESTER JOINT WATER WORKS
MAMARONECK, NY

RYE LAKE WATER FILTRATION PLANT
HARRISON, NY

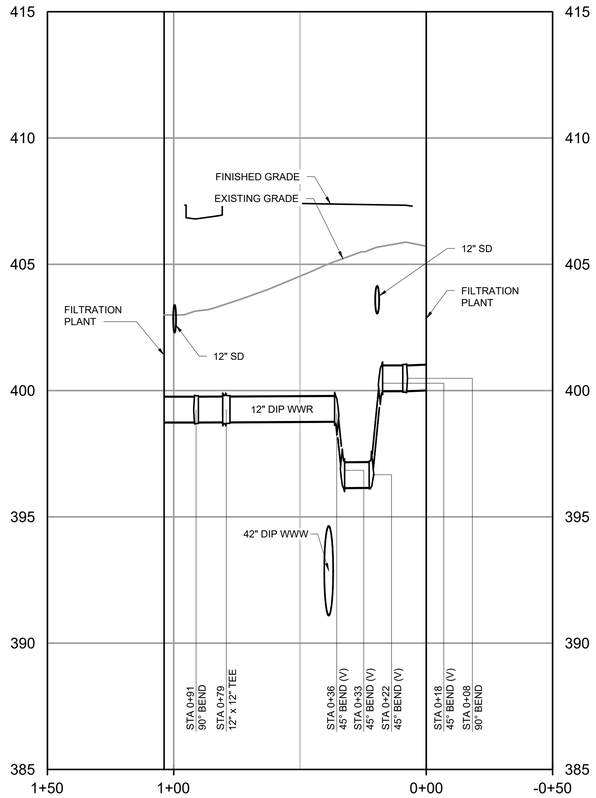
CIVIL
PW AND FP PROFILES

DATE:	FEB 2025
HAZEN NO.:	90388-000
CONTRACT NO.:	A1364-A
DRAWING NUMBER:	C-245

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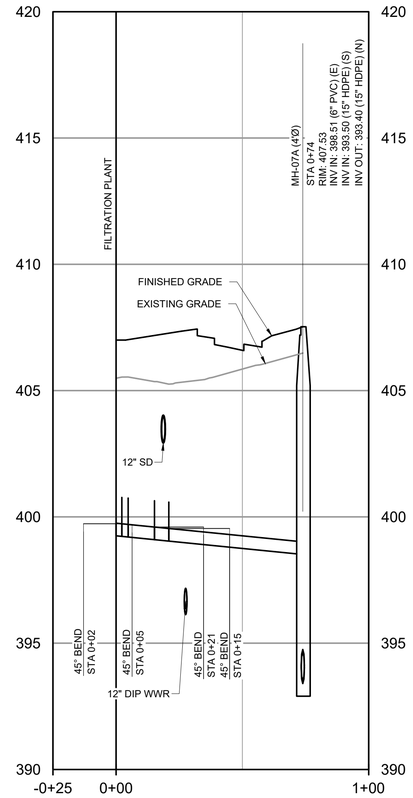
NOTES:

1. FOR PLAN INFORMATION SEE DWG C-131



WASHWATER RECYLE (WWR) PROFILE

HORIZONTAL SCALE: 1"= 30'
VERTICAL SCALE: 1"= 3'



FOUNDATION UNDERDRAIN PROFILE

HORIZONTAL SCALE: 1"= 30'
VERTICAL SCALE: 1"= 3'

WARNING
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HORIZONTAL SCALE: 1" = 30'

30 15 0 30'

3 1.5 0 3

VERTICAL SCALE: 1"=3'

REV	ISSUED FOR	DATE	BY

PROJECT ENGINEER:	R. FROST
DESIGNED BY:	J. TANNER
DRAWN BY:	J. TANNER
CHECKED BY:	D. SHEERAN

IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE 0 1/2" 1"

BID SET

STATE OF NEW YORK DANIEL JAMES SHEERAN 088955 LICENSED PROFESSIONAL ENGINEER

Hazen

HAZEN AND SAWYER
498 SEVENTH AVENUE, 11th FLOOR
NEW YORK, NEW YORK 10018

WESTCHESTER JOINT WATER WORKS
MAMARONECK, NY

RYE LAKE WATER FILTRATION PLANT
HARRISON, NY

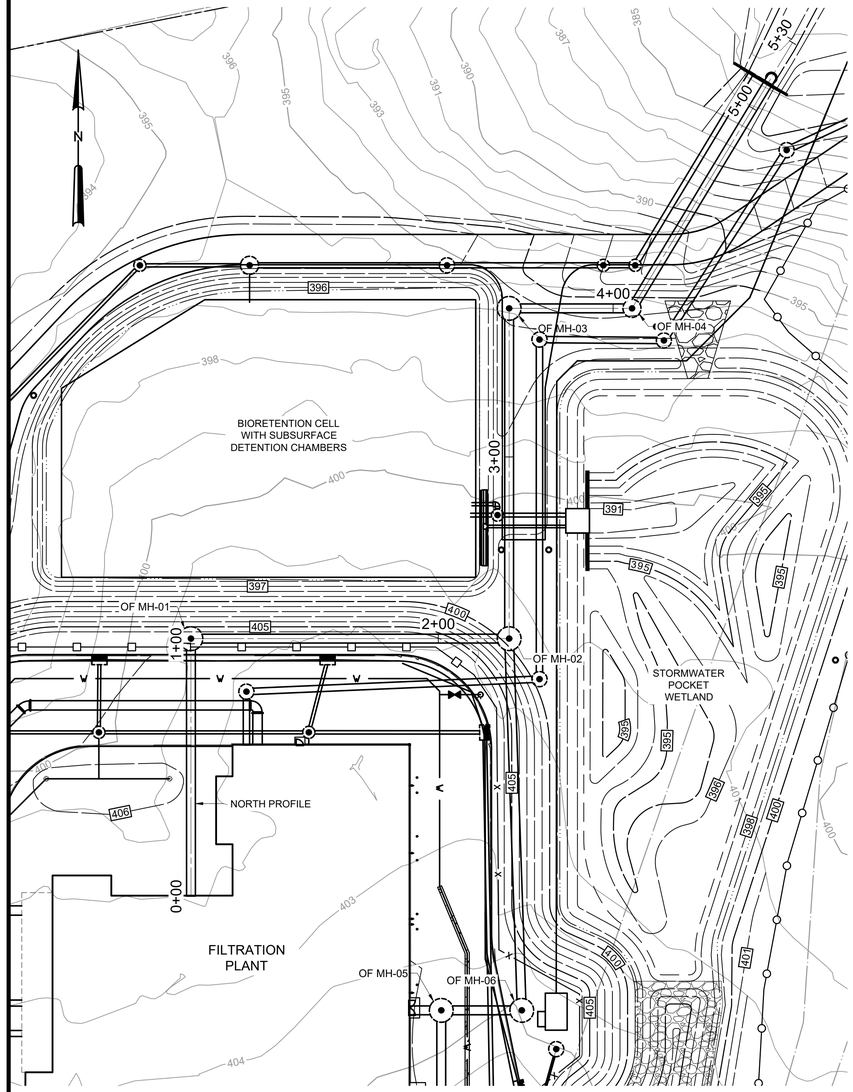
CIVIL
WWR AND FUD PROFILE

DATE:	FEB 2025
HAZEN NO.:	90388-000
CONTRACT NO.:	A1364-A
DRAWING NUMBER:	C-246

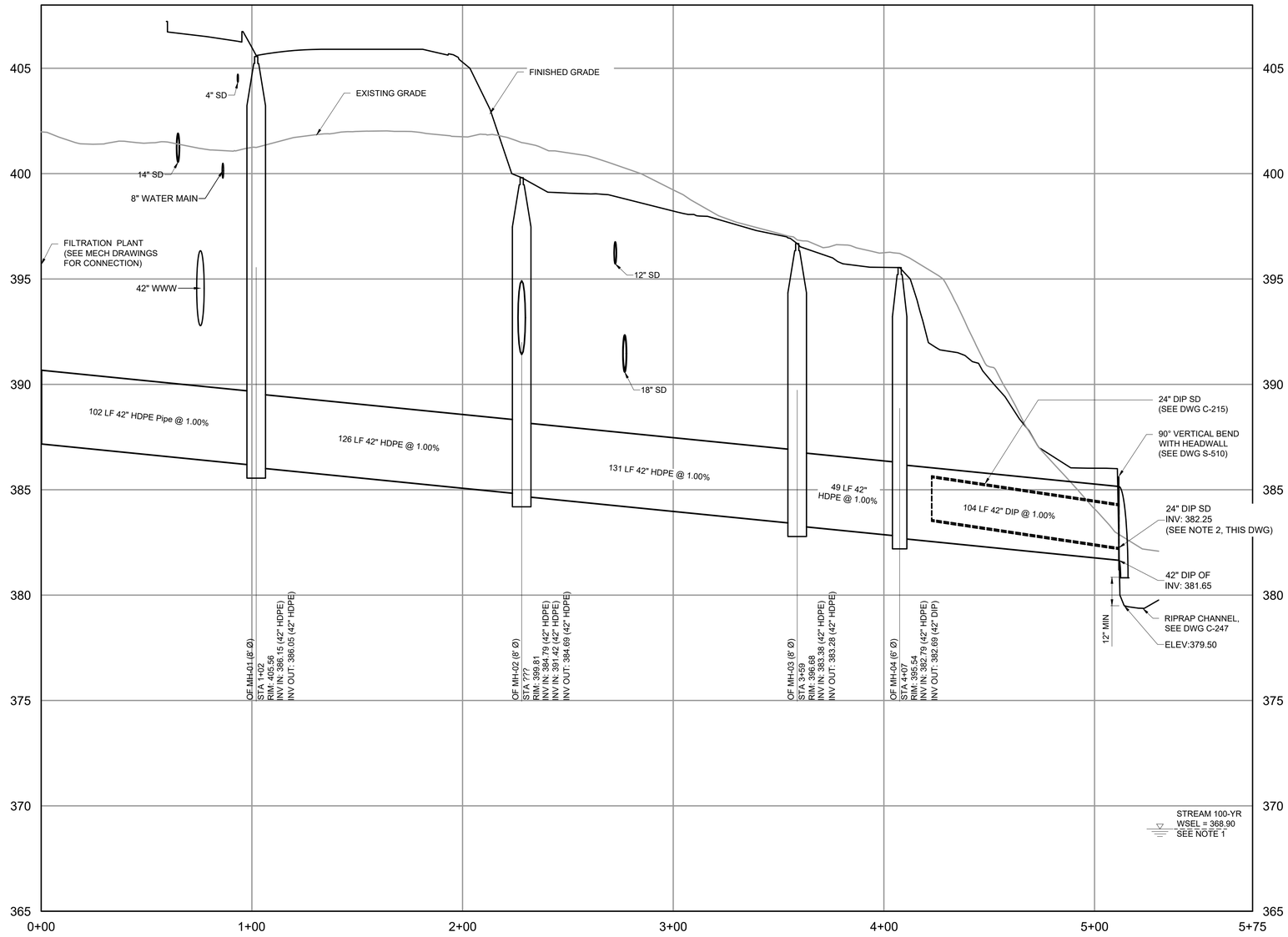
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PLOT DATE: 3/27/2025 11:13 AM BY: JTANNER

NOTES:

1. STREAM CENTERLINE IS LOCATED 260 FT FROM OVERFLOW OUTFALL.
2. PROVIDE REMOVABLE 24 MESH SSTL SCREEN TO OUTFALL PIPE.



PLAN
SCALE: 1" = 30'



PROFILE - NORTH
HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1"= 3'

HORIZONTAL SCALE: 1" = 30'
30 15 0 30'
3 1.5 0 3
VERTICAL SCALE: 1"=3'

WARNING
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REV	ISSUED FOR	DATE	BY

PROJECT ENGINEER: R. FROST
DESIGNED BY: J. TANNER
DRAWN BY: J. TANNER
CHECKED BY: D. SHEERAN
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE 0 1/2" 1"

BID SET

STATE OF NEW YORK · STEVEN JAMES SHEERAN · 088955 · LICENSED PROFESSIONAL ENGINEER

Hazen
HAZEN AND SAWYER
498 SEVENTH AVENUE, 11th FLOOR
NEW YORK, NEW YORK 10018

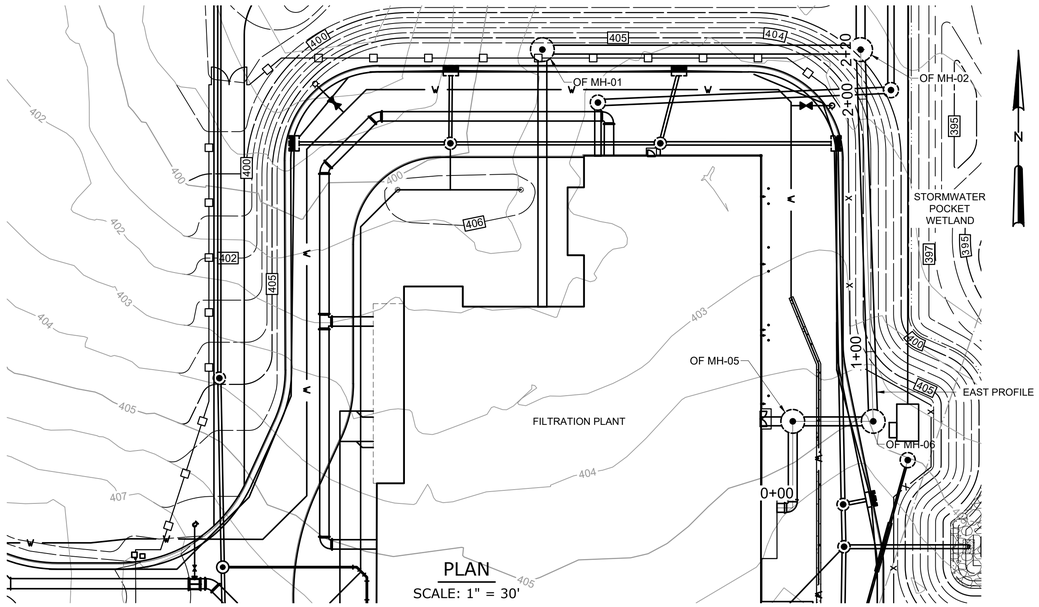
WESTCHESTER JOINT WATER WORKS
MAMARONECK, NY

RYE LAKE WATER FILTRATION PLANT
HARRISON, NY

CIVIL
OVERFLOW PROFILE - SHEET 1 OF 2

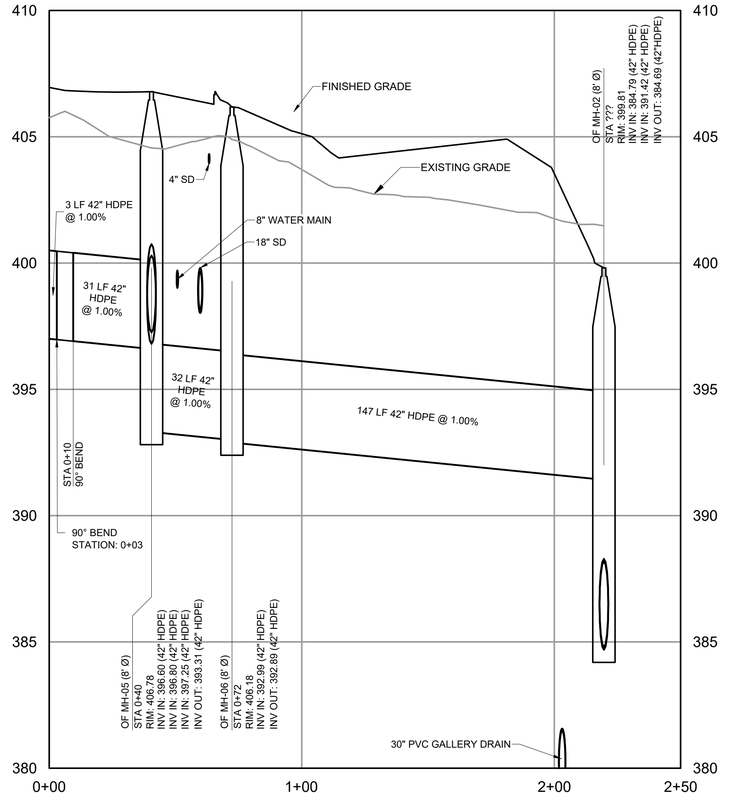
DATE: FEB 2025
HAZEN NO.: 90388-000
CONTRACT NO.: A1364-A
DRAWING NUMBER: C-247

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PLOT DATE: 3/27/2025 2:40 PM BY: LWALLACE



PLAN

SCALE: 1" = 30'



PROFILE - EAST

HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1"= 3'

WARNING
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HORIZONTAL SCALE: 1" = 30'
30 15 0 30'
3 1.5 0 3
VERTICAL SCALE: 1"=3'

REV	ISSUED FOR	DATE	BY

PROJECT ENGINEER: R. FROST
DESIGNED BY: J. TANNER
DRAWN BY: J. TANNER
CHECKED BY: D. SHEERAN
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE 0 1/2" 1"

BID SET

STATE OF NEW YORK — DANIEL JAMES SHEERAN — 088955 — LICENSED PROFESSIONAL ENGINEER

Hazen
HAZEN AND SAWYER
498 SEVENTH AVENUE, 11th FLOOR
NEW YORK, NEW YORK 10018

WESTCHESTER JOINT WATER WORKS
MAMARONECK, NY

RYE LAKE WATER FILTRATION PLANT
HARRISON, NY

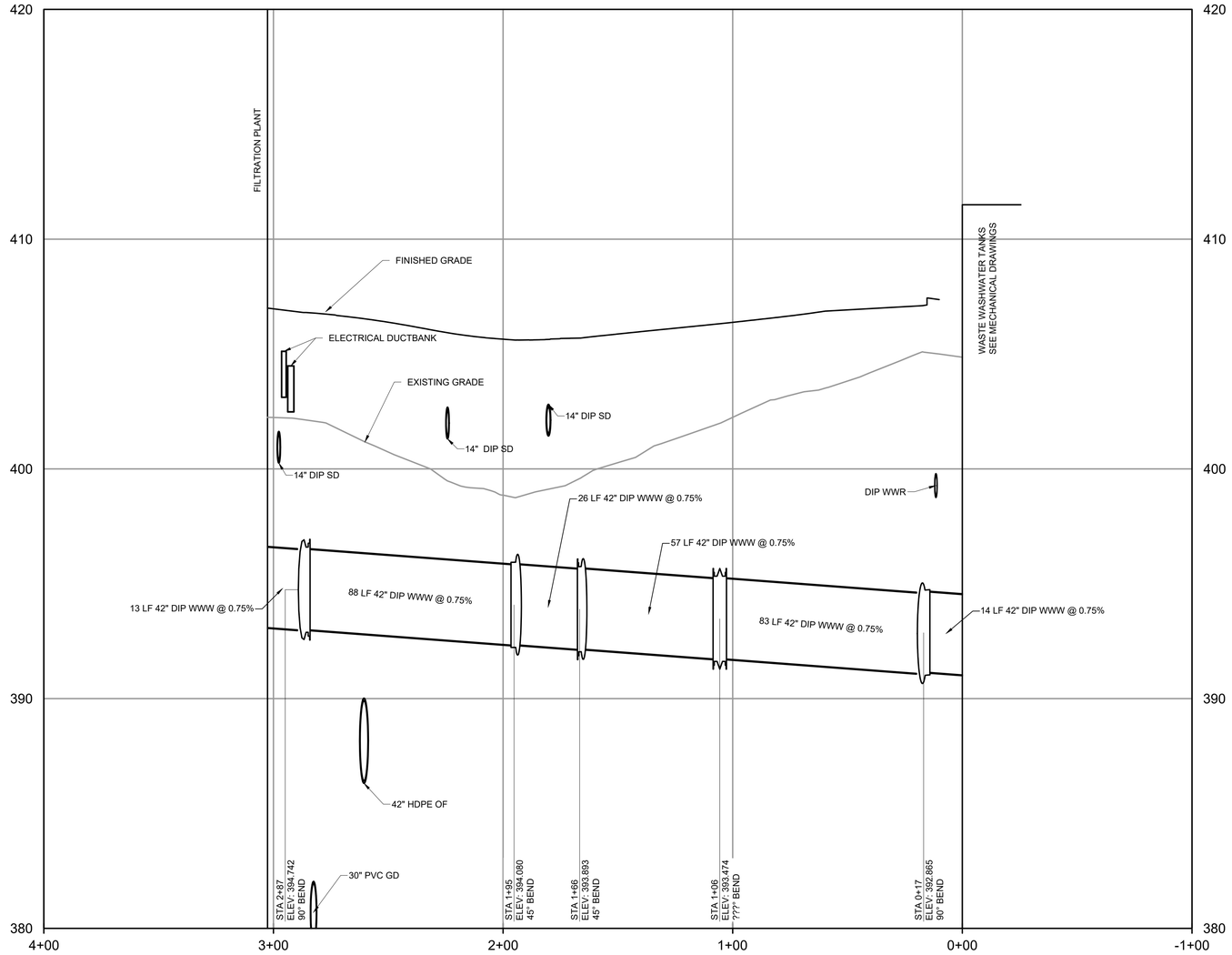
CIVIL
OVERFLOW PROFILE - SHEET 2 OF 2

DATE: FEB 2025
HAZEN NO.: 90388-000
CONTRACT NO.: A1364-A
DRAWING NUMBER: C-248

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PLOT DATE: 3/27/2025 3:03 PM BY: LWALLACE

NOTES:

1. FOR PLAN INFORMATION SEE DWG C-131



WASTE WASHWATER (WWW) PROFILE

HORIZONTAL SCALE: 1"= 30'
VERTICAL SCALE: 1"= 3'

HORIZONTAL SCALE: 1" = 30'

30 15 0 30'

3 1.5 0 3

VERTICAL SCALE: 1"=3'

WARNING
IT IS A VIOLATION OF SECTION 7209.2 OF THE NEW YORK STATE EDUCATION LAW FOR ANY PERSON, UNLESS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER IN ANY WAY PLANS, SPECIFICATIONS, PLATS OR REPORTS TO WHICH THE SEAL OF A PROFESSIONAL ENGINEER HAS BEEN APPLIED. IF AN ITEM BEARING THE SEAL OF A PROFESSIONAL ENGINEER IS ALTERED, THE ALTERING ENGINEER SHALL AFFIX TO THE ITEM HIS SEAL AND THE NOTATION "ALTERED BY" FOLLOWED BY HIS SIGNATURE, THE DATE, AND A SPECIFIC DESCRIPTION OF THE ALTERATION.

REV	ISSUED FOR	DATE	BY

PROJECT ENGINEER: R. FROST
DESIGNED BY: J. TANNER
DRAWN BY: J. TANNER
CHECKED BY: D. SHEERAN

IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE 0 1/2" 1"

BID SET



Hazen
HAZEN AND SAWYER
498 SEVENTH AVENUE, 11th FLOOR
NEW YORK, NEW YORK 10018

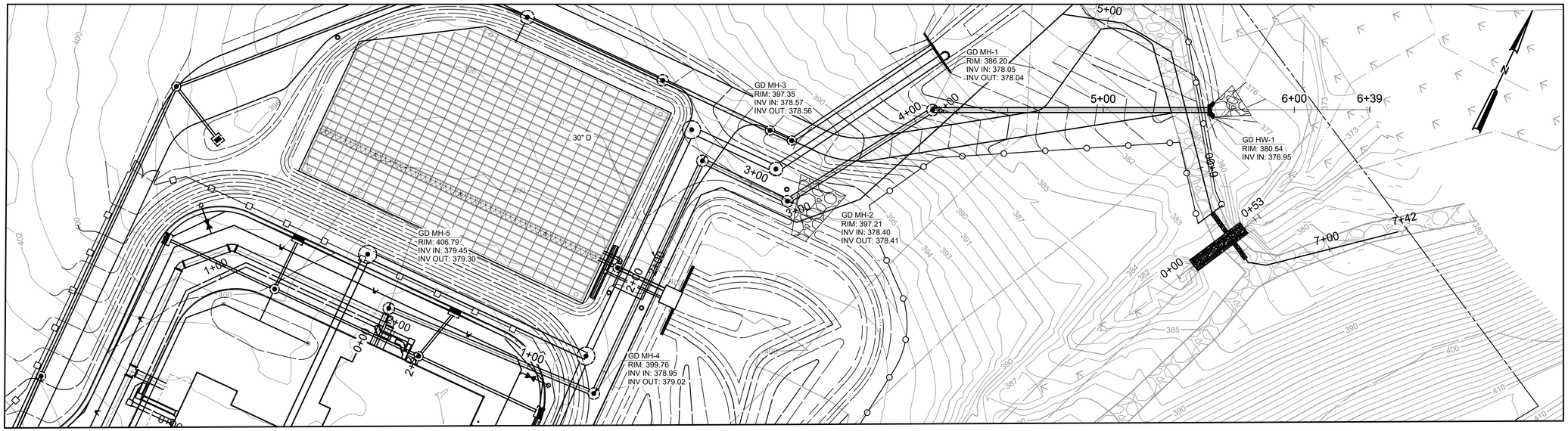
WESTCHESTER JOINT WATER WORKS
MAMARONECK, NY

RYE LAKE WATER FILTRATION PLANT
HARRISON, NY

CIVIL
WWW PROFILE

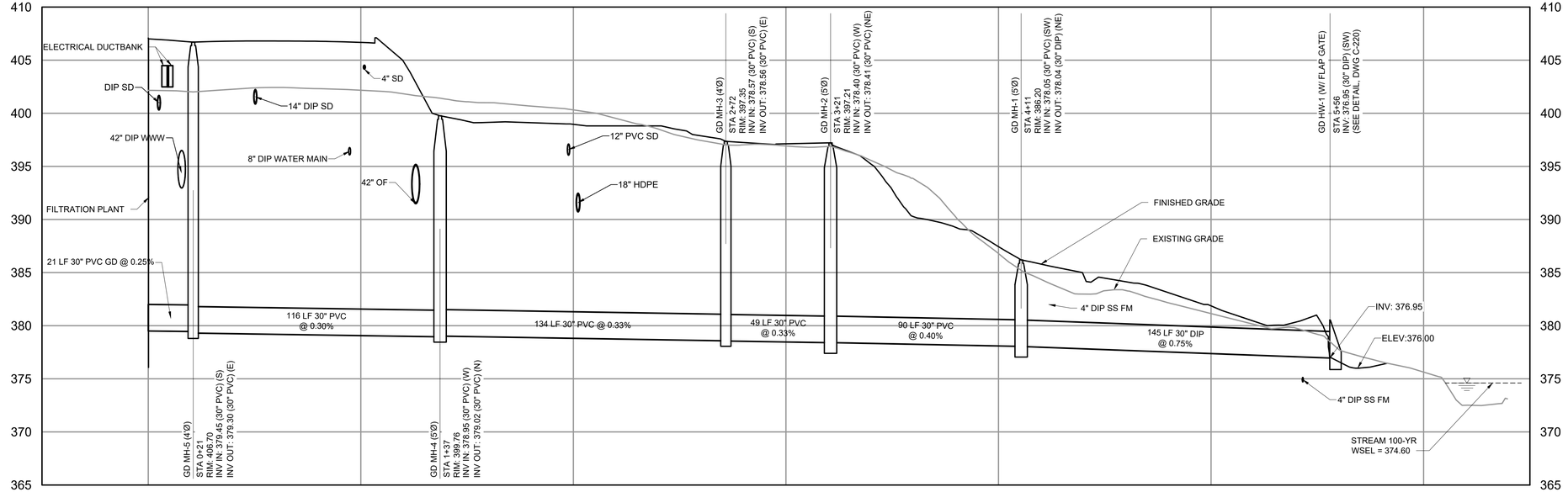
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CONTRACT NO.:	A1364-A
DRAWING NUMBER:	C-249

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PLOT DATE: 3/27/2025 12:03 AM BY: JTANNER



PLAN

SCALE 1" = 30'



PROFILE

HORIZONTAL SCALE 1" = 30'
VERTICAL SCALE: 1" = 6'

HORIZONTAL SCALE: 1" = 30'

30 15 0 30'

6 3 0 6

VERTICAL SCALE: 1"=6'

WARNING
IT IS A VIOLATION OF SECTION 7209.2 OF THE NEW YORK STATE EDUCATION LAW FOR ANY PERSON, UNLESS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER IN ANY WAY PLANS, SPECIFICATIONS, PLATS OR REPORTS TO WHICH THE SEAL OF A PROFESSIONAL ENGINEER HAS BEEN APPLIED. IF AN ITEM BEARING THE SEAL OF A PROFESSIONAL ENGINEER IS ALTERED, THE ALTERING ENGINEER SHALL AFFIX TO THE ITEM HIS SEAL AND THE NOTATION "ALTERED BY" FOLLOWED BY HIS SIGNATURE, THE DATE, AND A SPECIFIC DESCRIPTION OF THE ALTERATION.

REV	ISSUED FOR	DATE	BY

PROJECT ENGINEER: R. FROST
DESIGNED BY: J. TANNER
DRAWN BY: J. TANNER
CHECKED BY: D. SHEERAN
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE 0 1/2" 1"

BID SET

STATE OF NEW YORK DANIEL JAMES SHEERAN 088955 LICENSED PROFESSIONAL ENGINEER

Hazen

HAZEN AND SAWYER
498 SEVENTH AVENUE, 11th FLOOR
NEW YORK, NEW YORK 10018

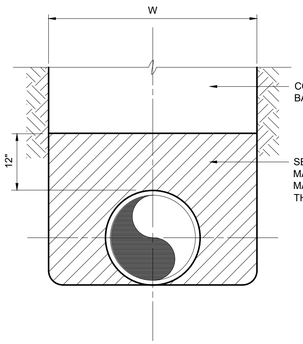
WESTCHESTER JOINT WATER WORKS
MAMARONECK, NY

RYE LAKE WATER FILTRATION PLANT
HARRISON, NY

CIVIL
GALLERY DRAIN PROFILE

DATE: FEB 2025
HAZEN NO.: 90388-000
CONTRACT NO.: A1364-A
DRAWING NUMBER: C-250

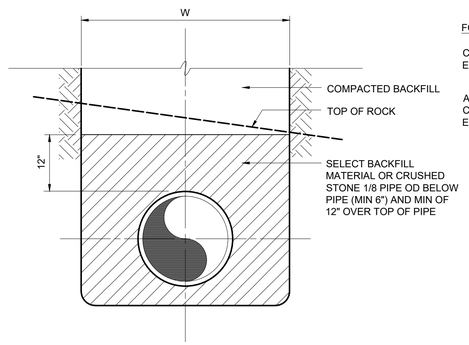
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IN EARTH

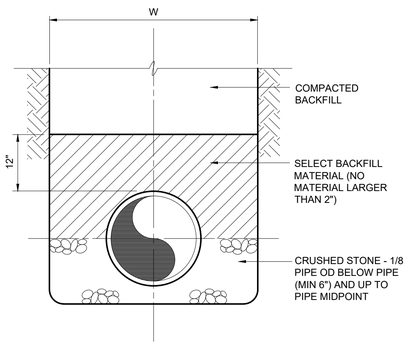
C-01-0100



TYPE A

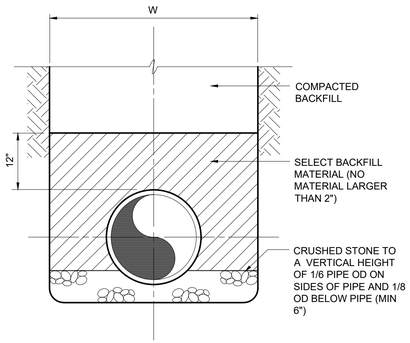
IN ROCK

C-01-0101



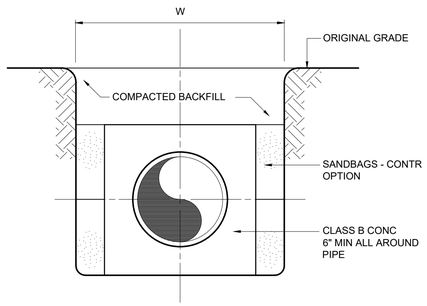
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C-01-0102



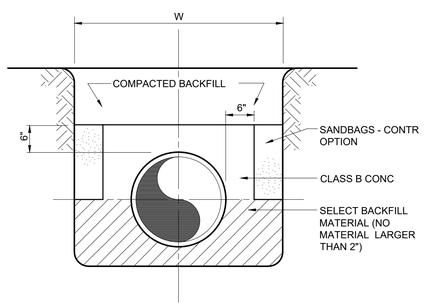
TYPE C

C-01-0103



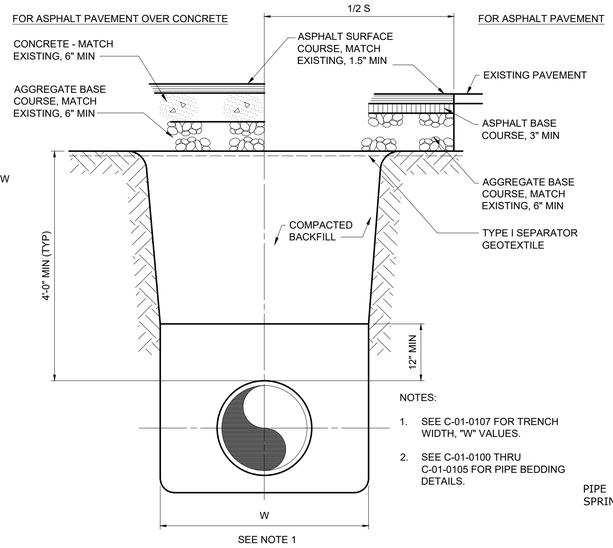
CONCRETE ENCASEMENT
(SEE NOTE 1)

C-01-0104



CONCRETE ARCH
(SEE NOTE 1)

C-01-0105



NOTES:

1. SEE C-01-0107 FOR TRENCH WIDTH, "W" VALUES.
2. SEE C-01-0100 THRU C-01-0105 FOR PIPE BEDDING DETAILS.

TYPICAL TRENCH

C-01-0106

TRENCH EXCAVATION LIMITS		
INTERNAL DIAMETER OF PIPE	W WIDTH OF TRENCH	
	MAX	W=MIN
4"-6"	3'-9"	2'-0"
8"-10"	3'-9"	2'-2"
12"	3'-9"	O.D.+2'
14"-16"	4'-2"	O.D.+2'
18"	4'-4"	O.D.+2'
20",21"	4'-8"	O.D.+2'
24"	4'-11"	O.D.+2'
27"	5'-9"	O.D.+2'
30"	6'-7"	O.D.+2'
36"	7'-4"	O.D.+2'
42"	8'-2"	O.D.+2'
48"	8'-9"	O.D.+2'
54"	9'-4"	O.D.+2'
60"	9'-10"	O.D.+2'
72"	11'-0"	O.D.+2'
78"	11'-8"	O.D.+2'
84"	12'-0"	O.D.+2'
90"	12'-6"	O.D.+2'
96"	13'-0"	O.D.+2'
108"	14'-0"	O.D.+2'
DEPTH OF CUT	S MAXIMUM PAVEMENT REPLACEMENT WIDTH	
0-6'	S=W+4'	
>6-8'	S=W+8'	
>8-10'	S=W+12'	
>10-12'	S=W+16'	
>12-14'	S=W+20'	
>14-16'	S=W+24'	
>16-18'	S=W+28'	
>18'	S=W+32'	
W = TRENCH WIDTH AT BOTTOM OF PIPE. TRENCH SIDE SLOPES SHALL BE IN ACCORDANCE WITH OSHA REQUIREMENTS.		

C-01-0107

TRANSMISSION MAIN NOTES:

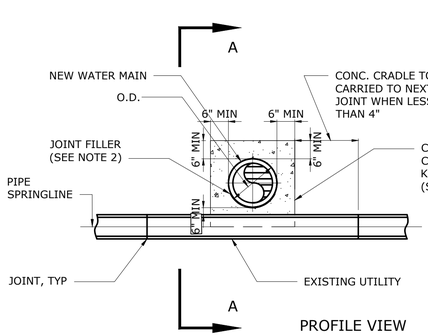
1. EXISTING UTILITIES TO BE RAISED/LOWERED TO FINISH GRADE. (INCLUDES CB'S, DI'S, MH'S, VALVES, HYDRANTS, ETC.)
2. PROVIDE 18" VERTICAL SEPARATION BETWEEN WATER MAIN AND SANITARY SEWER; AND 18" SEPARATION BETWEEN WATER MAIN AND STORMSEWER.
3. PROVIDE 10' HORIZONTAL SEPARATION BETWEEN WATER MAIN AND ALL OTHER UTILITIES.
4. EXISTING ON SITE WATER SYSTEM IS TO BE PRESSURE TESTED AND DISINFECTED.
5. EXISTING SANITARY SEWER MANHOLES THAT WILL BE CONNECTED TO ARE TO BE RECONSTRUCTED AS REQUIRED WITH 4' DIA. PRECAST RISERS WITH ROOF SLAB AND 3' DIA. OPENING. (SEE DETAILS FOR MANHOLE).
6. SEE THRUST BLOCK DETAILS FOR WATER MAIN SYSTEM.
7. ALL WATER MAINS TO BE TESTED AND CHLORINATED IN ACCORDANCE WITH AWWA STANDARDS C 600-93 SECTION 4 & C651-99 EXCEPT FOR SECTION 4.4.2 (TABLET METHOD). ALL TESTING MUST BE PERFORMED, RESULTS CERTIFIED BY A NYS PR AND SENT TO AND APPROVED BY WESTCHESTER COUNTY DEPARTMENT OF HEALTH BEFORE WATER MAIN IS PUT INTO SERVICE.
8. EXISTING WATER MAINS THAT ARE BEING REPLACED WITH NEW WATER MAINS SHALL BE REMOVED OR ABANDONED AFTER THE NEW MAIN HAS BEEN PLACE IN SERVICE.
9. ALL VALVES ASSOCIATED WITH TRANSMISSION MAINS SHALL ONLY BE OPERATED BY DPW STAFF.

PRESSURE LEAKAGE TESTING:

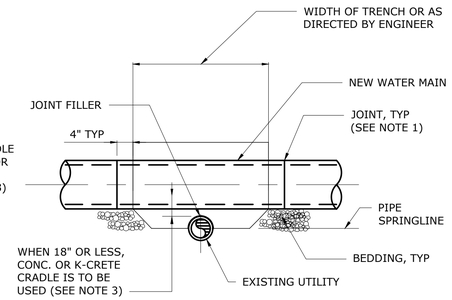
1. ALL PIPE INSTALLED SHALL BE PRESSURE TESTED AND LEAKAGE TESTED IN ACCORDANCE WITH THE LATEST EDITION OF AWWA STANDARD C600-93 SECTION 4.
2. 48 HOUR NOTICE TO DPW AND WCDOH IS REQUIRED FOR SCHEDULING PRESSURE/LEAKAGE TESTING.

DISINFECTION

1. ALL NEW, CLEANED, OR REPAIRED WATER MAINS SHALL BE DISINFECTED IN ACCORDANCE WITH TEH LATEST EDITION OF AWWA STANDARDS C 600-93 SECTION 4 & C651-99 EXCEPT FOR SECTION 4.4.2 (TABLET METHOD).



PROFILE VIEW



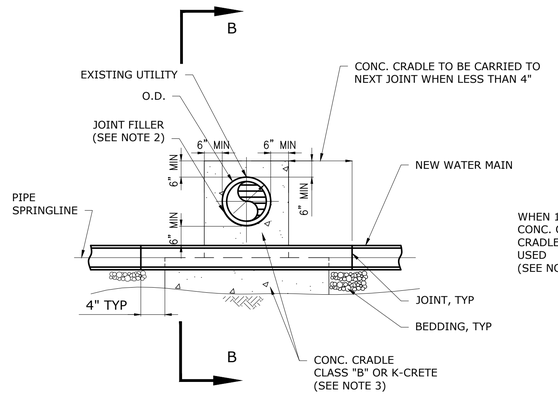
SECTION A-A

NOTES:

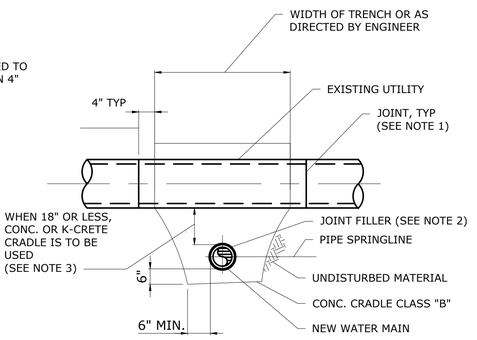
1. ARRANGE SO NEITHER NEW OR EXISTING PIPE HAS JOINT IN CONTACT WITH CONCRETE.
2. JUTE OR SIMILAR BITUMINOUS IMPREGNATED JOINT FILLER SHALL BE INSTALLED BETWEEN BOTH PIPES AND CONCRETE.
3. IF 10' OF HORIZONTAL SEPARATION OR 18" VERTICAL SEPARATION CANNOT BE MADE, THE CONTRACTOR WILL ENCASE THE NEW WATER MAIN IN K-CRETE (SEE WATER MAIN INSTALLATION NEAR SANITARY SEWER). HEALTH DEPARTMENT APPROVAL SHALL BE REQUIRED.

NEW PIPE OVER EXIST. UTILITY

C-01-0120R



PROFILE VIEW



SECTION B-B

NOTES:

1. ARRANGE SO NEITHER NEW OR EXISTING PIPE HAS JOINT IN CONTACT WITH CONCRETE.
2. JUTE OR SIMILAR BITUMINOUS IMPREGNATED JOINT FILLER SHALL BE INSTALLED BETWEEN BOTH PIPES AND CONCRETE.
3. IF 10' OF HORIZONTAL SEPARATION OR 18" VERTICAL SEPARATION CANNOT BE MADE, THE CONTRACTOR WILL ENCASE THE NEW WATER MAIN IN K-CRETE (SEE WATER MAIN INSTALLATION NEAR SANITARY SEWER). HEALTH DEPARTMENT APPROVAL SHALL BE REQUIRED.

NEW PIPE UNDER EXIST. UTILITIES

C-01-0120R

WARNING
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REV	ISSUED FOR	DATE	BY

PROJECT ENGINEER: R. FROST

DESIGNED BY: J. TANNER

DRAWN BY: J. TANNER

CHECKED BY: D. SHEERAN

IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE 0 1/2" 1"

BID SET



Hazen
HAZEN AND SAWYER
498 SEVENTH AVENUE, 11th FLOOR
NEW YORK, NEW YORK 10018

WESTCHESTER JOINT WATER WORKS
MAMARONECK, NY

RYE LAKE WATER FILTRATION PLANT
HARRISON, NY

CIVIL
YARD PIPING DETAILS - SHEET 1 OF 2

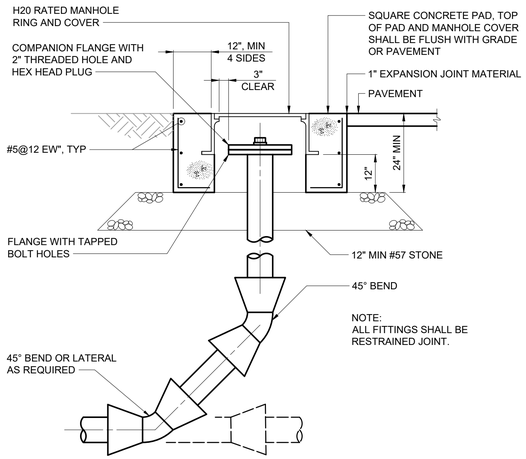
DATE: FEB 2025

HAZEN NO.: 90388-000

CONTRACT NO.: A1364-A

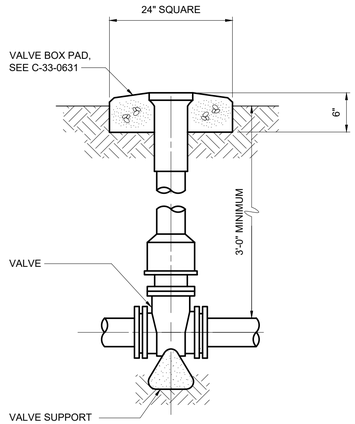
DRAWING NUMBER: C-251

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PLOT DATE: 3/27/2025 12:04 AM BY: JTANNER



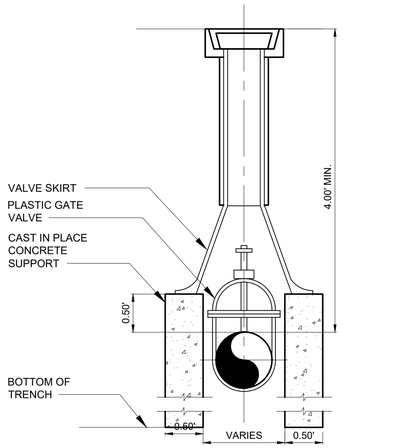
CLEANOUT RISER FOR PRESSURIZED LINES 4"-12"

C-33-0643



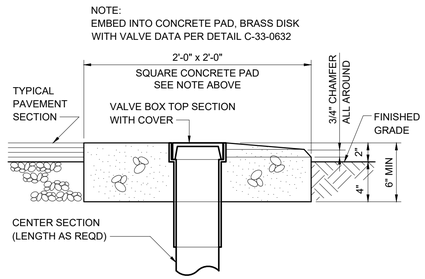
VALVE BOX

C-33-0630



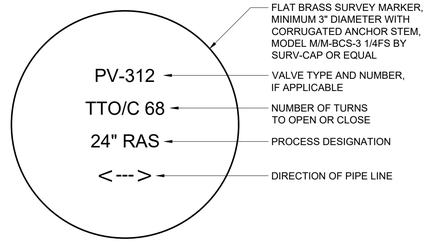
PLASTIC VALVE BOX DETAIL

NTS



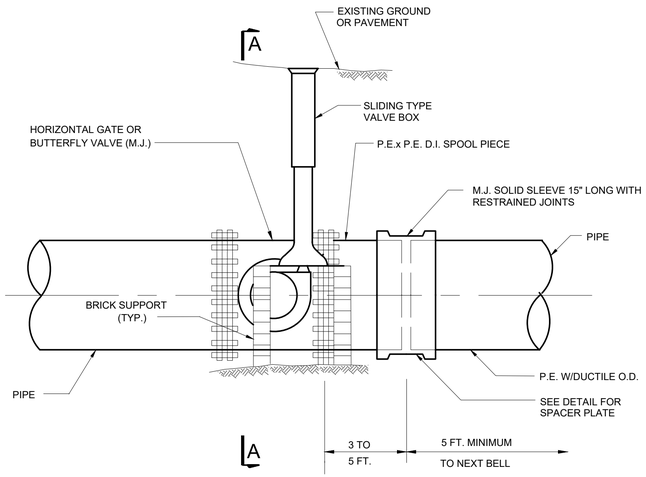
VALVE BOX PAD

C-33-0631

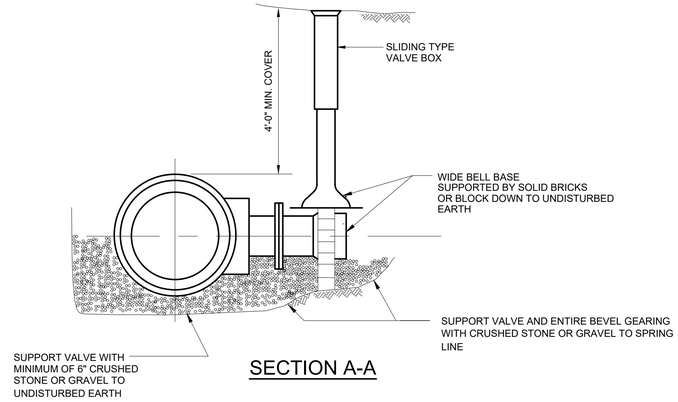


NOTES:
1. ENGRAVING SHALL BE MINIMUM 3/16" TALL CAPITAL LETTERS IN A BLOCK FONT SIMILAR TO ARIAL, CENTERED AND SPACED AS SHOWN.
2. ALL MARKINGS SHALL BE NEATLY MACHINE ENGRAVED.
3. ALTERNATELY, MARKINGS MAY BE HAND STAMPED, PROVIDED STAMPING IS DEEP ENOUGH TO WITHSTAND NORMAL TRAFFIC AND WEATHERING. STAMPING OF DISK SHALL BE ACCOMPLISHED PRIOR TO SETTING IN CONCRETE VALVE BOX PAD.
4. SUBMIT ONE SAMPLE FOR APPROVAL PRIOR TO ENGRAVING ALL MARKERS.
5. REGARDLESS OF ENGRAVING METHOD SELECTED, CONTRACTOR SHALL PROVIDE COMPATIBLE STAMP SET AND ANVIL TO OWNER UPON COMPLETION OF PROJECT FOR FUTURE REPAIR OF ENGRAVINGS.

C-33-0632



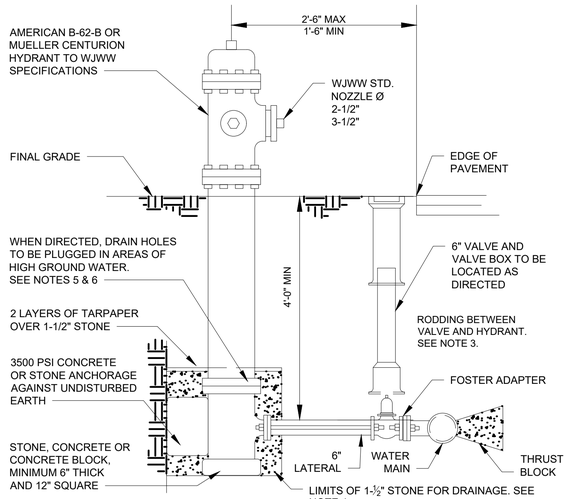
ELEVATION



SECTION A-A

NOTES:
1. NO PART OF VALVE BOX OR BASE TO TOUCH VALVE
2. PAINT NUTS AND BOLTS ON JOINTS WITH 2 COATS BITUMASTIC AFTER INSTALLATION

TYPICAL HORIZONTAL MAIN - LINE GATE OR BUTTERFLY VALVE INSTALLATION DETAIL



NOTES:
1. PUMPER OUTLET SHALL FACE STREET, HOSE OUTLETS SHALL BE PARALLEL TO STREET.
2. PLUMBNESS OF HYDRANT TO BE CHECKED IN TWO DIRECTIONS, 90° APART.
3. RODDING SHALL CONSIST OF TWO 3/4" THREADED RODS CAREFULLY COATED WITH BITUMASTIC PAINT. RODDING MAY BE OMITTED BETWEEN THE MAIN AND LATERAL VALVE ONLY WHERE A TAPPING VALVE OR HYDRANT VALVE ANCHORING TEE IS USED.
4. 1-1/2" STONE SHALL BE PLACED AROUND THE HYDRANT FROM THE BOTTOM OF THE TRENCH, BUT AT LEAST 6" BELOW THE BASE OF THE HYDRANT TO 6" ABOVE THE WASTE OPENING AND TO A DISTANCE OF 12" AROUND THE ELBOW.
5. HYDRANTS WITH PLUGGED DRAINS SHALL HAVE A 3" BLACK CIRCLE PAINTED DIRECTLY UNDER THE PUMPER OUTLET.
6. HYDRANT DRAINAGE:
   - 6.A. HYDRANT DRAINS SHOULD BE PLUGGED. WHEN THE DRAINS ARE PLUGGED THE BARRELS MUST BE PUMPED DRY AFTER USE DURING FREEZING WEATHER.
   - 6.B. WHERE HYDRANT DRAINS ARE NOT PLUGGED, A GRAVEL POCKET OR DRY WELL SHALL BE PROVIDED UNLESS THE NATURAL SOILS WILL PROVIDE ADEQUATE DRAINAGE.
   - 6.C. HYDRANT DRAINS SHALL NOT BE CONNECTED TO OR LOCATED WITHIN 10 FEET OF SANITARY SEWERS, STORM SEWERS, OR STORM DRAINS.
   - 6.D. HYDRANT DRAINS, WHERE ALLOWED, MUST BE ABOVE THE SEASONAL GROUNDWATER TABLE.

FIRE HYDRANT

NTS

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REV	ISSUED FOR	DATE	BY

PROJECT ENGINEER:	R. FROST
DESIGNED BY:	J. TANNER
DRAWN BY:	J. TANNER
CHECKED BY:	D. SHEERAN

IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE (0, 1/2", 1")

BID SET

STATE OF NEW YORK
DANIEL JAMES SHEERAN
088955
LICENSED PROFESSIONAL ENGINEER

Hazen
HAZEN AND SAWYER
498 SEVENTH AVENUE, 11th FLOOR
NEW YORK, NEW YORK 10018

WESTCHESTER JOINT WATER WORKS
MAMARONECK, NY

RYE LAKE WATER FILTRATION PLANT
HARRISON, NY

CIVIL
YARD PIPING DETAILS - SHEET 2 OF 2

DATE:	FEB 2025
HAZEN NO.:	90388-000
CONTRACT NO.:	A1364-A
DRAWING NUMBER:	C-252

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EROSION AND SEDIMENT CONTROL NOTES:

1. CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLIANCE WITH ALL SOIL EROSION AND SEDIMENT CONTROL PRACTICES.

2. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE APPROVED STORMWATER POLLUTION PREVENTION PLAN (SWPPP) IF APPLICABLE, AND/OR WITH THE SOIL EROSION AND SEDIMENT CONTROL REQUIREMENTS SPECIFIED BY THE NYSDEC STANDARDS AND SPECIFICATIONS FOR EROSION AND SEDIMENT CONTROL (NOVEMBER 2016), AND THE TOWN/VILLAGE OF HARRISON STANDARDS FOR EROSION AND SEDIMENT CONTROL.

3. IN THE EVENT OF CONFLICT BETWEEN THESE SPECIFICATION REQUIREMENTS AND POLLUTION CONTROL LAWS, RULES, REGULATIONS OR PERMIT CONDITIONS BY OTHER FEDERAL OR STATE OR LOCAL GOVERNMENT AGENCIES, THE MORE RESTRICTIVE LAWS, RULES OR REGULATIONS SHALL APPLY.

4. DUE TO THE NATURE OF THE WORK REQUIRED BY THIS CONTRACT, IT IS ANTICIPATED THE LOCATION AND NATURE OF EROSION AND SEDIMENT CONTROL MEASURES WILL BE ADJUSTED AS CONSTRUCTION PROGRESSES TO REFLECT THE CURRENT PHASE OF WORK. THE CONSTRUCTION SCHEDULE ADOPTED BY THE CONTRACTOR WILL IMPACT THE PLACEMENT AND NEED FOR SPECIFIC DEVICES REQUIRED FOR THE CONTROL OF EROSION. THE LOCATION AND EXTENT OF EROSION AND SEDIMENT CONTROL MEASURES SHALL BE REVISED AT EACH PHASE OF CONSTRUCTION RESULTING IN A CHANGE OF EITHER THE QUANTITY OR DIRECTION OF SURFACE RUNOFF FROM THE CONSTRUCTION AREAS. PERMANENT EROSION AND SEDIMENT CONTROL MEASURES SHALL REMAIN IN PLACE AT THE CONCLUSION OF THE PROJECT.

5. CONTRACTOR SHALL OBTAIN PRIOR APPROVAL FROM THE ENGINEER, OWNER, AND REGULATORY AGENCIES FOR DEVIATIONS FROM THE APPROVED EROSION AND SEDIMENT CONTROL PLAN.

6. NO LAND DISTURBANCE, DEMOLITION OR CONSTRUCTION ACTIVITIES SHALL BEGIN UNTIL ALL PERIMETER EROSION AND SEDIMENT CONTROL MEASURES, INCLUDING, BUT NOT LIMITED TO, SILT FENCING, INLET PROTECTION, TEMPORARY DIVERSIONS, SEDIMENT BASIN PROTECTION HAVE BEEN INSTALLED AS SHOWN ON THE CONTRACT DRAWINGS. IF CLEARING IS REQUIRED FOR INSTALLATION OF A PARTICULAR MEASURE, ALL MEASURES NOT REQUIRING CLEARING SHALL BE INSTALLED FIRST. CLEARING OF THE NECESSARY LAND FOR INSTALLATION OF THE PARTICULAR MEASURE MAY THEN PROCEED.

7. CLEARING SHALL BE LIMITED AS MUCH AS POSSIBLE TO AREAS REQUIRED FOR CURRENT CONSTRUCTION ACTIVITIES. MASS CLEARING AND GRADING SHALL BE AVOIDED.

8. ALL EROSION CONTROL MEASURES SHALL BE INSPECTED BY A QUALIFIED INSPECTOR WITHIN 24 HOURS FOLLOWING EVERY RAINFALL BUT IN NO CASE LESS THAN TWICE EVERY SEVEN CALENDAR DAYS. THE TWO INSPECTIONS SHALL BE SEPARATED BY A MINIMUM OF TWO (2) FULL CALENDAR DAYS.

9. EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSPECTED AND MAINTAINED, REPAIRED, OR REPLACED IMMEDIATELY BY THE CONTRACTOR AS REQUIRED TO MAINTAIN PERFORMANCE OF MEASURE DURING THE LIFE OF THE PROJECT, INCLUDING WINTER SHUTDOWN, ETC. SUCH INSPECTION AND MAINTENANCE SHALL CONTINUE UNTIL AFTER PERMANENT STABILIZATION MEASURES ARE IN PLACE AND THE TEMPORARY CONTROL MEASURES ARE ORDERED TO BE REMOVED BY THE ENGINEER.

10. TIMELY MAINTENANCE OF SEDIMENT CONTROL PRACTICES IS THE RESPONSIBILITY OF THE CONTRACTOR. ALL PRACTICES SHALL BE MAINTAINED IN GOOD WORKING ORDER AT ALL TIMES. THE SEDIMENT LEVEL IN ALL PRACTICES SHALL BE CLOSELY MONITORED AND SEDIMENT REMOVED PROMPTLY WHEN MAXIMUM LEVELS ARE REACHED OR AS ORDERED BY THE ENGINEER. ALL SEDIMENT CONTROL PRACTICES SHALL BE INSPECTED BY THE END OF EACH WORK DAY, PRIOR TO EVERY WEEKEND, BEFORE AND AFTER EACH RAINFALL OF 0.5" OR GREATER WITHIN A 12 HOUR PERIOD, OR AS DIRECTED BY THE ENGINEER IN ORDER TO INSURE PROPER OPERATION.

11. WHERE EROSION CONTROL MATERIALS HAVE BEEN USED ON FINAL GRADE THAT HAVE BEEN PERMANENTLY SEEDED, THE CONTRACTOR SHALL CARE FOR THE AREAS UNTIL ACCEPTANCE OF THE CONTRACT OR ACCEPTANCE OF THE TURF, WHICHEVER IS LATER. WHERE NECESSARY, SUCH CARE MAY INCLUDE, BUT IS NOT LIMITED TO PROVIDING WARNING SIGNS OR BARRICADES FOR PROTECTION AGAINST TRAFFIC, ANY SURFACES THAT HAVE SETTLED, BECOME GULLIED, OR OTHERWISE DAMAGED SHALL BE REPAIRED AT NO ADDITIONAL EXPENSE TO THE CITY TO REESTABLISH THE GRADE AND SOIL CONDITIONS THAT EXISTED PRIOR TO PLACING EROSION CONTROL MATERIALS.

12. DUST CONTROL MUST BE PROVIDED AS DIRECTED.

13. CONTRACTOR SHALL INITIATE STABILIZATION MEASURES AS SOON AS PRACTICABLE ON STOCKPILES AND IN PORTIONS OF THE SITE WHERE CONSTRUCTION ACTIVITIES HAVE TEMPORARILY OR PERMANENTLY CEASED, BUT IN NO CASE MORE THAN 7 DAYS AFTER THE CONSTRUCTION ACTIVITY IN THAT PORTION OF THE SITE HAS TEMPORARILY OR PERMANENTLY CEASED. THIS REQUIREMENT DOES NOT APPLY IN THE FOLLOWING INSTANCES:

    A) WHERE THE INITIATION OF STABILIZATION MEASURES BY THE 7TH DAY AFTER CONSTRUCTION ACTIVITY TEMPORARILY OR PERMANENTLY CEASED IS PRECLUDED BY SNOW COVER OR FROZEN GROUND CONDITIONS, STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS PRACTICABLE;

    B) WHERE CONSTRUCTION ACTIVITY ON A PORTION OF THE SITE IS TEMPORARILY CEASED, AND EARTH-DISTURBING ACTIVITIES WILL BE RESUMED WITHIN FOURTEEN (14) DAYS, TEMPORARY STABILIZATION MEASURES NEED NOT BE INITIATED ON THAT PORTION OF THE SITE.

14. ALL DISTURBED AREAS SHALL DRAIN TO APPROVED SEDIMENT CONTROL MEASURES AT ALL TIMES DURING LAND DISTURBANCE ACTIVITIES AND UNTIL FINAL STABILIZATION IS ACHIEVED. SEDIMENT-LADEN GROUNDWATER ENCOUNTERED DURING TRENCHING, BORING, OR OTHER ACTIVITIES SHALL BE PUMPED INTO A SEDIMENT TRAPPING DEVICE PRIOR TO BEING DISCHARGED INTO A STREAM, POND, SWALE, OR CATCH BASIN.

15. SOIL STOCKPILE AND LAYDOWN AREAS SHALL HAVE PERIMETER SEDIMENT CONTROL MEASURES AND TEMPORARY OR PERMANENT STABILIZATION MEASURES INSTALLED AS SOON AS POSSIBLE AND AT COMPLETION OF STOCKPILING AND LAYDOWN ACTIVITIES. STOCKPILE SIDE SLOPES SHALL NOT EXCEED 3H : 1V UNLESS APPROVED BY ENGINEER. TOP OF STOCKPILE SHALL BE GRADED WITH A MINIMUM 5% SLOPE TO INSURE PROPER DRAINAGE.

16. EARTHEN-MATERIAL STOCKPILES MUST BE LOCATED A MINIMUM OF 50' FROM STORM DRAINS AND STREAMS UNLESS NO REASONABLE ALTERNATIVES ARE AVAILABLE.

17. DEDICATED AREAS FOR DEMOLITION, CONSTRUCTION, AND OTHER WASTES MUST BE LOCATED A MINIMUM OF 50' FROM STORM DRAINS AND STREAMS UNLESS NO REASONABLE ALTERNATIVES ARE AVAILABLE.

18. STAGING AREA, STOCKPILES, AND OTHER STORAGE LOCATIONS SHALL BE PROTECTED FROM EROSION.

19. ALL DISTURBED SOIL AREAS SHALL BE FERTILIZED, SEEDED AND MULCHED IN ACCORDANCE WITH THE SPECIFICATIONS AND THE SEEDING SCHEDULE, AND RE-SEEDED AS NECESSARY, TO ESTABLISH AND MAINTAIN A VIGOROUS, DENSE VEGETATIVE COVER.

20. ALL POINTS OF CONSTRUCTION INGRESS AND EGRESS SHALL BE PROTECTED TO PREVENT THE DEPOSITION OF MATERIALS ONTO TRAVERSED OFFSITE ROADWAYS. IF MATERIAL IS TRACKED ONTO OFFSITE ROADWAYS, IT SHALL BE REMOVED IMMEDIATELY. DO NOT UTILIZE A WATER HOSE TO CLEAN ROADS UNLESS THE RUNOFF IS DIRECTED TO A PROPERLY DESIGNED AND FUNCTIONING SEDIMENT CONTROL DEVICE. PROPER PRECAUTIONS SHALL BE TAKEN TO ENSURE THAT MATERIALS DEPOSITED ONTO OFFSITE ROADWAYS ARE REMOVED SO THAT THEY DO NOT ENTER YARD INLETS, CATCH BASINS, SEWERS, WETLANDS, SURFACE WATER BODIES, OR ROADSIDE SWALES. DO NOT UTILIZE A FIRE OR GARDEN HOSE TO CLEAN ROADS UNLESS THE RUNOFF IS DIRECTED TO A PROPERLY DESIGNED AND FUNCTIONING SEDIMENT CONTROL DEVICE. WATER PUMPED OUT OF THE EXCAVATED AREAS CONTAINS SEDIMENTS THAT MUST BE REMOVED PRIOR TO DISCHARGING TO RECEIVING BODIES OF WATER USING REMOVABLE PUMPING STATIONS, SUMP PITS, PORTABLE SEDIMENTATION TANKS AND/OR SILT CONTROL BAGS.

21. WHERE CONCRETE EQUIPMENT WASHING IS REQUIRED, THIS MUST BE DONE IN AN APPROVED "CONCRETE CONTAINMENT AREA". CONTRACTOR SHALL NOT DISCHARGE ANY CONCRETE WASHOUT WATER INTO SEWERS, SURFACE WATER BODIES OR ONTO THE GROUND. ALL WASHOUT WATER MUST BE REMOVED FROM THE SITE(S) DAILY.

22. SEEDING DATES: THE FOLLOWING SEEDING DATES ARE BEST RECOMMENDED TO ESTABLISH PERMANENT VEGETATIVE COVER WITHIN MOST LOCATIONS IN THE WESTCHESTER COUNTY SOIL AND WATER CONSERVATION DISTRICT: SPRING - 3/1-6/1 AND FALL - 9/1 - 10/15

23. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DESIGN, INSTALLATION, PERMITTING, AND OPERATION OF A DEWATERING SYSTEM AS REQUIRED FOR THE COMPLETION OF THE WORK. PROCEDURES FOR DEWATERING INCLUDING ASSOCIATED EROSION AND SEDIMENT CONTROL PROPOSED BY THE CONTRACTOR SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW PRIOR TO ANY EARTHWORK OPERATIONS. ALL WATER REMOVED BY DEWATERING OPERATIONS SHALL BE DISPOSED OF IN ACCORDANCE WITH THE SOIL EROSION AND SEDIMENT CONTROL REQUIREMENTS SPECIFIED BY THE NYSDEC STANDARDS AND SPECIFICATIONS FOR EROSION AND SEDIMENT CONTROL (NOVEMBER 2016). CONTRACTOR MAY USE PORTABLE SETTLING TANK, SEDIMENT FILTER BAG, OR OTHER APPROVED METHOD TO SETTLE DEWATERING FLOW OF SEDIMENT BEFORE DISCHARGE.

24. ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL REMAIN IN PLACE UNTIL CONSTRUCTION IS COMPLETE, PERMANENT VEGETATION IS ESTABLISHED ON ALL DISTURBED AREAS, AND LOCAL AUTHORITIES HAVE GIVEN PERMISSION FOR REMOVAL. ONCE FINAL STABILIZATION IS COMPLETE, REMOVE EROSION AND SEDIMENT CONTROL MEASURES AND PERFORM FINAL SITE RESTORATION.

25. IF INSPECTIONS BY THE ENGINEER OR THE TOWN/VILLAGE OF HARRISON'S DPW INSPECTOR OR ENGINEER FIND FAILURE(S) BY THE CONTRACTOR TO COMPLY, THE ENTIRE PROJECT WILL BE STOPPED WITH NO COMPENSATION TO THE CONTRACTOR UNTIL ALL FINDINGS HAVE BEEN IDENTIFIED, ADDRESSED AND COMPLETED BY THE CONTRACTOR.

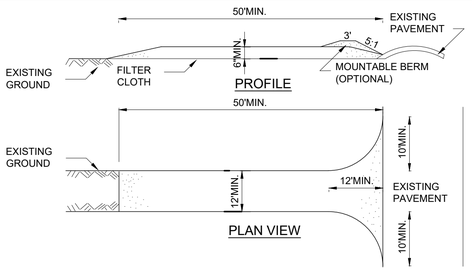
26. IF DIRECTED, THE CONTRACTOR SHALL PROVIDE TO THE ENGINEER WEEKLY COPIES OF A REPORT FOR HIS INSPECTION, FINDINGS AND ACTIONS TAKEN.

27. THE CONTRACTOR SHALL MAINTAIN ALL TEMPORARY AND PERMANENT STORMWATER MANAGEMENT PRACTICES DURING CONSTRUCTION UNTIL FINAL STABILIZATION AND ACCEPTANCE BY THE OWNER. WJWW SHALL MAINTAIN PERMANENT STORMWATER MANAGEMENT PRACTICES UPON COMPLETION OF CONSTRUCTION. SEE SWPPP FOR APPLICABLE CONTACT INFORMATION.

SITE RESTORATION REQUIREMENTS			
TYPE OF SOIL DISTURBANCE	SOIL RESTORATION REQUIREMENT		COMMENTS / EXAMPLES
NO SOIL DISTURBANCE	RESTORATION NOT PERMITTED		PRESERVATION OF NATURAL FEATURES
MINIMAL SOIL DISTURBANCE	RESTORATION NOT PERMITTED		CLEARING AND GRUBBING
AREAS WHERE TOPSOIL IS STRIPPED ONLY - NO CHANGE IN GRADE	HSG A & B	HSG C & D	PROTECT AREA FROM ANY ONGOING CONSTRUCTION ACTIVITIES
	APPLY 6 INCHES OF TOPSOIL	AERATE* AND APPLY 6 INCHES OF TOPSOIL	
AREAS OF CUT OR FILL	HSG A & B	HSG C & D	
	AERATE* AND APPLY 6 INCHES OF TOPSOIL	APPLY FULL SOIL RESTORATION**	
HEAVY TRAFFIC AREAS ON SITE (ESPECIALLY IN ZONE 5-25 FEET AROUND BUILDINGS BUT NOT WITHIN 5 FOOT PERIMETER AROUND FOUNDATION WALLS	APPLY FULL SOIL RESTORATION (DECOMPACTION AND COMPOST ENHANCEMENT)		
AREAS WHERE RUNOFF REDUCTION AND/OR INFILTRATION PRACTICES ARE APPLIED	RESTORATION NOT REQUIRED. BY MAY BE APPLIED TO ENHANCE THE REDUCTION SPECIFIED FOR APPROPRIATE PRACTICES		KEEP CONSTRUCTION EQUIPMENT FROM CROSSING THESE AREAS. TO PROTECT NEWLY INSTALLED PRACTICE FROM ANY ONGOING CONSTRUCTION ACTIVITIES CONSTRUCT A SINGLE PHASE OPERATION FENCE AREA
REDEVELOPMENT PROJECTS	SOIL RESTORATION IS REQUIRED ON REDEVELOPMENT PROJECTS IN AREAS WHERE EXISTING IMPERVIOUS AREA WILL BE CONVERTED TO PERVIOUS AREA		

* AERATION INCLUDES THE USE OF MACHINES SUCH AS TRACTOR-DRAWN IMPLEMENTS WITH COULTERS MAKING A NARROW SLIT IN THE SOIL, A ROLLER WITH MANY SPIKES MAKING INDENTATIONS IN THE SOIL, OR PRONGS WHICH FUNCTION LIKE A MINI-SUBSOILER.

** PER "DEEP RIPPING AND DE-COMPACTION, DEC 2008".

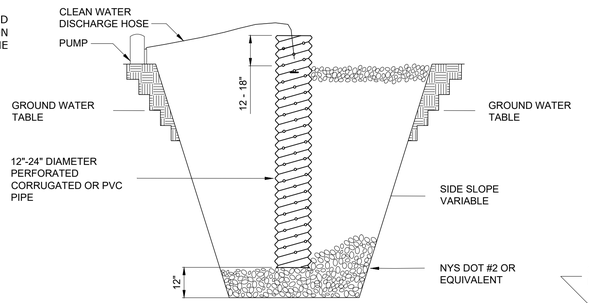


CONSTRUCTION SPECIFICATIONS

1. STONE SIZE - USE 1-4 INCH STONE, OR RECLAIMED OR RECYCLED CONCRETE EQUIVALENT.
2. LENGTH - NOT LESS THAN 50 FEET (EXCEPT ON A SINGLE RESIDENCE LOT WHERE A 30 FOOT MINIMUM LENGTH WOULD APPLY).
3. THICKNESS - NOT LESS THAN SIX (6) INCHES.
4. WIDTH - TWELVE (12) FOOT MINIMUM, BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS. TWENTY-FOUR (24) FOOT IF SINGLE ENTRANCE TO SITE.
5. GEOTEXTILE - WILL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE.
6. SURFACE WATER - ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ACCESS SHALL BE PIPED BENEATH THE ENTRANCE. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM WITH 5:1 SLOPES WILL BE PERMITTED.
7. MAINTENANCE - THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY, ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY.
8. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON A AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
9. PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED AFTER EACH RAIN.

STABILIZED CONSTRUCTION ACCESS

NTS

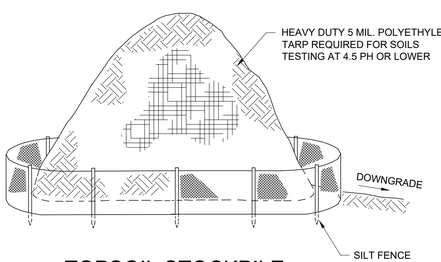


CONSTRUCTION SPECIFICATIONS

1. PIT DIMENSIONS ARE VARIABLE.
2. THE STANDPIPE SHOULD BE CONSTRUCTED BY PERFORATING A 12-24" DIAMETER CORRUGATED OR PVC PIPE.
3. A BASE OF NYS DOT #2 OR EQUIVALENT AGGREGATE SHOULD BE PLACED IN THE PIT TO A DEPTH OF 12". AFTER INSTALLING THE STANDPIPE, THE PIT SURROUNDING THE STANDPIPE SHOULD BE BACKFILLED WITH NYS DOT #2 OR EQUIVALENT AGGREGATE.
4. THE STANDPIPE SHOULD EXTEND 12-18" ABOVE THE LIP OF THE PIT.
5. IF DISCHARGE WILL BE PUMPED DIRECTLY TO A STORM DRAINAGE SYSTEM, THE STANDPIPE SHOULD BE WRAPPED WITH FILTERCLOTH BEFORE INSTALLATION. IT IS RECOMMENDED THAT 1/4"-1/2" HARDWARE CLOTH MAY BE PLACED AROUND THE STANDPIPE, PRIOR TO ATTACHING THE FILTERCLOTH.

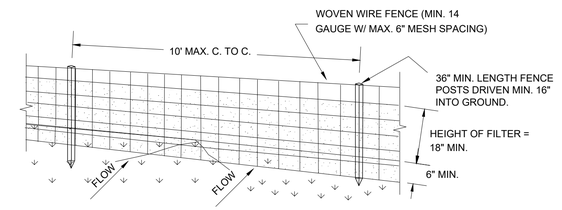
DEWATERING SUMP PIT

NTS

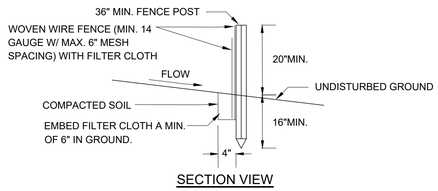


TOPSOIL STOCKPILE

NTS



PERSPECTIVE VIEW



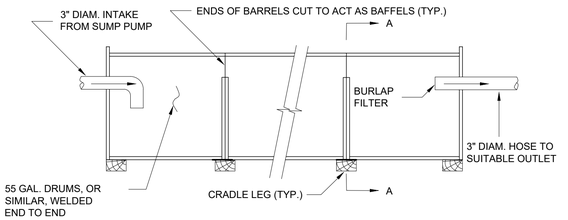
SECTION VIEW

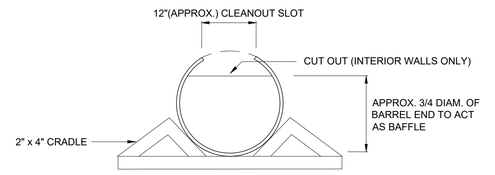
CONSTRUCTION SPECIFICATIONS

1. WOVEN WIRE FENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES. POSTS SHALL BE STEEL EITHER "T" OR "U" TYPE OR HARDWOOD.
2. FILTER CLOTH TO BE TO BE FASTENED SECURELY TO WOVEN WIRE FENCE WITH TIES SPACED EVERY 24" AT TOP AND MID SECTION. FENCE SHALL BE WOVEN WIRE, 6" MAXIMUM MESH OPENING.
3. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVER-LAPPED BY SIX INCHES AND FOLDED. FILTER CLOTH SHALL BE EITHER FILTER X, MIRAFI 100X, STABILINKA T140N, OR APPROVED EQUIVALENT.
4. PREFABRICATED UNITS SHALL MEET THE MINIMUM REQUIREMENTS SHOWN.
5. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE.

REINFORCED SILT FENCE

NTS





SECTION A-A

CONSTRUCTION SPECIFICATIONS

1. CLEAN OUT THE SEDIMENT TANK WHEN ONE THIRD (1/3) FILLED WITH SILT.
2. STEEL DRUMS ARE USED AS AN EXAMPLE DUE TO THEIR READY AVAILABILITY. ANY TANKS MAY BE USED, PROVIDING THAT THE VOLUME REQUIREMENTS ARE MET.
3. ALL SEDIMENT COLLECTED IN THE TANK SHALL BE DISPOSED OF IN A SEDIMENT TRAPPING DEVICE OR AS APPROVED BY THE INSPECTOR.

PORTABLE SEDIMENT TANK

NTS

WARNING
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REV	ISSUED FOR	DATE	BY

PROJECT ENGINEER:	R. FROST
DESIGNED BY:	J. TANNER
DRAWN BY:	J. TANNER
CHECKED BY:	D. SHEERAN

IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE 0 1/2" 1"

BID SET



Hazen
HAZEN AND SAWYER
498 SEVENTH AVENUE, 11th FLOOR
NEW YORK, NEW YORK 10018

WESTCHESTER JOINT WATER WORKS
MAMARONECK, NY

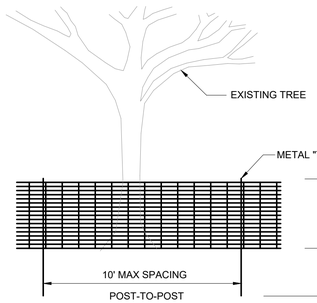
RYE LAKE WATER FILTRATION PLANT
HARRISON, NY

CIVIL
EROSION AND SEDIMENT CONTROL NOTES

DATE:	FEB 2025
HAZEN NO.:	90388-000
CONTRACT NO.:	A1364-A
DRAWING NUMBER:	C-301

File: C:\USERS\JTANNER\DCACDOCS\HAZEN AND SAWYER\90388-000_RYE_LAKE_FILTRATION\PROJECT FILES\PROJECTWISE\CIVIL\C-301 Saved by JTANNER Save date: 2/10/2025 10:28 AM
PLOT DATE: 3/27/2025 12:05 AM BY: JTANNER

EROSION AND SEDIMENT CONTROL MAINTENANCE SCHEDULE					
MONITORING REQUIREMENTS				MAINTENANCE REQUIREMENTS	
PRACTICE	DAILY	WEEKLY	AFTER RAINFALL	DURING CONSTRUCTION	AFTER CONSTRUCTION
SILT FENCE BARRIER	---	INSPECT	INSPECT	CLEAN / REPLACE	REMOVE
STABILIZED CONSTRUCTION ACCESS	INSPECT	---	INSPECT	CLEAN / REPLACE STONE AND FABRIC	REMOVE
DUST CONTROL	INSPECT	---	INSPECT	MULCHING / SPRAYING WATER	N/A
VEGETATIVE ESTABLISHMENT	---	INSPECT	INSPECT	WATER / RESEED / REPLACE	RESEED TO 80% COVERAGE
INLET PROTECTION	---	INSPECT	INSPECT	CLEAN / REPAIR / REPLACE	REMOVE
SOIL STOCKPILES	---	INSPECT	INSPECT	MULCHING / SILT FENCE REPAIR	REMOVE
CONCRETE DRAINAGE STRUCTURES	---	INSPECT	INSPECT	CLEAN SUMPS / REMOVE DEBRIS / REPAIR / REPLACE	CLEAN SUMPS / REMOVE DEBRIS / REPAIR / REPLACE
DRAINAGE PIPES	---	INSPECT	INSPECT	CLEAN / REPAIR	CLEAN / REPAIR
ROAD AND PAVEMENT	---	INSPECT	INSPECT	CLEAN	CLEAN
DEWATERING SUMP PIT	INSPECT	---	INSPECT	CLEAN / REPAIR / REPLACE	REMOVE
PORTABLE SEDIMENT TANK	INSPECT	---	INSPECT	CLEAN / REPAIR / REPLACE	REMOVE
GEOTEXTILE FILTER BAG	INSPECT	---	INSPECT	REPLACE AT 75% REDUCTION OF FLOW	REMOVE
EROSION CONTROL MATTING	---	INSPECT	INSPECT	RESTORE IF DAMAGED	BIODEGRADABLE
CONSTRUCTION ROAD STABILIZATION	---	INSPECT	INSPECT	TOP DRESS WITH GRAVEL	REMOVE
CONCRETE WASHOUT	INSPECT	---	INSPECT	REPAIR / REPLACE	REMOVE
TREE PROTECTION	---	INSPECT	INSPECT	REPAIR / REPLACE	REMOVE
CONSTRUCTION DITCH	---	INSPECT	INSPECT	REMOVE SEDIMENT / REGRADE	REMOVE
SKIMMER	---	INSPECT	INSPECT	REPAIR / REPLACE	REMOVE
SEDIMENT BASIN	INSPECT	---	INSPECT	REMOVE SEDIMENT / REGRADE	CONVERTED TO SMP
SEDIMENT BASIN BAFFLE	INSPECT	---	INSPECT	REPAIR / REPLACE	REMOVE
RIP RAP OUTLET PROTECTION	---	INSPECT	INSPECT	REPAIR / REPLACE	CLEAN / REPAIR / REMOVE DEBRIS

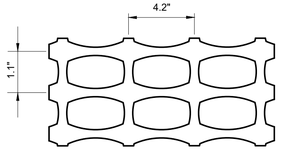


NOTES:
1. PLACE CONTINUOUS RUN OF FENCE MATERIAL ON BOTH SIDES OF IMMEDIATE WORK ZONE IN WOODED AREAS AS SHOWN ON THE PLANS. DO NOT ATTACH FENCE MATERIAL TO TREES.
2. TREE PROTECTION FENCING FABRIC TO BE PLACED AT THE DRIP LINE OF THE TREES THAT ARE TO BE PROTECTED.
3. "MIRASAFE" HIGH STRENGTH POLYMER GEOGRID FABRIC BY MIRAFI CONSTRUCTION PRODUCTS, PENDERGRASS, GEORGIA. FENCE MATERIAL TO BE WARNING AND BARRIER FENCE AS PER SPECIFICATION 31 10 00.
4. ONE SIGN PER 300' OF TREE PROTECTION FENCING SHALL READ, AS SHOWN TO THE RIGHT.

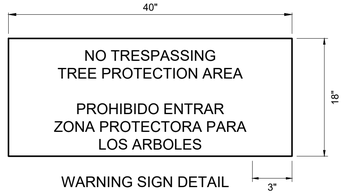
TREE PROTECTION BARRIER FENCE

NTS

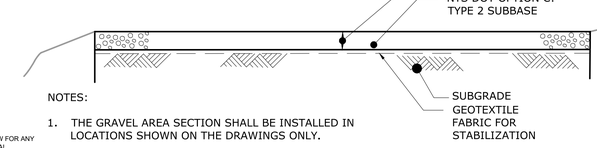
FENCING FABRIC ORANGE MIRASAFE



TC MIRAFI MIRASAFE OR AN APPROVED EQUAL. STAPLE TO VERTICAL 2X4 OR TIE TO METAL "T" POSTS.



WARNING SIGN DETAIL

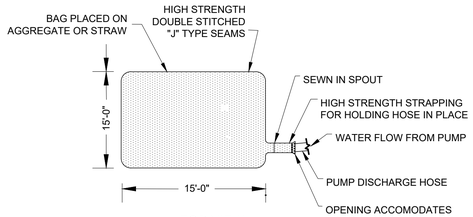


NOTES:
1. THE GRAVEL AREA SECTION SHALL BE INSTALLED IN LOCATIONS SHOWN ON THE DRAWINGS ONLY.

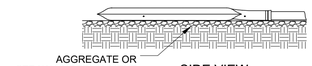
CONSTRUCTION ROAD STABILIZATION

NTS

WARNING
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TOP VIEW



SIDE VIEW

NOTES:
1. SILT CONTROL SYSTEM TO BE USED IN CONJUNCTION WITH PUMP AROUND IF DEEMED NECESSARY BY SEDIMENT CONTROL INSPECTOR TO TREAT ANY SEDIMENT-LADEN WATER WITHIN THE DRY WORK AREA.
2. GEOTEXTILE FILTER BAG SHALL BE PLACED AT LEAST 50 FT FROM ALL WETLANDS, STREAMS, OR OTHER SURFACE WATERS.

DEWATERING/FILTER BAG MATERIALS SPECIFICATIONS:

THE DEWATERING/FILTER BAG SHALL BE MADE OF NON-WOVEN GEOTEXTILE WITH A MINIMUM SURFACE AREA OF 225 SQUARE FEET PER SIDE. ALL STRUCTURAL SEAMS SHALL BE SEWN WITH A DOUBLE STITCH USING A DOUBLE NEEDLE MACHINE WITH HIGH STRENGTH THREAD. THE SEAM STRENGTH SHALL WITHSTAND 100LB/IN USING ASTM D-4884 TEST METHOD. THE DEWATERING/FILTER BAG SHALL HAVE A NOZZLE LARGE ENOUGH TO ACCOMMODATE A FOUR INCH DISCHARGE HOSE. THE NOZZLE SHALL BE SEALED TIGHTLY AROUND THE DISCHARGE HOSE WITH A STRAP OR SIMILAR DEVICE TO PREVENT UNTREATED WATER FROM ESCAPING. THE GEOTEXTILE FABRIC SHALL BE A NON-WOVEN FABRIC WITH THE FOLLOWING PROPERTIES:

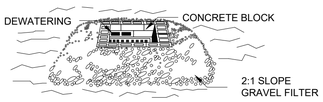
WEIGHT	ASTM D-3776	10 OZ/YD
GRAB TENSILE	ASTM D-4632	270 LBS
PUNCTURE	ASTM D-4833	150 LBS
FLOW RATE	ASTM D-4491	70 GAL/MIN/SQ FT
PERMITIVITY	ASTM D-4991	1/1.3 SEC
UV RESISTANCE	ASTM D-4355	70%
AOS % RETAINED	ASTM D-4751	100

CONSTRUCTION:

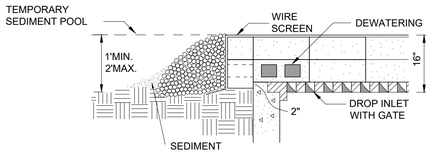
THE DEWATERING/FILTER BAG SHALL BE INSTALLED OVER A 3 INCH GRAVEL BASE OR A STRAW BALE BASE TO PROMOTE INFILTRATION AND DEWATERING OF THE FILTER BAG.

GEOTEXTILE FILTER BAG

NTS



STONE & BLOCK PLAN VIEW



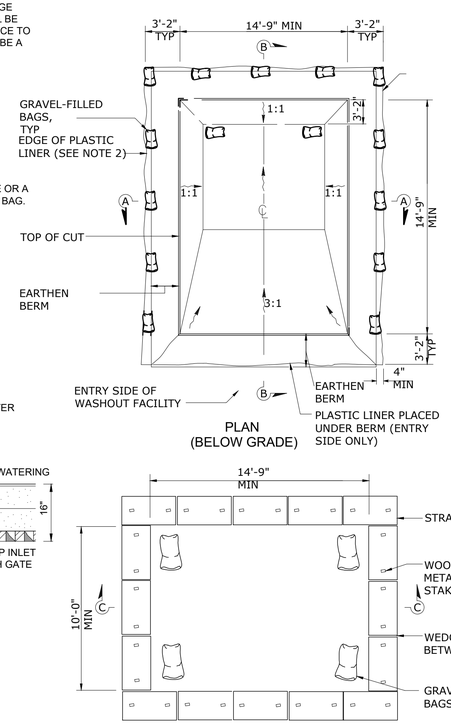
STONE & BLOCK DETAIL

CONSTRUCTION SPECIFICATIONS

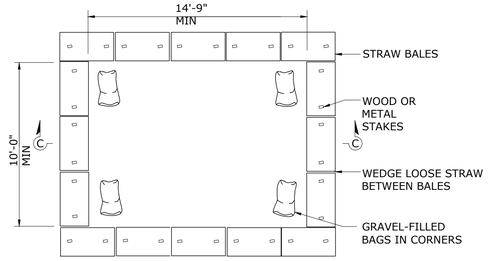
1. LAY ONE BLOCK ON EACH SIDE OF THE STRUCTURE ON ITS SIDE FOR DEWATERING. FOUNDATION SHALL BE 2 INCHES MINIMUM BELOW REST OF INLET AND BLOCKS SHALL BE PLACED AGAINST INLET FOR SUPPORT.
2. HARDWARE CLOTH OR 1/2" WIRE MESH SHALL BE PLACED OVER BLOCK OPENINGS TO SUPPORT STONE.
3. USE CLEAN STONE OR GRAVEL 1/2-3/4 INCH IN DIAMETER PLACED 2 INCHES BELOW TOP OF THE BLOCK ON A 2:1 SLOPE OR FLATTER.
4. FOR STONE STRUCTURES ONLY, A 1 FOOT THICK LAYER OF THE FILTER STONE WILL BE PLACED AGAINST THE 3 INCH STONE AS SHOWN ON THE DRAWINGS.
5. MAXIMUM DRAINAGE AREA 1 ACRE.
6. INSERTS SHALL PROVIDE A MINIMUM OF 50-PERCENT OF THE OPENING, UNOBSTRUCTED DESIGN FLOW AREA OF THE STORM DRAIN INLET OPENING.

STONE & BLOCK DROP INLET PROTECTION

NTS



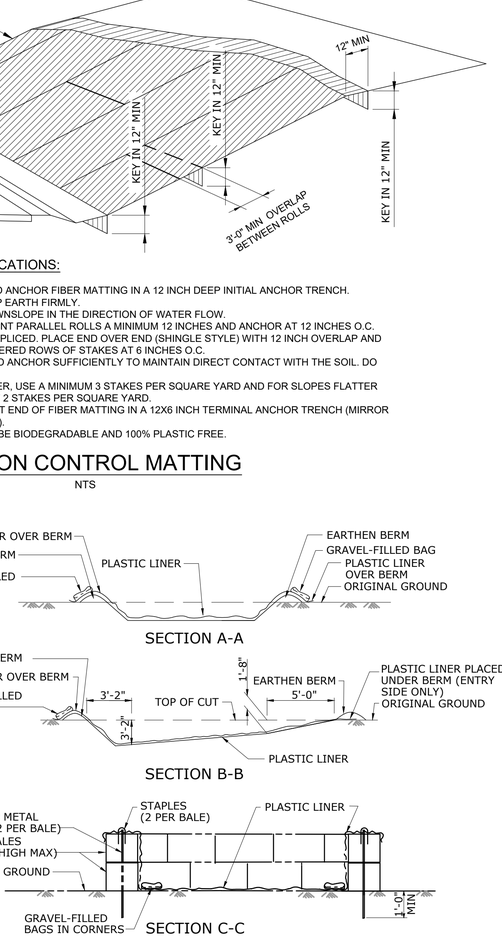
PLAN
(BELOW GRADE)



PLAN
(ON GRADE)

CONCRETE WASHOUT

NTS

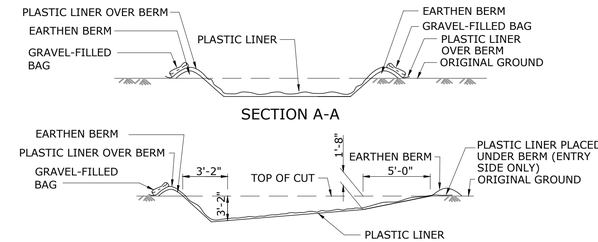


CONSTRUCTION SPECIFICATIONS:

1. BEGIN AT TOP OF SLOPE AND ANCHOR FIBER MATTING IN A 12 INCH DEEP INITIAL ANCHOR TRENCH. BACKFILL TRENCH AND TAMP EARTH FIRMLY.
2. UNROLL FIBER MATTING DOWNSLOPE IN THE DIRECTION OF WATER FLOW.
3. OVERLAP EDGES OF ADJACENT PARALLEL ROLLS A MINIMUM 12 INCHES AND ANCHOR AT 12 INCHES O.C.
4. WHEN FIBER MAT MUST BE SPLICED. PLACE END OVER END (SHINGLE STYLE) WITH 12 INCH OVERLAP AND ANCHOR USING TWO STAGGERED ROWS OF STAKES AT 6 INCHES O.C.
5. LAY FIBER MAT LOOSELY AND ANCHOR SUFFICIENTLY TO MAINTAIN DIRECT CONTACT WITH THE SOIL. DO NOT STRETCH.
6. FOR SLOPES 2:1 AND STEEPER, USE A MINIMUM 3 STAKES PER SQUARE YARD AND FOR SLOPES FLATTER THAN 2:1, USE A MINIMUM OF 2 STAKES PER SQUARE YARD.
7. ANCHOR, FILL, AND COMPACT END OF FIBER MATTING IN A 12X6 INCH TERMINAL ANCHOR TRENCH (MIRROR IMAGE OF EXISTING TRENCH).
8. MATTING MATERIALS SHALL BE BIODEGRADABLE AND 100% PLASTIC FREE.

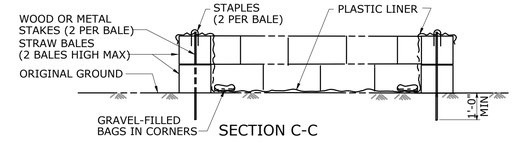
EROSION CONTROL MATTING

NTS

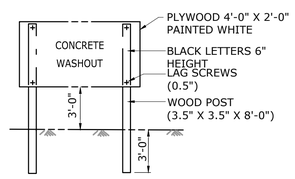


SECTION A-A

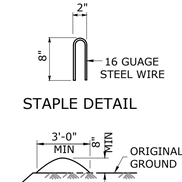
SECTION B-B



SECTION C-C



CONCRETE WASHOUT
SIGN DETAIL



STAPLE DETAIL

TYPICAL SECTION
EARTHEN BERM

NOTES:
1. THE CONCRETE WASHOUT SIGN SHALL BE INSTALLED WITHIN 32'-10" OF THE TEMPORARY CONCRETE WASHOUT FACILITY.
2. PLASTIC LINER SHALL HAVE A MINIMUM THICKNESS OF 10MIL AND SHALL BE ANCHORED WITH GRAVEL-FILLED BAGS FOR BELOW GRADE CONCRETE WASHOUT FACILITY.
3. CONCRETE WASHOUT SHALL BE LOCATED A MINIMUM OF 100-FEET FROM DRAINAGE SWALES, STORM DRAIN INLETS, WETLANDS, STREAMS, AND OTHER SURFACE WATERS

CONCRETE WASHOUT

NTS

REV	ISSUED FOR	DATE	BY

PROJECT ENGINEER:	R. FROST
DESIGNED BY:	J. TANNER
DRAWN BY:	J. TANNER
CHECKED BY:	D. SHEERAN

IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE 0 1/2" 1"

BID SET

STATE OF NEW YORK — DANIEL JAMES SHEERAN — 088955 — LICENSED PROFESSIONAL ENGINEER

Hazen
HAZEN AND SAWYER
498 SEVENTH AVENUE, 11th FLOOR
NEW YORK, NEW YORK 10018

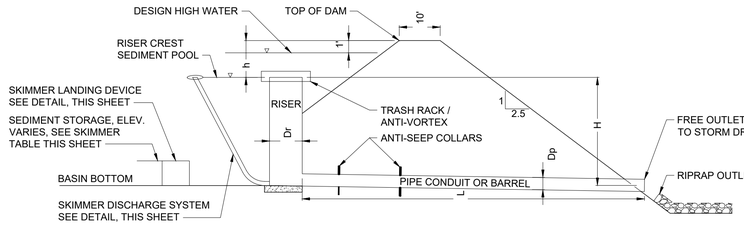
WESTCHESTER JOINT WATER WORKS
MAMARONECK, NY

RYE LAKE WATER FILTRATION PLANT
HARRISON, NY

CIVIL
EROSION AND SEDIMENT CONTROL DETAILS

DATE:	FEB 2025
HAZEN NO.:	90388-000
CONTRACT NO.:	A1364-A
DRAWING NUMBER:	C-302

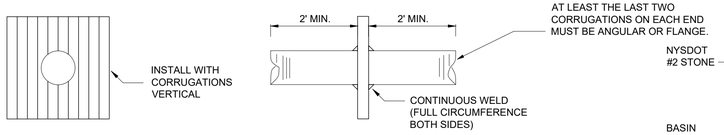
File: C:\USERS\JTANNER\DC\ACCDOCS\HAZEN AND SAWYER\90388-000_RYE_LAKE_FILTRATION\PROJECT FILES\PROJECTWISE\CIVIL\C-302 Saved by JTANNER Save date: 2/10/2025 10:24 AM
PLOT DATE: 3/27/2025 12:05 AM BY: JTANNER



BASIN ID	BOTTOM OF BASIN ELEVATION	TOP OF DAM ELEVATION	TOP OF SEDIMENT STORAGE ZONE ELEVATION	TOP OF DEWATERING ZONE, RISER CREST ELEVATION	H (FT)	h (FT)	L (FT)	Dp (IN)	Dr (IN)
1	394.00	399.35	395.00	398.00	10.28	1.35	60.00	15.00	72.00
2	393.00	399.00	394.00	397.00	8.97	2.00	21.00	24.00	48.00

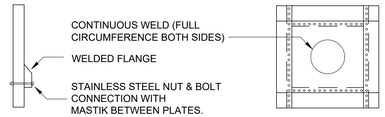
SEDIMENT BASIN PIPE SPILLWAY

NTS



COLLAR WELDED IN PLACE ON BARREL SECTION

1. PLATES TO BE PRE-CUT CLAMPED TOGETHER & PRE-DRILLED & LABELED TO FACILITATE WATER TIGHT FIELD ASSEMBLY.



MULTI-PIECE COLLAR FOR LARGE PIPES

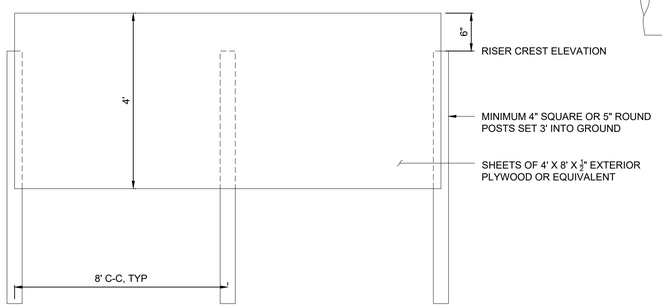


COLLAR FOR FLANGE JOINT PIPE

BASIN ID	# OF COLLARS	COLLAR SIZE (FT x FT)	COLLAR PROJECTION (FT)
1	4.00	3.33 x 3.33	1.10
2	4.00	3.33 x 3.33	1.10

ANTI SEEP COLLAR

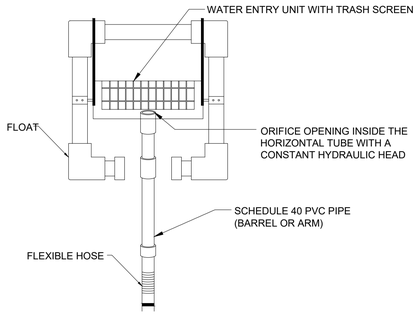
NTS



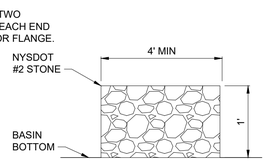
WARNING
IT IS A VIOLATION OF SECTION 7209.2 OF THE NEW YORK STATE EDUCATION LAW FOR ANY PERSON, UNLESS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER IN ANY WAY PLANS, SPECIFICATIONS, PLATS OR REPORTS TO WHICH THE SEAL OF A PROFESSIONAL ENGINEER HAS BEEN APPLIED. IF AN ITEM BEARING THE SEAL OF A PROFESSIONAL ENGINEER IS ALTERED, THE ALTERING ENGINEER SHALL AFFIX TO THE ITEM HIS SEAL AND THE NOTATION "ALTERED BY" FOLLOWED BY HIS SIGNATURE, THE DATE, AND A SPECIFIC DESCRIPTION OF THE ALTERATION.

SEDIMENT BASIN BAFFLE

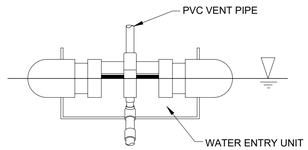
NTS



SKIMMER PLAN VIEW



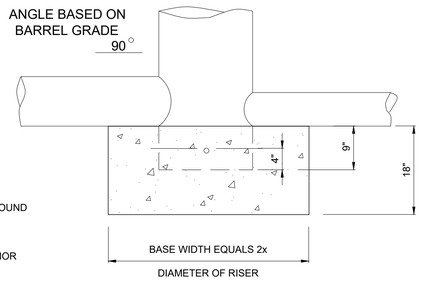
SKIMMER LANDING DEVICE



SKIMMER PROFILE VIEW

SKIMMER DISCHARGE SYSTEM

NTS



CONSTRUCTION NOTES

1. THE CONCRETE BASE SHALL BE POURED IN SUCH A MANNER TO INSURE THAT THE CONCRETE FILLS THE BOTTOM OF THE RISER TO THE INVERT OF THE OUTLET PIPE TO PREVENT THE RISER FROM BREAKING AWAY FROM THE BASE.
2. WITH ALUMINUM OR ALUMINIZED PIPE, THE EMBEDDED SECTION MUST BE PAINTED WITH CHROMATE OR EQUIVALENT.
3. RISER BASE MAY BE SIZED AS COMPUTED USING FLOATATION WITH A FACTOR OF SAFETY OF 1.2.

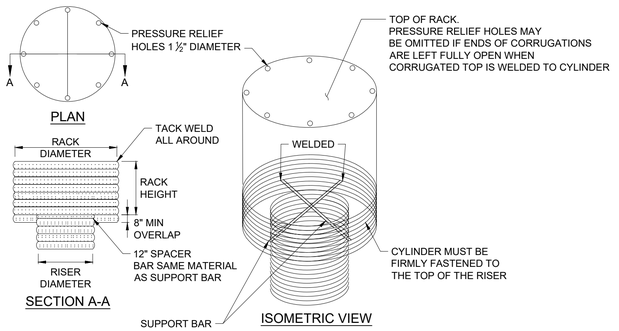
RISER BASE SEDIMENT BASIN DETAIL

NTS

CONSTRUCTION NOTES

1. PIPE FLOTATION SECTION SHALL BE SOLVENT WELDED TO ENSURE AN AIRTIGHT ASSEMBLY. THE CONTRACTOR IS REQUIRED TO CONDUCT A TEST TO CHECK FOR LEAKS PRIOR TO INSTALLATION.
2. SKIMMER SECTION SHALL HAVE 12 ROW OF ½" DIAMETER HOLES, 1 ¼" ON CENTER. IF ADDITIONAL FILTRATION IS NECESSARY, THE FILTERING MEDIA SHALL CONSIST OF A TYPE GD-II GEOTEXTILE FABRIC WRAPPED AROUND THE PERFORATED PORTION OF THE SKIMMER AND ATTACHED WITH PLASTIC SNAP TIES, BANDS, ETC.
3. FLEXIBLE PIPE SHALL BE INSERTED INTO SOLID PIPE AND FASTENED WITH 2 #8 WOOD SCREWS.
4. AT A MINIMUM, THE STRUCTURE SHALL BE INSPECTED AFTER EACH RAIN AND REPAIRS MADE AS NEEDED. IF VANDALISM IS A PROBLEM, MORE FREQUENT INSPECTION MAY BE NECESSARY.
5. CONSTRUCTION OPERATION SHALL BE CARRIED OUT IN SUCH A MANNER THAT EROSION AND WATER POLLUTION ARE MINIMIZED.
6. THE STRUCTURE SHALL ONLY BE REMOVED WHEN THE CONTRIBUTING DRAINAGE AREA HAS BEEN PROPERLY STABILIZED.

BASIN ID	WATER SURFACE ELEVATION	ARM LENGTH (FT)	ARM DIAMETER (IN)	ORIFICE SIZE (IN)	TOP OF LANDING DEVICE ELEVATION	FLEXIBLE HOSE LENGTH (IN)	FLEXIBLE HOSE ATTACHMENT ELEVATION
1	398.35	12.00	3.00	3.00	395.00	72.00	394.00
2	397	13.00	3.00	3.00	394.00	72.00	393.00



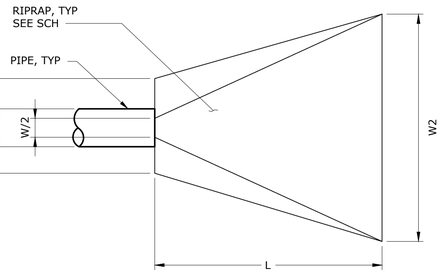
CONSTRUCTION NOTES

1. THE CYLINDER MUST BE FIRMLY FASTENED TO THE TOP OF THE RISER.
2. SUPPORT BARS ARE WELDED TO THE TOP OF THE RISER OR ATTACHED BY STRAPS BOLTED TO TOP OF RISER.

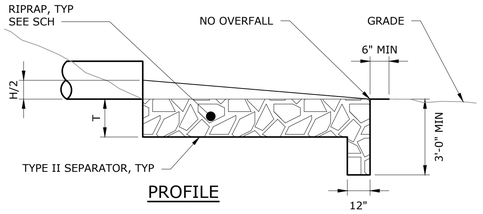
BASIN ID	RISER DIAMETER (IN)	RACK DIAMETER (IN)	RACK HEIGHT (IN)	THICKNESS GAGE	MINIMUM SUPPORT SIZE SUPPORT BAR	MINIMUM TOP	
						THICKNESS	STIFFENER
1	72	102	36	10	2" PIPE OR 2 x 2 x 3/16 ANGLE W/ STIFFENER	8 ga.	2 x 2 x ¼ ANGLE
2	48	72	21	12	1-¼" PIPE OR 1-½ x 1-½ x ¼ ANGLE	10 ga.	-

CONCENTRIC TRASH RACK AND ANTI-VORTEX DEVICE DETAIL

NTS



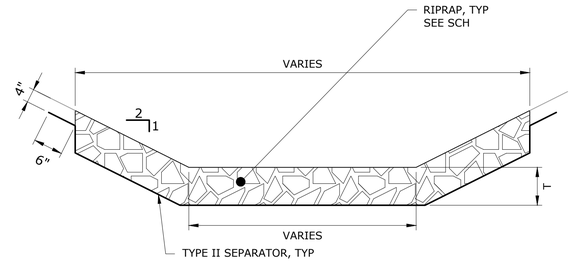
PLAN



PROFILE

RIPRAP OUTLET PROTECTION

NTS



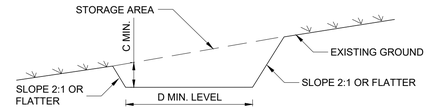
CROSS-SECTION

NOTES:

1. DETAIL AND SCHEDULE PROVIDE MINIMUM DIMENSIONS. SEE CONTRACT DWGS FOR LOCATIONS, EXTENTS, AND SHAPE OF RIPRAP OUTLET PROTECTION.
2. RIPRAP SHALL BE COMPOSED OF A WELL-GRADED MIXTURE OF ROCK SIZE SO THAT 50 PERCENT OF THE PIECES, BY WEIGHT SHALL BE LARGER THAN THE D50 SIZE. WELL-GRADED MIXTURE IS DEFINED AS A MIXTURE COMPOSED OF PRIMARILY LARGER ROCK SIZES, BUT WITH SUFFICIENT MIXTURE OF OTHER SIZES TO FILL THE SMALLER VOIDS BETWEEN THE ROCKS.

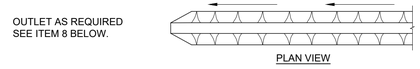
SCHEDULE OF DIMENSIONS

PIPE	H	W	W1	W2	L	T	D_{50}	D_{MAX}
SD AND OF OUTFALL	SEE GRADING PLANS					20"	9"	14"
WETLAND SPILLWAY	2'	--	8'	26'	22'	20"	9"	14"
FOREBAY HEADWALL	SEE GRADING PLANS					20"	9"	14"
GALLERY DRAIN	1.25'	--	9'	18.5'	17'	20"	9"	14"
CD-1	1'	--	12'	24'	20'	20"	9"	14"
CD-2	1'	--	12'	24'	20'	20"	9"	14"



CROSS SECTION

POSITIVE DRAINAGE: 0.5% OR STEEPER DEPENDENT ON TOPOGRAPHY



PLAN VIEW

CONSTRUCTION DITCH SCHEDULE						
DITCH ID	DITCH WIDTH (D)	DITCH DEPTH (C)	SWALE TYPE	TYPE OF TREATMENT	SIDE SLOPES	SLOPE
CD-1	4 FT	1 FT	A	2	2:1	< 5%
CD-2	4 FT	1 FT	A	2	2:1	< 5%

CONSTRUCTION SPECIFICATIONS

1. ALL CONSTRUCTION DITCHES SHALL HAVE UNINTERRUPTED POSITIVE GRADE TO AN OUTLET.
2. DIVERTED RUNOFF FROM A DISTURBED AREA SHALL BE CONVEYED TO A SEDIMENT TRAPPING DEVICE.
3. DIVERTED RUNOFF FROM AN UNDISTURBED AREA SHALL OUTLET DIRECTLY INTO AN UNDISTURBED STABILIZED AREA AT NON-EROSIVE VELOCITY.
4. ALL TREES, BRUSH, STUMPS, OBSTRUCTIONS, AND OTHER OBJECTIONABLE MATERIAL SHALL BE REMOVED AND DISPOSED OF SO AS NOT TO INTERFERE WITH THE PROPER FUNCTIONING OF THE SWALE.
5. THE DITCH SHALL BE EXCAVATED OR SHAPED TO LINE, GRADE, AND CROSS SECTION AS REQUIRED TO MEET THE CRITERIA SPECIFIED HEREIN AND BE FREE OF BANK PROJECTIONS OR OTHER IRREGULARITIES WHICH WILL IMPEDE NORMAL FLOW.
6. FILLS SHALL BE COMPACTED BY EARTH MOVING EQUIPMENT.
7. ALL EARTH REMOVED AND NOT NEEDED FOR CONSTRUCTION SHALL BE PLACED SO THAT IT WILL NOT INTERFERE WITH THE FUNCTIONING OF THE DITCH.
8. STABILIZATION SHALL BE AS PER THE FLOW CHANNEL STABILIZATION CHART BELOW:

TYPE OF TREATMENT	CHANNEL GRADE	SWALE TYPE A (5 AC. OR LESS)	SWALE TYPE B (5 AC. - 10 AC)
1	0.5 - 3.0%	SEED AND STRAW MULCH	SEED AND STRAW MULCH
2	3.1 - 5.0%	SEED AND STRAW MULCH	SEED AND COVER USING RECP
3	5.1 - 8.0%	SEED AND COVER WITH RECP	LINED WITH 4-8" RIP-RAP OR GEOTEXTLE
4	8.1 - 10.%	LINED WITH 4-8" RIP-RAP OR GEOTEXTILE	SITE SPECIFIC DESIGN

9. PERIODIC INSPECTION AND REQUIRED MAINTENANCE MUST BE PROVIDED AFTER EACH RAIN EVENT.

CONSTRUCTION DITCH

NTS

REV	ISSUED FOR	DATE	BY

PROJECT ENGINEER: R. FROST
DESIGNED BY: J. TANNER
DRAWN BY: J. TANNER
CHECKED BY: D. SHEERAN
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE 0 1/2" 1"

BID SET

STATE OF NEW YORK — CHRISTOPHER JAMES SHEERAN — 088955 — LICENSED PROFESSIONAL ENGINEER

Hazen

HAZEN AND SAWYER
498 SEVENTH AVENUE, 11th FLOOR
NEW YORK, NEW YORK 10018

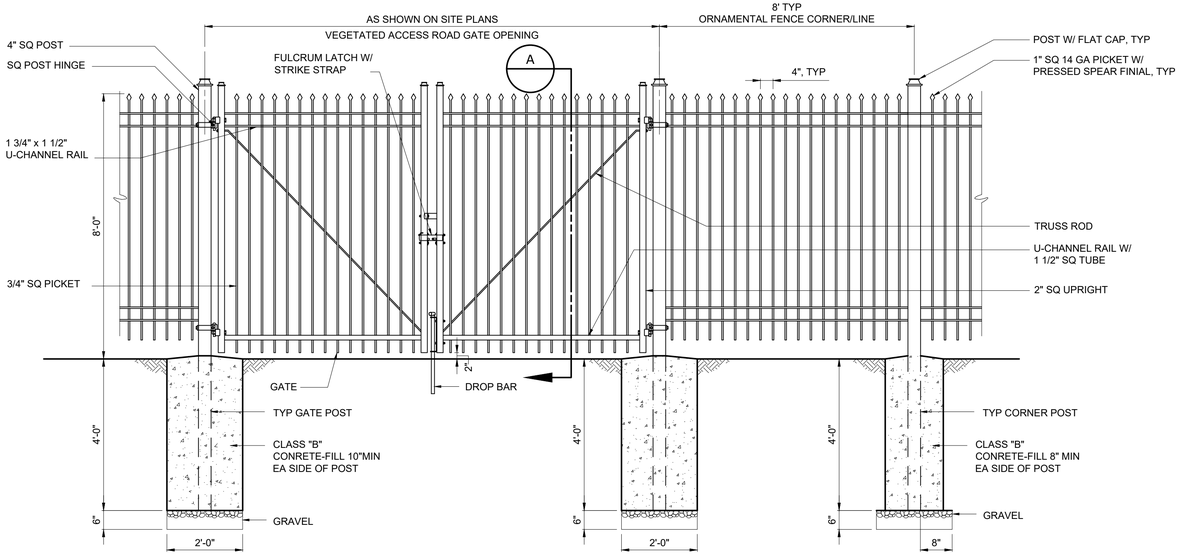
WESTCHESTER JOINT WATER WORKS
MAMARONECK, NY

RYE LAKE WATER FILTRATION PLANT
HARRISON, NY

CIVIL
EROSION AND SEDIMENT CONTROL DETAILS

DATE: FEB 2025
HAZEN NO.: 90388-000
CONTRACT NO.: A1364-A
DRAWING NUMBER: C-303

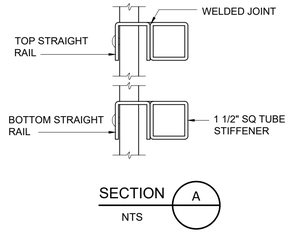
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PLOT DATE: 3/27/2025 12:05 AM BY: JTANNER



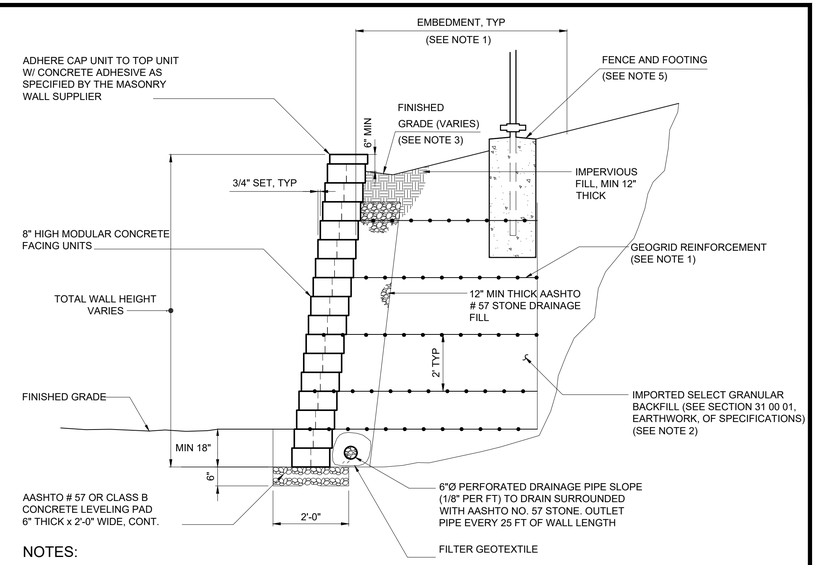
ORNAMENTAL FENCE

NOTES:

1. PROVIDE LATCHING DEVICES TO HOLD GATE IN OPEN POSITION.
2. IF ROCK IS ENCOUNTERED WHEN SETTING POSTS, DRILL HOLES 4" ARGER IN DIA. THAN POSTS AND BACKFILL TO GRADE WITH CLASS "B" CONCRETE.
3. SEE SPECIFICATION 32-31-19 FOR ADDITIONAL INFORMATION.



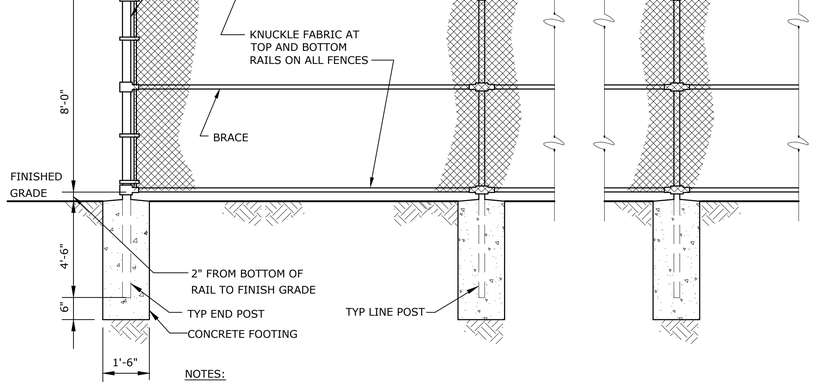
SECTION A
NTS



NOTES:

1. GEOGRID REINFORCEMENT MATERIAL AND EMBEDMENT LENGTH TO BE ESTABLISHED BY PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF NEW YORK BASED UPON CURRENT AND PROJECTED LOADINGS AND PROPER DRAINAGE. MINIMUM GEOGRID LENGTH TO BE 0.75 TIMES THE MAXIMUM WALL HEIGHT AND TO BE UNIFORM FOR ALL LAYERS. SEE SPECIFICATION 31 34 19.13.
2. WALL BACKFILL MATERIAL USED IN DESIGN SHALL BE ON-SITE MATERIAL OR MATERIAL MATCHING WALL DESIGN PARAMETERS SHALL BE SUPPLIED BY CONTRACTOR AT NO ADDITIONAL COST. IT SHOULD BE ASSUMED BACKFILL MATERIAL IS NOT AVAILABLE ON SITE. SEE SPECIFICATION SECTION 32 32 35 FOR BACKFILL SPECIFICATIONS.
3. PROVIDE POSITIVE DRAINAGE AWAY FROM BACK OF WALL.
4. INCLUDE SUBGRADE LOADING FOR PARKING AREA WHERE APPLICABLE. DESIGN TO ACCOMMODATE H-20 LOADING AS MINIMUM.
5. PROVIDE ADDITIONAL SPACE BEHIND THE RETAINING WALL TO INSTALL FENCE AND FOOTINGS.

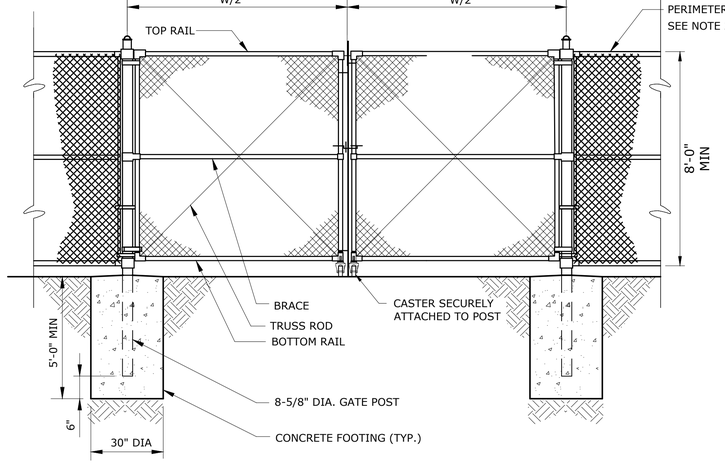
MSE RETAINING WALL
C-32-0580



NOTES:

1. GATES SHALL BE IN ACCORDANCE WITH THE DETAILS ON THE ARCH DRAWINGS.
2. FENCE SHALL BE POLYOLEFIN COATED CHAIN LINK FENCE PER SPECIFICATION 32 31 13.
3. ORIENTATION AND LIMIT OF PERIMETER FENCE SHALL BE INSTALLED PER DWGS AND AS DIRECTED BY ENGINEER.
4. IF ROCK IS ENCOUNTERED WHEN SETTING POSTS, DRILL HOLES 4 INCHES LARGER IN DIAMETER THAN POSTS AND BACKFILL TO GRADE WITH CLASS "B" CONCRETE.

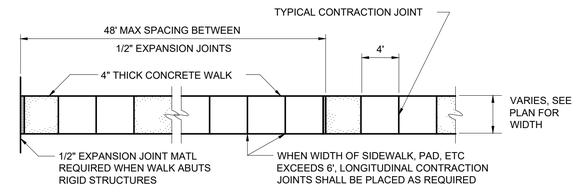
TYPICAL PERIMETER FENCE
NTS



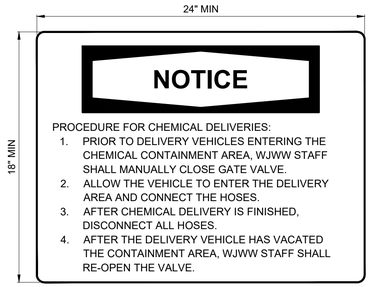
NOTES:

1. PROVIDE LATCHING DEVICES TO HOLD GATES IN OPEN POSITION AND PADLOCK MASTER LOCK NUMBER 12 OR EQUAL TO LOCK GATES CLOSED.
2. ORIENTATION AND LIMIT OF PERIMETER FENCE SHALL BE INSTALLED AS DIRECTED BY ENGINEER.
3. IF ROCK IS ENCOUNTERED WHEN SETTING POSTS, DRILL HOLES 1/2" INCH LARGER IN DIAMETER THAN POSTS AND BACKFILL TO GRADE WITH CLASS "B" CONCRETE.

TYPICAL CHAIN LINK FENCE GATE
NTS



TYPICAL CONCRETE WALKWAY
C-32-0520



NOTES:

1. SIGN SHALL BE IN ACCORDANCE WITH SPECIFICATION SECTION 10 14 01 - IDENTIFYING DEVICES.
2. SEE DWG C-141 AND A-012 FOR SIGN LOCATION.

CONTAINMENT AREA SIGN
NTS

WARNING
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REV	ISSUED FOR	DATE	BY

PROJECT ENGINEER:	R. FROST
DESIGNED BY:	J. TANNER
DRAWN BY:	J. TANNER
CHECKED BY:	D. SHEERAN
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	0 1/2" 1"

BID SET



Hazen

HAZEN AND SAWYER
498 SEVENTH AVENUE, 11th FLOOR
NEW YORK, NEW YORK 10018

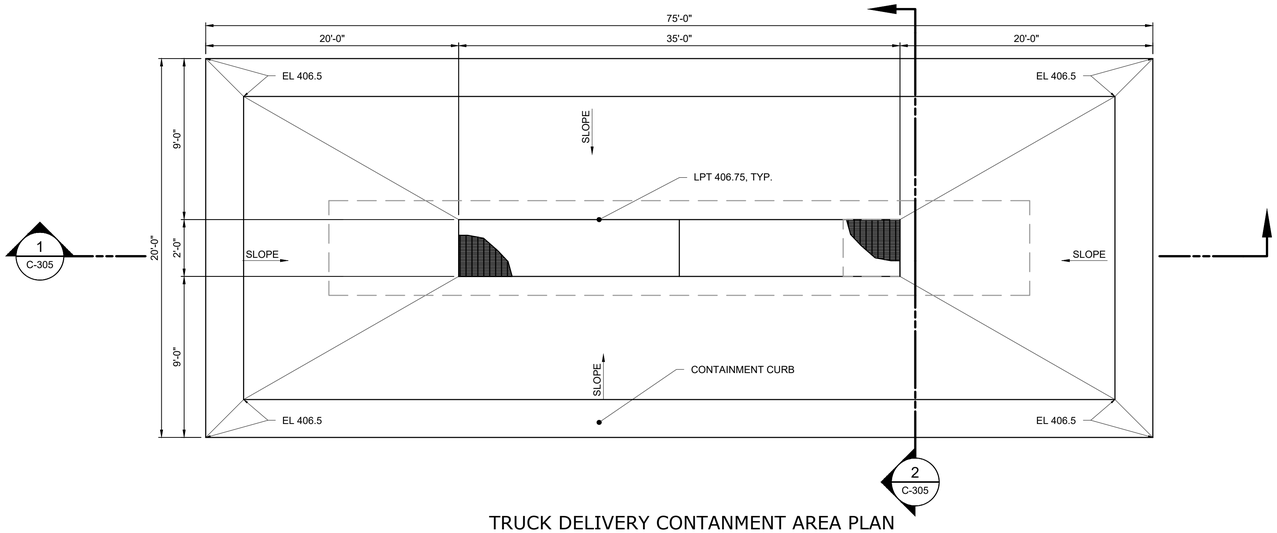
WESTCHESTER JOINT WATER WORKS
MAMARONECK, NY

RYE LAKE WATER FILTRATION PLANT
HARRISON, NY

CIVIL
SITE DETAILS

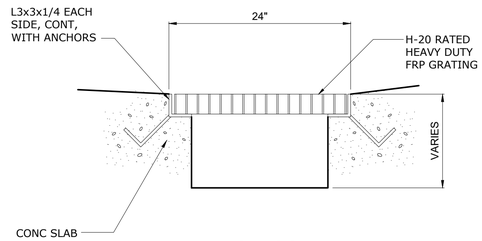
DATE:	FEB 2025
HAZEN NO.:	90388-000
CONTRACT NO.:	A1364-A
DRAWING NUMBER:	C-304

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PLOT DATE: 3/27/2025 12:05 AM BY: JTANNER



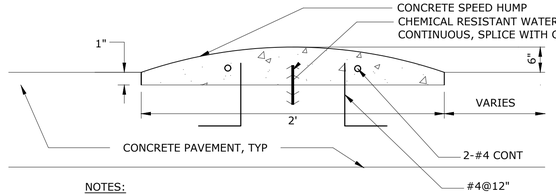
TRUCK DELIVERY CONTANMENT AREA PLAN

1/4"=1'=0"



TRENCH COVER

NTS

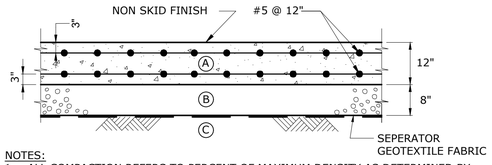


NOTES:

1. USE CURB AND CURB & GUTTER MEETING THE MATERIAL AND CONSTRUCTION REQUIREMENTS OF SECTION 609 OF THE NEW YORK STATE DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS.

CONTAINMENT CURB

NTS



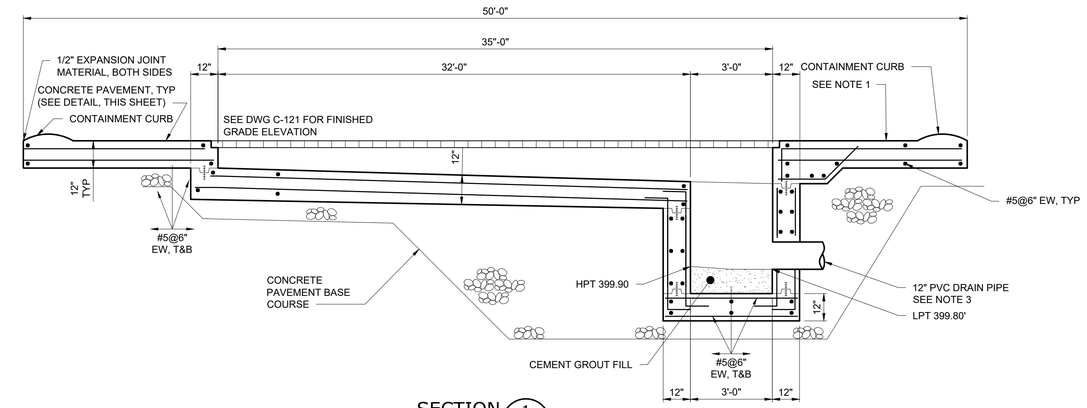
NOTES:

1. ALL COMPACTION REFERS TO PERCENT OF MAXIMUM DENSITY AS DETERMINED BY ASTM D-1557 METHOD D, SEE NOTES.
2. CONCRETE SHALL BE 4,500 PSI.
3. REINFORCING SHALL BE #5 @ 12" C/C AT DEPTH OF 3" FROM TOP OF COURSE AND 3" FROM BOTTOM OF COURSE.

KEY:
- (A) = CONCRETE PAVEMENT
- (B) = BASE COURSE COMPACTED TO 95%
- (C) = SUBGRADE COMPACTED TO 95%

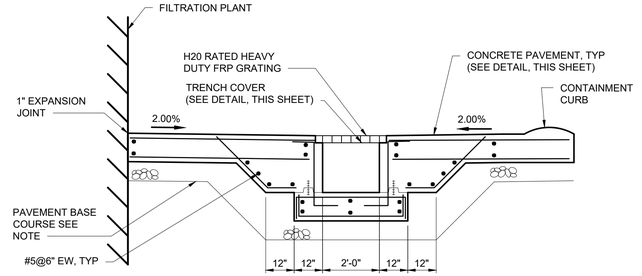
CONCRETE PAVEMENT SECTION

NTS



SECTION 1

NTS C-352

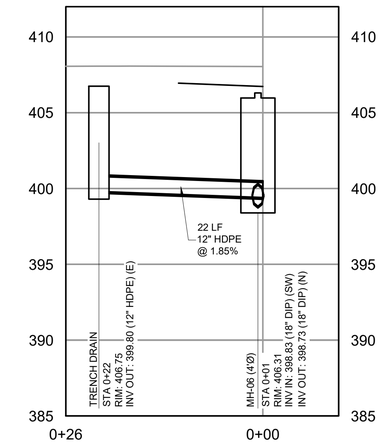


SECTION 2

NTS C-352

NOTE:

1. APPLY CONCRETE TOPPING ON ALL CONCRETE SURFACES WITHIN THE AREA ENCLOSED BY SPEED HUMPS AND EDGE OF BUILDING AS PART OF THE SECONDARY CONTAINMENT AREA IN ACCORDANCE WITH SPECIFICATION 099700 - SPECIAL COATINGS.
2. PAVEMENT BASE COURSE SHALL BE PER SPECIFICATION 321000 - PAVING AND SURFACING.
3. PIPE PENETRATION SHALL BE SEALED USING A LINK-SEAL, AS MANUFACTURED BY GPT, OR APPROVED EQUAL.



TRENCH DRAIN OUTLET PROFILE

HORIZONTAL SCALE: 1" = 10'
VERTICAL SCALE: 1" = 5'

SCALE: 1" = 5' — 5 2.5 0 5'

SCALE: 1" = 10' — 10 5 0 10'

WARNING
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REV	ISSUED FOR	DATE	BY

PROJECT ENGINEER:	R. FROST
DESIGNED BY:	J. TANNER
DRAWN BY:	J. TANNER
CHECKED BY:	D. SHEERAN
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE	0 1/2" 1"

BID SET

STATE OF NEW YORK — JAMES SHEERAN — 088955 — LICENSED PROFESSIONAL ENGINEER

Hazen

HAZEN AND SAWYER
498 SEVENTH AVENUE, 11th FLOOR
NEW YORK, NEW YORK 10018

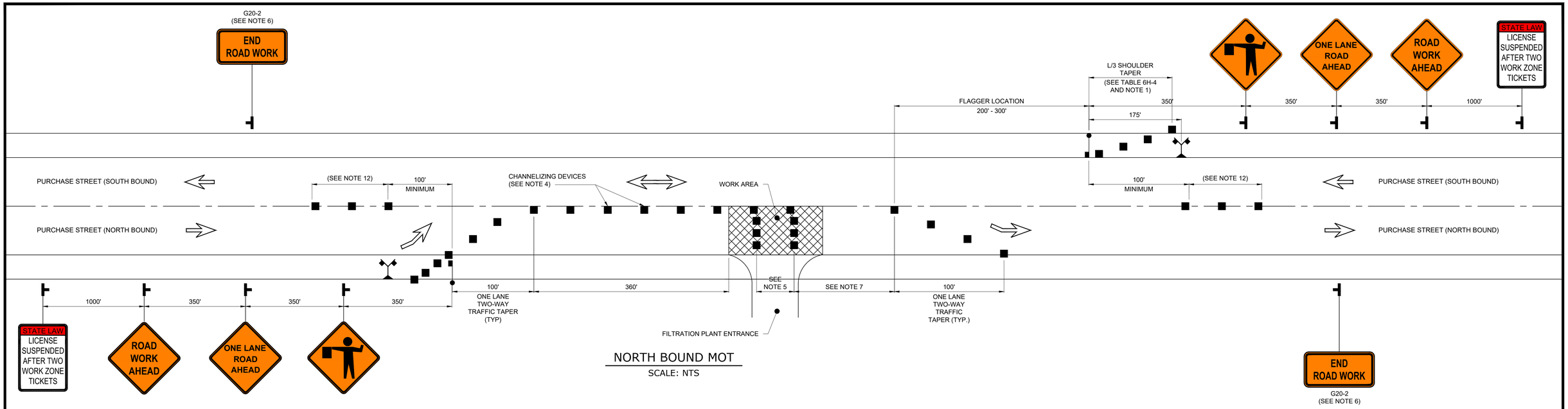
WESTCHESTER JOINT WATER WORKS
MAMARONECK, NY

RYE LAKE WATER FILTRATION PLANT
HARRISON, NY

CIVIL
TRUCK DELIVERY CONTAINMENT DETAIL

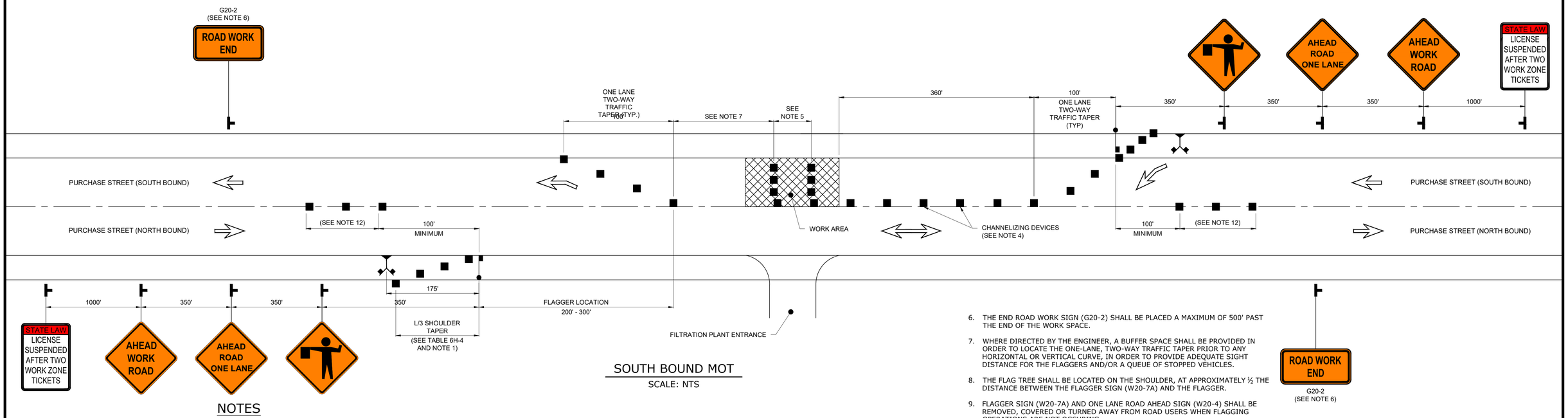
DATE:	FEB 2025
HAZEN NO.:	90388-000
CONTRACT NO.:	A1364-A
DRAWING NUMBER:	C-305

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PLOT DATE: 3/27/2025 2:27 PM BY: JTANNER



NORTH BOUND MOT

SCALE: NTS



SOUTH BOUND MOT

SCALE: NTS

NOTES

1. WHEN PAVED SHOULDERS HAVING A WIDTH OF 8' OR MORE ARE CLOSED, CHANNELIZING DEVICES SHALL BE USED TO CLOSE THE SHOULDER IN ADVANCE TO DELINEATE THE BEGINNING OF THE WORK AREA AND DIRECT VEHICULAR TRAFFIC TO REMAIN IN THE TRAVEL WAY.
2. WHEN A SIDE ROAD OR DRIVEWAY INTERSECTS THE ROADWAY WITHIN A WORK ZONE TRAFFIC CONTROL AREA, ADDITIONAL TEMPORARY TRAFFIC CONTROL DEVICES AND/OR FLAGGERS SHALL BE PLACED AS NEEDED. ADDITIONAL FLAGGERS SHALL BE LOCATED AT ALL INTERSECTIONS AND COMMERCIAL DRIVEWAYS LOCATED WITHIN OR NEAR THE ACTIVE WORK SPACE.
3. NO WORK ACTIVITY, EQUIPMENT, OR STORAGE OF VEHICLES, OR MATERIAL SHALL OCCUR WITHIN THE BUFFER SPACE AT ANY TIME.
4. CHANNELIZING DEVICE SPACING (CENTER TO CENTER) SHALL NOT EXCEED 40' IN THE ACTIVE WORK SPACE.
5. TRANSVERSE DEVICES SHALL BE REQUIRED (AS PER 619 STANDARD SPECIFICATIONS) WHEN A PAVED SHOULDER HAVING A WIDTH OF 8' OR GREATER IS CLOSED FOR A DISTANCE GREATER THAN 1500'.
6. THE END ROAD WORK SIGN (G20-2) SHALL BE PLACED A MAXIMUM OF 500' PAST THE END OF THE WORK SPACE.
7. WHERE DIRECTED BY THE ENGINEER, A BUFFER SPACE SHALL BE PROVIDED IN ORDER TO LOCATE THE ONE-LANE, TWO-WAY TRAFFIC TAPER PRIOR TO ANY HORIZONTAL OR VERTICAL CURVE, IN ORDER TO PROVIDE ADEQUATE SIGHT DISTANCE FOR THE FLAGGERS AND/OR A QUEUE OF STOPPED VEHICLES.
8. THE FLAG TREE SHALL BE LOCATED ON THE SHOULDER, AT APPROXIMATELY ½ THE DISTANCE BETWEEN THE FLAGGER SIGN (W20-7A) AND THE FLAGGER.
9. FLAGGER SIGN (W20-7A) AND ONE LANE ROAD AHEAD SIGN (W20-4) SHALL BE REMOVED, COVERED OR TURNED AWAY FROM ROAD USERS WHEN FLAGGING OPERATIONS ARE NOT OCCURING.
10. FLAGGER AND FLAG TREE SHALL BE ILUMINATED TO LEVEL II ILLUMINATION DURING NIGHT TIME OPERATIONS.
11. ALL FLAGGERS SHALL USE 24" (MIN.) OCTAGON SHAPED STOP/SLOW PADDLES HAVING 6' STAFF.
12. CENTERLINE CHANNELIZING DEVICES ARE OPTIONAL AND MAY BE ELIMINATED WHERE SPACE CONSTRAINTS EXIST.

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REV	ISSUED FOR	DATE	BY

PROJECT ENGINEER: R. FROST
DESIGNED BY: J. TANNER
DRAWN BY: M. SEEBOLD
CHECKED BY: D. SHEERAN
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE 0 1/2" 1"

BID SET



Hazen

HAZEN AND SAWYER
498 SEVENTH AVENUE, 11th FLOOR
NEW YORK, NEW YORK 10018

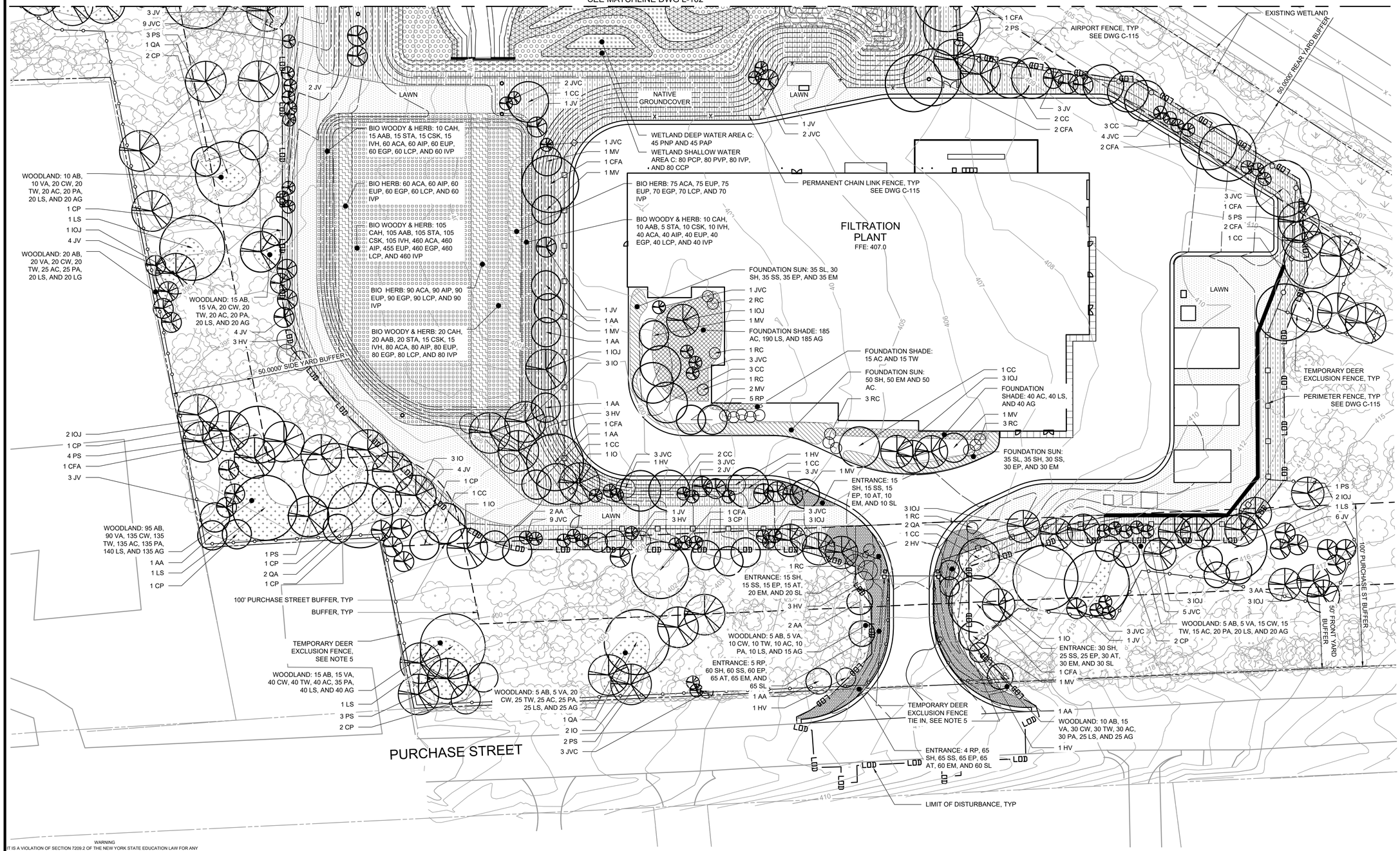
WESTCHESTER JOINT WATER WORKS
MAMARONECK, NY

RYE LAKE WATER FILTRATION PLANT
HARRISON, NY

CIVIL
MAINTENANCE OF TRAFFIC DETAIL

DATE: FEB 2025
HAZEN NO.: 90388-000
CONTRACT NO.: A1364-A
DRAWING NUMBER: C-306

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PLOT DATE: 3/27/2025 12:05 AM BY: JTANNER



PLAN

SCALE: 1" = 30'

SCALE: 1" = 30'

30 15 0 30

NOTES:

1. SEE L-102 LANDSCAPE PLAN - SHEET 2 FOR PLANTING NOTES.
2. SEE L-301 FOR LANDSCAPE SCHEDULES.
3. SEE L-301 AND L-302 FOR SEEDING AND PLANTING DETAILS.
4. ALL WORK PERFORMED BETWEEN THE CONSTRUCTION/SILT FENCE AND TEMPORARY DEER EXCLUSION FENCE SHALL BE PERFORMED WITH HAND TOOLS ONLY. NO HEAVY MACHINERY SHALL BE PERMITTED.
5. TEMPORARY DEER EXCLUSION FENCE TO TIE INTO CHAIN LINK FENCE AND AIRPORT FENCE DURING CONSTRUCTION, SEE CIVIL DWG C-111, AND SHALL BE SIX (6) INCHES FROM THE ACTUATED SWINGING ACCESS GATE STONE COLUMNS AFTER REMOVAL OF THE CHAIN LINK FENCE GATES.

LEGEND

- ZONE 1 - LAWN
- ZONE 2 - NATIVE GROUNDCOVER
- ZONE 3 - ENTRANCE
- ZONE 4 - FOUNDATION PART SUN
- ZONE 5 - FOUNDATION SHADE
- ZONE 6 - WOODLAND
- ZONE 7 - BIORETENTION HERBACEOUS
- ZONE 8 - BIORETENTION WOODY AND HERBACEOUS
- ZONE 9 - WETLAND DEEP WATER
- ZONE 10 - WETLAND SHALLOW WATER BENCH
- ZONE 11 - WETLAND SHORELINE FRINGE
- ZONE 12 - WETLAND RIPARIAN FRINGE

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REV	ISSUED FOR	DATE	BY

PROJECT ENGINEER: R. FROST
DESIGNED BY: E. MOSKALENKO
DRAWN BY: E. MOSKALENKO
CHECKED BY: M. SANTOWASSO

IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE 0 1/2" 1"

BID SET

REGISTERED LANDSCAPE ARCHITECT ELIZABETH ANN MOSKALENKO 002548-1 STATE OF NEW YORK

Hazen
HAZEN AND SAWYER
498 SEVENTH AVENUE, 11th FLOOR
NEW YORK, NEW YORK 10018

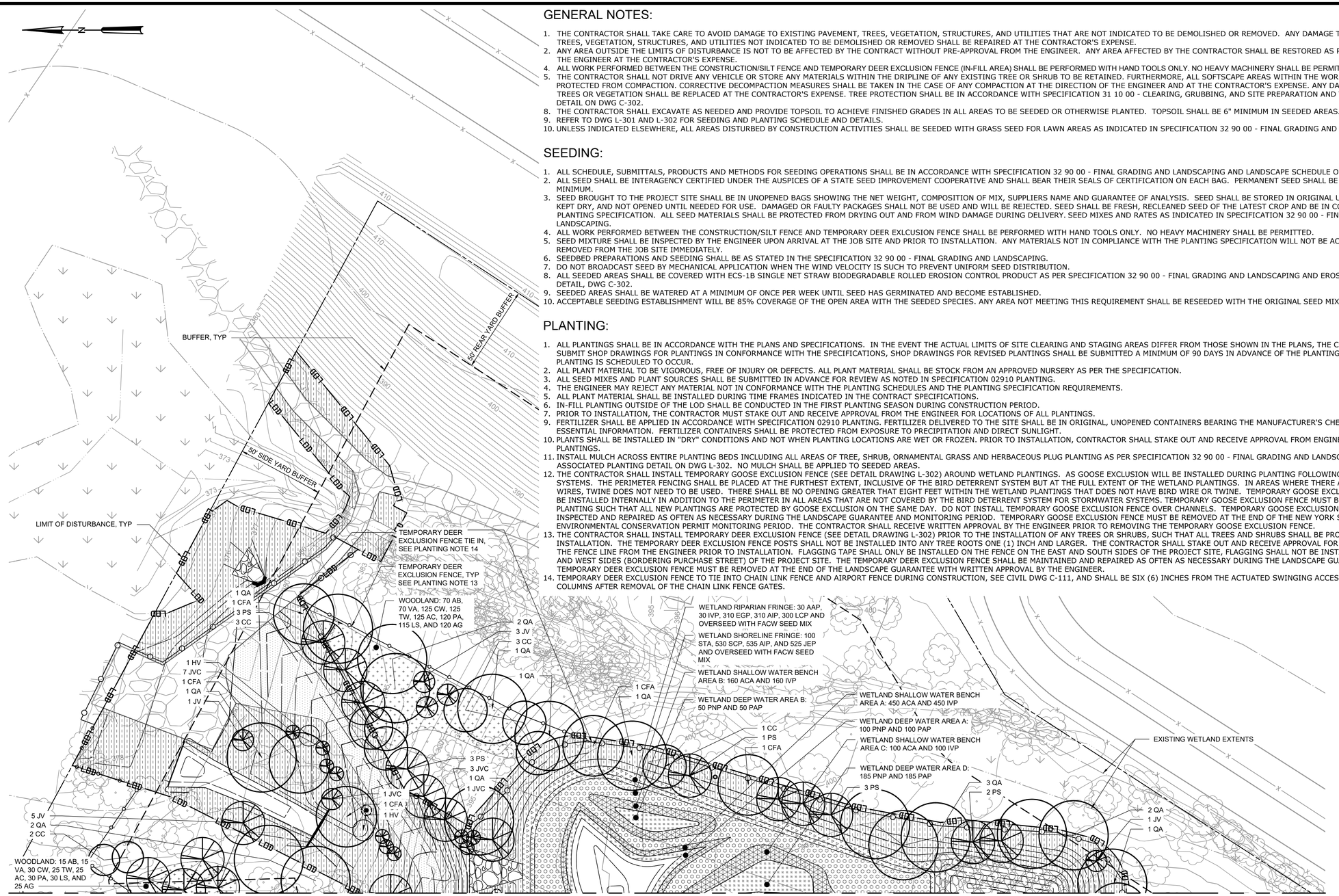
WESTCHESTER JOINT WATER WORKS
MAMARONECK, NY

RYE LAKE WATER FILTRATION PLANT
HARRISON, NY

LANDSCAPE
LANDSCAPE PLAN - SHEET 1

DATE: FEB 2025
HAZEN NO.: 90388-000
CONTRACT NO.: A1364-A
DRAWING NUMBER: L-101

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GENERAL NOTES:

1. THE CONTRACTOR SHALL TAKE CARE TO AVOID DAMAGE TO EXISTING PAVEMENT, TREES, VEGETATION, STRUCTURES, AND UTILITIES THAT ARE NOT INDICATED TO BE DEMOLISHED OR REMOVED. ANY DAMAGE TO EXISTING PAVEMENT, TREES, VEGETATION, STRUCTURES, AND UTILITIES NOT INDICATED TO BE DEMOLISHED OR REMOVED SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.
2. ANY AREA OUTSIDE THE LIMITS OF DISTURBANCE IS NOT TO BE AFFECTED BY THE CONTRACT WITHOUT PRE-APPROVAL FROM THE ENGINEER. ANY AREA AFFECTED BY THE CONTRACTOR SHALL BE RESTORED AS PER THE DIRECTION OF THE ENGINEER AT THE CONTRACTOR'S EXPENSE.
4. ALL WORK PERFORMED BETWEEN THE CONSTRUCTION/SILT FENCE AND TEMPORARY DEER EXCLUSION FENCE (IN-FILL AREA) SHALL BE PERFORMED WITH HAND TOOLS ONLY. NO HEAVY MACHINERY SHALL BE PERMITTED.
5. THE CONTRACTOR SHALL NOT DRIVE ANY VEHICLE OR STORE ANY MATERIALS WITHIN THE DRIPLINE OF ANY EXISTING TREE OR SHRUB TO BE RETAINED. FURTHERMORE, ALL SOFTSCAPE AREAS WITHIN THE WORK LIMITS SHALL BE PROTECTED FROM COMPACTION. CORRECTIVE DECOMPACTION MEASURES SHALL BE TAKEN IN THE CASE OF ANY COMPACTION AT THE DIRECTION OF THE ENGINEER AND AT THE CONTRACTOR'S EXPENSE. ANY DAMAGE TO EXISTING TREES OR VEGETATION SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE. TREE PROTECTION SHALL BE IN ACCORDANCE WITH SPECIFICATION 31 10 00 - CLEARING, GRUBBING, AND SITE PREPARATION AND TREE PROTECTION DETAIL ON DWG C-302.
8. THE CONTRACTOR SHALL EXCAVATE AS NEEDED AND PROVIDE TOPSOIL TO ACHIEVE FINISHED GRADES IN ALL AREAS TO BE SEEDED OR OTHERWISE PLANTED. TOPSOIL SHALL BE 6" MINIMUM IN SEEDED AREAS.
9. REFER TO DWG L-301 AND L-302 FOR SEEDING AND PLANTING SCHEDULE AND DETAILS.
10. UNLESS INDICATED ELSEWHERE, ALL AREAS DISTURBED BY CONSTRUCTION ACTIVITIES SHALL BE SEEDED WITH GRASS SEED FOR LAWN AREAS AS INDICATED IN SPECIFICATION 32 90 00 - FINAL GRADING AND LANDSCAPING.

SEEDING:

1. ALL SCHEDULE, SUBMITTALS, PRODUCTS AND METHODS FOR SEEDING OPERATIONS SHALL BE IN ACCORDANCE WITH SPECIFICATION 32 90 00 - FINAL GRADING AND LANDSCAPING AND LANDSCAPE SCHEDULE ON DWG L-301.
2. ALL SEED SHALL BE INTERAGENCY CERTIFIED UNDER THE AUSPICES OF A STATE SEED IMPROVEMENT COOPERATIVE AND SHALL BEAR THEIR SEALS OF CERTIFICATION ON EACH BAG. PERMANENT SEED SHALL BE 75% PURE LIVE SEED MINIMUM.
3. SEED BROUGHT TO THE PROJECT SITE SHALL BE IN UNOPENED BAGS SHOWING THE NET WEIGHT, COMPOSITION OF MIX, SUPPLIERS NAME AND GUARANTEE OF ANALYSIS. SEED SHALL BE STORED IN ORIGINAL UNOPENED PACKAGES, KEPT DRY, AND NOT OPENED UNTIL NEEDED FOR USE. DAMAGED OR FAULTY PACKAGES SHALL NOT BE USED AND WILL BE REJECTED. SEED SHALL BE FRESH, RECLEANED SEED OF THE LATEST CROP AND BE IN CONFORMANCE WITH THE PLANTING SPECIFICATION. ALL SEED MATERIALS SHALL BE PROTECTED FROM DRYING OUT AND FROM WIND DAMAGE DURING DELIVERY. SEED MIXES AND RATES AS INDICATED IN SPECIFICATION 32 90 00 - FINAL GRADING AND LANDSCAPING.
4. ALL WORK PERFORMED BETWEEN THE CONSTRUCTION/SILT FENCE AND TEMPORARY DEER EXLCUSION FENCE SHALL BE PERFORMED WITH HAND TOOLS ONLY. NO HEAVY MACHINERY SHALL BE PERMITTED.
5. SEED MIXTURE SHALL BE INSPECTED BY THE ENGINEER UPON ARRIVAL AT THE JOB SITE AND PRIOR TO INSTALLATION. ANY MATERIALS NOT IN COMPLIANCE WITH THE PLANTING SPECIFICATION WILL NOT BE ACCEPTED AND SHALL BE REMOVED FROM THE JOB SITE IMMEDIATELY.
6. SEEDBED PREPARATIONS AND SEEDING SHALL BE AS STATED IN THE SPECIFICATION 32 90 00 - FINAL GRADING AND LANDSCAPING.
7. DO NOT BROADCAST SEED BY MECHANICAL APPLICATION WHEN THE WIND VELOCITY IS SUCH TO PREVENT UNIFORM SEED DISTRIBUTION.
8. ALL SEEDED AREAS SHALL BE COVERED WITH ECS-1B SINGLE NET STRAW BIODEGRADABLE ROLLED EROSION CONTROL PRODUCT AS PER SPECIFICATION 32 90 00 - FINAL GRADING AND LANDSCAPING AND EROSION CONTROL MATTING DETAIL, DWG C-302.
9. SEEDED AREAS SHALL BE WATERED AT A MINIMUM OF ONCE PER WEEK UNTIL SEED HAS GERMINATED AND BECOME ESTABLISHED.
10. ACCEPTABLE SEEDING ESTABLISHMENT WILL BE 85% COVERAGE OF THE OPEN AREA WITH THE SEEDED SPECIES. ANY AREA NOT MEETING THIS REQUIREMENT SHALL BE RESEEDED WITH THE ORIGINAL SEED MIX.

PLANTING:

1. ALL PLANTINGS SHALL BE IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS. IN THE EVENT THE ACTUAL LIMITS OF SITE CLEARING AND STAGING AREAS DIFFER FROM THOSE SHOWN IN THE PLANS, THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR PLANTINGS IN CONFORMANCE WITH THE SPECIFICATIONS, SHOP DRAWINGS FOR REVISED PLANTINGS SHALL BE SUBMITTED A MINIMUM OF 90 DAYS IN ADVANCE OF THE PLANTING SEASON WHEN PLANTING IS SCHEDULED TO OCCUR.
2. ALL PLANT MATERIAL TO BE VIGOROUS, FREE OF INJURY OR DEFECTS. ALL PLANT MATERIAL SHALL BE STOCK FROM AN APPROVED NURSERY AS PER THE SPECIFICATION.
3. ALL SEED MIXES AND PLANT SOURCES SHALL BE SUBMITTED IN ADVANCE FOR REVIEW AS NOTED IN SPECIFICATION 02910 PLANTING.
4. THE ENGINEER MAY REJECT ANY MATERIAL NOT IN CONFORMANCE WITH THE PLANTING SCHEDULES AND THE PLANTING SPECIFICATION REQUIREMENTS.
5. ALL PLANT MATERIAL SHALL BE INSTALLED DURING TIME FRAMES INDICATED IN THE CONTRACT SPECIFICATIONS.
6. IN-FILL PLANTING OUTSIDE OF THE LOD SHALL BE CONDUCTED IN THE FIRST PLANTING SEASON DURING CONSTRUCTION PERIOD.
7. PRIOR TO INSTALLATION, THE CONTRACTOR MUST STAKE OUT AND RECEIVE APPROVAL FROM THE ENGINEER FOR LOCATIONS OF ALL PLANTINGS.
9. FERTILIZER SHALL BE APPLIED IN ACCORDANCE WITH SPECIFICATION 02910 PLANTING. FERTILIZER DELIVERED TO THE SITE SHALL BE IN ORIGINAL, UNOPENED CONTAINERS BEARING THE MANUFACTURER'S CHEMICAL ANALYSIS AND ESSENTIAL INFORMATION. FERTILIZER CONTAINERS SHALL BE PROTECTED FROM EXPOSURE TO PRECIPITATION AND DIRECT SUNLIGHT.
10. PLANTS SHALL BE INSTALLED IN "DRY" CONDITIONS AND NOT WHEN PLANTING LOCATIONS ARE WET OR FROZEN. PRIOR TO INSTALLATION, CONTRACTOR SHALL STAKE OUT AND RECEIVE APPROVAL FROM ENGINEER FOR LOCATIONS OF PLANTINGS.
11. INSTALL MULCH ACROSS ENTIRE PLANTING BEDS INCLUDING ALL AREAS OF TREE, SHRUB, ORNAMENTAL GRASS AND HERBACEOUS PLUG PLANTING AS PER SPECIFICATION 32 90 00 - FINAL GRADING AND LANDSCAPING AND EACH ASSOCIATED PLANTING DETAIL ON DWG L-302. NO MULCH SHALL BE APPLIED TO SEEDED AREAS.
12. THE CONTRACTOR SHALL INSTALL TEMPORARY GOOSE EXCLUSION FENCE (SEE DETAIL DRAWING L-302) AROUND WETLAND PLANTINGS. AS GOOSE EXCLUSION WILL BE INSTALLED DURING PLANTING FOLLOWING BIRD DETERRENT SYSTEMS. THE PERIMETER FENCING SHALL BE PLACED AT THE FURTHEST EXTENT, INCLUSIVE OF THE BIRD DETERRENT SYSTEM BUT AT THE FULL EXTENT OF THE WETLAND PLANTINGS. IN AREAS WHERE THERE ARE BIRD DETERRENT WIRES, TWINE DOES NOT NEED TO BE USED. THERE SHALL BE NO OPENING GREATER THAT EIGHT FEET WITHIN THE WETLAND PLANTINGS THAT DOES NOT HAVE BIRD WIRE OR TWINE. TEMPORARY GOOSE EXCLUSION FENCING SHALL BE INSTALLED INTERNALLY IN ADDITION TO THE PERIMETER IN ALL AREAS THAT ARE NOT COVERED BY THE BIRD DETERRENT SYSTEM FOR STORMWATER SYSTEMS. TEMPORARY GOOSE EXCLUSION FENCE MUST BE INSTALLED WHILE PLANTING SUCH THAT ALL NEW PLANTINGS ARE PROTECTED BY GOOSE EXCLUSION ON THE SAME DAY. DO NOT INSTALL TEMPORARY GOOSE EXCLUSION FENCE OVER CHANNELS. TEMPORARY GOOSE EXCLUSION FENCE MUST BE INSPECTED AND REPAIRED AS OFTEN AS NECESSARY DURING THE LANDSCAPE GUARANTEE AND MONITORING PERIOD. TEMPORARY GOOSE EXCLUSION FENCE MUST BE REMOVED AT THE END OF THE NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION PERMIT MONITORING PERIOD. THE CONTRACTOR SHALL RECEIVE WRITTEN APPROVAL BY THE ENGINEER PRIOR TO REMOVING THE TEMPORARY GOOSE EXCLUSION FENCE.
13. THE CONTRACTOR SHALL INSTALL TEMPORARY DEER EXCLUSION FENCE (SEE DETAIL DRAWING L-302) PRIOR TO THE INSTALLATION OF ANY TREES OR SHRUBS, SUCH THAT ALL TREES AND SHRUBS SHALL BE PROTECTED THE SAME AS INSTALLATION. THE TEMPORARY DEER EXCLUSION FENCE POSTS SHALL NOT BE INSTALLED INTO ANY TREE ROOTS ONE (1) INCH AND LARGER. THE CONTRACTOR SHALL STAKE OUT AND RECEIVE APPROVAL FOR FINAL LOCATION OF THE FENCE LINE FROM THE ENGINEER PRIOR TO INSTALLATION. FLAGGING TAPE SHALL ONLY BE INSTALLED ON THE FENCE ON THE EAST AND SOUTH SIDES OF THE PROJECT SITE, FLAGGING SHALL NOT BE INSTALLED ON THE NORTH AND WEST SIDES (BORDERING PURCHASE STREET) OF THE PROJECT SITE. THE TEMPORARY DEER EXCLUSION FENCE SHALL BE MAINTAINED AND REPAIRED AS OFTEN AS NECESSARY DURING THE LANDSCAPE GUARANTEE. THE TEMPORARY DEER EXCLUSION FENCE MUST BE REMOVED AT THE END OF THE LANDSCAPE GUARANTEE WITH WRITTEN APPROVAL BY THE ENGINEER.
14. TEMPORARY DEER EXCLUSION FENCE TO TIE INTO CHAIN LINK FENCE AND AIRPORT FENCE DURING CONSTRUCTION, SEE CIVIL DWG C-111, AND SHALL BE SIX (6) INCHES FROM THE ACTUATED SWINGING ACCESS GATE STONE COLUMNS AFTER REMOVAL OF THE CHAIN LINK FENCE GATES.

LEGEND

- ZONE 1 - LAWN
- ZONE 2 - NATIVE GROUNDCOVER
- ZONE 3 - ENTRANCE
- ZONE 4 - FOUNDATION PART SUN
- ZONE 5 - FOUNDATION SHADE
- ZONE 6 - WOODLAND
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- ZONE 11 - WETLAND SHORELINE FRINGE
- ZONE 12 - WETLAND RIPARIAN FRINGE

PLAN
SCALE: 1" = 30'

SCALE: 1" = 30'
30 15 0 30'

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REV	ISSUED FOR	DATE	BY

PROJECT ENGINEER:	R. FROST
DESIGNED BY:	E. MOSKALENKO
DRAWN BY:	E. MOSKALENKO
CHECKED BY:	M. SANTOWASSO

IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE 0 1/2" 1"

BID SET

REGISTERED LANDSCAPE ARCHITECT ELIZABETH ANN MOSKALENKO 002548-1 STATE OF NEW YORK

Hazen
HAZEN AND SAWYER
498 SEVENTH AVENUE, 11th FLOOR
NEW YORK, NEW YORK 10018

WESTCHESTER JOINT WATER WORKS
MAMARONECK, NY

RYE LAKE WATER FILTRATION PLANT
HARRISON, NY

LANDSCAPE
LANDSCAPE PLAN - SHEET 2

DATE:	FEB 2025
HAZEN NO.:	90388-000
CONTRACT NO.:	A1364-A
DRAWING NUMBER:	L-102

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PLOT DATE: 2/21/2025 3:32 PM BY: KCAMPOS

SEEDING SCHEDULE

ZONE 1 - Lawn Seed Mix **(24,150 SF)**

BOTANICAL NAME	COMMON NAME	PERCENTAGE
Festuca rubra	creeping red fescue	25
Lolium multiflorum	annual ryegrass	25
Lolium perenne , 'Blackstone'	perennial ryegrass, 'Blackstone'	25
Lolium perenee 'Confetti III'	Perennial ryegrass, Confetti III' turf type	25

Seed Lawn Mix at a rate of 150 lbs/acre.

ZONE 2 - Native Groundcover Seed Mix **(65,820 SF)**

BOTANICAL NAME	COMMON NAME	PERCENTAGE
Carex grisea	gray wood sedge	20
Carex pensylvanica	Pensylvania sedge	20
Sporobolus heterolepis	prairie dropseed	20
Achillea millefolium	common yarrow	5
Aquilegia canadensis	wild columbine	5
Asclepias tuberosa	butterfly milkweed	5
Conoclinium coelestinum	blue mistflower	5
Eurybia divarica	white wood aster	5
Solidago nemoralis	gray goldenrod	5
Symphyotrichum novi-belgii	New York aster	5

Seed Native Groundcover Mix at a rate of 15 lbs/acre and overseed with Cover Crop Seed Mix at a rate of 15 lbs/acre.

COVER CROP SEED MIX **(65,400 SF)**

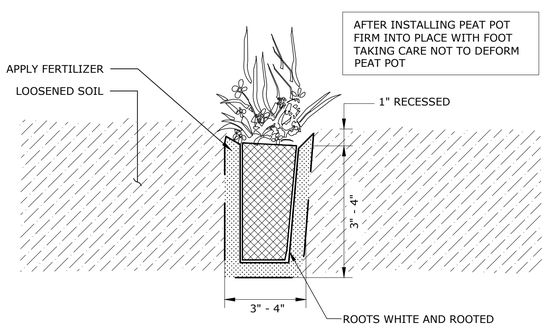
BOTANICAL NAME	COMMON NAME
Avena sativa	oats

Seed Cover Crop at a rate of 15 lbs/acre.

ZONES 7, 8, 11, 12 - FACW SEED MIX **(34,400 SF)**

BOTANICAL NAME	COMMON NAME	PERCENTAGE
Asclepias incarnata	swamp milkweed	20
Euthamia graminifolia	grass-leaved goldenrod	20
Eupatorium maculatum	spotted Joe-Pye-weed	20
Eupatorium perfoliatum	boneset	20
Lobelia cardinalis	cardinal flower	20

Seed FACW Seed Mix at a rate of 10 lbs/acre.



NOTES:

1. ALL PLASTIC WRAP SHALL BE REMOVED PRIOR TO PLANTING.

TYPICAL PLUG PLANTING DETAIL

NOT TO SCALE

PLANTING SCHEDULE

ZONES 3, 4, 5, & 6

	Quantity	Code	Scientific Name	Common Name	Size	Form	Spacing	Comments
Trees								
	13	AA	*Amelanchier arborea*	downy serviceberry	#7	cont.	as shown	
	14	CP	*Carpinus caroliniana*	American hornbeam	#10	cont.	as shown	
	26	CC	*Cercis canadensis*	eastern redbud	#20	cont.	as shown	acceptable cultivars: 'Ace of Hearts', 'Forest Pansy', 'Ruby Falls'
	18	CFA	*Cornus florida* 'Appalachian Spring'	Appalachian Spring flowering dogwood	#10	cont.	as shown	
	13	IO	*Ilex opaca*	American holly	#15	cont.	as shown	
	19	IOJ	*Ilex opaca* 'Jersey Princess'	Jersey Princess american holly	#65	cont.	as shown	
	44	JV	*Juniperus virginiana*	eastern red cedar	#15	cont.	as shown	
	69	JVC	*Juniperus virginiana* 'Emerald Sentinel'	Emerald Sentinel™ red cedar	#65	cont.	as shown	
	5	LS	*Liquidambar styraciflua*	American sweetgum	1.5" cal	B&B	as shown	
	9	MV	*Magnolia virginiana 'Henry Hicks'*	Henry Hicks southern magnolia	3.5" cal	B&B	as shown	
	33	PS	*Pinus strobus*	eastern white pine	#25	cont.	as shown	
	22	QA	*Quercus alba*	white oak	1.5" cal	B&B	as shown	
Shrubs								
	265	AB	*Aronia arbutifolia*	red chokeberry	72 cell	tubeling	2' O.C.	naturalistic clusters of 3 to 5
	20	HV	*Hamamelis virginiana* 'Mohonk Red'	Mohonk red witchhazel	#5	cont.	as shown	
	12	RC	*Rhododendron catawbiense* 'Roseum Elegans'	English Roseum catawba rhododendron	#7	cont.	as shown	
	14	RP	*Rhododendron* 'P.J.M. Elite'	Elite rhododendron	#5	cont.	4' O.C.	
	265	VA	*Vaccinium angustifolium*	lowbush blueberry	72 cell	tubeling	2' O.C.	naturalistic clusters of 3 to 5
Herbaceous / Grasses								
	465	CW	Carex woodii	wood sedge	2"	plug	1' O.C.	naturalistic clusters of 3 to 5
	480	TW	Tiarella wherryi	wherry's foam flower	2"	plug	1.5' O.C.	naturalistic clusters of 3 to 5
	850	AC	Anemone canadensis	windflower	2"	plug	1.5' O.C.	naturalistic clusters of 3 to 5
	300	EM	Eurybia macrophyllus 'Twilight'	twilight big leaf aster	2"	plug	1.5' O.C.	naturalistic clusters of 3 to 5
	465	PA	Polystichum acrostichoides	christmas fern	32 cell	tubeling	1' O.C.	naturalistic clusters of 3 to 5
	255	SL	Symphyotrichum laeve	smooth blue aster	2"	plug	1.5' O.C.	naturalistic clusters of 3 to 5
	695	LS	Lobelia siphilitica	great blue lobelia	2"	plug	1' O.C.	naturalistic clusters of 3 to 5
	300	SH	Sporobolus heterolepis	prairie dropseed	#1	cont.	1.5' O.C.	naturalistic clusters of 3 to 5
	245	SS	Schizachyrium scoparium 'Carousel'	Carousel little bluestem	#1	cont.	1.5' O.C.	naturalistic clusters of 3 to 5
	690	AG	Aquilegia canadensis	eastern red columbine	2"	plug	1' O.C.	naturalistic clusters of 3 to 5
	245	EP	Echinacea purpurea	eastern purple coneflower	2"	plug	1' O.C.	naturalistic clusters of 3 to 5
	185	AT	Asclepias tuberosa	butteryfly weed	2"	plug	1' O.C.	naturalistic clusters of 3 to 5

ZONES 7 & 8 - BIORETENTION

	No.	Sym	Scientific Name	Common Name	Size	Form	Spacing	Comments
Shrubs								
	145	CAH	*Clethra alnifolia* 'Hummingbird'	Hummingbird sweet pepperbush	#1	cont.	3' O.C.	Cluster of 3,5,7
	150	AAB	*Aronia arbutifolia* 'Brillantissima'	Brilliantissima red chokeberry	#1	cont.	3' O.C.	Cluster of 3,5,7
	145	STA	*Spirea tomentosa*	steeplebush	#1	cont.	3' O.C.	Cluster of 3,5,7
	145	CSK	*Cornus sericea* 'Kelseyi'	Kelsey red-twig dogwood	#1	cont.	3' O.C.	Cluster of 3,5,7
	140	IVH	*Itea virginica* 'Henry's Garnet'	Henry's Garnet sweetspire	#1	cont.	3' O.C.	Cluster of 3,5,7
Herbaceous								
	865	ACA	*Acorus calamus*	sweet flag	2"	plug	2' O.C.	Groups of 5,7,9 in alternating rows
	865	AIP	*Asclepias incarnata*	swamp milkweed	2"	plug	2' O.C.	Groups of 5,7,9 in alternating rows
	860	EUP	*Eupatorium purpureum*	Joe-Pye Weed	2"	plug	2' O.C.	Groups of 5,7,9 in alternating rows
	860	EGP	*Euthamia graminifolia*	grass-leaved goldenrod	2"	plug	2' O.C.	Groups of 5,7,9 in alternating rows
	860	LCP	*Lobelia cardinalis*	cardinal flower	2"	plug	2' O.C.	Groups of 5,7,9 in alternating rows
	860	IVP	*Iris versicolor*	blue flag	2"	plug	2' O.C.	Groups of 5,7,9 in alternating rows

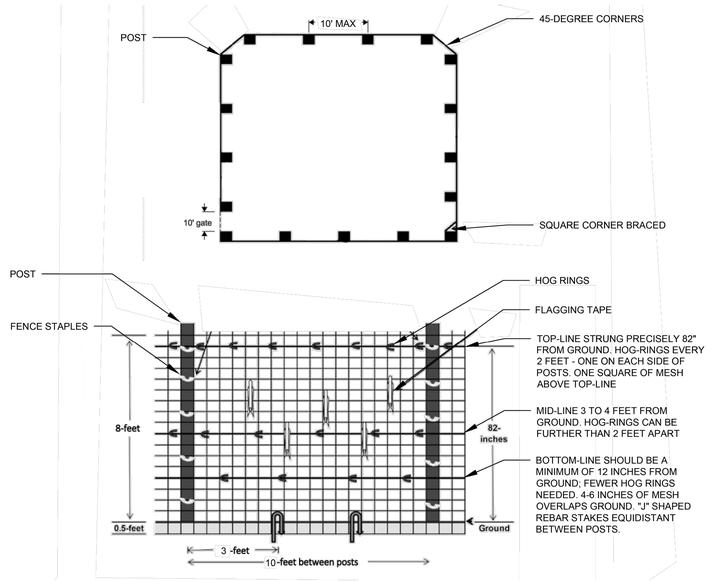
Wetland

	Quantity	Code	Scientific Name		Size	Form	Spacing	Comments
Zone 9 -Wetland Deep Water (Area A: 700 SF + Area B: 340 SF + Area C: 310 SF = 1,350 SF)								
	380	PNP	*Potamogeton nodusus*	long-leaved pond weed	2"	plug	2' O.C.	Groups of 5,7,9 in alternating rows
	380	PAP	*Polygonum amphibium*	water smartweed	2"	plug	2' O.C.	Groups of 5,7,9 in alternating rows
Zone 10 - Wetland Shallow Water Bench (Area A: 3,120 SF + Area B 1,070 SF + 650 SF = 4,840 SF)								
	710	ACA	*Acorus calamus*	sweet flag	2"	plug	2' O.C.	Groups of 5,7,9 in alternating rows
	710	IVP	*Iris versicolor*	blue flag	2"	plug	2' O.C.	Groups of 5,7,9 in alternating rows
Zone 11 - Wetland Shoreline Fringe (Area: 6,850 SF)								
Herbaceous								
	530	SCP	*Saururus cernuus*	lizard's tail	2"	plug	2' O.C.	Groups of 5,7,9 in alternating rows
	525	AIP	*Asclepias incarnata*	swamp milkweed	2"	plug	2' O.C.	Groups of 5,7,9 in alternating rows
	525	EUP	*Eupatorium purpureum*	Joe-Pye Weed	2"	plug	2' O.C.	Groups of 5,7,9 in alternating rows
Shrubs								
	100	STA	*Spirea tomentosa*	steeplebush	#1	cont	4' O.C.	Cluster of 3,5,7

Overseed at a rate of 10 lbs/acre with FACW Seed Mix.

Zone 12 - Wetland Riparian Fringe (4,000 SF)

Herbaceous								
	310	EGP	*Euthamia graminifolia*	grass-leaved goldenrod	2"	plug	2' O.C.	Groups of 5,7,9 in alternating rows
	310	AIP	*Asclepias incarnata*	swamp milkweed	2"	plug	2' O.C.	Groups of 5,7,9 in alternating rows
	300	LCP	*Lobelia cardinalis*	cardinal flower	2"	plug	2' O.C.	Groups of 5,7,9 in alternating rows
Shrubs								
	30	AAP	*Aronia arbutifolia*	red chokeberry	72 cell	tubeling	4' O.C.	Cluster of 3,5,7
	30	IVP	*Itea virginica*	virginia sweetspire	72 cell	tubeling	4' O.C.	Cluster of 3,5,7

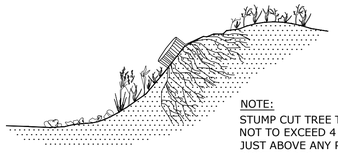


INSTALLATION NOTES:

1. INSTALL 10-FOOT LONG 4" X 4" WOODEN POSTS AT LEAST 2 FEET DEEP WITH AT LEAST 8 FEET OF POST ABOVE GROUND. POSTS SHOULD BE SPACED NO FURTHER THAN 10 FEET APART.
2. INSTALL 45-DEGREE ANGLE POSTS AT THE CORNERS WHEN POSSIBLE RATHER THAN SQUARE TO INCREASE STRENGTH. SPACE POSTS FOR GATE(S) AND LEAVE SPACE BETWEEN FENCE AND TREES AS NECESSARY FOR EQUIPMENT ACCESS AND MAINTENANCE.
3. STRING THREE SECTIONS OF NO. 14 GAUGE WIRE - TOP, MIDDLE, AND BOTTOM TO SUPPORT AND REINFORCE THE WIRE MESH FENCING. START WITH THE TOP LINE AND SECURE TO POSTS WITH U-SHAPED FENCE STAPLES. ONCE ALL THREE LINES ARE ATTACHED, TENSION THE LINES USING GRIPPLES OR OTHER LOCKING DEVICES.
4. ATTACH NO. 14 GAUGE METAL MESH WITH 4" X 6" OPENINGS TO POSTS WITH U-SHAPED FENCING STAPLES AND PULL TAUT BETWEEN EACH POST.
5. CRIMP HOG RINGS TO THE TOP LINE EVERY 2 FEET BETWEEN POSTS AND AS CLOSE AS POSSIBLE TO EACH SIDE OF THE POSTS. PLACE HOG RINGS EVERY 3 TO 4 FEET ON THE MIDDLE AND BOTTOM LINES.
6. AFTER MESH IS SECURED TO WIRE, STAKE MESH TO THE GROUND WITH INVERTED J-SHAPED, 12-INCH LONG REBAR OR SIMILAR STAKES. USE TWO STAKES BETWEEN POSTS.
7. ONCE FENCE CONSTRUCTION IS COMPLETE, HANG ORANGE CLOTH FLAGGING TAPE STREAMERS AROUND ENTIRE FENCE TO ALERT DEER AND OTHER WILDLIFE TO THE OBSTRUCTION. ATTACH FLAGGING IN AN UP-AND-DOWN ZIGZAG PATTERN BOTH INSIDE AND OUTSIDE OF THE FENCE.
8. INSPECT ROUTINELY AND TIGHTEN AND REPAIR AS NEEDED.

TEMPORARY DEER EXCLUSION FENCE

NOT TO SCALE



NOTE:
STUMP CUT TREE TO A HEIGHT NOT TO EXCEED 4 INCHES OR JUST ABOVE ANY PRONOUNCED ROOT FLARES

FLUSH CUT

NOT TO SCALE

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REV	ISSUED FOR	DATE	BY

PROJECT ENGINEER: R. FROST
DESIGNED BY: E. MOSKALENKO
DRAWN BY: E. MOSKALENKO
CHECKED BY: M. SANTOWASSO

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REGISTERED LANDSCAPE ARCHITECT ELIZABETH ANN MOSKALENKO 002548-1 STATE OF NEW YORK

Hazen

HAZEN AND SAWYER
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NEW YORK, NEW YORK 10018

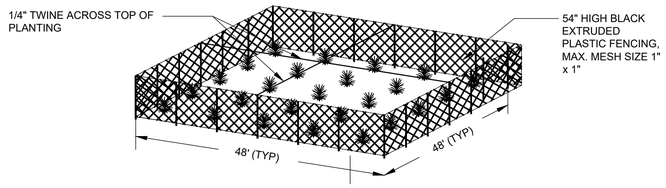
WESTCHESTER JOINT WATER WORKS
MAMARONECK, NY

RYE LAKE WATER FILTRATION PLANT
HARRISON, NY

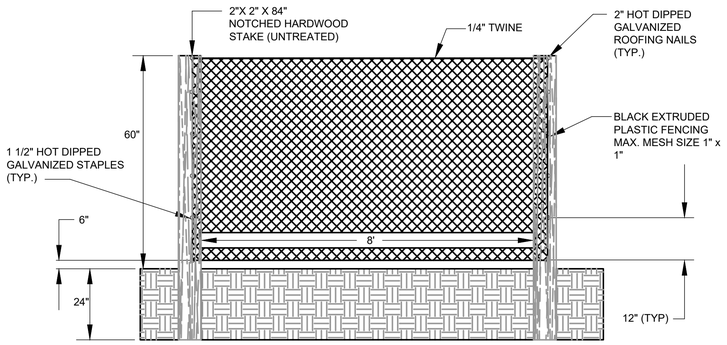
LANDSCAPE
LANDSCAPE SCHEDULE

DATE: FEB 2025
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CONTRACT NO.: A1364-A
DRAWING NUMBER: L-301

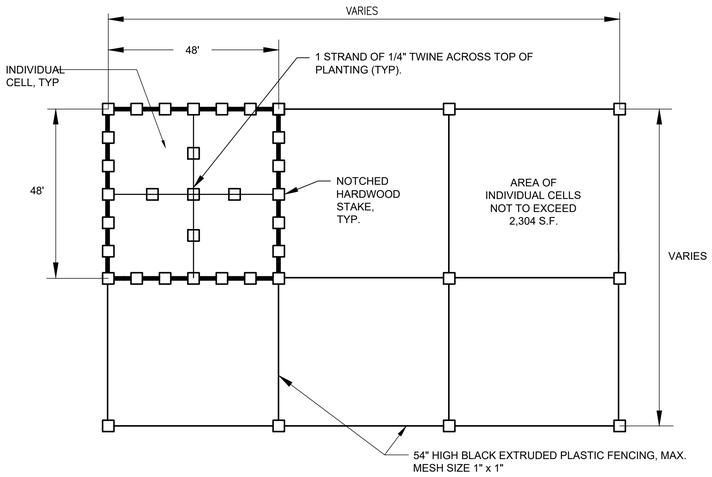
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GOOSE EXCLUSION FENCE - 3D
(SECTIONS NO LARGER THAN 2,310 S.F.)



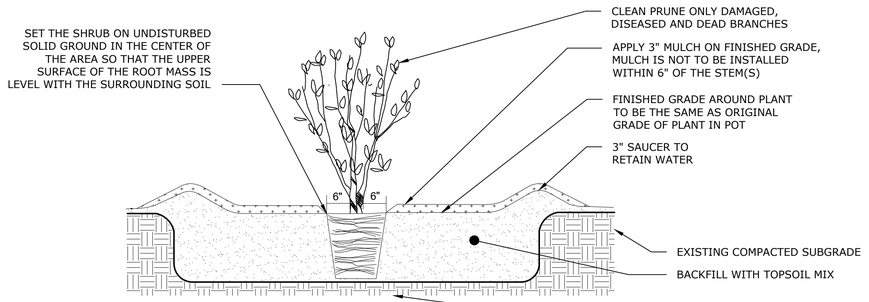
PERIMETER GOOSE EXCLUSION FENCE - SECTION VIEW



PERIMETER GOOSE EXCLUSION FENCE - PLAN VIEW

TEMPORARY GOOSE EXCLUSION FENCE DETAIL

NOT TO SCALE

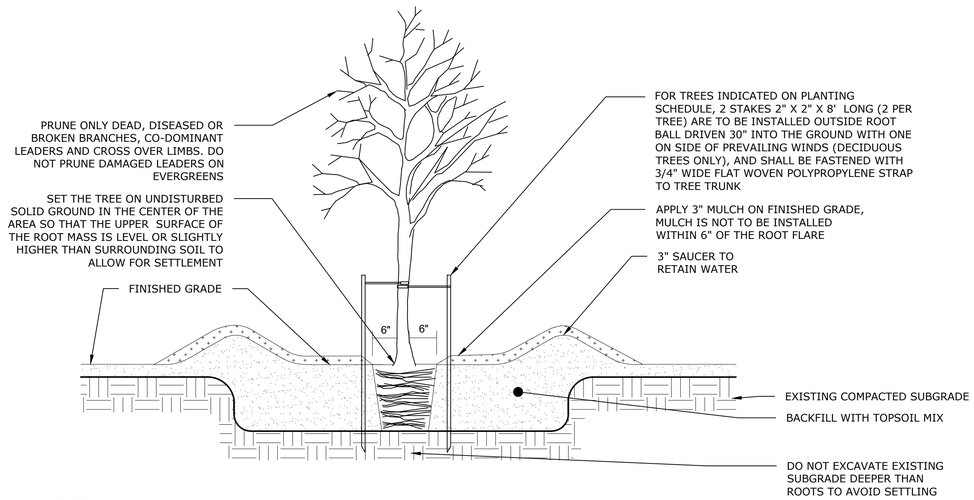


NOTES:

1. PRUNING, IF NECESSARY, SHALL BE DONE BY A CERTIFIED ARBORIST.
2. NOTIFY ENGINEER IF IMPERVIOUS OR UNACCEPTABLE NATIVE SOIL TO BE REMOVED IS ENCOUNTERED IN SHRUB PLANTING LOCATIONS.
3. ROTOTILL/CULTIVATE SOILS TO A DEPTH EQUAL TO THE DEPTH OF ROOT BALL AND TWO TIMES THE DIAMETER OF THE ROOT BALL.
2. APPLY FERTILIZER AND MYCORRHIZAL INOCULANT PER PLANTING SPECIFICATION. TAMP SOIL IN 6" LAYERS AROUND ROOT BALL AND WATER THOROUGHLY AFTER PLANTING. WATER THOROUGHLY AFTER EXCAVATION AND AFTER PLANT INSTALLATION.
3. CONTAINER: REMOVE ROOT BALL FROM CONTAINER. LOOSEN POT- BOUND, SPIRALLY-GROWING AND GIRDLING ROOTS. B&B: CAREFULLY REMOVE TOP 1/3 OF BURLAP. CUT SEVERAL SLITS IN BURLAP TO FACILITATE ROOT PENETRATION
4. REMOVE AND DISPOSE OF ALL NON-BIODEGRADABLES FROM PLANTING HOLES AND ROOT BALL.

TYPICAL SHRUB PLANTING DETAIL

NOT TO SCALE

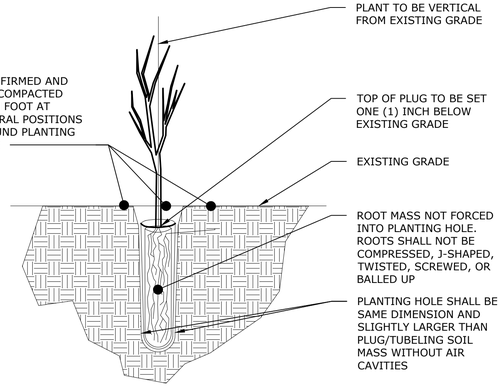


NOTES:

1. PRUNING, IF NECESSARY, SHALL BE DONE BY A CERTIFIED ARBORIST.
2. NOTIFY ENGINEER IF IMPERVIOUS OR UNACCEPTABLE NATIVE SOIL TO BE REMOVED IS ENCOUNTERED IN TREE PIT LOCATIONS.
3. ROTOTILL/CULTIVATE SOILS TO A DEPTH EQUAL TO THE DEPTH OF ROOT BALL AND TWO TIMES THE DIAMETER OF THE ROOT BALL.
4. APPLY FERTILIZER AND MYCORRHIZAL INOCULANT PER PLANTING SPECIFICATION. TAMP SOIL IN 6" LAYERS AROUND ROOT BALL AND WATER THOROUGHLY AFTER PLANTING. WATER THOROUGHLY AFTER EXCAVATION AND AFTER PLANT INSTALLATION.
5. COMPLETELY UNWRAP OR CUT GIRDLING ROOTS. DO NOT DAMAGE MAIN ROOTS OR ROOT BALL WHEN INSTALLING TREE.
6. FOR CONTAINER: REMOVE ROOT BALL FROM CONTAINER. LOOSEN POT- BOUND, SPIRALLY-GROWING ROOTS. FOR B&B: CUT TWINE AND REMOVE BURLAP AND UPPER THIRD OF WIRE BASKET TO A MINIMUM DEPTH OF 18".
7. REMOVE AND DISPOSE OF ALL NON-BIODEGRADABLES FROM PLANTING HOLES AND ROOT BALL.
8. REMOVE STAKES AFTER FIRST YEAR.

TYPICAL TREE PLANTING DETAIL

NOT TO SCALE



NOTES:

1. LOCATE THE CYLINDRICAL DIBBLE OR PLUG EXTRACTOR IN THE CENTER OF THE PLANTING SPOT, ORIENT THE TOOL VERTICALLY (STRAIGHT DOWN), AND APPLY FIRM PRESSURE ON THE FOOTSTEP SO THAT THE PLANTING TOOL PENETRATES TO THE FULL DESIGN DEPTH. THE CREATED HOLE SHALL BE WITHIN 10 DEGREES OR VERTICAL.
2. REMOVE THE PLANTING TOOL AND EXAMINE THE PLANTING HOLE. THE CREATED HOLE SHALL BE CLEAN AND CONFORM TO THE SHAPE OF THE PLUG/TUBELING DIMENSIONS. IF IT DOES NOT CONFORM TO THE REQUIRED SHAPE, INSERT THE TOOL AGAIN TO CREATE THE CORRECT DIMENSIONS. IF DIMENSION ARE STILL NOT CORRECT OR A LARGE AIR POCKET IS CREATED, THE HOLE SHALL BE ABANDONED AND A NEW PLANTING LOCATION SELECTED.
3. ONCE THE CORRECT PLANTING HOLE SIZE IS ACHIEVED, GENTLY REMOVE THE TUBELING FROM THE PLANT TRAY, PLANT CARRIER OR SHIPPING CONTAINER AND CAREFULLY REMOVE THE TREE/SHRUB FROM THE PLANT TUBE. ALTERNATELY, CAREFULLY REMOVE A PLUG FROM THE PLANTING BAG OR PLANT CARRIER.
4. APPLY FERTILIER PER PLANTING SPECIFICATION TO THE HOLE. IMMEDIATELY PLACE THE TREE/SHRUB IN THE PLANTING HOLE. THE TREES/SHRUB SHALL BE PLACED IN THE PLANTING HOLE SUCH THAT THE TOP OF THE TUBELING ROOT COLLAR OR PLUG ROOTMASS IS ONE (1) INCH BELOW THE ADJACENT SOIL ELEVATION WITH THE ROOTS ORIENTED DOWNWARD. DO NOT FORCE INTO THE PLANTING HOLE. THE ROOT SYSTEM SHALL NOT BE COMPRESSED, TWISTED, SCREWED, J-SHAPED OR BALLED UP.
5. WITH THE FOOT, SCRAPE ENOUGH SOIL FROM THE SURROUNDING AREA TO CLOSE THE PLANTING HOLE AND FULLY COVER THE PLANTING SURFACE OF THE TUBELING/PLUG TO AN ELEVATION SLIGHTLY HIGHER THAN THE ADJACENT GRADE.
6. WHILE GENTLY HOLDING THE TOP OF THE TREE/SHRUB APPLY FIRM FOOT PRESSURE IN SEVERAL DIFFERENT POSITIONS IMMEDIATELY AROUND THE TREE/SHRUB TO FIRM THE SOIL AND ELIMINATE AIR POCKETS. THE FINAL PLACEMENT SHALL RESULT IN THE TOP OF THE ROOT MASS BEING ONE (1) INCH BELOW THE SOIL SURFACE WITH THE PLANTING HOLE BEING TOTALLY CLOSED WITH FIRMED, UNCOMPACTED SOIL WITHOUT ANY AIR POCKETS.

TUBELING PLANTING DETAIL

NOT TO SCALE

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PROJECT ENGINEER:	R. FROST
DESIGNED BY:	E. MOSKALENKO
DRAWN BY:	E. MOSKALENKO
CHECKED BY:	M. SANTOWASSO

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BID SET

REGISTERED LANDSCAPE ARCHITECT · ELIZABETH ANN MOSKALENKO · 002548-1 · STATE OF NEW YORK

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MAMARONECK, NY

RYE LAKE WATER FILTRATION PLANT
HARRISON, NY

LANDSCAPE
LANDSCAPE DETAILS

DATE:	FEB 2025
HAZEN NO.:	90388-000
CONTRACT NO.:	A1364-A
DRAWING NUMBER:	L-302

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APPENDIX B

PREVIOUS REPORTS



GZA
Known for excellence.
Built on trust.

WASTE CHARACTERIZATION LETTER REPORT

WESTCHESTER JOINT WATER WORKS
Filtration

PROPOSED FILTRATION PLANT
WEST HARRISON, NEW YORK

July 9, 2021
File No. 41.0162892.01



PREPARED FOR:
Hazen

498 Seventh Avenue, 11th Floor
New York, New York

GZA GeoEnvironmental of New York
104 West 29th Street, Floor 10 | New York, New York 10017
212-594-8140

www.gza.com

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WATER
CONSTRUCTION MANAGEMENT

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File No. 41.0162892.01

Mrs. Eliora Camilleri
Hazen and Sawyer
498 Seventh Avenue, 11th Floor
New York, NY 10018

Re: Waste Characterization Report
Westchester Joint Water Works
Rye Lake Water Filtration Plant
West Harrison, New York

Dear Mrs. Camilleri:

GZA GeoEnvironmental of New York (GZA) is pleased to submit to Hazen and Sawyer (Hazen/Client) this waste characterization report summarizing the results of the waste characterization sampling performed for the proposed Westchester Joint Water Works (WJWW) Treatment Plant in Westchester County, New York (Site). A Site Location Plan is included as **Figure 1**.

GZA performed this waste characterization study in accordance with the scope of services described in our updated proposal dated April 13, 2021, and the executed Change Order Request dated April 29, 2021.

OBJECTIVE

Our objectives were to collect and analyze soil samples for waste characterization parameters for disposal facility acceptance evaluation in the shallower soils, and a beneficial reuse evaluation in the deeper soils in support of the excavation of the proposed Site development.

PROPOSED REDEVELOPMENT

The Site consists of wooded area and bounded by Tower Road to the south, Westchester County Airport to the east, Purchase Street to the west, and wooded area to the north. The Site is located within 1,000 feet of Rye Lake to the west. The proposed construction will consist of a wastewater treatment plant, storm water retention basins and access roads. Hazen provided the reported cut and fill estimates to GZA on June 9, 2021. The proposed excavation is approximately 38,000 cubic yads (cy).

WASTE CHARCTERIZATION SOIL SAMPLING

Select waste characterization soil samples were collected to evaluate the potential for beneficial reuse, or off-site disposal during construction. GZA collected 18 sets of characterization samples over the footprint of the proposed excavation areas. Six sample

sets were collected from the upper 0-5 foot below ground surface (bgs) interval for typical parameters required for acceptance at off-site disposal facilities. The remaining 12 composite sampling sets characterized deeper sampling intervals (5 to 23 feet bgs) to fulfill the New York State Department of Environmental Conversation (NYSDEC) Solid Waste Management beneficial reuse sampling requirements in accordance with New York State Solid Waste (6 NYCRR Part 360.12).

A waste characterization sampling plan showing Site features is presented on **Figure 2**. Waste characterization samples were collected within the main structure, combined waste wash water tanks, access way, bioretention cell, underground stormwater chamber, and exterior of building footprint.

Waste characterization samples were collected during the geotechnical investigation. Borings were advanced with an ATV-mounted CME-750X drill rig with acetate liner sleeve attachment. GZA observed and documented these soil explorations, including field screening the soils, with a photoionization detector (PID). Selected Site photographs of the sampling are included in **Attachment A**. The GZA field representative collected discrete soil samples for volatile organic compounds (VOC). GZA also collected composite samples made-up of discrete samples that were homogenized in the field prior to filling sampling jars. No elevated PID readings above background levels were noted in any of the 31 soil borings performed during the geotechnical investigation. Soil boring logs from the sampled locations are provided in **Attachment B**.

ANALYTICAL TESTING

A sample summary table is provided in **Table 1**. Waste characterization sampling was collected in accordance with NYSDEC Technical Guidance for Site Investigation and Remediation (DER-10) guidelines. Immediately after sample collection, sample containers were placed in insulated coolers with ice and transported under chain-of-custody to the laboratory. The samples were submitted to Alpha Analytical (Alpha) for analysis. Alpha is New York State Department of Health (NYSDOH) Environmental Laboratory Approval Program (ELAP)-certified laboratory. laboratory reports are provided in **Attachment C**.

The following tables summarize the analytical testing program performed during the waste characterization study.

Waste Characterization Sampling (0-5 feet bgs):

Matrix (# of Samples)	**Analytical Parameter**
Discrete Soil Samples (6)	VOCs by EPA Method 8260
Composite Soil Samples (6)	Semi-volatile Organic Compounds (SVOCs) by EPA Method 8270D Target Analyte List (TAL) Metals by EPA Method 6010 Toxicity Characteristic Leaching Procedure (TCLP) Metals EPA Method 1311/6010 Polychlorinated Biphenyls (PCB) by EPA Method 8082A Pesticides and Herbicides by EPA Method 8081B and 8081A Ignitability by EPA Method 1010A Corrosivity by EPA Method 9040C Reactivity- Sulfide and Cyanide by EPA Method SW846 Ch.7.3

Beneficial Re-Use Sampling (5-23 feet bgs):

Matrix (# of Samples)	**Analytical Parameter**
Discrete Soil Samples (24)	VOCs by EPA Method 8260
Composite Soil Samples (12)	SVOCs by EPA Method 8270D TAL Metals by EPA Method 6010 PCB by EPA Method 8082A Pesticides by EPA Method 8081A

SOIL ANALYTICAL RESULTS

GZA summarized the analytical results in the attached **Tables 2 through 7** and compared the results to NYSDEC Part 375 Unrestricted Use Soil Cleanup Objectives (SCOs), and Part 375 Residential Use SCOs. The TCLP results were compared to the United States Environmental Protection Agency (EPA) 40 CFR Part 261 Hazardous Waste Regulations (Part 261 HW Regs) Maximum Contaminant Limits. The Alpha laboratory reports are attached as **Attachment C**.

The sampling results in **Table 2** indicate that VOCs were either not detected or detected below the Unrestricted Use SCOs.

The sampling results in **Table 3** indicate that SVOCs were either not detected or detected below the Unrestricted Use SCOs.

The sampling results in **Table 4** indicate that metals were either not detected or detected below the Unrestricted Use SCOs

As shown in **Table 5,** PCBs, Herbicides and Pesticides were either not detected or detected below Unrestricted SCOs.

As shown in **Table 6,** no TCLP metals concentrations are reported over their respective hazardous limits.

As shown in **Table 7**, the RCRA characteristics and waste characterization parameters were either not detected or detected below their respective Part 261 HW Regs.

CONCLUSIONS

Based on part this waste characterization sampling, GZA developed the following conclusions.

- No hazardous waste materials were reported in the analytical testing performed.
- The excavated material samples meet the New York State Solid Waste (6 NYCRR Part 360) definition of “general fill” and may be beneficially reused off site.
- The deeper soils (i.e., 5-23 feet bgs) sampled in all excavation areas show no concentrations of VOCs, SVOCs, PCBs, Pesticides, Herbicides or Metals above reporting limits.

The Client may use these analytical results to facilitate selection of permitted soil disposal facility (ies) or permitted soil recycling of facilities. Excavated material may require additional waste characterization depending on the acceptance requirements of the selected soil facility's permit.

We appreciate the opportunity to work with you on this project. Should you have any questions, please contact Stephen Kline at 347-242-7109, or stephen.kline@gza.com.

Very truly yours,

GZA GEOENVIRONMENTAL OF NEW YORK

Matthew Del Balzo
Project Manager

Cassandra A. Wetzel, P.E.
Consultant Reviewer

Stephen M. Kline, P.E.
Associate Principal

ATTACHMENTS:

Table 1 – Sample Summary Table
Table 2 – Volatile Organic Compounds in Soil
Table 3 – Semi-Volatile Organic Compounds in Soil
Table 4 – TAL Metals in Soil
Table 5 – Polychlorinated Biphenyls, Pesticides and Herbicides in Soil
Table 6 – Toxicity Characteristic Leaching Procedure RCRA 8 Metals in Soil
Table 7 – Waste Characterization Parameters

Figure 1 – Site Location Map
Figure 2 – Sampling Plan

Attachment A – Photographic Log
Attachment B – Soil Boring Logs
Attachment C – Laboratory Reports

TABLES

Table 1
Sample Summary Table

Boring	Location	Total Sampling Depth	Waste Characterization Sampling Interval	Beneficial Reuse Sampling Interval	Discrete Soil Samples Collected
B-1	Structure	15	(0-5)	(5-15)	4 VOCs (1'-2', 6'-7', 10'-11', 14'-15')
B-2		25		(15-25)	3 VOCs (16'-17', 20'-21', 24'-25')
B-3					
B-3a					
B-4		15		(5-15)	1 VOC (6'-7')
B-5		5	(0-5)		1 VOC (1'-2')
B-6					
B-7		25		(15-25)	3 VOCs (16'-17', 20'-21', 24'-25')
B-8					
B-9		15		(5-15)	1 VOC (5'-7')
B-10		23	(0-5)	(13-23)	2 VOCs (1'-2', 13'-15')
B-11					
B-12	Combined waste washwater tanks				
B-13		15	(0-5)	(5-15)	2 VOCs (1'-2', 6'-7')
B-14					
B-15	Structure				
B-16	Access way (deeper excavations are utility lines)	5			2 VOCs (1'-2', 4'-5')
B-17		10	(0-5)	(5-10)	2 VOCs (1'-2', 6'-7')
B-18					
B-19	Bioretention cell	10		(0-10)	3 VOCs (1'-2', 5'-6', 9'-10')
B-20					
B-21					
B-22		10		(0-10)	1 VOC (1'-2')
B-23					
B-24	Underground stormwater chamber	5	(0-5)		1 VOC (1'-2')
B-25					
B-26		10		(0-10)	1 VOC (1'-2')
B-27	Additional Borings Outside Proposed Structure Footprint				
B-28					
B-29		10		(0-10)	3 VOCs (1'-2', 5'-6', 9'-10')
B-30					
Sampling Totals			6	12	30

Table 2 - Volatile Organic Compounds in Soil
Waste Characterization Report
Rye Lake Water Plant
Harrison, New York

LOCATION	Part 375 Unrestricted Use Soil Cleanup Objectives	Part 375 Residential Use Soil Cleanup Objectives	B-1 (1-2')		B-1 (6-7')		B-1 (10-11')		B-1 (14-15')		B-2 (16-17')	
LAB SAMPLE ID			5/27/2021		5/27/2021		5/27/2021		5/27/2021		6/2/2021	
DATE			L2128322-03		L2128321-03		L2128321-04		L2128321-05		L2129255-05	
SAMPLE DEPTH (ft.)			1-2'		6-7'		10-11'		14-15'		16-17'	
			Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual
Volatile Organic Compounds (VOC) BY EPA 5035/8260 (mg/kg)												
1,1,1,2-Tetrachloroethane	--	--	0.00063	U	0.00036	U	0.00039	U	0.00036	U	0.00046	U
1,1,1-Trichloroethane	0.68	100	0.00063	U	0.00036	U	0.00039	U	0.00036	U	0.00046	U
1,1,2,2-Tetrachloroethane	--	--	0.00063	U	0.00036	U	0.00039	U	0.00036	U	0.00046	U
1,1,2-Trichloroethane	--	--	0.0012	U	0.00072	U	0.00078	U	0.00071	U	0.00091	U
1,1-Dichloroethane	0.27	19	0.0012	U	0.00072	U	0.00078	U	0.00071	U	0.00091	U
1,1-Dichloroethene	0.33	100	0.0012	U	0.00072	U	0.00078	U	0.00071	U	0.00091	U
1,1-Dichloropropene	--	--	0.00063	U	0.00036	U	0.00039	U	0.00036	U	0.00046	U
1,2,3-Trichlorobenzene	--	--	0.0025	U	0.0014	U	0.0016	U	0.0014	U	0.0018	U
1,2,3-Trichloropropane	--	--	0.0025	U	0.0014	U	0.0016	U	0.0014	U	0.0018	U
1,2,4,5-Tetramethylbenzene	--	--	0.0025	U	0.0014	U	0.0016	U	0.0014	U	0.0018	U
1,2,4-Trichlorobenzene	--	--	0.0025	U	0.0014	U	0.0016	U	0.0014	U	0.0018	U
1,2,4-Trimethylbenzene	3.6	47	0.0025	U	0.0014	U	0.0016	U	0.0014	U	0.0018	U
1,2-Dibromo-3-chloropropane	--	--	0.0038	U	0.0022	U	0.0024	U	0.0021	U	0.0027	U
1,2-Dibromoethane	--	--	0.0012	U	0.00072	U	0.00078	U	0.00071	U	0.00091	U
1,2-Dichlorobenzene	1.1	100	0.0025	U	0.0014	U	0.0016	U	0.0014	U	0.0018	U
1,2-Dichloroethane	0.02	2.3	0.0012	U	0.00072	U	0.00078	U	0.00071	U	0.00091	U
1,2-Dichloroethene, Total	--	--	0.0012	U	0.00072	U	0.00078	U	0.00071	U	0.00091	U
1,2-Dichloropropane	--	--	0.0012	U	0.00072	U	0.00078	U	0.00071	U	0.00091	U
1,3,5-Trimethylbenzene	8.4	47	0.0025	U	0.0014	U	0.0016	U	0.0014	U	0.0018	U
1,3-Dichlorobenzene	2.4	17	0.0025	U	0.0014	U	0.0016	U	0.0014	U	0.0018	U
1,3-Dichloropropane	--	--	0.0025	U	0.0014	U	0.0016	U	0.0014	U	0.0018	U
1,3-Dichloropropene, Total	--	--	0.00063	U	0.00036	U	0.00039	U	0.00036	U	0.00046	U
1,4-Dichlorobenzene	1.8	9.8	0.0025	U	0.0014	U	0.0016	U	0.0014	U	0.0018	U
1,4-Dioxane	0.1	9.8	0.1	U	0.058	U	0.063	U	0.057	U	0.073	U
2,2-Dichloropropane	--	--	0.0025	U	0.0014	U	0.0016	U	0.0014	U	0.0018	U
2-Butanone	0.12	100	0.012	U	0.0072	U	0.0032	J	0.0071	U	0.0091	U
2-Hexanone	--	--	0.012	U	0.0072	U	0.0078	U	0.0071	U	0.0091	U
4-Methyl-2-pentanone	--	--	0.012	U	0.0072	U	0.0078	U	0.0071	U	0.0091	U
Acetone	0.05	100	0.012	U	0.0072	U	0.0074	J	0.0071	U	0.0068	J
Acrylonitrile	--	--	0.005	U	0.0029	U	0.0031	U	0.0028	U	0.0036	U
Benzene	0.06	2.9	0.00063	U	0.00036	U	0.00039	U	0.00036	U	0.00046	U
Bromobenzene	--	--	0.0025	U	0.0014	U	0.0016	U	0.0014	U	0.0018	U
Bromochloromethane	--	--	0.0025	U	0.0014	U	0.0016	U	0.0014	U	0.0018	U
Bromodichloromethane	--	--	0.00063	U	0.00036	U	0.00039	U	0.00036	U	0.00046	U
Bromoform	--	--	0.005	U	0.0029	U	0.0031	U	0.0028	U	0.0036	U
Bromomethane	--	--	0.0025	U	0.0014	U	0.0016	U	0.0014	U	0.0018	U
Carbon disulfide	--	--	0.012	U	0.0072	U	0.0078	U	0.0071	U	0.0091	U
Carbon tetrachloride	0.76	1.4	0.0012	U	0.00072	U	0.00078	U	0.00071	U	0.00091	U
Chlorobenzene	1.1	100	0.00063	U	0.00036	U	0.00039	U	0.00036	U	0.00046	U
Chloroethane	--	--	0.0025	U	0.0014	U	0.0016	U	0.0014	U	0.0018	U
Chloroform	0.37	10	0.0019	U	0.0011	U	0.0012	U	0.0011	U	0.0014	U
Chloromethane	--	--	0.005	U	0.0029	U	0.0018	J	0.0028	U	0.0036	U
cis-1,2-Dichloroethene	0.25	59	0.0012	U	0.00072	U	0.00078	U	0.00071	U	0.00091	U
cis-1,3-Dichloropropene	--	--	0.00063	U	0.00036	U	0.00039	U	0.00036	U	0.00046	U
Dibromochloromethane	--	--	0.0012	U	0.00072	U	0.00078	U	0.00071	U	0.00091	U
Dibromomethane	--	--	0.0025	U	0.0014	U	0.0016	U	0.0014	U	0.0018	U
Dichlorodifluoromethane	--	--	0.012	U	0.0072	U	0.0078	U	0.0071	U	0.0091	U
Ethyl ether	--	--	0.0025	U	0.0014	U	0.0016	U	0.0014	U	0.0018	U
Ethylbenzene	1	30	0.0012	U	0.00072	U	0.00078	U	0.00071	U	0.00091	U
Hexachlorobutadiene	--	--	0.005	U	0.0029	U	0.0031	U	0.0028	U	0.0036	U
Isopropylbenzene	--	--	0.0012	U	0.00072	U	0.00078	U	0.00071	U	0.00091	U
Methyl tert butyl ether	0.93	62	0.0025	U	0.0014	U	0.0016	U	0.0014	U	0.0018	U
Methylene chloride	0.05	51	0.0063	U	0.0036	U	0.0039	U	0.0036	U	0.0046	U
n-Butylbenzene	12	100	0.0012	U	0.00072	U	0.00078	U	0.00071	U	0.00091	U
n-Propylbenzene	3.9	100	0.0012	U	0.00072	U	0.00078	U	0.00071	U	0.00091	U
Naphthalene	12	100	0.005	U	0.0029	U	0.0031	U	0.0028	U	0.0036	U
o-Chlorotoluene	--	--	0.0025	U	0.0014	U	0.0016	U	0.0014	U	0.0018	U
o-Xylene	--	--	0.0012	U	0.00072	U	0.00078	U	0.00071	U	0.00091	U
p-Chlorotoluene	--	--	0.0025	U	0.0014	U	0.0016	U	0.0014	U	0.0018	U
p-Diethylbenzene	--	--	0.0025	U	0.0014	U	0.0016	U	0.0014	U	0.0018	U
p-Ethyltoluene	--	--	0.0025	U	0.0014	U	0.0016	U	0.0014	U	0.0018	U
p-Isopropyltoluene	--	--	0.0012	U	0.00072	U	0.00078	U	0.00071	U	0.00091	U
p/m-Xylene	--	--	0.0025	U	0.0014	U	0.0016	U	0.0014	U	0.0018	U
sec-Butylbenzene	11	100	0.0012	U	0.00072	U	0.00078	U	0.00071	U	0.00091	U
Styrene	--	--	0.0012	U	0.00072	U	0.00078	U	0.00071	U	0.00091	U
tert-Butylbenzene	5.9	100	0.0025	U	0.0014	U	0.0016	U	0.0014	U	0.0018	U
Tetrachloroethene	1.3	5.5	0.00063	U	0.00036	U	0.00039	U	0.00036	U	0.00046	U
Toluene	0.7	100	0.0012	U	0.00072	U	0.00078	U	0.00071	U	0.00091	U
trans-1,2-Dichloroethene	0.19	100	0.0019	U	0.0011	U	0.0012	U	0.0011	U	0.0014	U
trans-1,3-Dichloropropene	--	--	0.0012	U	0.00072	U	0.00078	U	0.00071	U	0.00091	U
trans-1,4-Dichloro-2-butene	--	--	0.0063	U	0.0036	U	0.0039	U	0.0036	U	0.0046	U
Trichloroethene	0.47	10	0.00063	U	0.00036	U	0.00039	U	0.00036	U	0.00046	U
Trichlorofluoromethane	--	--	0.005	U	0.0029	U	0.0031	U	0.0028	U	0.0036	U
Vinyl acetate	--	--	0.012	U	0.0072	U	0.0078	U	0.0071	U	0.0091	U
Vinyl chloride	0.02	0.21	0.0012	U	0.00072	U	0.00078	U	0.00071	U	0.00091	U
Xylenes, Total	0.26	100	0.0012	U	0.00072	U	0.00078	U	0.00071	U	0.00091	U

Table Notes:

--: No guidance value.
mg/kg: Milligrams per Kilogram.
U: Not detected at the reported detection limit for the sample.
J: Estimate Value. The analyte concentration is below the quantitative limit (RL), but above the method detection limit (MDL) or estimated detection limit (EDL).
Undetected value is greater than the standard or guidance value.

Table 2- Volatile Organic Compounds in Soil
Waste Characteriztion Report
Rye Lake Water Plant
Harrison, New York

LOCATION	Part 375 Unrestricted Use Soil Cleanup Objectives	Part 375 Residential Use Soil Cleanup Objectives	B-2 (20-21')		B-2 (24-25')		B-4 (6-7')		B-5 (1-2')		B-7 (16-17')	
LAB SAMPLE ID			6/2/2021		6/2/2021		5/27/2021		5/27/2021		6/2/2021	
DATE			L2129255-06		L2129255-07		L2128321-01		L2128322-01		L2129255-01	
SAMPLE DEPTH (ft.)			20-21'		24-25'		6-7'		1-2'		16-17'	
			Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual
Volatile Organic Compounds (VOC) BY EPA 5035/8260 (mg/kg)												
1,1,1,2-Tetrachloroethane	--	--	0.00026	U	0.00028	U	0.0005	U	0.00054	U	0.00029	U
1,1,1-Trichloroethane	0.68	100	0.00026	U	0.00028	U	0.0005	U	0.00054	U	0.00029	U
1,1,2,2-Tetrachloroethane	--	--	0.00026	U	0.00028	U	0.0005	U	0.00054	U	0.00029	U
1,1,2-Trichloroethane	--	--	0.00052	U	0.00056	U	0.001	U	0.0011	U	0.00058	U
1,1-Dichloroethane	0.27	19	0.00052	U	0.00056	U	0.001	U	0.0011	U	0.00058	U
1,1-Dichloroethene	0.33	100	0.00052	U	0.00056	U	0.001	U	0.0011	U	0.00058	U
1,1-Dichloropropene	--	--	0.00026	U	0.00028	U	0.0005	U	0.00054	U	0.00029	U
1,2,3-Trichlorobenzene	--	--	0.001	U	0.0011	U	0.002	U	0.0022	U	0.0012	U
1,2,3-Trichloropropane	--	--	0.001	U	0.0011	U	0.002	U	0.0022	U	0.0012	U
1,2,4,5-Tetramethylbenzene	--	--	0.001	U	0.0011	U	0.002	U	0.0022	U	0.0012	U
1,2,4-Trichlorobenzene	--	--	0.001	U	0.0011	U	0.002	U	0.0022	U	0.0012	U
1,2,4-Trimethylbenzene	3.6	47	0.001	U	0.0011	U	0.002	U	0.0022	U	0.0012	U
1,2-Dibromo-3-chloropropane	--	--	0.0015	U	0.0017	U	0.003	U	0.0033	U	0.0018	U
1,2-Dibromoethane	--	--	0.00052	U	0.00056	U	0.001	U	0.0011	U	0.00058	U
1,2-Dichlorobenzene	1.1	100	0.001	U	0.0011	U	0.002	U	0.0022	U	0.0012	U
1,2-Dichloroethane	0.02	2.3	0.00052	U	0.00056	U	0.001	U	0.0011	U	0.00058	U
1,2-Dichloroethene, Total	--	--	0.00052	U	0.00056	U	0.001	U	0.0011	U	0.00058	U
1,2-Dichloropropane	--	--	0.00052	U	0.00056	U	0.001	U	0.0011	U	0.00058	U
1,3,5-Trimethylbenzene	8.4	47	0.001	U	0.0011	U	0.002	U	0.0022	U	0.0012	U
1,3-Dichlorobenzene	2.4	17	0.001	U	0.0011	U	0.002	U	0.0022	U	0.0012	U
1,3-Dichloropropane	--	--	0.001	U	0.0011	U	0.002	U	0.0022	U	0.0012	U
1,3-Dichloropropene, Total	--	--	0.00026	U	0.00028	U	0.0005	U	0.00054	U	0.00029	U
1,4-Dichlorobenzene	1.8	9.8	0.001	U	0.0011	U	0.002	U	0.0022	U	0.0012	U
1,4-Dioxane	0.1	9.8	0.041	U	0.044	U	0.08	U	0.087	U	0.047	U
2,2-Dichloropropane	--	--	0.001	U	0.0011	U	0.002	U	0.0022	U	0.0012	U
2-Butanone	0.12	100	0.0052	U	0.0056	U	0.01	U	0.011	U	0.0058	U
2-Hexanone	--	--	0.0052	U	0.0056	U	0.01	U	0.011	U	0.0058	U
4-Methyl-2-pentanone	--	--	0.0052	U	0.0056	U	0.01	U	0.011	U	0.0058	U
Acetone	0.05	100	0.0052	U	0.0056	U	0.01	U	0.011	U	0.0079	
Acrylonitrile	--	--	0.0021	U	0.0022	U	0.004	U	0.0044	U	0.0023	U
Benzene	0.06	2.9	0.00026	U	0.00028	U	0.0005	U	0.00054	U	0.00029	U
Bromobenzene	--	--	0.001	U	0.0011	U	0.002	U	0.0022	U	0.0012	U
Bromochloromethane	--	--	0.001	U	0.0011	U	0.002	U	0.0022	U	0.0012	U
Bromodichloromethane	--	--	0.00026	U	0.00028	U	0.0005	U	0.00054	U	0.00029	U
Bromoform	--	--	0.0021	U	0.0022	U	0.004	U	0.0044	U	0.0023	U
Bromomethane	--	--	0.001	U	0.0011	U	0.002	U	0.0022	U	0.0012	U
Carbon disulfide	--	--	0.0052	U	0.0056	U	0.01	U	0.011	U	0.0058	U
Carbon tetrachloride	0.76	1.4	0.00052	U	0.00056	U	0.001	U	0.0011	U	0.00058	U
Chlorobenzene	1.1	100	0.00026	U	0.00028	U	0.0005	U	0.00054	U	0.00029	U
Chloroethane	--	--	0.001	U	0.0011	U	0.002	U	0.0022	U	0.0012	U
Chloroform	0.37	10	0.00077	U	0.00084	U	0.0015	U	0.0016	U	0.00088	U
Chloromethane	--	--	0.0021	U	0.0022	U	0.004	U	0.0044	U	0.0023	U
cis-1,2-Dichloroethene	0.25	59	0.00052	U	0.00056	U	0.001	U	0.0011	U	0.00058	U
cis-1,3-Dichloropropene	--	--	0.00026	U	0.00028	U	0.0005	U	0.00054	U	0.00029	U
Dibromochloromethane	--	--	0.00052	U	0.00056	U	0.001	U	0.0011	U	0.00058	U
Dibromomethane	--	--	0.001	U	0.0011	U	0.002	U	0.0022	U	0.0012	U
Dichlorodifluoromethane	--	--	0.0052	U	0.0056	U	0.01	U	0.011	U	0.0058	U
Ethyl ether	--	--	0.001	U	0.0011	U	0.002	U	0.0022	U	0.0012	U
Ethylbenzene	1	30	0.00052	U	0.00056	U	0.001	U	0.0011	U	0.00058	U
Hexachlorobutadiene	--	--	0.0021	U	0.0022	U	0.004	U	0.0044	U	0.0023	U
Isopropylbenzene	--	--	0.00052	U	0.00056	U	0.001	U	0.0011	U	0.00058	U
Methyl tert butyl ether	0.93	62	0.001	U	0.0011	U	0.002	U	0.0022	U	0.0012	U
Methylene chloride	0.05	51	0.0026	U	0.0028	U	0.005	U	0.0054	U	0.0029	U
n-Butylbenzene	12	100	0.00052	U	0.00056	U	0.001	U	0.0011	U	0.00058	U
n-Propylbenzene	3.9	100	0.00052	U	0.00056	U	0.001	U	0.0011	U	0.00058	U
Naphthalene	12	100	0.0021	U	0.0022	U	0.004	U	0.0044	U	0.0023	U
o-Chlorotoluene	--	--	0.001	U	0.0011	U	0.002	U	0.0022	U	0.0012	U
o-Xylene	--	--	0.00052	U	0.00056	U	0.001	U	0.0011	U	0.00058	U
p-Chlorotoluene	--	--	0.001	U	0.0011	U	0.002	U	0.0022	U	0.0012	U
p-Diethylbenzene	--	--	0.001	U	0.0011	U	0.002	U	0.0022	U	0.0012	U
p-Ethyltoluene	--	--	0.001	U	0.0011	U	0.002	U	0.0022	U	0.0012	U
p-Isopropyltoluene	--	--	0.00052	U	0.00056	U	0.001	U	0.0011	U	0.00058	U
p/m-Xylene	--	--	0.001	U	0.0011	U	0.002	U	0.0022	U	0.0012	U
sec-Butylbenzene	11	100	0.00052	U	0.00056	U	0.001	U	0.0011	U	0.00058	U
Styrene	--	--	0.00052	U	0.00056	U	0.001	U	0.0011	U	0.00058	U
tert-Butylbenzene	5.9	100	0.001	U	0.0011	U	0.002	U	0.0022	U	0.0012	U
Tetrachloroethene	1.3	5.5	0.00026	U	0.00028	U	0.0005	U	0.00054	U	0.00029	U
Toluene	0.7	100	0.00052	U	0.00056	U	0.001	U	0.0011	U	0.00058	U
trans-1,2-Dichloroethene	0.19	100	0.00077	U	0.00084	U	0.0015	U	0.0016	U	0.00088	U
trans-1,3-Dichloropropene	--	--	0.00052	U	0.00056	U	0.001	U	0.0011	U	0.00058	U
trans-1,4-Dichloro-2-butene	--	--	0.0026	U	0.0028	U	0.005	U	0.0054	U	0.0029	U
Trichloroethene	0.47	10	0.00026	U	0.00028	U	0.0005	U	0.00054	U	0.00029	U
Trichlorofluoromethane	--	--	0.0021	U	0.0022	U	0.004	U	0.0044	U	0.0023	U
Vinyl acetate	--	--	0.0052	U	0.0056	U	0.01	U	0.011	U	0.0058	U
Vinyl chloride	0.02	0.21	0.00052	U	0.00056	U	0.001	U	0.0011	U	0.00058	U
Xylenes, Total	0.26	100	0.00052	U	0.00056	U	0.001	U	0.0011	U	0.00058	U

Table Notes:

--: No guidance value.
mg/kg: Milligrams per Kilogram.
U: Not detected at the reported detection limit for the sample.
J: Estimate Value. The analyte concentration is below the quantitative limit (RL), but above the method detection limit (MDL) or estimated detection limit (EDL).
Undetected value is greater than the standard or guidance value.

Table 2- Volatile Organic Compounds in Soil
Waste Characteriztion Report
Rye Lake Water Plant
Harrison, New York

LOCATION	Part 375 Unrestricted Use Soil Cleanup Objectives	Part 375 Residential Use Soil Cleanup Objectives	B-7 (20-21')		B-7 (24-25')		B-9 (5-7')		B-10 (1-2')		B-10 (13-15')	
LAB SAMPLE ID			6/2/2021		6/2/2021		5/26/2021		5/26/2021		5/26/2021	
DATE			L2129255-02		L2129255-03		L2128025-07		L2128025-15		L2128025-09	
SAMPLE DEPTH (ft.)			20-21'		24-25'		5-7'		1-2'		13-15'	
			Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual
Volatile Organic Compounds (VOC) BY EPA 5035/8260 (mg/kg)												
1,1,1,2-Tetrachloroethane	--	--	0.00037	U	0.00033	U	0.00027	U	0.0007	U	0.0003	U
1,1,1-Trichloroethane	0.68	100	0.00037	U	0.00033	U	0.00027	U	0.0007	U	0.0003	U
1,1,2,2-Tetrachloroethane	--	--	0.00037	U	0.00033	U	0.00027	U	0.0007	U	0.0003	U
1,1,2-Trichloroethane	--	--	0.00075	U	0.00066	U	0.00054	U	0.0014	U	0.00061	U
1,1-Dichloroethane	0.27	19	0.00075	U	0.00066	U	0.00054	U	0.0014	U	0.00061	U
1,1-Dichloroethene	0.33	100	0.00075	U	0.00066	U	0.00054	U	0.0014	U	0.00061	U
1,1-Dichloropropene	--	--	0.00037	U	0.00033	U	0.00027	U	0.0007	U	0.0003	U
1,2,3-Trichlorobenzene	--	--	0.0015	U	0.0013	U	0.0011	U	0.0028	U	0.0012	U
1,2,3-Trichloropropane	--	--	0.0015	U	0.0013	U	0.0011	U	0.0028	U	0.0012	U
1,2,4,5-Tetramethylbenzene	--	--	0.0015	U	0.0013	U	0.0011	U	0.0028	U	0.0012	U
1,2,4-Trichlorobenzene	--	--	0.0015	U	0.0013	U	0.0011	U	0.0028	U	0.0012	U
1,2,4-Trimethylbenzene	3.6	47	0.0015	U	0.0013	U	0.0011	U	0.0028	U	0.0012	U
1,2-Dibromo-3-chloropropane	--	--	0.0022	U	0.002	U	0.0016	U	0.0042	U	0.0018	U
1,2-Dibromoethane	--	--	0.00075	U	0.00066	U	0.00054	U	0.0014	U	0.00061	U
1,2-Dichlorobenzene	1.1	100	0.0015	U	0.0013	U	0.0011	U	0.0028	U	0.0012	U
1,2-Dichloroethane	0.02	2.3	0.00075	U	0.00066	U	0.00054	U	0.0014	U	0.00061	U
1,2-Dichloroethene, Total	--	--	0.00075	U	0.00066	U	0.00054	U	0.0014	U	0.00061	U
1,2-Dichloropropane	--	--	0.00075	U	0.00066	U	0.00054	U	0.0014	U	0.00061	U
1,3,5-Trimethylbenzene	8.4	47	0.0015	U	0.0013	U	0.0011	U	0.0028	U	0.0012	U
1,3-Dichlorobenzene	2.4	17	0.0015	U	0.0013	U	0.0011	U	0.0028	U	0.0012	U
1,3-Dichloropropane	--	--	0.0015	U	0.0013	U	0.0011	U	0.0028	U	0.0012	U
1,3-Dichloropropene, Total	--	--	0.00037	U	0.00033	U	0.00027	U	0.0007	U	0.0003	U
1,4-Dichlorobenzene	1.8	9.8	0.0015	U	0.0013	U	0.0011	U	0.0028	U	0.0012	U
1,4-Dioxane	0.1	9.8	0.06	U	0.053	U	0.043	U	0.11	U	0.048	U
2,2-Dichloropropane	--	--	0.0015	U	0.0013	U	0.0011	U	0.0028	U	0.0012	U
2-Butanone	0.12	100	0.0075	U	0.0066	U	0.0014	J	0.014	U	0.0061	U
2-Hexanone	--	--	0.0075	U	0.0066	U	0.0054	U	0.014	U	0.0061	U
4-Methyl-2-pentanone	--	--	0.0075	U	0.0066	U	0.0054	U	0.014	U	0.0061	U
Acetone	0.05	100	0.0075	U	0.0066	U	0.012		0.014	U	0.0061	U
Acrylonitrile	--	--	0.003	U	0.0026	U	0.0021	U	0.0056	U	0.0024	U
Benzene	0.06	2.9	0.00037	U	0.00033	U	0.00011	J	0.0007	U	0.0003	U
Bromobenzene	--	--	0.0015	U	0.0013	U	0.0011	U	0.0028	U	0.0012	U
Bromochloromethane	--	--	0.0015	U	0.0013	U	0.0011	U	0.0028	U	0.0012	U
Bromodichloromethane	--	--	0.00037	U	0.00033	U	0.00027	U	0.0007	U	0.0003	U
Bromoform	--	--	0.003	U	0.0026	U	0.0021	U	0.0056	U	0.0024	U
Bromomethane	--	--	0.0015	U	0.0013	U	0.0011	U	0.0028	U	0.0012	U
Carbon disulfide	--	--	0.0075	U	0.0066	U	0.0054	U	0.014	U	0.0061	U
Carbon tetrachloride	0.76	1.4	0.00075	U	0.00066	U	0.00054	U	0.0014	U	0.00061	U
Chlorobenzene	1.1	100	0.00037	U	0.00033	U	0.00027	U	0.0007	U	0.0003	U
Chloroethane	--	--	0.0015	U	0.0013	U	0.0011	U	0.0028	U	0.0012	U
Chloroform	0.37	10	0.0011	U	0.001	U	0.0008	U	0.0021	U	0.00091	U
Chloromethane	--	--	0.003	U	0.0026	U	0.0021	U	0.0056	U	0.0024	U
cis-1,2-Dichloroethene	0.25	59	0.00075	U	0.00066	U	0.00054	U	0.0014	U	0.00061	U
cis-1,3-Dichloropropene	--	--	0.00037	U	0.00033	U	0.00027	U	0.0007	U	0.0003	U
Dibromochloromethane	--	--	0.00075	U	0.00066	U	0.00054	U	0.0014	U	0.00061	U
Dibromomethane	--	--	0.0015	U	0.0013	U	0.0011	U	0.0028	U	0.0012	U
Dichlorodifluoromethane	--	--	0.0075	U	0.0066	U	0.0054	U	0.014	U	0.0061	U
Ethyl ether	--	--	0.0015	U	0.0013	U	0.0011	U	0.0028	U	0.0012	U
Ethylbenzene	1	30	0.00075	U	0.00066	U	0.00054	U	0.0014	U	0.00061	U
Hexachlorobutadiene	--	--	0.003	U	0.0026	U	0.0021	U	0.0056	U	0.0024	U
Isopropylbenzene	--	--	0.00075	U	0.00066	U	0.00054	U	0.0014	U	0.00061	U
Methyl tert butyl ether	0.93	62	0.0015	U	0.0013	U	0.0011	U	0.0028	U	0.0012	U
Methylene chloride	0.05	51	0.0037	U	0.0033	U	0.0027	U	0.007	U	0.003	U
n-Butylbenzene	12	100	0.00075	U	0.00066	U	0.00054	U	0.0014	U	0.00061	U
n-Propylbenzene	3.9	100	0.00075	U	0.00066	U	0.00054	U	0.0014	U	0.00061	U
Naphthalene	12	100	0.003	U	0.0026	U	0.0021	U	0.0056	U	0.0024	U
o-Chlorotoluene	--	--	0.0015	U	0.0013	U	0.0011	U	0.0028	U	0.0012	U
o-Xylene	--	--	0.00075	U	0.00066	U	0.00054	U	0.0014	U	0.00061	U
p-Chlorotoluene	--	--	0.0015	U	0.0013	U	0.0011	U	0.0028	U	0.0012	U
p-Diethylbenzene	--	--	0.0015	U	0.0013	U	0.0011	U	0.0028	U	0.0012	U
p-Ethyltoluene	--	--	0.0015	U	0.0013	U	0.0011	U	0.0028	U	0.0012	U
p-Isopropyltoluene	--	--	0.00075	U	0.00066	U	0.00054	U	0.0014	U	0.00061	U
p/m-Xylene	--	--	0.0015	U	0.0013	U	0.0011	U	0.0028	U	0.0012	U
sec-Butylbenzene	11	100	0.00075	U	0.00066	U	0.00054	U	0.0014	U	0.00061	U
Styrene	--	--	0.00075	U	0.00066	U	0.00054	U	0.0014	U	0.00061	U
tert-Butylbenzene	5.9	100	0.0015	U	0.0013	U	0.0011	U	0.0028	U	0.0012	U
Tetrachloroethene	1.3	5.5	0.00037	U	0.00033	U	0.00027	U	0.0007	U	0.0003	U
Toluene	0.7	100	0.00075	U	0.00066	U	0.00054	U	0.0014	U	0.00061	U
trans-1,2-Dichloroethene	0.19	100	0.0011	U	0.001	U	0.0008	U	0.0021	U	0.00091	U
trans-1,3-Dichloropropene	--	--	0.00075	U	0.00066	U	0.00054	U	0.0014	U	0.00061	U
trans-1,4-Dichloro-2-butene	--	--	0.0037	U	0.0033	U	0.0027	U	0.007	U	0.003	U
Trichloroethene	0.47	10	0.00037	U	0.00033	U	0.00027	U	0.0007	U	0.0003	U
Trichlorofluoromethane	--	--	0.003	U	0.0026	U	0.0021	U	0.0056	U	0.0024	U
Vinyl acetate	--	--	0.0075	U	0.0066	U	0.0054	U	0.014	U	0.0061	U
Vinyl chloride	0.02	0.21	0.00075	U	0.00066	U	0.00054	U	0.0014	U	0.00061	U
Xylenes, Total	0.26	100	0.00075	U	0.00066	U	0.00054	U	0.0014	U	0.00061	U

Table Notes:

--: No guidance value.
mg/kg: Milligrams per Kilogram.
U: Not detected at the reported detection limit for the sample.
J: Estimate Value. The analyte concentration is below the quantitative limit (RL), but above the method detection limit (MDL) or estimated detection limit (EDL).
Undetected value is greater than the standard or guidance value.

Table 2- Volatile Organic Compounds in Soil
Waste Characteriztion Report
Rye Lake Water Plant
Harrison, New York

LOCATION	Part 375 Unrestricted Use Soil Cleanup Objectives	Part 375 Residential Use Soil Cleanup Objectives	B-13 (1-2')		B-13 (6-7')		B-16 (1-2')		B-16 (4-5')		B-17 (1-2')	
LAB SAMPLE ID			5/26/2021		5/26/2021		6/4/2021		6/4/2021		6/1/2021	
DATE			L2128025-13		L2128025-05		L2130255-01		L2130255-02		L2128995-01	
SAMPLE DEPTH (ft.)			1-2'		6-7'		1-2'		4-5'		1-2'	
			Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual
Volatile Organic Compounds (VOC) BY EPA 5035/8260 (mg/kg)												
1,1,1,2-Tetrachloroethane	--	--	0.00053	U	0.00066	U	0.00043	U	0.00041	U	0.00052	U
1,1,1-Trichloroethane	0.68	100	0.00053	U	0.00066	U	0.00043	U	0.00041	U	0.00052	U
1,1,2,2-Tetrachloroethane	--	--	0.00053	U	0.00066	U	0.00043	U	0.00041	U	0.00052	U
1,1,2-Trichloroethane	--	--	0.0011	U	0.0013	U	0.00085	U	0.00082	U	0.001	U
1,1-Dichloroethane	0.27	19	0.0011	U	0.0013	U	0.00085	U	0.00082	U	0.001	U
1,1-Dichloroethene	0.33	100	0.0011	U	0.0013	U	0.00085	U	0.00082	U	0.001	U
1,1-Dichloropropene	--	--	0.00053	U	0.00066	U	0.00043	U	0.00041	U	0.00052	U
1,2,3-Trichlorobenzene	--	--	0.0021	U	0.0026	U	0.0017	U	0.0016	U	0.0021	U
1,2,3-Trichloropropane	--	--	0.0021	U	0.0026	U	0.0017	U	0.0016	U	0.0021	U
1,2,4,5-Tetramethylbenzene	--	--	0.0021	U	0.0026	U	0.0017	U	0.0016	U	0.0021	U
1,2,4-Trichlorobenzene	--	--	0.0021	U	0.0026	U	0.0017	U	0.0016	U	0.0021	U
1,2,4-Trimethylbenzene	3.6	47	0.0021	U	0.0026	U	0.0017	U	0.0016	U	0.0021	U
1,2-Dibromo-3-chloropropane	--	--	0.0032	U	0.0039	U	0.0026	U	0.0024	U	0.0031	U
1,2-Dibromoethane	--	--	0.0011	U	0.0013	U	0.00085	U	0.00082	U	0.001	U
1,2-Dichlorobenzene	1.1	100	0.0021	U	0.0026	U	0.0017	U	0.0016	U	0.0021	U
1,2-Dichloroethane	0.02	2.3	0.0011	U	0.0013	U	0.00085	U	0.00082	U	0.001	U
1,2-Dichloroethene, Total	--	--	0.0011	U	0.0013	U	0.00085	U	0.00082	U	0.001	U
1,2-Dichloropropane	--	--	0.0011	U	0.0013	U	0.00085	U	0.00082	U	0.001	U
1,3,5-Trimethylbenzene	8.4	47	0.0021	U	0.0026	U	0.0017	U	0.0016	U	0.0021	U
1,3-Dichlorobenzene	2.4	17	0.0021	U	0.0026	U	0.0017	U	0.0016	U	0.0021	U
1,3-Dichloropropane	--	--	0.0021	U	0.0026	U	0.0017	U	0.0016	U	0.0021	U
1,3-Dichloropropene, Total	--	--	0.00053	U	0.00066	U	0.00043	U	0.00041	U	0.00052	U
1,4-Dichlorobenzene	1.8	9.8	0.0021	U	0.0026	U	0.0017	U	0.0016	U	0.0021	U
1,4-Dioxane	0.1	9.8	0.086	U	0.1	U	0.068	U	0.065	U	0.083	U
2,2-Dichloropropane	--	--	0.0021	U	0.0026	U	0.0017	U	0.0016	U	0.0021	U
2-Butanone	0.12	100	0.011	U	0.013	U	0.0085	U	0.0082	U	0.01	U
2-Hexanone	--	--	0.011	U	0.013	U	0.0085	U	0.0082	U	0.01	U
4-Methyl-2-pentanone	--	--	0.011	U	0.013	U	0.0085	U	0.0082	U	0.01	U
Acetone	0.05	100	0.028		0.0068	J	0.0085	U	0.0047	J	0.01	U
Acrylonitrile	--	--	0.0043	U	0.0052	U	0.0034	U	0.0033	U	0.0041	U
Benzene	0.06	2.9	0.00053	U	0.00066	U	0.00043	U	0.00041	U	0.00052	U
Bromobenzene	--	--	0.0021	U	0.0026	U	0.0017	U	0.0016	U	0.0021	U
Bromochloromethane	--	--	0.0021	U	0.0026	U	0.0017	U	0.0016	U	0.0021	U
Bromodichloromethane	--	--	0.00053	U	0.00066	U	0.00043	U	0.00041	U	0.00052	U
Bromoform	--	--	0.0043	U	0.0052	U	0.0034	U	0.0033	U	0.0041	U
Bromomethane	--	--	0.0021	U	0.0026	U	0.0017	U	0.0016	U	0.0021	U
Carbon disulfide	--	--	0.011	U	0.0086	J	0.0085	U	0.0082	U	0.01	U
Carbon tetrachloride	0.76	1.4	0.0011	U	0.0013	U	0.00085	U	0.00082	U	0.001	U
Chlorobenzene	1.1	100	0.00053	U	0.00066	U	0.00043	U	0.00041	U	0.00052	U
Chloroethane	--	--	0.0021	U	0.0026	U	0.0017	U	0.0016	U	0.0021	U
Chloroform	0.37	10	0.0016	U	0.002	U	0.0013	U	0.0012	U	0.0016	U
Chloromethane	--	--	0.0043	U	0.0052	U	0.0034	U	0.0033	U	0.0041	U
cis-1,2-Dichloroethene	0.25	59	0.0011	U	0.0013	U	0.00085	U	0.00082	U	0.001	U
cis-1,3-Dichloropropene	--	--	0.00053	U	0.00066	U	0.00043	U	0.00041	U	0.00052	U
Dibromochloromethane	--	--	0.0011	U	0.0013	U	0.00085	U	0.00082	U	0.001	U
Dibromomethane	--	--	0.0021	U	0.0026	U	0.0017	U	0.0016	U	0.0021	U
Dichlorodifluoromethane	--	--	0.011	U	0.013	U	0.0085	U	0.0082	U	0.01	U
Ethyl ether	--	--	0.0021	U	0.0026	U	0.0017	U	0.0016	U	0.0021	U
Ethylbenzene	1	30	0.0011	U	0.0013	U	0.00085	U	0.00082	U	0.001	U
Hexachlorobutadiene	--	--	0.0043	U	0.0052	U	0.0034	U	0.0033	U	0.0041	U
Isopropylbenzene	--	--	0.0011	U	0.0013	U	0.00085	U	0.00082	U	0.001	U
Methyl tert butyl ether	0.93	62	0.0021	U	0.0026	U	0.0017	U	0.0016	U	0.0021	U
Methylene chloride	0.05	51	0.0053	U	0.0066	U	0.0043	U	0.0041	U	0.0052	U
n-Butylbenzene	12	100	0.0011	U	0.0013	U	0.00085	U	0.00082	U	0.001	U
n-Propylbenzene	3.9	100	0.0011	U	0.0013	U	0.00085	U	0.00082	U	0.001	U
Naphthalene	12	100	0.0043	U	0.0052	U	0.0034	U	0.0033	U	0.0041	U
o-Chlorotoluene	--	--	0.0021	U	0.0026	U	0.0017	U	0.0016	U	0.0021	U
o-Xylene	--	--	0.0011	U	0.0013	U	0.00085	U	0.00082	U	0.001	U
p-Chlorotoluene	--	--	0.0021	U	0.0026	U	0.0017	U	0.0016	U	0.0021	U
p-Diethylbenzene	--	--	0.0021	U	0.0026	U	0.0017	U	0.0016	U	0.0021	U
p-Ethyltoluene	--	--	0.0021	U	0.0026	U	0.0017	U	0.0016	U	0.0021	U
p-Isopropyltoluene	--	--	0.0011	U	0.0013	U	0.00085	U	0.014		0.001	U
p/m-Xylene	--	--	0.0021	U	0.0026	U	0.0017	U	0.0016	U	0.0021	U
sec-Butylbenzene	11	100	0.0011	U	0.0013	U	0.00085	U	0.00082	U	0.001	U
Styrene	--	--	0.0011	U	0.0013	U	0.00085	U	0.00082	U	0.001	U
tert-Butylbenzene	5.9	100	0.0021	U	0.0026	U	0.0017	U	0.0016	U	0.0021	U
Tetrachloroethene	1.3	5.5	0.00053	U	0.00066	U	0.00043	U	0.00041	U	0.00052	U
Toluene	0.7	100	0.0011	U	0.0013	U	0.00085	U	0.00082	U	0.001	U
trans-1,2-Dichloroethene	0.19	100	0.0016	U	0.002	U	0.0013	U	0.0012	U	0.0016	U
trans-1,3-Dichloropropene	--	--	0.0011	U	0.0013	U	0.00085	U	0.00082	U	0.001	U
trans-1,4-Dichloro-2-butene	--	--	0.0053	U	0.0066	U	0.0043	U	0.0041	U	0.0052	U
Trichloroethene	0.47	10	0.00053	U	0.00066	U	0.00043	U	0.00041	U	0.00052	U
Trichlorofluoromethane	--	--	0.0043	U	0.0052	U	0.0034	U	0.0033	U	0.0041	U
Vinyl acetate	--	--	0.011	U	0.013	U	0.0085	U	0.0082	U	0.01	U
Vinyl chloride	0.02	0.21	0.0011	U	0.0013	U	0.00085	U	0.00082	U	0.001	U
Xylenes, Total	0.26	100	0.0011	U	0.0013	U	0.00085	U	0.00082	U	0.001	U

Table Notes:

--: No guidance value.
mg/kg: Milligrams per Kilogram.
U: Not detected at the reported detection limit for the sample.
J: Estimate Value. The analyte concentration is below the quantitative limit (RL), but above the method detection limit (MDL) or estimated detection limit (EDL).
Undetected value is greater than the standard or guidance value.

Table 2- Volatile Organic Compounds in Soil
Waste Characteriztion Report
Rye Lake Water Plant
Harrison, New York

LOCATION	Part 375 Unrestricted Use Soil Cleanup Objectives	Part 375 Residential Use Soil Cleanup Objectives	B-17 (6-7')		B-19 (1-2')		B-19 (5-6')		B-19 (9-10')		B-22 (1-2')	
LAB SAMPLE ID			6/1/2021		6/3/2021		6/3/2021		6/3/2021		5/26/2021	
DATE			L2128996-01		L2129818-01		L2129818-02		L2129818-03		L2128025-03	
SAMPLE DEPTH (ft.)			6-7'		1-2'		5-6'		9-10'		1-2'	
			Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual
Volatile Organic Compounds (VOC) BY EPA 5035/8260 (mg/kg)												
1,1,1,2-Tetrachloroethane	--	--	0.0003	U	0.00032	U	0.0003	U	0.00032	U	0.00055	U
1,1,1-Trichloroethane	0.68	100	0.0003	U	0.00032	U	0.0003	U	0.00032	U	0.00055	U
1,1,2,2-Tetrachloroethane	--	--	0.0003	U	0.00032	U	0.0003	U	0.00032	U	0.00055	U
1,1,2-Trichloroethane	--	--	0.00061	U	0.00065	U	0.0006	U	0.00063	U	0.0011	U
1,1-Dichloroethane	0.27	19	0.00061	U	0.00065	U	0.0006	U	0.00063	U	0.0011	U
1,1-Dichloroethene	0.33	100	0.00061	U	0.00065	U	0.0006	U	0.00063	U	0.0011	U
1,1-Dichloropropene	--	--	0.0003	U	0.00032	U	0.0003	U	0.00032	U	0.00055	U
1,2,3-Trichlorobenzene	--	--	0.0012	U	0.0013	U	0.0012	U	0.0013	U	0.0022	U
1,2,3-Trichloropropane	--	--	0.0012	U	0.0013	U	0.0012	U	0.0013	U	0.0022	U
1,2,4,5-Tetramethylbenzene	--	--	0.0012	U	0.0013	U	0.0012	U	0.0013	U	0.0022	U
1,2,4-Trichlorobenzene	--	--	0.0012	U	0.0013	U	0.0012	U	0.0013	U	0.0022	U
1,2,4-Trimethylbenzene	3.6	47	0.0012	U	0.0013	U	0.0012	U	0.0013	U	0.0022	U
1,2-Dibromo-3-chloropropane	--	--	0.0018	U	0.002	U	0.0018	U	0.0019	U	0.0033	U
1,2-Dibromoethane	--	--	0.00061	U	0.00065	U	0.0006	U	0.00063	U	0.0011	U
1,2-Dichlorobenzene	1.1	100	0.0012	U	0.0013	U	0.0012	U	0.0013	U	0.0022	U
1,2-Dichloroethane	0.02	2.3	0.00061	U	0.00065	U	0.0006	U	0.00063	U	0.0011	U
1,2-Dichloroethene, Total	--	--	0.00061	U	0.00065	U	0.0006	U	0.00063	U	0.0011	U
1,2-Dichloropropane	--	--	0.00061	U	0.00065	U	0.0006	U	0.00063	U	0.0011	U
1,3,5-Trimethylbenzene	8.4	47	0.0012	U	0.0013	U	0.0012	U	0.0013	U	0.0022	U
1,3-Dichlorobenzene	2.4	17	0.0012	U	0.0013	U	0.0012	U	0.0013	U	0.0022	U
1,3-Dichloropropane	--	--	0.0012	U	0.0013	U	0.0012	U	0.0013	U	0.0022	U
1,3-Dichloropropene, Total	--	--	0.0003	U	0.00032	U	0.0003	U	0.00032	U	0.00055	U
1,4-Dichlorobenzene	1.8	9.8	0.0012	U	0.0013	U	0.0012	U	0.0013	U	0.0022	U
1,4-Dioxane	0.1	9.8	0.049	U	0.052	U	0.048	U	0.05	U	0.087	U
2,2-Dichloropropane	--	--	0.0012	U	0.0013	U	0.0012	U	0.0013	U	0.0022	U
2-Butanone	0.12	100	0.0061	U	0.0065	U	0.006	U	0.0063	U	0.011	U
2-Hexanone	--	--	0.0061	U	0.0065	U	0.006	U	0.0063	U	0.011	U
4-Methyl-2-pentanone	--	--	0.0061	U	0.0065	U	0.006	U	0.0063	U	0.011	U
Acetone	0.05	100	0.0079		0.0046	J	0.0031	J	0.0063	U	0.011	U
Acrylonitrile	--	--	0.0024	U	0.0026	U	0.0024	U	0.0025	U	0.0044	U
Benzene	0.06	2.9	0.0003	U	0.00032	U	0.0003	U	0.00032	U	0.00055	U
Bromobenzene	--	--	0.0012	U	0.0013	U	0.0012	U	0.0013	U	0.0022	U
Bromochloromethane	--	--	0.0012	U	0.0013	U	0.0012	U	0.0013	U	0.0022	U
Bromodichloromethane	--	--	0.0003	U	0.00032	U	0.0003	U	0.00032	U	0.00055	U
Bromoform	--	--	0.0024	U	0.0026	U	0.0024	U	0.0025	U	0.0044	U
Bromomethane	--	--	0.0012	U	0.0013	U	0.0012	U	0.0013	U	0.0022	U
Carbon disulfide	--	--	0.0061	U	0.0065	U	0.0029	J	0.0063	U	0.011	U
Carbon tetrachloride	0.76	1.4	0.00061	U	0.00065	U	0.0006	U	0.00063	U	0.0011	U
Chlorobenzene	1.1	100	0.0003	U	0.00032	U	0.0003	U	0.00032	U	0.00055	U
Chloroethane	--	--	0.0012	U	0.0013	U	0.0012	U	0.0013	U	0.0022	U
Chloroform	0.37	10	0.00091	U	0.00098	U	0.0009	U	0.00095	U	0.0016	U
Chloromethane	--	--	0.0024	U	0.0026	U	0.0024	U	0.0025	U	0.0044	U
cis-1,2-Dichloroethene	0.25	59	0.00061	U	0.00065	U	0.0006	U	0.00063	U	0.0011	U
cis-1,3-Dichloropropene	--	--	0.0003	U	0.00032	U	0.0003	U	0.00032	U	0.00055	U
Dibromochloromethane	--	--	0.00061	U	0.00065	U	0.0006	U	0.00063	U	0.0011	U
Dibromomethane	--	--	0.0012	U	0.0013	U	0.0012	U	0.0013	U	0.0022	U
Dichlorodifluoromethane	--	--	0.0061	U	0.0065	U	0.006	U	0.0063	U	0.011	U
Ethyl ether	--	--	0.0012	U	0.0013	U	0.0012	U	0.0013	U	0.0022	U
Ethylbenzene	1	30	0.00061	U	0.00065	U	0.0006	U	0.00063	U	0.0011	U
Hexachlorobutadiene	--	--	0.0024	U	0.0026	U	0.0024	U	0.0025	U	0.0044	U
Isopropylbenzene	--	--	0.00061	U	0.00065	U	0.0006	U	0.00063	U	0.0011	U
Methyl tert butyl ether	0.93	62	0.0012	U	0.0013	U	0.0012	U	0.0013	U	0.0022	U
Methylene chloride	0.05	51	0.003	U	0.0032	U	0.003	U	0.0032	U	0.0055	U
n-Butylbenzene	12	100	0.00061	U	0.00065	U	0.0006	U	0.00063	U	0.0011	U
n-Propylbenzene	3.9	100	0.00061	U	0.00065	U	0.0006	U	0.00063	U	0.0011	U
Naphthalene	12	100	0.0024	U	0.0026	U	0.0024	U	0.0025	U	0.0044	U
o-Chlorotoluene	--	--	0.0012	U	0.0013	U	0.0012	U	0.0013	U	0.0022	U
o-Xylene	--	--	0.00061	U	0.00065	U	0.0006	U	0.00063	U	0.0011	U
p-Chlorotoluene	--	--	0.0012	U	0.0013	U	0.0012	U	0.0013	U	0.0022	U
p-Diethylbenzene	--	--	0.0012	U	0.0013	U	0.0012	U	0.0013	U	0.0022	U
p-Ethyltoluene	--	--	0.0012	U	0.0013	U	0.0012	U	0.0013	U	0.0022	U
p-Isopropyltoluene	--	--	0.00061	U	0.00011	J	0.0006	U	0.00063	U	0.0011	U
p/m-Xylene	--	--	0.0012	U	0.0013	U	0.0012	U	0.0013	U	0.0022	U
sec-Butylbenzene	11	100	0.00061	U	0.00065	U	0.0006	U	0.00063	U	0.0011	U
Styrene	--	--	0.00061	U	0.00065	U	0.0006	U	0.00063	U	0.0011	U
tert-Butylbenzene	5.9	100	0.0012	U	0.0013	U	0.0012	U	0.0013	U	0.0022	U
Tetrachloroethene	1.3	5.5	0.0003	U	0.00032	U	0.0003	U	0.00032	U	0.00055	U
Toluene	0.7	100	0.00061	U	0.00065	U	0.0006	U	0.00063	U	0.0011	U
trans-1,2-Dichloroethene	0.19	100	0.00091	U	0.00098	U	0.0009	U	0.00095	U	0.0016	U
trans-1,3-Dichloropropene	--	--	0.00061	U	0.00065	U	0.0006	U	0.00063	U	0.0011	U
trans-1,4-Dichloro-2-butene	--	--	0.003	U	0.0032	U	0.003	U	0.0032	U	0.0055	U
Trichloroethene	0.47	10	0.0003	U	0.00032	U	0.0003	U	0.00032	U	0.00055	U
Trichlorofluoromethane	--	--	0.0024	U	0.0026	U	0.0024	U	0.0025	U	0.0044	U
Vinyl acetate	--	--	0.0061	U	0.0065	U	0.006	U	0.0063	U	0.011	U
Vinyl chloride	0.02	0.21	0.00061	U	0.00065	U	0.0006	U	0.00063	U	0.0011	U
Xylenes, Total	0.26	100	0.00061	U	0.00065	U	0.0006	U	0.00063	U	0.0011	U

Table Notes:

--: No guidance value.
mg/kg: Milligrams per Kilogram.
U: Not detected at the reported detection limit for the sample.
J: Estimate Value. The analyte concentration is below the quantitative limit (RL), but above the method detection limit (MDL) or estimated detection limit (EDL).
Undetected value is greater than the standard or guidance value.

Table 2- Volatile Organic Compounds in Soil
Waste Characteriztion Report
Rye Lake Water Plant
Harrison, New York

LOCATION	Part 375 Unrestricted Use Soil Cleanup Objectives	Part 375 Residential Use Soil Cleanup Objectives	B-24 (1-2')		B-26 (1-2')		B-29 (1-2')		B-29 (5-6')		B-29 (24-25')	
LAB SAMPLE ID			5/26/2021		5/26/2021		6/2/2021		6/2/2021		6/2/2021	
DATE			L2128025-11		L2128025-01		L2129255-09		L2129255-10		L2129255-11	
SAMPLE DEPTH (ft.)			1-2'		1-2'		1-2'		5-6'		24-25'	
			Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual
Volatile Organic Compounds (VOC) BY EPA 5035/8260 (mg/kg)												
1,1,1,2-Tetrachloroethane	--	--	0.0007	U	0.00072	U	0.00054	U	0.00033	U	0.00045	U
1,1,1-Trichloroethane	0.68	100	0.0007	U	0.00072	U	0.00054	U	0.00033	U	0.00045	U
1,1,2,2-Tetrachloroethane	--	--	0.0007	U	0.00072	U	0.00054	U	0.00033	U	0.00045	U
1,1,2-Trichloroethane	--	--	0.0014	U	0.0014	U	0.0011	U	0.00066	U	0.0009	U
1,1-Dichloroethane	0.27	19	0.0014	U	0.0014	U	0.0011	U	0.00066	U	0.0009	U
1,1-Dichloroethene	0.33	100	0.0014	U	0.0014	U	0.0011	U	0.00066	U	0.0009	U
1,1-Dichloropropene	--	--	0.0007	U	0.00072	U	0.00054	U	0.00033	U	0.00045	U
1,2,3-Trichlorobenzene	--	--	0.0028	U	0.0029	U	0.0022	U	0.0013	U	0.0018	U
1,2,3-Trichloropropane	--	--	0.0028	U	0.0029	U	0.0022	U	0.0013	U	0.0018	U
1,2,4,5-Tetramethylbenzene	--	--	0.0028	U	0.0029	U	0.0022	U	0.0013	U	0.0018	U
1,2,4-Trichlorobenzene	--	--	0.0028	U	0.0029	U	0.0022	U	0.0013	U	0.0018	U
1,2,4-Trimethylbenzene	3.6	47	0.0028	U	0.0029	U	0.0022	U	0.0013	U	0.0018	U
1,2-Dibromo-3-chloropropane	--	--	0.0042	U	0.0043	U	0.0032	U	0.002	U	0.0027	U
1,2-Dibromoethane	--	--	0.0014	U	0.0014	U	0.0011	U	0.00066	U	0.0009	U
1,2-Dichlorobenzene	1.1	100	0.0028	U	0.0029	U	0.0022	U	0.0013	U	0.0018	U
1,2-Dichloroethane	0.02	2.3	0.0014	U	0.0014	U	0.0011	U	0.00066	U	0.0009	U
1,2-Dichloroethene, Total	--	--	0.0014	U	0.0014	U	0.0011	U	0.00066	U	0.0009	U
1,2-Dichloropropane	--	--	0.0014	U	0.0014	U	0.0011	U	0.00066	U	0.0009	U
1,3,5-Trimethylbenzene	8.4	47	0.0028	U	0.0029	U	0.0022	U	0.0013	U	0.0018	U
1,3-Dichlorobenzene	2.4	17	0.0028	U	0.0029	U	0.0022	U	0.0013	U	0.0018	U
1,3-Dichloropropane	--	--	0.0028	U	0.0029	U	0.0022	U	0.0013	U	0.0018	U
1,3-Dichloropropene, Total	--	--	0.0007	U	0.00072	U	0.00054	U	0.00033	U	0.00045	U
1,4-Dichlorobenzene	1.8	9.8	0.0028	U	0.0029	U	0.0022	U	0.0013	U	0.0018	U
1,4-Dioxane	0.1	9.8	0.11	U	0.12	U	0.087	U	0.053	U	0.072	U
2,2-Dichloropropane	--	--	0.0028	U	0.0029	U	0.0022	U	0.0013	U	0.0018	U
2-Butanone	0.12	100	0.014	U	0.014	U	0.011	U	0.0033	J	0.009	U
2-Hexanone	--	--	0.014	U	0.014	U	0.011	U	0.0066	U	0.009	U
4-Methyl-2-pentanone	--	--	0.014	U	0.014	U	0.011	U	0.0066	U	0.009	U
Acetone	0.05	100	0.014	U	0.014	U	0.013		0.029		0.009	U
Acrylonitrile	--	--	0.0056	U	0.0058	U	0.0043	U	0.0026	U	0.0036	U
Benzene	0.06	2.9	0.0007	U	0.00072	U	0.00054	U	0.00012	J	0.00045	U
Bromobenzene	--	--	0.0028	U	0.0029	U	0.0022	U	0.0013	U	0.0018	U
Bromochloromethane	--	--	0.0028	U	0.0029	U	0.0022	U	0.0013	U	0.0018	U
Bromodichloromethane	--	--	0.0007	U	0.00072	U	0.00054	U	0.00033	U	0.00045	U
Bromoform	--	--	0.0056	U	0.0058	U	0.0043	U	0.0026	U	0.0036	U
Bromomethane	--	--	0.0028	U	0.0029	U	0.0022	U	0.0013	U	0.0018	U
Carbon disulfide	--	--	0.014	U	0.014	U	0.011	U	0.0066	U	0.009	U
Carbon tetrachloride	0.76	1.4	0.0014	U	0.0014	U	0.0011	U	0.00066	U	0.0009	U
Chlorobenzene	1.1	100	0.0007	U	0.00072	U	0.00054	U	0.00033	U	0.00045	U
Chloroethane	--	--	0.0028	U	0.0029	U	0.0022	U	0.0013	U	0.0018	U
Chloroform	0.37	10	0.0021	U	0.0022	U	0.0016	U	0.00099	U	0.0013	U
Chloromethane	--	--	0.0056	U	0.0058	U	0.0043	U	0.0026	U	0.0036	U
cis-1,2-Dichloroethene	0.25	59	0.0014	U	0.0014	U	0.0011	U	0.00066	U	0.0009	U
cis-1,3-Dichloropropene	--	--	0.0007	U	0.00072	U	0.00054	U	0.00033	U	0.00045	U
Dibromochloromethane	--	--	0.0014	U	0.0014	U	0.0011	U	0.00066	U	0.0009	U
Dibromomethane	--	--	0.0028	U	0.0029	U	0.0022	U	0.0013	U	0.0018	U
Dichlorodifluoromethane	--	--	0.014	U	0.014	U	0.011	U	0.0066	U	0.009	U
Ethyl ether	--	--	0.0028	U	0.0029	U	0.0022	U	0.0013	U	0.0018	U
Ethylbenzene	1	30	0.0014	U	0.0014	U	0.0011	U	0.00066	U	0.0009	U
Hexachlorobutadiene	--	--	0.0056	U	0.0058	U	0.0043	U	0.0026	U	0.0036	U
Isopropylbenzene	--	--	0.0014	U	0.0014	U	0.0011	U	0.00066	U	0.0009	U
Methyl tert butyl ether	0.93	62	0.0028	U	0.0029	U	0.0022	U	0.0013	U	0.0018	U
Methylene chloride	0.05	51	0.007	U	0.0072	U	0.0054	U	0.0033	U	0.0045	U
n-Butylbenzene	12	100	0.0014	U	0.0014	U	0.0011	U	0.00066	U	0.0009	U
n-Propylbenzene	3.9	100	0.0014	U	0.0014	U	0.0011	U	0.00066	U	0.0009	U
Naphthalene	12	100	0.0056	U	0.0058	U	0.0043	U	0.00076	J	0.0036	U
o-Chlorotoluene	--	--	0.0028	U	0.0029	U	0.0022	U	0.0013	U	0.0018	U
o-Xylene	--	--	0.0014	U	0.0014	U	0.0011	U	0.00066	U	0.0009	U
p-Chlorotoluene	--	--	0.0028	U	0.0029	U	0.0022	U	0.0013	U	0.0018	U
p-Diethylbenzene	--	--	0.0028	U	0.0029	U	0.0022	U	0.0013	U	0.0018	U
p-Ethyltoluene	--	--	0.0028	U	0.0029	U	0.0022	U	0.0013	U	0.0018	U
p-Isopropyltoluene	--	--	0.0014	U	0.0014	U	0.0011	U	0.0001	J	0.00012	J
p/m-Xylene	--	--	0.0028	U	0.0029	U	0.0022	U	0.0013	U	0.0018	U
sec-Butylbenzene	11	100	0.0014	U	0.0014	U	0.0011	U	0.00066	U	0.0009	U
Styrene	--	--	0.0014	U	0.0014	U	0.0011	U	0.00066	U	0.0009	U
tert-Butylbenzene	5.9	100	0.0028	U	0.0029	U	0.0022	U	0.0013	U	0.0018	U
Tetrachloroethene	1.3	5.5	0.0007	U	0.00072	U	0.00054	U	0.00033	U	0.00045	U
Toluene	0.7	100	0.0014	U	0.0014	U	0.0011	U	0.00066	U	0.0009	U
trans-1,2-Dichloroethene	0.19	100	0.0021	U	0.0022	U	0.0016	U	0.00099	U	0.0013	U
trans-1,3-Dichloropropene	--	--	0.0014	U	0.0014	U	0.0011	U	0.00066	U	0.0009	U
trans-1,4-Dichloro-2-butene	--	--	0.007	U	0.0072	U	0.0054	U	0.0033	U	0.0045	U
Trichloroethene	0.47	10	0.0007	U	0.00072	U	0.00054	U	0.00033	U	0.00045	U
Trichlorofluoromethane	--	--	0.0056	U	0.0058	U	0.0043	U	0.0026	U	0.0036	U
Vinyl acetate	--	--	0.014	U	0.014	U	0.011	U	0.0066	U	0.009	U
Vinyl chloride	0.02	0.21	0.0014	U	0.0014	U	0.0011	U	0.00066	U	0.0009	U
Xylenes, Total	0.26	100	0.0014	U	0.0014	U	0.0011	U	0.00066	U	0.0009	U

Table Notes:

--: No guidance value.
mg/kg: Milligrams per Kilogram.
U: Not detected at the reported detection limit for the sample.
J: Estimate Value. The analyte concentration is below the quantitative limit (RL), but above the method detection limit (MDL) or estimated detection limit (EDL).
Undetected value is greater than the standard or guidance value.

Table 3 - Semi-Volatile Organic Compounds in Soil
Waste Characterization Report
Rye Lake Water Plant
Harrison, New York

LOCATION	Part 375 Unrestricted Use Soil Cleanup Objectives	Part 375 Residential Use Soil Cleanup Objectives	B-1 (0-5')		B-1 (5-15')		B-2 (15-25')		B-4 (5-15')		B-5 (0-5')		B-7 (15-25')		B-9 (5-15')		B-10 (0-5')	
DATE			5/27/2021		5/27/2021		6/2/2021		5/27/2021		5/27/2021		6/2/2021		5/26/2021		5/26/2021	
LAB SAMPLE ID			L2128322-04		L2128321-06		L2129255-08		L2128321-02		L2128322-02		L2129255-04		L2128025-08		L2128025-16	
			Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual
Semi-Volatile Organic Compounds (SVOCs) by EPA Method 8270D (mg/kg)																		
1,2,4,5-Tetrachlorobenzene	--	--	0.22	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
1,2,4-Trichlorobenzene	--	--	0.22	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
1,2-Dichlorobenzene	1.1	100	0.22	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
1,3-Dichlorobenzene	2.4	17	0.22	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
1,4-Dichlorobenzene	1.8	9.8	0.22	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
1,4-Dioxane	0.1	9.8	0.033	U	0.027	U	0.028	U	0.027	U	0.028	U	0.027	U	0.027	U	0.028	U
2,4,5-Trichlorophenol	--	--	0.22	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
2,4,6-Trichlorophenol	--	--	0.13	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U
2,4-Dichlorophenol	--	--	0.2	U	0.16	U	0.16	U	0.16	U	0.16	U	0.16	U	0.16	U	0.17	U
2,4-Dimethylphenol	--	--	0.22	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
2,4-Dinitrophenol	--	--	1	U	0.87	U	0.88	U	0.87	U	0.88	U	0.87	U	0.87	U	0.89	U
2,4-Dinitrotoluene	--	--	0.22	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
2,6-Dinitrotoluene	--	--	0.22	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
2-Chloronaphthalene	--	--	0.22	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
2-Chlorophenol	--	--	0.22	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
2-Methylnaphthalene	--	--	0.26	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
2-Methylphenol	0.33	100	0.22	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
2-Nitroaniline	--	--	0.22	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
2-Nitrophenol	--	--	0.47	U	0.39	U	0.4	U	0.39	U	0.4	U	0.39	U	0.39	U	0.4	U
3,3'-Dichlorobenzidine	--	--	0.22	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
3-Methylphenol/4-Methylphenol	0.33	34	0.31	U	0.26	U	0.26	U	0.26	U	0.26	U	0.26	U	0.26	U	0.27	U
3-Nitroaniline	--	--	0.22	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
4,6-Dinitro-o-cresol	--	--	0.57	U	0.47	U	0.48	U	0.47	U	0.48	U	0.47	U	0.47	U	0.48	U
4-Bromophenyl phenyl ether	--	--	0.22	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
4-Chloroaniline	--	--	0.22	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
4-Chlorophenyl phenyl ether	--	--	0.22	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
4-Nitroaniline	--	--	0.22	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
4-Nitrophenol	--	--	0.3	U	0.25	U	0.26	U	0.25	U	0.26	U	0.26	U	0.25	U	0.26	U
Acenaphthene	20	100	0.17	U	0.14	U	0.15	U	0.14	U	0.15	U	0.14	U	0.14	U	0.15	U
Acenaphthylene	100	100	0.17	U	0.14	U	0.15	U	0.14	U	0.15	U	0.14	U	0.14	U	0.15	U
Acetophenone	--	--	0.22	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
Anthracene	100	100	0.13	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U
Benzo(a)anthracene	1	1	0.13	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U
Benzo(a)pyrene	1	1	0.17	U	0.14	U	0.15	U	0.14	U	0.15	U	0.14	U	0.14	U	0.15	U
Benzo(b)fluoranthene	1	1	0.13	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U
Benzo(ghi)perylene	100	100	0.17	U	0.14	U	0.15	U	0.14	U	0.15	U	0.14	U	0.14	U	0.15	U
Benzo(k)fluoranthene	0.8	1	0.13	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U
Benzoic Acid	--	--	0.71	U	0.59	U	0.6	U	0.59	U	0.6	U	0.59	U	0.59	U	0.6	U
Benzyl Alcohol	--	--	0.22	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
Biphenyl	--	--	0.5	U	0.41	U	0.42	U	0.41	U	0.42	U	0.42	U	0.41	U	0.42	U
Bis(2-chloroethoxy)methane	--	--	0.24	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
Bis(2-chloroethyl)ether	--	--	0.2	U	0.16	U	0.16	U	0.16	U	0.16	U	0.16	U	0.16	U	0.17	U
Bis(2-chloroisopropyl)ether	--	--	0.26	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
Bis(2-ethylhexyl)phthalate	--	--	0.22	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
Butyl benzyl phthalate	--	--	0.22	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
Carbazole	--	--	0.22	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
Chrysene	1	1	0.13	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U
Di-n-butylphthalate	--	--	0.22	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
Di-n-octylphthalate	--	--	0.22	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
Dibenzo(a,h)anthracene	0.33	0.33	0.13	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U
Dibenzofuran	7	14	0.22	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
Diethyl phthalate	--	--	0.22	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
Dimethyl phthalate	--	--	0.22	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
Fluoranthene	100	100	0.13	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U
Fluorene	30	100	0.22	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
Hexachlorobenzene	0.33	0.33	0.13	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U
Hexachlorobutadiene	--	--	0.22	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
Hexachlorocyclopentadiene	--	--	0.62	U	0.52	U	0.53	U	0.52	U	0.53	U	0.52	U	0.52	U	0.53	U
Hexachloroethane	--	--	0.17	U	0.14	U	0.15	U	0.14	U	0.15	U	0.14	U	0.14	U	0.15	U
Indeno(1,2,3-cd)pyrene	0.5	0.5	0.17	U	0.14	U	0.15	U	0.14	U	0.15	U	0.14	U	0.14	U	0.15	U
Isophorone	--	--	0.2	U	0.16	U	0.16	U	0.16	U	0.16	U	0.16	U	0.16	U	0.17	U
n-Nitrosodi-n-propylamine	--	--	0.22	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
Naphthalene	12	100	0.22	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
NDPA/DPA	--	--	0.17	U	0.14	U	0.15	U	0.14	U	0.15	U	0.14	U	0.14	U	0.15	U
Nitrobenzene	--	--	0.2	U	0.16	U	0.16	U	0.16	U	0.16	U	0.16	U	0.16	U	0.17	U
p-Chloro-m-cresol	--	--	0.22	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
Pentachlorophenol	0.8	2.4	0.17	U	0.14	U	0.15	U	0.14	U	0.15	U	0.14	U	0.14	U	0.15	U
Phenanthrene	100	100	0.13	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U
Phenol	0.33	100	0.22	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
Pyrene	100	100	0.13	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U

Table Notes:

--: No guidance value.

mg/kg: Milligrams per Kilogram.

U: Not detected at the reported detection limit for the sample.

J: Estimate Value. The analyte concentration is below the quantitative limit (RL), but above the method detection limit (MDL) or estimated detection limit (EDL).

Table 3 - Semi-Volatile Organic Compounds in Soil
Waste Characterization Report
Rye Lake Water Plant
Harrison, New York

LOCATION	Part 375 Unrestricted Use Soil Cleanup Objectives	Part 375 Residential Use Soil Cleanup Objectives	B-10 (13-23')		B-13 (0-5')		B-13 (5-15')		B-17 (0-5')		B-17 (5-10')		B-19 (0-10')		B-22 (0-10')		B-24 (0-5')		B-26 (0-10')		B-29 (0-10')	
DATE			5/26/2021		5/26/2021		5/26/2021		6/1/2021		6/1/2021		6/3/2021		5/26/2021		5/26/2021		5/26/2021		6/2/2021	
LAB SAMPLE ID			L2128025-10		L2128025-14		L2128025-06		L2128995-02		L2128996-02		L2129818-04		L2128025-03		L2128025-12		L2128025-02		L2129255-12	
			Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual
Semi-Volatile Organic Compounds (SVOCs) by EPA Method 8270D (mg/kg)																						
1,2,4,5-Tetrachlorobenzene	--	--	0.18	U	0.18	U	0.19	U	0.18	U	0.18	U	0.18	U	0.18	U	0.19	U	0.21	U	0.18	U
1,2,4-Trichlorobenzene	--	--	0.18	U	0.18	U	0.19	U	0.18	U	0.18	U	0.18	U	0.18	U	0.19	U	0.21	U	0.18	U
1,2-Dichlorobenzene	1.1	100	0.18	U	0.18	U	0.19	U	0.18	U	0.18	U	0.18	U	0.18	U	0.19	U	0.21	U	0.18	U
1,3-Dichlorobenzene	2.4	17	0.18	U	0.18	U	0.19	U	0.18	U	0.18	U	0.18	U	0.18	U	0.19	U	0.21	U	0.18	U
1,4-Dichlorobenzene	1.8	9.8	0.18	U	0.18	U	0.19	U	0.18	U	0.18	U	0.18	U	0.18	U	0.19	U	0.21	U	0.18	U
1,4-Dioxane	0.1	9.8	0.027	U	0.027	U	0.028	U	0.027	U	0.027	U	0.027	U	0.028	U	0.029	U	0.031	U	0.028	U
2,4,5-Trichlorophenol	--	--	0.18	U	0.18	U	0.19	U	0.18	U	0.18	U	0.18	U	0.18	U	0.19	U	0.21	U	0.18	U
2,4,6-Trichlorophenol	--	--	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.12	U	0.12	U	0.11	U
2,4-Dichlorophenol	--	--	0.16	U	0.16	U	0.17	U	0.16	U	0.16	U	0.16	U	0.16	U	0.18	U	0.19	U	0.17	U
2,4-Dimethylphenol	--	--	0.18	U	0.18	U	0.19	U	0.18	U	0.18	U	0.18	U	0.18	U	0.19	U	0.21	U	0.18	U
2,4-Dinitrophenol	--	--	0.88	U	0.86	U	0.91	U	0.88	U	0.87	U	0.88	U	0.88	U	0.94	U	1	U	0.89	U
2,4-Dinitrotoluene	--	--	0.18	U	0.18	U	0.19	U	0.18	U	0.18	U	0.18	U	0.18	U	0.19	U	0.21	U	0.18	U
2,6-Dinitrotoluene	--	--	0.18	U	0.18	U	0.19	U	0.18	U	0.18	U	0.18	U	0.18	U	0.19	U	0.21	U	0.18	U
2-Chloronaphthalene	--	--	0.18	U	0.18	U	0.19	U	0.18	U	0.18	U	0.18	U	0.18	U	0.19	U	0.21	U	0.18	U
2-Chlorophenol	--	--	0.18	U	0.18	U	0.19	U	0.18	U	0.18	U	0.18	U	0.18	U	0.19	U	0.21	U	0.18	U
2-Methylnaphthalene	--	--	0.22	U	0.22	U	0.23	U	0.22	U	0.22	U	0.22	U	0.22	U	0.23	U	0.25	U	0.22	U
2-Methylphenol	0.33	100	0.18	U	0.18	U	0.19	U	0.18	U	0.18	U	0.18	U	0.18	U	0.19	U	0.21	U	0.18	U
2-Nitroaniline	--	--	0.18	U	0.18	U	0.19	U	0.18	U	0.18	U	0.18	U	0.18	U	0.19	U	0.21	U	0.18	U
2-Nitrophenol	--	--	0.4	U	0.39	U	0.41	U	0.39	U	0.39	U	0.39	U	0.4	U	0.42	U	0.45	U	0.4	U
3,3'-Dichlorobenzidine	--	--	0.18	U	0.18	U	0.19	U	0.18	U	0.18	U	0.18	U	0.18	U	0.19	U	0.21	U	0.18	U
3-Methylphenol/4-Methylphenol	0.33	34	0.26	U	0.26	U	0.27	U	0.26	U	0.26	U	0.26	U	0.26	U	0.28	U	0.3	U	0.27	U
3-Nitroaniline	--	--	0.18	U	0.18	U	0.19	U	0.18	U	0.18	U	0.18	U	0.18	U	0.19	U	0.21	U	0.18	U
4,6-Dinitro-o-cresol	--	--	0.48	U	0.47	U	0.49	U	0.48	U	0.47	U	0.47	U	0.48	U	0.51	U	0.54	U	0.48	U
4-Bromophenyl phenyl ether	--	--	0.18	U	0.18	U	0.19	U	0.18	U	0.18	U	0.18	U	0.18	U	0.19	U	0.21	U	0.18	U
4-Chloroaniline	--	--	0.18	U	0.18	U	0.19	U	0.18	U	0.18	U	0.18	U	0.18	U	0.19	U	0.21	U	0.18	U
4-Chlorophenyl phenyl ether	--	--	0.18	U	0.18	U	0.19	U	0.18	U	0.18	U	0.18	U	0.18	U	0.19	U	0.21	U	0.18	U
4-Nitroaniline	--	--	0.18	U	0.18	U	0.19	U	0.18	U	0.18	U	0.18	U	0.18	U	0.19	U	0.21	U	0.18	U
4-Nitrophenol	--	--	0.26	U	0.25	U	0.26	U	0.26	U	0.25	U	0.26	U	0.26	U	0.27	U	0.29	U	0.26	U
Acenaphthene	20	100	0.15	U	0.14	U	0.15	U	0.15	U	0.14	U	0.15	U	0.15	U	0.16	U	0.17	U	0.15	U
Acenaphthylene	100	100	0.15	U	0.14	U	0.15	U	0.15	U	0.14	U	0.15	U	0.15	U	0.16	U	0.17	U	0.15	U
Acetophenone	--	--	0.18	U	0.18	U	0.19	U	0.18	U	0.18	U	0.18	U	0.18	U	0.19	U	0.21	U	0.18	U
Anthracene	100	100	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.12	U	0.12	U	0.11	U
Benzo(a)anthracene	1	1	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.12	U	0.12	U	0.11	U
Benzo(a)pyrene	1	1	0.15	U	0.14	U	0.15	U	0.15	U	0.14	U	0.15	U	0.15	U	0.16	U	0.17	U	0.15	U
Benzo(b)fluoranthene	1	1	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.12	U	0.12	U	0.11	U
Benzo(ghi)perylene	100	100	0.15	U	0.14	U	0.15	U	0.15	U	0.14	U	0.15	U	0.15	U	0.16	U	0.17	U	0.15	U
Benzo(k)fluoranthene	0.8	1	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.12	U	0.12	U	0.11	U
Benzoic Acid	--	--	0.59	U	0.58	U	0.61	U	0.59	U	0.59	U	0.59	U	0.59	U	0.63	U	0.67	U	0.6	U
Benzyl Alcohol	--	--	0.18	U	0.18	U	0.19	U	0.18	U	0.18	U	0.18	U	0.18	U	0.19	U	0.21	U	0.18	U
Biphenyl	--	--	0.42	U	0.41	U	0.43	U	0.42	U	0.41	U	0.42	U	0.42	U	0.44	U	0.47	U	0.42	U
Bis(2-chloroethoxy)methane	--	--	0.2	U	0.19	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.21	U	0.22	U	0.2	U
Bis(2-chloroethyl)ether	--	--	0.16	U	0.16	U	0.17	U	0.16	U	0.16	U	0.16	U	0.16	U	0.18	U	0.19	U	0.17	U
Bis(2-chloroisopropyl)ether	--	--	0.22	U	0.22	U	0.23	U	0.22	U	0.22	U	0.22	U	0.22	U	0.23	U	0.25	U	0.22	U
Bis(2-ethylhexyl)phthalate	--	--	0.18	U	0.18	U	0.19	U	0.18	U	0.18	U	0.18	U	0.18	U	0.19	U	0.21	U	0.18	U
Butyl benzyl phthalate	--	--	0.18	U	0.18	U	0.19	U	0.18	U	0.18	U	0.18	U	0.18	U	0.19	U	0.21	U	0.18	U
Carbazole	--	--	0.18	U	0.18	U	0.19	U	0.18	U	0.18	U	0.18	U	0.18	U	0.19	U	0.21	U	0.18	U
Chrysene	1	1	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.021	J	0.12	U	0.11	U
Di-n-butylphthalate	--	--	0.18	U	0.18	U	0.19	U	0.18	U	0.18	U	0.18	U	0.18	U	0.19	U	0.21	U	0.18	U
Di-n-octylphthalate	--	--	0.18	U	0.18	U	0.19	U	0.18	U	0.18	U	0.18	U	0.18	U	0.19	U	0.21	U	0.18	U
Dibenzo(a,h)anthracene	0.33	0.33	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.12	U	0.12	U	0.11	U
Dibenzofuran	7	14	0.18	U	0.18	U	0.19	U	0.18	U	0.18	U	0.18	U	0.18	U	0.19	U	0.21	U	0.18	U
Diethyl phthalate	--	--	0.18	U	0.18	U	0.19	U	0.18	U	0.18	U	0.18	U	0.18	U	0.19	U	0.21	U	0.18	U
Dimethyl phthalate	--	--	0.18	U	0.18	U	0.19	U	0.18	U	0.18	U	0.18	U	0.18	U	0.19	U	0.21	U	0.18	U
Fluoranthene	100	100	0.11	U	0.11	U	0.11	U	0.025	J	0.11	U	0.11	U	0.11	U	0.036	J	0.12	U	0.026	J
Fluorene	30	100	0.18	U	0.18	U	0.19	U	0.18	U	0.18	U	0.18	U	0.18	U	0.19	U	0.21	U	0.18	U
Hexachlorobenzene	0.33	0.33	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.12	U	0.12	U	0.11	U
Hexachlorobutadiene	--	--	0.18	U	0.18	U	0.19	U	0.18	U	0.18	U	0.18	U	0.18	U	0.19	U	0.21	U	0.18	U
Hexachlorocyclopentadiene	--	--	0.52	U	0.52	U	0.54	U	0.52	U	0.52	U	0.52	U	0.52	U	0.56	U	0.59	U	0.53	U
Hexachloroethane	--	--	0.15	U	0.14	U	0.15	U	0.15	U	0.14	U	0.15	U	0.15	U	0.16	U	0.17	U	0.15	U
Indeno(1,2,3-cd)pyrene	0.5	0.5	0.15	U	0.14	U	0.15	U	0.15	U	0.14	U	0.15	U	0.15	U	0.16	U	0.17	U	0.15	U
Isophorone	--	--	0.16	U	0.16	U	0.17	U	0.16	U	0.16	U	0.16	U	0.16	U	0.18	U	0.19	U	0.17	U
n-Nitrosodi-n-propylamine	--	--	0.18	U	0.18	U	0.19	U	0.18	U	0.18	U	0.18	U	0.18	U	0.19	U	0.21	U	0.18	U
Naphthalene	12	100	0.18	U	0.18	U	0.19	U	0.18	U	0.18	U	0.18	U	0.18	U	0.19	U	0.21	U	0.18	U
NDPA/DPA	--	--	0.15	U	0.14	U	0.15	U	0.15	U	0.14	U	0.15	U	0.15	U	0.16	U	0.17	U	0.15	U
Nitrobenzene	--	--	0.16	U	0.16	U	0.17	U	0.16	U	0.16	U	0.16	U	0.16	U	0.18	U	0.19	U	0.17	U
p-Chloro-m-cresol	--	--	0.18	U	0.18	U	0.19	U	0.18	U	0.18	U	0.18	U	0.18	U	0.19	U	0.21	U	0.18	U
Pentachlorophenol	0.8	2.4	0.15	U	0.14	U	0.15	U	0.15	U	0.14	U	0.15	U	0.15	U	0.16	U	0.17	U	0.15	U
Phenanthrene	100	100	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.12	U	0.12	U	0.031	J
Phenol	0.33	100	0.18	U	0.18	U	0.19	U	0.18	U	0.18	U	0.18	U	0.18	U	0.19	U	0.21	U	0.18	U
Pyrene	100	100	0.11	U	0.11	U	0.11	U	0.029	J	0.11	U	0.11	U	0.11	U	0.032	J	0.12	U	0.022	J

Table Notes:

--: No guidance value.

mg/kg: Milligrams per Kilogram.

U: Not detected at the reported detection limit for the sample.

J: Estimate Value. The analyte concentration is below the quantitative limit (RL), but above the method detection limit (MDL) or estimated detection limit (EDL).

Table 4 - TAL Metals in Soil
Waste Characteriztion Report
Rye Lake Water Plant
Harrison, New York

LOCATION	Part 375 Unrestricted Use Soil Cleanup Objectives	Part 375 Residential Use Soil Cleanup Objectives	B-1 (0-5')		B-1 (5-15')		B-2 (15-25')		B-4 (5-15')		B-5 (0-5')		B-7 (15-25')		B-9 (5-15')		B-10 (0-5')		B-10 (13-23')	
DATE			5/27/2021		5/27/2021		6/2/2021		5/27/2021		5/27/2021		6/2/2021		5/26/2021		5/26/2021		5/26/2021	
LAB SAMPLE ID			L2128322-04		L2128321-06		L2129255-08		L2128321-02		L2128322-02		L2129255-04		L2128025-08		L2128025-16		L2128025-10	
			Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual
Total Metals (mg/kg)																				
Aluminum, Total	--	--	11100		5300		5780		6700		9650		6140		7150		9380		6250	
Antimony, Total	--	--	5.18	U	4.33	U	4.28	U	4.24	U	4.28	U	4.26	U	4.25	U	4.37	U	4.27	U
Arsenic, Total	13	16	1.57		0.546	J	0.941		1.49		1.49		0.998		0.79	J	1.62		0.82	J
Barium, Total	350	350	101		82.6		74.2		99.9		124		104		93.3		71.2		97.8	
Beryllium, Total	7.2	14	0.518	U	0.433	U	0.188	J	0.424	U	0.428	U	0.23	J	0.23	J	0.376	J	0.239	J
Cadmium, Total	2.5	2.5	0.404	J	0.234	J	0.308	J	0.263	J	0.3	J	0.341	J	0.298	J	0.323	J	0.307	J
Calcium, Total	--	--	1500		4350		1730		2610		1540		1860		2110		907		5400	
Chromium, Total	--	--	32.3		17		18.7		25.2		19.2		19.7		27.1		25		21.2	
Cobalt, Total	--	--	10.5		6.57		6.92		7.87		7.8		6.86		8.54		8.65		7.53	
Copper, Total	50	270	24.4		11.8		20.2		13.8		12.1		12.7		14.8		20.4		13.5	
Iron, Total	--	--	22500		12900		12400		15200		17600		13700		14700		15600		14500	
Lead, Total	63	400	4.51	J	4.1	J	3.13	J	3.9	J	2.51	J	3.55	J	4.05	J	8.75		3.86	J
Magnesium, Total	--	--	4180		3830		2890		3860		3430		2710		4190		3830		4770	
Manganese, Total	1600	2000	397		153		166		239		302		164		179		233		161	
Mercury, Total	0.18	0.81	0.083	U	0.069	U	0.079	U	0.07	U	0.071	U	0.076	U	0.073	U	0.072	U	0.075	U
Nickel, Total	30	140	22.4		10.4		12.2		12.2		10.2		10.6		13		20.5		12.5	
Potassium, Total	--	--	2820		2040		2250		2910		2670		2260		2550		2140		2860	
Selenium, Total	3.9	36	2.07	U	1.73	U	0.316	J	1.7	U	1.71	U	0.239	J	0.357	J	1.75	U	0.333	J
Silver, Total	2	36	1.04	U	0.866	U	0.855	U	0.848	U	0.857	U	0.853	U	0.85	U	0.873	U	0.854	U
Sodium, Total	--	--	69.6	J	123	J	110	J	120	J	63	J	101	J	114	J	55.5	J	112	J
Thallium, Total	--	--	2.07	U	1.73	U	1.71	U	1.7	U	1.71	U	1.7	U	1.7	U	1.75	U	1.71	U
Vanadium, Total	--	--	43.7		23.8		25.3		29.7		32		28.3		37.6		29.2		28.4	
Zinc, Total	109	2200	46.4		25.7		32.4		32		44.5		27.6		36.9		42.1		30.3	

Table Notes:

--: No guidance value

mg/kg: Milligrams per Kilogram

U: Not detected at the reported detection limit for the sample.

J: Estimate Value. The analyte concentration is below the quantitative limit (RL), but above the method detection limit (MDL) or estimated detection limit (EDL)

Table 4 - TAL Metals in Soil
Waste Characterization Report
Rye Lake Water Plant
Harrison, New York

LOCATION	Part 375 Unrestricted Use Soil Cleanup Objectives	Part 375 Residential Use Soil Cleanup Objectives	B-13 (0-5')		B-13 (5-15')		B-17 (0-5')		B-17 (5-10')		B-19 (0-10')		B-22 (0-10')		B-24 (0-5')		B-26 (0-10')		B-29 (0-10')	
DATE			5/26/2021		5/26/2021		6/1/2021		6/1/2021		6/3/2021		5/26/2021		5/26/2021		5/26/2021		6/2/2021	
LAB SAMPLE ID			L2128025-14		L2128025-06		L2128995-02		L2128996-02		L2129818-04		L2128025-03		L2128025-12		L2128025-02		L2129255-12	
			Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual
Total Metals (mg/kg)																				
Aluminum, Total	--	--	11700		8180		9410		7450		8020		8240		14200		10700		10000	
Antimony, Total	--	--	4.29	U	4.46	U	4.22	U	4.24	U	4.18	U	4.37	U	4.59	U	5.1	U	4.33	U
Arsenic, Total	13	16	2.57		0.767	J	1.81		1.09		0.819	J	0.936		3.11		1.26		1.96	
Barium, Total	350	350	53.7		84.1		88.1		93.8		90		63.9		86		96.2		104	
Beryllium, Total	7.2	14	0.394	J	0.357	J	0.245	J	0.22	J	0.418	U	0.323	J	0.514		0.377	J	0.372	J
Cadmium, Total	2.5	2.5	0.326	J	0.294	J	0.312	J	0.271	J	0.334	J	0.28	J	0.422	J	0.347	J	0.537	J
Calcium, Total	--	--	842		1010		858		1280		1670		1000		435		1080		1960	
Chromium, Total	--	--	23.5		17.3		24.9		14.4		16.7		15.1		26.3		19		34.8	
Cobalt, Total	--	--	6.86		7.42		8.63		10.1		6.02		5.24		9.19		7.62		12.2	
Copper, Total	50	270	14.5		13		7.29		16.1		11.3		17.8		11.5		15.8		23.8	
Iron, Total	--	--	15600		14400		13500		10900		13800		12900		20000		16300		20700	
Lead, Total	63	400	21.6		5.05		5.95		3.11	J	2.56	J	3.83	J	14.5		4.98	J	5.4	
Magnesium, Total	--	--	2870		2180		3650		1980		3020		1870		3100		2380		5100	
Manganese, Total	1600	2000	245		311		192		248		241		213		400		365		346	
Mercury, Total	0.18	0.81	0.07	U	0.077	U	0.079	U	0.078	U	0.078	U	0.077	U	0.077	U	0.092	U	0.081	U
Nickel, Total	30	140	12.8		12.2		13.4		11.7		12.5		12.3		14.2		13.1		21.3	
Potassium, Total	--	--	961		1820		2470		1550		2250		1630		692		1920		2770	
Selenium, Total	3.9	36	0.883	J	1.78	U	0.354	J	1.7	U	1.67	U	0.42	J	1.14	J	0.449	J	0.364	J
Silver, Total	2	36	0.858	U	0.892	U	0.844	U	0.848	U	0.836	U	0.874	U	0.917	U	1.02	U	0.866	U
Sodium, Total	--	--	44.2	J	67	J	53.5	J	83.9	J	104	J	61.3	J	35.3	J	84.7	J	74.5	J
Thallium, Total	--	--	1.72	U	1.78	U	1.69	U	1.7	U	1.67	U	1.75	U	1.83	U	2.04	U	1.73	U
Vanadium, Total	--	--	32.7		26.9		29		22		25.3		23.3		37.3		30.8		42.8	
Zinc, Total	109	2200	45.4		30.3		35.7		20.9		27.8		28.4		59.9		27		50.9	

Table Notes:

--: No guidance value

mg/kg: Milligrams per Kilogram

U: Not detected at the reported detection limit for the sample.

J: Estimate Value. The analyte concentration is below the quantitative limit (RL), but above the method detection limit (MDL) or estimated detection limit (EDL)

Table 5 - Pesticides, Polychlorinated Biphenyls, and Herbicides in Soil
Waste Characterization Report
Rye Lake Water Plant
Harrison, New York

SAMPLE LOCATION	Part 375 Unrestricted Use Soil Cleanup Objectives	Part 375 Residential Use Soil Cleanup Objectives	B-1 (0-5')		B-1 (5-15')		B-2 (15-25')		B-4 (5-15')		B-5 (0-5')		B-7 (15-25')		B-9 (5-15')		B-10 (0-5')		B-10 (13-23')	
DATE			5/27/2021		5/27/2021		6/2/2021		5/27/2021		5/27/2021		6/2/2021		5/26/2021		5/26/2021		5/26/2021	
LAB SAMPLE ID			L2128322-04		L2128321-06		L2129255-08		L2128321-02		L2128322-02		L2129255-04		L2128025-08		L2128025-16		L2128025-10	
SAMPLE TYPE			Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual
Organochlorine Pesticides by GC																				
4,4'-DDD	0.0033	2.6	0.00202	U	0.00174	U	0.00172	U	0.00176	U	0.00178	U	0.00174	U	0.00174	U	0.00176	U	0.00175	U
4,4'-DDE	0.0033	1.8	0.00202	U	0.00174	U	0.00172	U	0.00176	U	0.00178	U	0.00174	U	0.00174	U	0.00176	U	0.00175	U
4,4'-DDT	0.0033	1.7	0.00379	U	0.00327	U	0.00323	U	0.0033	U	0.00334	U	0.00327	U	0.00326	U	0.00329	U	0.00329	U
Aldrin	0.005	0.019	0.00202	U	0.00174	U	0.00172	U	0.00176	U	0.00178	U	0.00174	U	0.00174	U	0.00176	U	0.00175	U
Alpha-BHC	0.02	0.097	0.000843	U	0.000726	U	0.000717	U	0.000733	U	0.000742	U	0.000726	U	0.000724	U	0.000732	U	0.000731	U
Beta-BHC	0.036	0.072	0.00202	U	0.00174	U	0.00172	U	0.00176	U	0.00178	U	0.00174	U	0.00174	U	0.00176	U	0.00175	U
Chlordane	--	--	0.0169	U	0.0145	U	0.0143	U	0.0146	U	0.0148	U	0.0145	U	0.0145	U	0.0146	U	0.0146	U
cis-Chlordane	0.094	0.91	0.00253	U	0.00218	U	0.00215	U	0.0022	U	0.00222	U	0.00218	U	0.00217	U	0.0022	U	0.00219	U
Delta-BHC	0.04	100	0.00202	U	0.00174	U	0.00172	U	0.00176	U	0.00178	U	0.00174	U	0.00174	U	0.00176	U	0.00175	U
Dieldrin	0.005	0.039	0.00126	U	0.00109	U	0.00108	U	0.0011	U	0.00111	U	0.00109	U	0.00109	U	0.0011	U	0.0011	U
Endosulfan I	2.4	4.8	0.00202	U	0.00174	U	0.00172	U	0.00176	U	0.00178	U	0.00174	U	0.00174	U	0.00176	U	0.00175	U
Endosulfan II	2.4	4.8	0.00202	U	0.00174	U	0.00172	U	0.00176	U	0.00178	U	0.00174	U	0.00174	U	0.00176	U	0.00175	U
Endosulfan sulfate	2.4	4.8	0.000843	U	0.000726	U	0.000717	U	0.000733	U	0.000742	U	0.000726	U	0.000724	U	0.000732	U	0.000731	U
Endrin	0.014	2.2	0.000843	U	0.000726	U	0.000717	U	0.000733	U	0.000742	U	0.000726	U	0.000724	U	0.000732	U	0.000731	U
Endrin aldehyde	--	--	0.00253	U	0.00218	U	0.00215	U	0.0022	U	0.00222	U	0.00218	U	0.00217	U	0.0022	U	0.00219	U
Endrin ketone	--	--	0.00202	U	0.00174	U	0.00172	U	0.00176	U	0.00178	U	0.00174	U	0.00174	U	0.00176	U	0.00175	U
Heptachlor	0.042	0.42	0.00101	U	0.000871	U	0.000861	U	0.000879	U	0.00089	U	0.000872	U	0.000869	U	0.000878	U	0.000877	U
Heptachlor epoxide	--	--	0.00379	U	0.00327	U	0.00323	U	0.0033	U	0.00334	U	0.00327	U	0.00326	U	0.00329	U	0.00329	U
Lindane	0.1	0.28	0.000843	U	0.000726	U	0.000717	U	0.000733	U	0.000742	U	0.000726	U	0.000724	U	0.000732	U	0.000731	U
Methoxychlor	--	--	0.00379	U	0.00327	U	0.00323	U	0.0033	U	0.00334	U	0.00327	U	0.00326	U	0.00329	U	0.00329	U
Toxaphene	--	--	0.0379	U	0.0327	U	0.0323	U	0.033	U	0.0334	U	0.0327	U	0.0326	U	0.0329	U	0.0329	U
trans-Chlordane	--	--	0.00253	U	0.00218	U	0.00215	U	0.0022	U	0.00222	U	0.00218	U	0.00217	U	0.0022	U	0.00219	U
Polychlorinated Biphenyls by GC																				
Aroclor 1016	0.1	1	0.0423	U	0.0351	U	0.0356	U	0.0363	U	0.0364	U	0.035	U	0.0365	U	0.036	U	0.0362	U
Aroclor 1221	0.1	1	0.0423	U	0.0351	U	0.0356	U	0.0363	U	0.0364	U	0.035	U	0.0365	U	0.036	U	0.0362	U
Aroclor 1232	0.1	1	0.0423	U	0.0351	U	0.0356	U	0.0363	U	0.0364	U	0.035	U	0.0365	U	0.036	U	0.0362	U
Aroclor 1242	0.1	1	0.0423	U	0.0351	U	0.0356	U	0.0363	U	0.0364	U	0.035	U	0.0365	U	0.036	U	0.0362	U
Aroclor 1248	0.1	1	0.0423	U	0.0351	U	0.0356	U	0.0363	U	0.0364	U	0.035	U	0.0365	U	0.036	U	0.0362	U
Aroclor 1254	0.1	1	0.0423	U	0.0351	U	0.0356	U	0.0363	U	0.0364	U	0.035	U	0.0365	U	0.036	U	0.0362	U
Aroclor 1260	0.1	1	0.0423	U	0.0351	U	0.0356	U	0.0363	U	0.0364	U	0.035	U	0.0365	U	0.036	U	0.0362	U
Aroclor 1262	0.1	1	0.0423	U	0.0351	U	0.0356	U	0.0363	U	0.0364	U	0.035	U	0.0365	U	0.036	U	0.0362	U
Aroclor 1268	0.1	1	0.0423	U	0.0351	U	0.0356	U	0.0363	U	0.0364	U	0.035	U	0.0365	U	0.036	U	0.0362	U
Chlorinated Herbicides by GC																				
2,4,5-T	--	--	0.217	U	NA		NA		NA		0.184	U	NA		NA		0.185	U	NA	
2,4,5-TP (Silvex)	3.8	58	0.217	U	NA		NA		NA		0.184	U	NA		NA		0.185	U	NA	
2,4-D	--	--	0.217	U	NA		NA		NA		0.184	U	NA		NA		0.185	U	NA	

TABLE NOTES:

--: No Guidance Value.

mg/kg: Milligrams per kilogram.

NA: Not Analyzed.

U: Not detected at the reported detection limit for the sample.

J: Estimated value. The analyte concentration is below the reporting limit (RL), but above the method detection limit (MDL) or estimated detection limit (EDL).

Undetected value is greater than the standard or guidance value.

Table 5 - Pesticides, Polychlorinated Biphenyls, and Herbicides in Soil
Waste Characterization Report
Rye Lake Water Plant
Harrison, New York

SAMPLE LOCATION	Part 375 Unrestricted Use Soil Cleanup Objectives	Part 375 Residential Use Soil Cleanup Objectives	B-13 (0-5')		B-13 (5-15')		B-17 (0-5')		B-17 (5-10')		B-19 (0-10')		B-22 (0-10')		B-24 (0-5')		B-26 (0-10')		B-29 (0-10')	
DATE			5/26/2021		5/26/2021		6/1/2021		6/1/2021		6/3/2021		5/26/2021		5/26/2021		5/26/2021		6/2/2021	
LAB SAMPLE ID			L2128025-14		L2128025-06		L2128995-02		L2128996-02		L2129818-04		L2128025-03		L2128025-12		L2128025-02		L2129255-12	
SAMPLE TYPE			Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual
Organochlorine Pesticides by GC																				
4,4'-DDD	0.0033	2.6	0.00165	U	0.00179	U	0.00172	U	0.00175	U	0.00172	U	0.0017	U	0.00184	U	0.00199	U	0.00176	U
4,4'-DDE	0.0033	1.8	0.00165	U	0.00179	U	0.00172	U	0.00175	U	0.00172	U	0.0017	U	0.00184	U	0.00199	U	0.00176	U
4,4'-DDT	0.0033	1.7	0.00309	U	0.00335	U	0.00323	U	0.00328	U	0.00323	U	0.00319	U	0.00345	U	0.00373	U	0.00329	U
Aldrin	0.005	0.019	0.00165	U	0.00179	U	0.00172	U	0.00175	U	0.00172	U	0.0017	U	0.00184	U	0.00199	U	0.00176	U
Alpha-BHC	0.02	0.097	0.000687	U	0.000745	U	0.000719	U	0.000729	U	0.000718	U	0.000708	U	0.000767	U	0.000828	U	0.000732	U
Beta-BHC	0.036	0.072	0.00165	U	0.00179	U	0.00172	U	0.00175	U	0.00172	U	0.0017	U	0.00184	U	0.00199	U	0.00176	U
Chlordane	--	--	0.0137	U	0.0149	U	0.0144	U	0.0146	U	0.0144	U	0.0142	U	0.0153	U	0.0166	U	0.0146	U
cis-Chlordane	0.094	0.91	0.00206	U	0.00223	U	0.00216	U	0.00219	U	0.00216	U	0.00212	U	0.0023	U	0.00248	U	0.00219	U
Delta-BHC	0.04	100	0.00165	U	0.00179	U	0.00172	U	0.00175	U	0.00172	U	0.0017	U	0.00184	U	0.00199	U	0.00176	U
Dieldrin	0.005	0.039	0.00103	U	0.00112	U	0.00108	U	0.00109	U	0.00108	U	0.00106	U	0.00115	U	0.00124	U	0.0011	U
Endosulfan I	2.4	4.8	0.00165	U	0.00179	U	0.00172	U	0.00175	U	0.00172	U	0.0017	U	0.00184	U	0.00199	U	0.00176	U
Endosulfan II	2.4	4.8	0.00165	U	0.00179	U	0.00172	U	0.00175	U	0.00172	U	0.0017	U	0.00184	U	0.00199	U	0.00176	U
Endosulfan sulfate	2.4	4.8	0.000687	U	0.000745	U	0.000719	U	0.000729	U	0.000718	U	0.000708	U	0.000767	U	0.000828	U	0.000732	U
Endrin	0.014	2.2	0.000687	U	0.000745	U	0.000719	U	0.000729	U	0.000718	U	0.000708	U	0.000767	U	0.000828	U	0.000732	U
Endrin aldehyde	--	--	0.00206	U	0.00223	U	0.00216	U	0.00219	U	0.00216	U	0.00212	U	0.0023	U	0.00248	U	0.00219	U
Endrin ketone	--	--	0.00165	U	0.00179	U	0.00172	U	0.00175	U	0.00172	U	0.0017	U	0.00184	U	0.00199	U	0.00176	U
Heptachlor	0.042	0.42	0.000824	U	0.000894	U	0.000862	U	0.000875	U	0.000862	U	0.00085	U	0.00092	U	0.000994	U	0.000878	U
Heptachlor epoxide	--	--	0.00309	U	0.00335	U	0.00323	U	0.00328	U	0.00323	U	0.00319	U	0.00345	U	0.00373	U	0.00329	U
Lindane	0.1	0.28	0.000687	U	0.000745	U	0.000719	U	0.000729	U	0.000718	U	0.000708	U	0.000767	U	0.000828	U	0.000732	U
Methoxychlor	--	--	0.00309	U	0.00335	U	0.00323	U	0.00328	U	0.00323	U	0.00319	U	0.00345	U	0.00373	U	0.00329	U
Toxaphene	--	--	0.0309	U	0.0335	U	0.0323	U	0.0328	U	0.0323	U	0.0319	U	0.0345	U	0.0373	U	0.0329	U
trans-Chlordane	--	--	0.00206	U	0.00223	U	0.00216	U	0.00219	U	0.00216	U	0.00212	U	0.0023	U	0.00248	U	0.00219	U
Polychlorinated Biphenyls by GC																				
Aroclor 1016	0.1	1	0.0364	U	0.0369	U	0.0361	U	0.0376	U	0.0357	U	0.0353	U	0.0389	U	0.041	U	0.0374	U
Aroclor 1221	0.1	1	0.0364	U	0.0369	U	0.0361	U	0.0376	U	0.0357	U	0.0353	U	0.0389	U	0.041	U	0.0374	U
Aroclor 1232	0.1	1	0.0364	U	0.0369	U	0.0361	U	0.0376	U	0.0357	U	0.0353	U	0.0389	U	0.041	U	0.0374	U
Aroclor 1242	0.1	1	0.0364	U	0.0369	U	0.0361	U	0.0376	U	0.0357	U	0.0353	U	0.0389	U	0.041	U	0.0374	U
Aroclor 1248	0.1	1	0.0364	U	0.0369	U	0.0361	U	0.0376	U	0.0357	U	0.0353	U	0.0389	U	0.041	U	0.0374	U
Aroclor 1254	0.1	1	0.0364	U	0.0369	U	0.0361	U	0.0376	U	0.0357	U	0.0353	U	0.0389	U	0.041	U	0.0374	U
Aroclor 1260	0.1	1	0.0364	U	0.00776	J	0.0361	U	0.0438		0.0357	U	0.0353	U	0.0389	U	0.041	U	0.0374	U
Aroclor 1262	0.1	1	0.0364	U	0.0369	U	0.0361	U	0.0376	U	0.0357	U	0.0353	U	0.0389	U	0.041	U	0.0374	U
Aroclor 1268	0.1	1	0.0364	U	0.0369	U	0.0361	U	0.0376	U	0.0357	U	0.0353	U	0.0389	U	0.041	U	0.0374	U
Chlorinated Herbicides by GC																				
2,4,5-T	--	--	0.182	U	NA		0.18	U	NA		NA		NA		0.195	U	NA		NA	
2,4,5-TP (Silvex)	3.8	58	0.182	U	NA		0.18	U	NA		NA		NA		0.195	U	NA		NA	
2,4-D	--	--	0.182	U	NA		0.18	U	NA		NA		NA		0.195	U	NA		NA	

TABLE NOTES:

--: No Guidance Value.

mg/kg: Milligrams per kilogram.

NA: Not Analyzed.

U: Not detected at the reported detection limit for the sample.

J: Estimated value. The analyte concentration is below the reporting limit (RL), but above the method detection limit (MDL) or estimated detection limit (EDL).

Undetected value is greater than the standard or guidance value.

Table 6 - TCLP Metals in Soil
Waste Characterization Report
Rye Lake Water Plant
Harrison, New York

LOCATION	Maximum Contaminant Concentrations for Toxicity (40 CFR 261 6/96)	B-1 (0-5')		B-5 (0-5')		B-10 (0-5')		B-13 (0-5')		B-17 (0-5')		B-24 (0-5')	
LAB SAMPLE ID		5/27/2021		5/27/2021		5/26/2021		5/27/2021		6/1/2021		5/26/2021	
DATE		L2128322-04		L2128322-02		L2133087-03		L2133087-02		L2128995-02		L2133087-01	
		Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual
TCLP Metals by EPA 1311 (mg/L)													
Arsenic, TCLP	5	1	U	1	U	0.03	J	0.024	J	1	U	1	U
Barium, TCLP	100	0.513		0.833		0.651		1.42		0.373	J	0.552	
Cadmium, TCLP	1	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Chromium, TCLP	5	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
Lead, TCLP	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Mercury, TCLP	0.2	0.001	J	0.0008	J	0.001	U	0.001	U	0.001	U	0.001	U
Selenium, TCLP	1	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Silver, TCLP	5	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U

Table Notes:

--: No guidance value

mg/L: Milligrams per Liter

U: Not detected at the reported detection limit for the sample.

J: Estimate Value. The analyte concentration is below the quantitative limit (RL), but above the method detection limit (MDL) or estimated detection limit (EDL)

Table 7- Waste Characterization Parameters
Waste Characterization Report
Rye Lake Water Plant
Harrison, New York

SAMPLE LOCATION		EPA RCRA Characteristic		B-1 (0-5')		B-5 (0-5')		B-10 (0-5')		B-13 (0-5')		B-17 (0-5')		B-24 (0-5')	
LAB SAMPLE ID				5/27/2021		5/27/2021		5/26/2021		5/26/2021		6/1/2021		5/26/2021	
DATE				L2128322-04		L2128322-02		L2133087-03		L2133087-02		L2128995-02		L2133087-01	
	Units			Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual
General Chemistry															
Corrosivity (pH)	S.U.	pH <2 or pH > 12		6.7		6.1		5.1		5.2		7		5.2	
Cyanide, Reactive	mg/kg	250		10	U	10	U	10	U	10	U	10	U	10	U
Sulfide, Reactive	mg/kg	500		10	U	10	U	10	U	10	U	10	U	10	U
Ignitability	-	--		NI		NI		NI		NI		NI		NI	
SAMPLE LOCATION		Part 375 Unrestricted Use Soil Cleanup Objectives	Part 375 Restricted Residential Use Soil Cleanup Objectives	B-1 (0-5')		B-5 (0-5')		B-10 (0-5')		B-13 (0-5')		B-17 (0-5')		B-24 (0-5')	
LAB SAMPLE ID				5/27/2021		5/27/2021		5/26/2021		5/26/2021		6/1/2021		5/26/2021	
DATE				L2128322-04		L2128322-02		L2133087-03		L2133087-02		L2128995-02		L2133087-01	
	Units			Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual
General Chemistry															
Solids, Total	%	--	--	75.4		88.4		89.3		91.3		90.7		83.4	

Table Notes:

S.U.: Standard Units.

U: Not detected at the reported detection limit for the sample.

J: Estimated value. The analyte concentration is below the reporting limit (RL), but above the method detection limit (MDL) or estimated detection limit (EDL).

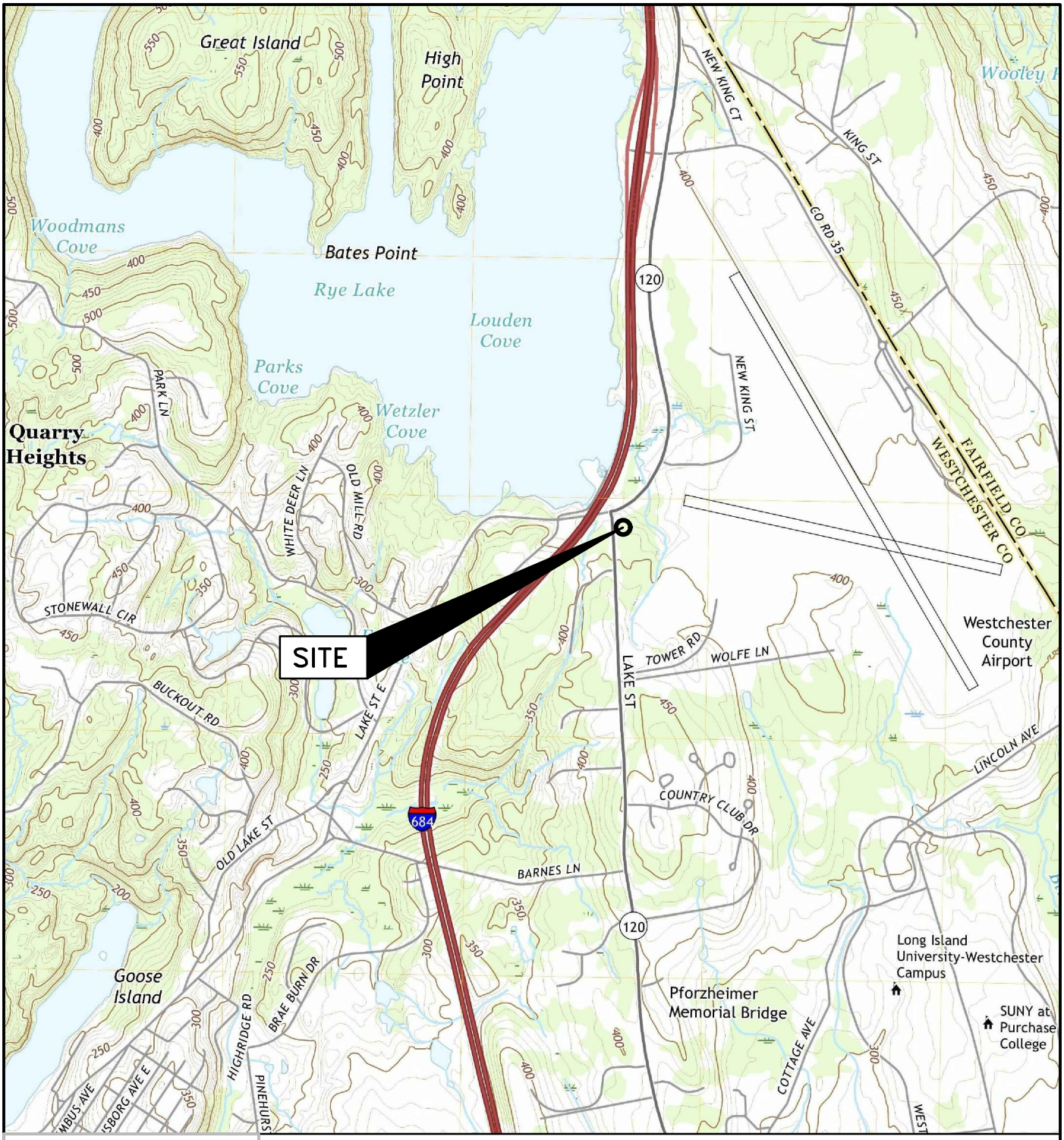
mg/kg: Milligrams per kilograms.

--: No Guidance Value.

-: No unit.

NI: Non-Ignitable

FIGURES



NEW YORK



QUADRANGLE LOCATION

SOURCE:

USGS TOPOGRAPHIC MAPS: GLENVILLE, CONNECTICUT, NEW YORK (2021). CONTOUR INTERVAL 10FT., NAVD-1988, ORIGINAL SCALE 1:24,000 (1IN.=2,000FT.).

N W E S

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WESTCHESTER JOINT WATER WORKS
WATER TREATMENT PLANT
WESTCHESTER COUNTY, NY

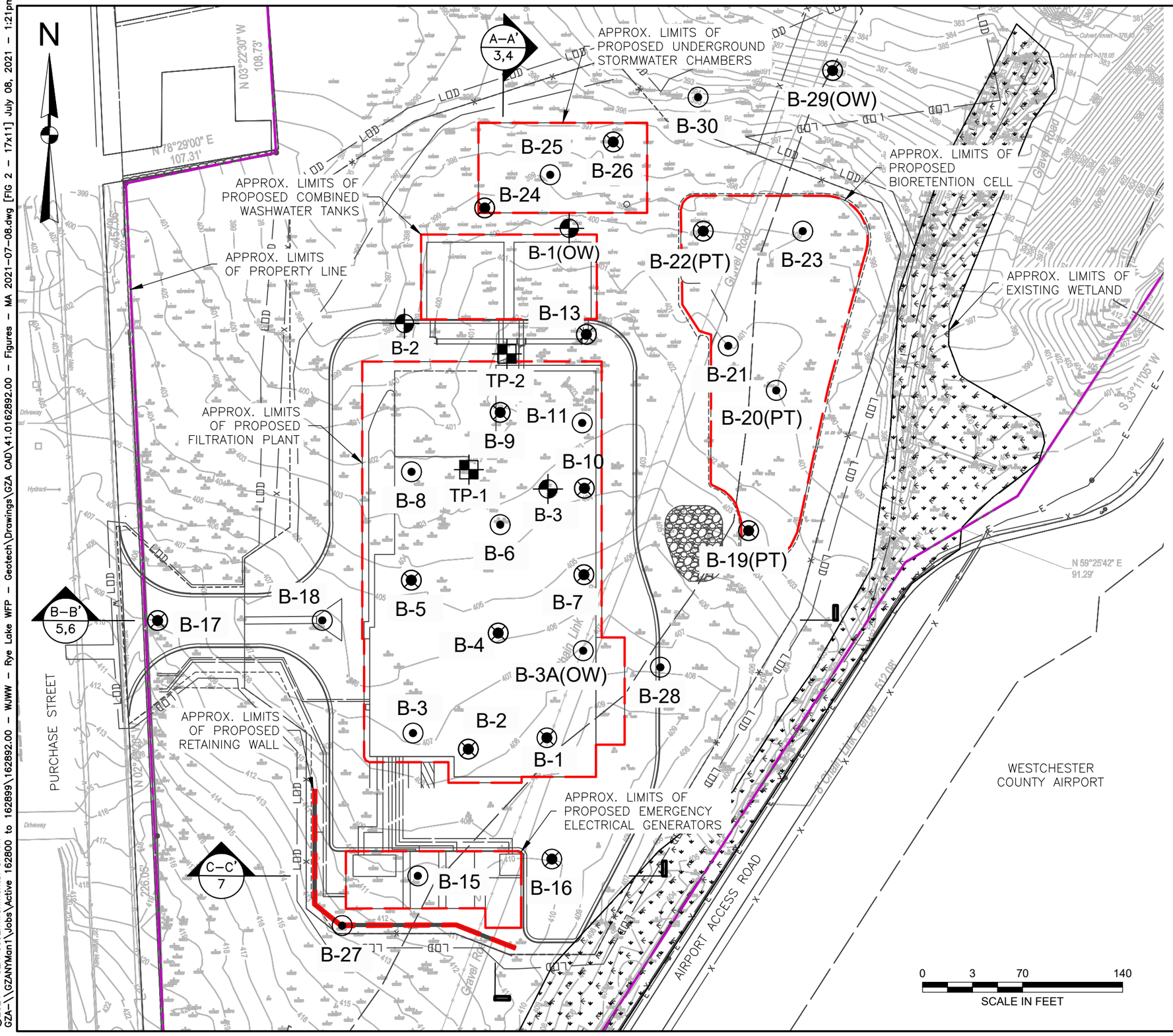
PREPARED BY:
GZA GeoEnvironmental of NY
Engineers and Scientists
www.gza.com

PREPARED FOR:
Hazen

SITE LOCATION MAP

PROJ MGR: DSP	REVIEWED BY: DSP	CHECKED BY: CAW	FIGURE 1
DESIGNED BY: ZSB	DRAWN BY: ZSB	SCALE: 1"=2000'	
DATE: JUNE, 2021	PROJECT NO. 41.0162892.00	REVISION NO. -	SHEET NO. 1 OF 7

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GZA–J:\Active 162800 to 162899\162892.00 – WJWW – Rye Lake WFP – Geotech\Drawings\GZA CAD\41.0162892.00 – Figures – SB 2021–06–28.dwg [FIG 1 8.5x11] June 28, 2021 – 1:29pm susan.benyaminov



GENERAL NOTES

1. BASE MAP DEVELOPED FROM TOPOGRAPHIC SURVEY, PREPARED BY GEORGE J. MOTTARELLA, DATED APRIL 17, 2021 AND FROM DRAWING TITLED "CIVIL SITE BORING PLAN", PREPARED BY, HAZEN & SAWYER, DATED MARCH 2021.
2. EXPLORATION LOCATIONS WERE SURVEYED AND MARKED OUT BY HAZEN & SAWYER.
3. THE PURPOSE OF THIS DRAWING IS TO LOCATE, DESCRIBE, AND REPRESENT THE POSITIONS OF EXPLORATIONS AND MONITORING WELLS AND IN RELATION TO THE SUBJECT SITE. THIS DRAWING IS NOT CONSIDERED A LAND SURVEY. THE LOCATIONS SHOWN SHOULD BE CONSIDERED ACCURATE ONLY TO THE DEGREE IMPLIED BY THE METHOD USED.

LEGEND

- APPROXIMATE PROPERTY BOUNDARY
- APPROXIMATE LIMITS OF PROPOSED STRUCTURES
- APPROXIMATE LIMITS OF EXISTING WETLAND
- B-X — APPROXIMATE WASTE CHARACTERIZATION SAMPLE LOCATION (OW) INDICATES OBSERVATION WELL INSTALLED IN BORING (PT) INDICATES IN–SITU PERMEABILITY TESTING PERFORMED IN BORING
- B-X — APPROXIMATE TEST BORING LOCATION (OW) INDICATES OBSERVATION WELL INSTALLED IN BORING (PT) INDICATES IN–SITU PERMEABILITY TESTING PERFORMED IN BORING
- B-X — APPROXIMATE TEST BORING LOCATION PERFORMED BY GENERAL BORINGS, INC. IN 2019.
- TP-X — APPROXIMATE TEST PIT LOCATION PERFORMED BY GENERAL BORINGS, INC. IN 2019.

NO.	ISSUE/DESCRIPTION	BY	DATE

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WESTCHESTER JOINT WATER WORKS
WATER TREATMENT PLANT
WESTCHESTER COUNTY, NY

WASTE CHARACTERIZATION SAMPLING PLAN

PREPARED BY: GZA GeoEnvironmental of NY Engineers and Scientists www.gza.com

PREPARED FOR: Hazen

PROJ MGR: DSP	REVIEWED BY: DSP	CHECKED BY: CAW	FIGURE 2
DESIGNED BY: ZSB	DRAWN BY: ZSB	SCALE: AS SHOWN	
DATE: JULY, 2021	PROJECT NO. 41.0162892.00	REVISION NO. -	SHEET NO. 2 OF 7

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GZA–\\GZANYMan1\Jobs\Active 162800 to 162899\162892.00 – WJWW – Rye Lake WFP – Geotech\Drawings\GZA CAD\41.0162892.00 – Figures – MA 2021-07-08.dwg [FIG 2 – 17x11] July 08, 2021 – 1:21pm moh

Attachment A – Photographic Log

Photographic Log

Client Name: Hazen	**Site Location:** Rye Lake Water Filtration Plant	**Project No.** 41.0162892.01

Photo No. 1	**Date:** 5/26/21
Direction Photo Taken: North	
Description: Drilling contractor collecting waste characterization samples.	



Photo No. 2	**Date:** 5/26/21
Direction Photo Taken: N/A	
Description: GZA screening and collected waste characterization sample.	



Photographic Log

Client Name: Hazen	**Site Location:** Rye Lake Water Filtration Plant	**Project No.** 41.0162892.01

Photo No.	**Date:**
3	5/26/21

Direction Photo Taken:
N/A

Description:
Soil core in acetate liner from B-24.



Photo No.	**Date:**
4	5/26/21

Direction Photo Taken:
N/A

Description:
Soil core in acetate liner from B-10



Attachment B – Soil Boring Logs

LOG KEY

GZA
Geo Environmental, Inc.
Engineers and Scientists

BURMISTER SOIL CLASSIFICATION

COMPONENT	NAME	PROPORTIONAL TERM	PERCENT BY WEIGHT
MAJOR	GRAVEL, SAND, FINES*		>50
Minor	Gravel, Sand, Fines*	and	35 - 50
		some	20-35
		little	10-20
		trace	0-10

*See identification of fines table.

IDENTIFICATION OF FINES

Material	PI	Atterberg Thread Dia.
SILT	0	Cannot Roll
Clayey SILT	1-5	1/4"
SILT & CLAY	5-10	1/8"
CLAY & SILT	10-20	1/16"
Silty CLAY	20-40	1/32"
CLAY	>40	1/64"

GRADATION DESIGNATION	PROPORTION OF COMPONENT
Fine to coarse	All fractions > 10%
Medium to coarse	<10% fine
Fine to medium	<10% coarse
Coarse	<10% fine and medium
Medium	<10% coarse and fine
Fine	<10% coarse and medium

PLASTIC SOILS

Consistency	Blows/Ft. SPT N-Value
Very Soft	< 2
Soft	2 - 4
Medium Stiff	4 - 8
Stiff	8 - 15
Very Stiff	15 - 30
Hard	>30

GRAVEL & SAND

Density	Blows/Ft. SPT N-Value
Very Loose	< 4
Loose	4 - 10
Medium Dense	10 - 30
Dense	30 - 50
Very Dense	> 50

UNIFIED SOIL CLASSIFICATION SYSTEM (USCS) (ASTM D 2487)

MAJOR DIVISIONS			Group Symbols
Coarse Grained Soils More than 50% of material larger than No. 200 sieve.	Gravel More than 50% larger than No. 4 sieve.	Clean Gravels (Little or no fines)	GW GP
		Gravels with Fines (Appreciable amount of fines)	GM GC
	Sand More than 50% smaller than No. 4 sieve.	Clean Sands (Little or no fines)	SW SP
		Sands with Fines (Appreciable amount of fines)	SM SC
Fine Grained Soils More than 50% of material smaller than No. 200 sieve.		Silts and Clays Liquid Limit <50	ML CL
		Silts and CLays Liquid Limit >50	OL MH CH OH
		Highly Organic Soils	Pt

ORGANIC SOIL CLASSIFICATION

Fibrous PEAT (Pt) - Lightweight, spongy, mostly visible organic matter, water squeezes readily from sample. Typically near top of deposit.
Fine Grained PEAT (Pt) - Lightweight, spongy, little visible organic matter, water squeezes readily from sample. Typically below fibrous peat.
Organic Silt (OL) - Typically gray to dark gray, often has strong H2S odor. Typically contains shells or shell fragments. Lightweight. Usually found near coastal regions. May contain wide range of sand fractions.
Organic Clay (OH) - Typically gray to dark gray, high plasticity. Usually found near coastal regions. May contain wide range of sand fractions. Need organic content test for final identification.

ABBREVIATIONS

MR = Mud Rotary
HSA = Hollow Stem Auger
SSA = Solid Stem Auger
SS = Split Spoon Sampler
U = Undisturbed Sample (Shelby Tube)
MC = Modified California Sampler
V = Vibracore
M = Macrocore

USCS = Unified Soil Classification System (ASTM D2487)
NYCBC = New York City Building Code
WOR = Weight of Rods
WOH= Weight of Hammer
SPT = Standard Penetration Test (ASTM D1586)

Tv = Field Vane Shear Test (Torvane) Shear Strength
PP = Pocket Penetrometer Shear Strength
PI = Plasticity Index
Wn = Moisture Content
CO = Consolidation
UC = Unconfined Compression Test
UU = Unconsolidated Undrained (Triaxial) Test
SI = Sieve Analysis
DS = Direct Shear
PID = Photoionization Detector
ppm = Parts Per Million
REC = Recovery
RQD = Rock Quality Designation
▼ = Measured Water Level

N-Value = Cumulative number of uncorrected blows for the middle two six-inch intervals (blows/foot).

TEST BORING LOG

GZA GeoEnvironmental of New York
Engineers and Scientists

Westchester Joint Water Works
Water Treatment Plant
Westchester County, New York

EXPLORATION NO.: B-1
SHEET: 1 of 3
PROJECT NO: 41.0162892.00
REVIEWED BY: D. Patel

Logged By: A. Amador
Drilling Co.: Craig Test Boring Co., Inc.
Foreman: P. Mullins/S. Schultz
Date Start: 5/14/2021 **Finish:** 5/17/2021

Type of Rig: ATV
Rig Model: CME 750X
Drilling Method: Mud Rotary

Boring Location: See Plan
Stationing (ft.): **Offset (ft.):**
Ground Surface Elevation (ft.): 408
Final Boring Depth (ft.): 60.2

H. Datum: -
V. Datum: NAVD 88
Northing:
Easting:

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4/3.5

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

Date	Time	Water Depth	Stab. Time
Not	Measured		

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (per 6 in.)	Sample SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	Stratum Depth (ft.)	Stratum Description	Stratum Elev. (ft.)
		S-1	0.0-2	24	16	1 26		S-1: Top 1": TOPSOIL			0.3	TOPSOIL	407.7
						9 9	35	Bottom 15": Medium dense, brown, fine to medium SAND, some Silt, little Gravel, trace mica.					
		S-2	2.0-4	24	19	5 4		S-2: Stiff, gray-brown SILT, some Sand, trace Gravel.				SILTY SAND	
						8 10	12						
5		S-3	4.0-6	24	6	13 14		S-3: Medium dense, brown, fine to medium SAND, some Silt, little Gravel, trace mica.					
						14 16	28				6		402.0
		S-4	6.0-8	24	15	13 15		S-4: Dense, brown, fine to medium SAND, some Silt, little Gravel, trace mica.					
						17 14	32						
		S-5	8.0-10	24	14	6 10		S-5: Medium dense, brown, fine to medium SAND, some Silt, little Gravel, trace mica.					
						17 18	27						
10		S-6	10.0-12	24	16	10 14		S-6: Medium dense, brown, fine to medium SAND and SILT, little Gravel, trace mica.					
						14 22	28						
15		S-7	15.0-17	24	16	11 15		S-7: Dense, brown, fine to medium SAND and SILT, little Gravel, trace mica.				GLACIAL TILL	
						22 25	37						
20		S-8	20.0-22	24	19	14 18		S-8: Dense, brown, fine to medium SAND and SILT, little Gravel, trace mica.					
						30 31	48				23.5		384.5
25		S-9	25.0-27	24	17	32 79		S-9: Very dense, gray, fine to medium SAND and SILT, little Gravel, trace mica.				DECOMPOSED ROCK	
						60 42	>100						
30													

REMARKS

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: B-1

GZA TEMPLATE TEST BORING - GZA 2016_01_26.GDT - 6/21/21 10:20 - J:\GINT PROJECT DATABASES\41.0162800\41.0162892.00.GPJ

TEST BORING LOG

GZA GeoEnvironmental of New York
Engineers and Scientists

Westchester Joint Water Works
Water Treatment Plant
Westchester County, New York

EXPLORATION NO.: B-1
SHEET: 2 of 3
PROJECT NO: 41.0162892.00
REVIEWED BY: D. Patel

Logged By: A. Amador
Drilling Co.: Craig Test Boring Co., Inc.
Foreman: P. Mullins/S. Schultz
Date Start: 5/14/2021 **Finish:** 5/17/2021

Type of Rig: ATV
Rig Model: CME 750X
Drilling Method: Mud Rotary

Boring Location: See Plan
Stationing (ft.): **Offset (ft.):**
Ground Surface Elevation (ft.): 408
Final Boring Depth (ft.): 60.2

H. Datum: -
V. Datum: NAVD 88
Northing:
Easting:

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4/3.5

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

Date	Time	Water Depth	Stab. Time
Not	Measured		

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Pen. (in)	Rec. (in)	Blows (per 6 in.)	SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	Stratum Depth (ft.)	Stratum Description	Stratum Elev. (ft.)
		S-10	30.0-32	24	18	23 28 44 74	72	S-10: Very dense, gray, fine to medium SAND and SILT, little Gravel, trace mica.					
35		S-11	35.0-37	15	13	37 70 100/3"	R	S-11: Very dense, gray, fine to medium SAND and SILT, little Gravel, trace quartz fragments.					
40		S-12	40.0-42	14	13	42 70 100/2"	R	S-12: Very dense, gray, fine to medium SAND and SILT, little Gravel, trace mica.					
45		S-13	45.0-47	24	10	27 27 37 44	64	S-13: Very dense, gray, fine to medium SAND and SILT, little Gravel, trace mica.				DECOMPOSED ROCK	
50		S-14	50.0-52	14	11	24 85 100/2"	R	S-14: Hard, gray-brown SILT, some fine Sand, little Gravel, trace mica.					
55		S-15	55.0-57	14	11	37 60 100/2"	R	S-15: Hard, gray-brown SILT, some fine Sand, little Gravel, trace mica.					
60													

REMARKS

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: B-1

GZA TEMPLATE TEST BORING - GZA 2016_01_26.GDT - 6/21/21 10:20 - J:\GINT PROJECT DATABASES\41.0162800\41.0162892.00.GPJ

TEST BORING LOG

GZA GeoEnvironmental of New York
Engineers and Scientists

Westchester Joint Water Works
Water Treatment Plant
Westchester County, New York

EXPLORATION NO.: B-1
SHEET: 3 of 3
PROJECT NO: 41.0162892.00
REVIEWED BY: D. Patel

Logged By: A. Amador
Drilling Co.: Craig Test Boring Co., Inc.
Foreman: P. Mullins/S. Schultz
Date Start: 5/14/2021 **Finish:** 5/17/2021

Type of Rig: ATV
Rig Model: CME 750X
Drilling Method: Mud Rotary

Boring Location: See Plan
Stationing (ft.): **Offset (ft.):**
Ground Surface Elevation (ft.): 408
Final Boring Depth (ft.): 60.2

H. Datum: -
V. Datum: NAVD 88
Northing:
Easting:

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4/3.5

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

Date	Time	Water Depth	Stab. Time
Not	Measured		

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (per 6 in.)	SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	Stratum Depth (ft.)	Stratum Description	Stratum Elev. (ft.)
		S-16	60.0-62	2	0	100/2"	R	S-16: No Recovery. End of exploration at 60.2 feet.	1 2 3		60.2		347.8
65													
70													
75													
80													
85													
90													

REMARKS

1 - Decomposed Rock fragments encountered at tip of split spoon.
2 - Photoionization Detector (PID) readings were obtained for all samples. Results PID = 0 ppm throughout.
3 - Borehole was backfilled with soil cuttings and bentonite upon completion.

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: B-1

GZA TEMPLATE TEST BORING - GZA 2016_01_26.GDT - 6/21/21 10:20 - J:\GINT PROJECT DATABASES\41.0162800\41.0162892.00.GPJ

TEST BORING LOG

GZA GeoEnvironmental of New York
Engineers and Scientists

Westchester Joint Water Works
Water Treatment Plant
Westchester County, New York

EXPLORATION NO.: B-2
SHEET: 1 of 3
PROJECT NO: 41.0162892.00
REVIEWED BY: D. Patel

Logged By: A. Amador
Drilling Co.: Craig Test Boring Co., Inc.
Foreman: P. Mullins/S. Schultz
Date Start: 5/14/2021 **Finish:** 5/14/2021

Type of Rig: ATV
Rig Model: CME 750X
Drilling Method: Mud Rotary

Boring Location: See Plan
Stationing (ft.): **Offset (ft.):**
Ground Surface Elevation (ft.): 408
Final Boring Depth (ft.): 60.2

H. Datum: -
V. Datum: NAVD 88
Northing:
Easting:

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4/3.5

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

Date	Time	Water Depth	Stab. Time
Not	Measured		

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (per 6 in.)	Sample SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	Stratum Depth (ft.)	Stratum Description	Stratum Elev. (ft.)
		S-1	0.0-2	24	4	1 2 1 3	3	S-1: Top 1": TOPSOIL Bottom 3": Soft, brown SILT, some Sand, little Gravel, trace roots.			0.3	TOPSOIL	407.7
		S-2	2.0-4	24	12	3 5 8 9	13	S-2: Medium dense, brown, fine to medium SAND, some Silt, little Gravel, trace mica.					
5		S-3	4.0-6	24	13	9 9 9 10	18	S-3: Medium dense, brown, fine to medium SAND, some Silt, little Gravel, trace mica.				SILTY SAND	
		S-4	6.0-8	24	13	9 7 7 8	14	S-4: Medium dense, brown, fine to medium SAND, some Silt, little Gravel, trace mica.					
		S-5	8.0-10	24	14	17 50 23 19	73	S-5: Very dense, brown, fine to medium SAND and SILT, little Gravel, trace mica.			8		400.0
10		S-6	10.0-12	24	0	74 41 19 21	60	S-6: No recovery.	1				
15		S-7	15.0-17	24	15	96 21 23 31	44	S-7: Dense, brown, fine to medium SAND and SILT, little Gravel.				GLACIAL TILL	
20		S-8	20.0-22	24	11	21 26 25 36	51	S-8: Very dense, brown, fine to medium SAND and SILT, little Gravel, trace mica.			23.5		384.5
25		S-9	25.0-27	24	15	14 23 44 40	67	S-9: Very dense, gray-brown, fine to medium SAND, some Silt, little Gravel, trace mica.				DECOMPOSED ROCK	
30													

REMARKS

1 - Gravel encountered at tip of split spoon at sample S-6.

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: B-2

GZA TEMPLATE TEST BORING - GZA 2016_01_26.GDT - 6/21/21 10:21 - J:\GINT PROJECT DATABASES\41.0162800\41.0162892.00.GPJ

TEST BORING LOG

GZA GeoEnvironmental of New York
Engineers and Scientists

Westchester Joint Water Works
Water Treatment Plant
Westchester County, New York

EXPLORATION NO.: B-2
SHEET: 2 of 3
PROJECT NO: 41.0162892.00
REVIEWED BY: D. Patel

Logged By: A. Amador
Drilling Co.: Craig Test Boring Co., Inc.
Foreman: P. Mullins/S. Schultz
Date Start: 5/14/2021 **Finish:** 5/14/2021

Type of Rig: ATV
Rig Model: CME 750X
Drilling Method: Mud Rotary

Boring Location: See Plan
Stationing (ft.): **Offset (ft.):**
Ground Surface Elevation (ft.): 408
Final Boring Depth (ft.): 60.2

H. Datum: -
V. Datum: NAVD 88
Northing:
Easting:

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4/3.5

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

Date	Time	Water Depth	Stab. Time
Not	Measured		

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (per 6 in.)	Sample SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	Stratum Depth (ft.)	Stratum Description	Stratum Elev. (ft.)
		S-10	30.0-32	24	20	21 36 67 70	>100	S-10: Very dense, gray, fine to medium SAND, some Silt, little Gravel, trace mica.					
35		S-11	35.0-37	17	13	39 51 100/5"	R	S-11: Very dense, gray-brown, fine to medium SAND and SILT, trace mica.					
40		S-12	40.0-42	14	19	34 52 71 70	>100	S-12: Very dense, gray-brown, fine to medium SAND and SILT, little Gravel, trace mica.					
45		S-13	45.0-47	24	20	38 26 32 45	58	S-13: Very dense, gray, fine to medium SAND, some SILT, little Gravel, trace mica.				DECOMPOSED ROCK	
50		S-14	50.0-52	16	15	44 50 100/4"	R	S-14: Very dense, gray-brown, fine to coarse SAND, some Silt, little Gravel.					
55		S-15	55.0-57	17	12	13 22 100/5"	R	S-15: Very dense, brown, fine to medium SAND and SILT, little Gravel, trace mica.					
60													

REMARKS

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: B-2

GZA TEMPLATE TEST BORING - GZA 2016_01_26.GDT - 6/21/21 10:21 - J:\GINT PROJECT DATABASES\41.0162800\41.0162892.00.GPJ

TEST BORING LOG

GZA GeoEnvironmental of New York
Engineers and Scientists

Westchester Joint Water Works
Water Treatment Plant
Westchester County, New York

EXPLORATION NO.: B-2
SHEET: 3 of 3
PROJECT NO: 41.0162892.00
REVIEWED BY: D. Patel

Logged By: A. Amador
Drilling Co.: Craig Test Boring Co., Inc.
Foreman: P. Mullins/S. Schultz
Date Start: 5/14/2021 **Finish:** 5/14/2021

Type of Rig: ATV
Rig Model: CME 750X
Drilling Method: Mud Rotary

Boring Location: See Plan
Stationing (ft.): **Offset (ft.):**
Ground Surface Elevation (ft.): 408
Final Boring Depth (ft.): 60.2

H. Datum: -
V. Datum: NAVD 88
Northing:
Easting:

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4/3.5

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)			
Date	**Time**	**Water Depth**	**Stab. Time**
Not	Measured		

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (per 6 in.)	SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	Stratum Depth (ft.)	Stratum Description	Stratum Elev. (ft.)
		S-16	60.0-62	2	0	100/2"	R	S-16: No Recovery. End of exploration at 60.2 feet.	2, 3, 4		60.2		347.8

65
70
75
80
85
90

REMARKS

2 - Decomposed Rock fragments encountered at tip of split spoon.
3 - Photoionization Detector (PID) readings were obtained for all samples. Results PID = 0 ppm throughout.
4 - Borehole was backfilled with soil cuttings and bentonite upon completion.

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: B-2

GZA TEMPLATE TEST BORING - GZA 2016_01_26.GDT - 6/21/21 10:21 - J:\GINT PROJECT DATABASES\41.0162800\41.0162892.00.GPJ

TEST BORING LOG

GZA GeoEnvironmental of New York
Engineers and Scientists

Westchester Joint Water Works
Water Treatment Plant
Westchester County, New York

EXPLORATION NO.: B-4
SHEET: 1 of 3
PROJECT NO: 41.0162892.00
REVIEWED BY: D. Patel

Logged By: A. Amador
Drilling Co.: Craig Test Boring Co., Inc.
Foreman: P. Mullins/S. Schultz
Date Start: 5/17/2021 **Finish:** 5/17/2021

Type of Rig: ATV
Rig Model: CME 750X
Drilling Method: Mud Rotary

Boring Location: See Plan
Stationing (ft.): **Offset (ft.):**
Ground Surface Elevation (ft.): 406
Final Boring Depth (ft.): 60.2

H. Datum: -
V. Datum: NAVD 88
Northing:
Easting:

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4/3.5

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

Date	Time	Water Depth	Stab. Time
Not	Measured		

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (per 6 in.)	Sample SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	Stratum Depth (ft.)	Stratum Description	Stratum Elev. (ft.)
		S-1	0.0-2	24	17	1 1 1 1	2	S-1: Top 1": TOPSOIL Bottom 16": Very loose, brown, fine to medium SAND, some Silt, trace Gravel, trace mica.			0.3	TOPSOIL	405.7
		S-2	2.0-4	24	16	3 9 13 15	22	S-2: Medium dense, brown, fine to medium SAND, some Silt, little Gravel.					
5		S-3	4.0-6	24	12	4 5 5 4	10	S-3: Loose, brown, fine to medium SAND, some Silt, little Gravel, trace mica.				SILTY SAND	
		S-4	6.0-8	24	10	7 9 17 26	26	S-4: Medium dense, brown, fine to medium SAND, some Silt, little Gravel, trace mica.			8		398.0
		S-5	8.0-10	24	17	10 13 18 22	31	S-5: Dense, brown, fine to medium SAND, some Silt, little Gravel, trace mica.					
10		S-6	10.0-12	24	16	22 20 22 25	42	S-6: Dense, brown, fine to medium SAND, some Silt, little Gravel, trace mica.					
15		S-7	15.0-17	24	23	9 15 17 22	32	S-7: Dense, brown, fine to medium SAND, some Silt, little Gravel, trace mica.				GLACIAL TILL	
20		S-8	20.0-22	24	21	10 15 32 26	47	S-8: Dense, brown, fine to medium SAND, some Silt, little Gravel, trace mica.			23.5		382.5
25		S-9	25.0-27	24	14	32 5 33 50	38	S-9: Very dense, gray-brown, fine to medium SAND, some Silt, little Gravel, trace mica.				DECOMPOSED ROCK	
30													

REMARKS

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: B-4

GZA TEMPLATE TEST BORING - GZA 2016_01_26.GDT - 6/21/21 10:21 - J:\GINT PROJECT DATABASES\41.0162800\41.0162892.00.GPJ

TEST BORING LOG

GZA GeoEnvironmental of New York
Engineers and Scientists

Westchester Joint Water Works
Water Treatment Plant
Westchester County, New York

EXPLORATION NO.: B-4
SHEET: 2 of 3
PROJECT NO: 41.0162892.00
REVIEWED BY: D. Patel

Logged By: A. Amador
Drilling Co.: Craig Test Boring Co., Inc.
Foreman: P. Mullins/S. Schultz
Date Start: 5/17/2021 **Finish:** 5/17/2021

Type of Rig: ATV
Rig Model: CME 750X
Drilling Method: Mud Rotary

Boring Location: See Plan
Stationing (ft.): **Offset (ft.):**
Ground Surface Elevation (ft.): 406
Final Boring Depth (ft.): 60.2

H. Datum: -
V. Datum: NAVD 88
Northing:
Easting:

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4/3.5

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

Date	Time	Water Depth	Stab. Time
Not	Measured		

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (per 6 in.)	Sample SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	Stratum Depth (ft.)	Stratum Description	Stratum Elev. (ft.)
		S-10	30.0-32	1	1	100/1"	R	S-10: No Recovery.	1				
35		S-11	35.0-37	20	16	36 45 68 100/2"	>100	S-11: Very dense, gray-brown, fine to medium SAND, some Silt, little Gravel, trace mica.					
40		S-12	40.0-42	8	8	50 100/2"	R	S-12: Very dense, gray-brown, fine to medium SAND, some Silt, little Gravel, trace mica.					
45		S-13	45.0-47	24	15	23 58 76 100/2"	>100	S-13: Very dense, gray-brown, fine to medium SAND, some Silt, little Gravel, trace mica.				DECOMPOSED ROCK	
50		S-14	50.0-52	7	7	65 100/1"	R	S-14: Hard, gray-brown SILT, trace Sand, trace Gravel, trace mica.					
55		S-15	55.0-57	5	3	100/5"	R	S-15: Hard, gray-brown SILT, trace Sand, trace Gravel, trace mica.					
60													

REMARKS

1 - Hard drilling from approximately 29-31 feet in depth.

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: B-4

GZA TEMPLATE TEST BORING - GZA 2016_01_26.GDT - 6/21/21 10:21 - J:\GINT PROJECT DATABASES\41.0162800\41.0162892.00.GPJ

TEST BORING LOG

GZA GeoEnvironmental of New York
Engineers and Scientists

Westchester Joint Water Works
Water Treatment Plant
Westchester County, New York

EXPLORATION NO.: B-4
SHEET: 3 of 3
PROJECT NO: 41.0162892.00
REVIEWED BY: D. Patel

Logged By: A. Amador
Drilling Co.: Craig Test Boring Co., Inc.
Foreman: P. Mullins/S. Schultz
Date Start: 5/17/2021 **Finish:** 5/17/2021

Type of Rig: ATV
Rig Model: CME 750X
Drilling Method: Mud Rotary

Boring Location: See Plan
Stationing (ft.): **Offset (ft.):**
Ground Surface Elevation (ft.): 406
Final Boring Depth (ft.): 60.2

H. Datum: -
V. Datum: NAVD 88
Northing:
Easting:

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4/3.5

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)			
Date	**Time**	**Water Depth**	**Stab. Time**
Not	Measured		

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (per 6 in.)	SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	Stratum Depth (ft.)	Stratum Description	Stratum Elev. (ft.)
		S-16	60.0-62	2	0	100/2"	R	S-16: No Recovery. End of exploration at 60.2 feet.	2, 3, 4		60.2		345.8

65
70
75
80
85
90

REMARKS

2 - Decomposed Rock fragments encountered at tip of split spoon.
3 - Photoionization Detector (PID) readings were obtained for all samples. Results PID = 0 ppm throughout.
4 - Borehole was backfilled with soil cuttings and bentonite upon completion.

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: B-4

GZA TEMPLATE TEST BORING - GZA 2016_01_26.GDT - 6/21/21 10:21 - J:\GINT PROJECT DATABASES\41.0162800\41.0162892.00.GPJ

TEST BORING LOG

GZA GeoEnvironmental of New York
Engineers and Scientists

Westchester Joint Water Works
Water Treatment Plant
Westchester County, New York

EXPLORATION NO.: B-5
SHEET: 1 of 3
PROJECT NO: 41.0162892.00
REVIEWED BY: D. Patel

Logged By: A. Amador
Drilling Co.: Craig Test Boring Co., Inc.
Foreman: P. Mullins/S. Schultz
Date Start: 5/19/2021 **Finish:** 5/20/2021

Type of Rig: ATV
Rig Model: CME 750X
Drilling Method: Mud Rotary

Boring Location: See Plan
Stationing (ft.): **Offset (ft.):**
Ground Surface Elevation (ft.): 404
Final Boring Depth (ft.): 60.3

H. Datum: -
V. Datum: NAVD 88
Northing:
Easting:

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4/3.5

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

Date	Time	Water Depth	Stab. Time
Not	Measured		

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (per 6 in.)	Sample SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	Stratum Depth (ft.)	Stratum Description	Stratum Elev. (ft.)
		S-1	0.0-2	24	13	1 1 2 4	3	S-1: Top 1": TOPSOIL Bottom 12": Very loose, brown, fine to medium SAND, some Silt, little Gravel, trace roots.			0.3	TOPSOIL	403.7
		S-2	2.0-4	24	21	8 9 12 16	21	S-2: Medium dense, brown, fine to medium SAND, some Silt, trace Clay.			4	SILTY SAND	400.0
5		S-3	4.0-6	24	14	7 12 11 14	23	S-3: Medium dense, brown, fine to medium SAND, some Silt, little Gravel, trace mica.					
		S-4	6.0-8	24	13	18 13 11 11	24	S-4: Medium dense, brown, fine to medium SAND, some Silt, little Gravel, trace mica.					
		S-5	8.0-10	24	9	9 10 12 9	22	S-5: Medium dense, brown, fine to medium SAND, some Silt, little Gravel, trace mica.					
10		S-6	10.0-12	24	16	14 16 15 17	31	S-6: Dense, brown, medium tobine SAND, some Silt, little Gravel, trace mica.				GLACIAL TILL	
15		S-7	15.0-17	24	15	13 12 17 16	29	S-7: Medium dense, brown, fine to medium SAND, some Silt, little Gravel, trace mica.					
20		S-8	20.0-22	24	16	4 5 10 11	15	S-8: Medium dense, brown, fine to medium SAND, some Silt, little Gravel, trace mica.			23.5		380.5
25		S-9	25.0-27	13	7	19 30 100/1"	R	S-9: Very dense, gray-brown, fine to medium SAND and SILT, little Gravel, trace mica.				DECOMPOSED ROCK	
30													

REMARKS

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: B-5

GZA TEMPLATE TEST BORING - GZA 2016_01_26.GDT - 6/21/21 10:21 - J:\GINT PROJECT DATABASES\41.0162800\41.0162892.00.GPJ

TEST BORING LOG

GZA GeoEnvironmental of New York
Engineers and Scientists

Westchester Joint Water Works
Water Treatment Plant
Westchester County, New York

EXPLORATION NO.: B-5
SHEET: 2 of 3
PROJECT NO: 41.0162892.00
REVIEWED BY: D. Patel

Logged By: A. Amador
Drilling Co.: Craig Test Boring Co., Inc.
Foreman: P. Mullins/S. Schultz
Date Start: 5/19/2021 **Finish:** 5/20/2021

Type of Rig: ATV
Rig Model: CME 750X
Drilling Method: Mud Rotary

Boring Location: See Plan
Stationing (ft.): **Offset (ft.):**
Ground Surface Elevation (ft.): 404
Final Boring Depth (ft.): 60.3

H. Datum: -
V. Datum: NAVD 88
Northing:
Easting:

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4/3.5

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

Date	Time	Water Depth	Stab. Time
Not	Measured		

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Pen. (in)	Rec. (in)	Blows (per 6 in.)	SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	Stratum Depth (ft.)	Stratum Description	Stratum Elev. (ft.)
		S-10	30.0-32	24	17	27 36 47 59	83	S-10: Very dense, gray-brown, fine to medium SAND and SILT, little Gravel, trace mica.					
35		S-11	35.0-37	24	19	31 46 37 29	83	S-11: Very dense, gray-brown, fine to medium SAND and SILT, little Gravel, trace mica.					
40		S-12	40.0-42	24	15	31 30 31 28	61	S-12: Very dense, gray, fine to medium SAND, some Silt, little Gravel, trace mica.					
45		S-13	45.0-47	24	16	21 17 15 19	32	S-13: Dense, gray-brown, fine to medium SAND, some Silt, trace mica.				DECOMPOSED ROCK	
50		S-14	50.0-52	24	18	24 34 40 62	74	S-14: Hard, gray-brown SILT, some Sand, little Gravel, trace mica.					
55		S-15	55.0-57	5	4	100/5"	R	S-15: Hard, gray-brown SILT, some Sand, trace mica.					
60													

REMARKS

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: B-5

GZA TEMPLATE TEST BORING - GZA 2016_01_26.GDT - 6/21/21 10:21 - J:\GINT PROJECT DATABASES\41.0162800\41.0162892.00.GPJ

TEST BORING LOG

GZA GeoEnvironmental of New York
Engineers and Scientists

Westchester Joint Water Works
Water Treatment Plant
Westchester County, New York

EXPLORATION NO.: B-5
SHEET: 3 of 3
PROJECT NO: 41.0162892.00
REVIEWED BY: D. Patel

Logged By: A. Amador
Drilling Co.: Craig Test Boring Co., Inc.
Foreman: P. Mullins/S. Schultz
Date Start: 5/19/2021 **Finish:** 5/20/2021

Type of Rig: ATV
Rig Model: CME 750X
Drilling Method: Mud Rotary

Boring Location: See Plan
Stationing (ft.): **Offset (ft.):**
Ground Surface Elevation (ft.): 404
Final Boring Depth (ft.): 60.3

H. Datum: -
V. Datum: NAVD 88
Northing:
Easting:

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4/3.5

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

Date	Time	Water Depth	Stab. Time
Not	Measured		

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (per 6 in.)	SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	Stratum Depth (ft.)	Stratum Description	Stratum Elev. (ft.)
		S-16	60.0-62	3	0	100/3"	R	S-16: No Recovery. End of exploration at 60.3 feet.	1 2 3		60.3		343.7
65													
70													
75													
80													
85													
90													

REMARKS

1 - Decomposed Rock fragments encountered at tip of split spoon.
2 - Photoionization Detector (PID) readings were obtained for all samples. Results PID = 0 ppm throughout.
3 - Borehole was backfilled with soil cuttings and bentonite upon completion.

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: B-5

GZA TEMPLATE TEST BORING - GZA 2016_01_26.GDT - 6/21/21 10:21 - J:\GINT PROJECT DATABASES\41.0162800\41.0162892.00.GPJ

TEST BORING LOG

GZA GeoEnvironmental of New York
Engineers and Scientists

Westchester Joint Water Works
Water Treatment Plant
Westchester County, New York

EXPLORATION NO.: B-7
SHEET: 1 of 3
PROJECT NO: 41.0162892.00
REVIEWED BY: D. Patel

Logged By: A. Amador
Drilling Co.: Craig Test Boring Co., Inc.
Foreman: P. Mullins/S. Schultz
Date Start: 5/18/2021 **Finish:** 5/18/2021

Type of Rig: ATV
Rig Model: CME 750X
Drilling Method: Mud Rotary

Boring Location: See Plan
Stationing (ft.): **Offset (ft.):**
Ground Surface Elevation (ft.): 405
Final Boring Depth (ft.): 60.3

H. Datum: -
V. Datum: NAVD 88
Northing:
Easting:

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4/3.5

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

Date	Time	Water Depth	Stab. Time
Not	Measured		

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (per 6 in.)	Sample SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	Stratum Depth (ft.)	Stratum Description	Stratum Elev. (ft.)
		S-1	0.0-2	24	16	1 1 5 9	6	S-1: Top 1" TOPSOIL Bottom 15": Loose, brown, fine to medium SAND and SILT, little Gravel, trace roots.			0.3	TOPSOIL	404.7
		S-2	2.0-4	24	17	6 6 8 11	14	S-2: Medium dense, brown, fine to medium SAND and SILT, little Gravel, trace Clay.			4	SILTY SAND	401.0
5		S-3	4.0-6	8	5	33 100/2"	R	S-3: Very dense, brown, fine to medium SAND and SILT, little Gravel, trace Clay.	1				
		S-4	6.0-8	24	12	9 22 26 27	48	S-4: Dense, brown, fine to medium SAND and SILT, little Gravel, trace mica.					
		S-5	8.0-10	24	14	9 12 12 18	24	S-5: Medium dense, brown, fine to medium SAND and SILT, little Gravel, trace mica.					
10		S-6	10.0-12	20	14	16 20 21 100/2"	41	S-6: Dense, brown, fine to medium SAND and SILT, little Gravel, trace mica.					
15		S-7	15.0-17	24	19	16 18 22 35	40	S-7: Dense, brown, fine to medium SAND and SILT, little Gravel, trace mica.				GLACIAL TILL	
20		S-8	20.0-22	24	20	13 16 19 29	35	S-8: Dense, gray-brown, fine to medium SAND and SILT, little Gravel, trace mica.					
25		S-9	25.0-27	13	10	16 18 100/1"	R	S-9: Very dense, gray-brown, fine to medium SAND, little SILT, trace mica.					
30													

REMARKS

1 - Hard drilling from approximately 5-6 feet in depth.

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: B-7

GZA TEMPLATE TEST BORING - GZA 2016_01_26.GDT - 6/21/21 10:21 - J:\GINT PROJECT DATABASES\41.0162800\41.0162892.00.GPJ

TEST BORING LOG

GZA GeoEnvironmental of New York
Engineers and Scientists

Westchester Joint Water Works
Water Treatment Plant
Westchester County, New York

EXPLORATION NO.: B-7
SHEET: 2 of 3
PROJECT NO: 41.0162892.00
REVIEWED BY: D. Patel

Logged By: A. Amador
Drilling Co.: Craig Test Boring Co., Inc.
Foreman: P. Mullins/S. Schultz
Date Start: 5/18/2021 **Finish:** 5/18/2021

Type of Rig: ATV
Rig Model: CME 750X
Drilling Method: Mud Rotary

Boring Location: See Plan
Stationing (ft.): **Offset (ft.):**
Ground Surface Elevation (ft.): 405
Final Boring Depth (ft.): 60.3

H. Datum: -
V. Datum: NAVD 88
Northing:
Easting:

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4/3.5

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

Date	Time	Water Depth	Stab. Time
Not	Measured		

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (per 6 in.)	Sample SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	Stratum Depth (ft.)	Stratum Description	Stratum Elev. (ft.)
		S-10	30.0-32	24	19	8 8 11 23	19	S-10: Medium dense, gray-brown, fine to medium SAND, little Silt, trace mica.				GLACIAL TILL	
											33.5		371.5
35		S-11	35.0-37	13	12	40 77 100/1"	R	S-11: Very dense, gray, fine to medium SAND, some Gravel, trace mica.					
40		S-12	40.0-42	24	19	42 61 66 67	>100	S-12: Very dense, gray, fine to medium SAND, some Gravel, trace mica.					
45		S-13	45.0-47	24	17	23 40 44 35	84	S-13: Very dense, gray-brown, fine to medium SAND and SILT, little Gravel, trace mica.				DECOMPOSED ROCK	
50		S-14	50.0-52	3	0	100/3"	R	S-14: No Recovery.	2				
55		S-15	55.0-57	4	0	100/4"	R	S-15: No Recovery.	3				
60													

REMARKS

2 - Decomposed Rock fragments encountered at tip of split spoon.
3 - Decomposed Rock fragments encountered at tip of split spoon.

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: B-7

GZA TEMPLATE TEST BORING - GZA 2016_01_26.GDT - 6/21/21 10:21 - J:\GINT PROJECT DATABASES\41.0162800\41.0162892.00.GPJ

TEST BORING LOG

GZA GeoEnvironmental of New York
Engineers and Scientists

Westchester Joint Water Works
Water Treatment Plant
Westchester County, New York

EXPLORATION NO.: B-7
SHEET: 3 of 3
PROJECT NO: 41.0162892.00
REVIEWED BY: D. Patel

Logged By: A. Amador
Drilling Co.: Craig Test Boring Co., Inc.
Foreman: P. Mullins/S. Schultz
Date Start: 5/18/2021 **Finish:** 5/18/2021

Type of Rig: ATV
Rig Model: CME 750X
Drilling Method: Mud Rotary

Boring Location: See Plan
Stationing (ft.): **Offset (ft.):**
Ground Surface Elevation (ft.): 405
Final Boring Depth (ft.): 60.3

H. Datum: -
V. Datum: NAVD 88
Northing:
Easting:

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4/3.5

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

Date	Time	Water Depth	Stab. Time
Not	Measured		

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (per 6 in.)	SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	Stratum Depth (ft.)	Stratum Description	Stratum Elev. (ft.)
		S-16	60.0-62	3	0	100/3"	R	S-16: No Recovery. End of exploration at 60.3 feet.	4 5 6		60.3		344.7
65													
70													
75													
80													
85													
90													

REMARKS

4 - Decomposed Rock fragments encountered at tip of split spoon.
5 - Photoionization Detector (PID) readings were obtained for all samples. Results PID = 0 ppm throughout.
6 - Borehole was backfilled with soil cuttings and bentonite upon completion.

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: B-7

GZA TEMPLATE TEST BORING - GZA 2016_01_26.GDT - 6/21/21 10:21 - J:\GINT PROJECT DATABASES\41.0162800\41.0162892.00.GPJ

TEST BORING LOG

GZA GeoEnvironmental of New York
Engineers and Scientists

Westchester Joint Water Works
Water Treatment Plant
Westchester County, New York

EXPLORATION NO.: B-9
SHEET: 1 of 3
PROJECT NO: 41.0162892.00
REVIEWED BY: D. Patel

Logged By: A. Amador
Drilling Co.: Craig Test Boring Co., Inc.
Foreman: P. Mullins/S. Schultz
Date Start: 5/20/2021 **Finish:** 5/20/2021

Type of Rig: ATV
Rig Model: CME 750X
Drilling Method: Mud Rotary

Boring Location: See Plan
Stationing (ft.): **Offset (ft.):**
Ground Surface Elevation (ft.): 402
Final Boring Depth (ft.): 60.3

H. Datum: -
V. Datum: NAVD 88
Northing:
Easting:

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4/3.5

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

Date	Time	Water Depth	Stab. Time
Not	Measured		

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (per 6 in.)	Sample SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	Stratum Depth (ft.)	Stratum Description	Stratum Elev. (ft.)
		S-1	0.0-2	24	10	1 2 10 10	12	S-1: Top 1": TOPSOIL Bottom 9": Medium dense, brown, fine to medium SAND and SILT, little Gravel, trace roots.			0.3	TOPSOIL	401.7
		S-2	2.0-4	24	19	11 9 11 14	20	S-2: Medium dense, brown, fine to medium SAND and SILT, little Gravel, trace mica.			2	SILTY SAND	400.0
5		S-3	4.0-6	24	15	8 9 14 21	23	S-3: Medium dense, brown, fine to medium SAND and SILT, little Gravel, trace mica.					
		S-4	6.0-8	24	11	18 17 21 24	38	S-4: Dense, brown, fine to medium SAND and SILT, little Gravel, trace mica.					
		S-5	8.0-10	24	17	6 8 11 10	19	S-5: Medium dense, brown, fine to medium SAND and SILT, little Gravel, trace mica.					
10		S-6	10.0-12	24	14	8 11 8 9	19	S-6: Medium dense, brown, fine to medium SAND and SILT, little Gravel, trace mica.				GLACIAL TILL	
15		S-7	15.0-17	24	17	8 15 20 15	35	S-7: Dense, brown, fine to medium SAND, some Silt, little Gravel, trace mica.					
20		S-8	20.0-22	24	17	12 20 21 27	41	S-8: Dense, brown, fine to medium SAND, some Silt, little Gravel, trace mica.			23.5		378.5
25		S-9	25.0-27	24	18	28 30 31 43	61	S-9: Very dense, gray, fine to medium SAND and SILT, little Gravel, trace mica.				DECOMPOSED ROCK	
30													

REMARKS

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: B-9

GZA TEMPLATE TEST BORING - GZA 2016_01_26.GDT - 6/21/21 10:21 - J:\GINT PROJECT DATABASES\41.0162800\41.0162892.00.GPJ

TEST BORING LOG

GZA GeoEnvironmental of New York
Engineers and Scientists

Westchester Joint Water Works
Water Treatment Plant
Westchester County, New York

EXPLORATION NO.: B-9
SHEET: 2 of 3
PROJECT NO: 41.0162892.00
REVIEWED BY: D. Patel

Logged By: A. Amador
Drilling Co.: Craig Test Boring Co., Inc.
Foreman: P. Mullins/S. Schultz
Date Start: 5/20/2021 **Finish:** 5/20/2021

Type of Rig: ATV
Rig Model: CME 750X
Drilling Method: Mud Rotary

Boring Location: See Plan
Stationing (ft.): **Offset (ft.):**
Ground Surface Elevation (ft.): 402
Final Boring Depth (ft.): 60.3

H. Datum: -
V. Datum: NAVD 88
Northing:
Easting:

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4/3.5

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

Date	Time	Water Depth	Stab. Time
Not	Measured		

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (per 6 in.)	Sample SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	Stratum Depth (ft.)	Stratum Description	Stratum Elev. (ft.)
		S-10	30.0-32	23	18	29 38 56 100/5"	94	S-10: Very dense, gray, fine to medium SAND and SILT, little Gravel, trace mica.					
35		S-11	35.0-37	14	15	21 62 100/2"	R	S-11: Very dense, gray, fine to medium SAND and SILT, little Gravel, trace mica.					
40		S-12	40.0-42	24	15	41 39 39 46	78	S-12: Very dense, gray, fine to medium SAND and SILT, little Gravel, trace mica.					
45		S-13	45.0-47	17	11	33 57 100/5"	R	S-13: Hard, gray SILT, little Gravel, little Sand, trace Gravel, trace mica.				DECOMPOSED ROCK	
50		S-14	50.0-52	3	0	100/3"	R	S-14: No Recovery.	1				
55		S-15	55.0-57	2	0	100/2"	R	S-15: No Recovery.	2				
60													

REMARKS

1 - Decomposed Rock fragments encountered at tip of split spoon.
2 - Decomposed Rock fragments encountered at tip of split spoon.

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: B-9

GZA TEMPLATE TEST BORING - GZA 2016_01_26.GDT - 6/21/21 10:21 - J:\GINT PROJECT DATABASES\41.0162800\41.0162892.00.GPJ

TEST BORING LOG

GZA GeoEnvironmental of New York
Engineers and Scientists

Westchester Joint Water Works
Water Treatment Plant
Westchester County, New York

EXPLORATION NO.: B-9
SHEET: 3 of 3
PROJECT NO: 41.0162892.00
REVIEWED BY: D. Patel

Logged By: A. Amador
Drilling Co.: Craig Test Boring Co., Inc.
Foreman: P. Mullins/S. Schultz
Date Start: 5/20/2021 **Finish:** 5/20/2021

Type of Rig: ATV
Rig Model: CME 750X
Drilling Method: Mud Rotary

Boring Location: See Plan
Stationing (ft.): **Offset (ft.):**
Ground Surface Elevation (ft.): 402
Final Boring Depth (ft.): 60.3

H. Datum: -
V. Datum: NAVD 88
Northing:
Easting:

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4/3.5

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

Date	Time	Water Depth	Stab. Time
Not	Measured		

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (per 6 in.)	SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	Stratum Depth (ft.)	Stratum Description	Stratum Elev. (ft.)
		S-16	60.0-62	3	0	100/3"	R	S-16: No Recovery. End of exploration at 60.3 feet.	3 4 5		60.3		341.7
65													
70													
75													
80													
85													
90													

REMARKS

3 - Decomposed Rock fragments encountered at tip of split spoon.
4 - Photoionization Detector (PID) readings were obtained for all samples. Results PID = 0 ppm throughout.
5 - Borehole was backfilled with soil cuttings and bentonite upon completion.

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: B-9

GZA TEMPLATE TEST BORING - GZA 2016_01_26.GDT - 6/21/21 10:21 - J:\GINT PROJECT DATABASES\41.0162800\41.0162892.00.GPJ

TEST BORING LOG

GZA GeoEnvironmental of New York
Engineers and Scientists

Westchester Joint Water Works
Water Treatment Plant
Westchester County, New York

EXPLORATION NO.: B-13
SHEET: 1 of 3
PROJECT NO: 41.0162892.00
REVIEWED BY: D. Patel

Logged By: A. Amador
Drilling Co.: Craig Test Boring Co., Inc.
Foreman: P. Mullins/S. Schultz
Date Start: 5/24/2021 **Finish:** 5/24/2021

Type of Rig: ATV
Rig Model: CME 750X
Drilling Method: Mud Rotary

Boring Location: See Plan
Stationing (ft.): **Offset (ft.):**
Ground Surface Elevation (ft.): 402
Final Boring Depth (ft.): 60.2

H. Datum: -
V. Datum: NAVD 88
Northing:
Easting:

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4/3.5

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

Date	Time	Water Depth	Stab. Time
Not	Measured		

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (per 6 in.)	Sample SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	Stratum Depth (ft.)	Stratum Description	Stratum Elev. (ft.)
		S-1	0.0-2	24	12	1 4 7 8	11	S-1: Top 1": TOPSOIL Bottom 11": Medium dense, brown, fine to medium SAND, some Gravel, some Silt, frequent roots.			0.3	TOPSOIL	401.7
		S-2	2.0-4	24	11	6 7 12 25	19	S-2: Medium dense, brown, fine to medium SAND, some Gravel, some Silt, frequent roots.			4	SILTY SAND	398.0
5		S-3	4.0-6	1	0	100/1"	R	S-3: No recovery.	1				
		S-4	6.0-8	24	17	10 14 14 13	28	S-4: Medium dense, brown, fine to medium SAND and SILT, little Gravel, trace mica.					
		S-5	8.0-10	24	11	11 13 12 11	25	S-5: Medium dense, brown, fine to medium SAND and SILT, little Gravel.					
10		S-6	10.0-12	24	10	12 11 14 12	25	S-6: Medium dense, brown, fine to medium SAND and SILT, little Gravel, trace mica.					
15		S-7	15.0-17	24	16	6 8 9 8	17	S-7: Medium dense, brown, fine to medium SAND and SILT, little Gravel, trace mica.				GLACIAL TILL	
20		S-8	20.0-22	19	12	7 19 49 100/1"	68	S-8: Very dense, fine to medium SAND and SILT, little Gravel, trace mica.					
25		S-9	25.0-27	24	16	19 22 34 35	56	S-9: Very dense, gray-brown, fine to medium SAND and SILT, little Gravel, trace mica.					
30													

REMARKS

1 - Possible boulder encountered from approximately 4.0-4.7 feet depth.

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: B-13

GZA TEMPLATE TEST BORING - GZA 2016_01_26.GDT - 6/21/21 10:20 - J:\GINT PROJECT DATABASES\41.0162800\41.0162892.00.GPJ

TEST BORING LOG

GZA GeoEnvironmental of New York
Engineers and Scientists

Westchester Joint Water Works
Water Treatment Plant
Westchester County, New York

EXPLORATION NO.: B-13
SHEET: 2 of 3
PROJECT NO: 41.0162892.00
REVIEWED BY: D. Patel

Logged By: A. Amador
Drilling Co.: Craig Test Boring Co., Inc.
Foreman: P. Mullins/S. Schultz
Date Start: 5/24/2021 **Finish:** 5/24/2021

Type of Rig: ATV
Rig Model: CME 750X
Drilling Method: Mud Rotary

Boring Location: See Plan
Stationing (ft.): **Offset (ft.):**
Ground Surface Elevation (ft.): 402
Final Boring Depth (ft.): 60.2

H. Datum: -
V. Datum: NAVD 88
Northing:
Easting:

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4/3.5

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

Date	Time	Water Depth	Stab. Time
Not	Measured		

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Pen. (in)	Rec. (in)	Blows (per 6 in.)	SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	Stratum Depth (ft.)	Stratum Description	Stratum Elev. (ft.)
		S-10	30.0-32	24	17	23 28 26 46	54	S-10: Very dense, gray-brown, fine to medium SAND and SILT, little Gravel, trace mica.				GLACIAL TILL	
											33.5		368.5
35		S-11	35.0-37	24	15	23 41 57 49	98	S-11: Very dense, gray-brown, fine to medium SAND and SILT, little Gravel, trace mica.					
40		S-12	40.0-42	16	15	50 70 100/4"	R	S-12: Very dense, gray-brown, fine to medium SAND and SILT, little Gravel, trace mica.					
45		S-13	45.0-47	10	9	71 100/4"	R	S-13: Very dense, gray-brown, fine to medium SAND and SILT, little Gravel, trace mica.				DECOMPOSED ROCK	
50		S-14	50.0-52	11	8	37 100/5"	R	S-14: Hard, gray-brown SILT, little Sand, trace mica, trace quartz fragments.					
55		S-15	55.0-57	8	7	58 100/2"	R	S-15: Hard, gray-brown SILT, little Sand, trace mica, trace quartz fragments.					
60													

REMARKS

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: B-13

GZA TEMPLATE TEST BORING - GZA 2016_01_26.GDT - 6/21/21 10:20 - J:\GINT PROJECT DATABASES\41.0162800\41.0162892.00.GPJ

TEST BORING LOG

GZA GeoEnvironmental of New York
Engineers and Scientists

Westchester Joint Water Works
Water Treatment Plant
Westchester County, New York

EXPLORATION NO.: B-13
SHEET: 3 of 3
PROJECT NO: 41.0162892.00
REVIEWED BY: D. Patel

Logged By: A. Amador
Drilling Co.: Craig Test Boring Co., Inc.
Foreman: P. Mullins/S. Schultz
Date Start: 5/24/2021 **Finish:** 5/24/2021

Type of Rig: ATV
Rig Model: CME 750X
Drilling Method: Mud Rotary

Boring Location: See Plan
Stationing (ft.): **Offset (ft.):**
Ground Surface Elevation (ft.): 402
Final Boring Depth (ft.): 60.2

H. Datum: -
V. Datum: NAVD 88
Northing:
Easting:

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4/3.5

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

Date	Time	Water Depth	Stab. Time
Not	Measured		

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (per 6 in.)	SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	Stratum Depth (ft.)	Stratum Description	Stratum Elev. (ft.)
		S-16	60.0-62	2	0	100/2"	R	S-16: No Recovery. End of exploration at 60.2 feet.	2, 3, 4		60.2		341.8
65													
70													
75													
80													
85													
90													

REMARKS

2 - Decomposed Rock fragments encountered at tip of split spoon.
3 - Photoionization Detector (PID) readings were obtained for all samples. Results PID = 0 ppm throughout.
4 - Borehole was backfilled with soil cuttings and bentonite upon completion.

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: B-13

GZA TEMPLATE TEST BORING - GZA 2016_01_26.GDT - 6/21/21 10:20 - J:\GINT PROJECT DATABASES\41.0162800\41.0162892.00.GPJ

TEST BORING LOG

GZA GeoEnvironmental of New York
Engineers and Scientists

Westchester Joint Water Works
Water Treatment Plant
Westchester County, New York

EXPLORATION NO.: B-16
SHEET: 1 of 1
PROJECT NO: 41.0162892.00
REVIEWED BY: D. Patel

Logged By: A. Amador
Drilling Co.: Craig Test Boring Co., Inc.
Foreman: P. Mullins/S. Schultz
Date Start: 6/4/2021 **Finish:** 6/4/2021

Type of Rig: ATV
Rig Model: CME 750X
Drilling Method: Mud Rotary

Boring Location: See Plan
Stationing (ft.): **Offset (ft.):**
Ground Surface Elevation (ft.): 410
Final Boring Depth (ft.): 22

H. Datum: -
V. Datum: NAVD 88
Northing:
Easting:

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4/3.5

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

Date	Time	Water Depth	Stab. Time
Not	Measured		

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (per 6 in.)	Sample SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	Stratum Depth (ft.)	Stratum Description	Stratum Elev. (ft.)
		S-1	0.0-2	24	4	1 9 4 6	13	S-1: Top 1": TOPSOIL Bottom 3": Medium dense, dark-brown SILT, occasional roots.			0.3	TOPSOIL	409.7
		S-2	2.0-4	24	22	5 5 9 13	14	S-2: Medium dense, brown, fine to medium SAND and SILT, little Gravel, trace mica.					
5		S-3	5.0-7	24	15	8 7 8 12	15	S-3: Medium dense, brown, fine to medium SAND and SILT, little Gravel, trace mica.				SILTY SAND	
		S-4	7.0-9	24	13	7 9 11 14	20	S-4: Medium dense, brown, fine to medium SAND and SILT, little Gravel, trace mica.					
10		S-5	9.0-11	24	4	10 13 16 12	29	S-5: Medium dense, brown, fine to medium SAND and SILT, trace Gravel.			9		401.0
15		S-6	15.0-17	24	16	9 8 10 16	18	S-6: Medium dense, gray-brown fine to medium SAND and SILT, little Gravel, trace mica.				GLACIAL TILL	
20		S-7	20.0-22	24	16	10 13 26 24	39	S-7: Dense gray-brown, fine to medium SAND and SILT, trace mica.	1				
								End of exploration at 22 feet.	2		22		388.0
25													
30													

REMARKS

1 - Photoionization Detector (PID) readings were obtained for all samples. Results PID = 0 ppm throughout.
2 - Borehole was backfilled with soil cuttings and bentonite upon completion.

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: B-16

GZA TEMPLATE TEST BORING - GZA 2016_01_26.GDT - 6/21/21 10:21 - J:\GINT PROJECT DATABASES\41.0162800\41.0162892.00.GPJ

TEST BORING LOG

GZA GeoEnvironmental of New York
Engineers and Scientists

Westchester Joint Water Works
Water Treatment Plant
Westchester County, New York

EXPLORATION NO.: B-17
SHEET: 1 of 1
PROJECT NO: 41.0162892.00
REVIEWED BY: D. Patel

Logged By: A. Amador
Drilling Co.: Craig Test Boring Co., Inc.
Foreman: P. Mullins/S. Schultz
Date Start: 6/1/2021 **Finish:** 6/1/2021

Type of Rig: ATV
Rig Model: CME 750X
Drilling Method: Mud Rotary

Boring Location: See Plan
Stationing (ft.): **Offset (ft.):**
Ground Surface Elevation (ft.): 409
Final Boring Depth (ft.): 22

H. Datum: -
V. Datum: NAVD 88
Northing:
Easting:

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4/3.5

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

Date	Time	Water Depth	Stab. Time
Not	Measured		

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (per 6 in.)	Sample SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	Stratum Depth (ft.)	Stratum Description	Stratum Elev. (ft.)
		S-1	0.0-2	24	14	4 3 4 6	7	S-1: Top 1": TOPSOIL Bottom 13": Loose, brown, fine to medium SAND, some Silt, little Gravel, trace roots.			0.3	TOPSOIL	408.7
											2	SILTY SAND	407.0
		S-2	2.0-4	24	8	9 31 51 27	82	S-2: Very dense, brown, fine to medium SAND, some Silt, little Gravel.	1				
5		S-3	4.0-6	24	12	8 13 18 21	31	S-3: Dense, brown, fine to medium SAND, some Silt, little Gravel, trace mica.					
		S-4	6.0-8	24	17	18 13 14 14	27	S-4: Medium dense, brown, fine to medium SAND and SILT, little Gravel, trace mica.					
		S-5	8.0-10	24	16	8 11 9 14	20	S-5: Medium dense, brown, fine to medium SAND and SILT, little Gravel, trace mica.					
10		S-6	10.0-12	24	15	13 16 19 20	35	S-6: Dense, brown, fine to medium SAND and SILT, little Gravel, trace mica.				GLACIAL TILL	
15		S-7	15.0-17	24	17	29 17 19 21	36	S-7: Dense, brown, fine to medium SAND and SILT, little Gravel, trace mica.					
20		S-8	20.0-22	24	16	9 11 16 16	27	S-8: Medium dense, gray-brown, fine to medium SAND and SILT, little Gravel, trace mica.	2		22		387.0
								End of exploration at 22 feet.	3				
25													
30													

REMARKS

1 - Gravel encountered at tip of split spoon at sample S-2.
2 - Photoionization Detector (PID) readings were obtained for all samples. Results PID = 0 ppm throughout.
3 - Borehole was backfilled with soil cuttings and bentonite upon completion.

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: B-17

GZA TEMPLATE TEST BORING - GZA 2016_01_26.GDT - 6/21/21 10:21 - J:\GINT PROJECT DATABASES\41.0162800\41.0162892.00.GPJ

TEST BORING LOG

GZA GeoEnvironmental of New York
Engineers and Scientists

Westchester Joint Water Works
Water Treatment Plant
Westchester County, New York

EXPLORATION NO.: B-24
SHEET: 1 of 1
PROJECT NO: 41.0162892.00
REVIEWED BY: D. Patel

Logged By: A. Amador
Drilling Co.: Craig Test Boring Co., Inc.
Foreman: Dave Cooke/S. Schultz
Date Start: 5/25/2021 **Finish:** 5/26/2021

Type of Rig: ATV
Rig Model: CME 750X
Drilling Method: Mud Rotary

Boring Location: See Plan
Stationing (ft.): **Offset (ft.):**
Ground Surface Elevation (ft.): 399
Final Boring Depth (ft.): 22

H. Datum: -
V. Datum: NAVD 88
Northing:
Easting:

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4/3.5

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)			
Date	**Time**	**Water Depth**	**Stab. Time**
Not	Measured		

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (per 6 in.)	Sample SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	Stratum Depth (ft.)	Stratum Description	Stratum Elev. (ft.)
		S-1	0.0-2	24	15	10 77 81 69	>100	S-1: Top 1": TOPSOIL Bottom 14": Very dense, brown, fine to coarse Gravel, little sand, trace roots.			0.3	TOPSOIL	398.7
		S-2	2.0-4	24	7	14 15 16 17	31	S-2: Dense, brown, fine to medium SAND, some Silt, little Gravel.					
5		S-3	4.0-6	24	17	19 22 16 17	38	S-3: Dense, brown, fine to medium SAND, some Silt, little Gravel, trace mica.					
		S-4	6.0-8	5	5	100/5"	R	S-4: Very dense, brown, fine to medium SAND, some Gravel, some Silt, trace mica.					
		S-5	8.0-10	24	16	6 5 9 11	14	S-5: Medium dense, brown, fine to medium SAND and SILT, little Gravel, trace mica.					
10		S-6	10.0-12	24	10	12 14 22 49	36	S-6: Dense, brown, fine to medium SAND and SILT, little Gravel, trace mica.				GLACIAL TILL	
15		S-7	15.0-17	24	0	10 13 15 22	28	S-7: No recovery.	1				
20		S-8	20.0-22	24	16	6 8 12 12	20	S-8: Medium dense, brown, fine to medium SAND and SILT, little Gravel, trace mica.	2		22		377.0
								End of exploration at 22 feet.	3				
25													
30													

REMARKS

1 - Gravel encountered at tip of split spoon at sample S-7.
2 - Photoionization Detector (PID) readings were obtained for all samples. Results PID = 0 ppm throughout.
3 - Borehole was backfilled with soil cuttings and bentonite upon completion.

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: B-24

GZA TEMPLATE TEST BORING - GZA 2016_01_26.GDT - 6/21/21 10:21 - J:\GINT PROJECT DATABASES\41.0162800\41.0162892.00.GPJ

TEST BORING LOG

GZA GeoEnvironmental of New York
Engineers and Scientists

Westchester Joint Water Works
Water Treatment Plant
Westchester County, New York

EXPLORATION NO.: B-26
SHEET: 1 of 1
PROJECT NO: 41.0162892.00
REVIEWED BY: D. Patel

Logged By: A. Amador
Drilling Co.: Craig Test Boring Co., Inc.
Foreman: Dave Cooke/S. Schultz
Date Start: 5/25/2021 **Finish:** 5/25/2021

Type of Rig: ATV
Rig Model: CME 750X
Drilling Method: Mud Rotary

Boring Location: See Plan
Stationing (ft.): **Offset (ft.):**
Ground Surface Elevation (ft.): 397
Final Boring Depth (ft.): 22

H. Datum: -
V. Datum: NAVD 88
Northing:
Easting:

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4/3.5

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

Date	Time	Water Depth	Stab. Time
Not	Measured		

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (per 6 in.)	Sample SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	Stratum Depth (ft.)	Stratum Description	Stratum Elev. (ft.)
		S-1	0.0-2	24	14	1 1 1 3	2	S-1: Top 1": TOPSOIL Bottom 13": Very loose, brown, fine to medium SAND, some Silt, little Gravel, occasional roots.			0.3	TOPSOIL	396.7
		S-2	2.0-4	24	15	6 8 10 12	18	S-2: Medium dense, brown, fine to medium SAND, some Silt, little Gravel, trace mica.				SILTY SAND	
5		S-3	4.0-6	24	15	11 32 20 25	52	S-3: Very dense, brown, fine to medium SAND, some Silt, little Gravel, trace mica.			4		393.0
		S-4	6.0-8	11	8	21 100/5"	R	S-4: Very dense, brown, fine to medium SAND, some Silt, little Gravel, trace mica.	1				
		S-5	8.0-10	24	6	41 27 50 30	77	S-5: Very dense, brown, fine to medium SAND and SILT, little Gravel.					
10		S-6	10.0-12	24	10	21 40 37 29	77	S-6: Very dense, brown, fine to medium SAND and SILT, little Gravel, trace mica.				GLACIAL TILL	
15		S-7	15.0-17	24	13	11 21 19 20	40	S-7: Dense, brown, fine to medium SAND and SILT, little Gravel, trace mica.					
											18.5		378.5
20		S-8	20.0-22	24	15	19 25 45 64	70	S-8: Top 9": Dense, brown, fine to medium SAND and SILT, little Gravel, trace mica. Bottom 6": Hard, gray SILT, little Gravel, trace Sand, trace mica.	2			DECOMPOSED ROCK	
								End of exploration at 22 feet.	3		22		375.0
25													
30													

REMARKS

1 - Possible Cobbles/Boulders at approximately 7 feet below ground surface.
2 - Photoionization Detector (PID) readings were obtained for all samples. Results PID = 0 ppm throughout.
3 - Borehole was backfilled with soil cuttings and bentonite upon completion.

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: B-26

GZA TEMPLATE TEST BORING - GZA 2016_01_26.GDT - 6/21/21 10:21 - J:\GINT PROJECT DATABASES\41.0162800\41.0162892.00.GPJ

TEST BORING LOG

GZA GeoEnvironmental of New York
Engineers and Scientists

Westchester Joint Water Works
Water Treatment Plant
Westchester County, New York

EXPLORATION NO.: B-29
SHEET: 1 of 1
PROJECT NO: 41.0162892.00
REVIEWED BY: D. Patel

Logged By: A. Amador
Drilling Co.: Craig Test Boring Co., Inc.
Foreman: P. Mullins/S. Schultz
Date Start: 6/2/2021 **Finish:** 6/2/2021

Type of Rig: ATV
Rig Model: CME 750X
Drilling Method: Mud Rotary

Boring Location: See Plan
Stationing (ft.): **Offset (ft.):**
Ground Surface Elevation (ft.): 389
Final Boring Depth (ft.): 22

H. Datum: -
V. Datum: NAVD 88
Northing:
Easting:

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4/3.5

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

Date	Time	Water Depth	Stab. Time
6/3/21	10:00	7.0 ft	
6/4/21	10:00	8.0 ft	

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (per 6 in.)	Sample SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	Stratum Depth (ft.)	Stratum Description	Stratum Elev. (ft.)
		S-1	0.0-2	24	13	1 1 1 2	2	S-1: Top 1": TOPSOIL Bottom 12": Very loose, brown, fine to medium SAND, some Silt, little Gravel.			0.3	TOPSOIL	388.7
		S-2	2.0-4	24	12	2 2 2 4	4	S-2: Very loose, brown, fine to medium SAND, some Silt, little Gravel.			4	SILTY SAND	385.0
5		S-3	4.0-6	24	6	3 55 20 18	75	S-3: Very dense, brown, fine to medium SAND, some Silt, little Gravel, trace mica.					
		S-4	6.0-8	24	9	18 12 16 24	28	S-4: Medium dense, brown, fine to medium SAND and SILT, little Gravel, trace mica.					
		S-5	8.0-10	24	10	32 28 15 15	43	S-5: Dense, gray-brown, fine to coarse SAND, some Gravel, some Silt.					
10		S-6	10.0-12	24	13	6 13 10 5	23	S-6: Medium Dense, brown, fine to medium SAND and SILT, little Gravel, trace mica.	1			GLACIAL TILL	
15		S-7	15.0-17	24	17	19 20 27 20	47	S-7: Dense, gray, fine to medium SAND and SILT, little Gravel, trace mica.					
20		S-8	20.0-22	24	17	20 27 28 28	55	S-8: Very Dense, gray, fine to medium SAND and SILT, little Gravel, trace mica.	2		22		367.0
								End of exploration at 22 feet.	3				
25													
30													

REMARKS

1 - Hard drilling from approximately 4-10 feet in depth.
2 - Photoionization Detector (PID) readings were obtained for all samples. Results PID = 0 ppm throughout.
3 - Borehole was drilled ahead to 25 feet below ground surface. A 28 foot long PVC well was installed in borehole (See Well Installation Log). Borehole was backfilled with filter sand around PVC annulus area upon completion.

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: B-29

GZA TEMPLATE TEST BORING - GZA 2016_01_26.GDT - 6/21/21 10:21 - J:\GINT PROJECT DATABASES\41.0162800\41.0162892.00.GPJ

Attachment C – Laboratory Reports

ANALYTICAL REPORT

Lab Number:	L2128321
Client:	GZA GeoEnvironmental, Inc. 104 West 29th Street, 10th Floor New York, NY 10001
ATTN:	Matthew Del Balzo
Phone:	(212) 594-8140
Project Name:	RYE LAKE WFP
Project Number:	41.0162892.00
Report Date:	06/10/21

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2128321
Report Date: 06/10/21

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2128321-01	B-4 (6'-7')	SOIL	RYE LAKE WFP	05/27/21 10:10	05/27/21
L2128321-02	B-4 (5'-15')	SOIL	RYE LAKE WFP	05/27/21 10:10	05/27/21
L2128321-03	B-1 (6'-7')	SOIL	RYE LAKE WFP	05/27/21 10:40	05/27/21
L2128321-04	B-1 (10'-11')	SOIL	RYE LAKE WFP	05/27/21 10:50	05/27/21
L2128321-05	B-1 (14'-15')	SOIL	RYE LAKE WFP	05/27/21 11:05	05/27/21
L2128321-06	B-1 (5'-15')	SOIL	RYE LAKE WFP	05/27/21 10:40	05/27/21

Project Name:	RYE LAKE WFP	**Lab Number:**	L2128321
Project Number:	41.0162892.00	**Report Date:**	06/10/21

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name:	RYE LAKE WFP	**Lab Number:**	L2128321
Project Number:	41.0162892.00	**Report Date:**	06/10/21

Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Sample Receipt

L2128321-01: The sample ID was specified by the client.

L2128321-03 and -06: The collection time on the chain of custody was 10:40; however, the collection time on the container label was 10:50. At the client's request, the collection time is reported as 10:40.

Total Metals

L2128321-02 and -06: The sample has elevated detection limits for all elements, with the exception of mercury, due to the dilution required by matrix interferences encountered during analysis.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:  Cristin Walker

Title: Technical Director/Representative Date: 06/10/21

ORGANICS

VOLATILES

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2128321
Report Date: 06/10/21

SAMPLE RESULTS

Lab ID: L2128321-01
Client ID: B-4 (6'-7')
Sample Location: RYE LAKE WFP
Date Collected: 05/27/21 10:10
Date Received: 05/27/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 06/03/21 14:46
Analyst: JC
Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methylene chloride	ND		ug/kg	5.0	2.3	1
1,1-Dichloroethane	ND		ug/kg	1.0	0.14	1
Chloroform	ND		ug/kg	1.5	0.14	1
Carbon tetrachloride	ND		ug/kg	1.0	0.23	1
1,2-Dichloropropane	ND		ug/kg	1.0	0.12	1
Dibromochloromethane	ND		ug/kg	1.0	0.14	1
1,1,2-Trichloroethane	ND		ug/kg	1.0	0.27	1
Tetrachloroethene	ND		ug/kg	0.50	0.20	1
Chlorobenzene	ND		ug/kg	0.50	0.13	1
Trichlorofluoromethane	ND		ug/kg	4.0	0.70	1
1,2-Dichloroethane	ND		ug/kg	1.0	0.26	1
1,1,1-Trichloroethane	ND		ug/kg	0.50	0.17	1
Bromodichloromethane	ND		ug/kg	0.50	0.11	1
trans-1,3-Dichloropropene	ND		ug/kg	1.0	0.27	1
cis-1,3-Dichloropropene	ND		ug/kg	0.50	0.16	1
1,3-Dichloropropene, Total	ND		ug/kg	0.50	0.16	1
1,1-Dichloropropene	ND		ug/kg	0.50	0.16	1
Bromoform	ND		ug/kg	4.0	0.25	1
1,1,2,2-Tetrachloroethane	ND		ug/kg	0.50	0.17	1
Benzene	ND		ug/kg	0.50	0.17	1
Toluene	ND		ug/kg	1.0	0.54	1
Ethylbenzene	ND		ug/kg	1.0	0.14	1
Chloromethane	ND		ug/kg	4.0	0.94	1
Bromomethane	ND		ug/kg	2.0	0.58	1
Vinyl chloride	ND		ug/kg	1.0	0.34	1
Chloroethane	ND		ug/kg	2.0	0.45	1
1,1-Dichloroethene	ND		ug/kg	1.0	0.24	1
trans-1,2-Dichloroethene	ND		ug/kg	1.5	0.14	1

Project Name: RYE LAKE WFP **Lab Number:** L2128321

Project Number: 41.0162892.00 **Report Date:** 06/10/21

SAMPLE RESULTS

Lab ID: L2128321-01 Date Collected: 05/27/21 10:10

Client ID: B-4 (6'-7') Date Received: 05/27/21

Sample Location: RYE LAKE WFP Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Trichloroethene	ND		ug/kg	0.50	0.14	1
1,2-Dichlorobenzene	ND		ug/kg	2.0	0.14	1
1,3-Dichlorobenzene	ND		ug/kg	2.0	0.15	1
1,4-Dichlorobenzene	ND		ug/kg	2.0	0.17	1
Methyl tert butyl ether	ND		ug/kg	2.0	0.20	1
p/m-Xylene	ND		ug/kg	2.0	0.56	1
o-Xylene	ND		ug/kg	1.0	0.29	1
Xylenes, Total	ND		ug/kg	1.0	0.29	1
cis-1,2-Dichloroethene	ND		ug/kg	1.0	0.18	1
1,2-Dichloroethene, Total	ND		ug/kg	1.0	0.14	1
Dibromomethane	ND		ug/kg	2.0	0.24	1
Styrene	ND		ug/kg	1.0	0.20	1
Dichlorodifluoromethane	ND		ug/kg	10	0.92	1
Acetone	ND		ug/kg	10	4.8	1
Carbon disulfide	ND		ug/kg	10	4.6	1
2-Butanone	ND		ug/kg	10	2.2	1
Vinyl acetate	ND		ug/kg	10	2.2	1
4-Methyl-2-pentanone	ND		ug/kg	10	1.3	1
1,2,3-Trichloropropane	ND		ug/kg	2.0	0.13	1
2-Hexanone	ND		ug/kg	10	1.2	1
Bromochloromethane	ND		ug/kg	2.0	0.20	1
2,2-Dichloropropane	ND		ug/kg	2.0	0.20	1
1,2-Dibromoethane	ND		ug/kg	1.0	0.28	1
1,3-Dichloropropane	ND		ug/kg	2.0	0.17	1
1,1,1,2-Tetrachloroethane	ND		ug/kg	0.50	0.13	1
Bromobenzene	ND		ug/kg	2.0	0.14	1
n-Butylbenzene	ND		ug/kg	1.0	0.17	1
sec-Butylbenzene	ND		ug/kg	1.0	0.15	1
tert-Butylbenzene	ND		ug/kg	2.0	0.12	1
o-Chlorotoluene	ND		ug/kg	2.0	0.19	1
p-Chlorotoluene	ND		ug/kg	2.0	0.11	1
1,2-Dibromo-3-chloropropane	ND		ug/kg	3.0	1.0	1
Hexachlorobutadiene	ND		ug/kg	4.0	0.17	1
Isopropylbenzene	ND		ug/kg	1.0	0.11	1
p-Isopropyltoluene	ND		ug/kg	1.0	0.11	1
Naphthalene	ND		ug/kg	4.0	0.65	1
Acrylonitrile	ND		ug/kg	4.0	1.2	1

Project Name: RYE LAKE WFP
Lab Number: L2128321
Project Number: 41.0162892.00
Report Date: 06/10/21

SAMPLE RESULTS

Lab ID: L2128321-01
Client ID: B-4 (6'-7')
Sample Location: RYE LAKE WFP
Date Collected: 05/27/21 10:10
Date Received: 05/27/21
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
n-Propylbenzene	ND		ug/kg	1.0	0.17	1
1,2,3-Trichlorobenzene	ND		ug/kg	2.0	0.32	1
1,2,4-Trichlorobenzene	ND		ug/kg	2.0	0.27	1
1,3,5-Trimethylbenzene	ND		ug/kg	2.0	0.19	1
1,2,4-Trimethylbenzene	ND		ug/kg	2.0	0.34	1
1,4-Dioxane	ND		ug/kg	80	35.	1
p-Diethylbenzene	ND		ug/kg	2.0	0.18	1
p-Ethyltoluene	ND		ug/kg	2.0	0.38	1
1,2,4,5-Tetramethylbenzene	ND		ug/kg	2.0	0.19	1
Ethyl ether	ND		ug/kg	2.0	0.34	1
trans-1,4-Dichloro-2-butene	ND		ug/kg	5.0	1.4	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	121		70-130
Toluene-d8	115		70-130
4-Bromofluorobenzene	98		70-130
Dibromofluoromethane	117		70-130

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2128321
Report Date: 06/10/21

SAMPLE RESULTS

Lab ID: L2128321-03
Client ID: B-1 (6'-7')
Sample Location: RYE LAKE WFP
Date Collected: 05/27/21 10:40
Date Received: 05/27/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 06/03/21 15:07
Analyst: JC
Percent Solids: 90%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methylene chloride	ND		ug/kg	3.6	1.6	1
1,1-Dichloroethane	ND		ug/kg	0.72	0.10	1
Chloroform	ND		ug/kg	1.1	0.10	1
Carbon tetrachloride	ND		ug/kg	0.72	0.17	1
1,2-Dichloropropane	ND		ug/kg	0.72	0.09	1
Dibromochloromethane	ND		ug/kg	0.72	0.10	1
1,1,2-Trichloroethane	ND		ug/kg	0.72	0.19	1
Tetrachloroethene	ND		ug/kg	0.36	0.14	1
Chlorobenzene	ND		ug/kg	0.36	0.09	1
Trichlorofluoromethane	ND		ug/kg	2.9	0.50	1
1,2-Dichloroethane	ND		ug/kg	0.72	0.18	1
1,1,1-Trichloroethane	ND		ug/kg	0.36	0.12	1
Bromodichloromethane	ND		ug/kg	0.36	0.08	1
trans-1,3-Dichloropropene	ND		ug/kg	0.72	0.20	1
cis-1,3-Dichloropropene	ND		ug/kg	0.36	0.11	1
1,3-Dichloropropene, Total	ND		ug/kg	0.36	0.11	1
1,1-Dichloropropene	ND		ug/kg	0.36	0.11	1
Bromoform	ND		ug/kg	2.9	0.18	1
1,1,2,2-Tetrachloroethane	ND		ug/kg	0.36	0.12	1
Benzene	ND		ug/kg	0.36	0.12	1
Toluene	ND		ug/kg	0.72	0.39	1
Ethylbenzene	ND		ug/kg	0.72	0.10	1
Chloromethane	ND		ug/kg	2.9	0.67	1
Bromomethane	ND		ug/kg	1.4	0.42	1
Vinyl chloride	ND		ug/kg	0.72	0.24	1
Chloroethane	ND		ug/kg	1.4	0.33	1
1,1-Dichloroethene	ND		ug/kg	0.72	0.17	1
trans-1,2-Dichloroethene	ND		ug/kg	1.1	0.10	1

Project Name: RYE LAKE WFP **Lab Number:** L2128321

Project Number: 41.0162892.00 **Report Date:** 06/10/21

SAMPLE RESULTS

Lab ID: L2128321-03 Date Collected: 05/27/21 10:40

Client ID: B-1 (6'-7') Date Received: 05/27/21

Sample Location: RYE LAKE WFP Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Trichloroethene	ND		ug/kg	0.36	0.10	1
1,2-Dichlorobenzene	ND		ug/kg	1.4	0.10	1
1,3-Dichlorobenzene	ND		ug/kg	1.4	0.11	1
1,4-Dichlorobenzene	ND		ug/kg	1.4	0.12	1
Methyl tert butyl ether	ND		ug/kg	1.4	0.14	1
p/m-Xylene	ND		ug/kg	1.4	0.40	1
o-Xylene	ND		ug/kg	0.72	0.21	1
Xylenes, Total	ND		ug/kg	0.72	0.21	1
cis-1,2-Dichloroethene	ND		ug/kg	0.72	0.13	1
1,2-Dichloroethene, Total	ND		ug/kg	0.72	0.10	1
Dibromomethane	ND		ug/kg	1.4	0.17	1
Styrene	ND		ug/kg	0.72	0.14	1
Dichlorodifluoromethane	ND		ug/kg	7.2	0.66	1
Acetone	ND		ug/kg	7.2	3.5	1
Carbon disulfide	ND		ug/kg	7.2	3.3	1
2-Butanone	ND		ug/kg	7.2	1.6	1
Vinyl acetate	ND		ug/kg	7.2	1.6	1
4-Methyl-2-pentanone	ND		ug/kg	7.2	0.92	1
1,2,3-Trichloropropane	ND		ug/kg	1.4	0.09	1
2-Hexanone	ND		ug/kg	7.2	0.85	1
Bromochloromethane	ND		ug/kg	1.4	0.15	1
2,2-Dichloropropane	ND		ug/kg	1.4	0.14	1
1,2-Dibromoethane	ND		ug/kg	0.72	0.20	1
1,3-Dichloropropane	ND		ug/kg	1.4	0.12	1
1,1,1,2-Tetrachloroethane	ND		ug/kg	0.36	0.10	1
Bromobenzene	ND		ug/kg	1.4	0.10	1
n-Butylbenzene	ND		ug/kg	0.72	0.12	1
sec-Butylbenzene	ND		ug/kg	0.72	0.10	1
tert-Butylbenzene	ND		ug/kg	1.4	0.09	1
o-Chlorotoluene	ND		ug/kg	1.4	0.14	1
p-Chlorotoluene	ND		ug/kg	1.4	0.08	1
1,2-Dibromo-3-chloropropane	ND		ug/kg	2.2	0.72	1
Hexachlorobutadiene	ND		ug/kg	2.9	0.12	1
Isopropylbenzene	ND		ug/kg	0.72	0.08	1
p-Isopropyltoluene	ND		ug/kg	0.72	0.08	1
Naphthalene	ND		ug/kg	2.9	0.47	1
Acrylonitrile	ND		ug/kg	2.9	0.83	1

Project Name: RYE LAKE WFP
Lab Number: L2128321
Project Number: 41.0162892.00
Report Date: 06/10/21

SAMPLE RESULTS

Lab ID: L2128321-03
Client ID: B-1 (6'-7')
Sample Location: RYE LAKE WFP
Date Collected: 05/27/21 10:40
Date Received: 05/27/21
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
n-Propylbenzene	ND		ug/kg	0.72	0.12	1
1,2,3-Trichlorobenzene	ND		ug/kg	1.4	0.23	1
1,2,4-Trichlorobenzene	ND		ug/kg	1.4	0.20	1
1,3,5-Trimethylbenzene	ND		ug/kg	1.4	0.14	1
1,2,4-Trimethylbenzene	ND		ug/kg	1.4	0.24	1
1,4-Dioxane	ND		ug/kg	58	25.	1
p-Diethylbenzene	ND		ug/kg	1.4	0.13	1
p-Ethyltoluene	ND		ug/kg	1.4	0.28	1
1,2,4,5-Tetramethylbenzene	ND		ug/kg	1.4	0.14	1
Ethyl ether	ND		ug/kg	1.4	0.25	1
trans-1,4-Dichloro-2-butene	ND		ug/kg	3.6	1.0	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	116		70-130
Toluene-d8	95		70-130
4-Bromofluorobenzene	93		70-130
Dibromofluoromethane	108		70-130

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2128321
Report Date: 06/10/21

SAMPLE RESULTS

Lab ID: L2128321-04
Client ID: B-1 (10'-11')
Sample Location: RYE LAKE WFP
Date Collected: 05/27/21 10:50
Date Received: 05/27/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 06/03/21 15:28
Analyst: JC
Percent Solids: 89%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methylene chloride	ND		ug/kg	3.9	1.8	1
1,1-Dichloroethane	ND		ug/kg	0.78	0.11	1
Chloroform	ND		ug/kg	1.2	0.11	1
Carbon tetrachloride	ND		ug/kg	0.78	0.18	1
1,2-Dichloropropane	ND		ug/kg	0.78	0.10	1
Dibromochloromethane	ND		ug/kg	0.78	0.11	1
1,1,2-Trichloroethane	ND		ug/kg	0.78	0.21	1
Tetrachloroethene	ND		ug/kg	0.39	0.15	1
Chlorobenzene	ND		ug/kg	0.39	0.10	1
Trichlorofluoromethane	ND		ug/kg	3.1	0.54	1
1,2-Dichloroethane	ND		ug/kg	0.78	0.20	1
1,1,1-Trichloroethane	ND		ug/kg	0.39	0.13	1
Bromodichloromethane	ND		ug/kg	0.39	0.09	1
trans-1,3-Dichloropropene	ND		ug/kg	0.78	0.21	1
cis-1,3-Dichloropropene	ND		ug/kg	0.39	0.12	1
1,3-Dichloropropene, Total	ND		ug/kg	0.39	0.12	1
1,1-Dichloropropene	ND		ug/kg	0.39	0.12	1
Bromoform	ND		ug/kg	3.1	0.19	1
1,1,2,2-Tetrachloroethane	ND		ug/kg	0.39	0.13	1
Benzene	ND		ug/kg	0.39	0.13	1
Toluene	ND		ug/kg	0.78	0.42	1
Ethylbenzene	ND		ug/kg	0.78	0.11	1
Chloromethane	1.8	J	ug/kg	3.1	0.73	1
Bromomethane	ND		ug/kg	1.6	0.46	1
Vinyl chloride	ND		ug/kg	0.78	0.26	1
Chloroethane	ND		ug/kg	1.6	0.35	1
1,1-Dichloroethene	ND		ug/kg	0.78	0.19	1
trans-1,2-Dichloroethene	ND		ug/kg	1.2	0.11	1

Project Name: RYE LAKE WFP **Lab Number:** L2128321

Project Number: 41.0162892.00 **Report Date:** 06/10/21

SAMPLE RESULTS

Lab ID: L2128321-04 Date Collected: 05/27/21 10:50

Client ID: B-1 (10'-11') Date Received: 05/27/21

Sample Location: RYE LAKE WFP Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Trichloroethene	ND		ug/kg	0.39	0.11	1
1,2-Dichlorobenzene	ND		ug/kg	1.6	0.11	1
1,3-Dichlorobenzene	ND		ug/kg	1.6	0.12	1
1,4-Dichlorobenzene	ND		ug/kg	1.6	0.13	1
Methyl tert butyl ether	ND		ug/kg	1.6	0.16	1
p/m-Xylene	ND		ug/kg	1.6	0.44	1
o-Xylene	ND		ug/kg	0.78	0.23	1
Xylenes, Total	ND		ug/kg	0.78	0.23	1
cis-1,2-Dichloroethene	ND		ug/kg	0.78	0.14	1
1,2-Dichloroethene, Total	ND		ug/kg	0.78	0.11	1
Dibromomethane	ND		ug/kg	1.6	0.19	1
Styrene	ND		ug/kg	0.78	0.15	1
Dichlorodifluoromethane	ND		ug/kg	7.8	0.72	1
Acetone	7.4	J	ug/kg	7.8	3.8	1
Carbon disulfide	ND		ug/kg	7.8	3.6	1
2-Butanone	3.2	J	ug/kg	7.8	1.7	1
Vinyl acetate	ND		ug/kg	7.8	1.7	1
4-Methyl-2-pentanone	ND		ug/kg	7.8	1.0	1
1,2,3-Trichloropropane	ND		ug/kg	1.6	0.10	1
2-Hexanone	ND		ug/kg	7.8	0.92	1
Bromochloromethane	ND		ug/kg	1.6	0.16	1
2,2-Dichloropropane	ND		ug/kg	1.6	0.16	1
1,2-Dibromoethane	ND		ug/kg	0.78	0.22	1
1,3-Dichloropropane	ND		ug/kg	1.6	0.13	1
1,1,1,2-Tetrachloroethane	ND		ug/kg	0.39	0.10	1
Bromobenzene	ND		ug/kg	1.6	0.11	1
n-Butylbenzene	ND		ug/kg	0.78	0.13	1
sec-Butylbenzene	ND		ug/kg	0.78	0.11	1
tert-Butylbenzene	ND		ug/kg	1.6	0.09	1
o-Chlorotoluene	ND		ug/kg	1.6	0.15	1
p-Chlorotoluene	ND		ug/kg	1.6	0.09	1
1,2-Dibromo-3-chloropropane	ND		ug/kg	2.4	0.78	1
Hexachlorobutadiene	ND		ug/kg	3.1	0.13	1
Isopropylbenzene	ND		ug/kg	0.78	0.09	1
p-Isopropyltoluene	ND		ug/kg	0.78	0.09	1
Naphthalene	ND		ug/kg	3.1	0.51	1
Acrylonitrile	ND		ug/kg	3.1	0.90	1

Project Name: RYE LAKE WFP
Lab Number: L2128321
Project Number: 41.0162892.00
Report Date: 06/10/21

SAMPLE RESULTS

Lab ID: L2128321-04
Client ID: B-1 (10'-11')
Sample Location: RYE LAKE WFP
Date Collected: 05/27/21 10:50
Date Received: 05/27/21
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
n-Propylbenzene	ND		ug/kg	0.78	0.13	1
1,2,3-Trichlorobenzene	ND		ug/kg	1.6	0.25	1
1,2,4-Trichlorobenzene	ND		ug/kg	1.6	0.21	1
1,3,5-Trimethylbenzene	ND		ug/kg	1.6	0.15	1
1,2,4-Trimethylbenzene	ND		ug/kg	1.6	0.26	1
1,4-Dioxane	ND		ug/kg	63	28.	1
p-Diethylbenzene	ND		ug/kg	1.6	0.14	1
p-Ethyltoluene	ND		ug/kg	1.6	0.30	1
1,2,4,5-Tetramethylbenzene	ND		ug/kg	1.6	0.15	1
Ethyl ether	ND		ug/kg	1.6	0.27	1
trans-1,4-Dichloro-2-butene	ND		ug/kg	3.9	1.1	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	118		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	98		70-130
Dibromofluoromethane	109		70-130

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2128321
Report Date: 06/10/21

SAMPLE RESULTS

Lab ID: L2128321-05
Client ID: B-1 (14'-15')
Sample Location: RYE LAKE WFP
Date Collected: 05/27/21 11:05
Date Received: 05/27/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 06/03/21 21:21
Analyst: JC
Percent Solids: 92%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methylene chloride	ND		ug/kg	3.6	1.6	1
1,1-Dichloroethane	ND		ug/kg	0.71	0.10	1
Chloroform	ND		ug/kg	1.1	0.10	1
Carbon tetrachloride	ND		ug/kg	0.71	0.16	1
1,2-Dichloropropane	ND		ug/kg	0.71	0.09	1
Dibromochloromethane	ND		ug/kg	0.71	0.10	1
1,1,2-Trichloroethane	ND		ug/kg	0.71	0.19	1
Tetrachloroethene	ND		ug/kg	0.36	0.14	1
Chlorobenzene	ND		ug/kg	0.36	0.09	1
Trichlorofluoromethane	ND		ug/kg	2.8	0.49	1
1,2-Dichloroethane	ND		ug/kg	0.71	0.18	1
1,1,1-Trichloroethane	ND		ug/kg	0.36	0.12	1
Bromodichloromethane	ND		ug/kg	0.36	0.08	1
trans-1,3-Dichloropropene	ND		ug/kg	0.71	0.19	1
cis-1,3-Dichloropropene	ND		ug/kg	0.36	0.11	1
1,3-Dichloropropene, Total	ND		ug/kg	0.36	0.11	1
1,1-Dichloropropene	ND		ug/kg	0.36	0.11	1
Bromoform	ND		ug/kg	2.8	0.17	1
1,1,2,2-Tetrachloroethane	ND		ug/kg	0.36	0.12	1
Benzene	ND		ug/kg	0.36	0.12	1
Toluene	ND		ug/kg	0.71	0.39	1
Ethylbenzene	ND		ug/kg	0.71	0.10	1
Chloromethane	ND		ug/kg	2.8	0.66	1
Bromomethane	ND		ug/kg	1.4	0.41	1
Vinyl chloride	ND		ug/kg	0.71	0.24	1
Chloroethane	ND		ug/kg	1.4	0.32	1
1,1-Dichloroethene	ND		ug/kg	0.71	0.17	1
trans-1,2-Dichloroethene	ND		ug/kg	1.1	0.10	1

Project Name: RYE LAKE WFP **Lab Number:** L2128321

Project Number: 41.0162892.00 **Report Date:** 06/10/21

SAMPLE RESULTS

Lab ID: L2128321-05 Date Collected: 05/27/21 11:05

Client ID: B-1 (14'-15') Date Received: 05/27/21

Sample Location: RYE LAKE WFP Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Trichloroethene	ND		ug/kg	0.36	0.10	1
1,2-Dichlorobenzene	ND		ug/kg	1.4	0.10	1
1,3-Dichlorobenzene	ND		ug/kg	1.4	0.10	1
1,4-Dichlorobenzene	ND		ug/kg	1.4	0.12	1
Methyl tert butyl ether	ND		ug/kg	1.4	0.14	1
p/m-Xylene	ND		ug/kg	1.4	0.40	1
o-Xylene	ND		ug/kg	0.71	0.21	1
Xylenes, Total	ND		ug/kg	0.71	0.21	1
cis-1,2-Dichloroethene	ND		ug/kg	0.71	0.12	1
1,2-Dichloroethene, Total	ND		ug/kg	0.71	0.10	1
Dibromomethane	ND		ug/kg	1.4	0.17	1
Styrene	ND		ug/kg	0.71	0.14	1
Dichlorodifluoromethane	ND		ug/kg	7.1	0.65	1
Acetone	ND		ug/kg	7.1	3.4	1
Carbon disulfide	ND		ug/kg	7.1	3.2	1
2-Butanone	ND		ug/kg	7.1	1.6	1
Vinyl acetate	ND		ug/kg	7.1	1.5	1
4-Methyl-2-pentanone	ND		ug/kg	7.1	0.91	1
1,2,3-Trichloropropane	ND		ug/kg	1.4	0.09	1
2-Hexanone	ND		ug/kg	7.1	0.84	1
Bromochloromethane	ND		ug/kg	1.4	0.14	1
2,2-Dichloropropane	ND		ug/kg	1.4	0.14	1
1,2-Dibromoethane	ND		ug/kg	0.71	0.20	1
1,3-Dichloropropane	ND		ug/kg	1.4	0.12	1
1,1,1,2-Tetrachloroethane	ND		ug/kg	0.36	0.09	1
Bromobenzene	ND		ug/kg	1.4	0.10	1
n-Butylbenzene	ND		ug/kg	0.71	0.12	1
sec-Butylbenzene	ND		ug/kg	0.71	0.10	1
tert-Butylbenzene	ND		ug/kg	1.4	0.08	1
o-Chlorotoluene	ND		ug/kg	1.4	0.14	1
p-Chlorotoluene	ND		ug/kg	1.4	0.08	1
1,2-Dibromo-3-chloropropane	ND		ug/kg	2.1	0.71	1
Hexachlorobutadiene	ND		ug/kg	2.8	0.12	1
Isopropylbenzene	ND		ug/kg	0.71	0.08	1
p-Isopropyltoluene	ND		ug/kg	0.71	0.08	1
Naphthalene	ND		ug/kg	2.8	0.46	1
Acrylonitrile	ND		ug/kg	2.8	0.82	1

Project Name: RYE LAKE WFP
Lab Number: L2128321
Project Number: 41.0162892.00
Report Date: 06/10/21

SAMPLE RESULTS

Lab ID: L2128321-05
Client ID: B-1 (14'-15')
Sample Location: RYE LAKE WFP
Date Collected: 05/27/21 11:05
Date Received: 05/27/21
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
n-Propylbenzene	ND		ug/kg	0.71	0.12	1
1,2,3-Trichlorobenzene	ND		ug/kg	1.4	0.23	1
1,2,4-Trichlorobenzene	ND		ug/kg	1.4	0.19	1
1,3,5-Trimethylbenzene	ND		ug/kg	1.4	0.14	1
1,2,4-Trimethylbenzene	ND		ug/kg	1.4	0.24	1
1,4-Dioxane	ND		ug/kg	57	25.	1
p-Diethylbenzene	ND		ug/kg	1.4	0.12	1
p-Ethyltoluene	ND		ug/kg	1.4	0.27	1
1,2,4,5-Tetramethylbenzene	ND		ug/kg	1.4	0.14	1
Ethyl ether	ND		ug/kg	1.4	0.24	1
trans-1,4-Dichloro-2-butene	ND		ug/kg	3.6	1.0	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	109		70-130
Toluene-d8	96		70-130
4-Bromofluorobenzene	93		70-130
Dibromofluoromethane	114		70-130

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2128321
Report Date: 06/10/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 06/03/21 08:29
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01,03-04 Batch: WG1507172-5					
Methylene chloride	ND		ug/kg	5.0	2.3
1,1-Dichloroethane	ND		ug/kg	1.0	0.14
Chloroform	ND		ug/kg	1.5	0.14
Carbon tetrachloride	ND		ug/kg	1.0	0.23
1,2-Dichloropropane	ND		ug/kg	1.0	0.12
Dibromochloromethane	ND		ug/kg	1.0	0.14
1,1,2-Trichloroethane	ND		ug/kg	1.0	0.27
Tetrachloroethene	ND		ug/kg	0.50	0.20
Chlorobenzene	ND		ug/kg	0.50	0.13
Trichlorofluoromethane	ND		ug/kg	4.0	0.70
1,2-Dichloroethane	ND		ug/kg	1.0	0.26
1,1,1-Trichloroethane	ND		ug/kg	0.50	0.17
Bromodichloromethane	ND		ug/kg	0.50	0.11
trans-1,3-Dichloropropene	ND		ug/kg	1.0	0.27
cis-1,3-Dichloropropene	ND		ug/kg	0.50	0.16
1,3-Dichloropropene, Total	ND		ug/kg	0.50	0.16
1,1-Dichloropropene	ND		ug/kg	0.50	0.16
Bromoform	ND		ug/kg	4.0	0.25
1,1,2,2-Tetrachloroethane	ND		ug/kg	0.50	0.17
Benzene	ND		ug/kg	0.50	0.17
Toluene	ND		ug/kg	1.0	0.54
Ethylbenzene	ND		ug/kg	1.0	0.14
Chloromethane	ND		ug/kg	4.0	0.93
Bromomethane	ND		ug/kg	2.0	0.58
Vinyl chloride	ND		ug/kg	1.0	0.34
Chloroethane	ND		ug/kg	2.0	0.45
1,1-Dichloroethene	ND		ug/kg	1.0	0.24
trans-1,2-Dichloroethene	ND		ug/kg	1.5	0.14
Trichloroethene	ND		ug/kg	0.50	0.14

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2128321
Report Date: 06/10/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 06/03/21 08:29
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01,03-04 Batch: WG1507172-5					
1,2-Dichlorobenzene	ND		ug/kg	2.0	0.14
1,3-Dichlorobenzene	ND		ug/kg	2.0	0.15
1,4-Dichlorobenzene	ND		ug/kg	2.0	0.17
Methyl tert butyl ether	ND		ug/kg	2.0	0.20
p/m-Xylene	ND		ug/kg	2.0	0.56
o-Xylene	ND		ug/kg	1.0	0.29
Xylenes, Total	ND		ug/kg	1.0	0.29
cis-1,2-Dichloroethene	ND		ug/kg	1.0	0.18
1,2-Dichloroethene, Total	ND		ug/kg	1.0	0.14
Dibromomethane	ND		ug/kg	2.0	0.24
Styrene	0.40	J	ug/kg	1.0	0.20
Dichlorodifluoromethane	ND		ug/kg	10	0.92
Acetone	ND		ug/kg	10	4.8
Carbon disulfide	ND		ug/kg	10	4.6
2-Butanone	ND		ug/kg	10	2.2
Vinyl acetate	ND		ug/kg	10	2.2
4-Methyl-2-pentanone	ND		ug/kg	10	1.3
1,2,3-Trichloropropane	ND		ug/kg	2.0	0.13
2-Hexanone	ND		ug/kg	10	1.2
Bromochloromethane	ND		ug/kg	2.0	0.20
2,2-Dichloropropane	ND		ug/kg	2.0	0.20
1,2-Dibromoethane	ND		ug/kg	1.0	0.28
1,3-Dichloropropane	ND		ug/kg	2.0	0.17
1,1,1,2-Tetrachloroethane	ND		ug/kg	0.50	0.13
Bromobenzene	ND		ug/kg	2.0	0.14
n-Butylbenzene	ND		ug/kg	1.0	0.17
sec-Butylbenzene	ND		ug/kg	1.0	0.15
tert-Butylbenzene	ND		ug/kg	2.0	0.12
o-Chlorotoluene	ND		ug/kg	2.0	0.19

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2128321
Report Date: 06/10/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 06/03/21 08:29
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01,03-04 Batch: WG1507172-5					
p-Chlorotoluene	ND		ug/kg	2.0	0.11
1,2-Dibromo-3-chloropropane	ND		ug/kg	3.0	1.0
Hexachlorobutadiene	ND		ug/kg	4.0	0.17
Isopropylbenzene	ND		ug/kg	1.0	0.11
p-Isopropyltoluene	ND		ug/kg	1.0	0.11
Naphthalene	ND		ug/kg	4.0	0.65
Acrylonitrile	ND		ug/kg	4.0	1.2
n-Propylbenzene	ND		ug/kg	1.0	0.17
1,2,3-Trichlorobenzene	ND		ug/kg	2.0	0.32
1,2,4-Trichlorobenzene	ND		ug/kg	2.0	0.27
1,3,5-Trimethylbenzene	ND		ug/kg	2.0	0.19
1,2,4-Trimethylbenzene	ND		ug/kg	2.0	0.33
1,4-Dioxane	ND		ug/kg	80	35.
p-Diethylbenzene	ND		ug/kg	2.0	0.18
p-Ethyltoluene	ND		ug/kg	2.0	0.38
1,2,4,5-Tetramethylbenzene	ND		ug/kg	2.0	0.19
Ethyl ether	ND		ug/kg	2.0	0.34
trans-1,4-Dichloro-2-butene	ND		ug/kg	5.0	1.4

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	118		70-130
Toluene-d8	94		70-130
4-Bromofluorobenzene	100		70-130
Dibromofluoromethane	114		70-130

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2128321
Report Date: 06/10/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 06/03/21 20:06
Analyst: KJD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 05 Batch: WG1507672-5					
Methylene chloride	ND		ug/kg	5.0	2.3
1,1-Dichloroethane	ND		ug/kg	1.0	0.14
Chloroform	ND		ug/kg	1.5	0.14
Carbon tetrachloride	ND		ug/kg	1.0	0.23
1,2-Dichloropropane	ND		ug/kg	1.0	0.12
Dibromochloromethane	ND		ug/kg	1.0	0.14
1,1,2-Trichloroethane	ND		ug/kg	1.0	0.27
Tetrachloroethene	ND		ug/kg	0.50	0.20
Chlorobenzene	ND		ug/kg	0.50	0.13
Trichlorofluoromethane	ND		ug/kg	4.0	0.70
1,2-Dichloroethane	ND		ug/kg	1.0	0.26
1,1,1-Trichloroethane	ND		ug/kg	0.50	0.17
Bromodichloromethane	ND		ug/kg	0.50	0.11
trans-1,3-Dichloropropene	ND		ug/kg	1.0	0.27
cis-1,3-Dichloropropene	ND		ug/kg	0.50	0.16
1,3-Dichloropropene, Total	ND		ug/kg	0.50	0.16
1,1-Dichloropropene	ND		ug/kg	0.50	0.16
Bromoform	ND		ug/kg	4.0	0.25
1,1,2,2-Tetrachloroethane	ND		ug/kg	0.50	0.17
Benzene	ND		ug/kg	0.50	0.17
Toluene	ND		ug/kg	1.0	0.54
Ethylbenzene	ND		ug/kg	1.0	0.14
Chloromethane	ND		ug/kg	4.0	0.93
Bromomethane	ND		ug/kg	2.0	0.58
Vinyl chloride	ND		ug/kg	1.0	0.34
Chloroethane	ND		ug/kg	2.0	0.45
1,1-Dichloroethene	ND		ug/kg	1.0	0.24
trans-1,2-Dichloroethene	ND		ug/kg	1.5	0.14
Trichloroethene	ND		ug/kg	0.50	0.14

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2128321
Report Date: 06/10/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 06/03/21 20:06
Analyst: KJD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 05 Batch: WG1507672-5					
1,2-Dichlorobenzene	ND		ug/kg	2.0	0.14
1,3-Dichlorobenzene	ND		ug/kg	2.0	0.15
1,4-Dichlorobenzene	ND		ug/kg	2.0	0.17
Methyl tert butyl ether	ND		ug/kg	2.0	0.20
p/m-Xylene	ND		ug/kg	2.0	0.56
o-Xylene	ND		ug/kg	1.0	0.29
Xylenes, Total	ND		ug/kg	1.0	0.29
cis-1,2-Dichloroethene	ND		ug/kg	1.0	0.18
1,2-Dichloroethene, Total	ND		ug/kg	1.0	0.14
Dibromomethane	ND		ug/kg	2.0	0.24
Styrene	0.38	J	ug/kg	1.0	0.20
Dichlorodifluoromethane	ND		ug/kg	10	0.92
Acetone	ND		ug/kg	10	4.8
Carbon disulfide	ND		ug/kg	10	4.6
2-Butanone	ND		ug/kg	10	2.2
Vinyl acetate	ND		ug/kg	10	2.2
4-Methyl-2-pentanone	ND		ug/kg	10	1.3
1,2,3-Trichloropropane	ND		ug/kg	2.0	0.13
2-Hexanone	ND		ug/kg	10	1.2
Bromochloromethane	ND		ug/kg	2.0	0.20
2,2-Dichloropropane	ND		ug/kg	2.0	0.20
1,2-Dibromoethane	ND		ug/kg	1.0	0.28
1,3-Dichloropropane	ND		ug/kg	2.0	0.17
1,1,1,2-Tetrachloroethane	ND		ug/kg	0.50	0.13
Bromobenzene	ND		ug/kg	2.0	0.14
n-Butylbenzene	ND		ug/kg	1.0	0.17
sec-Butylbenzene	ND		ug/kg	1.0	0.15
tert-Butylbenzene	ND		ug/kg	2.0	0.12
o-Chlorotoluene	ND		ug/kg	2.0	0.19

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2128321
Report Date: 06/10/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 06/03/21 20:06
Analyst: KJD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 05 Batch: WG1507672-5					
p-Chlorotoluene	ND		ug/kg	2.0	0.11
1,2-Dibromo-3-chloropropane	ND		ug/kg	3.0	1.0
Hexachlorobutadiene	ND		ug/kg	4.0	0.17
Isopropylbenzene	ND		ug/kg	1.0	0.11
p-Isopropyltoluene	ND		ug/kg	1.0	0.11
Naphthalene	ND		ug/kg	4.0	0.65
Acrylonitrile	ND		ug/kg	4.0	1.2
n-Propylbenzene	ND		ug/kg	1.0	0.17
1,2,3-Trichlorobenzene	ND		ug/kg	2.0	0.32
1,2,4-Trichlorobenzene	ND		ug/kg	2.0	0.27
1,3,5-Trimethylbenzene	ND		ug/kg	2.0	0.19
1,2,4-Trimethylbenzene	ND		ug/kg	2.0	0.33
1,4-Dioxane	ND		ug/kg	80	35.
p-Diethylbenzene	ND		ug/kg	2.0	0.18
p-Ethyltoluene	ND		ug/kg	2.0	0.38
1,2,4,5-Tetramethylbenzene	ND		ug/kg	2.0	0.19
Ethyl ether	ND		ug/kg	2.0	0.34
trans-1,4-Dichloro-2-butene	ND		ug/kg	5.0	1.4

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	108		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	94		70-130
Dibromofluoromethane	108		70-130

Lab Control Sample Analysis
Batch Quality Control

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2128321
Report Date: 06/10/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01,03-04 Batch: WG1507172-3 WG1507172-4								
Methylene chloride	119		114		70-130	4		30
1,1-Dichloroethane	111		107		70-130	4		30
Chloroform	101		98		70-130	3		30
Carbon tetrachloride	97		96		70-130	1		30
1,2-Dichloropropane	114		109		70-130	4		30
Dibromochloromethane	106		104		70-130	2		30
1,1,2-Trichloroethane	112		112		70-130	0		30
Tetrachloroethene	95		95		70-130	0		30
Chlorobenzene	103		100		70-130	3		30
Trichlorofluoromethane	124		120		70-139	3		30
1,2-Dichloroethane	110		107		70-130	3		30
1,1,1-Trichloroethane	108		103		70-130	5		30
Bromodichloromethane	104		102		70-130	2		30
trans-1,3-Dichloropropene	106		105		70-130	1		30
cis-1,3-Dichloropropene	108		104		70-130	4		30
1,1-Dichloropropene	105		102		70-130	3		30
Bromoform	92		89		70-130	3		30
1,1,2,2-Tetrachloroethane	102		100		70-130	2		30
Benzene	106		102		70-130	4		30
Toluene	98		96		70-130	2		30
Ethylbenzene	97		94		70-130	3		30
Chloromethane	**183**	Q	**177**	Q	52-130	3		30
Bromomethane	147		145		57-147	1		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2128321
Report Date: 06/10/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01,03-04 Batch: WG1507172-3 WG1507172-4								
Vinyl chloride	**154**	Q	**148**	Q	67-130	4		30
Chloroethane	130		125		50-151	4		30
1,1-Dichloroethene	121		123		65-135	2		30
trans-1,2-Dichloroethene	122		114		70-130	7		30
Trichloroethene	113		109		70-130	4		30
1,2-Dichlorobenzene	98		95		70-130	3		30
1,3-Dichlorobenzene	98		95		70-130	3		30
1,4-Dichlorobenzene	97		92		70-130	5		30
Methyl tert butyl ether	105		103		66-130	2		30
p/m-Xylene	101		98		70-130	3		30
o-Xylene	98		96		70-130	2		30
cis-1,2-Dichloroethene	112		110		70-130	2		30
Dibromomethane	112		113		70-130	1		30
Styrene	107		104		70-130	3		30
Dichlorodifluoromethane	**161**	Q	**156**	Q	30-146	3		30
Acetone	110		108		54-140	2		30
Carbon disulfide	130		127		59-130	2		30
2-Butanone	114		113		70-130	1		30
Vinyl acetate	125		123		70-130	2		30
4-Methyl-2-pentanone	92		86		70-130	7		30
1,2,3-Trichloropropane	101		100		68-130	1		30
2-Hexanone	82		82		70-130	0		30
Bromochloromethane	112		109		70-130	3		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2128321
Report Date: 06/10/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01,03-04 Batch: WG1507172-3 WG1507172-4								
2,2-Dichloropropane	99		94		70-130	5		30
1,2-Dibromoethane	114		115		70-130	1		30
1,3-Dichloropropane	108		106		69-130	2		30
1,1,1,2-Tetrachloroethane	106		103		70-130	3		30
Bromobenzene	92		90		70-130	2		30
n-Butylbenzene	100		97		70-130	3		30
sec-Butylbenzene	98		94		70-130	4		30
tert-Butylbenzene	91		88		70-130	3		30
o-Chlorotoluene	99		96		70-130	3		30
p-Chlorotoluene	99		94		70-130	5		30
1,2-Dibromo-3-chloropropane	83		84		68-130	1		30
Hexachlorobutadiene	83		81		67-130	2		30
Isopropylbenzene	92		90		70-130	2		30
p-Isopropyltoluene	93		91		70-130	2		30
Naphthalene	81		80		70-130	1		30
Acrylonitrile	117		124		70-130	6		30
n-Propylbenzene	95		92		70-130	3		30
1,2,3-Trichlorobenzene	86		84		70-130	2		30
1,2,4-Trichlorobenzene	80		79		70-130	1		30
1,3,5-Trimethylbenzene	97		94		70-130	3		30
1,2,4-Trimethylbenzene	96		94		70-130	2		30
1,4-Dioxane	122		118		65-136	3		30
p-Diethylbenzene	91		87		70-130	4		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: RYE LAKE WFP

Project Number: 41.0162892.00

Lab Number: L2128321

Report Date: 06/10/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01,03-04 Batch: WG1507172-3 WG1507172-4								
p-Ethyltoluene	96		93		70-130	3		30
1,2,4,5-Tetramethylbenzene	75		73		70-130	3		30
Ethyl ether	130		129		67-130	1		30
trans-1,4-Dichloro-2-butene	108		105		70-130	3		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	105		103		70-130
Toluene-d8	97		99		70-130
4-Bromofluorobenzene	96		95		70-130
Dibromofluoromethane	97		95		70-130

Lab Control Sample Analysis
Batch Quality Control

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2128321
Report Date: 06/10/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 05 Batch: WG1507672-3 WG1507672-4								
Methylene chloride	81		83		70-130	2		30
1,1-Dichloroethane	81		81		70-130	0		30
Chloroform	78		79		70-130	1		30
Carbon tetrachloride	87		88		70-130	1		30
1,2-Dichloropropane	81		81		70-130	0		30
Dibromochloromethane	83		84		70-130	1		30
1,1,2-Trichloroethane	82		83		70-130	1		30
Tetrachloroethene	87		88		70-130	1		30
Chlorobenzene	80		80		70-130	0		30
Trichlorofluoromethane	96		96		70-139	0		30
1,2-Dichloroethane	79		81		70-130	3		30
1,1,1-Trichloroethane	84		85		70-130	1		30
Bromodichloromethane	78		80		70-130	3		30
trans-1,3-Dichloropropene	86		88		70-130	2		30
cis-1,3-Dichloropropene	82		83		70-130	1		30
1,1-Dichloropropene	86		87		70-130	1		30
Bromoform	83		85		70-130	2		30
1,1,2,2-Tetrachloroethane	80		82		70-130	2		30
Benzene	80		80		70-130	0		30
Toluene	82		82		70-130	0		30
Ethylbenzene	83		83		70-130	0		30
Chloromethane	90		91		52-130	1		30
Bromomethane	104		108		57-147	4		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2128321
Report Date: 06/10/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 05 Batch: WG1507672-3 WG1507672-4								
Vinyl chloride	94		93		67-130	1		30
Chloroethane	91		91		50-151	0		30
1,1-Dichloroethene	87		89		65-135	2		30
trans-1,2-Dichloroethene	85		84		70-130	1		30
Trichloroethene	82		81		70-130	1		30
1,2-Dichlorobenzene	82		83		70-130	1		30
1,3-Dichlorobenzene	83		83		70-130	0		30
1,4-Dichlorobenzene	82		81		70-130	1		30
Methyl tert butyl ether	81		82		66-130	1		30
p/m-Xylene	82		81		70-130	1		30
o-Xylene	80		79		70-130	1		30
cis-1,2-Dichloroethene	79		79		70-130	0		30
Dibromomethane	83		85		70-130	2		30
Styrene	80		79		70-130	1		30
Dichlorodifluoromethane	127		127		30-146	0		30
Acetone	84		88		54-140	5		30
Carbon disulfide	85		86		59-130	1		30
2-Butanone	72		82		70-130	13		30
Vinyl acetate	83		86		70-130	4		30
4-Methyl-2-pentanone	79		83		70-130	5		30
1,2,3-Trichloropropane	78		81		68-130	4		30
2-Hexanone	75		78		70-130	4		30
Bromochloromethane	82		83		70-130	1		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2128321
Report Date: 06/10/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 05 Batch: WG1507672-3 WG1507672-4								
2,2-Dichloropropane	83		83		70-130	0		30
1,2-Dibromoethane	86		88		70-130	2		30
1,3-Dichloropropane	83		84		69-130	1		30
1,1,1,2-Tetrachloroethane	81		82		70-130	1		30
Bromobenzene	82		82		70-130	0		30
n-Butylbenzene	86		86		70-130	0		30
sec-Butylbenzene	85		84		70-130	1		30
tert-Butylbenzene	84		84		70-130	0		30
o-Chlorotoluene	82		81		70-130	1		30
p-Chlorotoluene	81		81		70-130	0		30
1,2-Dibromo-3-chloropropane	83		86		68-130	4		30
Hexachlorobutadiene	87		86		67-130	1		30
Isopropylbenzene	85		84		70-130	1		30
p-Isopropyltoluene	86		86		70-130	0		30
Naphthalene	79		82		70-130	4		30
Acrylonitrile	86		88		70-130	2		30
n-Propylbenzene	85		84		70-130	1		30
1,2,3-Trichlorobenzene	83		85		70-130	2		30
1,2,4-Trichlorobenzene	86		86		70-130	0		30
1,3,5-Trimethylbenzene	83		82		70-130	1		30
1,2,4-Trimethylbenzene	83		82		70-130	1		30
1,4-Dioxane	115		120		65-136	4		30
p-Diethylbenzene	85		87		70-130	2		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: RYE LAKE WFP

Project Number: 41.0162892.00

Lab Number: L2128321

Report Date: 06/10/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 05 Batch: WG1507672-3 WG1507672-4								
p-Ethyltoluene	85		84		70-130	1		30
1,2,4,5-Tetramethylbenzene	85		85		70-130	0		30
Ethyl ether	82		84		67-130	2		30
trans-1,4-Dichloro-2-butene	88		90		70-130	2		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	95		96		70-130
Toluene-d8	100		99		70-130
4-Bromofluorobenzene	98		97		70-130
Dibromofluoromethane	99		98		70-130

SEMIVOLATILES

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2128321
Report Date: 06/10/21

SAMPLE RESULTS

Lab ID: L2128321-02
Client ID: B-4 (5'-15')
Sample Location: RYE LAKE WFP

Date Collected: 05/27/21 10:10
Date Received: 05/27/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D
Analytical Date: 06/09/21 12:54
Analyst: JG
Percent Solids: 91%

Extraction Method: EPA 3546
Extraction Date: 06/08/21 23:54

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Acenaphthene	ND		ug/kg	140	19.	1
1,2,4-Trichlorobenzene	ND		ug/kg	180	21.	1
Hexachlorobenzene	ND		ug/kg	110	20.	1
Bis(2-chloroethyl)ether	ND		ug/kg	160	24.	1
2-Chloronaphthalene	ND		ug/kg	180	18.	1
1,2-Dichlorobenzene	ND		ug/kg	180	32.	1
1,3-Dichlorobenzene	ND		ug/kg	180	31.	1
1,4-Dichlorobenzene	ND		ug/kg	180	32.	1
3,3'-Dichlorobenzidine	ND		ug/kg	180	48.	1
2,4-Dinitrotoluene	ND		ug/kg	180	36.	1
2,6-Dinitrotoluene	ND		ug/kg	180	31.	1
Fluoranthene	ND		ug/kg	110	21.	1
4-Chlorophenyl phenyl ether	ND		ug/kg	180	19.	1
4-Bromophenyl phenyl ether	ND		ug/kg	180	28.	1
Bis(2-chloroisopropyl)ether	ND		ug/kg	220	31.	1
Bis(2-chloroethoxy)methane	ND		ug/kg	200	18.	1
Hexachlorobutadiene	ND		ug/kg	180	26.	1
Hexachlorocyclopentadiene	ND		ug/kg	520	160	1
Hexachloroethane	ND		ug/kg	140	29.	1
Isophorone	ND		ug/kg	160	24.	1
Naphthalene	ND		ug/kg	180	22.	1
Nitrobenzene	ND		ug/kg	160	27.	1
NDPA/DPA	ND		ug/kg	140	21.	1
n-Nitrosodi-n-propylamine	ND		ug/kg	180	28.	1
Bis(2-ethylhexyl)phthalate	ND		ug/kg	180	63.	1
Butyl benzyl phthalate	ND		ug/kg	180	46.	1
Di-n-butylphthalate	ND		ug/kg	180	34.	1
Di-n-octylphthalate	ND		ug/kg	180	62.	1

Project Name: RYE LAKE WFP **Lab Number:** L2128321

Project Number: 41.0162892.00 **Report Date:** 06/10/21

SAMPLE RESULTS

Lab ID: L2128321-02 Date Collected: 05/27/21 10:10

Client ID: B-4 (5'-15') Date Received: 05/27/21

Sample Location: RYE LAKE WFP Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Diethyl phthalate	ND		ug/kg	180	17.	1
Dimethyl phthalate	ND		ug/kg	180	38.	1
Benzo(a)anthracene	ND		ug/kg	110	20.	1
Benzo(a)pyrene	ND		ug/kg	140	44.	1
Benzo(b)fluoranthene	ND		ug/kg	110	30.	1
Benzo(k)fluoranthene	ND		ug/kg	110	29.	1
Chrysene	ND		ug/kg	110	19.	1
Acenaphthylene	ND		ug/kg	140	28.	1
Anthracene	ND		ug/kg	110	35.	1
Benzo(ghi)perylene	ND		ug/kg	140	21.	1
Fluorene	ND		ug/kg	180	18.	1
Phenanthrene	ND		ug/kg	110	22.	1
Dibenzo(a,h)anthracene	ND		ug/kg	110	21.	1
Indeno(1,2,3-cd)pyrene	ND		ug/kg	140	25.	1
Pyrene	ND		ug/kg	110	18.	1
Biphenyl	ND		ug/kg	410	42.	1
4-Chloroaniline	ND		ug/kg	180	33.	1
2-Nitroaniline	ND		ug/kg	180	35.	1
3-Nitroaniline	ND		ug/kg	180	34.	1
4-Nitroaniline	ND		ug/kg	180	75.	1
Dibenzofuran	ND		ug/kg	180	17.	1
2-Methylnaphthalene	ND		ug/kg	220	22.	1
1,2,4,5-Tetrachlorobenzene	ND		ug/kg	180	19.	1
Acetophenone	ND		ug/kg	180	22.	1
2,4,6-Trichlorophenol	ND		ug/kg	110	34.	1
p-Chloro-m-cresol	ND		ug/kg	180	27.	1
2-Chlorophenol	ND		ug/kg	180	21.	1
2,4-Dichlorophenol	ND		ug/kg	160	29.	1
2,4-Dimethylphenol	ND		ug/kg	180	60.	1
2-Nitrophenol	ND		ug/kg	390	68.	1
4-Nitrophenol	ND		ug/kg	250	74.	1
2,4-Dinitrophenol	ND		ug/kg	870	84.	1
4,6-Dinitro-o-cresol	ND		ug/kg	470	87.	1
Pentachlorophenol	ND		ug/kg	140	40.	1
Phenol	ND		ug/kg	180	27.	1
2-Methylphenol	ND		ug/kg	180	28.	1
3-Methylphenol/4-Methylphenol	ND		ug/kg	260	28.	1

Project Name: RYE LAKE WFP
Lab Number: L2128321
Project Number: 41.0162892.00
Report Date: 06/10/21

SAMPLE RESULTS

Lab ID: L2128321-02
Client ID: B-4 (5'-15')
Sample Location: RYE LAKE WFP
Date Collected: 05/27/21 10:10
Date Received: 05/27/21
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
2,4,5-Trichlorophenol	ND		ug/kg	180	35.	1
Benzoic Acid	ND		ug/kg	590	180	1
Benzyl Alcohol	ND		ug/kg	180	55.	1
Carbazole	ND		ug/kg	180	18.	1
1,4-Dioxane	ND		ug/kg	27	8.3	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	76		25-120
Phenol-d6	84		10-120
Nitrobenzene-d5	83		23-120
2-Fluorobiphenyl	80		30-120
2,4,6-Tribromophenol	113		10-136
4-Terphenyl-d14	70		18-120

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2128321
Report Date: 06/10/21

SAMPLE RESULTS

Lab ID: L2128321-06
Client ID: B-1 (5'-15')
Sample Location: RYE LAKE WFP

Date Collected: 05/27/21 10:40
Date Received: 05/27/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D
Analytical Date: 06/09/21 13:16
Analyst: JG
Percent Solids: 91%

Extraction Method: EPA 3546
Extraction Date: 06/08/21 23:54

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Acenaphthene	ND		ug/kg	140	19.	1
1,2,4-Trichlorobenzene	ND		ug/kg	180	21.	1
Hexachlorobenzene	ND		ug/kg	110	20.	1
Bis(2-chloroethyl)ether	ND		ug/kg	160	25.	1
2-Chloronaphthalene	ND		ug/kg	180	18.	1
1,2-Dichlorobenzene	ND		ug/kg	180	33.	1
1,3-Dichlorobenzene	ND		ug/kg	180	31.	1
1,4-Dichlorobenzene	ND		ug/kg	180	32.	1
3,3'-Dichlorobenzidine	ND		ug/kg	180	48.	1
2,4-Dinitrotoluene	ND		ug/kg	180	36.	1
2,6-Dinitrotoluene	ND		ug/kg	180	31.	1
Fluoranthene	ND		ug/kg	110	21.	1
4-Chlorophenyl phenyl ether	ND		ug/kg	180	19.	1
4-Bromophenyl phenyl ether	ND		ug/kg	180	28.	1
Bis(2-chloroisopropyl)ether	ND		ug/kg	220	31.	1
Bis(2-chloroethoxy)methane	ND		ug/kg	200	18.	1
Hexachlorobutadiene	ND		ug/kg	180	26.	1
Hexachlorocyclopentadiene	ND		ug/kg	520	160	1
Hexachloroethane	ND		ug/kg	140	29.	1
Isophorone	ND		ug/kg	160	24.	1
Naphthalene	ND		ug/kg	180	22.	1
Nitrobenzene	ND		ug/kg	160	27.	1
NDPA/DPA	ND		ug/kg	140	21.	1
n-Nitrosodi-n-propylamine	ND		ug/kg	180	28.	1
Bis(2-ethylhexyl)phthalate	ND		ug/kg	180	63.	1
Butyl benzyl phthalate	ND		ug/kg	180	46.	1
Di-n-butylphthalate	ND		ug/kg	180	34.	1
Di-n-octylphthalate	ND		ug/kg	180	62.	1

Project Name: RYE LAKE WFP **Lab Number:** L2128321

Project Number: 41.0162892.00 **Report Date:** 06/10/21

SAMPLE RESULTS

Lab ID: L2128321-06 Date Collected: 05/27/21 10:40

Client ID: B-1 (5'-15') Date Received: 05/27/21

Sample Location: RYE LAKE WFP Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Diethyl phthalate	ND		ug/kg	180	17.	1
Dimethyl phthalate	ND		ug/kg	180	38.	1
Benzo(a)anthracene	ND		ug/kg	110	20.	1
Benzo(a)pyrene	ND		ug/kg	140	44.	1
Benzo(b)fluoranthene	ND		ug/kg	110	30.	1
Benzo(k)fluoranthene	ND		ug/kg	110	29.	1
Chrysene	ND		ug/kg	110	19.	1
Acenaphthylene	ND		ug/kg	140	28.	1
Anthracene	ND		ug/kg	110	35.	1
Benzo(ghi)perylene	ND		ug/kg	140	21.	1
Fluorene	ND		ug/kg	180	18.	1
Phenanthrene	ND		ug/kg	110	22.	1
Dibenzo(a,h)anthracene	ND		ug/kg	110	21.	1
Indeno(1,2,3-cd)pyrene	ND		ug/kg	140	25.	1
Pyrene	ND		ug/kg	110	18.	1
Biphenyl	ND		ug/kg	410	42.	1
4-Chloroaniline	ND		ug/kg	180	33.	1
2-Nitroaniline	ND		ug/kg	180	35.	1
3-Nitroaniline	ND		ug/kg	180	34.	1
4-Nitroaniline	ND		ug/kg	180	75.	1
Dibenzofuran	ND		ug/kg	180	17.	1
2-Methylnaphthalene	ND		ug/kg	220	22.	1
1,2,4,5-Tetrachlorobenzene	ND		ug/kg	180	19.	1
Acetophenone	ND		ug/kg	180	22.	1
2,4,6-Trichlorophenol	ND		ug/kg	110	34.	1
p-Chloro-m-cresol	ND		ug/kg	180	27.	1
2-Chlorophenol	ND		ug/kg	180	21.	1
2,4-Dichlorophenol	ND		ug/kg	160	29.	1
2,4-Dimethylphenol	ND		ug/kg	180	60.	1
2-Nitrophenol	ND		ug/kg	390	68.	1
4-Nitrophenol	ND		ug/kg	250	74.	1
2,4-Dinitrophenol	ND		ug/kg	870	85.	1
4,6-Dinitro-o-cresol	ND		ug/kg	470	87.	1
Pentachlorophenol	ND		ug/kg	140	40.	1
Phenol	ND		ug/kg	180	27.	1
2-Methylphenol	ND		ug/kg	180	28.	1
3-Methylphenol/4-Methylphenol	ND		ug/kg	260	28.	1

Project Name: RYE LAKE WFP
Lab Number: L2128321
Project Number: 41.0162892.00
Report Date: 06/10/21

SAMPLE RESULTS

Lab ID: L2128321-06
Client ID: B-1 (5'-15')
Sample Location: RYE LAKE WFP
Date Collected: 05/27/21 10:40
Date Received: 05/27/21
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
2,4,5-Trichlorophenol	ND		ug/kg	180	35.	1
Benzoic Acid	ND		ug/kg	590	180	1
Benzyl Alcohol	ND		ug/kg	180	56.	1
Carbazole	ND		ug/kg	180	18.	1
1,4-Dioxane	ND		ug/kg	27	8.4	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	103		25-120
Phenol-d6	106		10-120
Nitrobenzene-d5	107		23-120
2-Fluorobiphenyl	95		30-120
2,4,6-Tribromophenol	121		10-136
4-Terphenyl-d14	75		18-120

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2128321
Report Date: 06/10/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 06/09/21 11:03
Analyst: EK

Extraction Method: EPA 3546
Extraction Date: 06/08/21 23:54

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 02,06 Batch: WG1509399-1					
Acenaphthene	ND		ug/kg	130	17.
1,2,4-Trichlorobenzene	ND		ug/kg	160	19.
Hexachlorobenzene	ND		ug/kg	98	18.
Bis(2-chloroethyl)ether	ND		ug/kg	150	22.
2-Chloronaphthalene	ND		ug/kg	160	16.
1,2-Dichlorobenzene	ND		ug/kg	160	29.
1,3-Dichlorobenzene	ND		ug/kg	160	28.
1,4-Dichlorobenzene	ND		ug/kg	160	28.
3,3'-Dichlorobenzidine	ND		ug/kg	160	43.
2,4-Dinitrotoluene	ND		ug/kg	160	33.
2,6-Dinitrotoluene	ND		ug/kg	160	28.
Fluoranthene	ND		ug/kg	98	19.
4-Chlorophenyl phenyl ether	ND		ug/kg	160	17.
4-Bromophenyl phenyl ether	ND		ug/kg	160	25.
Bis(2-chloroisopropyl)ether	ND		ug/kg	200	28.
Bis(2-chloroethoxy)methane	ND		ug/kg	180	16.
Hexachlorobutadiene	ND		ug/kg	160	24.
Hexachlorocyclopentadiene	ND		ug/kg	470	150
Hexachloroethane	ND		ug/kg	130	26.
Isophorone	ND		ug/kg	150	21.
Naphthalene	ND		ug/kg	160	20.
Nitrobenzene	ND		ug/kg	150	24.
NDPA/DPA	ND		ug/kg	130	18.
n-Nitrosodi-n-propylamine	ND		ug/kg	160	25.
Bis(2-ethylhexyl)phthalate	ND		ug/kg	160	56.
Butyl benzyl phthalate	ND		ug/kg	160	41.
Di-n-butylphthalate	ND		ug/kg	160	31.
Di-n-octylphthalate	ND		ug/kg	160	56.
Diethyl phthalate	ND		ug/kg	160	15.

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2128321
Report Date: 06/10/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 06/09/21 11:03
Analyst: EK

Extraction Method: EPA 3546
Extraction Date: 06/08/21 23:54

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 02,06 Batch: WG1509399-1					
Dimethyl phthalate	ND		ug/kg	160	34.
Benzo(a)anthracene	ND		ug/kg	98	18.
Benzo(a)pyrene	ND		ug/kg	130	40.
Benzo(b)fluoranthene	ND		ug/kg	98	27.
Benzo(k)fluoranthene	ND		ug/kg	98	26.
Chrysene	ND		ug/kg	98	17.
Acenaphthylene	ND		ug/kg	130	25.
Anthracene	ND		ug/kg	98	32.
Benzo(ghi)perylene	ND		ug/kg	130	19.
Fluorene	ND		ug/kg	160	16.
Phenanthrene	ND		ug/kg	98	20.
Dibenzo(a,h)anthracene	ND		ug/kg	98	19.
Indeno(1,2,3-cd)pyrene	ND		ug/kg	130	23.
Pyrene	ND		ug/kg	98	16.
Biphenyl	ND		ug/kg	370	38.
4-Chloroaniline	ND		ug/kg	160	30.
2-Nitroaniline	ND		ug/kg	160	31.
3-Nitroaniline	ND		ug/kg	160	31.
4-Nitroaniline	ND		ug/kg	160	68.
Dibenzofuran	ND		ug/kg	160	15.
2-Methylnaphthalene	ND		ug/kg	200	20.
1,2,4,5-Tetrachlorobenzene	ND		ug/kg	160	17.
Acetophenone	ND		ug/kg	160	20.
2,4,6-Trichlorophenol	ND		ug/kg	98	31.
p-Chloro-m-cresol	ND		ug/kg	160	24.
2-Chlorophenol	ND		ug/kg	160	19.
2,4-Dichlorophenol	ND		ug/kg	150	26.
2,4-Dimethylphenol	ND		ug/kg	160	54.
2-Nitrophenol	ND		ug/kg	350	61.

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2128321
Report Date: 06/10/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 06/09/21 11:03
Analyst: EK

Extraction Method: EPA 3546
Extraction Date: 06/08/21 23:54

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 02,06 Batch: WG1509399-1					
4-Nitrophenol	ND		ug/kg	230	67.
2,4-Dinitrophenol	ND		ug/kg	780	76.
4,6-Dinitro-o-cresol	ND		ug/kg	420	78.
Pentachlorophenol	ND		ug/kg	130	36.
Phenol	ND		ug/kg	160	25.
2-Methylphenol	ND		ug/kg	160	25.
3-Methylphenol/4-Methylphenol	ND		ug/kg	240	26.
2,4,5-Trichlorophenol	ND		ug/kg	160	31.
Benzoic Acid	ND		ug/kg	530	160
Benzyl Alcohol	ND		ug/kg	160	50.
Carbazole	ND		ug/kg	160	16.
1,4-Dioxane	ND		ug/kg	24	7.5

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	65		25-120
Phenol-d6	72		10-120
Nitrobenzene-d5	74		23-120
2-Fluorobiphenyl	76		30-120
2,4,6-Tribromophenol	94		10-136
4-Terphenyl-d14	95		18-120

Lab Control Sample Analysis

Batch Quality Control

Project Name: RYE LAKE WFP

Project Number: 41.0162892.00

Lab Number: L2128321

Report Date: 06/10/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 02,06 Batch: WG1509399-2 WG1509399-3								
Acenaphthene	97		96		31-137	1		50
1,2,4-Trichlorobenzene	94		96		38-107	2		50
Hexachlorobenzene	102		101		40-140	1		50
Bis(2-chloroethyl)ether	86		88		40-140	2		50
2-Chloronaphthalene	98		97		40-140	1		50
1,2-Dichlorobenzene	86		89		40-140	3		50
1,3-Dichlorobenzene	81		87		40-140	7		50
1,4-Dichlorobenzene	83		88		28-104	6		50
3,3'-Dichlorobenzidine	102		100		40-140	2		50
2,4-Dinitrotoluene	116		115		40-132	1		50
2,6-Dinitrotoluene	105		101		40-140	4		50
Fluoranthene	105		102		40-140	3		50
4-Chlorophenyl phenyl ether	102		97		40-140	5		50
4-Bromophenyl phenyl ether	104		100		40-140	4		50
Bis(2-chloroisopropyl)ether	122		124		40-140	2		50
Bis(2-chloroethoxy)methane	97		97		40-117	0		50
Hexachlorobutadiene	91		89		40-140	2		50
Hexachlorocyclopentadiene	75		74		40-140	1		50
Hexachloroethane	86		91		40-140	6		50
Isophorone	114		115		40-140	1		50
Naphthalene	91		90		40-140	1		50
Nitrobenzene	106		108		40-140	2		50
NDPA/DPA	105		102		36-157	3		50

Lab Control Sample Analysis

Batch Quality Control

Project Name: RYE LAKE WFP

Project Number: 41.0162892.00

Lab Number: L2128321

Report Date: 06/10/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 02,06 Batch: WG1509399-2 WG1509399-3								
n-Nitrosodi-n-propylamine	110		110		32-121	0		50
Bis(2-ethylhexyl)phthalate	121		118		40-140	3		50
Butyl benzyl phthalate	118		114		40-140	3		50
Di-n-butylphthalate	120		114		40-140	5		50
Di-n-octylphthalate	109		108		40-140	1		50
Diethyl phthalate	109		106		40-140	3		50
Dimethyl phthalate	108		104		40-140	4		50
Benzo(a)anthracene	109		104		40-140	5		50
Benzo(a)pyrene	109		106		40-140	3		50
Benzo(b)fluoranthene	106		103		40-140	3		50
Benzo(k)fluoranthene	107		105		40-140	2		50
Chrysene	104		101		40-140	3		50
Acenaphthylene	105		103		40-140	2		50
Anthracene	104		101		40-140	3		50
Benzo(ghi)perylene	103		101		40-140	2		50
Fluorene	99		96		40-140	3		50
Phenanthrene	101		98		40-140	3		50
Dibenzo(a,h)anthracene	104		101		40-140	3		50
Indeno(1,2,3-cd)pyrene	105		103		40-140	2		50
Pyrene	103		100		35-142	3		50
Biphenyl	94		91		37-127	3		50
4-Chloroaniline	98		92		40-140	6		50
2-Nitroaniline	121		118		47-134	3		50

Lab Control Sample Analysis
Batch Quality Control

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2128321
Report Date: 06/10/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 02,06 Batch: WG1509399-2 WG1509399-3								
3-Nitroaniline	96		95		26-129	1		50
4-Nitroaniline	104		103		41-125	1		50
Dibenzofuran	98		98		40-140	0		50
2-Methylnaphthalene	97		95		40-140	2		50
1,2,4,5-Tetrachlorobenzene	91		89		40-117	2		50
Acetophenone	96		98		14-144	2		50
2,4,6-Trichlorophenol	104		103		30-130	1		50
p-Chloro-m-cresol	**110**	Q	**108**	Q	26-103	2		50
2-Chlorophenol	95		96		25-102	1		50
2,4-Dichlorophenol	106		108		30-130	2		50
2,4-Dimethylphenol	106		109		30-130	3		50
2-Nitrophenol	111		110		30-130	1		50
4-Nitrophenol	**120**	Q	**115**	Q	11-114	4		50
2,4-Dinitrophenol	78		71		4-130	9		50
4,6-Dinitro-o-cresol	99		93		10-130	6		50
Pentachlorophenol	85		79		17-109	7		50
Phenol	**92**	Q	**94**	Q	26-90	2		50
2-Methylphenol	102		104		30-130.	2		50
3-Methylphenol/4-Methylphenol	102		103		30-130	1		50
2,4,5-Trichlorophenol	107		100		30-130	7		50
Benzoic Acid	32		34		10-110	6		50
Benzyl Alcohol	109		113		40-140	4		50
Carbazole	106		103		54-128	3		50

Lab Control Sample Analysis

Batch Quality Control

Project Name: RYE LAKE WFP

Project Number: 41.0162892.00

Lab Number: L2128321

Report Date: 06/10/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 02,06 Batch: WG1509399-2 WG1509399-3								
1,4-Dioxane	52		65		40-140	22		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	90		91		25-120
Phenol-d6	95		98		10-120
Nitrobenzene-d5	102		102		23-120
2-Fluorobiphenyl	94		94		30-120
2,4,6-Tribromophenol	106		103		10-136
4-Terphenyl-d14	99		98		18-120

PCBS

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2128321
Report Date: 06/10/21

SAMPLE RESULTS

Lab ID: L2128321-02
Client ID: B-4 (5'-15')
Sample Location: RYE LAKE WFP

Date Collected: 05/27/21 10:10
Date Received: 05/27/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8082A
Analytical Date: 06/07/21 19:46
Analyst: CW
Percent Solids: 91%

Extraction Method: EPA 3546
Extraction Date: 06/07/21 08:17
Cleanup Method: EPA 3665A
Cleanup Date: 06/07/21
Cleanup Method: EPA 3660B
Cleanup Date: 06/07/21

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Polychlorinated Biphenyls by GC - Westborough Lab							
Aroclor 1016	ND		ug/kg	36.3	3.22	1	A
Aroclor 1221	ND		ug/kg	36.3	3.64	1	A
Aroclor 1232	ND		ug/kg	36.3	7.70	1	A
Aroclor 1242	ND		ug/kg	36.3	4.89	1	A
Aroclor 1248	ND		ug/kg	36.3	5.45	1	A
Aroclor 1254	ND		ug/kg	36.3	3.97	1	A
Aroclor 1260	ND		ug/kg	36.3	6.71	1	A
Aroclor 1262	ND		ug/kg	36.3	4.61	1	A
Aroclor 1268	ND		ug/kg	36.3	3.76	1	A
PCBs, Total	ND		ug/kg	36.3	3.22	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	47		30-150	A
Decachlorobiphenyl	48		30-150	A
2,4,5,6-Tetrachloro-m-xylene	50		30-150	B
Decachlorobiphenyl	55		30-150	B

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2128321
Report Date: 06/10/21

SAMPLE RESULTS

Lab ID: L2128321-06
Client ID: B-1 (5'-15')
Sample Location: RYE LAKE WFP

Date Collected: 05/27/21 10:40
Date Received: 05/27/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8082A
Analytical Date: 06/07/21 19:53
Analyst: CW
Percent Solids: 91%

Extraction Method: EPA 3546
Extraction Date: 06/07/21 08:17
Cleanup Method: EPA 3665A
Cleanup Date: 06/07/21
Cleanup Method: EPA 3660B
Cleanup Date: 06/07/21

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Polychlorinated Biphenyls by GC - Westborough Lab							
Aroclor 1016	ND		ug/kg	35.1	3.12	1	A
Aroclor 1221	ND		ug/kg	35.1	3.52	1	A
Aroclor 1232	ND		ug/kg	35.1	7.44	1	A
Aroclor 1242	ND		ug/kg	35.1	4.73	1	A
Aroclor 1248	ND		ug/kg	35.1	5.26	1	A
Aroclor 1254	ND		ug/kg	35.1	3.84	1	A
Aroclor 1260	ND		ug/kg	35.1	6.49	1	A
Aroclor 1262	ND		ug/kg	35.1	4.46	1	A
Aroclor 1268	ND		ug/kg	35.1	3.64	1	A
PCBs, Total	ND		ug/kg	35.1	3.12	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	51		30-150	A
Decachlorobiphenyl	56		30-150	A
2,4,5,6-Tetrachloro-m-xylene	54		30-150	B
Decachlorobiphenyl	61		30-150	B

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2128321
Report Date: 06/10/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8082A
Analytical Date: 06/07/21 20:08
Analyst: CW

Extraction Method: EPA 3546
Extraction Date: 06/07/21 04:23
Cleanup Method: EPA 3665A
Cleanup Date: 06/07/21
Cleanup Method: EPA 3660B
Cleanup Date: 06/07/21

Parameter	Result	Qualifier	Units	RL	MDL	Column
Polychlorinated Biphenyls by GC - Westborough Lab for sample(s): 02,06 Batch: WG1508314-1						
Aroclor 1016	ND		ug/kg	31.7	2.82	A
Aroclor 1221	ND		ug/kg	31.7	3.18	A
Aroclor 1232	ND		ug/kg	31.7	6.73	A
Aroclor 1242	ND		ug/kg	31.7	4.28	A
Aroclor 1248	ND		ug/kg	31.7	4.76	A
Aroclor 1254	ND		ug/kg	31.7	3.47	A
Aroclor 1260	ND		ug/kg	31.7	5.87	A
Aroclor 1262	ND		ug/kg	31.7	4.03	A
Aroclor 1268	ND		ug/kg	31.7	3.29	A
PCBs, Total	ND		ug/kg	31.7	2.82	A

Surrogate	%Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	65		30-150	A
Decachlorobiphenyl	70		30-150	A
2,4,5,6-Tetrachloro-m-xylene	69		30-150	B
Decachlorobiphenyl	78		30-150	B

Lab Control Sample Analysis

Batch Quality Control

Project Name: RYE LAKE WFP

Project Number: 41.0162892.00

Lab Number: L2128321

Report Date: 06/10/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
Polychlorinated Biphenyls by GC - Westborough Lab Associated sample(s): 02,06 Batch: WG1508314-2 WG1508314-3									
Aroclor 1016	82		80		40-140	2		50	A
Aroclor 1260	83		83		40-140	0		50	A

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	73		71		30-150	A
Decachlorobiphenyl	80		80		30-150	A
2,4,5,6-Tetrachloro-m-xylene	77		76		30-150	B
Decachlorobiphenyl	87		87		30-150	B

PESTICIDES

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2128321
Report Date: 06/10/21

SAMPLE RESULTS

Lab ID: L2128321-02
Client ID: B-4 (5'-15')
Sample Location: RYE LAKE WFP

Date Collected: 05/27/21 10:10
Date Received: 05/27/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8081B
Analytical Date: 06/08/21 10:38
Analyst: JMC
Percent Solids: 91%

Extraction Method: EPA 3546
Extraction Date: 06/07/21 13:26
Cleanup Method: EPA 3620B
Cleanup Date: 06/08/21

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Organochlorine Pesticides by GC - Westborough Lab							
Delta-BHC	ND		ug/kg	1.76	0.344	1	A
Lindane	ND		ug/kg	0.733	0.328	1	A
Alpha-BHC	ND		ug/kg	0.733	0.208	1	A
Beta-BHC	ND		ug/kg	1.76	0.667	1	A
Heptachlor	ND		ug/kg	0.879	0.394	1	A
Aldrin	ND		ug/kg	1.76	0.619	1	A
Heptachlor epoxide	ND		ug/kg	3.30	0.989	1	A
Endrin	ND		ug/kg	0.733	0.300	1	A
Endrin aldehyde	ND		ug/kg	2.20	0.770	1	A
Endrin ketone	ND		ug/kg	1.76	0.453	1	A
Dieldrin	ND		ug/kg	1.10	0.550	1	A
4,4'-DDE	ND		ug/kg	1.76	0.407	1	A
4,4'-DDD	ND		ug/kg	1.76	0.627	1	A
4,4'-DDT	ND		ug/kg	3.30	1.41	1	A
Endosulfan I	ND		ug/kg	1.76	0.416	1	A
Endosulfan II	ND		ug/kg	1.76	0.588	1	A
Endosulfan sulfate	ND		ug/kg	0.733	0.349	1	A
Methoxychlor	ND		ug/kg	3.30	1.03	1	A
Toxaphene	ND		ug/kg	33.0	9.23	1	A
cis-Chlordane	ND		ug/kg	2.20	0.613	1	A
trans-Chlordane	ND		ug/kg	2.20	0.580	1	A
Chlordane	ND		ug/kg	14.6	5.83	1	A

Project Name: RYE LAKE WFP **Lab Number:** L2128321

Project Number: 41.0162892.00 **Report Date:** 06/10/21

SAMPLE RESULTS

Lab ID: L2128321-02 Date Collected: 05/27/21 10:10

Client ID: B-4 (5'-15') Date Received: 05/27/21

Sample Location: RYE LAKE WFP Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Organochlorine Pesticides by GC - Westborough Lab							

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	66		30-150	A
Decachlorobiphenyl	73		30-150	A
2,4,5,6-Tetrachloro-m-xylene	64		30-150	B
Decachlorobiphenyl	74		30-150	B

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2128321
Report Date: 06/10/21

SAMPLE RESULTS

Lab ID: L2128321-06
Client ID: B-1 (5'-15')
Sample Location: RYE LAKE WFP

Date Collected: 05/27/21 10:40
Date Received: 05/27/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8081B
Analytical Date: 06/08/21 10:50
Analyst: JMC
Percent Solids: 91%

Extraction Method: EPA 3546
Extraction Date: 06/07/21 13:26
Cleanup Method: EPA 3620B
Cleanup Date: 06/08/21

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Organochlorine Pesticides by GC - Westborough Lab							
Delta-BHC	ND		ug/kg	1.74	0.341	1	A
Lindane	ND		ug/kg	0.726	0.324	1	A
Alpha-BHC	ND		ug/kg	0.726	0.206	1	A
Beta-BHC	ND		ug/kg	1.74	0.661	1	A
Heptachlor	ND		ug/kg	0.871	0.391	1	A
Aldrin	ND		ug/kg	1.74	0.614	1	A
Heptachlor epoxide	ND		ug/kg	3.27	0.980	1	A
Endrin	ND		ug/kg	0.726	0.298	1	A
Endrin aldehyde	ND		ug/kg	2.18	0.762	1	A
Endrin ketone	ND		ug/kg	1.74	0.449	1	A
Dieldrin	ND		ug/kg	1.09	0.545	1	A
4,4'-DDE	ND		ug/kg	1.74	0.403	1	A
4,4'-DDD	ND		ug/kg	1.74	0.622	1	A
4,4'-DDT	ND		ug/kg	3.27	1.40	1	A
Endosulfan I	ND		ug/kg	1.74	0.412	1	A
Endosulfan II	ND		ug/kg	1.74	0.582	1	A
Endosulfan sulfate	ND		ug/kg	0.726	0.346	1	A
Methoxychlor	ND		ug/kg	3.27	1.02	1	A
Toxaphene	ND		ug/kg	32.7	9.15	1	A
cis-Chlordane	ND		ug/kg	2.18	0.607	1	A
trans-Chlordane	ND		ug/kg	2.18	0.575	1	A
Chlordane	ND		ug/kg	14.5	5.77	1	A

Project Name: RYE LAKE WFP **Lab Number:** L2128321

Project Number: 41.0162892.00 **Report Date:** 06/10/21

SAMPLE RESULTS

Lab ID: L2128321-06 Date Collected: 05/27/21 10:40

Client ID: B-1 (5'-15') Date Received: 05/27/21

Sample Location: RYE LAKE WFP Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Organochlorine Pesticides by GC - Westborough Lab							

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	65		30-150	A
Decachlorobiphenyl	89		30-150	A
2,4,5,6-Tetrachloro-m-xylene	66		30-150	B
Decachlorobiphenyl	85		30-150	B

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2128321
Report Date: 06/10/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8081B
Analytical Date: 06/08/21 10:06
Analyst: JMC

Extraction Method: EPA 3546
Extraction Date: 06/07/21 13:26
Cleanup Method: EPA 3620B
Cleanup Date: 06/08/21

Parameter	Result	Qualifier	Units	RL	MDL	Column
Organochlorine Pesticides by GC - Westborough Lab for sample(s): 02,06 Batch: WG1508551-1						
Delta-BHC	ND		ug/kg	1.57	0.308	A
Lindane	ND		ug/kg	0.655	0.293	A
Alpha-BHC	ND		ug/kg	0.655	0.186	A
Beta-BHC	ND		ug/kg	1.57	0.596	A
Heptachlor	ND		ug/kg	0.786	0.352	A
Aldrin	ND		ug/kg	1.57	0.554	A
Heptachlor epoxide	ND		ug/kg	2.95	0.885	A
Endrin	ND		ug/kg	0.655	0.269	A
Endrin aldehyde	ND		ug/kg	1.96	0.688	A
Endrin ketone	ND		ug/kg	1.57	0.405	A
Dieldrin	ND		ug/kg	0.983	0.491	A
4,4'-DDE	ND		ug/kg	1.57	0.364	A
4,4'-DDD	ND		ug/kg	1.57	0.561	A
4,4'-DDT	ND		ug/kg	2.95	1.26	A
Endosulfan I	ND		ug/kg	1.57	0.372	A
Endosulfan II	ND		ug/kg	1.57	0.526	A
Endosulfan sulfate	ND		ug/kg	0.655	0.312	A
Methoxychlor	ND		ug/kg	2.95	0.917	A
Toxaphene	ND		ug/kg	29.5	8.26	A
cis-Chlordane	ND		ug/kg	1.96	0.548	A
trans-Chlordane	ND		ug/kg	1.96	0.519	A
Chlordane	ND		ug/kg	13.1	5.21	A

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2128321
Report Date: 06/10/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8081B
Analytical Date: 06/08/21 10:06
Analyst: JMC

Extraction Method: EPA 3546
Extraction Date: 06/07/21 13:26
Cleanup Method: EPA 3620B
Cleanup Date: 06/08/21

Parameter	Result	Qualifier	Units	RL	MDL	Column
Organochlorine Pesticides by GC - Westborough Lab for sample(s): 02,06 Batch: WG1508551-1						

Surrogate	%Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	64		30-150	A
Decachlorobiphenyl	72		30-150	A
2,4,5,6-Tetrachloro-m-xylene	65		30-150	B
Decachlorobiphenyl	69		30-150	B

Lab Control Sample Analysis

Batch Quality Control

Project Name: RYE LAKE WFP

Project Number: 41.0162892.00

Lab Number: L2128321

Report Date: 06/10/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
Organochlorine Pesticides by GC - Westborough Lab Associated sample(s): 02,06 Batch: WG1508551-2 WG1508551-3									
Delta-BHC	83		74		30-150	11		30	A
Lindane	80		73		30-150	9		30	A
Alpha-BHC	82		76		30-150	8		30	A
Beta-BHC	70		70		30-150	0		30	A
Heptachlor	78		70		30-150	11		30	A
Aldrin	80		70		30-150	13		30	A
Heptachlor epoxide	78		65		30-150	18		30	A
Endrin	80		66		30-150	19		30	A
Endrin aldehyde	61		52		30-150	16		30	A
Endrin ketone	82		67		30-150	20		30	A
Dieldrin	86		71		30-150	19		30	A
4,4'-DDE	76		65		30-150	16		30	A
4,4'-DDD	84		68		30-150	21		30	A
4,4'-DDT	86		65		30-150	28		30	A
Endosulfan I	71		62		30-150	14		30	A
Endosulfan II	81		65		30-150	22		30	A
Endosulfan sulfate	71		54		30-150	27		30	A
Methoxychlor	88		71		30-150	21		30	A
cis-Chlordane	63		57		30-150	10		30	A
trans-Chlordane	80		71		30-150	12		30	A

Lab Control Sample Analysis

Batch Quality Control

Project Name: RYE LAKE WFP

Project Number: 41.0162892.00

Lab Number: L2128321

Report Date: 06/10/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Organochlorine Pesticides by GC - Westborough Lab Associated sample(s): 02,06 Batch: WG1508551-2 WG1508551-3								

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	65		62		30-150	A
Decachlorobiphenyl	88		65		30-150	A
2,4,5,6-Tetrachloro-m-xylene	67		66		30-150	B
Decachlorobiphenyl	81		72		30-150	B

METALS

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2128321
Report Date: 06/10/21

SAMPLE RESULTS

Lab ID: L2128321-02
Client ID: B-4 (5'-15')
Sample Location: RYE LAKE WFP
Date Collected: 05/27/21 10:10
Date Received: 05/27/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 91%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Aluminum, Total	6700		mg/kg	8.48	2.29	2	06/03/21 06:55	06/03/21 17:02	EPA 3050B	1,6010D	SV
Antimony, Total	ND		mg/kg	4.24	0.322	2	06/03/21 06:55	06/03/21 17:02	EPA 3050B	1,6010D	SV
Arsenic, Total	1.49		mg/kg	0.848	0.176	2	06/03/21 06:55	06/03/21 17:02	EPA 3050B	1,6010D	SV
Barium, Total	99.9		mg/kg	0.848	0.148	2	06/03/21 06:55	06/03/21 17:02	EPA 3050B	1,6010D	SV
Beryllium, Total	ND		mg/kg	0.424	0.028	2	06/03/21 06:55	06/03/21 17:02	EPA 3050B	1,6010D	SV
Cadmium, Total	0.263	J	mg/kg	0.848	0.083	2	06/03/21 06:55	06/03/21 17:02	EPA 3050B	1,6010D	SV
Calcium, Total	2610		mg/kg	8.48	2.97	2	06/03/21 06:55	06/03/21 17:02	EPA 3050B	1,6010D	SV
Chromium, Total	25.2		mg/kg	0.848	0.081	2	06/03/21 06:55	06/03/21 17:02	EPA 3050B	1,6010D	SV
Cobalt, Total	7.87		mg/kg	1.70	0.141	2	06/03/21 06:55	06/03/21 17:02	EPA 3050B	1,6010D	SV
Copper, Total	13.8		mg/kg	0.848	0.219	2	06/03/21 06:55	06/03/21 17:02	EPA 3050B	1,6010D	SV
Iron, Total	15200		mg/kg	4.24	0.766	2	06/03/21 06:55	06/03/21 17:02	EPA 3050B	1,6010D	SV
Lead, Total	3.90	J	mg/kg	4.24	0.227	2	06/03/21 06:55	06/03/21 17:02	EPA 3050B	1,6010D	SV
Magnesium, Total	3860		mg/kg	8.48	1.31	2	06/03/21 06:55	06/03/21 17:02	EPA 3050B	1,6010D	SV
Manganese, Total	239		mg/kg	0.848	0.135	2	06/03/21 06:55	06/03/21 17:02	EPA 3050B	1,6010D	SV
Mercury, Total	ND		mg/kg	0.070	0.046	1	06/03/21 08:20	06/03/21 19:30	EPA 7471B	1,7471B	NB
Nickel, Total	12.2		mg/kg	2.12	0.205	2	06/03/21 06:55	06/03/21 17:02	EPA 3050B	1,6010D	SV
Potassium, Total	2910		mg/kg	212	12.2	2	06/03/21 06:55	06/03/21 17:02	EPA 3050B	1,6010D	SV
Selenium, Total	ND		mg/kg	1.70	0.219	2	06/03/21 06:55	06/03/21 17:02	EPA 3050B	1,6010D	SV
Silver, Total	ND		mg/kg	0.848	0.240	2	06/03/21 06:55	06/03/21 17:02	EPA 3050B	1,6010D	SV
Sodium, Total	120	J	mg/kg	170	2.67	2	06/03/21 06:55	06/03/21 17:02	EPA 3050B	1,6010D	SV
Thallium, Total	ND		mg/kg	1.70	0.267	2	06/03/21 06:55	06/03/21 17:02	EPA 3050B	1,6010D	SV
Vanadium, Total	29.7		mg/kg	0.848	0.172	2	06/03/21 06:55	06/03/21 17:02	EPA 3050B	1,6010D	SV
Zinc, Total	32.0		mg/kg	4.24	0.248	2	06/03/21 06:55	06/03/21 17:02	EPA 3050B	1,6010D	SV

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2128321
Report Date: 06/10/21

SAMPLE RESULTS

Lab ID: L2128321-06
Client ID: B-1 (5'-15')
Sample Location: RYE LAKE WFP
Sample Depth:
Matrix: Soil
Percent Solids: 91%

Date Collected: 05/27/21 10:40
Date Received: 05/27/21
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Aluminum, Total	5300		mg/kg	8.66	2.34	2	06/03/21 06:55	06/03/21 17:07	EPA 3050B	1,6010D	SV
Antimony, Total	ND		mg/kg	4.33	0.329	2	06/03/21 06:55	06/03/21 17:07	EPA 3050B	1,6010D	SV
Arsenic, Total	0.546	J	mg/kg	0.866	0.180	2	06/03/21 06:55	06/03/21 17:07	EPA 3050B	1,6010D	SV
Barium, Total	82.6		mg/kg	0.866	0.151	2	06/03/21 06:55	06/03/21 17:07	EPA 3050B	1,6010D	SV
Beryllium, Total	ND		mg/kg	0.433	0.029	2	06/03/21 06:55	06/03/21 17:07	EPA 3050B	1,6010D	SV
Cadmium, Total	0.234	J	mg/kg	0.866	0.085	2	06/03/21 06:55	06/03/21 17:07	EPA 3050B	1,6010D	SV
Calcium, Total	4350		mg/kg	8.66	3.03	2	06/03/21 06:55	06/03/21 17:07	EPA 3050B	1,6010D	SV
Chromium, Total	17.0		mg/kg	0.866	0.083	2	06/03/21 06:55	06/03/21 17:07	EPA 3050B	1,6010D	SV
Cobalt, Total	6.57		mg/kg	1.73	0.144	2	06/03/21 06:55	06/03/21 17:07	EPA 3050B	1,6010D	SV
Copper, Total	11.8		mg/kg	0.866	0.223	2	06/03/21 06:55	06/03/21 17:07	EPA 3050B	1,6010D	SV
Iron, Total	12900		mg/kg	4.33	0.782	2	06/03/21 06:55	06/03/21 17:07	EPA 3050B	1,6010D	SV
Lead, Total	4.10	J	mg/kg	4.33	0.232	2	06/03/21 06:55	06/03/21 17:07	EPA 3050B	1,6010D	SV
Magnesium, Total	3830		mg/kg	8.66	1.33	2	06/03/21 06:55	06/03/21 17:07	EPA 3050B	1,6010D	SV
Manganese, Total	153		mg/kg	0.866	0.138	2	06/03/21 06:55	06/03/21 17:07	EPA 3050B	1,6010D	SV
Mercury, Total	ND		mg/kg	0.069	0.045	1	06/03/21 08:20	06/03/21 19:33	EPA 7471B	1,7471B	NB
Nickel, Total	10.4		mg/kg	2.16	0.210	2	06/03/21 06:55	06/03/21 17:07	EPA 3050B	1,6010D	SV
Potassium, Total	2040		mg/kg	216	12.5	2	06/03/21 06:55	06/03/21 17:07	EPA 3050B	1,6010D	SV
Selenium, Total	ND		mg/kg	1.73	0.223	2	06/03/21 06:55	06/03/21 17:07	EPA 3050B	1,6010D	SV
Silver, Total	ND		mg/kg	0.866	0.245	2	06/03/21 06:55	06/03/21 17:07	EPA 3050B	1,6010D	SV
Sodium, Total	123	J	mg/kg	173	2.73	2	06/03/21 06:55	06/03/21 17:07	EPA 3050B	1,6010D	SV
Thallium, Total	ND		mg/kg	1.73	0.273	2	06/03/21 06:55	06/03/21 17:07	EPA 3050B	1,6010D	SV
Vanadium, Total	23.8		mg/kg	0.866	0.176	2	06/03/21 06:55	06/03/21 17:07	EPA 3050B	1,6010D	SV
Zinc, Total	25.7		mg/kg	4.33	0.254	2	06/03/21 06:55	06/03/21 17:07	EPA 3050B	1,6010D	SV

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2128321
Report Date: 06/10/21

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 02,06 Batch: WG1506654-1										
Aluminum, Total	ND		mg/kg	4.00	1.08	1	06/03/21 06:55	06/03/21 14:37	1,6010D	SV
Antimony, Total	ND		mg/kg	2.00	0.152	1	06/03/21 06:55	06/03/21 14:37	1,6010D	SV
Arsenic, Total	ND		mg/kg	0.400	0.083	1	06/03/21 06:55	06/03/21 14:37	1,6010D	SV
Barium, Total	ND		mg/kg	0.400	0.070	1	06/03/21 06:55	06/03/21 14:37	1,6010D	SV
Beryllium, Total	ND		mg/kg	0.200	0.013	1	06/03/21 06:55	06/03/21 14:37	1,6010D	SV
Cadmium, Total	ND		mg/kg	0.400	0.039	1	06/03/21 06:55	06/03/21 14:37	1,6010D	SV
Calcium, Total	1.87	J	mg/kg	4.00	1.40	1	06/03/21 06:55	06/03/21 14:37	1,6010D	SV
Chromium, Total	ND		mg/kg	0.400	0.038	1	06/03/21 06:55	06/03/21 14:37	1,6010D	SV
Cobalt, Total	ND		mg/kg	0.800	0.066	1	06/03/21 06:55	06/03/21 14:37	1,6010D	SV
Copper, Total	ND		mg/kg	0.400	0.103	1	06/03/21 06:55	06/03/21 14:37	1,6010D	SV
Iron, Total	ND		mg/kg	2.00	0.361	1	06/03/21 06:55	06/03/21 14:37	1,6010D	SV
Lead, Total	ND		mg/kg	2.00	0.107	1	06/03/21 06:55	06/03/21 14:37	1,6010D	SV
Magnesium, Total	ND		mg/kg	4.00	0.616	1	06/03/21 06:55	06/03/21 14:37	1,6010D	SV
Manganese, Total	ND		mg/kg	0.400	0.064	1	06/03/21 06:55	06/03/21 14:37	1,6010D	SV
Nickel, Total	ND		mg/kg	1.00	0.097	1	06/03/21 06:55	06/03/21 14:37	1,6010D	SV
Potassium, Total	ND		mg/kg	100	5.76	1	06/03/21 06:55	06/03/21 14:37	1,6010D	SV
Selenium, Total	ND		mg/kg	0.800	0.103	1	06/03/21 06:55	06/03/21 14:37	1,6010D	SV
Silver, Total	ND		mg/kg	0.400	0.113	1	06/03/21 06:55	06/03/21 14:37	1,6010D	SV
Sodium, Total	ND		mg/kg	80.0	1.26	1	06/03/21 06:55	06/03/21 14:37	1,6010D	SV
Thallium, Total	ND		mg/kg	0.800	0.126	1	06/03/21 06:55	06/03/21 14:37	1,6010D	SV
Vanadium, Total	ND		mg/kg	0.400	0.081	1	06/03/21 06:55	06/03/21 14:37	1,6010D	SV
Zinc, Total	ND		mg/kg	2.00	0.117	1	06/03/21 06:55	06/03/21 14:37	1,6010D	SV

Prep Information

Digestion Method: EPA 3050B

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 02,06 Batch: WG1506658-1										
Mercury, Total	ND		mg/kg	0.083	0.054	1	06/03/21 08:20	06/03/21 17:19	1,7471B	NB

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2128321
Report Date: 06/10/21

Method Blank Analysis
Batch Quality Control

Prep Information

Digestion Method: EPA 7471B

Lab Control Sample Analysis

Batch Quality Control

Project Name: RYE LAKE WFP

Project Number: 41.0162892.00

Lab Number: L2128321

Report Date: 06/10/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,06 Batch: WG1506654-2 SRM Lot Number: D109-540								
Aluminum, Total	61		-		50-150	-		
Antimony, Total	134		-		19-250	-		
Arsenic, Total	98		-		70-130	-		
Barium, Total	87		-		75-125	-		
Beryllium, Total	100		-		75-125	-		
Cadmium, Total	110		-		75-125	-		
Calcium, Total	85		-		73-128	-		
Chromium, Total	99		-		70-130	-		
Cobalt, Total	107		-		75-125	-		
Copper, Total	92		-		75-125	-		
Iron, Total	72		-		35-165	-		
Lead, Total	88		-		72-128	-		
Magnesium, Total	78		-		62-138	-		
Manganese, Total	87		-		74-126	-		
Nickel, Total	104		-		70-130	-		
Potassium, Total	76		-		59-141	-		
Selenium, Total	100		-		68-132	-		
Silver, Total	93		-		68-131	-		
Sodium, Total	99		-		35-165	-		
Thallium, Total	104		-		68-131	-		
Vanadium, Total	87		-		59-141	-		

Lab Control Sample Analysis

Batch Quality Control

Project Name: RYE LAKE WFP

Project Number: 41.0162892.00

Lab Number: L2128321

Report Date: 06/10/21

Parameter	LCS %Recovery	LCSD %Recovery	%Recovery Limits	RPD	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,06 Batch: WG1506654-2 SRM Lot Number: D109-540					
Zinc, Total	94	-	70-130	-	
Total Metals - Mansfield Lab Associated sample(s): 02,06 Batch: WG1506658-2 SRM Lot Number: D109-540					
Mercury, Total	88	-	60-140	-	

Matrix Spike Analysis
Batch Quality Control

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2128321
Report Date: 06/10/21

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,06 QC Batch ID: WG1506654-3 QC Sample: L2128962-01 Client ID: MS Sample												
Aluminum, Total	5180	166	5220	**24**	Q	-	-		75-125	-		20
Antimony, Total	ND	41.4	27.4	**66**	Q	-	-		75-125	-		20
Arsenic, Total	4.42	9.94	11.9	75		-	-		75-125	-		20
Barium, Total	33.3	166	162	78		-	-		75-125	-		20
Beryllium, Total	0.190J	4.14	3.61	87		-	-		75-125	-		20
Cadmium, Total	0.271J	4.22	3.52	83		-	-		75-125	-		20
Calcium, Total	5020	828	10900	**710**	Q	-	-		75-125	-		20
Chromium, Total	7.56	16.6	20.5	78		-	-		75-125	-		20
Cobalt, Total	4.74	41.4	35.5	**74**	Q	-	-		75-125	-		20
Copper, Total	12.2	20.7	29.4	83		-	-		75-125	-		20
Iron, Total	13700	82.8	12800	**0**	Q	-	-		75-125	-		20
Lead, Total	5.34	42.2	35.5	**71**	Q	-	-		75-125	-		20
Magnesium, Total	3650	828	3650	**0**	Q	-	-		75-125	-		20
Manganese, Total	478	41.4	477	**0**	Q	-	-		75-125	-		20
Nickel, Total	9.81	41.4	40.1	**73**	Q	-	-		75-125	-		20
Potassium, Total	475	828	1040	**68**	Q	-	-		75-125	-		20
Selenium, Total	ND	9.94	6.87	**69**	Q	-	-		75-125	-		20
Silver, Total	ND	24.8	3.63	**15**	Q	-	-		75-125	-		20
Sodium, Total	21.0J	828	729	88		-	-		75-125	-		20
Thallium, Total	ND	9.94	5.96	**60**	Q	-	-		75-125	-		20
Vanadium, Total	13.0	41.4	44.2	75		-	-		75-125	-		20

Matrix Spike Analysis
Batch Quality Control

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2128321
Report Date: 06/10/21

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Found	MSD %Recovery	Recovery Limits	RPD	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,06 QC Batch ID: WG1506654-3 QC Sample: L2128962-01 Client ID: MS Sample									
Zinc, Total	20.5	41.4	52.0	76	-	-	75-125	-	20
Total Metals - Mansfield Lab Associated sample(s): 02,06 QC Batch ID: WG1506658-3 QC Sample: L2128349-01 Client ID: MS Sample									
Mercury, Total	ND	0.149	0.176	118	-	-	80-120	-	20

Lab Duplicate Analysis
Batch Quality Control

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2128321
Report Date: 06/10/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,06 QC Batch ID: WG1506654-4 QC Sample: L2128962-01 Client ID: DUP Sample						
Arsenic, Total	4.42	3.79	mg/kg	15		20
Barium, Total	33.3	27.1	mg/kg	**21**	Q	20
Cadmium, Total	0.271J	0.266J	mg/kg	NC		20
Chromium, Total	7.56	8.13	mg/kg	7		20
Lead, Total	5.34	4.00	mg/kg	**29**	Q	20
Selenium, Total	ND	ND	mg/kg	NC		20
Silver, Total	ND	ND	mg/kg	NC		20
Total Metals - Mansfield Lab Associated sample(s): 02,06 QC Batch ID: WG1506658-4 QC Sample: L2128349-01 Client ID: DUP Sample						
Mercury, Total	ND	ND	mg/kg	NC		20

INORGANICS
&
MISCELLANEOUS

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2128321
Report Date: 06/10/21

SAMPLE RESULTS

Lab ID: L2128321-01
Client ID: B-4 (6'-7')
Sample Location: RYE LAKE WFP

Sample Depth:
Matrix: Soil

Date Collected: 05/27/21 10:10
Date Received: 05/27/21
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	88.4		%	0.100	NA	1	-	05/29/21 10:10	121,2540G	RI

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2128321
Report Date: 06/10/21

SAMPLE RESULTS

Lab ID: L2128321-02
Client ID: B-4 (5'-15')
Sample Location: RYE LAKE WFP

Date Collected: 05/27/21 10:10
Date Received: 05/27/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	90.6		%	0.100	NA	1	-	05/29/21 10:10	121,2540G	RI

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2128321
Report Date: 06/10/21

SAMPLE RESULTS

Lab ID: L2128321-03
Client ID: B-1 (6'-7')
Sample Location: RYE LAKE WFP

Sample Depth:
Matrix: Soil

Date Collected: 05/27/21 10:40
Date Received: 05/27/21
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	90.1		%	0.100	NA	1	-	05/29/21 10:10	121,2540G	RI

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2128321
Report Date: 06/10/21

SAMPLE RESULTS

Lab ID: L2128321-04
Client ID: B-1 (10'-11')
Sample Location: RYE LAKE WFP

Date Collected: 05/27/21 10:50
Date Received: 05/27/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	89.0		%	0.100	NA	1	-	05/29/21 10:10	121,2540G	RI

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2128321
Report Date: 06/10/21

SAMPLE RESULTS

Lab ID: L2128321-05
Client ID: B-1 (14'-15')
Sample Location: RYE LAKE WFP

Date Collected: 05/27/21 11:05
Date Received: 05/27/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	91.7		%	0.100	NA	1	-	05/29/21 10:10	121,2540G	RI

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2128321
Report Date: 06/10/21

SAMPLE RESULTS

Lab ID: L2128321-06
Client ID: B-1 (5'-15')
Sample Location: RYE LAKE WFP

Date Collected: 05/27/21 10:40
Date Received: 05/27/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	90.9		%	0.100	NA	1	-	05/29/21 10:10	121,2540G	RI

Lab Duplicate Analysis
Batch Quality Control

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2128321
Report Date: 06/10/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-06 QC Batch ID: WG1505249-1 QC Sample: L2128497-01 Client ID: DUP Sample						
Solids, Total	82.2	82.8	%	1		20

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2128321
Report Date: 06/10/21

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2128321-01A	Vial MeOH preserved	A	NA		5.4	Y	Absent		NYTCL-8260HLW(14)
L2128321-01A1	Vial MeOH preserved	A	NA		5.4	Y	Absent		NYTCL-8260HLW(14)
L2128321-01A2	Vial MeOH preserved	A	NA		5.4	Y	Absent		NYTCL-8260HLW(14)
L2128321-01B	Vial water preserved	A	NA		5.4	Y	Absent	28-MAY-21 20:07	NYTCL-8260HLW(14)
L2128321-01B1	Vial water preserved	A	NA		5.4	Y	Absent	28-MAY-21 20:07	NYTCL-8260HLW(14)
L2128321-01B2	Vial water preserved	A	NA		5.4	Y	Absent	28-MAY-21 20:07	NYTCL-8260HLW(14)
L2128321-01C	Vial water preserved	A	NA		5.4	Y	Absent	28-MAY-21 20:07	NYTCL-8260HLW(14)
L2128321-01C1	Vial water preserved	A	NA		5.4	Y	Absent	28-MAY-21 20:07	NYTCL-8260HLW(14)
L2128321-01C2	Vial water preserved	A	NA		5.4	Y	Absent	28-MAY-21 20:07	NYTCL-8260HLW(14)
L2128321-01D	Plastic 120ml unpreserved	A	NA		5.4	Y	Absent		TS(7)
L2128321-01D1	Plastic 120ml unpreserved	A	NA		5.4	Y	Absent		TS(7)
L2128321-01D2	Plastic 120ml unpreserved	A	NA		5.4	Y	Absent		TS(7)
L2128321-02A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		5.4	Y	Absent		BE-TI(180),AS-TI(180),BA-TI(180),AG-TI(180),NI-TI(180),TL-TI(180),AL-TI(180),CR-TI(180),SE-TI(180),CU-TI(180),PB-TI(180),SB-TI(180),ZN-TI(180),V-TI(180),CO-TI(180),MG-TI(180),FE-TI(180),MN-TI(180),HG-T(28),NA-TI(180),CA-TI(180),CD-TI(180),K-TI(180)
L2128321-02B	Glass 250ml/8oz unpreserved	A	NA		5.4	Y	Absent		NYTCL-8270(14),TS(7),NYTCL-8081(14),NYTCL-8082(365)
L2128321-03A	Vial MeOH preserved	A	NA		5.4	Y	Absent		NYTCL-8260HLW(14)
L2128321-03B	Vial water preserved	A	NA		5.4	Y	Absent	28-MAY-21 20:07	NYTCL-8260HLW(14)
L2128321-03C	Vial water preserved	A	NA		5.4	Y	Absent	28-MAY-21 20:07	NYTCL-8260HLW(14)
L2128321-03D	Plastic 120ml unpreserved	A	NA		5.4	Y	Absent		TS(7)
L2128321-04A	Vial MeOH preserved	A	NA		5.4	Y	Absent		NYTCL-8260HLW(14)
L2128321-04B	Vial water preserved	A	NA		5.4	Y	Absent	28-MAY-21 20:07	NYTCL-8260HLW(14)

*Values in parentheses indicate holding time in days

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2128321
Report Date: 06/10/21

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2128321-04C	Vial water preserved	A	NA		5.4	Y	Absent	28-MAY-21 20:07	NYTCL-8260HLW(14)
L2128321-04D	Plastic 120ml unpreserved	A	NA		5.4	Y	Absent		TS(7)
L2128321-05A	Vial MeOH preserved	A	NA		5.4	Y	Absent		NYTCL-8260HLW(14)
L2128321-05B	Vial water preserved	A	NA		5.4	Y	Absent	28-MAY-21 20:07	NYTCL-8260HLW(14)
L2128321-05C	Vial water preserved	A	NA		5.4	Y	Absent	28-MAY-21 20:07	NYTCL-8260HLW(14)
L2128321-05D	Plastic 120ml unpreserved	A	NA		5.4	Y	Absent		TS(7)
L2128321-06A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		5.4	Y	Absent		BE-TI(180),AS-TI(180),BA-TI(180),AG-TI(180),NI-TI(180),AL-TI(180),TL-TI(180),CR-TI(180),CU-TI(180),ZN-TI(180),SB-TI(180),PB-TI(180),SE-TI(180),CO-TI(180),V-TI(180),MG-TI(180),FE-TI(180),MN-TI(180),HG-T(28),K-TI(180),CD-TI(180),CA-TI(180),NA-TI(180)
L2128321-06B	Glass 250ml/8oz unpreserved	A	NA		5.4	Y	Absent		NYTCL-8270(14),TS(7),NYTCL-8081(14),NYTCL-8082(365)

*Values in parentheses indicate holding time in days

Project Name:	RYE LAKE WFP	**Lab Number:**	L2128321
Project Number:	41.0162892.00	**Report Date:**	06/10/21

GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers

Project Name:	RYE LAKE WFP	**Lab Number:**	L2128321
Project Number:	41.0162892.00	**Report Date:**	06/10/21

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. (Note: 'PFAS, Total (6)' is applicable to MassDEP DW compliance analysis only.). If a 'Total' result is requested, the results of its individual components will also be reported.

The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA,this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

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

F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

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

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

Report Format: DU Report with 'J' Qualifiers

Project Name:	RYE LAKE WFP	**Lab Number:**	L2128321
Project Number:	41.0162892.00	**Report Date:**	06/10/21

Data Qualifiers

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

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

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

Project Name:	RYE LAKE WFP	**Lab Number:**	L2128321
Project Number:	41.0162892.00	**Report Date:**	06/10/21

REFERENCES

1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.

121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene
EPA 625/625.1: alpha-Terpineol
EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D/8270E: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522, EPA 537.1.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

NEW YORK CHAIN OF CUSTODY

ALPHA ANALYTICAL

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TEL: 508-898-9220
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Mansfield, MA 02048
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FAX: 508-822-3288

Service Centers
Mahwah, NJ 07430: 35 Whitney Rd, Suite 5
Albany, NY 12205: 14 Walker Way
Tonawanda, NY 14150: 275 Cooper Ave, Suite 105

Page of

Date Rec'd in Lab: 5/28/21

ALPHA Job #: L2124321

Client Information
Client: GZA GeoEnvironmental
Address: 104 West 29th St
New York, NY
Phone: 212-594-8140
Fax:
Email: Matthew.Delbalzo@gza.com

Project Information
Project Name: Rye Lake WFP
Project Location: Rye Lake WFP
Project #: 41.0162892.00
(Use Project name as Project #) ☐
Project Manager: Matt Del Balzo
ALPHAQuote #:

Turn-Around Time
Standard ☒ Due Date:
Rush (only if pre approved) ☐ # of Days:

Deliverables
☐ ASP-A ☐ ASP-B
☐ EQuIS (1 File) ☐ EQuIS (4 File)
☐ Other

Billing Information
☐ Same as Client Info
PO #

Regulatory Requirement
☐ NY TOGS ☐ NY Part 375
☐ AWQ Standards ☐ NY CP-51
☐ NY Restricted Use ☐ Other
☐ NY Unrestricted Use
☐ NYC Sewer Discharge

Disposal Site Information
Please identify below location of applicable disposal facilities.
Disposal Facility:
☑ NJ ☑ NY
☑ Other: PA

These samples have been previously analyzed by Alpha ☐

Other project specific requirements/comments:

Please specify Metals or TAL.

ANALYSIS

Sample Filtration
☐ Done
☐ Lab to do
Preservation
☐ Lab to do
(Please Specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	VOCs (8260)	SVOCs (8270)	PCBs (8082)	Pesticides (8081)	TAL Metals	Total Bottle	Sample Specific Comments
2432101	B-4 (6'-7') X3 SAMPLES	5/27/21	10:10	SOIL	A.A	X						
.02	B-4 (5'-15')	5/27/21	10:10	SOIL	A.A		X	X	X	X		
.03	B-1 (6'-7')	5/27/21	10:40	SOIL	A.A.	X						
.04	B-1 (10'-11') B-1	5/27/21	10:50	SOIL	A.A.	X						
.05	B-1 (14'-15')	5/27/21	11:05	SOIL	A.A.	X						
.06	B-1 (5'-15')	5/27/21	10:40	SOIL	A.A.		X	X	X	X		

Preservative Code:
A = None
B = HCl
C = HNO_3
D = H_2SO_4
E = NaOH
F = MeOH
G = $NaHSO_4$
H = $Na_2S_2O_3$
K/E = Zn Ac/NaOH
O = Other

Container Code
P = Plastic
A = Amber Glass
V = Vial
G = Glass
B = Bacteria Cup
C = Cube
O = Other
E = Encore
D = BOD Bottle

Westboro: Certification No: MA935
Mansfield: Certification No: MA015

Container Type
Preservative

Relinquished By:	Date/Time	Received By:	Date/Time
Alvan Amador	5/27/21, 1:50PM		5/27/21 13:50
	5/27/21 19:00		5/28/21 0130
	5/28/21 0130		5/28/21 01:30

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. BY EXECUTING THIS COC, THE CLIENT HAS READ AND AGREES TO BE BOUND BY ALPHA'S TERMS & CONDITIONS. (See reverse side.)

Form No: 01-25 HC (rev. 30-Sept-2013)

ANALYTICAL REPORT

Lab Number:	L2128322
Client:	GZA GeoEnvironmental, Inc. 104 West 29th Street, 10th Floor New York, NY 10001
ATTN:	Matthew Del Balzo
Phone:	(212) 594-8140
Project Name:	RYE LAKE WFP
Project Number:	41.0162892.00
Report Date:	06/10/21

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2128322
Report Date: 06/10/21

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2128322-01	B-5 (1'-2')	SOIL	Not Specified	05/27/21 09:45	05/27/21
L2128322-02	B-5 (0'-5')	SOIL	Not Specified	05/27/21 09:45	05/27/21
L2128322-03	B-1 (1'-2')	SOIL	Not Specified	05/27/21 10:40	05/27/21
L2128322-04	B-1 (0'-5')	SOIL	Not Specified	05/27/21 10:40	05/27/21

Project Name:	RYE LAKE WFP	**Lab Number:**	L2128322
Project Number:	41.0162892.00	**Report Date:**	06/10/21

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name:	RYE LAKE WFP	**Lab Number:**	L2128322
Project Number:	41.0162892.00	**Report Date:**	06/10/21

Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Total Metals

L2128322-02 and -04: The sample has elevated detection limits for all elements, with the exception of mercury, due to the dilution required by matrix interferences encountered during analysis.

pH

WG1506813: A Laboratory Duplicate was prepared with the sample batch, however, the native sample was not available for reporting; therefore, the results could not be reported.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Michelle M. Morris

Title: Technical Director/Representative Date: 06/10/21

ORGANICS

VOLATILES

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2128322
Report Date: 06/10/21

SAMPLE RESULTS

Lab ID: L2128322-01
Client ID: B-5 (1'-2')
Sample Location: Not Specified

Date Collected: 05/27/21 09:45
Date Received: 05/27/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 06/03/21 20:31
Analyst: JC
Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methylene chloride	ND		ug/kg	5.4	2.5	1
1,1-Dichloroethane	ND		ug/kg	1.1	0.16	1
Chloroform	ND		ug/kg	1.6	0.15	1
Carbon tetrachloride	ND		ug/kg	1.1	0.25	1
1,2-Dichloropropane	ND		ug/kg	1.1	0.14	1
Dibromochloromethane	ND		ug/kg	1.1	0.15	1
1,1,2-Trichloroethane	ND		ug/kg	1.1	0.29	1
Tetrachloroethene	ND		ug/kg	0.54	0.21	1
Chlorobenzene	ND		ug/kg	0.54	0.14	1
Trichlorofluoromethane	ND		ug/kg	4.4	0.76	1
1,2-Dichloroethane	ND		ug/kg	1.1	0.28	1
1,1,1-Trichloroethane	ND		ug/kg	0.54	0.18	1
Bromodichloromethane	ND		ug/kg	0.54	0.12	1
trans-1,3-Dichloropropene	ND		ug/kg	1.1	0.30	1
cis-1,3-Dichloropropene	ND		ug/kg	0.54	0.17	1
1,3-Dichloropropene, Total	ND		ug/kg	0.54	0.17	1
1,1-Dichloropropene	ND		ug/kg	0.54	0.17	1
Bromoform	ND		ug/kg	4.4	0.27	1
1,1,2,2-Tetrachloroethane	ND		ug/kg	0.54	0.18	1
Benzene	ND		ug/kg	0.54	0.18	1
Toluene	ND		ug/kg	1.1	0.59	1
Ethylbenzene	ND		ug/kg	1.1	0.15	1
Chloromethane	ND		ug/kg	4.4	1.0	1
Bromomethane	ND		ug/kg	2.2	0.63	1
Vinyl chloride	ND		ug/kg	1.1	0.36	1
Chloroethane	ND		ug/kg	2.2	0.49	1
1,1-Dichloroethene	ND		ug/kg	1.1	0.26	1
trans-1,2-Dichloroethene	ND		ug/kg	1.6	0.15	1

Project Name: RYE LAKE WFP **Lab Number:** L2128322

Project Number: 41.0162892.00 **Report Date:** 06/10/21

SAMPLE RESULTS

Lab ID: L2128322-01 Date Collected: 05/27/21 09:45

Client ID: B-5 (1'-2') Date Received: 05/27/21

Sample Location: Not Specified Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Trichloroethene	ND		ug/kg	0.54	0.15	1
1,2-Dichlorobenzene	ND		ug/kg	2.2	0.16	1
1,3-Dichlorobenzene	ND		ug/kg	2.2	0.16	1
1,4-Dichlorobenzene	ND		ug/kg	2.2	0.19	1
Methyl tert butyl ether	ND		ug/kg	2.2	0.22	1
p/m-Xylene	ND		ug/kg	2.2	0.61	1
o-Xylene	ND		ug/kg	1.1	0.32	1
Xylenes, Total	ND		ug/kg	1.1	0.32	1
cis-1,2-Dichloroethene	ND		ug/kg	1.1	0.19	1
1,2-Dichloroethene, Total	ND		ug/kg	1.1	0.15	1
Dibromomethane	ND		ug/kg	2.2	0.26	1
Styrene	ND		ug/kg	1.1	0.21	1
Dichlorodifluoromethane	ND		ug/kg	11	1.0	1
Acetone	ND		ug/kg	11	5.2	1
Carbon disulfide	ND		ug/kg	11	5.0	1
2-Butanone	ND		ug/kg	11	2.4	1
Vinyl acetate	ND		ug/kg	11	2.3	1
4-Methyl-2-pentanone	ND		ug/kg	11	1.4	1
1,2,3-Trichloropropane	ND		ug/kg	2.2	0.14	1
2-Hexanone	ND		ug/kg	11	1.3	1
Bromochloromethane	ND		ug/kg	2.2	0.22	1
2,2-Dichloropropane	ND		ug/kg	2.2	0.22	1
1,2-Dibromoethane	ND		ug/kg	1.1	0.30	1
1,3-Dichloropropane	ND		ug/kg	2.2	0.18	1
1,1,1,2-Tetrachloroethane	ND		ug/kg	0.54	0.14	1
Bromobenzene	ND		ug/kg	2.2	0.16	1
n-Butylbenzene	ND		ug/kg	1.1	0.18	1
sec-Butylbenzene	ND		ug/kg	1.1	0.16	1
tert-Butylbenzene	ND		ug/kg	2.2	0.13	1
o-Chlorotoluene	ND		ug/kg	2.2	0.21	1
p-Chlorotoluene	ND		ug/kg	2.2	0.12	1
1,2-Dibromo-3-chloropropane	ND		ug/kg	3.3	1.1	1
Hexachlorobutadiene	ND		ug/kg	4.4	0.18	1
Isopropylbenzene	ND		ug/kg	1.1	0.12	1
p-Isopropyltoluene	ND		ug/kg	1.1	0.12	1
Naphthalene	ND		ug/kg	4.4	0.71	1
Acrylonitrile	ND		ug/kg	4.4	1.2	1

Project Name: RYE LAKE WFP **Lab Number:** L2128322

Project Number: 41.0162892.00 **Report Date:** 06/10/21

SAMPLE RESULTS

Lab ID: L2128322-01 Date Collected: 05/27/21 09:45

Client ID: B-5 (1'-2') Date Received: 05/27/21

Sample Location: Not Specified Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
n-Propylbenzene	ND		ug/kg	1.1	0.19	1
1,2,3-Trichlorobenzene	ND		ug/kg	2.2	0.35	1
1,2,4-Trichlorobenzene	ND		ug/kg	2.2	0.30	1
1,3,5-Trimethylbenzene	ND		ug/kg	2.2	0.21	1
1,2,4-Trimethylbenzene	ND		ug/kg	2.2	0.36	1
1,4-Dioxane	ND		ug/kg	87	38.	1
p-Diethylbenzene	ND		ug/kg	2.2	0.19	1
p-Ethyltoluene	ND		ug/kg	2.2	0.42	1
1,2,4,5-Tetramethylbenzene	ND		ug/kg	2.2	0.21	1
Ethyl ether	ND		ug/kg	2.2	0.37	1
trans-1,4-Dichloro-2-butene	ND		ug/kg	5.4	1.5	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	105		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	94		70-130
Dibromofluoromethane	114		70-130

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2128322
Report Date: 06/10/21

SAMPLE RESULTS

Lab ID: L2128322-03
Client ID: B-1 (1'-2')
Sample Location: Not Specified

Date Collected: 05/27/21 10:40
Date Received: 05/27/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 06/03/21 20:56
Analyst: JC
Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methylene chloride	ND		ug/kg	6.3	2.9	1
1,1-Dichloroethane	ND		ug/kg	1.2	0.18	1
Chloroform	ND		ug/kg	1.9	0.18	1
Carbon tetrachloride	ND		ug/kg	1.2	0.29	1
1,2-Dichloropropane	ND		ug/kg	1.2	0.16	1
Dibromochloromethane	ND		ug/kg	1.2	0.18	1
1,1,2-Trichloroethane	ND		ug/kg	1.2	0.33	1
Tetrachloroethene	ND		ug/kg	0.63	0.24	1
Chlorobenzene	ND		ug/kg	0.63	0.16	1
Trichlorofluoromethane	ND		ug/kg	5.0	0.87	1
1,2-Dichloroethane	ND		ug/kg	1.2	0.32	1
1,1,1-Trichloroethane	ND		ug/kg	0.63	0.21	1
Bromodichloromethane	ND		ug/kg	0.63	0.14	1
trans-1,3-Dichloropropene	ND		ug/kg	1.2	0.34	1
cis-1,3-Dichloropropene	ND		ug/kg	0.63	0.20	1
1,3-Dichloropropene, Total	ND		ug/kg	0.63	0.20	1
1,1-Dichloropropene	ND		ug/kg	0.63	0.20	1
Bromoform	ND		ug/kg	5.0	0.31	1
1,1,2,2-Tetrachloroethane	ND		ug/kg	0.63	0.21	1
Benzene	ND		ug/kg	0.63	0.21	1
Toluene	ND		ug/kg	1.2	0.68	1
Ethylbenzene	ND		ug/kg	1.2	0.18	1
Chloromethane	ND		ug/kg	5.0	1.2	1
Bromomethane	ND		ug/kg	2.5	0.73	1
Vinyl chloride	ND		ug/kg	1.2	0.42	1
Chloroethane	ND		ug/kg	2.5	0.57	1
1,1-Dichloroethene	ND		ug/kg	1.2	0.30	1
trans-1,2-Dichloroethene	ND		ug/kg	1.9	0.17	1

Project Name: RYE LAKE WFP **Lab Number:** L2128322

Project Number: 41.0162892.00 **Report Date:** 06/10/21

SAMPLE RESULTS

Lab ID: L2128322-03 Date Collected: 05/27/21 10:40

Client ID: B-1 (1'-2') Date Received: 05/27/21

Sample Location: Not Specified Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Trichloroethene	ND		ug/kg	0.63	0.17	1
1,2-Dichlorobenzene	ND		ug/kg	2.5	0.18	1
1,3-Dichlorobenzene	ND		ug/kg	2.5	0.18	1
1,4-Dichlorobenzene	ND		ug/kg	2.5	0.21	1
Methyl tert butyl ether	ND		ug/kg	2.5	0.25	1
p/m-Xylene	ND		ug/kg	2.5	0.70	1
o-Xylene	ND		ug/kg	1.2	0.36	1
Xylenes, Total	ND		ug/kg	1.2	0.36	1
cis-1,2-Dichloroethene	ND		ug/kg	1.2	0.22	1
1,2-Dichloroethene, Total	ND		ug/kg	1.2	0.17	1
Dibromomethane	ND		ug/kg	2.5	0.30	1
Styrene	ND		ug/kg	1.2	0.24	1
Dichlorodifluoromethane	ND		ug/kg	12	1.1	1
Acetone	ND		ug/kg	12	6.0	1
Carbon disulfide	ND		ug/kg	12	5.7	1
2-Butanone	ND		ug/kg	12	2.8	1
Vinyl acetate	ND		ug/kg	12	2.7	1
4-Methyl-2-pentanone	ND		ug/kg	12	1.6	1
1,2,3-Trichloropropane	ND		ug/kg	2.5	0.16	1
2-Hexanone	ND		ug/kg	12	1.5	1
Bromochloromethane	ND		ug/kg	2.5	0.26	1
2,2-Dichloropropane	ND		ug/kg	2.5	0.25	1
1,2-Dibromoethane	ND		ug/kg	1.2	0.35	1
1,3-Dichloropropane	ND		ug/kg	2.5	0.21	1
1,1,1,2-Tetrachloroethane	ND		ug/kg	0.63	0.16	1
Bromobenzene	ND		ug/kg	2.5	0.18	1
n-Butylbenzene	ND		ug/kg	1.2	0.21	1
sec-Butylbenzene	ND		ug/kg	1.2	0.18	1
tert-Butylbenzene	ND		ug/kg	2.5	0.15	1
o-Chlorotoluene	ND		ug/kg	2.5	0.24	1
p-Chlorotoluene	ND		ug/kg	2.5	0.14	1
1,2-Dibromo-3-chloropropane	ND		ug/kg	3.8	1.2	1
Hexachlorobutadiene	ND		ug/kg	5.0	0.21	1
Isopropylbenzene	ND		ug/kg	1.2	0.14	1
p-Isopropyltoluene	ND		ug/kg	1.2	0.14	1
Naphthalene	ND		ug/kg	5.0	0.81	1
Acrylonitrile	ND		ug/kg	5.0	1.4	1

Project Name: RYE LAKE WFP **Lab Number:** L2128322

Project Number: 41.0162892.00 **Report Date:** 06/10/21

SAMPLE RESULTS

Lab ID: L2128322-03 Date Collected: 05/27/21 10:40

Client ID: B-1 (1'-2') Date Received: 05/27/21

Sample Location: Not Specified Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
n-Propylbenzene	ND		ug/kg	1.2	0.21	1
1,2,3-Trichlorobenzene	ND		ug/kg	2.5	0.40	1
1,2,4-Trichlorobenzene	ND		ug/kg	2.5	0.34	1
1,3,5-Trimethylbenzene	ND		ug/kg	2.5	0.24	1
1,2,4-Trimethylbenzene	ND		ug/kg	2.5	0.42	1
1,4-Dioxane	ND		ug/kg	100	44.	1
p-Diethylbenzene	ND		ug/kg	2.5	0.22	1
p-Ethyltoluene	ND		ug/kg	2.5	0.48	1
1,2,4,5-Tetramethylbenzene	ND		ug/kg	2.5	0.24	1
Ethyl ether	ND		ug/kg	2.5	0.43	1
trans-1,4-Dichloro-2-butene	ND		ug/kg	6.3	1.8	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	108		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	92		70-130
Dibromofluoromethane	114		70-130

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2128322
Report Date: 06/10/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 06/03/21 20:06
Analyst: KJD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01,03 Batch: WG1507672-5					
Methylene chloride	ND		ug/kg	5.0	2.3
1,1-Dichloroethane	ND		ug/kg	1.0	0.14
Chloroform	ND		ug/kg	1.5	0.14
Carbon tetrachloride	ND		ug/kg	1.0	0.23
1,2-Dichloropropane	ND		ug/kg	1.0	0.12
Dibromochloromethane	ND		ug/kg	1.0	0.14
1,1,2-Trichloroethane	ND		ug/kg	1.0	0.27
Tetrachloroethene	ND		ug/kg	0.50	0.20
Chlorobenzene	ND		ug/kg	0.50	0.13
Trichlorofluoromethane	ND		ug/kg	4.0	0.70
1,2-Dichloroethane	ND		ug/kg	1.0	0.26
1,1,1-Trichloroethane	ND		ug/kg	0.50	0.17
Bromodichloromethane	ND		ug/kg	0.50	0.11
trans-1,3-Dichloropropene	ND		ug/kg	1.0	0.27
cis-1,3-Dichloropropene	ND		ug/kg	0.50	0.16
1,3-Dichloropropene, Total	ND		ug/kg	0.50	0.16
1,1-Dichloropropene	ND		ug/kg	0.50	0.16
Bromoform	ND		ug/kg	4.0	0.25
1,1,2,2-Tetrachloroethane	ND		ug/kg	0.50	0.17
Benzene	ND		ug/kg	0.50	0.17
Toluene	ND		ug/kg	1.0	0.54
Ethylbenzene	ND		ug/kg	1.0	0.14
Chloromethane	ND		ug/kg	4.0	0.93
Bromomethane	ND		ug/kg	2.0	0.58
Vinyl chloride	ND		ug/kg	1.0	0.34
Chloroethane	ND		ug/kg	2.0	0.45
1,1-Dichloroethene	ND		ug/kg	1.0	0.24
trans-1,2-Dichloroethene	ND		ug/kg	1.5	0.14
Trichloroethene	ND		ug/kg	0.50	0.14

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2128322
Report Date: 06/10/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 06/03/21 20:06
Analyst: KJD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01,03 Batch: WG1507672-5					
1,2-Dichlorobenzene	ND		ug/kg	2.0	0.14
1,3-Dichlorobenzene	ND		ug/kg	2.0	0.15
1,4-Dichlorobenzene	ND		ug/kg	2.0	0.17
Methyl tert butyl ether	ND		ug/kg	2.0	0.20
p/m-Xylene	ND		ug/kg	2.0	0.56
o-Xylene	ND		ug/kg	1.0	0.29
Xylenes, Total	ND		ug/kg	1.0	0.29
cis-1,2-Dichloroethene	ND		ug/kg	1.0	0.18
1,2-Dichloroethene, Total	ND		ug/kg	1.0	0.14
Dibromomethane	ND		ug/kg	2.0	0.24
Styrene	0.38	J	ug/kg	1.0	0.20
Dichlorodifluoromethane	ND		ug/kg	10	0.92
Acetone	ND		ug/kg	10	4.8
Carbon disulfide	ND		ug/kg	10	4.6
2-Butanone	ND		ug/kg	10	2.2
Vinyl acetate	ND		ug/kg	10	2.2
4-Methyl-2-pentanone	ND		ug/kg	10	1.3
1,2,3-Trichloropropane	ND		ug/kg	2.0	0.13
2-Hexanone	ND		ug/kg	10	1.2
Bromochloromethane	ND		ug/kg	2.0	0.20
2,2-Dichloropropane	ND		ug/kg	2.0	0.20
1,2-Dibromoethane	ND		ug/kg	1.0	0.28
1,3-Dichloropropane	ND		ug/kg	2.0	0.17
1,1,1,2-Tetrachloroethane	ND		ug/kg	0.50	0.13
Bromobenzene	ND		ug/kg	2.0	0.14
n-Butylbenzene	ND		ug/kg	1.0	0.17
sec-Butylbenzene	ND		ug/kg	1.0	0.15
tert-Butylbenzene	ND		ug/kg	2.0	0.12
o-Chlorotoluene	ND		ug/kg	2.0	0.19

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2128322
Report Date: 06/10/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 06/03/21 20:06
Analyst: KJD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01,03 Batch: WG1507672-5					
p-Chlorotoluene	ND		ug/kg	2.0	0.11
1,2-Dibromo-3-chloropropane	ND		ug/kg	3.0	1.0
Hexachlorobutadiene	ND		ug/kg	4.0	0.17
Isopropylbenzene	ND		ug/kg	1.0	0.11
p-Isopropyltoluene	ND		ug/kg	1.0	0.11
Naphthalene	ND		ug/kg	4.0	0.65
Acrylonitrile	ND		ug/kg	4.0	1.2
n-Propylbenzene	ND		ug/kg	1.0	0.17
1,2,3-Trichlorobenzene	ND		ug/kg	2.0	0.32
1,2,4-Trichlorobenzene	ND		ug/kg	2.0	0.27
1,3,5-Trimethylbenzene	ND		ug/kg	2.0	0.19
1,2,4-Trimethylbenzene	ND		ug/kg	2.0	0.33
1,4-Dioxane	ND		ug/kg	80	35.
p-Diethylbenzene	ND		ug/kg	2.0	0.18
p-Ethyltoluene	ND		ug/kg	2.0	0.38
1,2,4,5-Tetramethylbenzene	ND		ug/kg	2.0	0.19
Ethyl ether	ND		ug/kg	2.0	0.34
trans-1,4-Dichloro-2-butene	ND		ug/kg	5.0	1.4

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	108		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	94		70-130
Dibromofluoromethane	108		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: RYE LAKE WFP

Project Number: 41.0162892.00

Lab Number: L2128322

Report Date: 06/10/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01,03 Batch: WG1507672-3 WG1507672-4								
Methylene chloride	81		83		70-130	2		30
1,1-Dichloroethane	81		81		70-130	0		30
Chloroform	78		79		70-130	1		30
Carbon tetrachloride	87		88		70-130	1		30
1,2-Dichloropropane	81		81		70-130	0		30
Dibromochloromethane	83		84		70-130	1		30
1,1,2-Trichloroethane	82		83		70-130	1		30
Tetrachloroethene	87		88		70-130	1		30
Chlorobenzene	80		80		70-130	0		30
Trichlorofluoromethane	96		96		70-139	0		30
1,2-Dichloroethane	79		81		70-130	3		30
1,1,1-Trichloroethane	84		85		70-130	1		30
Bromodichloromethane	78		80		70-130	3		30
trans-1,3-Dichloropropene	86		88		70-130	2		30
cis-1,3-Dichloropropene	82		83		70-130	1		30
1,1-Dichloropropene	86		87		70-130	1		30
Bromoform	83		85		70-130	2		30
1,1,2,2-Tetrachloroethane	80		82		70-130	2		30
Benzene	80		80		70-130	0		30
Toluene	82		82		70-130	0		30
Ethylbenzene	83		83		70-130	0		30
Chloromethane	90		91		52-130	1		30
Bromomethane	104		108		57-147	4		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: RYE LAKE WFP

Project Number: 41.0162892.00

Lab Number: L2128322

Report Date: 06/10/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01,03 Batch: WG1507672-3 WG1507672-4								
Vinyl chloride	94		93		67-130	1		30
Chloroethane	91		91		50-151	0		30
1,1-Dichloroethene	87		89		65-135	2		30
trans-1,2-Dichloroethene	85		84		70-130	1		30
Trichloroethene	82		81		70-130	1		30
1,2-Dichlorobenzene	82		83		70-130	1		30
1,3-Dichlorobenzene	83		83		70-130	0		30
1,4-Dichlorobenzene	82		81		70-130	1		30
Methyl tert butyl ether	81		82		66-130	1		30
p/m-Xylene	82		81		70-130	1		30
o-Xylene	80		79		70-130	1		30
cis-1,2-Dichloroethene	79		79		70-130	0		30
Dibromomethane	83		85		70-130	2		30
Styrene	80		79		70-130	1		30
Dichlorodifluoromethane	127		127		30-146	0		30
Acetone	84		88		54-140	5		30
Carbon disulfide	85		86		59-130	1		30
2-Butanone	72		82		70-130	13		30
Vinyl acetate	83		86		70-130	4		30
4-Methyl-2-pentanone	79		83		70-130	5		30
1,2,3-Trichloropropane	78		81		68-130	4		30
2-Hexanone	75		78		70-130	4		30
Bromochloromethane	82		83		70-130	1		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: RYE LAKE WFP

Project Number: 41.0162892.00

Lab Number: L2128322

Report Date: 06/10/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01,03 Batch: WG1507672-3 WG1507672-4								
2,2-Dichloropropane	83		83		70-130	0		30
1,2-Dibromoethane	86		88		70-130	2		30
1,3-Dichloropropane	83		84		69-130	1		30
1,1,1,2-Tetrachloroethane	81		82		70-130	1		30
Bromobenzene	82		82		70-130	0		30
n-Butylbenzene	86		86		70-130	0		30
sec-Butylbenzene	85		84		70-130	1		30
tert-Butylbenzene	84		84		70-130	0		30
o-Chlorotoluene	82		81		70-130	1		30
p-Chlorotoluene	81		81		70-130	0		30
1,2-Dibromo-3-chloropropane	83		86		68-130	4		30
Hexachlorobutadiene	87		86		67-130	1		30
Isopropylbenzene	85		84		70-130	1		30
p-Isopropyltoluene	86		86		70-130	0		30
Naphthalene	79		82		70-130	4		30
Acrylonitrile	86		88		70-130	2		30
n-Propylbenzene	85		84		70-130	1		30
1,2,3-Trichlorobenzene	83		85		70-130	2		30
1,2,4-Trichlorobenzene	86		86		70-130	0		30
1,3,5-Trimethylbenzene	83		82		70-130	1		30
1,2,4-Trimethylbenzene	83		82		70-130	1		30
1,4-Dioxane	115		120		65-136	4		30
p-Diethylbenzene	85		87		70-130	2		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: RYE LAKE WFP

Project Number: 41.0162892.00

Lab Number: L2128322

Report Date: 06/10/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01,03 Batch: WG1507672-3 WG1507672-4								
p-Ethyltoluene	85		84		70-130	1		30
1,2,4,5-Tetramethylbenzene	85		85		70-130	0		30
Ethyl ether	82		84		67-130	2		30
trans-1,4-Dichloro-2-butene	88		90		70-130	2		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	95		96		70-130
Toluene-d8	100		99		70-130
4-Bromofluorobenzene	98		97		70-130
Dibromofluoromethane	99		98		70-130

SEMIVOLATILES

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2128322
Report Date: 06/10/21

SAMPLE RESULTS

Lab ID: L2128322-02
Client ID: B-5 (0'-5')
Sample Location: Not Specified

Date Collected: 05/27/21 09:45
Date Received: 05/27/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D
Analytical Date: 06/09/21 13:38
Analyst: JG
Percent Solids: 88%

Extraction Method: EPA 3546
Extraction Date: 06/08/21 23:54

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Acenaphthene	ND		ug/kg	150	19.	1
1,2,4-Trichlorobenzene	ND		ug/kg	180	21.	1
Hexachlorobenzene	ND		ug/kg	110	21.	1
Bis(2-chloroethyl)ether	ND		ug/kg	160	25.	1
2-Chloronaphthalene	ND		ug/kg	180	18.	1
1,2-Dichlorobenzene	ND		ug/kg	180	33.	1
1,3-Dichlorobenzene	ND		ug/kg	180	32.	1
1,4-Dichlorobenzene	ND		ug/kg	180	32.	1
3,3'-Dichlorobenzidine	ND		ug/kg	180	49.	1
2,4-Dinitrotoluene	ND		ug/kg	180	37.	1
2,6-Dinitrotoluene	ND		ug/kg	180	32.	1
Fluoranthene	ND		ug/kg	110	21.	1
4-Chlorophenyl phenyl ether	ND		ug/kg	180	20.	1
4-Bromophenyl phenyl ether	ND		ug/kg	180	28.	1
Bis(2-chloroisopropyl)ether	ND		ug/kg	220	31.	1
Bis(2-chloroethoxy)methane	ND		ug/kg	200	18.	1
Hexachlorobutadiene	ND		ug/kg	180	27.	1
Hexachlorocyclopentadiene	ND		ug/kg	530	170	1
Hexachloroethane	ND		ug/kg	150	30.	1
Isophorone	ND		ug/kg	160	24.	1
Naphthalene	ND		ug/kg	180	22.	1
Nitrobenzene	ND		ug/kg	160	27.	1
NDPA/DPA	ND		ug/kg	150	21.	1
n-Nitrosodi-n-propylamine	ND		ug/kg	180	28.	1
Bis(2-ethylhexyl)phthalate	ND		ug/kg	180	64.	1
Butyl benzyl phthalate	ND		ug/kg	180	46.	1
Di-n-butylphthalate	ND		ug/kg	180	35.	1
Di-n-octylphthalate	ND		ug/kg	180	63.	1

Project Name: RYE LAKE WFP **Lab Number:** L2128322

Project Number: 41.0162892.00 **Report Date:** 06/10/21

SAMPLE RESULTS

Lab ID: L2128322-02 Date Collected: 05/27/21 09:45

Client ID: B-5 (0'-5') Date Received: 05/27/21

Sample Location: Not Specified Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Diethyl phthalate	ND		ug/kg	180	17.	1
Dimethyl phthalate	ND		ug/kg	180	39.	1
Benzo(a)anthracene	ND		ug/kg	110	21.	1
Benzo(a)pyrene	ND		ug/kg	150	45.	1
Benzo(b)fluoranthene	ND		ug/kg	110	31.	1
Benzo(k)fluoranthene	ND		ug/kg	110	29.	1
Chrysene	ND		ug/kg	110	19.	1
Acenaphthylene	ND		ug/kg	150	28.	1
Anthracene	ND		ug/kg	110	36.	1
Benzo(ghi)perylene	ND		ug/kg	150	22.	1
Fluorene	ND		ug/kg	180	18.	1
Phenanthrene	ND		ug/kg	110	22.	1
Dibenzo(a,h)anthracene	ND		ug/kg	110	21.	1
Indeno(1,2,3-cd)pyrene	ND		ug/kg	150	26.	1
Pyrene	ND		ug/kg	110	18.	1
Biphenyl	ND		ug/kg	420	43.	1
4-Chloroaniline	ND		ug/kg	180	34.	1
2-Nitroaniline	ND		ug/kg	180	36.	1
3-Nitroaniline	ND		ug/kg	180	35.	1
4-Nitroaniline	ND		ug/kg	180	76.	1
Dibenzofuran	ND		ug/kg	180	17.	1
2-Methylnaphthalene	ND		ug/kg	220	22.	1
1,2,4,5-Tetrachlorobenzene	ND		ug/kg	180	19.	1
Acetophenone	ND		ug/kg	180	23.	1
2,4,6-Trichlorophenol	ND		ug/kg	110	35.	1
p-Chloro-m-cresol	ND		ug/kg	180	27.	1
2-Chlorophenol	ND		ug/kg	180	22.	1
2,4-Dichlorophenol	ND		ug/kg	160	30.	1
2,4-Dimethylphenol	ND		ug/kg	180	61.	1
2-Nitrophenol	ND		ug/kg	400	69.	1
4-Nitrophenol	ND		ug/kg	260	75.	1
2,4-Dinitrophenol	ND		ug/kg	880	86.	1
4,6-Dinitro-o-cresol	ND		ug/kg	480	88.	1
Pentachlorophenol	ND		ug/kg	150	40.	1
Phenol	ND		ug/kg	180	28.	1
2-Methylphenol	ND		ug/kg	180	28.	1
3-Methylphenol/4-Methylphenol	ND		ug/kg	260	29.	1

Project Name: RYE LAKE WFP
Lab Number: L2128322
Project Number: 41.0162892.00
Report Date: 06/10/21

SAMPLE RESULTS

Lab ID: L2128322-02
Client ID: B-5 (0'-5')
Sample Location: Not Specified
Date Collected: 05/27/21 09:45
Date Received: 05/27/21
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
2,4,5-Trichlorophenol	ND		ug/kg	180	35.	1
Benzoic Acid	ND		ug/kg	600	190	1
Benzyl Alcohol	ND		ug/kg	180	56.	1
Carbazole	ND		ug/kg	180	18.	1
1,4-Dioxane	ND		ug/kg	28	8.5	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	100		25-120
Phenol-d6	103		10-120
Nitrobenzene-d5	105		23-120
2-Fluorobiphenyl	95		30-120
2,4,6-Tribromophenol	125		10-136
4-Terphenyl-d14	82		18-120

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2128322
Report Date: 06/10/21

SAMPLE RESULTS

Lab ID: L2128322-04
Client ID: B-1 (0'-5')
Sample Location: Not Specified

Date Collected: 05/27/21 10:40
Date Received: 05/27/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D
Analytical Date: 06/09/21 14:23
Analyst: JG
Percent Solids: 75%

Extraction Method: EPA 3546
Extraction Date: 06/08/21 23:54

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Acenaphthene	ND		ug/kg	170	23.	1
1,2,4-Trichlorobenzene	ND		ug/kg	220	25.	1
Hexachlorobenzene	ND		ug/kg	130	24.	1
Bis(2-chloroethyl)ether	ND		ug/kg	200	30.	1
2-Chloronaphthalene	ND		ug/kg	220	22.	1
1,2-Dichlorobenzene	ND		ug/kg	220	39.	1
1,3-Dichlorobenzene	ND		ug/kg	220	38.	1
1,4-Dichlorobenzene	ND		ug/kg	220	38.	1
3,3'-Dichlorobenzidine	ND		ug/kg	220	58.	1
2,4-Dinitrotoluene	ND		ug/kg	220	44.	1
2,6-Dinitrotoluene	ND		ug/kg	220	38.	1
Fluoranthene	ND		ug/kg	130	25.	1
4-Chlorophenyl phenyl ether	ND		ug/kg	220	23.	1
4-Bromophenyl phenyl ether	ND		ug/kg	220	33.	1
Bis(2-chloroisopropyl)ether	ND		ug/kg	260	37.	1
Bis(2-chloroethoxy)methane	ND		ug/kg	240	22.	1
Hexachlorobutadiene	ND		ug/kg	220	32.	1
Hexachlorocyclopentadiene	ND		ug/kg	620	200	1
Hexachloroethane	ND		ug/kg	170	35.	1
Isophorone	ND		ug/kg	200	28.	1
Naphthalene	ND		ug/kg	220	27.	1
Nitrobenzene	ND		ug/kg	200	32.	1
NDPA/DPA	ND		ug/kg	170	25.	1
n-Nitrosodi-n-propylamine	ND		ug/kg	220	34.	1
Bis(2-ethylhexyl)phthalate	ND		ug/kg	220	76.	1
Butyl benzyl phthalate	ND		ug/kg	220	55.	1
Di-n-butylphthalate	ND		ug/kg	220	41.	1
Di-n-octylphthalate	ND		ug/kg	220	74.	1

Project Name: RYE LAKE WFP **Lab Number:** L2128322

Project Number: 41.0162892.00 **Report Date:** 06/10/21

SAMPLE RESULTS

Lab ID: L2128322-04 Date Collected: 05/27/21 10:40

Client ID: B-1 (0'-5') Date Received: 05/27/21

Sample Location: Not Specified Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Diethyl phthalate	ND		ug/kg	220	20.	1
Dimethyl phthalate	ND		ug/kg	220	46.	1
Benzo(a)anthracene	ND		ug/kg	130	25.	1
Benzo(a)pyrene	ND		ug/kg	170	53.	1
Benzo(b)fluoranthene	ND		ug/kg	130	37.	1
Benzo(k)fluoranthene	ND		ug/kg	130	35.	1
Chrysene	ND		ug/kg	130	23.	1
Acenaphthylene	ND		ug/kg	170	34.	1
Anthracene	ND		ug/kg	130	43.	1
Benzo(ghi)perylene	ND		ug/kg	170	26.	1
Fluorene	ND		ug/kg	220	21.	1
Phenanthrene	ND		ug/kg	130	26.	1
Dibenzo(a,h)anthracene	ND		ug/kg	130	25.	1
Indeno(1,2,3-cd)pyrene	ND		ug/kg	170	30.	1
Pyrene	ND		ug/kg	130	22.	1
Biphenyl	ND		ug/kg	500	51.	1
4-Chloroaniline	ND		ug/kg	220	40.	1
2-Nitroaniline	ND		ug/kg	220	42.	1
3-Nitroaniline	ND		ug/kg	220	41.	1
4-Nitroaniline	ND		ug/kg	220	90.	1
Dibenzofuran	ND		ug/kg	220	21.	1
2-Methylnaphthalene	ND		ug/kg	260	26.	1
1,2,4,5-Tetrachlorobenzene	ND		ug/kg	220	23.	1
Acetophenone	ND		ug/kg	220	27.	1
2,4,6-Trichlorophenol	ND		ug/kg	130	41.	1
p-Chloro-m-cresol	ND		ug/kg	220	32.	1
2-Chlorophenol	ND		ug/kg	220	26.	1
2,4-Dichlorophenol	ND		ug/kg	200	35.	1
2,4-Dimethylphenol	ND		ug/kg	220	72.	1
2-Nitrophenol	ND		ug/kg	470	82.	1
4-Nitrophenol	ND		ug/kg	300	89.	1
2,4-Dinitrophenol	ND		ug/kg	1000	100	1
4,6-Dinitro-o-cresol	ND		ug/kg	570	100	1
Pentachlorophenol	ND		ug/kg	170	48.	1
Phenol	ND		ug/kg	220	33.	1
2-Methylphenol	ND		ug/kg	220	34.	1
3-Methylphenol/4-Methylphenol	ND		ug/kg	310	34.	1

Project Name: RYE LAKE WFP
Lab Number: L2128322
Project Number: 41.0162892.00
Report Date: 06/10/21

SAMPLE RESULTS

Lab ID: L2128322-04
Client ID: B-1 (0'-5')
Sample Location: Not Specified
Date Collected: 05/27/21 10:40
Date Received: 05/27/21
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
2,4,5-Trichlorophenol	ND		ug/kg	220	42.	1
Benzoic Acid	ND		ug/kg	710	220	1
Benzyl Alcohol	ND		ug/kg	220	67.	1
Carbazole	ND		ug/kg	220	21.	1
1,4-Dioxane	ND		ug/kg	33	10.	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	78		25-120
Phenol-d6	82		10-120
Nitrobenzene-d5	81		23-120
2-Fluorobiphenyl	89		30-120
2,4,6-Tribromophenol	135		10-136
4-Terphenyl-d14	72		18-120

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2128322
Report Date: 06/10/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 06/09/21 11:03
Analyst: EK

Extraction Method: EPA 3546
Extraction Date: 06/08/21 23:54

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 02,04 Batch: WG1509399-1					
Acenaphthene	ND		ug/kg	130	17.
1,2,4-Trichlorobenzene	ND		ug/kg	160	19.
Hexachlorobenzene	ND		ug/kg	98	18.
Bis(2-chloroethyl)ether	ND		ug/kg	150	22.
2-Chloronaphthalene	ND		ug/kg	160	16.
1,2-Dichlorobenzene	ND		ug/kg	160	29.
1,3-Dichlorobenzene	ND		ug/kg	160	28.
1,4-Dichlorobenzene	ND		ug/kg	160	28.
3,3'-Dichlorobenzidine	ND		ug/kg	160	43.
2,4-Dinitrotoluene	ND		ug/kg	160	33.
2,6-Dinitrotoluene	ND		ug/kg	160	28.
Fluoranthene	ND		ug/kg	98	19.
4-Chlorophenyl phenyl ether	ND		ug/kg	160	17.
4-Bromophenyl phenyl ether	ND		ug/kg	160	25.
Bis(2-chloroisopropyl)ether	ND		ug/kg	200	28.
Bis(2-chloroethoxy)methane	ND		ug/kg	180	16.
Hexachlorobutadiene	ND		ug/kg	160	24.
Hexachlorocyclopentadiene	ND		ug/kg	470	150
Hexachloroethane	ND		ug/kg	130	26.
Isophorone	ND		ug/kg	150	21.
Naphthalene	ND		ug/kg	160	20.
Nitrobenzene	ND		ug/kg	150	24.
NDPA/DPA	ND		ug/kg	130	18.
n-Nitrosodi-n-propylamine	ND		ug/kg	160	25.
Bis(2-ethylhexyl)phthalate	ND		ug/kg	160	56.
Butyl benzyl phthalate	ND		ug/kg	160	41.
Di-n-butylphthalate	ND		ug/kg	160	31.
Di-n-octylphthalate	ND		ug/kg	160	56.
Diethyl phthalate	ND		ug/kg	160	15.

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2128322
Report Date: 06/10/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 06/09/21 11:03
Analyst: EK

Extraction Method: EPA 3546
Extraction Date: 06/08/21 23:54

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 02,04 Batch: WG1509399-1					
Dimethyl phthalate	ND		ug/kg	160	34.
Benzo(a)anthracene	ND		ug/kg	98	18.
Benzo(a)pyrene	ND		ug/kg	130	40.
Benzo(b)fluoranthene	ND		ug/kg	98	27.
Benzo(k)fluoranthene	ND		ug/kg	98	26.
Chrysene	ND		ug/kg	98	17.
Acenaphthylene	ND		ug/kg	130	25.
Anthracene	ND		ug/kg	98	32.
Benzo(ghi)perylene	ND		ug/kg	130	19.
Fluorene	ND		ug/kg	160	16.
Phenanthrene	ND		ug/kg	98	20.
Dibenzo(a,h)anthracene	ND		ug/kg	98	19.
Indeno(1,2,3-cd)pyrene	ND		ug/kg	130	23.
Pyrene	ND		ug/kg	98	16.
Biphenyl	ND		ug/kg	370	38.
4-Chloroaniline	ND		ug/kg	160	30.
2-Nitroaniline	ND		ug/kg	160	31.
3-Nitroaniline	ND		ug/kg	160	31.
4-Nitroaniline	ND		ug/kg	160	68.
Dibenzofuran	ND		ug/kg	160	15.
2-Methylnaphthalene	ND		ug/kg	200	20.
1,2,4,5-Tetrachlorobenzene	ND		ug/kg	160	17.
Acetophenone	ND		ug/kg	160	20.
2,4,6-Trichlorophenol	ND		ug/kg	98	31.
p-Chloro-m-cresol	ND		ug/kg	160	24.
2-Chlorophenol	ND		ug/kg	160	19.
2,4-Dichlorophenol	ND		ug/kg	150	26.
2,4-Dimethylphenol	ND		ug/kg	160	54.
2-Nitrophenol	ND		ug/kg	350	61.

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2128322
Report Date: 06/10/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 06/09/21 11:03
Analyst: EK

Extraction Method: EPA 3546
Extraction Date: 06/08/21 23:54

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 02,04 Batch: WG1509399-1					
4-Nitrophenol	ND		ug/kg	230	67.
2,4-Dinitrophenol	ND		ug/kg	780	76.
4,6-Dinitro-o-cresol	ND		ug/kg	420	78.
Pentachlorophenol	ND		ug/kg	130	36.
Phenol	ND		ug/kg	160	25.
2-Methylphenol	ND		ug/kg	160	25.
3-Methylphenol/4-Methylphenol	ND		ug/kg	240	26.
2,4,5-Trichlorophenol	ND		ug/kg	160	31.
Benzoic Acid	ND		ug/kg	530	160
Benzyl Alcohol	ND		ug/kg	160	50.
Carbazole	ND		ug/kg	160	16.
1,4-Dioxane	ND		ug/kg	24	7.5

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	65		25-120
Phenol-d6	72		10-120
Nitrobenzene-d5	74		23-120
2-Fluorobiphenyl	76		30-120
2,4,6-Tribromophenol	94		10-136
4-Terphenyl-d14	95		18-120

Lab Control Sample Analysis

Batch Quality Control

Project Name: RYE LAKE WFP

Project Number: 41.0162892.00

Lab Number: L2128322

Report Date: 06/10/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 02,04 Batch: WG1509399-2 WG1509399-3								
Acenaphthene	97		96		31-137	1		50
1,2,4-Trichlorobenzene	94		96		38-107	2		50
Hexachlorobenzene	102		101		40-140	1		50
Bis(2-chloroethyl)ether	86		88		40-140	2		50
2-Chloronaphthalene	98		97		40-140	1		50
1,2-Dichlorobenzene	86		89		40-140	3		50
1,3-Dichlorobenzene	81		87		40-140	7		50
1,4-Dichlorobenzene	83		88		28-104	6		50
3,3'-Dichlorobenzidine	102		100		40-140	2		50
2,4-Dinitrotoluene	116		115		40-132	1		50
2,6-Dinitrotoluene	105		101		40-140	4		50
Fluoranthene	105		102		40-140	3		50
4-Chlorophenyl phenyl ether	102		97		40-140	5		50
4-Bromophenyl phenyl ether	104		100		40-140	4		50
Bis(2-chloroisopropyl)ether	122		124		40-140	2		50
Bis(2-chloroethoxy)methane	97		97		40-117	0		50
Hexachlorobutadiene	91		89		40-140	2		50
Hexachlorocyclopentadiene	75		74		40-140	1		50
Hexachloroethane	86		91		40-140	6		50
Isophorone	114		115		40-140	1		50
Naphthalene	91		90		40-140	1		50
Nitrobenzene	106		108		40-140	2		50
NDPA/DPA	105		102		36-157	3		50

Lab Control Sample Analysis

Batch Quality Control

Project Name: RYE LAKE WFP

Project Number: 41.0162892.00

Lab Number: L2128322

Report Date: 06/10/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 02,04 Batch: WG1509399-2 WG1509399-3								
n-Nitrosodi-n-propylamine	110		110		32-121	0		50
Bis(2-ethylhexyl)phthalate	121		118		40-140	3		50
Butyl benzyl phthalate	118		114		40-140	3		50
Di-n-butylphthalate	120		114		40-140	5		50
Di-n-octylphthalate	109		108		40-140	1		50
Diethyl phthalate	109		106		40-140	3		50
Dimethyl phthalate	108		104		40-140	4		50
Benzo(a)anthracene	109		104		40-140	5		50
Benzo(a)pyrene	109		106		40-140	3		50
Benzo(b)fluoranthene	106		103		40-140	3		50
Benzo(k)fluoranthene	107		105		40-140	2		50
Chrysene	104		101		40-140	3		50
Acenaphthylene	105		103		40-140	2		50
Anthracene	104		101		40-140	3		50
Benzo(ghi)perylene	103		101		40-140	2		50
Fluorene	99		96		40-140	3		50
Phenanthrene	101		98		40-140	3		50
Dibenzo(a,h)anthracene	104		101		40-140	3		50
Indeno(1,2,3-cd)pyrene	105		103		40-140	2		50
Pyrene	103		100		35-142	3		50
Biphenyl	94		91		37-127	3		50
4-Chloroaniline	98		92		40-140	6		50
2-Nitroaniline	121		118		47-134	3		50

Lab Control Sample Analysis
Batch Quality Control

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2128322
Report Date: 06/10/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 02,04 Batch: WG1509399-2 WG1509399-3								
3-Nitroaniline	96		95		26-129	1		50
4-Nitroaniline	104		103		41-125	1		50
Dibenzofuran	98		98		40-140	0		50
2-Methylnaphthalene	97		95		40-140	2		50
1,2,4,5-Tetrachlorobenzene	91		89		40-117	2		50
Acetophenone	96		98		14-144	2		50
2,4,6-Trichlorophenol	104		103		30-130	1		50
p-Chloro-m-cresol	**110**	Q	**108**	Q	26-103	2		50
2-Chlorophenol	95		96		25-102	1		50
2,4-Dichlorophenol	106		108		30-130	2		50
2,4-Dimethylphenol	106		109		30-130	3		50
2-Nitrophenol	111		110		30-130	1		50
4-Nitrophenol	**120**	Q	**115**	Q	11-114	4		50
2,4-Dinitrophenol	78		71		4-130	9		50
4,6-Dinitro-o-cresol	99		93		10-130	6		50
Pentachlorophenol	85		79		17-109	7		50
Phenol	**92**	Q	**94**	Q	26-90	2		50
2-Methylphenol	102		104		30-130.	2		50
3-Methylphenol/4-Methylphenol	102		103		30-130	1		50
2,4,5-Trichlorophenol	107		100		30-130	7		50
Benzoic Acid	32		34		10-110	6		50
Benzyl Alcohol	109		113		40-140	4		50
Carbazole	106		103		54-128	3		50

Lab Control Sample Analysis

Batch Quality Control

Project Name: RYE LAKE WFP

Project Number: 41.0162892.00

Lab Number: L2128322

Report Date: 06/10/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 02,04 Batch: WG1509399-2 WG1509399-3								
1,4-Dioxane	52		65		40-140	22		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	90		91		25-120
Phenol-d6	95		98		10-120
Nitrobenzene-d5	102		102		23-120
2-Fluorobiphenyl	94		94		30-120
2,4,6-Tribromophenol	106		103		10-136
4-Terphenyl-d14	99		98		18-120

PCBS

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2128322
Report Date: 06/10/21

SAMPLE RESULTS

Lab ID: L2128322-02
Client ID: B-5 (0'-5')
Sample Location: Not Specified

Date Collected: 05/27/21 09:45
Date Received: 05/27/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8082A
Analytical Date: 06/07/21 20:00
Analyst: CW
Percent Solids: 88%

Extraction Method: EPA 3546
Extraction Date: 06/07/21 08:17
Cleanup Method: EPA 3665A
Cleanup Date: 06/07/21
Cleanup Method: EPA 3660B
Cleanup Date: 06/07/21

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Polychlorinated Biphenyls by GC - Westborough Lab							
Aroclor 1016	ND		ug/kg	36.4	3.24	1	A
Aroclor 1221	ND		ug/kg	36.4	3.65	1	A
Aroclor 1232	ND		ug/kg	36.4	7.73	1	A
Aroclor 1242	ND		ug/kg	36.4	4.91	1	A
Aroclor 1248	ND		ug/kg	36.4	5.47	1	A
Aroclor 1254	ND		ug/kg	36.4	3.99	1	A
Aroclor 1260	ND		ug/kg	36.4	6.73	1	A
Aroclor 1262	ND		ug/kg	36.4	4.63	1	A
Aroclor 1268	ND		ug/kg	36.4	3.78	1	A
PCBs, Total	ND		ug/kg	36.4	3.24	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	35		30-150	A
Decachlorobiphenyl	38		30-150	A
2,4,5,6-Tetrachloro-m-xylene	37		30-150	B
Decachlorobiphenyl	40		30-150	B

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2128322
Report Date: 06/10/21

SAMPLE RESULTS

Lab ID: L2128322-04
Client ID: B-1 (0'-5')
Sample Location: Not Specified

Date Collected: 05/27/21 10:40
Date Received: 05/27/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8082A
Analytical Date: 06/07/21 20:36
Analyst: CW
Percent Solids: 75%

Extraction Method: EPA 3546
Extraction Date: 06/07/21 08:17
Cleanup Method: EPA 3665A
Cleanup Date: 06/07/21
Cleanup Method: EPA 3660B
Cleanup Date: 06/07/21

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Polychlorinated Biphenyls by GC - Westborough Lab							
Aroclor 1016	ND		ug/kg	42.3	3.75	1	A
Aroclor 1221	ND		ug/kg	42.3	4.23	1	A
Aroclor 1232	ND		ug/kg	42.3	8.96	1	A
Aroclor 1242	ND		ug/kg	42.3	5.70	1	A
Aroclor 1248	ND		ug/kg	42.3	6.34	1	A
Aroclor 1254	ND		ug/kg	42.3	4.62	1	A
Aroclor 1260	ND		ug/kg	42.3	7.81	1	A
Aroclor 1262	ND		ug/kg	42.3	5.37	1	A
Aroclor 1268	ND		ug/kg	42.3	4.38	1	A
PCBs, Total	ND		ug/kg	42.3	3.75	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	56		30-150	A
Decachlorobiphenyl	58		30-150	A
2,4,5,6-Tetrachloro-m-xylene	57		30-150	B
Decachlorobiphenyl	61		30-150	B

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2128322
Report Date: 06/10/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8082A
Analytical Date: 06/07/21 20:08
Analyst: CW

Extraction Method: EPA 3546
Extraction Date: 06/07/21 04:23
Cleanup Method: EPA 3665A
Cleanup Date: 06/07/21
Cleanup Method: EPA 3660B
Cleanup Date: 06/07/21

Parameter	Result	Qualifier	Units	RL	MDL	Column
Polychlorinated Biphenyls by GC - Westborough Lab for sample(s): 02,04 Batch: WG1508314-1						
Aroclor 1016	ND		ug/kg	31.7	2.82	A
Aroclor 1221	ND		ug/kg	31.7	3.18	A
Aroclor 1232	ND		ug/kg	31.7	6.73	A
Aroclor 1242	ND		ug/kg	31.7	4.28	A
Aroclor 1248	ND		ug/kg	31.7	4.76	A
Aroclor 1254	ND		ug/kg	31.7	3.47	A
Aroclor 1260	ND		ug/kg	31.7	5.87	A
Aroclor 1262	ND		ug/kg	31.7	4.03	A
Aroclor 1268	ND		ug/kg	31.7	3.29	A
PCBs, Total	ND		ug/kg	31.7	2.82	A

Surrogate	%Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	65		30-150	A
Decachlorobiphenyl	70		30-150	A
2,4,5,6-Tetrachloro-m-xylene	69		30-150	B
Decachlorobiphenyl	78		30-150	B

Lab Control Sample Analysis

Batch Quality Control

Project Name: RYE LAKE WFP

Project Number: 41.0162892.00

Lab Number: L2128322

Report Date: 06/10/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
Polychlorinated Biphenyls by GC - Westborough Lab Associated sample(s): 02,04 Batch: WG1508314-2 WG1508314-3									
Aroclor 1016	82		80		40-140	2		50	A
Aroclor 1260	83		83		40-140	0		50	A

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	73		71		30-150	A
Decachlorobiphenyl	80		80		30-150	A
2,4,5,6-Tetrachloro-m-xylene	77		76		30-150	B
Decachlorobiphenyl	87		87		30-150	B

PESTICIDES

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2128322
Report Date: 06/10/21

SAMPLE RESULTS

Lab ID: L2128322-02
Client ID: B-5 (0'-5')
Sample Location: Not Specified

Date Collected: 05/27/21 09:45
Date Received: 05/27/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8081B
Analytical Date: 06/08/21 11:00
Analyst: JMC
Percent Solids: 88%

Extraction Method: EPA 3546
Extraction Date: 06/07/21 13:26
Cleanup Method: EPA 3620B
Cleanup Date: 06/08/21

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Organochlorine Pesticides by GC - Westborough Lab							
Delta-BHC	ND		ug/kg	1.78	0.349	1	A
Lindane	ND		ug/kg	0.742	0.332	1	A
Alpha-BHC	ND		ug/kg	0.742	0.211	1	A
Beta-BHC	ND		ug/kg	1.78	0.675	1	A
Heptachlor	ND		ug/kg	0.890	0.399	1	A
Aldrin	ND		ug/kg	1.78	0.627	1	A
Heptachlor epoxide	ND		ug/kg	3.34	1.00	1	A
Endrin	ND		ug/kg	0.742	0.304	1	A
Endrin aldehyde	ND		ug/kg	2.22	0.779	1	A
Endrin ketone	ND		ug/kg	1.78	0.458	1	A
Dieldrin	ND		ug/kg	1.11	0.556	1	A
4,4'-DDE	ND		ug/kg	1.78	0.412	1	A
4,4'-DDD	ND		ug/kg	1.78	0.635	1	A
4,4'-DDT	ND		ug/kg	3.34	1.43	1	A
Endosulfan I	ND		ug/kg	1.78	0.420	1	A
Endosulfan II	ND		ug/kg	1.78	0.595	1	A
Endosulfan sulfate	ND		ug/kg	0.742	0.353	1	A
Methoxychlor	ND		ug/kg	3.34	1.04	1	A
Toxaphene	ND		ug/kg	33.4	9.35	1	A
cis-Chlordane	ND		ug/kg	2.22	0.620	1	A
trans-Chlordane	ND		ug/kg	2.22	0.587	1	A
Chlordane	ND		ug/kg	14.8	5.90	1	A

Project Name: RYE LAKE WFP **Lab Number:** L2128322

Project Number: 41.0162892.00 **Report Date:** 06/10/21

SAMPLE RESULTS

Lab ID: L2128322-02 Date Collected: 05/27/21 09:45

Client ID: B-5 (0'-5') Date Received: 05/27/21

Sample Location: Not Specified Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Organochlorine Pesticides by GC - Westborough Lab							

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	68		30-150	A
Decachlorobiphenyl	85		30-150	A
2,4,5,6-Tetrachloro-m-xylene	72		30-150	B
Decachlorobiphenyl	91		30-150	B

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2128322
Report Date: 06/10/21

SAMPLE RESULTS

Lab ID: L2128322-02
Client ID: B-5 (0'-5')
Sample Location: Not Specified

Date Collected: 05/27/21 09:45
Date Received: 05/27/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8151A
Analytical Date: 05/30/21 23:41
Analyst: SDC
Percent Solids: 88%
Methylation Date: 05/30/21 11:21

Extraction Method: EPA 8151A
Extraction Date: 05/29/21 10:04

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Chlorinated Herbicides by GC - Westborough Lab							
2,4-D	ND		ug/kg	184	11.6	1	A
2,4,5-T	ND		ug/kg	184	5.69	1	A
2,4,5-TP (Silvex)	ND		ug/kg	184	4.88	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DCAA	96		30-150	A
DCAA	95		30-150	B

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2128322
Report Date: 06/10/21

SAMPLE RESULTS

Lab ID: L2128322-04
Client ID: B-1 (0'-5')
Sample Location: Not Specified

Date Collected: 05/27/21 10:40
Date Received: 05/27/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8081B
Analytical Date: 06/08/21 11:11
Analyst: JMC
Percent Solids: 75%

Extraction Method: EPA 3546
Extraction Date: 06/07/21 13:26
Cleanup Method: EPA 3620B
Cleanup Date: 06/08/21

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Organochlorine Pesticides by GC - Westborough Lab							
Delta-BHC	ND		ug/kg	2.02	0.396	1	A
Lindane	ND		ug/kg	0.843	0.377	1	A
Alpha-BHC	ND		ug/kg	0.843	0.239	1	A
Beta-BHC	ND		ug/kg	2.02	0.767	1	A
Heptachlor	ND		ug/kg	1.01	0.454	1	A
Aldrin	ND		ug/kg	2.02	0.712	1	A
Heptachlor epoxide	ND		ug/kg	3.79	1.14	1	A
Endrin	ND		ug/kg	0.843	0.346	1	A
Endrin aldehyde	ND		ug/kg	2.53	0.885	1	A
Endrin ketone	ND		ug/kg	2.02	0.521	1	A
Dieldrin	ND		ug/kg	1.26	0.632	1	A
4,4'-DDE	ND		ug/kg	2.02	0.468	1	A
4,4'-DDD	ND		ug/kg	2.02	0.722	1	A
4,4'-DDT	ND		ug/kg	3.79	1.63	1	A
Endosulfan I	ND		ug/kg	2.02	0.478	1	A
Endosulfan II	ND		ug/kg	2.02	0.676	1	A
Endosulfan sulfate	ND		ug/kg	0.843	0.401	1	A
Methoxychlor	ND		ug/kg	3.79	1.18	1	A
Toxaphene	ND		ug/kg	37.9	10.6	1	A
cis-Chlordane	ND		ug/kg	2.53	0.705	1	A
trans-Chlordane	ND		ug/kg	2.53	0.668	1	A
Chlordane	ND		ug/kg	16.9	6.70	1	A

Project Name: RYE LAKE WFP **Lab Number:** L2128322

Project Number: 41.0162892.00 **Report Date:** 06/10/21

SAMPLE RESULTS

Lab ID: L2128322-04 Date Collected: 05/27/21 10:40

Client ID: B-1 (0'-5') Date Received: 05/27/21

Sample Location: Not Specified Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Organochlorine Pesticides by GC - Westborough Lab							

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	53		30-150	A
Decachlorobiphenyl	62		30-150	A
2,4,5,6-Tetrachloro-m-xylene	54		30-150	B
Decachlorobiphenyl	64		30-150	B

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2128322
Report Date: 06/10/21

SAMPLE RESULTS

Lab ID: L2128322-04
Client ID: B-1 (0'-5')
Sample Location: Not Specified

Date Collected: 05/27/21 10:40
Date Received: 05/27/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8151A
Analytical Date: 05/31/21 00:00
Analyst: SDC
Percent Solids: 75%
Methylation Date: 05/30/21 11:21

Extraction Method: EPA 8151A
Extraction Date: 05/29/21 10:04

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Chlorinated Herbicides by GC - Westborough Lab							
2,4-D	ND		ug/kg	217	13.7	1	A
2,4,5-T	ND		ug/kg	217	6.73	1	A
2,4,5-TP (Silvex)	ND		ug/kg	217	5.77	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DCAA	93		30-150	A
DCAA	88		30-150	B

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2128322
Report Date: 06/10/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8151A
Analytical Date: 05/30/21 22:28
Analyst: SDC

Extraction Method: EPA 8151A
Extraction Date: 05/29/21 10:04

Methylation Date: 05/30/21 11:21

Parameter	Result	Qualifier	Units	RL	MDL	Column
Chlorinated Herbicides by GC - Westborough Lab for sample(s): 02,04 Batch: WG1505317-1						
2,4-D	ND		ug/kg	166	10.4	A
2,4,5-T	ND		ug/kg	166	5.14	A
2,4,5-TP (Silvex)	ND		ug/kg	166	4.41	A

Surrogate	%Recovery	Qualifier	Acceptance Criteria	Column
DCAA	90		30-150	A
DCAA	95		30-150	B

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2128322
Report Date: 06/10/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8081B
Analytical Date: 06/08/21 10:06
Analyst: JMC

Extraction Method: EPA 3546
Extraction Date: 06/07/21 13:26
Cleanup Method: EPA 3620B
Cleanup Date: 06/08/21

Parameter	Result	Qualifier	Units	RL	MDL	Column
Organochlorine Pesticides by GC - Westborough Lab for sample(s): 02,04 Batch: WG1508551-1						
Delta-BHC	ND		ug/kg	1.57	0.308	A
Lindane	ND		ug/kg	0.655	0.293	A
Alpha-BHC	ND		ug/kg	0.655	0.186	A
Beta-BHC	ND		ug/kg	1.57	0.596	A
Heptachlor	ND		ug/kg	0.786	0.352	A
Aldrin	ND		ug/kg	1.57	0.554	A
Heptachlor epoxide	ND		ug/kg	2.95	0.885	A
Endrin	ND		ug/kg	0.655	0.269	A
Endrin aldehyde	ND		ug/kg	1.96	0.688	A
Endrin ketone	ND		ug/kg	1.57	0.405	A
Dieldrin	ND		ug/kg	0.983	0.491	A
4,4'-DDE	ND		ug/kg	1.57	0.364	A
4,4'-DDD	ND		ug/kg	1.57	0.561	A
4,4'-DDT	ND		ug/kg	2.95	1.26	A
Endosulfan I	ND		ug/kg	1.57	0.372	A
Endosulfan II	ND		ug/kg	1.57	0.526	A
Endosulfan sulfate	ND		ug/kg	0.655	0.312	A
Methoxychlor	ND		ug/kg	2.95	0.917	A
Toxaphene	ND		ug/kg	29.5	8.26	A
cis-Chlordane	ND		ug/kg	1.96	0.548	A
trans-Chlordane	ND		ug/kg	1.96	0.519	A
Chlordane	ND		ug/kg	13.1	5.21	A

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2128322
Report Date: 06/10/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8081B
Analytical Date: 06/08/21 10:06
Analyst: JMC

Extraction Method: EPA 3546
Extraction Date: 06/07/21 13:26
Cleanup Method: EPA 3620B
Cleanup Date: 06/08/21

Parameter	Result	Qualifier	Units	RL	MDL	Column
Organochlorine Pesticides by GC - Westborough Lab for sample(s): 02,04 Batch: WG1508551-1						

Surrogate	%Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	64		30-150	A
Decachlorobiphenyl	72		30-150	A
2,4,5,6-Tetrachloro-m-xylene	65		30-150	B
Decachlorobiphenyl	69		30-150	B

Lab Control Sample Analysis

Batch Quality Control

Project Name: RYE LAKE WFP

Project Number: 41.0162892.00

Lab Number: L2128322

Report Date: 06/10/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
Chlorinated Herbicides by GC - Westborough Lab Associated sample(s): 02,04 Batch: WG1505317-2 WG1505317-3									
2,4-D	101		95		30-150	6		30	A
2,4,5-T	89		82		30-150	8		30	A
2,4,5-TP (Silvex)	90		82		30-150	9		30	A

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria	Column
DCAA	89		83		30-150	A
DCAA	98		95		30-150	B

Lab Control Sample Analysis

Batch Quality Control

Project Name: RYE LAKE WFP

Project Number: 41.0162892.00

Lab Number: L2128322

Report Date: 06/10/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
Organochlorine Pesticides by GC - Westborough Lab Associated sample(s): 02,04 Batch: WG1508551-2 WG1508551-3									
Delta-BHC	83		74		30-150	11		30	A
Lindane	80		73		30-150	9		30	A
Alpha-BHC	82		76		30-150	8		30	A
Beta-BHC	70		70		30-150	0		30	A
Heptachlor	78		70		30-150	11		30	A
Aldrin	80		70		30-150	13		30	A
Heptachlor epoxide	78		65		30-150	18		30	A
Endrin	80		66		30-150	19		30	A
Endrin aldehyde	61		52		30-150	16		30	A
Endrin ketone	82		67		30-150	20		30	A
Dieldrin	86		71		30-150	19		30	A
4,4'-DDE	76		65		30-150	16		30	A
4,4'-DDD	84		68		30-150	21		30	A
4,4'-DDT	86		65		30-150	28		30	A
Endosulfan I	71		62		30-150	14		30	A
Endosulfan II	81		65		30-150	22		30	A
Endosulfan sulfate	71		54		30-150	27		30	A
Methoxychlor	88		71		30-150	21		30	A
cis-Chlordane	63		57		30-150	10		30	A
trans-Chlordane	80		71		30-150	12		30	A

Lab Control Sample Analysis

Batch Quality Control

Project Name: RYE LAKE WFP

Project Number: 41.0162892.00

Lab Number: L2128322

Report Date: 06/10/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Organochlorine Pesticides by GC - Westborough Lab Associated sample(s): 02,04 Batch: WG1508551-2 WG1508551-3								

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	65		62		30-150	A
Decachlorobiphenyl	88		65		30-150	A
2,4,5,6-Tetrachloro-m-xylene	67		66		30-150	B
Decachlorobiphenyl	81		72		30-150	B

METALS

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2128322
Report Date: 06/10/21

SAMPLE RESULTS

Lab ID: L2128322-02
Client ID: B-5 (0'-5')
Sample Location: Not Specified
Sample Depth:
Matrix: Soil
Percent Solids: 88%

Date Collected: 05/27/21 09:45
Date Received: 05/27/21
Field Prep: Not Specified
TCLP/SPLP Ext. Date: 05/29/21 16:28

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
TCLP Metals by EPA 1311 - Mansfield Lab											
Arsenic, TCLP	ND		mg/l	1.00	0.019	1	06/02/21 14:13	06/04/21 00:28	EPA 3015	1,6010D	SV
Barium, TCLP	0.833		mg/l	0.500	0.021	1	06/02/21 14:13	06/04/21 00:28	EPA 3015	1,6010D	SV
Cadmium, TCLP	ND		mg/l	0.100	0.010	1	06/02/21 14:13	06/04/21 00:28	EPA 3015	1,6010D	SV
Chromium, TCLP	ND		mg/l	0.200	0.021	1	06/02/21 14:13	06/04/21 00:28	EPA 3015	1,6010D	SV
Lead, TCLP	ND		mg/l	0.500	0.027	1	06/02/21 14:13	06/04/21 00:28	EPA 3015	1,6010D	SV
Mercury, TCLP	0.0008	J	mg/l	0.0010	0.0005	1	06/02/21 14:15	06/03/21 12:16	EPA 7470A	1,7470A	OU
Selenium, TCLP	ND		mg/l	0.500	0.035	1	06/02/21 14:13	06/04/21 00:28	EPA 3015	1,6010D	SV
Silver, TCLP	ND		mg/l	0.100	0.028	1	06/02/21 14:13	06/04/21 00:28	EPA 3015	1,6010D	SV

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2128322
Report Date: 06/10/21

SAMPLE RESULTS

Lab ID: L2128322-02
Client ID: B-5 (0'-5')
Sample Location: Not Specified
Date Collected: 05/27/21 09:45
Date Received: 05/27/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Aluminum, Total	9650		mg/kg	8.57	2.31	2	06/03/21 06:55	06/03/21 17:11	EPA 3050B	1,6010D	SV
Antimony, Total	ND		mg/kg	4.28	0.326	2	06/03/21 06:55	06/03/21 17:11	EPA 3050B	1,6010D	SV
Arsenic, Total	1.49		mg/kg	0.857	0.178	2	06/03/21 06:55	06/03/21 17:11	EPA 3050B	1,6010D	SV
Barium, Total	124		mg/kg	0.857	0.149	2	06/03/21 06:55	06/03/21 17:11	EPA 3050B	1,6010D	SV
Beryllium, Total	ND		mg/kg	0.428	0.028	2	06/03/21 06:55	06/03/21 17:11	EPA 3050B	1,6010D	SV
Cadmium, Total	0.300	J	mg/kg	0.857	0.084	2	06/03/21 06:55	06/03/21 17:11	EPA 3050B	1,6010D	SV
Calcium, Total	1540		mg/kg	8.57	3.00	2	06/03/21 06:55	06/03/21 17:11	EPA 3050B	1,6010D	SV
Chromium, Total	19.2		mg/kg	0.857	0.082	2	06/03/21 06:55	06/03/21 17:11	EPA 3050B	1,6010D	SV
Cobalt, Total	7.80		mg/kg	1.71	0.142	2	06/03/21 06:55	06/03/21 17:11	EPA 3050B	1,6010D	SV
Copper, Total	12.1		mg/kg	0.857	0.221	2	06/03/21 06:55	06/03/21 17:11	EPA 3050B	1,6010D	SV
Iron, Total	17600		mg/kg	4.28	0.774	2	06/03/21 06:55	06/03/21 17:11	EPA 3050B	1,6010D	SV
Lead, Total	2.51	J	mg/kg	4.28	0.230	2	06/03/21 06:55	06/03/21 17:11	EPA 3050B	1,6010D	SV
Magnesium, Total	3430		mg/kg	8.57	1.32	2	06/03/21 06:55	06/03/21 17:11	EPA 3050B	1,6010D	SV
Manganese, Total	302		mg/kg	0.857	0.136	2	06/03/21 06:55	06/03/21 17:11	EPA 3050B	1,6010D	SV
Mercury, Total	ND		mg/kg	0.071	0.046	1	06/03/21 08:20	06/03/21 19:36	EPA 7471B	1,7471B	NB
Nickel, Total	10.2		mg/kg	2.14	0.207	2	06/03/21 06:55	06/03/21 17:11	EPA 3050B	1,6010D	SV
Potassium, Total	2670		mg/kg	214	12.3	2	06/03/21 06:55	06/03/21 17:11	EPA 3050B	1,6010D	SV
Selenium, Total	ND		mg/kg	1.71	0.221	2	06/03/21 06:55	06/03/21 17:11	EPA 3050B	1,6010D	SV
Silver, Total	ND		mg/kg	0.857	0.242	2	06/03/21 06:55	06/03/21 17:11	EPA 3050B	1,6010D	SV
Sodium, Total	63.0	J	mg/kg	171	2.70	2	06/03/21 06:55	06/03/21 17:11	EPA 3050B	1,6010D	SV
Thallium, Total	ND		mg/kg	1.71	0.270	2	06/03/21 06:55	06/03/21 17:11	EPA 3050B	1,6010D	SV
Vanadium, Total	32.0		mg/kg	0.857	0.174	2	06/03/21 06:55	06/03/21 17:11	EPA 3050B	1,6010D	SV
Zinc, Total	44.5		mg/kg	4.28	0.251	2	06/03/21 06:55	06/03/21 17:11	EPA 3050B	1,6010D	SV

Project Name: RYE LAKE WFP
Lab Number: L2128322
Project Number: 41.0162892.00
Report Date: 06/10/21

SAMPLE RESULTS

Lab ID: L2128322-04
Client ID: B-1 (0'-5')
Sample Location: Not Specified
Date Collected: 05/27/21 10:40
Date Received: 05/27/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 75%
TCLP/SPLP Ext. Date: 05/29/21 16:28

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
TCLP Metals by EPA 1311 - Mansfield Lab											
Arsenic, TCLP	ND		mg/l	1.00	0.019	1	06/02/21 14:13	06/04/21 00:33	EPA 3015	1,6010D	SV
Barium, TCLP	0.513		mg/l	0.500	0.021	1	06/02/21 14:13	06/04/21 00:33	EPA 3015	1,6010D	SV
Cadmium, TCLP	ND		mg/l	0.100	0.010	1	06/02/21 14:13	06/04/21 00:33	EPA 3015	1,6010D	SV
Chromium, TCLP	ND		mg/l	0.200	0.021	1	06/02/21 14:13	06/04/21 00:33	EPA 3015	1,6010D	SV
Lead, TCLP	ND		mg/l	0.500	0.027	1	06/02/21 14:13	06/04/21 00:33	EPA 3015	1,6010D	SV
Mercury, TCLP	0.0010	J	mg/l	0.0010	0.0005	1	06/02/21 14:15	06/03/21 12:19	EPA 7470A	1,7470A	OU
Selenium, TCLP	ND		mg/l	0.500	0.035	1	06/02/21 14:13	06/04/21 00:33	EPA 3015	1,6010D	SV
Silver, TCLP	ND		mg/l	0.100	0.028	1	06/02/21 14:13	06/04/21 00:33	EPA 3015	1,6010D	SV

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2128322
Report Date: 06/10/21

SAMPLE RESULTS

Lab ID: L2128322-04
Client ID: B-1 (0'-5')
Sample Location: Not Specified
Date Collected: 05/27/21 10:40
Date Received: 05/27/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 75%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Aluminum, Total	11100		mg/kg	10.4	2.80	2	06/03/21 06:55	06/03/21 17:16	EPA 3050B	1,6010D	SV
Antimony, Total	ND		mg/kg	5.18	0.394	2	06/03/21 06:55	06/03/21 17:16	EPA 3050B	1,6010D	SV
Arsenic, Total	1.57		mg/kg	1.04	0.216	2	06/03/21 06:55	06/03/21 17:16	EPA 3050B	1,6010D	SV
Barium, Total	101		mg/kg	1.04	0.180	2	06/03/21 06:55	06/03/21 17:16	EPA 3050B	1,6010D	SV
Beryllium, Total	ND		mg/kg	0.518	0.034	2	06/03/21 06:55	06/03/21 17:16	EPA 3050B	1,6010D	SV
Cadmium, Total	0.404	J	mg/kg	1.04	0.102	2	06/03/21 06:55	06/03/21 17:16	EPA 3050B	1,6010D	SV
Calcium, Total	1500		mg/kg	10.4	3.63	2	06/03/21 06:55	06/03/21 17:16	EPA 3050B	1,6010D	SV
Chromium, Total	32.3		mg/kg	1.04	0.100	2	06/03/21 06:55	06/03/21 17:16	EPA 3050B	1,6010D	SV
Cobalt, Total	10.5		mg/kg	2.07	0.172	2	06/03/21 06:55	06/03/21 17:16	EPA 3050B	1,6010D	SV
Copper, Total	24.4		mg/kg	1.04	0.267	2	06/03/21 06:55	06/03/21 17:16	EPA 3050B	1,6010D	SV
Iron, Total	22500		mg/kg	5.18	0.936	2	06/03/21 06:55	06/03/21 17:16	EPA 3050B	1,6010D	SV
Lead, Total	4.51	J	mg/kg	5.18	0.278	2	06/03/21 06:55	06/03/21 17:16	EPA 3050B	1,6010D	SV
Magnesium, Total	4180		mg/kg	10.4	1.60	2	06/03/21 06:55	06/03/21 17:16	EPA 3050B	1,6010D	SV
Manganese, Total	397		mg/kg	1.04	0.165	2	06/03/21 06:55	06/03/21 17:16	EPA 3050B	1,6010D	SV
Mercury, Total	ND		mg/kg	0.083	0.054	1	06/03/21 08:20	06/03/21 19:40	EPA 7471B	1,7471B	NB
Nickel, Total	22.4		mg/kg	2.59	0.251	2	06/03/21 06:55	06/03/21 17:16	EPA 3050B	1,6010D	SV
Potassium, Total	2820		mg/kg	259	14.9	2	06/03/21 06:55	06/03/21 17:16	EPA 3050B	1,6010D	SV
Selenium, Total	ND		mg/kg	2.07	0.267	2	06/03/21 06:55	06/03/21 17:16	EPA 3050B	1,6010D	SV
Silver, Total	ND		mg/kg	1.04	0.293	2	06/03/21 06:55	06/03/21 17:16	EPA 3050B	1,6010D	SV
Sodium, Total	69.6	J	mg/kg	207	3.26	2	06/03/21 06:55	06/03/21 17:16	EPA 3050B	1,6010D	SV
Thallium, Total	ND		mg/kg	2.07	0.326	2	06/03/21 06:55	06/03/21 17:16	EPA 3050B	1,6010D	SV
Vanadium, Total	43.7		mg/kg	1.04	0.210	2	06/03/21 06:55	06/03/21 17:16	EPA 3050B	1,6010D	SV
Zinc, Total	46.4		mg/kg	5.18	0.304	2	06/03/21 06:55	06/03/21 17:16	EPA 3050B	1,6010D	SV

Project Name: RYE LAKE WFP **Lab Number:** L2128322

Project Number: 41.0162892.00 **Report Date:** 06/10/21

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
TCLP Metals by EPA 1311 - Mansfield Lab for sample(s): 02,04 Batch: WG1506591-1										
Arsenic, TCLP	ND		mg/l	1.00	0.019	1	06/02/21 14:13	06/03/21 23:34	1,6010D	SV
Barium, TCLP	ND		mg/l	0.500	0.021	1	06/02/21 14:13	06/03/21 23:34	1,6010D	SV
Cadmium, TCLP	ND		mg/l	0.100	0.010	1	06/02/21 14:13	06/03/21 23:34	1,6010D	SV
Chromium, TCLP	ND		mg/l	0.200	0.021	1	06/02/21 14:13	06/03/21 23:34	1,6010D	SV
Lead, TCLP	ND		mg/l	0.500	0.027	1	06/02/21 14:13	06/03/21 23:34	1,6010D	SV
Selenium, TCLP	ND		mg/l	0.500	0.035	1	06/02/21 14:13	06/03/21 23:34	1,6010D	SV
Silver, TCLP	ND		mg/l	0.100	0.028	1	06/02/21 14:13	06/03/21 23:34	1,6010D	SV

Prep Information

Digestion Method: EPA 3015

TCLP/SPLP Extraction Date: 05/27/21 22:18

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
TCLP Metals by EPA 1311 - Mansfield Lab for sample(s): 02,04 Batch: WG1506593-1										
Mercury, TCLP	0.0009	J	mg/l	0.0010	0.0005	1	06/02/21 14:15	06/03/21 11:46	1,7470A	OU

Prep Information

Digestion Method: EPA 7470A

TCLP/SPLP Extraction Date: 05/27/21 22:18

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 02,04 Batch: WG1506654-1										
Aluminum, Total	ND		mg/kg	4.00	1.08	1	06/03/21 06:55	06/03/21 14:37	1,6010D	SV
Antimony, Total	ND		mg/kg	2.00	0.152	1	06/03/21 06:55	06/03/21 14:37	1,6010D	SV
Arsenic, Total	ND		mg/kg	0.400	0.083	1	06/03/21 06:55	06/03/21 14:37	1,6010D	SV
Barium, Total	ND		mg/kg	0.400	0.070	1	06/03/21 06:55	06/03/21 14:37	1,6010D	SV
Beryllium, Total	ND		mg/kg	0.200	0.013	1	06/03/21 06:55	06/03/21 14:37	1,6010D	SV
Cadmium, Total	ND		mg/kg	0.400	0.039	1	06/03/21 06:55	06/03/21 14:37	1,6010D	SV
Calcium, Total	1.87	J	mg/kg	4.00	1.40	1	06/03/21 06:55	06/03/21 14:37	1,6010D	SV
Chromium, Total	ND		mg/kg	0.400	0.038	1	06/03/21 06:55	06/03/21 14:37	1,6010D	SV
Cobalt, Total	ND		mg/kg	0.800	0.066	1	06/03/21 06:55	06/03/21 14:37	1,6010D	SV

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2128322
Report Date: 06/10/21

Method Blank Analysis
Batch Quality Control

Copper, Total	ND	mg/kg	0.400	0.103	1	06/03/21 06:55	06/03/21 14:37	1,6010D	SV
Iron, Total	ND	mg/kg	2.00	0.361	1	06/03/21 06:55	06/03/21 14:37	1,6010D	SV
Lead, Total	ND	mg/kg	2.00	0.107	1	06/03/21 06:55	06/03/21 14:37	1,6010D	SV
Magnesium, Total	ND	mg/kg	4.00	0.616	1	06/03/21 06:55	06/03/21 14:37	1,6010D	SV
Manganese, Total	ND	mg/kg	0.400	0.064	1	06/03/21 06:55	06/03/21 14:37	1,6010D	SV
Nickel, Total	ND	mg/kg	1.00	0.097	1	06/03/21 06:55	06/03/21 14:37	1,6010D	SV
Potassium, Total	ND	mg/kg	100	5.76	1	06/03/21 06:55	06/03/21 14:37	1,6010D	SV
Selenium, Total	ND	mg/kg	0.800	0.103	1	06/03/21 06:55	06/03/21 14:37	1,6010D	SV
Silver, Total	ND	mg/kg	0.400	0.113	1	06/03/21 06:55	06/03/21 14:37	1,6010D	SV
Sodium, Total	ND	mg/kg	80.0	1.26	1	06/03/21 06:55	06/03/21 14:37	1,6010D	SV
Thallium, Total	ND	mg/kg	0.800	0.126	1	06/03/21 06:55	06/03/21 14:37	1,6010D	SV
Vanadium, Total	ND	mg/kg	0.400	0.081	1	06/03/21 06:55	06/03/21 14:37	1,6010D	SV
Zinc, Total	ND	mg/kg	2.00	0.117	1	06/03/21 06:55	06/03/21 14:37	1,6010D	SV

Prep Information

Digestion Method: EPA 3050B

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 02,04 Batch: WG1506658-1										
Mercury, Total	ND		mg/kg	0.083	0.054	1	06/03/21 08:20	06/03/21 17:19	1,7471B	NB

Prep Information

Digestion Method: EPA 7471B

Lab Control Sample Analysis

Batch Quality Control

Project Name: RYE LAKE WFP

Project Number: 41.0162892.00

Lab Number: L2128322

Report Date: 06/10/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
TCLP Metals by EPA 1311 - Mansfield Lab Associated sample(s): 02,04 Batch: WG1506591-2								
Arsenic, TCLP	110		-		75-125	-		20
Barium, TCLP	102		-		75-125	-		20
Cadmium, TCLP	109		-		75-125	-		20
Chromium, TCLP	104		-		75-125	-		20
Lead, TCLP	106		-		75-125	-		20
Selenium, TCLP	114		-		75-125	-		20
Silver, TCLP	104		-		75-125	-		20
TCLP Metals by EPA 1311 - Mansfield Lab Associated sample(s): 02,04 Batch: WG1506593-2								
Mercury, TCLP	114		-		80-120	-		

Lab Control Sample Analysis

Batch Quality Control

Project Name: RYE LAKE WFP

Project Number: 41.0162892.00

Lab Number: L2128322

Report Date: 06/10/21

Parameter	LCS %Recovery	LCSD %Recovery	%Recovery Limits	RPD	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04 Batch: WG1506654-2 SRM Lot Number: D109-540					
Aluminum, Total	61	-	50-150	-	
Antimony, Total	134	-	19-250	-	
Arsenic, Total	98	-	70-130	-	
Barium, Total	87	-	75-125	-	
Beryllium, Total	100	-	75-125	-	
Cadmium, Total	110	-	75-125	-	
Calcium, Total	85	-	73-128	-	
Chromium, Total	99	-	70-130	-	
Cobalt, Total	107	-	75-125	-	
Copper, Total	92	-	75-125	-	
Iron, Total	72	-	35-165	-	
Lead, Total	88	-	72-128	-	
Magnesium, Total	78	-	62-138	-	
Manganese, Total	87	-	74-126	-	
Nickel, Total	104	-	70-130	-	
Potassium, Total	76	-	59-141	-	
Selenium, Total	100	-	68-132	-	
Silver, Total	93	-	68-131	-	
Sodium, Total	99	-	35-165	-	
Thallium, Total	104	-	68-131	-	
Vanadium, Total	87	-	59-141	-	

Lab Control Sample Analysis

Batch Quality Control

Project Name: RYE LAKE WFP

Project Number: 41.0162892.00

Lab Number: L2128322

Report Date: 06/10/21

Parameter	LCS %Recovery	LCSD %Recovery	%Recovery Limits	RPD	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04 Batch: WG1506654-2 SRM Lot Number: D109-540					
Zinc, Total	94	-	70-130	-	
Total Metals - Mansfield Lab Associated sample(s): 02,04 Batch: WG1506658-2 SRM Lot Number: D109-540					
Mercury, Total	88	-	60-140	-	

Matrix Spike Analysis
Batch Quality Control

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2128322
Report Date: 06/10/21

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
TCLP Metals by EPA 1311 - Mansfield Lab Associated sample(s): 02,04 QC Batch ID: WG1506591-3 QC Sample: L2128454-02 Client ID: MS Sample												
Arsenic, TCLP	ND	1.2	1.31	109		-	-		75-125	-		20
Barium, TCLP	1.14	20	20.8	98		-	-		75-125	-		20
Cadmium, TCLP	ND	0.51	0.539	106		-	-		75-125	-		20
Chromium, TCLP	ND	2	2.01	100		-	-		75-125	-		20
Lead, TCLP	0.202J	5.1	5.43	106		-	-		75-125	-		20
Selenium, TCLP	0.037J	1.2	1.37	114		-	-		75-125	-		20
Silver, TCLP	ND	0.5	0.510	102		-	-		75-125	-		20
TCLP Metals by EPA 1311 - Mansfield Lab Associated sample(s): 02,04 QC Batch ID: WG1506593-3 QC Sample: L2128786-01 Client ID: MS Sample												
Mercury, TCLP	0.0012	0.025	0.0242	92		-	-		80-120	-		20

Matrix Spike Analysis
Batch Quality Control

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2128322
Report Date: 06/10/21

Parameter	Native Sample	MS Added	MS Found	MS %Recovery		MSD Found	MSD %Recovery	Recovery Limits	RPD	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04 QC Batch ID: WG1506654-3 QC Sample: L2128962-01 Client ID: MS Sample										
Aluminum, Total	5180	166	5220	**24**	Q	-	-	75-125	-	20
Antimony, Total	ND	41.4	27.4	**66**	Q	-	-	75-125	-	20
Arsenic, Total	4.42	9.94	11.9	75		-	-	75-125	-	20
Barium, Total	33.3	166	162	78		-	-	75-125	-	20
Beryllium, Total	0.190J	4.14	3.61	87		-	-	75-125	-	20
Cadmium, Total	0.271J	4.22	3.52	83		-	-	75-125	-	20
Calcium, Total	5020	828	10900	**710**	Q	-	-	75-125	-	20
Chromium, Total	7.56	16.6	20.5	78		-	-	75-125	-	20
Cobalt, Total	4.74	41.4	35.5	**74**	Q	-	-	75-125	-	20
Copper, Total	12.2	20.7	29.4	83		-	-	75-125	-	20
Iron, Total	13700	82.8	12800	**0**	Q	-	-	75-125	-	20
Lead, Total	5.34	42.2	35.5	**71**	Q	-	-	75-125	-	20
Magnesium, Total	3650	828	3650	**0**	Q	-	-	75-125	-	20
Manganese, Total	478	41.4	477	**0**	Q	-	-	75-125	-	20
Nickel, Total	9.81	41.4	40.1	**73**	Q	-	-	75-125	-	20
Potassium, Total	475	828	1040	**68**	Q	-	-	75-125	-	20
Selenium, Total	ND	9.94	6.87	**69**	Q	-	-	75-125	-	20
Silver, Total	ND	24.8	3.63	**15**	Q	-	-	75-125	-	20
Sodium, Total	21.0J	828	729	88		-	-	75-125	-	20
Thallium, Total	ND	9.94	5.96	**60**	Q	-	-	75-125	-	20
Vanadium, Total	13.0	41.4	44.2	75		-	-	75-125	-	20

Matrix Spike Analysis
Batch Quality Control

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2128322
Report Date: 06/10/21

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Found	MSD %Recovery	Recovery Limits	RPD	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02,04 QC Batch ID: WG1506654-3 QC Sample: L2128962-01 Client ID: MS Sample									
Zinc, Total	20.5	41.4	52.0	76	-	-	75-125	-	20
Total Metals - Mansfield Lab Associated sample(s): 02,04 QC Batch ID: WG1506658-3 QC Sample: L2128349-01 Client ID: MS Sample									
Mercury, Total	ND	0.149	0.176	118	-	-	80-120	-	20

Lab Duplicate Analysis
Batch Quality Control

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2128322
Report Date: 06/10/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
TCLP Metals by EPA 1311 - Mansfield Lab Associated sample(s): 02,04 QC Batch ID: WG1506591-4 QC Sample: L2128454-02 Client ID: DUP Sample						
Lead, TCLP	0.202J	0.213J	mg/l	NC		20
TCLP Metals by EPA 1311 - Mansfield Lab Associated sample(s): 02,04 QC Batch ID: WG1506593-4 QC Sample: L2128786-01 Client ID: DUP Sample						
Mercury, TCLP	0.0012	0.0014	mg/l	10		20
Total Metals - Mansfield Lab Associated sample(s): 02,04 QC Batch ID: WG1506654-4 QC Sample: L2128962-01 Client ID: DUP Sample						
Arsenic, Total	4.42	3.79	mg/kg	15		20
Barium, Total	33.3	27.1	mg/kg	**21**	Q	20
Cadmium, Total	0.271J	0.266J	mg/kg	NC		20
Chromium, Total	7.56	8.13	mg/kg	7		20
Lead, Total	5.34	4.00	mg/kg	**29**	Q	20
Selenium, Total	ND	ND	mg/kg	NC		20
Silver, Total	ND	ND	mg/kg	NC		20
Total Metals - Mansfield Lab Associated sample(s): 02,04 QC Batch ID: WG1506658-4 QC Sample: L2128349-01 Client ID: DUP Sample						
Mercury, Total	ND	ND	mg/kg	NC		20

INORGANICS
&
MISCELLANEOUS

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2128322
Report Date: 06/10/21

SAMPLE RESULTS

Lab ID: L2128322-02
Client ID: B-5 (0'-5')
Sample Location: Not Specified
Sample Depth:
Matrix: Soil

Date Collected: 05/27/21 09:45
Date Received: 05/27/21
Field Prep: Not Specified

Test Material Information

Source of Material:	Unknown
Description of Material:	Non-Metallic - Damp Soil
Particle Size:	Coarse
Preliminary Burning Time (sec):	120

Parameter	Result	Date Analyzed	Analytical Method	Analyst
Ignitability of Solids - Westborough Lab				
Ignitability	NI	06/03/21 14:40	1,1030	IS

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2128322
Report Date: 06/10/21

SAMPLE RESULTS

Lab ID: L2128322-04
Client ID: B-1 (0'-5')
Sample Location: Not Specified
Sample Depth:
Matrix: Soil

Date Collected: 05/27/21 10:40
Date Received: 05/27/21
Field Prep: Not Specified

Test Material Information

Source of Material: Unknown
Description of Material: Non-Metallic - Damp Soil
Particle Size: Coarse
Preliminary Burning Time (sec): 120

Parameter	Result	Date Analyzed	Analytical Method	Analyst
Ignitability of Solids - Westborough Lab				
Ignitability	NI	06/03/21 14:40	1,1030	IS

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2128322
Report Date: 06/10/21

SAMPLE RESULTS

Lab ID: L2128322-01
Client ID: B-5 (1'-2')
Sample Location: Not Specified

Date Collected: 05/27/21 09:45
Date Received: 05/27/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	87.1		%	0.100	NA	1	-	05/29/21 10:30	121,2540G	RI

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2128322
Report Date: 06/10/21

SAMPLE RESULTS

Lab ID: L2128322-02
Client ID: B-5 (0'-5')
Sample Location: Not Specified

Sample Depth:
Matrix: Soil

Date Collected: 05/27/21 09:45
Date Received: 05/27/21
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	88.4		%	0.100	NA	1	-	05/29/21 10:30	121,2540G	RI
pH (H)	6.1		SU	-	NA	1	-	06/02/21 21:40	1,9045D	AS
Cyanide, Reactive	ND		mg/kg	10	10.	1	06/03/21 19:50	06/03/21 22:22	125,7.3	NA
Sulfide, Reactive	ND		mg/kg	10	10.	1	06/03/21 19:50	06/03/21 21:40	125,7.3	NA

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2128322
Report Date: 06/10/21

SAMPLE RESULTS

Lab ID: L2128322-03
Client ID: B-1 (1'-2')
Sample Location: Not Specified

Date Collected: 05/27/21 10:40
Date Received: 05/27/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	84.4		%	0.100	NA	1	-	05/29/21 10:30	121,2540G	RI

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2128322
Report Date: 06/10/21

SAMPLE RESULTS

Lab ID: L2128322-04
Client ID: B-1 (0'-5')
Sample Location: Not Specified

Sample Depth:
Matrix: Soil

Date Collected: 05/27/21 10:40
Date Received: 05/27/21
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	75.4		%	0.100	NA	1	-	05/29/21 10:30	121,2540G	RI
pH (H)	6.7		SU	-	NA	1	-	06/02/21 21:40	1,9045D	AS
Cyanide, Reactive	ND		mg/kg	10	10.	1	06/03/21 19:50	06/03/21 22:23	125,7.3	NA
Sulfide, Reactive	ND		mg/kg	10	10.	1	06/03/21 19:50	06/03/21 21:40	125,7.3	NA

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2128322
Report Date: 06/10/21

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab for sample(s): 02,04 Batch: WG1506146-1										
Sulfide, Reactive	ND		mg/kg	10	10.	1	06/03/21 19:50	06/03/21 21:40	125,7.3	NA
General Chemistry - Westborough Lab for sample(s): 02,04 Batch: WG1506149-1										
Cyanide, Reactive	ND		mg/kg	10	10.	1	06/03/21 19:50	06/03/21 22:22	125,7.3	NA

Lab Control Sample Analysis

Batch Quality Control

Project Name: RYE LAKE WFP

Project Number: 41.0162892.00

Lab Number: L2128322

Report Date: 06/10/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 02,04 Batch: WG1506146-2								
Sulfide, Reactive	82		-		60-125	-		40
General Chemistry - Westborough Lab Associated sample(s): 02,04 Batch: WG1506149-2								
Cyanide, Reactive	57		-		30-125	-		40
General Chemistry - Westborough Lab Associated sample(s): 02,04 Batch: WG1506813-1								
pH	100		-		99-101	-		

Lab Duplicate Analysis
Batch Quality Control

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2128322
Report Date: 06/10/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-04 QC Batch ID: WG1505252-1 QC Sample: L2128322-01 Client ID: B-5 (1'-2')						
Solids, Total	87.1	88.3	%	1		20
General Chemistry - Westborough Lab Associated sample(s): 02,04 QC Batch ID: WG1506146-3 QC Sample: L2128322-02 Client ID: B-5 (0'-5')						
Sulfide, Reactive	ND	ND	mg/kg	NC		40
General Chemistry - Westborough Lab Associated sample(s): 02,04 QC Batch ID: WG1506149-3 QC Sample: L2128322-02 Client ID: B-5 (0'-5')						
Cyanide, Reactive	ND	ND	mg/kg	NC		40

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2128322
Report Date: 06/10/21

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2128322-01A	Vial MeOH preserved	A	NA		5.4	Y	Absent		NYTCL-8260HLW(14)
L2128322-01B	Vial water preserved	A	NA		5.4	Y	Absent	28-MAY-21 20:07	NYTCL-8260HLW(14)
L2128322-01C	Vial water preserved	A	NA		5.4	Y	Absent	28-MAY-21 20:07	NYTCL-8260HLW(14)
L2128322-01D	Plastic 120ml unpreserved	A	NA		5.4	Y	Absent		TS(7)
L2128322-02A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		5.4	Y	Absent		BE-TI(180),AS-TI(180),BA-TI(180),AG-TI(180),CR-TI(180),TL-TI(180),AL-TI(180),NI-TI(180),CU-TI(180),PB-TI(180),SB-TI(180),ZN-TI(180),SE-TI(180),CO-TI(180),V-TI(180),FE-TI(180),MN-TI(180),HG-T(28),MG-TI(180),CD-TI(180),CA-TI(180),NA-TI(180),K-TI(180)
L2128322-02B	Glass 120ml/4oz unpreserved	A	NA		5.4	Y	Absent		IGNIT-1030(14),NYTCL-8270(14),REACTS(14),HERB-APA(14),TS(7),PH-9045(1),NYTCL-8081(14),REACTCN(14),NYTCL-8082(365)
L2128322-02C	Glass 500ml/16oz unpreserved	A	NA		5.4	Y	Absent		IGNIT-1030(14),NYTCL-8270(14),REACTS(14),HERB-APA(14),TS(7),PH-9045(1),NYTCL-8081(14),REACTCN(14),NYTCL-8082(365)
L2128322-02X	Plastic 120ml HNO3 preserved Extracts	A	NA		5.4	Y	Absent		CD-CI(180),AS-CI(180),BA-CI(180),HG-C(28),PB-CI(180),CR-CI(180),SE-CI(180),AG-CI(180)
L2128322-02X9	Tumble Vessel	A	NA		5.4	Y	Absent		-
L2128322-03A	Vial MeOH preserved	A	NA		5.4	Y	Absent		NYTCL-8260HLW(14)
L2128322-03B	Vial water preserved	A	NA		5.4	Y	Absent	28-MAY-21 20:07	NYTCL-8260HLW(14)
L2128322-03C	Vial water preserved	A	NA		5.4	Y	Absent	28-MAY-21 20:07	NYTCL-8260HLW(14)
L2128322-03D	Plastic 120ml unpreserved	A	NA		5.4	Y	Absent		TS(7)
L2128322-04A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		5.4	Y	Absent		BE-TI(180),BA-TI(180),AS-TI(180),AG-TI(180),AL-TI(180),NI-TI(180),TL-TI(180),CR-TI(180),SE-TI(180),ZN-TI(180),SB-TI(180),CU-TI(180),PB-TI(180),CO-TI(180),V-TI(180),FE-TI(180),MN-TI(180),HG-T(28),MG-TI(180),NA-TI(180),CA-TI(180),CD-TI(180),K-TI(180)

*Values in parentheses indicate holding time in days

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2128322
Report Date: 06/10/21

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2128322-04B	Glass 120ml/4oz unpreserved	A	NA		5.4	Y	Absent		REACTS(14),IGNIT-1030(14),NYTCL-8270(14),HERB-APA(14),TS(7),PH-9045(1),NYTCL-8081(14),NYTCL-8082(365),REACTCN(14)
L2128322-04C	Glass 500ml/16oz unpreserved	A	NA		5.4	Y	Absent		REACTS(14),IGNIT-1030(14),NYTCL-8270(14),HERB-APA(14),TS(7),PH-9045(1),NYTCL-8081(14),NYTCL-8082(365),REACTCN(14)
L2128322-04X	Plastic 120ml HNO3 preserved Extracts	A	NA		5.4	Y	Absent		CD-CI(180),AS-CI(180),BA-CI(180),HG-C(28),PB-CI(180),CR-CI(180),SE-CI(180),AG-CI(180)
L2128322-04X9	Tumble Vessel	A	NA		5.4	Y	Absent		-

*Values in parentheses indicate holding time in days

Project Name:	RYE LAKE WFP	**Lab Number:**	L2128322
Project Number:	41.0162892.00	**Report Date:**	06/10/21

GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers

Project Name:	RYE LAKE WFP	**Lab Number:**	L2128322
Project Number:	41.0162892.00	**Report Date:**	06/10/21

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. (Note: 'PFAS, Total (6)' is applicable to MassDEP DW compliance analysis only.). If a 'Total' result is requested, the results of its individual components will also be reported.

The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA,this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

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

F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

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

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

Report Format: DU Report with 'J' Qualifiers

Project Name:	RYE LAKE WFP	**Lab Number:**	L2128322
Project Number:	41.0162892.00	**Report Date:**	06/10/21

Data Qualifiers

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

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

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

Project Name:	RYE LAKE WFP	**Lab Number:**	L2128322
Project Number:	41.0162892.00	**Report Date:**	06/10/21

REFERENCES

1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.

121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

125 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates IIIA, April 1998.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene
EPA 625/625.1: alpha-Terpineol
EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D/8270E: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522, EPA 537.1.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

NEW YORK CHAIN OF CUSTODY

ALPHA ANALYTICAL

Westborough, MA 01581
8 Walkup Dr.
TEL: 508-898-9220
FAX: 508-898-9193

Mansfield, MA 02048
320 Forbes Blvd
TEL: 508-822-9300
FAX: 508-822-3288

Service Centers
Mahwah, NJ 07430: 35 Whitney Rd, Suite 5
Albany, NY 12205: 14 Walker Way
Tonawanda, NY 14150: 275 Cooper Ave, Suite 105

Page of

Date Rec'd in Lab: 5/28/21

ALPHA Job #: L2128322

Client Information
Client: GZA GeoEnvironmental
Address: 104 West 29th St
New York, NY
Phone: 212-594-8140
Fax:
Email: Matthew.Delbalzo@gza.com

Project Information
Project Name: Rye Lake WFP
Project Location:
Project #: 41.0162892.00
(Use Project name as Project #) ☐
Project Manager: Matt DelBalzo
ALPHAQuote #:

Turn-Around Time
Standard ☑ Due Date:
Rush (only if pre approved) ☐ # of Days:

These samples have been previously analyzed by Alpha ☐

Other project specific requirements/comments:

Please specify Metals or TAL.

Deliverables
☐ ASP-A ☐ ASP-B
☐ EQuIS (1 File) ☐ EQuIS (4 File)
☐ Other

Regulatory Requirement
☐ NY TOGS ☐ NY Part 375
☐ AWQ Standards ☐ NY CP-51
☐ NY Restricted Use ☐ Other
☐ NY Unrestricted Use
☐ NYC Sewer Discharge

Billing Information
☐ Same as Client Info
PO #

Disposal Site Information
Please identify below location of applicable disposal facilities.
Disposal Facility:
☑ NJ ☑ NY
☑ Other: PA

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	VOCs (8260)	SVOCs (8270)	TAL Metals (6010/7471)	Pesticides (8081)	Herbicides (8151)	PCBs (8082)	TCLP RCRA 8 Metal	Haz. Charact.
2128322-01	B-5 (1'-2')	5/27/21	9:45	Soil	A.A.	X							
-02	B-5 (0'-5')	5/27/21	9:45	Soil	A.A.		X	X	X	X	X	X	X
-03	B-1 (1'-2') } B-1	5/27/21	10:40	Soil	A.A.	X							
-04	B-1 (0'-5') } B-1	5/27/21	10:40	Soil	A.A.		X	X	X	X	X	X	X

Sample Filtration
☐ Done
☐ Lab to do
Preservation
☐ Lab to do
(Please Specify below)

Total Bottle

Sample Specific Comments

Preservative Code:
A = None
B = HCl
C = HNO_3
D = H_2SO_4
E = NaOH
F = MeOH
G = $NaHSO_4$
H = $Na_2S_2O_3$
K/E = Zn Ac/NaOH
O = Other

Container Code
P = Plastic
A = Amber Glass
V = Vial
G = Glass
B = Bacteria Cup
C = Cube
O = Other
E = Encore
D = BOD Bottle

Westboro: Certification No: MA935
Mansfield: Certification No: MA015

Container Type									
Preservative									

Relinquished By:	Date/Time	Received By:	Date/Time
Allan Amador	05/27/21, 1:50PM		5/27/21 1350
	5/27/21 1905	AAC	5/27/21 2030
AAC	5/28/21 0430		5/28/21 01:30

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. BY EXECUTING THIS COC, THE CLIENT HAS READ AND AGREES TO BE BOUND BY ALPHA'S TERMS & CONSTITUTIONS. (See reverse side.)

Form No: 01-25 HC (rev. 30-Sept-2013)

ANALYTICAL REPORT

Lab Number:	L2128995
Client:	GZA GeoEnvironmental, Inc. 104 West 29th Street, 10th Floor New York, NY 10001
ATTN:	Matthew Del Balzo
Phone:	(212) 594-8140
Project Name:	RYE LAKE WFP
Project Number:	41.0162892.00
Report Date:	06/11/21

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2128995
Report Date: 06/11/21

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2128995-01	B-17 (1'-2')	SOIL	RYE LAKE	06/01/21 09:15	06/01/21
L2128995-02	B-17 (0'-5')	SOIL	RYE LAKE	06/01/21 09:15	06/01/21

Project Name:	RYE LAKE WFP	**Lab Number:**	L2128995
Project Number:	41.0162892.00	**Report Date:**	06/11/21

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name:	RYE LAKE WFP	**Lab Number:**	L2128995
Project Number:	41.0162892.00	**Report Date:**	06/11/21

Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Total Metals

L2128995-02: The sample has elevated detection limits for all elements, with the exception of mercury, due to the dilution required by matrix interferences encountered during analysis.

The WG1507721-3 MS recoveries for aluminum (1610%), iron (2660%), magnesium (74%), manganese (257%), performed on L2128995-02, do not apply because the sample concentrations are greater than four times the spike amounts added.

The WG1507721-3 MS recoveries, performed on L2128995-02, are outside the acceptance criteria for antimony (65%) and potassium (0%). A post digestion spike was performed and was within acceptance criteria.

The WG1507721-4 Laboratory Duplicate RPDs for arsenic (26%), chromium (40%), copper (35%), iron (24%) and manganese (40%), performed on L2128995-02, are outside the acceptance criteria. The elevated RPDs have been attributed to the non-homogeneous nature of the native sample.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Tiffani Morrissey - Tiffani Morrissey

Title: Technical Director/Representative Date: 06/11/21

ORGANICS

VOLATILES

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2128995
Report Date: 06/11/21

SAMPLE RESULTS

Lab ID: L2128995-01
Client ID: B-17 (1'-2')
Sample Location: RYE LAKE

Date Collected: 06/01/21 09:15
Date Received: 06/01/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 06/08/21 13:15
Analyst: JC
Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methylene chloride	ND		ug/kg	5.2	2.4	1
1,1-Dichloroethane	ND		ug/kg	1.0	0.15	1
Chloroform	ND		ug/kg	1.6	0.14	1
Carbon tetrachloride	ND		ug/kg	1.0	0.24	1
1,2-Dichloropropane	ND		ug/kg	1.0	0.13	1
Dibromochloromethane	ND		ug/kg	1.0	0.14	1
1,1,2-Trichloroethane	ND		ug/kg	1.0	0.28	1
Tetrachloroethene	ND		ug/kg	0.52	0.20	1
Chlorobenzene	ND		ug/kg	0.52	0.13	1
Trichlorofluoromethane	ND		ug/kg	4.1	0.72	1
1,2-Dichloroethane	ND		ug/kg	1.0	0.26	1
1,1,1-Trichloroethane	ND		ug/kg	0.52	0.17	1
Bromodichloromethane	ND		ug/kg	0.52	0.11	1
trans-1,3-Dichloropropene	ND		ug/kg	1.0	0.28	1
cis-1,3-Dichloropropene	ND		ug/kg	0.52	0.16	1
1,3-Dichloropropene, Total	ND		ug/kg	0.52	0.16	1
1,1-Dichloropropene	ND		ug/kg	0.52	0.16	1
Bromoform	ND		ug/kg	4.1	0.25	1
1,1,2,2-Tetrachloroethane	ND		ug/kg	0.52	0.17	1
Benzene	ND		ug/kg	0.52	0.17	1
Toluene	ND		ug/kg	1.0	0.56	1
Ethylbenzene	ND		ug/kg	1.0	0.14	1
Chloromethane	ND		ug/kg	4.1	0.96	1
Bromomethane	ND		ug/kg	2.1	0.60	1
Vinyl chloride	ND		ug/kg	1.0	0.35	1
Chloroethane	ND		ug/kg	2.1	0.47	1
1,1-Dichloroethene	ND		ug/kg	1.0	0.25	1
trans-1,2-Dichloroethene	ND		ug/kg	1.6	0.14	1

Project Name: RYE LAKE WFP **Lab Number:** L2128995

Project Number: 41.0162892.00 **Report Date:** 06/11/21

SAMPLE RESULTS

Lab ID: L2128995-01 Date Collected: 06/01/21 09:15

Client ID: B-17 (1'-2') Date Received: 06/01/21

Sample Location: RYE LAKE Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Trichloroethene	ND		ug/kg	0.52	0.14	1
1,2-Dichlorobenzene	ND		ug/kg	2.1	0.15	1
1,3-Dichlorobenzene	ND		ug/kg	2.1	0.15	1
1,4-Dichlorobenzene	ND		ug/kg	2.1	0.18	1
Methyl tert butyl ether	ND		ug/kg	2.1	0.21	1
p/m-Xylene	ND		ug/kg	2.1	0.58	1
o-Xylene	ND		ug/kg	1.0	0.30	1
Xylenes, Total	ND		ug/kg	1.0	0.30	1
cis-1,2-Dichloroethene	ND		ug/kg	1.0	0.18	1
1,2-Dichloroethene, Total	ND		ug/kg	1.0	0.14	1
Dibromomethane	ND		ug/kg	2.1	0.25	1
Styrene	ND		ug/kg	1.0	0.20	1
Dichlorodifluoromethane	ND		ug/kg	10	0.95	1
Acetone	ND		ug/kg	10	5.0	1
Carbon disulfide	ND		ug/kg	10	4.7	1
2-Butanone	ND		ug/kg	10	2.3	1
Vinyl acetate	ND		ug/kg	10	2.2	1
4-Methyl-2-pentanone	ND		ug/kg	10	1.3	1
1,2,3-Trichloropropane	ND		ug/kg	2.1	0.13	1
2-Hexanone	ND		ug/kg	10	1.2	1
Bromochloromethane	ND		ug/kg	2.1	0.21	1
2,2-Dichloropropane	ND		ug/kg	2.1	0.21	1
1,2-Dibromoethane	ND		ug/kg	1.0	0.29	1
1,3-Dichloropropane	ND		ug/kg	2.1	0.17	1
1,1,1,2-Tetrachloroethane	ND		ug/kg	0.52	0.14	1
Bromobenzene	ND		ug/kg	2.1	0.15	1
n-Butylbenzene	ND		ug/kg	1.0	0.17	1
sec-Butylbenzene	ND		ug/kg	1.0	0.15	1
tert-Butylbenzene	ND		ug/kg	2.1	0.12	1
o-Chlorotoluene	ND		ug/kg	2.1	0.20	1
p-Chlorotoluene	ND		ug/kg	2.1	0.11	1
1,2-Dibromo-3-chloropropane	ND		ug/kg	3.1	1.0	1
Hexachlorobutadiene	ND		ug/kg	4.1	0.17	1
Isopropylbenzene	ND		ug/kg	1.0	0.11	1
p-Isopropyltoluene	ND		ug/kg	1.0	0.11	1
Naphthalene	ND		ug/kg	4.1	0.67	1
Acrylonitrile	ND		ug/kg	4.1	1.2	1

Project Name: RYE LAKE WFP **Lab Number:** L2128995

Project Number: 41.0162892.00 **Report Date:** 06/11/21

SAMPLE RESULTS

Lab ID: L2128995-01 Date Collected: 06/01/21 09:15

Client ID: B-17 (1'-2') Date Received: 06/01/21

Sample Location: RYE LAKE Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
n-Propylbenzene	ND		ug/kg	1.0	0.18	1
1,2,3-Trichlorobenzene	ND		ug/kg	2.1	0.33	1
1,2,4-Trichlorobenzene	ND		ug/kg	2.1	0.28	1
1,3,5-Trimethylbenzene	ND		ug/kg	2.1	0.20	1
1,2,4-Trimethylbenzene	ND		ug/kg	2.1	0.34	1
1,4-Dioxane	ND		ug/kg	83	36.	1
p-Diethylbenzene	ND		ug/kg	2.1	0.18	1
p-Ethyltoluene	ND		ug/kg	2.1	0.40	1
1,2,4,5-Tetramethylbenzene	ND		ug/kg	2.1	0.20	1
Ethyl ether	ND		ug/kg	2.1	0.35	1
trans-1,4-Dichloro-2-butene	ND		ug/kg	5.2	1.5	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	100		70-130
Toluene-d8	96		70-130
4-Bromofluorobenzene	99		70-130
Dibromofluoromethane	101		70-130

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2128995
Report Date: 06/11/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 06/08/21 08:26
Analyst: JC

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01 Batch: WG1509148-5					
Methylene chloride	ND		ug/kg	5.0	2.3
1,1-Dichloroethane	ND		ug/kg	1.0	0.14
Chloroform	ND		ug/kg	1.5	0.14
Carbon tetrachloride	ND		ug/kg	1.0	0.23
1,2-Dichloropropane	ND		ug/kg	1.0	0.12
Dibromochloromethane	ND		ug/kg	1.0	0.14
1,1,2-Trichloroethane	ND		ug/kg	1.0	0.27
Tetrachloroethene	ND		ug/kg	0.50	0.20
Chlorobenzene	ND		ug/kg	0.50	0.13
Trichlorofluoromethane	ND		ug/kg	4.0	0.70
1,2-Dichloroethane	ND		ug/kg	1.0	0.26
1,1,1-Trichloroethane	ND		ug/kg	0.50	0.17
Bromodichloromethane	ND		ug/kg	0.50	0.11
trans-1,3-Dichloropropene	ND		ug/kg	1.0	0.27
cis-1,3-Dichloropropene	ND		ug/kg	0.50	0.16
1,3-Dichloropropene, Total	ND		ug/kg	0.50	0.16
1,1-Dichloropropene	ND		ug/kg	0.50	0.16
Bromoform	ND		ug/kg	4.0	0.25
1,1,2,2-Tetrachloroethane	ND		ug/kg	0.50	0.17
Benzene	ND		ug/kg	0.50	0.17
Toluene	ND		ug/kg	1.0	0.54
Ethylbenzene	ND		ug/kg	1.0	0.14
Chloromethane	ND		ug/kg	4.0	0.93
Bromomethane	ND		ug/kg	2.0	0.58
Vinyl chloride	ND		ug/kg	1.0	0.34
Chloroethane	ND		ug/kg	2.0	0.45
1,1-Dichloroethene	ND		ug/kg	1.0	0.24
trans-1,2-Dichloroethene	ND		ug/kg	1.5	0.14
Trichloroethene	ND		ug/kg	0.50	0.14

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2128995
Report Date: 06/11/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 06/08/21 08:26
Analyst: JC

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01 Batch: WG1509148-5					
1,2-Dichlorobenzene	ND		ug/kg	2.0	0.14
1,3-Dichlorobenzene	ND		ug/kg	2.0	0.15
1,4-Dichlorobenzene	0.18	J	ug/kg	2.0	0.17
Methyl tert butyl ether	ND		ug/kg	2.0	0.20
p/m-Xylene	ND		ug/kg	2.0	0.56
o-Xylene	ND		ug/kg	1.0	0.29
Xylenes, Total	ND		ug/kg	1.0	0.29
cis-1,2-Dichloroethene	ND		ug/kg	1.0	0.18
1,2-Dichloroethene, Total	ND		ug/kg	1.0	0.14
Dibromomethane	ND		ug/kg	2.0	0.24
Styrene	0.48	J	ug/kg	1.0	0.20
Dichlorodifluoromethane	ND		ug/kg	10	0.92
Acetone	ND		ug/kg	10	4.8
Carbon disulfide	ND		ug/kg	10	4.6
2-Butanone	ND		ug/kg	10	2.2
Vinyl acetate	ND		ug/kg	10	2.2
4-Methyl-2-pentanone	ND		ug/kg	10	1.3
1,2,3-Trichloropropane	ND		ug/kg	2.0	0.13
2-Hexanone	ND		ug/kg	10	1.2
Bromochloromethane	ND		ug/kg	2.0	0.20
2,2-Dichloropropane	ND		ug/kg	2.0	0.20
1,2-Dibromoethane	ND		ug/kg	1.0	0.28
1,3-Dichloropropane	ND		ug/kg	2.0	0.17
1,1,1,2-Tetrachloroethane	ND		ug/kg	0.50	0.13
Bromobenzene	ND		ug/kg	2.0	0.14
n-Butylbenzene	ND		ug/kg	1.0	0.17
sec-Butylbenzene	ND		ug/kg	1.0	0.15
tert-Butylbenzene	ND		ug/kg	2.0	0.12
o-Chlorotoluene	ND		ug/kg	2.0	0.19

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2128995
Report Date: 06/11/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 06/08/21 08:26
Analyst: JC

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01 Batch: WG1509148-5					
p-Chlorotoluene	ND		ug/kg	2.0	0.11
1,2-Dibromo-3-chloropropane	ND		ug/kg	3.0	1.0
Hexachlorobutadiene	ND		ug/kg	4.0	0.17
Isopropylbenzene	ND		ug/kg	1.0	0.11
p-Isopropyltoluene	ND		ug/kg	1.0	0.11
Naphthalene	ND		ug/kg	4.0	0.65
Acrylonitrile	ND		ug/kg	4.0	1.2
n-Propylbenzene	ND		ug/kg	1.0	0.17
1,2,3-Trichlorobenzene	0.33	J	ug/kg	2.0	0.32
1,2,4-Trichlorobenzene	ND		ug/kg	2.0	0.27
1,3,5-Trimethylbenzene	ND		ug/kg	2.0	0.19
1,2,4-Trimethylbenzene	ND		ug/kg	2.0	0.33
1,4-Dioxane	ND		ug/kg	80	35.
p-Diethylbenzene	ND		ug/kg	2.0	0.18
p-Ethyltoluene	ND		ug/kg	2.0	0.38
1,2,4,5-Tetramethylbenzene	ND		ug/kg	2.0	0.19
Ethyl ether	ND		ug/kg	2.0	0.34
trans-1,4-Dichloro-2-butene	ND		ug/kg	5.0	1.4

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	104		70-130
Toluene-d8	95		70-130
4-Bromofluorobenzene	99		70-130
Dibromofluoromethane	100		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: RYE LAKE WFP

Project Number: 41.0162892.00

Lab Number: L2128995

Report Date: 06/11/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 Batch: WG1509148-3 WG1509148-4								
Methylene chloride	96		96		70-130	0		30
1,1-Dichloroethane	107		107		70-130	0		30
Chloroform	109		109		70-130	0		30
Carbon tetrachloride	109		112		70-130	3		30
1,2-Dichloropropane	106		109		70-130	3		30
Dibromochloromethane	99		99		70-130	0		30
1,1,2-Trichloroethane	98		98		70-130	0		30
Tetrachloroethene	102		104		70-130	2		30
Chlorobenzene	100		101		70-130	1		30
Trichlorofluoromethane	108		111		70-139	3		30
1,2-Dichloroethane	114		112		70-130	2		30
1,1,1-Trichloroethane	110		113		70-130	3		30
Bromodichloromethane	111		112		70-130	1		30
trans-1,3-Dichloropropene	110		109		70-130	1		30
cis-1,3-Dichloropropene	113		114		70-130	1		30
1,1-Dichloropropene	107		109		70-130	2		30
Bromoform	106		106		70-130	0		30
1,1,2,2-Tetrachloroethane	98		97		70-130	1		30
Benzene	103		104		70-130	1		30
Toluene	97		98		70-130	1		30
Ethylbenzene	98		100		70-130	2		30
Chloromethane	107		102		52-130	5		30
Bromomethane	96		102		57-147	6		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: RYE LAKE WFP

Project Number: 41.0162892.00

Lab Number: L2128995

Report Date: 06/11/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 Batch: WG1509148-3 WG1509148-4								
Vinyl chloride	105		106		67-130	1		30
Chloroethane	108		110		50-151	2		30
1,1-Dichloroethene	101		104		65-135	3		30
trans-1,2-Dichloroethene	103		105		70-130	2		30
Trichloroethene	105		109		70-130	4		30
1,2-Dichlorobenzene	102		101		70-130	1		30
1,3-Dichlorobenzene	103		102		70-130	1		30
1,4-Dichlorobenzene	98		99		70-130	1		30
Methyl tert butyl ether	105		105		66-130	0		30
p/m-Xylene	98		100		70-130	2		30
o-Xylene	100		101		70-130	1		30
cis-1,2-Dichloroethene	104		107		70-130	3		30
Dibromomethane	109		110		70-130	1		30
Styrene	103		106		70-130	3		30
Dichlorodifluoromethane	98		99		30-146	1		30
Acetone	113		109		54-140	4		30
Carbon disulfide	97		100		59-130	3		30
2-Butanone	106		101		70-130	5		30
Vinyl acetate	115		112		70-130	3		30
4-Methyl-2-pentanone	108		105		70-130	3		30
1,2,3-Trichloropropane	101		100		68-130	1		30
2-Hexanone	106		103		70-130	3		30
Bromochloromethane	108		110		70-130	2		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: RYE LAKE WFP

Project Number: 41.0162892.00

Lab Number: L2128995

Report Date: 06/11/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 Batch: WG1509148-3 WG1509148-4								
2,2-Dichloropropane	113		114		70-130	1		30
1,2-Dibromoethane	99		98		70-130	1		30
1,3-Dichloropropane	103		103		69-130	0		30
1,1,1,2-Tetrachloroethane	102		105		70-130	3		30
Bromobenzene	99		101		70-130	2		30
n-Butylbenzene	102		103		70-130	1		30
sec-Butylbenzene	100		102		70-130	2		30
tert-Butylbenzene	101		103		70-130	2		30
o-Chlorotoluene	96		96		70-130	0		30
p-Chlorotoluene	102		101		70-130	1		30
1,2-Dibromo-3-chloropropane	94		93		68-130	1		30
Hexachlorobutadiene	95		98		67-130	3		30
Isopropylbenzene	102		103		70-130	1		30
p-Isopropyltoluene	102		103		70-130	1		30
Naphthalene	99		101		70-130	2		30
Acrylonitrile	108		103		70-130	5		30
n-Propylbenzene	101		101		70-130	0		30
1,2,3-Trichlorobenzene	103		104		70-130	1		30
1,2,4-Trichlorobenzene	105		107		70-130	2		30
1,3,5-Trimethylbenzene	103		102		70-130	1		30
1,2,4-Trimethylbenzene	104		104		70-130	0		30
1,4-Dioxane	102		100		65-136	2		30
p-Diethylbenzene	104		104		70-130	0		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: RYE LAKE WFP

Project Number: 41.0162892.00

Lab Number: L2128995

Report Date: 06/11/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 Batch: WG1509148-3 WG1509148-4								
p-Ethyltoluene	103		104		70-130	1		30
1,2,4,5-Tetramethylbenzene	104		106		70-130	2		30
Ethyl ether	102		104		67-130	2		30
trans-1,4-Dichloro-2-butene	114		110		70-130	4		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	109		105		70-130
Toluene-d8	97		97		70-130
4-Bromofluorobenzene	101		99		70-130
Dibromofluoromethane	105		106		70-130

SEMIVOLATILES

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2128995
Report Date: 06/11/21

SAMPLE RESULTS

Lab ID: L2128995-02
Client ID: B-17 (0'-5')
Sample Location: RYE LAKE

Date Collected: 06/01/21 09:15
Date Received: 06/01/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D
Analytical Date: 06/10/21 04:04
Analyst: ALS
Percent Solids: 91%

Extraction Method: EPA 3546
Extraction Date: 06/09/21 10:08

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Acenaphthene	ND		ug/kg	150	19.	1
1,2,4-Trichlorobenzene	ND		ug/kg	180	21.	1
Hexachlorobenzene	ND		ug/kg	110	20.	1
Bis(2-chloroethyl)ether	ND		ug/kg	160	25.	1
2-Chloronaphthalene	ND		ug/kg	180	18.	1
1,2-Dichlorobenzene	ND		ug/kg	180	33.	1
1,3-Dichlorobenzene	ND		ug/kg	180	31.	1
1,4-Dichlorobenzene	ND		ug/kg	180	32.	1
3,3'-Dichlorobenzidine	ND		ug/kg	180	49.	1
2,4-Dinitrotoluene	ND		ug/kg	180	36.	1
2,6-Dinitrotoluene	ND		ug/kg	180	31.	1
Fluoranthene	25	J	ug/kg	110	21.	1
4-Chlorophenyl phenyl ether	ND		ug/kg	180	20.	1
4-Bromophenyl phenyl ether	ND		ug/kg	180	28.	1
Bis(2-chloroisopropyl)ether	ND		ug/kg	220	31.	1
Bis(2-chloroethoxy)methane	ND		ug/kg	200	18.	1
Hexachlorobutadiene	ND		ug/kg	180	27.	1
Hexachlorocyclopentadiene	ND		ug/kg	520	160	1
Hexachloroethane	ND		ug/kg	150	30.	1
Isophorone	ND		ug/kg	160	24.	1
Naphthalene	ND		ug/kg	180	22.	1
Nitrobenzene	ND		ug/kg	160	27.	1
NDPA/DPA	ND		ug/kg	150	21.	1
n-Nitrosodi-n-propylamine	ND		ug/kg	180	28.	1
Bis(2-ethylhexyl)phthalate	ND		ug/kg	180	63.	1
Butyl benzyl phthalate	ND		ug/kg	180	46.	1
Di-n-butylphthalate	ND		ug/kg	180	35.	1
Di-n-octylphthalate	ND		ug/kg	180	62.	1

Project Name: RYE LAKE WFP **Lab Number:** L2128995

Project Number: 41.0162892.00 **Report Date:** 06/11/21

SAMPLE RESULTS

Lab ID: L2128995-02 Date Collected: 06/01/21 09:15

Client ID: B-17 (0'-5') Date Received: 06/01/21

Sample Location: RYE LAKE Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Diethyl phthalate	ND		ug/kg	180	17.	1
Dimethyl phthalate	ND		ug/kg	180	38.	1
Benzo(a)anthracene	ND		ug/kg	110	20.	1
Benzo(a)pyrene	ND		ug/kg	150	45.	1
Benzo(b)fluoranthene	ND		ug/kg	110	31.	1
Benzo(k)fluoranthene	ND		ug/kg	110	29.	1
Chrysene	ND		ug/kg	110	19.	1
Acenaphthylene	ND		ug/kg	150	28.	1
Anthracene	ND		ug/kg	110	36.	1
Benzo(ghi)perylene	ND		ug/kg	150	22.	1
Fluorene	ND		ug/kg	180	18.	1
Phenanthrene	ND		ug/kg	110	22.	1
Dibenzo(a,h)anthracene	ND		ug/kg	110	21.	1
Indeno(1,2,3-cd)pyrene	ND		ug/kg	150	25.	1
Pyrene	29	J	ug/kg	110	18.	1
Biphenyl	ND		ug/kg	420	42.	1
4-Chloroaniline	ND		ug/kg	180	33.	1
2-Nitroaniline	ND		ug/kg	180	35.	1
3-Nitroaniline	ND		ug/kg	180	34.	1
4-Nitroaniline	ND		ug/kg	180	76.	1
Dibenzofuran	ND		ug/kg	180	17.	1
2-Methylnaphthalene	ND		ug/kg	220	22.	1
1,2,4,5-Tetrachlorobenzene	ND		ug/kg	180	19.	1
Acetophenone	ND		ug/kg	180	23.	1
2,4,6-Trichlorophenol	ND		ug/kg	110	35.	1
p-Chloro-m-cresol	ND		ug/kg	180	27.	1
2-Chlorophenol	ND		ug/kg	180	22.	1
2,4-Dichlorophenol	ND		ug/kg	160	29.	1
2,4-Dimethylphenol	ND		ug/kg	180	60.	1
2-Nitrophenol	ND		ug/kg	390	69.	1
4-Nitrophenol	ND		ug/kg	260	74.	1
2,4-Dinitrophenol	ND		ug/kg	880	85.	1
4,6-Dinitro-o-cresol	ND		ug/kg	480	88.	1
Pentachlorophenol	ND		ug/kg	150	40.	1
Phenol	ND		ug/kg	180	28.	1
2-Methylphenol	ND		ug/kg	180	28.	1
3-Methylphenol/4-Methylphenol	ND		ug/kg	260	29.	1

Project Name: RYE LAKE WFP
Lab Number: L2128995
Project Number: 41.0162892.00
Report Date: 06/11/21

SAMPLE RESULTS

Lab ID: L2128995-02
Client ID: B-17 (0'-5')
Sample Location: RYE LAKE

Date Collected: 06/01/21 09:15
Date Received: 06/01/21
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
2,4,5-Trichlorophenol	ND		ug/kg	180	35.	1
Benzoic Acid	ND		ug/kg	590	180	1
Benzyl Alcohol	ND		ug/kg	180	56.	1
Carbazole	ND		ug/kg	180	18.	1
1,4-Dioxane	ND		ug/kg	27	8.4	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	87		25-120
Phenol-d6	87		10-120
Nitrobenzene-d5	81		23-120
2-Fluorobiphenyl	81		30-120
2,4,6-Tribromophenol	82		10-136
4-Terphenyl-d14	69		18-120

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2128995
Report Date: 06/11/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 06/10/21 00:20
Analyst: SZ

Extraction Method: EPA 3546
Extraction Date: 06/09/21 10:08

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 02 Batch: WG1509607-1					
Acenaphthene	ND		ug/kg	130	17.
1,2,4-Trichlorobenzene	ND		ug/kg	160	19.
Hexachlorobenzene	ND		ug/kg	99	18.
Bis(2-chloroethyl)ether	ND		ug/kg	150	22.
2-Chloronaphthalene	ND		ug/kg	160	16.
1,2-Dichlorobenzene	ND		ug/kg	160	30.
1,3-Dichlorobenzene	ND		ug/kg	160	28.
1,4-Dichlorobenzene	ND		ug/kg	160	29.
3,3'-Dichlorobenzidine	ND		ug/kg	160	44.
2,4-Dinitrotoluene	ND		ug/kg	160	33.
2,6-Dinitrotoluene	ND		ug/kg	160	28.
Fluoranthene	ND		ug/kg	99	19.
4-Chlorophenyl phenyl ether	ND		ug/kg	160	18.
4-Bromophenyl phenyl ether	ND		ug/kg	160	25.
Bis(2-chloroisopropyl)ether	ND		ug/kg	200	28.
Bis(2-chloroethoxy)methane	ND		ug/kg	180	16.
Hexachlorobutadiene	ND		ug/kg	160	24.
Hexachlorocyclopentadiene	ND		ug/kg	470	150
Hexachloroethane	ND		ug/kg	130	27.
Isophorone	ND		ug/kg	150	21.
Naphthalene	ND		ug/kg	160	20.
Nitrobenzene	ND		ug/kg	150	24.
NDPA/DPA	ND		ug/kg	130	19.
n-Nitrosodi-n-propylamine	ND		ug/kg	160	25.
Bis(2-ethylhexyl)phthalate	ND		ug/kg	160	57.
Butyl benzyl phthalate	ND		ug/kg	160	42.
Di-n-butylphthalate	ND		ug/kg	160	31.
Di-n-octylphthalate	ND		ug/kg	160	56.
Diethyl phthalate	ND		ug/kg	160	15.

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2128995
Report Date: 06/11/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 06/10/21 00:20
Analyst: SZ

Extraction Method: EPA 3546
Extraction Date: 06/09/21 10:08

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 02 Batch: WG1509607-1					
Dimethyl phthalate	ND		ug/kg	160	34.
Benzo(a)anthracene	ND		ug/kg	99	18.
Benzo(a)pyrene	ND		ug/kg	130	40.
Benzo(b)fluoranthene	ND		ug/kg	99	28.
Benzo(k)fluoranthene	ND		ug/kg	99	26.
Chrysene	ND		ug/kg	99	17.
Acenaphthylene	ND		ug/kg	130	25.
Anthracene	ND		ug/kg	99	32.
Benzo(ghi)perylene	ND		ug/kg	130	19.
Fluorene	ND		ug/kg	160	16.
Phenanthrene	ND		ug/kg	99	20.
Dibenzo(a,h)anthracene	ND		ug/kg	99	19.
Indeno(1,2,3-cd)pyrene	ND		ug/kg	130	23.
Pyrene	ND		ug/kg	99	16.
Biphenyl	ND		ug/kg	380	38.
4-Chloroaniline	ND		ug/kg	160	30.
2-Nitroaniline	ND		ug/kg	160	32.
3-Nitroaniline	ND		ug/kg	160	31.
4-Nitroaniline	ND		ug/kg	160	68.
Dibenzofuran	ND		ug/kg	160	16.
2-Methylnaphthalene	ND		ug/kg	200	20.
1,2,4,5-Tetrachlorobenzene	ND		ug/kg	160	17.
Acetophenone	ND		ug/kg	160	20.
2,4,6-Trichlorophenol	ND		ug/kg	99	31.
p-Chloro-m-cresol	ND		ug/kg	160	24.
2-Chlorophenol	ND		ug/kg	160	19.
2,4-Dichlorophenol	ND		ug/kg	150	26.
2,4-Dimethylphenol	ND		ug/kg	160	54.
2-Nitrophenol	ND		ug/kg	360	62.

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2128995
Report Date: 06/11/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 06/10/21 00:20
Analyst: SZ

Extraction Method: EPA 3546
Extraction Date: 06/09/21 10:08

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 02 Batch: WG1509607-1					
4-Nitrophenol	ND		ug/kg	230	67.
2,4-Dinitrophenol	ND		ug/kg	790	77.
4,6-Dinitro-o-cresol	ND		ug/kg	430	79.
Pentachlorophenol	ND		ug/kg	130	36.
Phenol	ND		ug/kg	160	25.
2-Methylphenol	ND		ug/kg	160	26.
3-Methylphenol/4-Methylphenol	ND		ug/kg	240	26.
2,4,5-Trichlorophenol	ND		ug/kg	160	32.
Benzoic Acid	ND		ug/kg	530	170
Benzyl Alcohol	ND		ug/kg	160	50.
Carbazole	ND		ug/kg	160	16.
1,4-Dioxane	ND		ug/kg	25	7.6

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	88		25-120
Phenol-d6	90		10-120
Nitrobenzene-d5	82		23-120
2-Fluorobiphenyl	88		30-120
2,4,6-Tribromophenol	88		10-136
4-Terphenyl-d14	95		18-120

Lab Control Sample Analysis

Batch Quality Control

Project Name: RYE LAKE WFP

Project Number: 41.0162892.00

Lab Number: L2128995

Report Date: 06/11/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 02 Batch: WG1509607-2 WG1509607-3								
Acenaphthene	94		101		31-137	7		50
1,2,4-Trichlorobenzene	82		86		38-107	5		50
Hexachlorobenzene	83		88		40-140	6		50
Bis(2-chloroethyl)ether	84		89		40-140	6		50
2-Chloronaphthalene	89		95		40-140	7		50
1,2-Dichlorobenzene	84		86		40-140	2		50
1,3-Dichlorobenzene	82		83		40-140	1		50
1,4-Dichlorobenzene	85		86		28-104	1		50
3,3'-Dichlorobenzidine	83		88		40-140	6		50
2,4-Dinitrotoluene	92		96		40-132	4		50
2,6-Dinitrotoluene	90		97		40-140	7		50
Fluoranthene	94		99		40-140	5		50
4-Chlorophenyl phenyl ether	85		90		40-140	6		50
4-Bromophenyl phenyl ether	83		88		40-140	6		50
Bis(2-chloroisopropyl)ether	83		85		40-140	2		50
Bis(2-chloroethoxy)methane	89		93		40-117	4		50
Hexachlorobutadiene	71		76		40-140	7		50
Hexachlorocyclopentadiene	66		73		40-140	10		50
Hexachloroethane	85		85		40-140	0		50
Isophorone	91		95		40-140	4		50
Naphthalene	89		95		40-140	7		50
Nitrobenzene	88		89		40-140	1		50
NDPA/DPA	94		99		36-157	5		50

Lab Control Sample Analysis

Batch Quality Control

Project Name: RYE LAKE WFP

Project Number: 41.0162892.00

Lab Number: L2128995

Report Date: 06/11/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 02 Batch: WG1509607-2 WG1509607-3								
n-Nitrosodi-n-propylamine	83		88		32-121	6		50
Bis(2-ethylhexyl)phthalate	108		114		40-140	5		50
Butyl benzyl phthalate	98		104		40-140	6		50
Di-n-butylphthalate	102		109		40-140	7		50
Di-n-octylphthalate	103		110		40-140	7		50
Diethyl phthalate	94		101		40-140	7		50
Dimethyl phthalate	89		95		40-140	7		50
Benzo(a)anthracene	91		97		40-140	6		50
Benzo(a)pyrene	98		104		40-140	6		50
Benzo(b)fluoranthene	89		92		40-140	3		50
Benzo(k)fluoranthene	100		108		40-140	8		50
Chrysene	96		100		40-140	4		50
Acenaphthylene	94		100		40-140	6		50
Anthracene	99		106		40-140	7		50
Benzo(ghi)perylene	96		102		40-140	6		50
Fluorene	95		100		40-140	5		50
Phenanthrene	95		102		40-140	7		50
Dibenzo(a,h)anthracene	99		105		40-140	6		50
Indeno(1,2,3-cd)pyrene	93		101		40-140	8		50
Pyrene	93		99		35-142	6		50
Biphenyl	92		99		37-127	7		50
4-Chloroaniline	84		91		40-140	8		50
2-Nitroaniline	93		99		47-134	6		50

Lab Control Sample Analysis
Batch Quality Control

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2128995
Report Date: 06/11/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 02 Batch: WG1509607-2 WG1509607-3								
3-Nitroaniline	85		91		26-129	7		50
4-Nitroaniline	89		96		41-125	8		50
Dibenzofuran	93		100		40-140	7		50
2-Methylnaphthalene	92		99		40-140	7		50
1,2,4,5-Tetrachlorobenzene	78		84		40-117	7		50
Acetophenone	90		94		14-144	4		50
2,4,6-Trichlorophenol	83		92		30-130	10		50
p-Chloro-m-cresol	94		101		26-103	7		50
2-Chlorophenol	94		99		25-102	5		50
2,4-Dichlorophenol	97		101		30-130	4		50
2,4-Dimethylphenol	95		100		30-130	5		50
2-Nitrophenol	91		94		30-130	3		50
4-Nitrophenol	88		89		11-114	1		50
2,4-Dinitrophenol	56		62		4-130	10		50
4,6-Dinitro-o-cresol	78		87		10-130	11		50
Pentachlorophenol	69		77		17-109	11		50
Phenol	**95**	Q	**99**	Q	26-90	4		50
2-Methylphenol	98		103		30-130.	5		50
3-Methylphenol/4-Methylphenol	94		100		30-130	6		50
2,4,5-Trichlorophenol	88		96		30-130	9		50
Benzoic Acid	14		16		10-110	13		50
Benzyl Alcohol	89		95		40-140	7		50
Carbazole	102		107		54-128	5		50

Lab Control Sample Analysis

Batch Quality Control

Project Name: RYE LAKE WFP

Project Number: 41.0162892.00

Lab Number: L2128995

Report Date: 06/11/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 02 Batch: WG1509607-2 WG1509607-3								
1,4-Dioxane	65		64		40-140	2		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	89		91		25-120
Phenol-d6	93		97		10-120
Nitrobenzene-d5	87		89		23-120
2-Fluorobiphenyl	88		96		30-120
2,4,6-Tribromophenol	82		91		10-136
4-Terphenyl-d14	87		92		18-120

PCBS

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2128995
Report Date: 06/11/21

SAMPLE RESULTS

Lab ID: L2128995-02
Client ID: B-17 (0'-5')
Sample Location: RYE LAKE

Date Collected: 06/01/21 09:15
Date Received: 06/01/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8082A
Analytical Date: 06/09/21 18:54
Analyst: CW
Percent Solids: 91%

Extraction Method: EPA 3546
Extraction Date: 06/09/21 08:39
Cleanup Method: EPA 3665A
Cleanup Date: 06/09/21
Cleanup Method: EPA 3660B
Cleanup Date: 06/09/21

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Polychlorinated Biphenyls by GC - Westborough Lab							
Aroclor 1016	ND		ug/kg	36.1	3.21	1	A
Aroclor 1221	ND		ug/kg	36.1	3.62	1	A
Aroclor 1232	ND		ug/kg	36.1	7.66	1	A
Aroclor 1242	ND		ug/kg	36.1	4.87	1	A
Aroclor 1248	ND		ug/kg	36.1	5.42	1	A
Aroclor 1254	ND		ug/kg	36.1	3.95	1	A
Aroclor 1260	ND		ug/kg	36.1	6.68	1	A
Aroclor 1262	ND		ug/kg	36.1	4.59	1	A
Aroclor 1268	ND		ug/kg	36.1	3.74	1	A
PCBs, Total	ND		ug/kg	36.1	3.21	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	62		30-150	A
Decachlorobiphenyl	51		30-150	A
2,4,5,6-Tetrachloro-m-xylene	63		30-150	B
Decachlorobiphenyl	57		30-150	B

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2128995
Report Date: 06/11/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8082A
Analytical Date: 06/09/21 12:18
Analyst: CW

Extraction Method: EPA 3546
Extraction Date: 06/08/21 22:35
Cleanup Method: EPA 3665A
Cleanup Date: 06/09/21
Cleanup Method: EPA 3660B
Cleanup Date: 06/09/21

Parameter	Result	Qualifier	Units	RL	MDL	Column
Polychlorinated Biphenyls by GC - Westborough Lab for sample(s): 02 Batch: WG1509385-1						
Aroclor 1016	ND		ug/kg	32.5	2.88	A
Aroclor 1221	ND		ug/kg	32.5	3.26	A
Aroclor 1232	ND		ug/kg	32.5	6.89	A
Aroclor 1242	ND		ug/kg	32.5	4.38	A
Aroclor 1248	ND		ug/kg	32.5	4.87	A
Aroclor 1254	ND		ug/kg	32.5	3.55	A
Aroclor 1260	ND		ug/kg	32.5	6.00	A
Aroclor 1262	ND		ug/kg	32.5	4.13	A
Aroclor 1268	ND		ug/kg	32.5	3.36	A
PCBs, Total	ND		ug/kg	32.5	2.88	A

Surrogate	%Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	70		30-150	A
Decachlorobiphenyl	72		30-150	A
2,4,5,6-Tetrachloro-m-xylene	72		30-150	B
Decachlorobiphenyl	66		30-150	B

Lab Control Sample Analysis

Batch Quality Control

Project Name: RYE LAKE WFP

Project Number: 41.0162892.00

Lab Number: L2128995

Report Date: 06/11/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
Polychlorinated Biphenyls by GC - Westborough Lab Associated sample(s): 02 Batch: WG1509385-2 WG1509385-3									
Aroclor 1016	68		66		40-140	3		50	A
Aroclor 1260	69		67		40-140	3		50	A

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	70		66		30-150	A
Decachlorobiphenyl	72		69		30-150	A
2,4,5,6-Tetrachloro-m-xylene	72		68		30-150	B
Decachlorobiphenyl	66		64		30-150	B

PESTICIDES

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2128995
Report Date: 06/11/21

SAMPLE RESULTS

Lab ID: L2128995-02
Client ID: B-17 (0'-5')
Sample Location: RYE LAKE

Date Collected: 06/01/21 09:15
Date Received: 06/01/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8081B
Analytical Date: 06/09/21 22:54
Analyst: JAW
Percent Solids: 91%

Extraction Method: EPA 3546
Extraction Date: 06/09/21 09:01
Cleanup Method: EPA 3620B
Cleanup Date: 06/09/21

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Organochlorine Pesticides by GC - Westborough Lab							
Delta-BHC	ND		ug/kg	1.72	0.338	1	A
Lindane	ND		ug/kg	0.719	0.321	1	A
Alpha-BHC	ND		ug/kg	0.719	0.204	1	A
Beta-BHC	ND		ug/kg	1.72	0.654	1	A
Heptachlor	ND		ug/kg	0.862	0.387	1	A
Aldrin	ND		ug/kg	1.72	0.607	1	A
Heptachlor epoxide	ND		ug/kg	3.23	0.970	1	A
Endrin	ND		ug/kg	0.719	0.295	1	A
Endrin aldehyde	ND		ug/kg	2.16	0.755	1	A
Endrin ketone	ND		ug/kg	1.72	0.444	1	A
Dieldrin	ND		ug/kg	1.08	0.539	1	A
4,4'-DDE	ND		ug/kg	1.72	0.399	1	A
4,4'-DDD	ND		ug/kg	1.72	0.615	1	A
4,4'-DDT	ND		ug/kg	3.23	1.39	1	A
Endosulfan I	ND		ug/kg	1.72	0.408	1	A
Endosulfan II	ND		ug/kg	1.72	0.576	1	A
Endosulfan sulfate	ND		ug/kg	0.719	0.342	1	A
Methoxychlor	ND		ug/kg	3.23	1.01	1	A
Toxaphene	ND		ug/kg	32.3	9.06	1	A
cis-Chlordane	ND		ug/kg	2.16	0.601	1	A
trans-Chlordane	ND		ug/kg	2.16	0.569	1	A
Chlordane	ND		ug/kg	14.4	5.71	1	A

Project Name: RYE LAKE WFP **Lab Number:** L2128995

Project Number: 41.0162892.00 **Report Date:** 06/11/21

SAMPLE RESULTS

Lab ID: L2128995-02 Date Collected: 06/01/21 09:15

Client ID: B-17 (0'-5') Date Received: 06/01/21

Sample Location: RYE LAKE Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Organochlorine Pesticides by GC - Westborough Lab							

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	73		30-150	A
Decachlorobiphenyl	82		30-150	A
2,4,5,6-Tetrachloro-m-xylene	70		30-150	B
Decachlorobiphenyl	87		30-150	B

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2128995
Report Date: 06/11/21

SAMPLE RESULTS

Lab ID: L2128995-02
Client ID: B-17 (0'-5')
Sample Location: RYE LAKE

Date Collected: 06/01/21 09:15
Date Received: 06/01/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8151A
Analytical Date: 06/04/21 20:03
Analyst: AR
Percent Solids: 91%
Methylation Date: 06/03/21 18:27

Extraction Method: EPA 8151A
Extraction Date: 06/02/21 16:14

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Chlorinated Herbicides by GC - Westborough Lab							
2,4-D	ND		ug/kg	180	11.3	1	A
2,4,5-T	ND		ug/kg	180	5.57	1	A
2,4,5-TP (Silvex)	ND		ug/kg	180	4.78	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DCAA	94		30-150	A
DCAA	86		30-150	B

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2128995
Report Date: 06/11/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8151A
Analytical Date: 06/04/21 14:37
Analyst: AR

Extraction Method: EPA 8151A
Extraction Date: 06/02/21 16:12

Methylation Date: 06/03/21 18:27

Parameter	Result	Qualifier	Units	RL	MDL	Column
Chlorinated Herbicides by GC - Westborough Lab for sample(s): 02 Batch: WG1506709-1						
2,4-D	ND		ug/kg	162	10.2	A
2,4,5-T	ND		ug/kg	162	5.03	A
2,4,5-TP (Silvex)	ND		ug/kg	162	4.32	A

Surrogate	%Recovery	Qualifier	Acceptance Criteria	Column
DCAA	85		30-150	A
DCAA	82		30-150	B

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2128995
Report Date: 06/11/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8081B
Analytical Date: 06/09/21 21:38
Analyst: SDC

Extraction Method: EPA 3546
Extraction Date: 06/09/21 03:11
Cleanup Method: EPA 3620B
Cleanup Date: 06/09/21

Parameter	Result	Qualifier	Units	RL	MDL	Column
Organochlorine Pesticides by GC - Westborough Lab for sample(s): 02 Batch: WG1509425-1						
Delta-BHC	ND		ug/kg	1.57	0.308	A
Lindane	ND		ug/kg	0.654	0.292	A
Alpha-BHC	ND		ug/kg	0.654	0.186	A
Beta-BHC	ND		ug/kg	1.57	0.596	A
Heptachlor	ND		ug/kg	0.785	0.352	A
Aldrin	ND		ug/kg	1.57	0.553	A
Heptachlor epoxide	ND		ug/kg	2.94	0.884	A
Endrin	ND		ug/kg	0.654	0.268	A
Endrin aldehyde	ND		ug/kg	1.96	0.687	A
Endrin ketone	ND		ug/kg	1.57	0.404	A
Dieldrin	ND		ug/kg	0.982	0.491	A
4,4'-DDE	ND		ug/kg	1.57	0.363	A
4,4'-DDD	ND		ug/kg	1.57	0.560	A
4,4'-DDT	ND		ug/kg	2.94	1.26	A
Endosulfan I	ND		ug/kg	1.57	0.371	A
Endosulfan II	ND		ug/kg	1.57	0.525	A
Endosulfan sulfate	ND		ug/kg	0.654	0.312	A
Methoxychlor	ND		ug/kg	2.94	0.916	A
Toxaphene	ND		ug/kg	29.4	8.25	A
cis-Chlordane	ND		ug/kg	1.96	0.547	A
trans-Chlordane	ND		ug/kg	1.96	0.518	A
Chlordane	ND		ug/kg	13.1	5.20	A

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2128995
Report Date: 06/11/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8081B
Analytical Date: 06/09/21 21:38
Analyst: SDC

Extraction Method: EPA 3546
Extraction Date: 06/09/21 03:11
Cleanup Method: EPA 3620B
Cleanup Date: 06/09/21

Parameter	Result	Qualifier	Units	RL	MDL	Column
Organochlorine Pesticides by GC - Westborough Lab for sample(s): 02 Batch: WG1509425-1						

Surrogate	%Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	76		30-150	A
Decachlorobiphenyl	87		30-150	A
2,4,5,6-Tetrachloro-m-xylene	72		30-150	B
Decachlorobiphenyl	98		30-150	B

Lab Control Sample Analysis

Batch Quality Control

Project Name: RYE LAKE WFP

Project Number: 41.0162892.00

Lab Number: L2128995

Report Date: 06/11/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
Chlorinated Herbicides by GC - Westborough Lab Associated sample(s): 02 Batch: WG1506709-2 WG1506709-3									
2,4-D	91		96		30-150	5		30	A
2,4,5-T	80		82		30-150	2		30	A
2,4,5-TP (Silvex)	79		83		30-150	5		30	A

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria	Column
DCAA	79		90		30-150	A
DCAA	77		81		30-150	B

Lab Control Sample Analysis

Batch Quality Control

Project Name: RYE LAKE WFP

Project Number: 41.0162892.00

Lab Number: L2128995

Report Date: 06/11/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
Organochlorine Pesticides by GC - Westborough Lab Associated sample(s): 02 Batch: WG1509425-2 WG1509425-3									
Delta-BHC	92		96		30-150	4		30	A
Lindane	91		94		30-150	3		30	A
Alpha-BHC	96		99		30-150	3		30	A
Beta-BHC	80		82		30-150	2		30	A
Heptachlor	88		90		30-150	2		30	A
Aldrin	89		92		30-150	3		30	A
Heptachlor epoxide	87		89		30-150	2		30	A
Endrin	94		97		30-150	3		30	A
Endrin aldehyde	71		76		30-150	7		30	A
Endrin ketone	83		85		30-150	2		30	A
Dieldrin	98		101		30-150	3		30	A
4,4'-DDE	93		96		30-150	3		30	A
4,4'-DDD	95		98		30-150	3		30	A
4,4'-DDT	84		85		30-150	1		30	A
Endosulfan I	85		88		30-150	3		30	A
Endosulfan II	87		90		30-150	3		30	A
Endosulfan sulfate	72		71		30-150	1		30	A
Methoxychlor	70		71		30-150	1		30	A
cis-Chlordane	72		76		30-150	5		30	A
trans-Chlordane	94		97		30-150	3		30	A

Lab Control Sample Analysis

Batch Quality Control

Project Name: RYE LAKE WFP

Project Number: 41.0162892.00

Lab Number: L2128995

Report Date: 06/11/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Organochlorine Pesticides by GC - Westborough Lab Associated sample(s): 02 Batch: WG1509425-2 WG1509425-3								

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	83		86		30-150	A
Decachlorobiphenyl	98		95		30-150	A
2,4,5,6-Tetrachloro-m-xylene	79		82		30-150	B
Decachlorobiphenyl	106		108		30-150	B

METALS

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2128995
Report Date: 06/11/21

SAMPLE RESULTS

Lab ID: L2128995-02
Client ID: B-17 (0'-5')
Sample Location: RYE LAKE
Sample Depth:
Matrix: Soil
Percent Solids: 91%

Date Collected: 06/01/21 09:15
Date Received: 06/01/21
Field Prep: Not Specified
TCLP/SPLP Ext. Date: 06/02/21 17:12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
TCLP Metals by EPA 1311 - Mansfield Lab											
Arsenic, TCLP	ND		mg/l	1.00	0.019	1	06/07/21 10:31	06/08/21 01:24	EPA 3015	1,6010D	BV
Barium, TCLP	0.373	J	mg/l	0.500	0.021	1	06/07/21 10:31	06/08/21 01:24	EPA 3015	1,6010D	BV
Cadmium, TCLP	ND		mg/l	0.100	0.010	1	06/07/21 10:31	06/08/21 01:24	EPA 3015	1,6010D	BV
Chromium, TCLP	ND		mg/l	0.200	0.021	1	06/07/21 10:31	06/08/21 01:24	EPA 3015	1,6010D	BV
Lead, TCLP	ND		mg/l	0.500	0.027	1	06/07/21 10:31	06/08/21 01:24	EPA 3015	1,6010D	BV
Mercury, TCLP	ND		mg/l	0.0010	0.0005	1	06/07/21 10:35	06/07/21 14:29	EPA 7470A	1,7470A	OU
Selenium, TCLP	ND		mg/l	0.500	0.035	1	06/07/21 10:31	06/08/21 01:24	EPA 3015	1,6010D	BV
Silver, TCLP	ND		mg/l	0.100	0.028	1	06/07/21 10:31	06/08/21 01:24	EPA 3015	1,6010D	BV

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2128995
Report Date: 06/11/21

SAMPLE RESULTS

Lab ID: L2128995-02
Client ID: B-17 (0'-5')
Sample Location: RYE LAKE
Date Collected: 06/01/21 09:15
Date Received: 06/01/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 91%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Aluminum, Total	9410		mg/kg	8.44	2.28	2	06/07/21 21:30	06/08/21 10:14	EPA 3050B	1,6010D	GD
Antimony, Total	ND		mg/kg	4.22	0.320	2	06/07/21 21:30	06/08/21 10:14	EPA 3050B	1,6010D	GD
Arsenic, Total	1.81		mg/kg	0.844	0.175	2	06/07/21 21:30	06/08/21 10:14	EPA 3050B	1,6010D	GD
Barium, Total	88.1		mg/kg	0.844	0.147	2	06/07/21 21:30	06/08/21 10:14	EPA 3050B	1,6010D	GD
Beryllium, Total	0.245	J	mg/kg	0.422	0.028	2	06/07/21 21:30	06/08/21 10:14	EPA 3050B	1,6010D	GD
Cadmium, Total	0.312	J	mg/kg	0.844	0.083	2	06/07/21 21:30	06/08/21 10:14	EPA 3050B	1,6010D	GD
Calcium, Total	858		mg/kg	8.44	2.95	2	06/07/21 21:30	06/08/21 10:14	EPA 3050B	1,6010D	GD
Chromium, Total	24.9		mg/kg	0.844	0.081	2	06/07/21 21:30	06/08/21 10:14	EPA 3050B	1,6010D	GD
Cobalt, Total	8.63		mg/kg	1.69	0.140	2	06/07/21 21:30	06/08/21 10:14	EPA 3050B	1,6010D	GD
Copper, Total	7.29		mg/kg	0.844	0.218	2	06/07/21 21:30	06/08/21 10:14	EPA 3050B	1,6010D	GD
Iron, Total	13500		mg/kg	4.22	0.762	2	06/07/21 21:30	06/08/21 10:14	EPA 3050B	1,6010D	GD
Lead, Total	5.95		mg/kg	4.22	0.226	2	06/07/21 21:30	06/08/21 10:14	EPA 3050B	1,6010D	GD
Magnesium, Total	3650		mg/kg	8.44	1.30	2	06/07/21 21:30	06/08/21 10:14	EPA 3050B	1,6010D	GD
Manganese, Total	192		mg/kg	0.844	0.134	2	06/07/21 21:30	06/08/21 10:14	EPA 3050B	1,6010D	GD
Mercury, Total	ND		mg/kg	0.079	0.051	1	06/07/21 21:54	06/08/21 11:31	EPA 7471B	1,7471B	OU
Nickel, Total	13.4		mg/kg	2.11	0.204	2	06/07/21 21:30	06/08/21 10:14	EPA 3050B	1,6010D	GD
Potassium, Total	2470		mg/kg	211	12.1	2	06/07/21 21:30	06/08/21 10:14	EPA 3050B	1,6010D	GD
Selenium, Total	0.354	J	mg/kg	1.69	0.218	2	06/07/21 21:30	06/08/21 10:14	EPA 3050B	1,6010D	GD
Silver, Total	ND		mg/kg	0.844	0.239	2	06/07/21 21:30	06/08/21 10:14	EPA 3050B	1,6010D	GD
Sodium, Total	53.5	J	mg/kg	169	2.66	2	06/07/21 21:30	06/08/21 10:14	EPA 3050B	1,6010D	GD
Thallium, Total	ND		mg/kg	1.69	0.266	2	06/07/21 21:30	06/08/21 10:14	EPA 3050B	1,6010D	GD
Vanadium, Total	29.0		mg/kg	0.844	0.171	2	06/07/21 21:30	06/08/21 10:14	EPA 3050B	1,6010D	GD
Zinc, Total	35.7		mg/kg	4.22	0.247	2	06/07/21 21:30	06/08/21 10:14	EPA 3050B	1,6010D	GD

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2128995
Report Date: 06/11/21

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
TCLP Metals by EPA 1311 - Mansfield Lab for sample(s): 02 Batch: WG1507674-1										
Arsenic, TCLP	ND		mg/l	1.00	0.019	1	06/07/21 10:31	06/07/21 13:02	1,6010D	SV
Barium, TCLP	ND		mg/l	0.500	0.021	1	06/07/21 10:31	06/07/21 13:02	1,6010D	SV
Cadmium, TCLP	ND		mg/l	0.100	0.010	1	06/07/21 10:31	06/07/21 13:02	1,6010D	SV
Chromium, TCLP	ND		mg/l	0.200	0.021	1	06/07/21 10:31	06/07/21 13:02	1,6010D	SV
Lead, TCLP	ND		mg/l	0.500	0.027	1	06/07/21 10:31	06/07/21 13:02	1,6010D	SV
Selenium, TCLP	ND		mg/l	0.500	0.035	1	06/07/21 10:31	06/07/21 13:02	1,6010D	SV
Silver, TCLP	ND		mg/l	0.100	0.028	1	06/07/21 10:31	06/07/21 13:02	1,6010D	SV

Prep Information

Digestion Method: EPA 3015
TCLP/SPLP Extraction Date: 06/01/21 16:44

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
TCLP Metals by EPA 1311 - Mansfield Lab for sample(s): 02 Batch: WG1507677-1										
Mercury, TCLP	ND		mg/l	0.0010	0.0005	1	06/07/21 10:35	06/07/21 13:55	1,7470A	OU

Prep Information

Digestion Method: EPA 7470A
TCLP/SPLP Extraction Date: 06/01/21 16:44

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 02 Batch: WG1507721-1										
Aluminum, Total	ND		mg/kg	4.00	1.08	1	06/07/21 21:30	06/08/21 09:51	1,6010D	GD
Antimony, Total	ND		mg/kg	2.00	0.152	1	06/07/21 21:30	06/08/21 09:51	1,6010D	GD
Arsenic, Total	0.100	J	mg/kg	0.400	0.083	1	06/07/21 21:30	06/08/21 09:51	1,6010D	GD
Barium, Total	ND		mg/kg	0.400	0.070	1	06/07/21 21:30	06/08/21 09:51	1,6010D	GD
Beryllium, Total	ND		mg/kg	0.200	0.013	1	06/07/21 21:30	06/08/21 09:51	1,6010D	GD
Cadmium, Total	ND		mg/kg	0.400	0.039	1	06/07/21 21:30	06/08/21 09:51	1,6010D	GD
Calcium, Total	ND		mg/kg	4.00	1.40	1	06/07/21 21:30	06/08/21 09:51	1,6010D	GD
Chromium, Total	ND		mg/kg	0.400	0.038	1	06/07/21 21:30	06/08/21 09:51	1,6010D	GD
Cobalt, Total	ND		mg/kg	0.800	0.066	1	06/07/21 21:30	06/08/21 09:51	1,6010D	GD

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2128995
Report Date: 06/11/21

Method Blank Analysis
Batch Quality Control

Copper, Total	ND		mg/kg	0.400	0.103	1	06/07/21 21:30	06/08/21 09:51	1,6010D	GD
Iron, Total	ND		mg/kg	2.00	0.361	1	06/07/21 21:30	06/08/21 09:51	1,6010D	GD
Lead, Total	ND		mg/kg	2.00	0.107	1	06/07/21 21:30	06/08/21 09:51	1,6010D	GD
Magnesium, Total	ND		mg/kg	4.00	0.616	1	06/07/21 21:30	06/08/21 09:51	1,6010D	GD
Manganese, Total	ND		mg/kg	0.400	0.064	1	06/07/21 21:30	06/08/21 09:51	1,6010D	GD
Nickel, Total	ND		mg/kg	1.00	0.097	1	06/07/21 21:30	06/08/21 09:51	1,6010D	GD
Potassium, Total	ND		mg/kg	100	5.76	1	06/07/21 21:30	06/08/21 09:51	1,6010D	GD
Selenium, Total	ND		mg/kg	0.800	0.103	1	06/07/21 21:30	06/08/21 09:51	1,6010D	GD
Silver, Total	ND		mg/kg	0.400	0.113	1	06/07/21 21:30	06/08/21 09:51	1,6010D	GD
Sodium, Total	1.78	J	mg/kg	80.0	1.26	1	06/07/21 21:30	06/08/21 09:51	1,6010D	GD
Thallium, Total	ND		mg/kg	0.800	0.126	1	06/07/21 21:30	06/08/21 09:51	1,6010D	GD
Vanadium, Total	ND		mg/kg	0.400	0.081	1	06/07/21 21:30	06/08/21 09:51	1,6010D	GD
Zinc, Total	ND		mg/kg	2.00	0.117	1	06/07/21 21:30	06/08/21 09:51	1,6010D	GD

Prep Information

Digestion Method: EPA 3050B

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 02 Batch: WG1507723-1										
Mercury, Total	ND		mg/kg	0.083	0.054	1	06/07/21 21:54	06/08/21 10:51	1,7471B	OU

Prep Information

Digestion Method: EPA 7471B

Lab Control Sample Analysis

Batch Quality Control

Project Name: RYE LAKE WFP

Project Number: 41.0162892.00

Lab Number: L2128995

Report Date: 06/11/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
TCLP Metals by EPA 1311 - Mansfield Lab Associated sample(s): 02 Batch: WG1507674-2								
Arsenic, TCLP	106		-		75-125	-		20
Barium, TCLP	100		-		75-125	-		20
Cadmium, TCLP	100		-		75-125	-		20
Chromium, TCLP	99		-		75-125	-		20
Lead, TCLP	98		-		75-125	-		20
Selenium, TCLP	105		-		75-125	-		20
Silver, TCLP	98		-		75-125	-		20
TCLP Metals by EPA 1311 - Mansfield Lab Associated sample(s): 02 Batch: WG1507677-2								
Mercury, TCLP	99		-		80-120	-		

Lab Control Sample Analysis

Batch Quality Control

Project Name: RYE LAKE WFP

Project Number: 41.0162892.00

Lab Number: L2128995

Report Date: 06/11/21

Parameter	LCS %Recovery	LCSD %Recovery	%Recovery Limits	RPD	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02 Batch: WG1507721-2 SRM Lot Number: D109-540					
Aluminum, Total	53	-	50-150	-	
Antimony, Total	141	-	19-250	-	
Arsenic, Total	96	-	70-130	-	
Barium, Total	95	-	75-125	-	
Beryllium, Total	100	-	75-125	-	
Cadmium, Total	114	-	75-125	-	
Calcium, Total	85	-	73-128	-	
Chromium, Total	95	-	70-130	-	
Cobalt, Total	107	-	75-125	-	
Copper, Total	95	-	75-125	-	
Iron, Total	64	-	35-165	-	
Lead, Total	90	-	72-128	-	
Magnesium, Total	68	-	62-138	-	
Manganese, Total	82	-	74-126	-	
Nickel, Total	104	-	70-130	-	
Potassium, Total	66	-	59-141	-	
Selenium, Total	100	-	68-132	-	
Silver, Total	90	-	68-131	-	
Sodium, Total	96	-	35-165	-	
Thallium, Total	101	-	68-131	-	
Vanadium, Total	83	-	59-141	-	

Lab Control Sample Analysis

Batch Quality Control

Project Name: RYE LAKE WFP

Project Number: 41.0162892.00

Lab Number: L2128995

Report Date: 06/11/21

Parameter	LCS %Recovery	LCSD %Recovery	%Recovery Limits	RPD	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02 Batch: WG1507721-2 SRM Lot Number: D109-540					
Zinc, Total	93	-	70-130	-	
Total Metals - Mansfield Lab Associated sample(s): 02 Batch: WG1507723-2 SRM Lot Number: D109-540					
Mercury, Total	91	-	60-140	-	

Matrix Spike Analysis
Batch Quality Control

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2128995
Report Date: 06/11/21

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
TCLP Metals by EPA 1311 - Mansfield Lab Associated sample(s): 02 QC Batch ID: WG1507674-3 QC Sample: L2129153-26 Client ID: MS Sample												
Arsenic, TCLP	0.169J	1.2	1.47	122		-	-		75-125	-		20
Barium, TCLP	0.345J	20	20.8	104		-	-		75-125	-		20
Cadmium, TCLP	0.035J	0.51	0.553	108		-	-		75-125	-		20
Chromium, TCLP	ND	2	2.01	100		-	-		75-125	-		20
Lead, TCLP	0.142J	5.1	5.31	104		-	-		75-125	-		20
Selenium, TCLP	ND	1.2	1.29	108		-	-		75-125	-		20
Silver, TCLP	ND	0.5	0.494	99		-	-		75-125	-		20
TCLP Metals by EPA 1311 - Mansfield Lab Associated sample(s): 02 QC Batch ID: WG1507677-3 QC Sample: L2129153-26 Client ID: MS Sample												
Mercury, TCLP	0.0008J	0.025	0.0248	99		-	-		80-120	-		20

Matrix Spike Analysis
Batch Quality Control

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2128995
Report Date: 06/11/21

Parameter	Native Sample	MS Added	MS Found	MS %Recovery		MSD Found	MSD %Recovery	Recovery Limits	RPD	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02 QC Batch ID: WG1507721-3 QC Sample: L2128995-02 Client ID: B-17 (0'-5')										
Aluminum, Total	9410	173	12200	**1610**	Q	-	-	75-125	-	20
Antimony, Total	ND	43.2	28.0	**65**	Q	-	-	75-125	-	20
Arsenic, Total	1.81	10.4	11.2	90		-	-	75-125	-	20
Barium, Total	88.1	173	241	88		-	-	75-125	-	20
Beryllium, Total	0.245J	4.32	4.38	101		-	-	75-125	-	20
Cadmium, Total	0.312J	4.41	4.17	95		-	-	75-125	-	20
Calcium, Total	858	864	1740	102		-	-	75-125	-	20
Chromium, Total	24.9	17.3	42.9	104		-	-	75-125	-	20
Cobalt, Total	8.63	43.2	44.9	84		-	-	75-125	-	20
Copper, Total	7.29	21.6	29.9	105		-	-	75-125	-	20
Iron, Total	13500	86.4	15800	**2660**	Q	-	-	75-125	-	20
Lead, Total	5.95	44.1	42.8	84		-	-	75-125	-	20
Magnesium, Total	3650	864	4290	**74**	Q	-	-	75-125	-	20
Manganese, Total	192	43.2	303	**257**	Q	-	-	75-125	-	20
Nickel, Total	13.4	43.2	50.5	86		-	-	75-125	-	20
Potassium, Total	2470	864	2230	**0**	Q	-	-	75-125	-	20
Selenium, Total	0.354J	10.4	9.77	94		-	-	75-125	-	20
Silver, Total	ND	25.9	24.0	92		-	-	75-125	-	20
Sodium, Total	53.5J	864	857	99		-	-	75-125	-	20
Thallium, Total	ND	10.4	7.74	75		-	-	75-125	-	20
Vanadium, Total	29.0	43.2	71.8	99		-	-	75-125	-	20

Matrix Spike Analysis
Batch Quality Control

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2128995
Report Date: 06/11/21

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Found	MSD %Recovery	Recovery Limits	RPD	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02 QC Batch ID: WG1507721-3 QC Sample: L2128995-02 Client ID: B-17 (0'-5')									
Zinc, Total	35.7	43.2	80.4	103	-	-	75-125	-	20
Total Metals - Mansfield Lab Associated sample(s): 02 QC Batch ID: WG1507723-3 QC Sample: L2126262-06 Client ID: MS Sample									
Mercury, Total	ND	0.158	0.181	114	-	-	80-120	-	20

Lab Duplicate Analysis
Batch Quality Control

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2128995
Report Date: 06/11/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
TCLP Metals by EPA 1311 - Mansfield Lab Associated sample(s): 02 QC Batch ID: WG1507674-4 QC Sample: L2129153-26 Client ID: DUP Sample						
Arsenic, TCLP	0.169J	0.189J	mg/l	NC		20
Chromium, TCLP	ND	0.022J	mg/l	NC		20
Lead, TCLP	0.142J	0.145J	mg/l	NC		20
TCLP Metals by EPA 1311 - Mansfield Lab Associated sample(s): 02 QC Batch ID: WG1507677-4 QC Sample: L2129153-26 Client ID: DUP Sample						
Mercury, TCLP	0.0008J	0.0008J	mg/l	NC		20

Lab Duplicate Analysis
Batch Quality Control

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2128995
Report Date: 06/11/21

Parameter	Native Sample	Duplicate Sample	Units	RPD		RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02 QC Batch ID: WG1507721-4 QC Sample: L2128995-02 Client ID: B-17 (0'-5')						
Aluminum, Total	9410	11100	mg/kg	16		20
Antimony, Total	ND	ND	mg/kg	NC		20
Arsenic, Total	1.81	2.34	mg/kg	**26**	Q	20
Barium, Total	88.1	92.8	mg/kg	5		20
Beryllium, Total	0.245J	0.313J	mg/kg	NC		20
Cadmium, Total	0.312J	0.400J	mg/kg	NC		20
Calcium, Total	858	932	mg/kg	8		20
Chromium, Total	24.9	37.2	mg/kg	**40**	Q	20
Cobalt, Total	8.63	10.1	mg/kg	16		20
Copper, Total	7.29	10.4	mg/kg	**35**	Q	20
Iron, Total	13500	17200	mg/kg	**24**	Q	20
Lead, Total	5.95	7.06	mg/kg	17		20
Magnesium, Total	3650	3990	mg/kg	9		20
Manganese, Total	192	289	mg/kg	**40**	Q	20
Nickel, Total	13.4	16.2	mg/kg	19		20
Potassium, Total	2470	2330	mg/kg	6		20
Selenium, Total	0.354J	0.330J	mg/kg	NC		20
Silver, Total	ND	ND	mg/kg	NC		20
Sodium, Total	53.5J	56.5J	mg/kg	NC		20

Lab Duplicate Analysis
Batch Quality Control

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2128995
Report Date: 06/11/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02 QC Batch ID: WG1507721-4 QC Sample: L2128995-02 Client ID: B-17 (0'-5')					
Thallium, Total	ND	ND	mg/kg	NC	20
Vanadium, Total	29.0	34.5	mg/kg	17	20
Zinc, Total	35.7	42.5	mg/kg	17	20
Total Metals - Mansfield Lab Associated sample(s): 02 QC Batch ID: WG1507723-4 QC Sample: L2126262-06 Client ID: DUP Sample					
Mercury, Total	ND	ND	mg/kg	NC	20

INORGANICS
&
MISCELLANEOUS

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2128995
Report Date: 06/11/21

SAMPLE RESULTS

Lab ID: L2128995-02
Client ID: B-17 (0'-5')
Sample Location: RYE LAKE

Date Collected: 06/01/21 09:15
Date Received: 06/01/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Test Material Information

Source of Material:	Unknown
Description of Material:	Non-Metallic - Damp Soil
Particle Size:	Medium
Preliminary Burning Time (sec):	120

Parameter	Result	Date Analyzed	Analytical Method	Analyst
Ignitability of Solids - Westborough Lab				
Ignitability	NI	06/08/21 10:30	1,1030	IS

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2128995
Report Date: 06/11/21

SAMPLE RESULTS

Lab ID: L2128995-01
Client ID: B-17 (1'-2')
Sample Location: RYE LAKE

Date Collected: 06/01/21 09:15
Date Received: 06/01/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	87.9		%	0.100	NA	1	-	06/03/21 07:56	121,2540G	RI

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2128995
Report Date: 06/11/21

SAMPLE RESULTS

Lab ID: L2128995-02
Client ID: B-17 (0'-5')
Sample Location: RYE LAKE

Date Collected: 06/01/21 09:15
Date Received: 06/01/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	90.7		%	0.100	NA	1	-	06/03/21 06:48	121,2540G	RI
pH (H)	7.0		SU	-	NA	1	-	06/04/21 02:01	1,9045D	KA
Cyanide, Reactive	ND		mg/kg	10	10.	1	06/06/21 17:15	06/06/21 19:00	125,7.3	NA
Sulfide, Reactive	ND		mg/kg	10	10.	1	06/06/21 17:15	06/06/21 18:30	125,7.3	NA

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2128995
Report Date: 06/11/21

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab for sample(s): 02 Batch: WG1508268-1										
Cyanide, Reactive	ND		mg/kg	10	10.	1	06/06/21 17:15	06/06/21 18:59	125,7.3	NA
General Chemistry - Westborough Lab for sample(s): 02 Batch: WG1508272-1										
Sulfide, Reactive	ND		mg/kg	10	10.	1	06/06/21 17:15	06/06/21 18:29	125,7.3	NA

Lab Control Sample Analysis

Batch Quality Control

Project Name: RYE LAKE WFP

Project Number: 41.0162892.00

Lab Number: L2128995

Report Date: 06/11/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 02 Batch: WG1507395-1								
pH	100		-		99-101	-		
General Chemistry - Westborough Lab Associated sample(s): 02 Batch: WG1508268-2								
Cyanide, Reactive	99		-		30-125	-		40
General Chemistry - Westborough Lab Associated sample(s): 02 Batch: WG1508272-2								
Sulfide, Reactive	83		-		60-125	-		40

Lab Duplicate Analysis
Batch Quality Control

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2128995
Report Date: 06/11/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 02 QC Batch ID: WG1506916-1 QC Sample: L2128505-01 Client ID: DUP Sample						
Solids, Total	80.6	80.6	%	0		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1506921-1 QC Sample: L2127073-07 Client ID: DUP Sample						
Solids, Total	89.3	89.3	%	0		20
General Chemistry - Westborough Lab Associated sample(s): 02 QC Batch ID: WG1507395-2 QC Sample: L2128840-15 Client ID: DUP Sample						
pH	7.7	7.7	SU	0		5
General Chemistry - Westborough Lab Associated sample(s): 02 QC Batch ID: WG1508268-3 QC Sample: L2128995-02 Client ID: B-17 (0'-5')						
Cyanide, Reactive	ND	ND	mg/kg	NC		40
General Chemistry - Westborough Lab Associated sample(s): 02 QC Batch ID: WG1508272-3 QC Sample: L2128995-02 Client ID: B-17 (0'-5')						
Sulfide, Reactive	ND	ND	mg/kg	NC		40

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2128995
Report Date: 06/11/21

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2128995-01A	Vial MeOH preserved	A	NA		3.3	Y	Absent		NYTCL-8260HLW(14)
L2128995-01B	Vial water preserved	A	NA		3.3	Y	Absent	02-JUN-21 11:48	NYTCL-8260HLW(14)
L2128995-01C	Vial water preserved	A	NA		3.3	Y	Absent	02-JUN-21 11:48	NYTCL-8260HLW(14)
L2128995-01D	Plastic 120ml unpreserved	A	NA		3.3	Y	Absent		TS(7)
L2128995-02A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.3	Y	Absent		BE-TI(180),AS-TI(180),BA-TI(180),AG-TI(180),CR-TI(180),AL-TI(180),NI-TI(180),TL-TI(180),SE-TI(180),PB-TI(180),SB-TI(180),ZN-TI(180),CU-TI(180),CO-TI(180),V-TI(180),MG-TI(180),MN-TI(180),FE-TI(180),HG-T(28),K-TI(180),CA-TI(180),NA-TI(180),CD-TI(180)
L2128995-02B	Glass 120ml/4oz unpreserved	A	NA		3.3	Y	Absent		NYTCL-8270(14),REACTS(14),IGNIT-1030(14),HERB-APA(14),TS(7),PH-9045(1),NYTCL-8081(14),REACTCN(14),NYTCL-8082(365)
L2128995-02C	Glass 500ml/16oz unpreserved	A	NA		3.3	Y	Absent		NYTCL-8270(14),REACTS(14),IGNIT-1030(14),HERB-APA(14),TS(7),PH-9045(1),NYTCL-8081(14),REACTCN(14),NYTCL-8082(365)
L2128995-02X	Plastic 120ml HNO3 preserved Extracts	A	NA		3.3	Y	Absent		CD-CI(180),BA-CI(180),AS-CI(180),HG-C(28),PB-CI(180),CR-CI(180),SE-CI(180),AG-CI(180)
L2128995-02X9	Tumble Vessel	A	NA		3.3	Y	Absent		-

*Values in parentheses indicate holding time in days

Project Name:	RYE LAKE WFP	**Lab Number:**	L2128995
Project Number:	41.0162892.00	**Report Date:**	06/11/21

GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers

Project Name:	RYE LAKE WFP	**Lab Number:**	L2128995
Project Number:	41.0162892.00	**Report Date:**	06/11/21

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. (Note: 'PFAS, Total (6)' is applicable to MassDEP DW compliance analysis only.). If a 'Total' result is requested, the results of its individual components will also be reported.

The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA,this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

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

F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

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

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

Report Format: DU Report with 'J' Qualifiers

Project Name:	RYE LAKE WFP	**Lab Number:**	L2128995
Project Number:	41.0162892.00	**Report Date:**	06/11/21

Data Qualifiers

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

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

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

Project Name:	RYE LAKE WFP	**Lab Number:**	L2128995
Project Number:	41.0162892.00	**Report Date:**	06/11/21

REFERENCES

1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.

121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

125 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates IIIA, April 1998.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene
EPA 625/625.1: alpha-Terpineol
EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D/8270E: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522, EPA 537.1.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

NEW YORK CHAIN OF CUSTODY

ALPHA ANALYTICAL

Westborough, MA 01581
8 Walkup Dr.
TEL: 508-898-9220
FAX: 508-898-9193

Mansfield, MA 02048
320 Forbes Blvd
TEL: 508-822-9300
FAX: 508-822-3288

Service Centers
Mahwah, NJ 07430: 35 Whitney Rd, Suite 5
Albany, NY 12205: 14 Walker Way
Tonawanda, NY 14150: 275 Cooper Ave, Suite 105

Page of

Date Rec'd in Lab: 6/2/21

ALPHA Job #: L2128995

Client Information
Client: GZA GeoEnvironmental
Address: 104 West 29th St
New York, NY
Phone: 212-594-8140
Fax:
Email: matthew.delbalzo@gza.com

Project Information
Project Name: RYE LAKE WFP
Project Location: RYE LAKE
Project #: 41.0162892.00
(Use Project name as Project #) ☐
Project Manager: Matt DelBalzo
ALPHAQuote #:

Turn-Around Time
Standard ☑ Due Date:
Rush (only if pre approved) ☐ # of Days:

Deliverables
☐ ASP-A ☐ ASP-B
☐ EQuIS (1 File) ☐ EQuIS (4 File)
☐ Other

Regulatory Requirement
☐ NY TOGS ☐ NY Part 375
☐ AWQ Standards ☐ NY CP-51
☐ NY Restricted Use ☐ Other
☐ NY Unrestricted Use
☐ NYC Sewer Discharge

Billing Information
☐ Same as Client Info
PO #

Disposal Site Information
Please identify below location of applicable disposal facilities.
Disposal Facility:
☑ NJ ☑ NY
☑ Other: PA

These samples have been previously analyzed by Alpha ☐

Other project specific requirements/comments:

Please specify Metals or TAL.

ANALYSIS

Sample Filtration
☐ Done
☐ Lab to do
Preservation
☐ Lab to do
(Please Specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	VOCs (8260)	SVOCs (8270)	TAL Metals (6410/7471)	Pesticides (8081)	Herbicides (8151)	PCBs (8082)	TCLP RCRA 8 Metal	Haz. Charact.	Sample Specific Comments	Total Bottle
28995-01	B-17 (1'-2')	6/1/21	9:15AM	SOIL	A.A.	X									
-02	B-17 (0'-5')	6/1/21	9:15AM	SOIL	A.A.		X	X	X	X	X	X	X		

Preservative Code:
A = None
B = HCl
C = HNO_3
D = H_2SO_4
E = NaOH
F = MeOH
G = $NaHSO_4$
H = $Na_2S_2O_3$
K/E = Zn Ac/NaOH
O = Other

Container Code
P = Plastic
A = Amber Glass
V = Vial
G = Glass
B = Bacteria Cup
C = Cube
O = Other
E = Encore
D = BOD Bottle

Westboro: Certification No: MA935
Mansfield: Certification No: MA015

Container Type									
Preservative									

Relinquished By:	Date/Time	Received By:	Date/Time
Allan Amador	6/1/21, 13:30		6/1/21 13:30
	6/1/21 20:35		6/1/21 21:00
	6/2/21 01:00		6/2/21 01:00

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. BY EXECUTING THIS COC, THE CLIENT HAS READ AND AGREES TO BE BOUND BY ALPHA'S TERMS & CONDITIONS. (See reverse side.)

Form No: 01-25 HC (rev. 30-Sept-2013)

ANALYTICAL REPORT

Lab Number:	L2128996
Client:	GZA GeoEnvironmental, Inc. 104 West 29th Street, 10th Floor New York, NY 10001
ATTN:	Matthew Del Balzo
Phone:	(212) 594-8140
Project Name:	RYE LAKE WFP
Project Number:	41.0162892.00
Report Date:	06/11/21

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2128996
Report Date: 06/11/21

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2128996-01	B-17 (6'-7')	SOIL	RYE LAKE WFP	06/01/21 09:20	06/01/21
L2128996-02	B-17 (5'-10')	SOIL	RYE LAKE WFP	06/01/21 09:20	06/01/21

Project Name:	RYE LAKE WFP	**Lab Number:**	L2128996
Project Number:	41.0162892.00	**Report Date:**	06/11/21

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name:	RYE LAKE WFP	**Lab Number:**	L2128996
Project Number:	41.0162892.00	**Report Date:**	06/11/21

Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Total Metals

L2128996-02: The sample has elevated detection limits for all elements, with the exception of mercury, due to the dilution required by matrix interferences encountered during analysis.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Tiffani Morrissey - Tiffani Morrissey

Title: Technical Director/Representative Date: 06/11/21

ORGANICS

VOLATILES

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2128996
Report Date: 06/11/21

SAMPLE RESULTS

Lab ID: L2128996-01
Client ID: B-17 (6'-7')
Sample Location: RYE LAKE WFP
Date Collected: 06/01/21 09:20
Date Received: 06/01/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 06/08/21 13:42
Analyst: JC
Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methylene chloride	ND		ug/kg	3.0	1.4	1
1,1-Dichloroethane	ND		ug/kg	0.61	0.09	1
Chloroform	ND		ug/kg	0.91	0.09	1
Carbon tetrachloride	ND		ug/kg	0.61	0.14	1
1,2-Dichloropropane	ND		ug/kg	0.61	0.08	1
Dibromochloromethane	ND		ug/kg	0.61	0.09	1
1,1,2-Trichloroethane	ND		ug/kg	0.61	0.16	1
Tetrachloroethene	ND		ug/kg	0.30	0.12	1
Chlorobenzene	ND		ug/kg	0.30	0.08	1
Trichlorofluoromethane	ND		ug/kg	2.4	0.42	1
1,2-Dichloroethane	ND		ug/kg	0.61	0.16	1
1,1,1-Trichloroethane	ND		ug/kg	0.30	0.10	1
Bromodichloromethane	ND		ug/kg	0.30	0.07	1
trans-1,3-Dichloropropene	ND		ug/kg	0.61	0.17	1
cis-1,3-Dichloropropene	ND		ug/kg	0.30	0.10	1
1,3-Dichloropropene, Total	ND		ug/kg	0.30	0.10	1
1,1-Dichloropropene	ND		ug/kg	0.30	0.10	1
Bromoform	ND		ug/kg	2.4	0.15	1
1,1,2,2-Tetrachloroethane	ND		ug/kg	0.30	0.10	1
Benzene	ND		ug/kg	0.30	0.10	1
Toluene	ND		ug/kg	0.61	0.33	1
Ethylbenzene	ND		ug/kg	0.61	0.09	1
Chloromethane	ND		ug/kg	2.4	0.57	1
Bromomethane	ND		ug/kg	1.2	0.35	1
Vinyl chloride	ND		ug/kg	0.61	0.20	1
Chloroethane	ND		ug/kg	1.2	0.28	1
1,1-Dichloroethene	ND		ug/kg	0.61	0.14	1
trans-1,2-Dichloroethene	ND		ug/kg	0.91	0.08	1

Project Name: RYE LAKE WFP **Lab Number:** L2128996

Project Number: 41.0162892.00 **Report Date:** 06/11/21

SAMPLE RESULTS

Lab ID: L2128996-01 Date Collected: 06/01/21 09:20

Client ID: B-17 (6'-7') Date Received: 06/01/21

Sample Location: RYE LAKE WFP Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Trichloroethene	ND		ug/kg	0.30	0.08	1
1,2-Dichlorobenzene	ND		ug/kg	1.2	0.09	1
1,3-Dichlorobenzene	ND		ug/kg	1.2	0.09	1
1,4-Dichlorobenzene	ND		ug/kg	1.2	0.10	1
Methyl tert butyl ether	ND		ug/kg	1.2	0.12	1
p/m-Xylene	ND		ug/kg	1.2	0.34	1
o-Xylene	ND		ug/kg	0.61	0.18	1
Xylenes, Total	ND		ug/kg	0.61	0.18	1
cis-1,2-Dichloroethene	ND		ug/kg	0.61	0.11	1
1,2-Dichloroethene, Total	ND		ug/kg	0.61	0.08	1
Dibromomethane	ND		ug/kg	1.2	0.14	1
Styrene	ND		ug/kg	0.61	0.12	1
Dichlorodifluoromethane	ND		ug/kg	6.1	0.56	1
Acetone	7.9		ug/kg	6.1	2.9	1
Carbon disulfide	ND		ug/kg	6.1	2.8	1
2-Butanone	ND		ug/kg	6.1	1.4	1
Vinyl acetate	ND		ug/kg	6.1	1.3	1
4-Methyl-2-pentanone	ND		ug/kg	6.1	0.78	1
1,2,3-Trichloropropane	ND		ug/kg	1.2	0.08	1
2-Hexanone	ND		ug/kg	6.1	0.72	1
Bromochloromethane	ND		ug/kg	1.2	0.12	1
2,2-Dichloropropane	ND		ug/kg	1.2	0.12	1
1,2-Dibromoethane	ND		ug/kg	0.61	0.17	1
1,3-Dichloropropane	ND		ug/kg	1.2	0.10	1
1,1,1,2-Tetrachloroethane	ND		ug/kg	0.30	0.08	1
Bromobenzene	ND		ug/kg	1.2	0.09	1
n-Butylbenzene	ND		ug/kg	0.61	0.10	1
sec-Butylbenzene	ND		ug/kg	0.61	0.09	1
tert-Butylbenzene	ND		ug/kg	1.2	0.07	1
o-Chlorotoluene	ND		ug/kg	1.2	0.12	1
p-Chlorotoluene	ND		ug/kg	1.2	0.07	1
1,2-Dibromo-3-chloropropane	ND		ug/kg	1.8	0.61	1
Hexachlorobutadiene	ND		ug/kg	2.4	0.10	1
Isopropylbenzene	ND		ug/kg	0.61	0.07	1
p-Isopropyltoluene	ND		ug/kg	0.61	0.07	1
Naphthalene	ND		ug/kg	2.4	0.40	1
Acrylonitrile	ND		ug/kg	2.4	0.70	1

Project Name: RYE LAKE WFP
Lab Number: L2128996
Project Number: 41.0162892.00
Report Date: 06/11/21

SAMPLE RESULTS

Lab ID: L2128996-01
Client ID: B-17 (6'-7')
Sample Location: RYE LAKE WFP
Date Collected: 06/01/21 09:20
Date Received: 06/01/21
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
n-Propylbenzene	ND		ug/kg	0.61	0.10	1
1,2,3-Trichlorobenzene	ND		ug/kg	1.2	0.20	1
1,2,4-Trichlorobenzene	ND		ug/kg	1.2	0.16	1
1,3,5-Trimethylbenzene	ND		ug/kg	1.2	0.12	1
1,2,4-Trimethylbenzene	ND		ug/kg	1.2	0.20	1
1,4-Dioxane	ND		ug/kg	49	21.	1
p-Diethylbenzene	ND		ug/kg	1.2	0.11	1
p-Ethyltoluene	ND		ug/kg	1.2	0.23	1
1,2,4,5-Tetramethylbenzene	ND		ug/kg	1.2	0.12	1
Ethyl ether	ND		ug/kg	1.2	0.21	1
trans-1,4-Dichloro-2-butene	ND		ug/kg	3.0	0.86	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	101		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	100		70-130
Dibromofluoromethane	100		70-130

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2128996
Report Date: 06/11/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 06/08/21 08:26
Analyst: JC

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01 Batch: WG1509148-5					
Methylene chloride	ND		ug/kg	5.0	2.3
1,1-Dichloroethane	ND		ug/kg	1.0	0.14
Chloroform	ND		ug/kg	1.5	0.14
Carbon tetrachloride	ND		ug/kg	1.0	0.23
1,2-Dichloropropane	ND		ug/kg	1.0	0.12
Dibromochloromethane	ND		ug/kg	1.0	0.14
1,1,2-Trichloroethane	ND		ug/kg	1.0	0.27
Tetrachloroethene	ND		ug/kg	0.50	0.20
Chlorobenzene	ND		ug/kg	0.50	0.13
Trichlorofluoromethane	ND		ug/kg	4.0	0.70
1,2-Dichloroethane	ND		ug/kg	1.0	0.26
1,1,1-Trichloroethane	ND		ug/kg	0.50	0.17
Bromodichloromethane	ND		ug/kg	0.50	0.11
trans-1,3-Dichloropropene	ND		ug/kg	1.0	0.27
cis-1,3-Dichloropropene	ND		ug/kg	0.50	0.16
1,3-Dichloropropene, Total	ND		ug/kg	0.50	0.16
1,1-Dichloropropene	ND		ug/kg	0.50	0.16
Bromoform	ND		ug/kg	4.0	0.25
1,1,2,2-Tetrachloroethane	ND		ug/kg	0.50	0.17
Benzene	ND		ug/kg	0.50	0.17
Toluene	ND		ug/kg	1.0	0.54
Ethylbenzene	ND		ug/kg	1.0	0.14
Chloromethane	ND		ug/kg	4.0	0.93
Bromomethane	ND		ug/kg	2.0	0.58
Vinyl chloride	ND		ug/kg	1.0	0.34
Chloroethane	ND		ug/kg	2.0	0.45
1,1-Dichloroethene	ND		ug/kg	1.0	0.24
trans-1,2-Dichloroethene	ND		ug/kg	1.5	0.14
Trichloroethene	ND		ug/kg	0.50	0.14

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2128996
Report Date: 06/11/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 06/08/21 08:26
Analyst: JC

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01 Batch: WG1509148-5					
1,2-Dichlorobenzene	ND		ug/kg	2.0	0.14
1,3-Dichlorobenzene	ND		ug/kg	2.0	0.15
1,4-Dichlorobenzene	0.18	J	ug/kg	2.0	0.17
Methyl tert butyl ether	ND		ug/kg	2.0	0.20
p/m-Xylene	ND		ug/kg	2.0	0.56
o-Xylene	ND		ug/kg	1.0	0.29
Xylenes, Total	ND		ug/kg	1.0	0.29
cis-1,2-Dichloroethene	ND		ug/kg	1.0	0.18
1,2-Dichloroethene, Total	ND		ug/kg	1.0	0.14
Dibromomethane	ND		ug/kg	2.0	0.24
Styrene	0.48	J	ug/kg	1.0	0.20
Dichlorodifluoromethane	ND		ug/kg	10	0.92
Acetone	ND		ug/kg	10	4.8
Carbon disulfide	ND		ug/kg	10	4.6
2-Butanone	ND		ug/kg	10	2.2
Vinyl acetate	ND		ug/kg	10	2.2
4-Methyl-2-pentanone	ND		ug/kg	10	1.3
1,2,3-Trichloropropane	ND		ug/kg	2.0	0.13
2-Hexanone	ND		ug/kg	10	1.2
Bromochloromethane	ND		ug/kg	2.0	0.20
2,2-Dichloropropane	ND		ug/kg	2.0	0.20
1,2-Dibromoethane	ND		ug/kg	1.0	0.28
1,3-Dichloropropane	ND		ug/kg	2.0	0.17
1,1,1,2-Tetrachloroethane	ND		ug/kg	0.50	0.13
Bromobenzene	ND		ug/kg	2.0	0.14
n-Butylbenzene	ND		ug/kg	1.0	0.17
sec-Butylbenzene	ND		ug/kg	1.0	0.15
tert-Butylbenzene	ND		ug/kg	2.0	0.12
o-Chlorotoluene	ND		ug/kg	2.0	0.19

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2128996
Report Date: 06/11/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 06/08/21 08:26
Analyst: JC

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01 Batch: WG1509148-5					
p-Chlorotoluene	ND		ug/kg	2.0	0.11
1,2-Dibromo-3-chloropropane	ND		ug/kg	3.0	1.0
Hexachlorobutadiene	ND		ug/kg	4.0	0.17
Isopropylbenzene	ND		ug/kg	1.0	0.11
p-Isopropyltoluene	ND		ug/kg	1.0	0.11
Naphthalene	ND		ug/kg	4.0	0.65
Acrylonitrile	ND		ug/kg	4.0	1.2
n-Propylbenzene	ND		ug/kg	1.0	0.17
1,2,3-Trichlorobenzene	0.33	J	ug/kg	2.0	0.32
1,2,4-Trichlorobenzene	ND		ug/kg	2.0	0.27
1,3,5-Trimethylbenzene	ND		ug/kg	2.0	0.19
1,2,4-Trimethylbenzene	ND		ug/kg	2.0	0.33
1,4-Dioxane	ND		ug/kg	80	35.
p-Diethylbenzene	ND		ug/kg	2.0	0.18
p-Ethyltoluene	ND		ug/kg	2.0	0.38
1,2,4,5-Tetramethylbenzene	ND		ug/kg	2.0	0.19
Ethyl ether	ND		ug/kg	2.0	0.34
trans-1,4-Dichloro-2-butene	ND		ug/kg	5.0	1.4

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	104		70-130
Toluene-d8	95		70-130
4-Bromofluorobenzene	99		70-130
Dibromofluoromethane	100		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: RYE LAKE WFP

Project Number: 41.0162892.00

Lab Number: L2128996

Report Date: 06/11/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 Batch: WG1509148-3 WG1509148-4								
Methylene chloride	96		96		70-130	0		30
1,1-Dichloroethane	107		107		70-130	0		30
Chloroform	109		109		70-130	0		30
Carbon tetrachloride	109		112		70-130	3		30
1,2-Dichloropropane	106		109		70-130	3		30
Dibromochloromethane	99		99		70-130	0		30
1,1,2-Trichloroethane	98		98		70-130	0		30
Tetrachloroethene	102		104		70-130	2		30
Chlorobenzene	100		101		70-130	1		30
Trichlorofluoromethane	108		111		70-139	3		30
1,2-Dichloroethane	114		112		70-130	2		30
1,1,1-Trichloroethane	110		113		70-130	3		30
Bromodichloromethane	111		112		70-130	1		30
trans-1,3-Dichloropropene	110		109		70-130	1		30
cis-1,3-Dichloropropene	113		114		70-130	1		30
1,1-Dichloropropene	107		109		70-130	2		30
Bromoform	106		106		70-130	0		30
1,1,2,2-Tetrachloroethane	98		97		70-130	1		30
Benzene	103		104		70-130	1		30
Toluene	97		98		70-130	1		30
Ethylbenzene	98		100		70-130	2		30
Chloromethane	107		102		52-130	5		30
Bromomethane	96		102		57-147	6		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: RYE LAKE WFP

Project Number: 41.0162892.00

Lab Number: L2128996

Report Date: 06/11/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 Batch: WG1509148-3 WG1509148-4								
Vinyl chloride	105		106		67-130	1		30
Chloroethane	108		110		50-151	2		30
1,1-Dichloroethene	101		104		65-135	3		30
trans-1,2-Dichloroethene	103		105		70-130	2		30
Trichloroethene	105		109		70-130	4		30
1,2-Dichlorobenzene	102		101		70-130	1		30
1,3-Dichlorobenzene	103		102		70-130	1		30
1,4-Dichlorobenzene	98		99		70-130	1		30
Methyl tert butyl ether	105		105		66-130	0		30
p/m-Xylene	98		100		70-130	2		30
o-Xylene	100		101		70-130	1		30
cis-1,2-Dichloroethene	104		107		70-130	3		30
Dibromomethane	109		110		70-130	1		30
Styrene	103		106		70-130	3		30
Dichlorodifluoromethane	98		99		30-146	1		30
Acetone	113		109		54-140	4		30
Carbon disulfide	97		100		59-130	3		30
2-Butanone	106		101		70-130	5		30
Vinyl acetate	115		112		70-130	3		30
4-Methyl-2-pentanone	108		105		70-130	3		30
1,2,3-Trichloropropane	101		100		68-130	1		30
2-Hexanone	106		103		70-130	3		30
Bromochloromethane	108		110		70-130	2		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: RYE LAKE WFP

Project Number: 41.0162892.00

Lab Number: L2128996

Report Date: 06/11/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 Batch: WG1509148-3 WG1509148-4								
2,2-Dichloropropane	113		114		70-130	1		30
1,2-Dibromoethane	99		98		70-130	1		30
1,3-Dichloropropane	103		103		69-130	0		30
1,1,1,2-Tetrachloroethane	102		105		70-130	3		30
Bromobenzene	99		101		70-130	2		30
n-Butylbenzene	102		103		70-130	1		30
sec-Butylbenzene	100		102		70-130	2		30
tert-Butylbenzene	101		103		70-130	2		30
o-Chlorotoluene	96		96		70-130	0		30
p-Chlorotoluene	102		101		70-130	1		30
1,2-Dibromo-3-chloropropane	94		93		68-130	1		30
Hexachlorobutadiene	95		98		67-130	3		30
Isopropylbenzene	102		103		70-130	1		30
p-Isopropyltoluene	102		103		70-130	1		30
Naphthalene	99		101		70-130	2		30
Acrylonitrile	108		103		70-130	5		30
n-Propylbenzene	101		101		70-130	0		30
1,2,3-Trichlorobenzene	103		104		70-130	1		30
1,2,4-Trichlorobenzene	105		107		70-130	2		30
1,3,5-Trimethylbenzene	103		102		70-130	1		30
1,2,4-Trimethylbenzene	104		104		70-130	0		30
1,4-Dioxane	102		100		65-136	2		30
p-Diethylbenzene	104		104		70-130	0		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: RYE LAKE WFP

Project Number: 41.0162892.00

Lab Number: L2128996

Report Date: 06/11/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 Batch: WG1509148-3 WG1509148-4								
p-Ethyltoluene	103		104		70-130	1		30
1,2,4,5-Tetramethylbenzene	104		106		70-130	2		30
Ethyl ether	102		104		67-130	2		30
trans-1,4-Dichloro-2-butene	114		110		70-130	4		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	109		105		70-130
Toluene-d8	97		97		70-130
4-Bromofluorobenzene	101		99		70-130
Dibromofluoromethane	105		106		70-130

SEMIVOLATILES

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2128996
Report Date: 06/11/21

SAMPLE RESULTS

Lab ID: L2128996-02
Client ID: B-17 (5'-10')
Sample Location: RYE LAKE WFP

Date Collected: 06/01/21 09:20
Date Received: 06/01/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D
Analytical Date: 06/10/21 02:35
Analyst: ALS
Percent Solids: 89%

Extraction Method: EPA 3546
Extraction Date: 06/09/21 10:08

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Acenaphthene	ND		ug/kg	140	19.	1
1,2,4-Trichlorobenzene	ND		ug/kg	180	21.	1
Hexachlorobenzene	ND		ug/kg	110	20.	1
Bis(2-chloroethyl)ether	ND		ug/kg	160	25.	1
2-Chloronaphthalene	ND		ug/kg	180	18.	1
1,2-Dichlorobenzene	ND		ug/kg	180	33.	1
1,3-Dichlorobenzene	ND		ug/kg	180	31.	1
1,4-Dichlorobenzene	ND		ug/kg	180	32.	1
3,3'-Dichlorobenzidine	ND		ug/kg	180	48.	1
2,4-Dinitrotoluene	ND		ug/kg	180	36.	1
2,6-Dinitrotoluene	ND		ug/kg	180	31.	1
Fluoranthene	ND		ug/kg	110	21.	1
4-Chlorophenyl phenyl ether	ND		ug/kg	180	19.	1
4-Bromophenyl phenyl ether	ND		ug/kg	180	28.	1
Bis(2-chloroisopropyl)ether	ND		ug/kg	220	31.	1
Bis(2-chloroethoxy)methane	ND		ug/kg	200	18.	1
Hexachlorobutadiene	ND		ug/kg	180	27.	1
Hexachlorocyclopentadiene	ND		ug/kg	520	160	1
Hexachloroethane	ND		ug/kg	140	29.	1
Isophorone	ND		ug/kg	160	24.	1
Naphthalene	ND		ug/kg	180	22.	1
Nitrobenzene	ND		ug/kg	160	27.	1
NDPA/DPA	ND		ug/kg	140	21.	1
n-Nitrosodi-n-propylamine	ND		ug/kg	180	28.	1
Bis(2-ethylhexyl)phthalate	ND		ug/kg	180	63.	1
Butyl benzyl phthalate	ND		ug/kg	180	46.	1
Di-n-butylphthalate	ND		ug/kg	180	34.	1
Di-n-octylphthalate	ND		ug/kg	180	62.	1

Project Name: RYE LAKE WFP **Lab Number:** L2128996

Project Number: 41.0162892.00 **Report Date:** 06/11/21

SAMPLE RESULTS

Lab ID: L2128996-02 Date Collected: 06/01/21 09:20

Client ID: B-17 (5'-10') Date Received: 06/01/21

Sample Location: RYE LAKE WFP Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Diethyl phthalate	ND		ug/kg	180	17.	1
Dimethyl phthalate	ND		ug/kg	180	38.	1
Benzo(a)anthracene	ND		ug/kg	110	20.	1
Benzo(a)pyrene	ND		ug/kg	140	44.	1
Benzo(b)fluoranthene	ND		ug/kg	110	31.	1
Benzo(k)fluoranthene	ND		ug/kg	110	29.	1
Chrysene	ND		ug/kg	110	19.	1
Acenaphthylene	ND		ug/kg	140	28.	1
Anthracene	ND		ug/kg	110	35.	1
Benzo(ghi)perylene	ND		ug/kg	140	21.	1
Fluorene	ND		ug/kg	180	18.	1
Phenanthrene	ND		ug/kg	110	22.	1
Dibenzo(a,h)anthracene	ND		ug/kg	110	21.	1
Indeno(1,2,3-cd)pyrene	ND		ug/kg	140	25.	1
Pyrene	ND		ug/kg	110	18.	1
Biphenyl	ND		ug/kg	410	42.	1
4-Chloroaniline	ND		ug/kg	180	33.	1
2-Nitroaniline	ND		ug/kg	180	35.	1
3-Nitroaniline	ND		ug/kg	180	34.	1
4-Nitroaniline	ND		ug/kg	180	75.	1
Dibenzofuran	ND		ug/kg	180	17.	1
2-Methylnaphthalene	ND		ug/kg	220	22.	1
1,2,4,5-Tetrachlorobenzene	ND		ug/kg	180	19.	1
Acetophenone	ND		ug/kg	180	22.	1
2,4,6-Trichlorophenol	ND		ug/kg	110	34.	1
p-Chloro-m-cresol	ND		ug/kg	180	27.	1
2-Chlorophenol	ND		ug/kg	180	22.	1
2,4-Dichlorophenol	ND		ug/kg	160	29.	1
2,4-Dimethylphenol	ND		ug/kg	180	60.	1
2-Nitrophenol	ND		ug/kg	390	68.	1
4-Nitrophenol	ND		ug/kg	250	74.	1
2,4-Dinitrophenol	ND		ug/kg	870	85.	1
4,6-Dinitro-o-cresol	ND		ug/kg	470	87.	1
Pentachlorophenol	ND		ug/kg	140	40.	1
Phenol	ND		ug/kg	180	27.	1
2-Methylphenol	ND		ug/kg	180	28.	1
3-Methylphenol/4-Methylphenol	ND		ug/kg	260	28.	1

Project Name: RYE LAKE WFP
Lab Number: L2128996
Project Number: 41.0162892.00
Report Date: 06/11/21

SAMPLE RESULTS

Lab ID: L2128996-02
Client ID: B-17 (5'-10')
Sample Location: RYE LAKE WFP
Date Collected: 06/01/21 09:20
Date Received: 06/01/21
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
2,4,5-Trichlorophenol	ND		ug/kg	180	35.	1
Benzoic Acid	ND		ug/kg	590	180	1
Benzyl Alcohol	ND		ug/kg	180	56.	1
Carbazole	ND		ug/kg	180	18.	1
1,4-Dioxane	ND		ug/kg	27	8.4	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	66		25-120
Phenol-d6	67		10-120
Nitrobenzene-d5	62		23-120
2-Fluorobiphenyl	66		30-120
2,4,6-Tribromophenol	63		10-136
4-Terphenyl-d14	65		18-120

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2128996
Report Date: 06/11/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 06/10/21 00:20
Analyst: SZ

Extraction Method: EPA 3546
Extraction Date: 06/09/21 10:08

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 02 Batch: WG1509607-1					
Acenaphthene	ND		ug/kg	130	17.
1,2,4-Trichlorobenzene	ND		ug/kg	160	19.
Hexachlorobenzene	ND		ug/kg	99	18.
Bis(2-chloroethyl)ether	ND		ug/kg	150	22.
2-Chloronaphthalene	ND		ug/kg	160	16.
1,2-Dichlorobenzene	ND		ug/kg	160	30.
1,3-Dichlorobenzene	ND		ug/kg	160	28.
1,4-Dichlorobenzene	ND		ug/kg	160	29.
3,3'-Dichlorobenzidine	ND		ug/kg	160	44.
2,4-Dinitrotoluene	ND		ug/kg	160	33.
2,6-Dinitrotoluene	ND		ug/kg	160	28.
Fluoranthene	ND		ug/kg	99	19.
4-Chlorophenyl phenyl ether	ND		ug/kg	160	18.
4-Bromophenyl phenyl ether	ND		ug/kg	160	25.
Bis(2-chloroisopropyl)ether	ND		ug/kg	200	28.
Bis(2-chloroethoxy)methane	ND		ug/kg	180	16.
Hexachlorobutadiene	ND		ug/kg	160	24.
Hexachlorocyclopentadiene	ND		ug/kg	470	150
Hexachloroethane	ND		ug/kg	130	27.
Isophorone	ND		ug/kg	150	21.
Naphthalene	ND		ug/kg	160	20.
Nitrobenzene	ND		ug/kg	150	24.
NDPA/DPA	ND		ug/kg	130	19.
n-Nitrosodi-n-propylamine	ND		ug/kg	160	25.
Bis(2-ethylhexyl)phthalate	ND		ug/kg	160	57.
Butyl benzyl phthalate	ND		ug/kg	160	42.
Di-n-butylphthalate	ND		ug/kg	160	31.
Di-n-octylphthalate	ND		ug/kg	160	56.
Diethyl phthalate	ND		ug/kg	160	15.

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2128996
Report Date: 06/11/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 06/10/21 00:20
Analyst: SZ

Extraction Method: EPA 3546
Extraction Date: 06/09/21 10:08

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 02 Batch: WG1509607-1					
Dimethyl phthalate	ND		ug/kg	160	34.
Benzo(a)anthracene	ND		ug/kg	99	18.
Benzo(a)pyrene	ND		ug/kg	130	40.
Benzo(b)fluoranthene	ND		ug/kg	99	28.
Benzo(k)fluoranthene	ND		ug/kg	99	26.
Chrysene	ND		ug/kg	99	17.
Acenaphthylene	ND		ug/kg	130	25.
Anthracene	ND		ug/kg	99	32.
Benzo(ghi)perylene	ND		ug/kg	130	19.
Fluorene	ND		ug/kg	160	16.
Phenanthrene	ND		ug/kg	99	20.
Dibenzo(a,h)anthracene	ND		ug/kg	99	19.
Indeno(1,2,3-cd)pyrene	ND		ug/kg	130	23.
Pyrene	ND		ug/kg	99	16.
Biphenyl	ND		ug/kg	380	38.
4-Chloroaniline	ND		ug/kg	160	30.
2-Nitroaniline	ND		ug/kg	160	32.
3-Nitroaniline	ND		ug/kg	160	31.
4-Nitroaniline	ND		ug/kg	160	68.
Dibenzofuran	ND		ug/kg	160	16.
2-Methylnaphthalene	ND		ug/kg	200	20.
1,2,4,5-Tetrachlorobenzene	ND		ug/kg	160	17.
Acetophenone	ND		ug/kg	160	20.
2,4,6-Trichlorophenol	ND		ug/kg	99	31.
p-Chloro-m-cresol	ND		ug/kg	160	24.
2-Chlorophenol	ND		ug/kg	160	19.
2,4-Dichlorophenol	ND		ug/kg	150	26.
2,4-Dimethylphenol	ND		ug/kg	160	54.
2-Nitrophenol	ND		ug/kg	360	62.

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2128996
Report Date: 06/11/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 06/10/21 00:20
Analyst: SZ

Extraction Method: EPA 3546
Extraction Date: 06/09/21 10:08

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 02 Batch: WG1509607-1					
4-Nitrophenol	ND		ug/kg	230	67.
2,4-Dinitrophenol	ND		ug/kg	790	77.
4,6-Dinitro-o-cresol	ND		ug/kg	430	79.
Pentachlorophenol	ND		ug/kg	130	36.
Phenol	ND		ug/kg	160	25.
2-Methylphenol	ND		ug/kg	160	26.
3-Methylphenol/4-Methylphenol	ND		ug/kg	240	26.
2,4,5-Trichlorophenol	ND		ug/kg	160	32.
Benzoic Acid	ND		ug/kg	530	170
Benzyl Alcohol	ND		ug/kg	160	50.
Carbazole	ND		ug/kg	160	16.
1,4-Dioxane	ND		ug/kg	25	7.6

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	88		25-120
Phenol-d6	90		10-120
Nitrobenzene-d5	82		23-120
2-Fluorobiphenyl	88		30-120
2,4,6-Tribromophenol	88		10-136
4-Terphenyl-d14	95		18-120

Lab Control Sample Analysis

Batch Quality Control

Project Name: RYE LAKE WFP

Project Number: 41.0162892.00

Lab Number: L2128996

Report Date: 06/11/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 02 Batch: WG1509607-2 WG1509607-3								
Acenaphthene	94		101		31-137	7		50
1,2,4-Trichlorobenzene	82		86		38-107	5		50
Hexachlorobenzene	83		88		40-140	6		50
Bis(2-chloroethyl)ether	84		89		40-140	6		50
2-Chloronaphthalene	89		95		40-140	7		50
1,2-Dichlorobenzene	84		86		40-140	2		50
1,3-Dichlorobenzene	82		83		40-140	1		50
1,4-Dichlorobenzene	85		86		28-104	1		50
3,3'-Dichlorobenzidine	83		88		40-140	6		50
2,4-Dinitrotoluene	92		96		40-132	4		50
2,6-Dinitrotoluene	90		97		40-140	7		50
Fluoranthene	94		99		40-140	5		50
4-Chlorophenyl phenyl ether	85		90		40-140	6		50
4-Bromophenyl phenyl ether	83		88		40-140	6		50
Bis(2-chloroisopropyl)ether	83		85		40-140	2		50
Bis(2-chloroethoxy)methane	89		93		40-117	4		50
Hexachlorobutadiene	71		76		40-140	7		50
Hexachlorocyclopentadiene	66		73		40-140	10		50
Hexachloroethane	85		85		40-140	0		50
Isophorone	91		95		40-140	4		50
Naphthalene	89		95		40-140	7		50
Nitrobenzene	88		89		40-140	1		50
NDPA/DPA	94		99		36-157	5		50

Lab Control Sample Analysis
Batch Quality Control

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2128996
Report Date: 06/11/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 02 Batch: WG1509607-2 WG1509607-3								
n-Nitrosodi-n-propylamine	83		88		32-121	6		50
Bis(2-ethylhexyl)phthalate	108		114		40-140	5		50
Butyl benzyl phthalate	98		104		40-140	6		50
Di-n-butylphthalate	102		109		40-140	7		50
Di-n-octylphthalate	103		110		40-140	7		50
Diethyl phthalate	94		101		40-140	7		50
Dimethyl phthalate	89		95		40-140	7		50
Benzo(a)anthracene	91		97		40-140	6		50
Benzo(a)pyrene	98		104		40-140	6		50
Benzo(b)fluoranthene	89		92		40-140	3		50
Benzo(k)fluoranthene	100		108		40-140	8		50
Chrysene	96		100		40-140	4		50
Acenaphthylene	94		100		40-140	6		50
Anthracene	99		106		40-140	7		50
Benzo(ghi)perylene	96		102		40-140	6		50
Fluorene	95		100		40-140	5		50
Phenanthrene	95		102		40-140	7		50
Dibenzo(a,h)anthracene	99		105		40-140	6		50
Indeno(1,2,3-cd)pyrene	93		101		40-140	8		50
Pyrene	93		99		35-142	6		50
Biphenyl	92		99		37-127	7		50
4-Chloroaniline	84		91		40-140	8		50
2-Nitroaniline	93		99		47-134	6		50

Lab Control Sample Analysis
Batch Quality Control

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2128996
Report Date: 06/11/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 02 Batch: WG1509607-2 WG1509607-3								
3-Nitroaniline	85		91		26-129	7		50
4-Nitroaniline	89		96		41-125	8		50
Dibenzofuran	93		100		40-140	7		50
2-Methylnaphthalene	92		99		40-140	7		50
1,2,4,5-Tetrachlorobenzene	78		84		40-117	7		50
Acetophenone	90		94		14-144	4		50
2,4,6-Trichlorophenol	83		92		30-130	10		50
p-Chloro-m-cresol	94		101		26-103	7		50
2-Chlorophenol	94		99		25-102	5		50
2,4-Dichlorophenol	97		101		30-130	4		50
2,4-Dimethylphenol	95		100		30-130	5		50
2-Nitrophenol	91		94		30-130	3		50
4-Nitrophenol	88		89		11-114	1		50
2,4-Dinitrophenol	56		62		4-130	10		50
4,6-Dinitro-o-cresol	78		87		10-130	11		50
Pentachlorophenol	69		77		17-109	11		50
Phenol	**95**	Q	**99**	Q	26-90	4		50
2-Methylphenol	98		103		30-130.	5		50
3-Methylphenol/4-Methylphenol	94		100		30-130	6		50
2,4,5-Trichlorophenol	88		96		30-130	9		50
Benzoic Acid	14		16		10-110	13		50
Benzyl Alcohol	89		95		40-140	7		50
Carbazole	102		107		54-128	5		50

Lab Control Sample Analysis

Batch Quality Control

Project Name: RYE LAKE WFP

Project Number: 41.0162892.00

Lab Number: L2128996

Report Date: 06/11/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 02 Batch: WG1509607-2 WG1509607-3								
1,4-Dioxane	65		64		40-140	2		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	89		91		25-120
Phenol-d6	93		97		10-120
Nitrobenzene-d5	87		89		23-120
2-Fluorobiphenyl	88		96		30-120
2,4,6-Tribromophenol	82		91		10-136
4-Terphenyl-d14	87		92		18-120

PCBS

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2128996
Report Date: 06/11/21

SAMPLE RESULTS

Lab ID: L2128996-02
Client ID: B-17 (5'-10')
Sample Location: RYE LAKE WFP

Date Collected: 06/01/21 09:20
Date Received: 06/01/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8082A
Analytical Date: 06/09/21 19:03
Analyst: CW
Percent Solids: 89%

Extraction Method: EPA 3546
Extraction Date: 06/09/21 08:39
Cleanup Method: EPA 3665A
Cleanup Date: 06/09/21
Cleanup Method: EPA 3660B
Cleanup Date: 06/09/21

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Polychlorinated Biphenyls by GC - Westborough Lab							
Aroclor 1016	ND		ug/kg	37.6	3.33	1	A
Aroclor 1221	ND		ug/kg	37.6	3.76	1	A
Aroclor 1232	ND		ug/kg	37.6	7.96	1	A
Aroclor 1242	ND		ug/kg	37.6	5.06	1	A
Aroclor 1248	ND		ug/kg	37.6	5.63	1	A
Aroclor 1254	ND		ug/kg	37.6	4.11	1	A
Aroclor 1260	43.8		ug/kg	37.6	6.94	1	B
Aroclor 1262	ND		ug/kg	37.6	4.77	1	A
Aroclor 1268	ND		ug/kg	37.6	3.89	1	A
PCBs, Total	43.8		ug/kg	37.6	3.33	1	B

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	65		30-150	A
Decachlorobiphenyl	56		30-150	A
2,4,5,6-Tetrachloro-m-xylene	65		30-150	B
Decachlorobiphenyl	63		30-150	B

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2128996
Report Date: 06/11/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8082A
Analytical Date: 06/09/21 12:18
Analyst: CW

Extraction Method: EPA 3546
Extraction Date: 06/08/21 22:35
Cleanup Method: EPA 3665A
Cleanup Date: 06/09/21
Cleanup Method: EPA 3660B
Cleanup Date: 06/09/21

Parameter	Result	Qualifier	Units	RL	MDL	Column
Polychlorinated Biphenyls by GC - Westborough Lab for sample(s): 02 Batch: WG1509385-1						
Aroclor 1016	ND		ug/kg	32.5	2.88	A
Aroclor 1221	ND		ug/kg	32.5	3.26	A
Aroclor 1232	ND		ug/kg	32.5	6.89	A
Aroclor 1242	ND		ug/kg	32.5	4.38	A
Aroclor 1248	ND		ug/kg	32.5	4.87	A
Aroclor 1254	ND		ug/kg	32.5	3.55	A
Aroclor 1260	ND		ug/kg	32.5	6.00	A
Aroclor 1262	ND		ug/kg	32.5	4.13	A
Aroclor 1268	ND		ug/kg	32.5	3.36	A
PCBs, Total	ND		ug/kg	32.5	2.88	A

Surrogate	%Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	70		30-150	A
Decachlorobiphenyl	72		30-150	A
2,4,5,6-Tetrachloro-m-xylene	72		30-150	B
Decachlorobiphenyl	66		30-150	B

Lab Control Sample Analysis
Batch Quality Control

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2128996
Report Date: 06/11/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
Polychlorinated Biphenyls by GC - Westborough Lab Associated sample(s): 02 Batch: WG1509385-2 WG1509385-3									
Aroclor 1016	68		66		40-140	3		50	A
Aroclor 1260	69		67		40-140	3		50	A

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	70		66		30-150	A
Decachlorobiphenyl	72		69		30-150	A
2,4,5,6-Tetrachloro-m-xylene	72		68		30-150	B
Decachlorobiphenyl	66		64		30-150	B

PESTICIDES

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2128996
Report Date: 06/11/21

SAMPLE RESULTS

Lab ID: L2128996-02
Client ID: B-17 (5'-10')
Sample Location: RYE LAKE WFP

Date Collected: 06/01/21 09:20
Date Received: 06/01/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8081B
Analytical Date: 06/09/21 23:07
Analyst: JAW
Percent Solids: 89%

Extraction Method: EPA 3546
Extraction Date: 06/09/21 09:01
Cleanup Method: EPA 3620B
Cleanup Date: 06/09/21

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Organochlorine Pesticides by GC - Westborough Lab							
Delta-BHC	ND		ug/kg	1.75	0.343	1	A
Lindane	ND		ug/kg	0.729	0.326	1	A
Alpha-BHC	ND		ug/kg	0.729	0.207	1	A
Beta-BHC	ND		ug/kg	1.75	0.664	1	A
Heptachlor	ND		ug/kg	0.875	0.392	1	A
Aldrin	ND		ug/kg	1.75	0.616	1	A
Heptachlor epoxide	ND		ug/kg	3.28	0.984	1	A
Endrin	ND		ug/kg	0.729	0.299	1	A
Endrin aldehyde	ND		ug/kg	2.19	0.766	1	A
Endrin ketone	ND		ug/kg	1.75	0.451	1	A
Dieldrin	ND		ug/kg	1.09	0.547	1	A
4,4'-DDE	ND		ug/kg	1.75	0.405	1	A
4,4'-DDD	ND		ug/kg	1.75	0.624	1	A
4,4'-DDT	ND		ug/kg	3.28	1.41	1	A
Endosulfan I	ND		ug/kg	1.75	0.413	1	A
Endosulfan II	ND		ug/kg	1.75	0.585	1	A
Endosulfan sulfate	ND		ug/kg	0.729	0.347	1	A
Methoxychlor	ND		ug/kg	3.28	1.02	1	A
Toxaphene	ND		ug/kg	32.8	9.19	1	A
cis-Chlordane	ND		ug/kg	2.19	0.610	1	A
trans-Chlordane	ND		ug/kg	2.19	0.578	1	A
Chlordane	ND		ug/kg	14.6	5.80	1	A

Project Name: RYE LAKE WFP **Lab Number:** L2128996

Project Number: 41.0162892.00 **Report Date:** 06/11/21

SAMPLE RESULTS

Lab ID: L2128996-02 Date Collected: 06/01/21 09:20

Client ID: B-17 (5'-10') Date Received: 06/01/21

Sample Location: RYE LAKE WFP Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Organochlorine Pesticides by GC - Westborough Lab							

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	64		30-150	A
Decachlorobiphenyl	73		30-150	A
2,4,5,6-Tetrachloro-m-xylene	60		30-150	B
Decachlorobiphenyl	73		30-150	B

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2128996
Report Date: 06/11/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8081B
Analytical Date: 06/09/21 21:38
Analyst: SDC

Extraction Method: EPA 3546
Extraction Date: 06/09/21 03:11
Cleanup Method: EPA 3620B
Cleanup Date: 06/09/21

Parameter	Result	Qualifier	Units	RL	MDL	Column
Organochlorine Pesticides by GC - Westborough Lab for sample(s): 02 Batch: WG1509425-1						
Delta-BHC	ND		ug/kg	1.57	0.308	A
Lindane	ND		ug/kg	0.654	0.292	A
Alpha-BHC	ND		ug/kg	0.654	0.186	A
Beta-BHC	ND		ug/kg	1.57	0.596	A
Heptachlor	ND		ug/kg	0.785	0.352	A
Aldrin	ND		ug/kg	1.57	0.553	A
Heptachlor epoxide	ND		ug/kg	2.94	0.884	A
Endrin	ND		ug/kg	0.654	0.268	A
Endrin aldehyde	ND		ug/kg	1.96	0.687	A
Endrin ketone	ND		ug/kg	1.57	0.404	A
Dieldrin	ND		ug/kg	0.982	0.491	A
4,4'-DDE	ND		ug/kg	1.57	0.363	A
4,4'-DDD	ND		ug/kg	1.57	0.560	A
4,4'-DDT	ND		ug/kg	2.94	1.26	A
Endosulfan I	ND		ug/kg	1.57	0.371	A
Endosulfan II	ND		ug/kg	1.57	0.525	A
Endosulfan sulfate	ND		ug/kg	0.654	0.312	A
Methoxychlor	ND		ug/kg	2.94	0.916	A
Toxaphene	ND		ug/kg	29.4	8.25	A
cis-Chlordane	ND		ug/kg	1.96	0.547	A
trans-Chlordane	ND		ug/kg	1.96	0.518	A
Chlordane	ND		ug/kg	13.1	5.20	A

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2128996
Report Date: 06/11/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8081B
Analytical Date: 06/09/21 21:38
Analyst: SDC

Extraction Method: EPA 3546
Extraction Date: 06/09/21 03:11
Cleanup Method: EPA 3620B
Cleanup Date: 06/09/21

Parameter	Result	Qualifier	Units	RL	MDL	Column
Organochlorine Pesticides by GC - Westborough Lab for sample(s): 02 Batch: WG1509425-1						

Surrogate	%Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	76		30-150	A
Decachlorobiphenyl	87		30-150	A
2,4,5,6-Tetrachloro-m-xylene	72		30-150	B
Decachlorobiphenyl	98		30-150	B

Lab Control Sample Analysis
Batch Quality Control

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2128996
Report Date: 06/11/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
Organochlorine Pesticides by GC - Westborough Lab Associated sample(s): 02 Batch: WG1509425-2 WG1509425-3									
Delta-BHC	92		96		30-150	4		30	A
Lindane	91		94		30-150	3		30	A
Alpha-BHC	96		99		30-150	3		30	A
Beta-BHC	80		82		30-150	2		30	A
Heptachlor	88		90		30-150	2		30	A
Aldrin	89		92		30-150	3		30	A
Heptachlor epoxide	87		89		30-150	2		30	A
Endrin	94		97		30-150	3		30	A
Endrin aldehyde	71		76		30-150	7		30	A
Endrin ketone	83		85		30-150	2		30	A
Dieldrin	98		101		30-150	3		30	A
4,4'-DDE	93		96		30-150	3		30	A
4,4'-DDD	95		98		30-150	3		30	A
4,4'-DDT	84		85		30-150	1		30	A
Endosulfan I	85		88		30-150	3		30	A
Endosulfan II	87		90		30-150	3		30	A
Endosulfan sulfate	72		71		30-150	1		30	A
Methoxychlor	70		71		30-150	1		30	A
cis-Chlordane	72		76		30-150	5		30	A
trans-Chlordane	94		97		30-150	3		30	A

Lab Control Sample Analysis

Batch Quality Control

Project Name: RYE LAKE WFP

Project Number: 41.0162892.00

Lab Number: L2128996

Report Date: 06/11/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Organochlorine Pesticides by GC - Westborough Lab Associated sample(s): 02 Batch: WG1509425-2 WG1509425-3								

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	83		86		30-150	A
Decachlorobiphenyl	98		95		30-150	A
2,4,5,6-Tetrachloro-m-xylene	79		82		30-150	B
Decachlorobiphenyl	106		108		30-150	B

METALS

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2128996
Report Date: 06/11/21

SAMPLE RESULTS

Lab ID: L2128996-02
Client ID: B-17 (5'-10')
Sample Location: RYE LAKE WFP
Date Collected: 06/01/21 09:20
Date Received: 06/01/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 89%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Aluminum, Total	7450		mg/kg	8.48	2.29	2	06/07/21 21:30	06/08/21 10:55	EPA 3050B	1,6010D	GD
Antimony, Total	ND		mg/kg	4.24	0.322	2	06/07/21 21:30	06/08/21 10:55	EPA 3050B	1,6010D	GD
Arsenic, Total	1.09		mg/kg	0.848	0.176	2	06/07/21 21:30	06/08/21 10:55	EPA 3050B	1,6010D	GD
Barium, Total	93.8		mg/kg	0.848	0.147	2	06/07/21 21:30	06/08/21 10:55	EPA 3050B	1,6010D	GD
Beryllium, Total	0.220	J	mg/kg	0.424	0.028	2	06/07/21 21:30	06/08/21 10:55	EPA 3050B	1,6010D	GD
Cadmium, Total	0.271	J	mg/kg	0.848	0.083	2	06/07/21 21:30	06/08/21 10:55	EPA 3050B	1,6010D	GD
Calcium, Total	1280		mg/kg	8.48	2.97	2	06/07/21 21:30	06/08/21 10:55	EPA 3050B	1,6010D	GD
Chromium, Total	14.4		mg/kg	0.848	0.081	2	06/07/21 21:30	06/08/21 10:55	EPA 3050B	1,6010D	GD
Cobalt, Total	10.1		mg/kg	1.70	0.141	2	06/07/21 21:30	06/08/21 10:55	EPA 3050B	1,6010D	GD
Copper, Total	16.1		mg/kg	0.848	0.219	2	06/07/21 21:30	06/08/21 10:55	EPA 3050B	1,6010D	GD
Iron, Total	10900		mg/kg	4.24	0.765	2	06/07/21 21:30	06/08/21 10:55	EPA 3050B	1,6010D	GD
Lead, Total	3.11	J	mg/kg	4.24	0.227	2	06/07/21 21:30	06/08/21 10:55	EPA 3050B	1,6010D	GD
Magnesium, Total	1980		mg/kg	8.48	1.30	2	06/07/21 21:30	06/08/21 10:55	EPA 3050B	1,6010D	GD
Manganese, Total	248		mg/kg	0.848	0.135	2	06/07/21 21:30	06/08/21 10:55	EPA 3050B	1,6010D	GD
Mercury, Total	ND		mg/kg	0.078	0.051	1	06/07/21 21:54	06/08/21 11:34	EPA 7471B	1,7471B	OU
Nickel, Total	11.7		mg/kg	2.12	0.205	2	06/07/21 21:30	06/08/21 10:55	EPA 3050B	1,6010D	GD
Potassium, Total	1550		mg/kg	212	12.2	2	06/07/21 21:30	06/08/21 10:55	EPA 3050B	1,6010D	GD
Selenium, Total	ND		mg/kg	1.70	0.219	2	06/07/21 21:30	06/08/21 10:55	EPA 3050B	1,6010D	GD
Silver, Total	ND		mg/kg	0.848	0.240	2	06/07/21 21:30	06/08/21 10:55	EPA 3050B	1,6010D	GD
Sodium, Total	83.9	J	mg/kg	170	2.67	2	06/07/21 21:30	06/08/21 10:55	EPA 3050B	1,6010D	GD
Thallium, Total	ND		mg/kg	1.70	0.267	2	06/07/21 21:30	06/08/21 10:55	EPA 3050B	1,6010D	GD
Vanadium, Total	22.0		mg/kg	0.848	0.172	2	06/07/21 21:30	06/08/21 10:55	EPA 3050B	1,6010D	GD
Zinc, Total	20.9		mg/kg	4.24	0.248	2	06/07/21 21:30	06/08/21 10:55	EPA 3050B	1,6010D	GD

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2128996
Report Date: 06/11/21

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 02 Batch: WG1507721-1										
Aluminum, Total	ND		mg/kg	4.00	1.08	1	06/07/21 21:30	06/08/21 09:51	1,6010D	GD
Antimony, Total	ND		mg/kg	2.00	0.152	1	06/07/21 21:30	06/08/21 09:51	1,6010D	GD
Arsenic, Total	0.100	J	mg/kg	0.400	0.083	1	06/07/21 21:30	06/08/21 09:51	1,6010D	GD
Barium, Total	ND		mg/kg	0.400	0.070	1	06/07/21 21:30	06/08/21 09:51	1,6010D	GD
Beryllium, Total	ND		mg/kg	0.200	0.013	1	06/07/21 21:30	06/08/21 09:51	1,6010D	GD
Cadmium, Total	ND		mg/kg	0.400	0.039	1	06/07/21 21:30	06/08/21 09:51	1,6010D	GD
Calcium, Total	ND		mg/kg	4.00	1.40	1	06/07/21 21:30	06/08/21 09:51	1,6010D	GD
Chromium, Total	ND		mg/kg	0.400	0.038	1	06/07/21 21:30	06/08/21 09:51	1,6010D	GD
Cobalt, Total	ND		mg/kg	0.800	0.066	1	06/07/21 21:30	06/08/21 09:51	1,6010D	GD
Copper, Total	ND		mg/kg	0.400	0.103	1	06/07/21 21:30	06/08/21 09:51	1,6010D	GD
Iron, Total	ND		mg/kg	2.00	0.361	1	06/07/21 21:30	06/08/21 09:51	1,6010D	GD
Lead, Total	ND		mg/kg	2.00	0.107	1	06/07/21 21:30	06/08/21 09:51	1,6010D	GD
Magnesium, Total	ND		mg/kg	4.00	0.616	1	06/07/21 21:30	06/08/21 09:51	1,6010D	GD
Manganese, Total	ND		mg/kg	0.400	0.064	1	06/07/21 21:30	06/08/21 09:51	1,6010D	GD
Nickel, Total	ND		mg/kg	1.00	0.097	1	06/07/21 21:30	06/08/21 09:51	1,6010D	GD
Potassium, Total	ND		mg/kg	100	5.76	1	06/07/21 21:30	06/08/21 09:51	1,6010D	GD
Selenium, Total	ND		mg/kg	0.800	0.103	1	06/07/21 21:30	06/08/21 09:51	1,6010D	GD
Silver, Total	ND		mg/kg	0.400	0.113	1	06/07/21 21:30	06/08/21 09:51	1,6010D	GD
Sodium, Total	1.78	J	mg/kg	80.0	1.26	1	06/07/21 21:30	06/08/21 09:51	1,6010D	GD
Thallium, Total	ND		mg/kg	0.800	0.126	1	06/07/21 21:30	06/08/21 09:51	1,6010D	GD
Vanadium, Total	ND		mg/kg	0.400	0.081	1	06/07/21 21:30	06/08/21 09:51	1,6010D	GD
Zinc, Total	ND		mg/kg	2.00	0.117	1	06/07/21 21:30	06/08/21 09:51	1,6010D	GD

Prep Information

Digestion Method: EPA 3050B

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 02 Batch: WG1507723-1										
Mercury, Total	ND		mg/kg	0.083	0.054	1	06/07/21 21:54	06/08/21 10:51	1,7471B	OU

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2128996
Report Date: 06/11/21

Method Blank Analysis
Batch Quality Control

Prep Information

Digestion Method: EPA 7471B

Lab Control Sample Analysis

Batch Quality Control

Project Name: RYE LAKE WFP

Project Number: 41.0162892.00

Lab Number: L2128996

Report Date: 06/11/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02 Batch: WG1507721-2 SRM Lot Number: D109-540								
Aluminum, Total	53		-		50-150	-		
Antimony, Total	141		-		19-250	-		
Arsenic, Total	96		-		70-130	-		
Barium, Total	95		-		75-125	-		
Beryllium, Total	100		-		75-125	-		
Cadmium, Total	114		-		75-125	-		
Calcium, Total	85		-		73-128	-		
Chromium, Total	95		-		70-130	-		
Cobalt, Total	107		-		75-125	-		
Copper, Total	95		-		75-125	-		
Iron, Total	64		-		35-165	-		
Lead, Total	90		-		72-128	-		
Magnesium, Total	68		-		62-138	-		
Manganese, Total	82		-		74-126	-		
Nickel, Total	104		-		70-130	-		
Potassium, Total	66		-		59-141	-		
Selenium, Total	100		-		68-132	-		
Silver, Total	90		-		68-131	-		
Sodium, Total	96		-		35-165	-		
Thallium, Total	101		-		68-131	-		
Vanadium, Total	83		-		59-141	-		

Lab Control Sample Analysis

Batch Quality Control

Project Name: RYE LAKE WFP

Project Number: 41.0162892.00

Lab Number: L2128996

Report Date: 06/11/21

Parameter	LCS %Recovery	LCSD %Recovery	%Recovery Limits	RPD	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02 Batch: WG1507721-2 SRM Lot Number: D109-540					
Zinc, Total	93	-	70-130	-	
Total Metals - Mansfield Lab Associated sample(s): 02 Batch: WG1507723-2 SRM Lot Number: D109-540					
Mercury, Total	91	-	60-140	-	

Matrix Spike Analysis
Batch Quality Control

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2128996
Report Date: 06/11/21

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02 QC Batch ID: WG1507721-3 QC Sample: L2128995-02 Client ID: MS Sample												
Aluminum, Total	9410	173	12200	**1610**	Q	-	-		75-125	-		20
Antimony, Total	ND	43.2	28.0	**65**	Q	-	-		75-125	-		20
Arsenic, Total	1.81	10.4	11.2	90		-	-		75-125	-		20
Barium, Total	88.1	173	241	88		-	-		75-125	-		20
Beryllium, Total	0.245J	4.32	4.38	101		-	-		75-125	-		20
Cadmium, Total	0.312J	4.41	4.17	95		-	-		75-125	-		20
Calcium, Total	858	864	1740	102		-	-		75-125	-		20
Chromium, Total	24.9	17.3	42.9	104		-	-		75-125	-		20
Cobalt, Total	8.63	43.2	44.9	84		-	-		75-125	-		20
Copper, Total	7.29	21.6	29.9	105		-	-		75-125	-		20
Iron, Total	13500	86.4	15800	**2660**	Q	-	-		75-125	-		20
Lead, Total	5.95	44.1	42.8	84		-	-		75-125	-		20
Magnesium, Total	3650	864	4290	**74**	Q	-	-		75-125	-		20
Manganese, Total	192	43.2	303	**257**	Q	-	-		75-125	-		20
Nickel, Total	13.4	43.2	50.5	86		-	-		75-125	-		20
Potassium, Total	2470	864	2230	**0**	Q	-	-		75-125	-		20
Selenium, Total	0.354J	10.4	9.77	94		-	-		75-125	-		20
Silver, Total	ND	25.9	24.0	92		-	-		75-125	-		20
Sodium, Total	53.5J	864	857	99		-	-		75-125	-		20
Thallium, Total	ND	10.4	7.74	75		-	-		75-125	-		20
Vanadium, Total	29.0	43.2	71.8	99		-	-		75-125	-		20

Matrix Spike Analysis
Batch Quality Control

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2128996
Report Date: 06/11/21

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Found	MSD %Recovery	Recovery Limits	RPD	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02 QC Batch ID: WG1507721-3 QC Sample: L2128995-02 Client ID: MS Sample									
Zinc, Total	35.7	43.2	80.4	103	-	-	75-125	-	20
Total Metals - Mansfield Lab Associated sample(s): 02 QC Batch ID: WG1507723-3 QC Sample: L2126262-06 Client ID: MS Sample									
Mercury, Total	ND	0.158	0.181	114	-	-	80-120	-	20

Lab Duplicate Analysis
Batch Quality Control

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2128996
Report Date: 06/11/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02 QC Batch ID: WG1507721-4 QC Sample: L2128995-02 Client ID: DUP Sample						
Aluminum, Total	9410	11100	mg/kg	16		20
Antimony, Total	ND	ND	mg/kg	NC		20
Arsenic, Total	1.81	2.34	mg/kg	**26**	Q	20
Barium, Total	88.1	92.8	mg/kg	5		20
Beryllium, Total	0.245J	0.313J	mg/kg	NC		20
Cadmium, Total	0.312J	0.400J	mg/kg	NC		20
Calcium, Total	858	932	mg/kg	8		20
Chromium, Total	24.9	37.2	mg/kg	**40**	Q	20
Cobalt, Total	8.63	10.1	mg/kg	16		20
Copper, Total	7.29	10.4	mg/kg	**35**	Q	20
Iron, Total	13500	17200	mg/kg	**24**	Q	20
Lead, Total	5.95	7.06	mg/kg	17		20
Magnesium, Total	3650	3990	mg/kg	9		20
Manganese, Total	192	289	mg/kg	**40**	Q	20
Nickel, Total	13.4	16.2	mg/kg	19		20
Potassium, Total	2470	2330	mg/kg	6		20
Selenium, Total	0.354J	0.330J	mg/kg	NC		20
Silver, Total	ND	ND	mg/kg	NC		20
Sodium, Total	53.5J	56.5J	mg/kg	NC		20

Lab Duplicate Analysis
Batch Quality Control

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2128996
Report Date: 06/11/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 02 QC Batch ID: WG1507721-4 QC Sample: L2128995-02 Client ID: DUP Sample					
Thallium, Total	ND	ND	mg/kg	NC	20
Vanadium, Total	29.0	34.5	mg/kg	17	20
Zinc, Total	35.7	42.5	mg/kg	17	20
Total Metals - Mansfield Lab Associated sample(s): 02 QC Batch ID: WG1507723-4 QC Sample: L2126262-06 Client ID: DUP Sample					
Mercury, Total	ND	ND	mg/kg	NC	20

INORGANICS
&
MISCELLANEOUS

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2128996
Report Date: 06/11/21

SAMPLE RESULTS

Lab ID: L2128996-01
Client ID: B-17 (6'-7')
Sample Location: RYE LAKE WFP

Date Collected: 06/01/21 09:20
Date Received: 06/01/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	87.3		%	0.100	NA	1	-	06/03/21 07:56	121,2540G	RI

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2128996
Report Date: 06/11/21

SAMPLE RESULTS

Lab ID: L2128996-02
Client ID: B-17 (5'-10')
Sample Location: RYE LAKE WFP

Date Collected: 06/01/21 09:20
Date Received: 06/01/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	88.7		%	0.100	NA	1	-	06/03/21 06:48	121,2540G	RI

Lab Duplicate Analysis

Batch Quality Control

Project Name: RYE LAKE WFP

Project Number: 41.0162892.00

Lab Number: L2128996

Report Date: 06/11/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 02 QC Batch ID: WG1506916-1 QC Sample: L2128505-01 Client ID: DUP Sample						
Solids, Total	80.6	80.6	%	0		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1506921-1 QC Sample: L2127073-07 Client ID: DUP Sample						
Solids, Total	89.3	89.3	%	0		20

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2128996
Report Date: 06/11/21

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2128996-01A	Vial MeOH preserved	A	NA		4.3	Y	Absent		NYTCL-8260HLW(14)
L2128996-01B	Vial water preserved	A	NA		4.3	Y	Absent	02-JUN-21 11:48	NYTCL-8260HLW(14)
L2128996-01C	Vial water preserved	A	NA		4.3	Y	Absent	02-JUN-21 11:48	NYTCL-8260HLW(14)
L2128996-01D	Plastic 120ml unpreserved	A	NA		4.3	Y	Absent		TS(7)
L2128996-02A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		4.3	Y	Absent		BE-TI(180),BA-TI(180),AS-TI(180),AG-TI(180),TL-TI(180),AL-TI(180),NI-TI(180),CR-TI(180),SE-TI(180),SB-TI(180),PB-TI(180),ZN-TI(180),CU-TI(180),V-TI(180),CO-TI(180),FE-TI(180),MG-TI(180),HG-T(28),MN-TI(180),CD-TI(180),K-TI(180),NA-TI(180),CA-TI(180)
L2128996-02B	Glass 250ml/8oz unpreserved	A	NA		4.3	Y	Absent		NYTCL-8270(14),TS(7),NYTCL-8081(14),NYTCL-8082(365)

*Values in parentheses indicate holding time in days

Project Name:	RYE LAKE WFP	**Lab Number:**	L2128996
Project Number:	41.0162892.00	**Report Date:**	06/11/21

GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers

Project Name:	RYE LAKE WFP	**Lab Number:**	L2128996
Project Number:	41.0162892.00	**Report Date:**	06/11/21

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. (Note: 'PFAS, Total (6)' is applicable to MassDEP DW compliance analysis only.). If a 'Total' result is requested, the results of its individual components will also be reported.

The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA,this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

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

F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

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

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

Report Format: DU Report with 'J' Qualifiers

Project Name:	RYE LAKE WFP	**Lab Number:**	L2128996
Project Number:	41.0162892.00	**Report Date:**	06/11/21

Data Qualifiers

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

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

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

Project Name:	RYE LAKE WFP	**Lab Number:**	L2128996
Project Number:	41.0162892.00	**Report Date:**	06/11/21

REFERENCES

1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.

121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene
EPA 625/625.1: alpha-Terpineol
EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D/8270E: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522, EPA 537.1.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

NEW YORK CHAIN OF CUSTODY

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Albany, NY 12205: 14 Walker Way
Tonawanda, NY 14150: 275 Cooper Ave, Suite 105

Page of

Date Rec'd in Lab: 6/2/21

ALPHA Job #: L2128996

Client Information
Client: GZA GeoEnvironmental
Address: 104 West 29th St
New York, NY
Phone: 212-594-8140
Fax:
Email: matthew.delbalzo@gza.com

Project Information
Project Name: RYE LAKE WFP
Project Location: RYE LAKE WFP
Project # 41.0162892.00
(Use Project name as Project #) ☐
Project Manager: Matthew DelBalzo
ALPHAQuote #:

Turn-Around Time
Standard ☑ Due Date:
Rush (only if pre approved) ☐ # of Days:

Deliverables
☐ ASP-A ☐ ASP-B
☐ EQuIS (1 File) ☐ EQuIS (4 File)
☐ Other

Regulatory Requirement
☐ NY TOGS ☐ NY Part 375
☐ AWQ Standards ☐ NY CP-51
☐ NY Restricted Use ☐ Other
☐ NY Unrestricted Use
☐ NYC Sewer Discharge

Billing Information
☐ Same as Client Info
PO #

Disposal Site Information
Please identify below location of applicable disposal facilities.
Disposal Facility:
☑ NJ ☑ NY
☑ Other: PA

These samples have been previously analyzed by Alpha ☐

Other project specific requirements/comments:

Please specify Metals or TAL.

ANALYSIS

Sample Filtration
☐ Done
☐ Lab to do
Preservation
☐ Lab to do
(Please Specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	VOCs (8260)	SVOCs (8270)	PCBs (8082)	Pesticides (8081)	Tal Metals				Sample Specific Comments	Total Bottle
28996-01	B-17 (6'-7')	6/1/21	9:20AM	SOIL	A.A.	X									
-02	B-17 (5'-10')	6/1/21	9:20 AM	SOIL	A.A.		X	X	X	X					

Container Type
Preservative

Preservative Code:
A = None
B = HCl
C = HNO_3
D = H_2SO_4
E = NaOH
F = MeOH
G = $NaHSO_4$
H = $Na_2S_2O_3$
K/E = Zn Ac/NaOH
O = Other

Container Code
P = Plastic
A = Amber Glass
V = Vial
G = Glass
B = Bacteria Cup
C = Cube
O = Other
E = Encore
D = BOD Bottle

Westboro: Certification No: MA935
Mansfield: Certification No: MA015

Relinquished By:	Date/Time	Received By:	Date/Time
Allan Amador	6/1/21, 13:30	[illegible]	6/1/21 13:30
[illegible]	6/1/21 20:35	[illegible] AAL	6/1/21 21:00
[illegible] AAL	6/2/21 01:00	[illegible]	6/2/21 01:00

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. BY EXECUTING THIS COC, THE CLIENT HAS READ AND AGREES TO BE BOUND BY ALPHA'S TERMS & CONDITIONS. (See reverse side.)

Form No: 01-25 HC (rev. 30-Sept-2013)

ANALYTICAL REPORT

Lab Number:	L2129255
Client:	GZA GeoEnvironmental, Inc. 104 West 29th Street, 10th Floor New York, NY 10001
ATTN:	Matthew Del Balzo
Phone:	(212) 594-8140
Project Name:	RYE LAKE WFP
Project Number:	41.0162892.00
Report Date:	06/14/21

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Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2129255
Report Date: 06/14/21

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2129255-01	B-7 (16'-17')	SOIL	RYE LAKE WFP	06/02/21 08:30	06/02/21
L2129255-02	B-7 (20'-21')	SOIL	RYE LAKE WFP	06/02/21 08:45	06/02/21
L2129255-03	B-7 (24'-25')	SOIL	RYE LAKE WFP	06/02/21 08:55	06/02/21
L2129255-04	B-7 (15'-25')	SOIL	RYE LAKE WFP	06/02/21 08:30	06/02/21
L2129255-05	B-2 (16'-17')	SOIL	RYE LAKE WFP	06/02/21 09:45	06/02/21
L2129255-06	B-2 (20'-21')	SOIL	RYE LAKE WFP	06/02/21 09:51	06/02/21
L2129255-07	B-2 (24'-25')	SOIL	RYE LAKE WFP	06/02/21 10:00	06/02/21
L2129255-08	B-2 (15'-25')	SOIL	RYE LAKE WFP	06/02/21 09:45	06/02/21
L2129255-09	B-29 (1'-2')	SOIL	RYE LAKE WFP	06/02/21 12:30	06/02/21
L2129255-10	B-29 (5'-6')	SOIL	RYE LAKE WFP	06/02/21 12:55	06/02/21
L2129255-11	B-29 (24'-25')	SOIL	RYE LAKE WFP	06/02/21 13:10	06/02/21
L2129255-12	B-29 (0'-10')	SOIL	RYE LAKE WFP	06/02/21 12:30	06/02/21

Project Name:	RYE LAKE WFP	**Lab Number:**	L2129255
Project Number:	41.0162892.00	**Report Date:**	06/14/21

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name:	RYE LAKE WFP	**Lab Number:**	L2129255
Project Number:	41.0162892.00	**Report Date:**	06/14/21

Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Sample Receipt

L2129255-09, -10, and -11: Raw soil was not submitted for the analysis of Total Solids. At the client's request, the Total Solids result from their sample "B-29" (reported as L2129255-12) was utilized in the dry weight calculation of the sample results.

Total Metals

L2129255-04, -08, and -12: The sample has elevated detection limits for all elements, with the exception of mercury, due to the dilution required by matrix interferences encountered during analysis.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Michelle M. Morris

Title: Technical Director/Representative Date: 06/14/21

ORGANICS

VOLATILES

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2129255
Report Date: 06/14/21

SAMPLE RESULTS

Lab ID: L2129255-01
Client ID: B-7 (16'-17')
Sample Location: RYE LAKE WFP
Date Collected: 06/02/21 08:30
Date Received: 06/02/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 06/10/21 01:41
Analyst: NLK
Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methylene chloride	ND		ug/kg	2.9	1.3	1
1,1-Dichloroethane	ND		ug/kg	0.58	0.09	1
Chloroform	ND		ug/kg	0.88	0.08	1
Carbon tetrachloride	ND		ug/kg	0.58	0.13	1
1,2-Dichloropropane	ND		ug/kg	0.58	0.07	1
Dibromochloromethane	ND		ug/kg	0.58	0.08	1
1,1,2-Trichloroethane	ND		ug/kg	0.58	0.16	1
Tetrachloroethene	ND		ug/kg	0.29	0.11	1
Chlorobenzene	ND		ug/kg	0.29	0.07	1
Trichlorofluoromethane	ND		ug/kg	2.3	0.41	1
1,2-Dichloroethane	ND		ug/kg	0.58	0.15	1
1,1,1-Trichloroethane	ND		ug/kg	0.29	0.10	1
Bromodichloromethane	ND		ug/kg	0.29	0.06	1
trans-1,3-Dichloropropene	ND		ug/kg	0.58	0.16	1
cis-1,3-Dichloropropene	ND		ug/kg	0.29	0.09	1
1,3-Dichloropropene, Total	ND		ug/kg	0.29	0.09	1
1,1-Dichloropropene	ND		ug/kg	0.29	0.09	1
Bromoform	ND		ug/kg	2.3	0.14	1
1,1,2,2-Tetrachloroethane	ND		ug/kg	0.29	0.10	1
Benzene	ND		ug/kg	0.29	0.10	1
Toluene	ND		ug/kg	0.58	0.32	1
Ethylbenzene	ND		ug/kg	0.58	0.08	1
Chloromethane	ND		ug/kg	2.3	0.54	1
Bromomethane	ND		ug/kg	1.2	0.34	1
Vinyl chloride	ND		ug/kg	0.58	0.20	1
Chloroethane	ND		ug/kg	1.2	0.26	1
1,1-Dichloroethene	ND		ug/kg	0.58	0.14	1
trans-1,2-Dichloroethene	ND		ug/kg	0.88	0.08	1

Project Name: RYE LAKE WFP **Lab Number:** L2129255

Project Number: 41.0162892.00 **Report Date:** 06/14/21

SAMPLE RESULTS

Lab ID: L2129255-01 Date Collected: 06/02/21 08:30

Client ID: B-7 (16'-17') Date Received: 06/02/21

Sample Location: RYE LAKE WFP Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Trichloroethene	ND		ug/kg	0.29	0.08	1
1,2-Dichlorobenzene	ND		ug/kg	1.2	0.08	1
1,3-Dichlorobenzene	ND		ug/kg	1.2	0.09	1
1,4-Dichlorobenzene	ND		ug/kg	1.2	0.10	1
Methyl tert butyl ether	ND		ug/kg	1.2	0.12	1
p/m-Xylene	ND		ug/kg	1.2	0.33	1
o-Xylene	ND		ug/kg	0.58	0.17	1
Xylenes, Total	ND		ug/kg	0.58	0.17	1
cis-1,2-Dichloroethene	ND		ug/kg	0.58	0.10	1
1,2-Dichloroethene, Total	ND		ug/kg	0.58	0.08	1
Dibromomethane	ND		ug/kg	1.2	0.14	1
Styrene	ND		ug/kg	0.58	0.11	1
Dichlorodifluoromethane	ND		ug/kg	5.8	0.53	1
Acetone	7.9		ug/kg	5.8	2.8	1
Carbon disulfide	ND		ug/kg	5.8	2.7	1
2-Butanone	ND		ug/kg	5.8	1.3	1
Vinyl acetate	ND		ug/kg	5.8	1.2	1
4-Methyl-2-pentanone	ND		ug/kg	5.8	0.75	1
1,2,3-Trichloropropane	ND		ug/kg	1.2	0.07	1
2-Hexanone	ND		ug/kg	5.8	0.69	1
Bromochloromethane	ND		ug/kg	1.2	0.12	1
2,2-Dichloropropane	ND		ug/kg	1.2	0.12	1
1,2-Dibromoethane	ND		ug/kg	0.58	0.16	1
1,3-Dichloropropane	ND		ug/kg	1.2	0.10	1
1,1,1,2-Tetrachloroethane	ND		ug/kg	0.29	0.08	1
Bromobenzene	ND		ug/kg	1.2	0.09	1
n-Butylbenzene	ND		ug/kg	0.58	0.10	1
sec-Butylbenzene	ND		ug/kg	0.58	0.09	1
tert-Butylbenzene	ND		ug/kg	1.2	0.07	1
o-Chlorotoluene	ND		ug/kg	1.2	0.11	1
p-Chlorotoluene	ND		ug/kg	1.2	0.06	1
1,2-Dibromo-3-chloropropane	ND		ug/kg	1.8	0.58	1
Hexachlorobutadiene	ND		ug/kg	2.3	0.10	1
Isopropylbenzene	ND		ug/kg	0.58	0.06	1
p-Isopropyltoluene	ND		ug/kg	0.58	0.06	1
Naphthalene	ND		ug/kg	2.3	0.38	1
Acrylonitrile	ND		ug/kg	2.3	0.67	1

Project Name: RYE LAKE WFP
Lab Number: L2129255
Project Number: 41.0162892.00
Report Date: 06/14/21

SAMPLE RESULTS

Lab ID: L2129255-01
Client ID: B-7 (16'-17')
Sample Location: RYE LAKE WFP
Date Collected: 06/02/21 08:30
Date Received: 06/02/21
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
n-Propylbenzene	ND		ug/kg	0.58	0.10	1
1,2,3-Trichlorobenzene	ND		ug/kg	1.2	0.19	1
1,2,4-Trichlorobenzene	ND		ug/kg	1.2	0.16	1
1,3,5-Trimethylbenzene	ND		ug/kg	1.2	0.11	1
1,2,4-Trimethylbenzene	ND		ug/kg	1.2	0.20	1
1,4-Dioxane	ND		ug/kg	47	20.	1
p-Diethylbenzene	ND		ug/kg	1.2	0.10	1
p-Ethyltoluene	ND		ug/kg	1.2	0.22	1
1,2,4,5-Tetramethylbenzene	ND		ug/kg	1.2	0.11	1
Ethyl ether	ND		ug/kg	1.2	0.20	1
trans-1,4-Dichloro-2-butene	ND		ug/kg	2.9	0.83	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	118		70-130
Toluene-d8	93		70-130
4-Bromofluorobenzene	101		70-130
Dibromofluoromethane	109		70-130

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2129255
Report Date: 06/14/21

SAMPLE RESULTS

Lab ID: L2129255-02
Client ID: B-7 (20'-21')
Sample Location: RYE LAKE WFP
Date Collected: 06/02/21 08:45
Date Received: 06/02/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 06/10/21 02:06
Analyst: NLK
Percent Solids: 90%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methylene chloride	ND		ug/kg	3.7	1.7	1
1,1-Dichloroethane	ND		ug/kg	0.75	0.11	1
Chloroform	ND		ug/kg	1.1	0.10	1
Carbon tetrachloride	ND		ug/kg	0.75	0.17	1
1,2-Dichloropropane	ND		ug/kg	0.75	0.09	1
Dibromochloromethane	ND		ug/kg	0.75	0.10	1
1,1,2-Trichloroethane	ND		ug/kg	0.75	0.20	1
Tetrachloroethene	ND		ug/kg	0.37	0.15	1
Chlorobenzene	ND		ug/kg	0.37	0.10	1
Trichlorofluoromethane	ND		ug/kg	3.0	0.52	1
1,2-Dichloroethane	ND		ug/kg	0.75	0.19	1
1,1,1-Trichloroethane	ND		ug/kg	0.37	0.12	1
Bromodichloromethane	ND		ug/kg	0.37	0.08	1
trans-1,3-Dichloropropene	ND		ug/kg	0.75	0.20	1
cis-1,3-Dichloropropene	ND		ug/kg	0.37	0.12	1
1,3-Dichloropropene, Total	ND		ug/kg	0.37	0.12	1
1,1-Dichloropropene	ND		ug/kg	0.37	0.12	1
Bromoform	ND		ug/kg	3.0	0.18	1
1,1,2,2-Tetrachloroethane	ND		ug/kg	0.37	0.12	1
Benzene	ND		ug/kg	0.37	0.12	1
Toluene	ND		ug/kg	0.75	0.40	1
Ethylbenzene	ND		ug/kg	0.75	0.10	1
Chloromethane	ND		ug/kg	3.0	0.70	1
Bromomethane	ND		ug/kg	1.5	0.43	1
Vinyl chloride	ND		ug/kg	0.75	0.25	1
Chloroethane	ND		ug/kg	1.5	0.34	1
1,1-Dichloroethene	ND		ug/kg	0.75	0.18	1
trans-1,2-Dichloroethene	ND		ug/kg	1.1	0.10	1

Project Name: RYE LAKE WFP **Lab Number:** L2129255

Project Number: 41.0162892.00 **Report Date:** 06/14/21

SAMPLE RESULTS

Lab ID: L2129255-02 Date Collected: 06/02/21 08:45

Client ID: B-7 (20'-21') Date Received: 06/02/21

Sample Location: RYE LAKE WFP Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Trichloroethene	ND		ug/kg	0.37	0.10	1
1,2-Dichlorobenzene	ND		ug/kg	1.5	0.11	1
1,3-Dichlorobenzene	ND		ug/kg	1.5	0.11	1
1,4-Dichlorobenzene	ND		ug/kg	1.5	0.13	1
Methyl tert butyl ether	ND		ug/kg	1.5	0.15	1
p/m-Xylene	ND		ug/kg	1.5	0.42	1
o-Xylene	ND		ug/kg	0.75	0.22	1
Xylenes, Total	ND		ug/kg	0.75	0.22	1
cis-1,2-Dichloroethene	ND		ug/kg	0.75	0.13	1
1,2-Dichloroethene, Total	ND		ug/kg	0.75	0.10	1
Dibromomethane	ND		ug/kg	1.5	0.18	1
Styrene	ND		ug/kg	0.75	0.15	1
Dichlorodifluoromethane	ND		ug/kg	7.5	0.68	1
Acetone	ND		ug/kg	7.5	3.6	1
Carbon disulfide	ND		ug/kg	7.5	3.4	1
2-Butanone	ND		ug/kg	7.5	1.6	1
Vinyl acetate	ND		ug/kg	7.5	1.6	1
4-Methyl-2-pentanone	ND		ug/kg	7.5	0.95	1
1,2,3-Trichloropropane	ND		ug/kg	1.5	0.10	1
2-Hexanone	ND		ug/kg	7.5	0.88	1
Bromochloromethane	ND		ug/kg	1.5	0.15	1
2,2-Dichloropropane	ND		ug/kg	1.5	0.15	1
1,2-Dibromoethane	ND		ug/kg	0.75	0.21	1
1,3-Dichloropropane	ND		ug/kg	1.5	0.12	1
1,1,1,2-Tetrachloroethane	ND		ug/kg	0.37	0.10	1
Bromobenzene	ND		ug/kg	1.5	0.11	1
n-Butylbenzene	ND		ug/kg	0.75	0.12	1
sec-Butylbenzene	ND		ug/kg	0.75	0.11	1
tert-Butylbenzene	ND		ug/kg	1.5	0.09	1
o-Chlorotoluene	ND		ug/kg	1.5	0.14	1
p-Chlorotoluene	ND		ug/kg	1.5	0.08	1
1,2-Dibromo-3-chloropropane	ND		ug/kg	2.2	0.74	1
Hexachlorobutadiene	ND		ug/kg	3.0	0.13	1
Isopropylbenzene	ND		ug/kg	0.75	0.08	1
p-Isopropyltoluene	ND		ug/kg	0.75	0.08	1
Naphthalene	ND		ug/kg	3.0	0.48	1
Acrylonitrile	ND		ug/kg	3.0	0.86	1

Project Name: RYE LAKE WFP
Lab Number: L2129255
Project Number: 41.0162892.00
Report Date: 06/14/21

SAMPLE RESULTS

Lab ID: L2129255-02
Client ID: B-7 (20'-21')
Sample Location: RYE LAKE WFP
Date Collected: 06/02/21 08:45
Date Received: 06/02/21
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
n-Propylbenzene	ND		ug/kg	0.75	0.13	1
1,2,3-Trichlorobenzene	ND		ug/kg	1.5	0.24	1
1,2,4-Trichlorobenzene	ND		ug/kg	1.5	0.20	1
1,3,5-Trimethylbenzene	ND		ug/kg	1.5	0.14	1
1,2,4-Trimethylbenzene	ND		ug/kg	1.5	0.25	1
1,4-Dioxane	ND		ug/kg	60	26.	1
p-Diethylbenzene	ND		ug/kg	1.5	0.13	1
p-Ethyltoluene	ND		ug/kg	1.5	0.29	1
1,2,4,5-Tetramethylbenzene	ND		ug/kg	1.5	0.14	1
Ethyl ether	ND		ug/kg	1.5	0.25	1
trans-1,4-Dichloro-2-butene	ND		ug/kg	3.7	1.0	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	100		70-130
Dibromofluoromethane	106		70-130

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2129255
Report Date: 06/14/21

SAMPLE RESULTS

Lab ID: L2129255-03
Client ID: B-7 (24'-25')
Sample Location: RYE LAKE WFP
Date Collected: 06/02/21 08:55
Date Received: 06/02/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 06/10/21 02:31
Analyst: NLK
Percent Solids: 89%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methylene chloride	ND		ug/kg	3.3	1.5	1
1,1-Dichloroethane	ND		ug/kg	0.66	0.10	1
Chloroform	ND		ug/kg	1.0	0.09	1
Carbon tetrachloride	ND		ug/kg	0.66	0.15	1
1,2-Dichloropropane	ND		ug/kg	0.66	0.08	1
Dibromochloromethane	ND		ug/kg	0.66	0.09	1
1,1,2-Trichloroethane	ND		ug/kg	0.66	0.18	1
Tetrachloroethene	ND		ug/kg	0.33	0.13	1
Chlorobenzene	ND		ug/kg	0.33	0.08	1
Trichlorofluoromethane	ND		ug/kg	2.6	0.46	1
1,2-Dichloroethane	ND		ug/kg	0.66	0.17	1
1,1,1-Trichloroethane	ND		ug/kg	0.33	0.11	1
Bromodichloromethane	ND		ug/kg	0.33	0.07	1
trans-1,3-Dichloropropene	ND		ug/kg	0.66	0.18	1
cis-1,3-Dichloropropene	ND		ug/kg	0.33	0.10	1
1,3-Dichloropropene, Total	ND		ug/kg	0.33	0.10	1
1,1-Dichloropropene	ND		ug/kg	0.33	0.10	1
Bromoform	ND		ug/kg	2.6	0.16	1
1,1,2,2-Tetrachloroethane	ND		ug/kg	0.33	0.11	1
Benzene	ND		ug/kg	0.33	0.11	1
Toluene	ND		ug/kg	0.66	0.36	1
Ethylbenzene	ND		ug/kg	0.66	0.09	1
Chloromethane	ND		ug/kg	2.6	0.62	1
Bromomethane	ND		ug/kg	1.3	0.39	1
Vinyl chloride	ND		ug/kg	0.66	0.22	1
Chloroethane	ND		ug/kg	1.3	0.30	1
1,1-Dichloroethene	ND		ug/kg	0.66	0.16	1
trans-1,2-Dichloroethene	ND		ug/kg	1.0	0.09	1

Project Name: RYE LAKE WFP **Lab Number:** L2129255

Project Number: 41.0162892.00 **Report Date:** 06/14/21

SAMPLE RESULTS

Lab ID: L2129255-03 Date Collected: 06/02/21 08:55

Client ID: B-7 (24'-25') Date Received: 06/02/21

Sample Location: RYE LAKE WFP Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Trichloroethene	ND		ug/kg	0.33	0.09	1
1,2-Dichlorobenzene	ND		ug/kg	1.3	0.10	1
1,3-Dichlorobenzene	ND		ug/kg	1.3	0.10	1
1,4-Dichlorobenzene	ND		ug/kg	1.3	0.11	1
Methyl tert butyl ether	ND		ug/kg	1.3	0.13	1
p/m-Xylene	ND		ug/kg	1.3	0.37	1
o-Xylene	ND		ug/kg	0.66	0.19	1
Xylenes, Total	ND		ug/kg	0.66	0.19	1
cis-1,2-Dichloroethene	ND		ug/kg	0.66	0.12	1
1,2-Dichloroethene, Total	ND		ug/kg	0.66	0.09	1
Dibromomethane	ND		ug/kg	1.3	0.16	1
Styrene	ND		ug/kg	0.66	0.13	1
Dichlorodifluoromethane	ND		ug/kg	6.6	0.61	1
Acetone	ND		ug/kg	6.6	3.2	1
Carbon disulfide	ND		ug/kg	6.6	3.0	1
2-Butanone	ND		ug/kg	6.6	1.5	1
Vinyl acetate	ND		ug/kg	6.6	1.4	1
4-Methyl-2-pentanone	ND		ug/kg	6.6	0.85	1
1,2,3-Trichloropropane	ND		ug/kg	1.3	0.08	1
2-Hexanone	ND		ug/kg	6.6	0.78	1
Bromochloromethane	ND		ug/kg	1.3	0.14	1
2,2-Dichloropropane	ND		ug/kg	1.3	0.13	1
1,2-Dibromoethane	ND		ug/kg	0.66	0.18	1
1,3-Dichloropropane	ND		ug/kg	1.3	0.11	1
1,1,1,2-Tetrachloroethane	ND		ug/kg	0.33	0.09	1
Bromobenzene	ND		ug/kg	1.3	0.10	1
n-Butylbenzene	ND		ug/kg	0.66	0.11	1
sec-Butylbenzene	ND		ug/kg	0.66	0.10	1
tert-Butylbenzene	ND		ug/kg	1.3	0.08	1
o-Chlorotoluene	ND		ug/kg	1.3	0.13	1
p-Chlorotoluene	ND		ug/kg	1.3	0.07	1
1,2-Dibromo-3-chloropropane	ND		ug/kg	2.0	0.66	1
Hexachlorobutadiene	ND		ug/kg	2.6	0.11	1
Isopropylbenzene	ND		ug/kg	0.66	0.07	1
p-Isopropyltoluene	ND		ug/kg	0.66	0.07	1
Naphthalene	ND		ug/kg	2.6	0.43	1
Acrylonitrile	ND		ug/kg	2.6	0.76	1

Project Name: RYE LAKE WFP
Lab Number: L2129255
Project Number: 41.0162892.00
Report Date: 06/14/21

SAMPLE RESULTS

Lab ID: L2129255-03
Client ID: B-7 (24'-25')
Sample Location: RYE LAKE WFP
Date Collected: 06/02/21 08:55
Date Received: 06/02/21
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
n-Propylbenzene	ND		ug/kg	0.66	0.11	1
1,2,3-Trichlorobenzene	ND		ug/kg	1.3	0.21	1
1,2,4-Trichlorobenzene	ND		ug/kg	1.3	0.18	1
1,3,5-Trimethylbenzene	ND		ug/kg	1.3	0.13	1
1,2,4-Trimethylbenzene	ND		ug/kg	1.3	0.22	1
1,4-Dioxane	ND		ug/kg	53	23.	1
p-Diethylbenzene	ND		ug/kg	1.3	0.12	1
p-Ethyltoluene	ND		ug/kg	1.3	0.26	1
1,2,4,5-Tetramethylbenzene	ND		ug/kg	1.3	0.13	1
Ethyl ether	ND		ug/kg	1.3	0.23	1
trans-1,4-Dichloro-2-butene	ND		ug/kg	3.3	0.94	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	98		70-130
Dibromofluoromethane	107		70-130

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2129255
Report Date: 06/14/21

SAMPLE RESULTS

Lab ID: L2129255-05
Client ID: B-2 (16'-17')
Sample Location: RYE LAKE WFP
Date Collected: 06/02/21 09:45
Date Received: 06/02/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 06/10/21 02:58
Analyst: NLK
Percent Solids: 89%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methylene chloride	ND		ug/kg	4.6	2.1	1
1,1-Dichloroethane	ND		ug/kg	0.91	0.13	1
Chloroform	ND		ug/kg	1.4	0.13	1
Carbon tetrachloride	ND		ug/kg	0.91	0.21	1
1,2-Dichloropropane	ND		ug/kg	0.91	0.11	1
Dibromochloromethane	ND		ug/kg	0.91	0.13	1
1,1,2-Trichloroethane	ND		ug/kg	0.91	0.24	1
Tetrachloroethene	ND		ug/kg	0.46	0.18	1
Chlorobenzene	ND		ug/kg	0.46	0.12	1
Trichlorofluoromethane	ND		ug/kg	3.6	0.63	1
1,2-Dichloroethane	ND		ug/kg	0.91	0.23	1
1,1,1-Trichloroethane	ND		ug/kg	0.46	0.15	1
Bromodichloromethane	ND		ug/kg	0.46	0.10	1
trans-1,3-Dichloropropene	ND		ug/kg	0.91	0.25	1
cis-1,3-Dichloropropene	ND		ug/kg	0.46	0.14	1
1,3-Dichloropropene, Total	ND		ug/kg	0.46	0.14	1
1,1-Dichloropropene	ND		ug/kg	0.46	0.14	1
Bromoform	ND		ug/kg	3.6	0.22	1
1,1,2,2-Tetrachloroethane	ND		ug/kg	0.46	0.15	1
Benzene	ND		ug/kg	0.46	0.15	1
Toluene	ND		ug/kg	0.91	0.49	1
Ethylbenzene	ND		ug/kg	0.91	0.13	1
Chloromethane	ND		ug/kg	3.6	0.85	1
Bromomethane	ND		ug/kg	1.8	0.53	1
Vinyl chloride	ND		ug/kg	0.91	0.30	1
Chloroethane	ND		ug/kg	1.8	0.41	1
1,1-Dichloroethene	ND		ug/kg	0.91	0.22	1
trans-1,2-Dichloroethene	ND		ug/kg	1.4	0.12	1

Project Name: RYE LAKE WFP **Lab Number:** L2129255

Project Number: 41.0162892.00 **Report Date:** 06/14/21

SAMPLE RESULTS

Lab ID: L2129255-05 Date Collected: 06/02/21 09:45

Client ID: B-2 (16'-17') Date Received: 06/02/21

Sample Location: RYE LAKE WFP Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Trichloroethene	ND		ug/kg	0.46	0.12	1
1,2-Dichlorobenzene	ND		ug/kg	1.8	0.13	1
1,3-Dichlorobenzene	ND		ug/kg	1.8	0.13	1
1,4-Dichlorobenzene	ND		ug/kg	1.8	0.16	1
Methyl tert butyl ether	ND		ug/kg	1.8	0.18	1
p/m-Xylene	ND		ug/kg	1.8	0.51	1
o-Xylene	ND		ug/kg	0.91	0.26	1
Xylenes, Total	ND		ug/kg	0.91	0.26	1
cis-1,2-Dichloroethene	ND		ug/kg	0.91	0.16	1
1,2-Dichloroethene, Total	ND		ug/kg	0.91	0.12	1
Dibromomethane	ND		ug/kg	1.8	0.22	1
Styrene	ND		ug/kg	0.91	0.18	1
Dichlorodifluoromethane	ND		ug/kg	9.1	0.83	1
Acetone	6.8	J	ug/kg	9.1	4.4	1
Carbon disulfide	ND		ug/kg	9.1	4.1	1
2-Butanone	ND		ug/kg	9.1	2.0	1
Vinyl acetate	ND		ug/kg	9.1	2.0	1
4-Methyl-2-pentanone	ND		ug/kg	9.1	1.2	1
1,2,3-Trichloropropane	ND		ug/kg	1.8	0.12	1
2-Hexanone	ND		ug/kg	9.1	1.1	1
Bromochloromethane	ND		ug/kg	1.8	0.19	1
2,2-Dichloropropane	ND		ug/kg	1.8	0.18	1
1,2-Dibromoethane	ND		ug/kg	0.91	0.25	1
1,3-Dichloropropane	ND		ug/kg	1.8	0.15	1
1,1,1,2-Tetrachloroethane	ND		ug/kg	0.46	0.12	1
Bromobenzene	ND		ug/kg	1.8	0.13	1
n-Butylbenzene	ND		ug/kg	0.91	0.15	1
sec-Butylbenzene	ND		ug/kg	0.91	0.13	1
tert-Butylbenzene	ND		ug/kg	1.8	0.11	1
o-Chlorotoluene	ND		ug/kg	1.8	0.17	1
p-Chlorotoluene	ND		ug/kg	1.8	0.10	1
1,2-Dibromo-3-chloropropane	ND		ug/kg	2.7	0.91	1
Hexachlorobutadiene	ND		ug/kg	3.6	0.15	1
Isopropylbenzene	ND		ug/kg	0.91	0.10	1
p-Isopropyltoluene	ND		ug/kg	0.91	0.10	1
Naphthalene	ND		ug/kg	3.6	0.59	1
Acrylonitrile	ND		ug/kg	3.6	1.0	1

Project Name: RYE LAKE WFP
Lab Number: L2129255
Project Number: 41.0162892.00
Report Date: 06/14/21

SAMPLE RESULTS

Lab ID: L2129255-05
Client ID: B-2 (16'-17')
Sample Location: RYE LAKE WFP
Date Collected: 06/02/21 09:45
Date Received: 06/02/21
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
n-Propylbenzene	ND		ug/kg	0.91	0.16	1
1,2,3-Trichlorobenzene	ND		ug/kg	1.8	0.29	1
1,2,4-Trichlorobenzene	ND		ug/kg	1.8	0.25	1
1,3,5-Trimethylbenzene	ND		ug/kg	1.8	0.18	1
1,2,4-Trimethylbenzene	ND		ug/kg	1.8	0.30	1
1,4-Dioxane	ND		ug/kg	73	32.	1
p-Diethylbenzene	ND		ug/kg	1.8	0.16	1
p-Ethyltoluene	ND		ug/kg	1.8	0.35	1
1,2,4,5-Tetramethylbenzene	ND		ug/kg	1.8	0.17	1
Ethyl ether	ND		ug/kg	1.8	0.31	1
trans-1,4-Dichloro-2-butene	ND		ug/kg	4.6	1.3	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	98		70-130
Dibromofluoromethane	106		70-130

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2129255
Report Date: 06/14/21

SAMPLE RESULTS

Lab ID: L2129255-06
Client ID: B-2 (20'-21')
Sample Location: RYE LAKE WFP
Date Collected: 06/02/21 09:51
Date Received: 06/02/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 06/10/21 03:23
Analyst: NLK
Percent Solids: 90%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methylene chloride	ND		ug/kg	2.6	1.2	1
1,1-Dichloroethane	ND		ug/kg	0.52	0.08	1
Chloroform	ND		ug/kg	0.77	0.07	1
Carbon tetrachloride	ND		ug/kg	0.52	0.12	1
1,2-Dichloropropane	ND		ug/kg	0.52	0.06	1
Dibromochloromethane	ND		ug/kg	0.52	0.07	1
1,1,2-Trichloroethane	ND		ug/kg	0.52	0.14	1
Tetrachloroethene	ND		ug/kg	0.26	0.10	1
Chlorobenzene	ND		ug/kg	0.26	0.07	1
Trichlorofluoromethane	ND		ug/kg	2.1	0.36	1
1,2-Dichloroethane	ND		ug/kg	0.52	0.13	1
1,1,1-Trichloroethane	ND		ug/kg	0.26	0.09	1
Bromodichloromethane	ND		ug/kg	0.26	0.06	1
trans-1,3-Dichloropropene	ND		ug/kg	0.52	0.14	1
cis-1,3-Dichloropropene	ND		ug/kg	0.26	0.08	1
1,3-Dichloropropene, Total	ND		ug/kg	0.26	0.08	1
1,1-Dichloropropene	ND		ug/kg	0.26	0.08	1
Bromoform	ND		ug/kg	2.1	0.13	1
1,1,2,2-Tetrachloroethane	ND		ug/kg	0.26	0.09	1
Benzene	ND		ug/kg	0.26	0.09	1
Toluene	ND		ug/kg	0.52	0.28	1
Ethylbenzene	ND		ug/kg	0.52	0.07	1
Chloromethane	ND		ug/kg	2.1	0.48	1
Bromomethane	ND		ug/kg	1.0	0.30	1
Vinyl chloride	ND		ug/kg	0.52	0.17	1
Chloroethane	ND		ug/kg	1.0	0.23	1
1,1-Dichloroethene	ND		ug/kg	0.52	0.12	1
trans-1,2-Dichloroethene	ND		ug/kg	0.77	0.07	1

Project Name: RYE LAKE WFP **Lab Number:** L2129255

Project Number: 41.0162892.00 **Report Date:** 06/14/21

SAMPLE RESULTS

Lab ID: L2129255-06 Date Collected: 06/02/21 09:51

Client ID: B-2 (20'-21') Date Received: 06/02/21

Sample Location: RYE LAKE WFP Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Trichloroethene	ND		ug/kg	0.26	0.07	1
1,2-Dichlorobenzene	ND		ug/kg	1.0	0.07	1
1,3-Dichlorobenzene	ND		ug/kg	1.0	0.08	1
1,4-Dichlorobenzene	ND		ug/kg	1.0	0.09	1
Methyl tert butyl ether	ND		ug/kg	1.0	0.10	1
p/m-Xylene	ND		ug/kg	1.0	0.29	1
o-Xylene	ND		ug/kg	0.52	0.15	1
Xylenes, Total	ND		ug/kg	0.52	0.15	1
cis-1,2-Dichloroethene	ND		ug/kg	0.52	0.09	1
1,2-Dichloroethene, Total	ND		ug/kg	0.52	0.07	1
Dibromomethane	ND		ug/kg	1.0	0.12	1
Styrene	ND		ug/kg	0.52	0.10	1
Dichlorodifluoromethane	ND		ug/kg	5.2	0.47	1
Acetone	ND		ug/kg	5.2	2.5	1
Carbon disulfide	ND		ug/kg	5.2	2.3	1
2-Butanone	ND		ug/kg	5.2	1.1	1
Vinyl acetate	ND		ug/kg	5.2	1.1	1
4-Methyl-2-pentanone	ND		ug/kg	5.2	0.66	1
1,2,3-Trichloropropane	ND		ug/kg	1.0	0.07	1
2-Hexanone	ND		ug/kg	5.2	0.61	1
Bromochloromethane	ND		ug/kg	1.0	0.10	1
2,2-Dichloropropane	ND		ug/kg	1.0	0.10	1
1,2-Dibromoethane	ND		ug/kg	0.52	0.14	1
1,3-Dichloropropane	ND		ug/kg	1.0	0.09	1
1,1,1,2-Tetrachloroethane	ND		ug/kg	0.26	0.07	1
Bromobenzene	ND		ug/kg	1.0	0.08	1
n-Butylbenzene	ND		ug/kg	0.52	0.09	1
sec-Butylbenzene	ND		ug/kg	0.52	0.08	1
tert-Butylbenzene	ND		ug/kg	1.0	0.06	1
o-Chlorotoluene	ND		ug/kg	1.0	0.10	1
p-Chlorotoluene	ND		ug/kg	1.0	0.06	1
1,2-Dibromo-3-chloropropane	ND		ug/kg	1.5	0.51	1
Hexachlorobutadiene	ND		ug/kg	2.1	0.09	1
Isopropylbenzene	ND		ug/kg	0.52	0.06	1
p-Isopropyltoluene	ND		ug/kg	0.52	0.06	1
Naphthalene	ND		ug/kg	2.1	0.33	1
Acrylonitrile	ND		ug/kg	2.1	0.59	1

Project Name: RYE LAKE WFP
Lab Number: L2129255
Project Number: 41.0162892.00
Report Date: 06/14/21

SAMPLE RESULTS

Lab ID: L2129255-06
Client ID: B-2 (20'-21')
Sample Location: RYE LAKE WFP
Date Collected: 06/02/21 09:51
Date Received: 06/02/21
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
n-Propylbenzene	ND		ug/kg	0.52	0.09	1
1,2,3-Trichlorobenzene	ND		ug/kg	1.0	0.16	1
1,2,4-Trichlorobenzene	ND		ug/kg	1.0	0.14	1
1,3,5-Trimethylbenzene	ND		ug/kg	1.0	0.10	1
1,2,4-Trimethylbenzene	ND		ug/kg	1.0	0.17	1
1,4-Dioxane	ND		ug/kg	41	18.	1
p-Diethylbenzene	ND		ug/kg	1.0	0.09	1
p-Ethyltoluene	ND		ug/kg	1.0	0.20	1
1,2,4,5-Tetramethylbenzene	ND		ug/kg	1.0	0.10	1
Ethyl ether	ND		ug/kg	1.0	0.18	1
trans-1,4-Dichloro-2-butene	ND		ug/kg	2.6	0.73	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	100		70-130
Dibromofluoromethane	105		70-130

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2129255
Report Date: 06/14/21

SAMPLE RESULTS

Lab ID: L2129255-07
Client ID: B-2 (24'-25')
Sample Location: RYE LAKE WFP
Date Collected: 06/02/21 10:00
Date Received: 06/02/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 06/10/21 03:49
Analyst: NLK
Percent Solids: 92%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methylene chloride	ND		ug/kg	2.8	1.3	1
1,1-Dichloroethane	ND		ug/kg	0.56	0.08	1
Chloroform	ND		ug/kg	0.84	0.08	1
Carbon tetrachloride	ND		ug/kg	0.56	0.13	1
1,2-Dichloropropane	ND		ug/kg	0.56	0.07	1
Dibromochloromethane	ND		ug/kg	0.56	0.08	1
1,1,2-Trichloroethane	ND		ug/kg	0.56	0.15	1
Tetrachloroethene	ND		ug/kg	0.28	0.11	1
Chlorobenzene	ND		ug/kg	0.28	0.07	1
Trichlorofluoromethane	ND		ug/kg	2.2	0.39	1
1,2-Dichloroethane	ND		ug/kg	0.56	0.14	1
1,1,1-Trichloroethane	ND		ug/kg	0.28	0.09	1
Bromodichloromethane	ND		ug/kg	0.28	0.06	1
trans-1,3-Dichloropropene	ND		ug/kg	0.56	0.15	1
cis-1,3-Dichloropropene	ND		ug/kg	0.28	0.09	1
1,3-Dichloropropene, Total	ND		ug/kg	0.28	0.09	1
1,1-Dichloropropene	ND		ug/kg	0.28	0.09	1
Bromoform	ND		ug/kg	2.2	0.14	1
1,1,2,2-Tetrachloroethane	ND		ug/kg	0.28	0.09	1
Benzene	ND		ug/kg	0.28	0.09	1
Toluene	ND		ug/kg	0.56	0.30	1
Ethylbenzene	ND		ug/kg	0.56	0.08	1
Chloromethane	ND		ug/kg	2.2	0.52	1
Bromomethane	ND		ug/kg	1.1	0.32	1
Vinyl chloride	ND		ug/kg	0.56	0.19	1
Chloroethane	ND		ug/kg	1.1	0.25	1
1,1-Dichloroethene	ND		ug/kg	0.56	0.13	1
trans-1,2-Dichloroethene	ND		ug/kg	0.84	0.08	1

Project Name: RYE LAKE WFP **Lab Number:** L2129255

Project Number: 41.0162892.00 **Report Date:** 06/14/21

SAMPLE RESULTS

Lab ID: L2129255-07 Date Collected: 06/02/21 10:00

Client ID: B-2 (24'-25') Date Received: 06/02/21

Sample Location: RYE LAKE WFP Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Trichloroethene	ND		ug/kg	0.28	0.08	1
1,2-Dichlorobenzene	ND		ug/kg	1.1	0.08	1
1,3-Dichlorobenzene	ND		ug/kg	1.1	0.08	1
1,4-Dichlorobenzene	ND		ug/kg	1.1	0.10	1
Methyl tert butyl ether	ND		ug/kg	1.1	0.11	1
p/m-Xylene	ND		ug/kg	1.1	0.31	1
o-Xylene	ND		ug/kg	0.56	0.16	1
Xylenes, Total	ND		ug/kg	0.56	0.16	1
cis-1,2-Dichloroethene	ND		ug/kg	0.56	0.10	1
1,2-Dichloroethene, Total	ND		ug/kg	0.56	0.08	1
Dibromomethane	ND		ug/kg	1.1	0.13	1
Styrene	ND		ug/kg	0.56	0.11	1
Dichlorodifluoromethane	ND		ug/kg	5.6	0.51	1
Acetone	ND		ug/kg	5.6	2.7	1
Carbon disulfide	ND		ug/kg	5.6	2.5	1
2-Butanone	ND		ug/kg	5.6	1.2	1
Vinyl acetate	ND		ug/kg	5.6	1.2	1
4-Methyl-2-pentanone	ND		ug/kg	5.6	0.71	1
1,2,3-Trichloropropane	ND		ug/kg	1.1	0.07	1
2-Hexanone	ND		ug/kg	5.6	0.66	1
Bromochloromethane	ND		ug/kg	1.1	0.11	1
2,2-Dichloropropane	ND		ug/kg	1.1	0.11	1
1,2-Dibromoethane	ND		ug/kg	0.56	0.16	1
1,3-Dichloropropane	ND		ug/kg	1.1	0.09	1
1,1,1,2-Tetrachloroethane	ND		ug/kg	0.28	0.07	1
Bromobenzene	ND		ug/kg	1.1	0.08	1
n-Butylbenzene	ND		ug/kg	0.56	0.09	1
sec-Butylbenzene	ND		ug/kg	0.56	0.08	1
tert-Butylbenzene	ND		ug/kg	1.1	0.07	1
o-Chlorotoluene	ND		ug/kg	1.1	0.11	1
p-Chlorotoluene	ND		ug/kg	1.1	0.06	1
1,2-Dibromo-3-chloropropane	ND		ug/kg	1.7	0.56	1
Hexachlorobutadiene	ND		ug/kg	2.2	0.09	1
Isopropylbenzene	ND		ug/kg	0.56	0.06	1
p-Isopropyltoluene	ND		ug/kg	0.56	0.06	1
Naphthalene	ND		ug/kg	2.2	0.36	1
Acrylonitrile	ND		ug/kg	2.2	0.64	1

Project Name: RYE LAKE WFP
Lab Number: L2129255
Project Number: 41.0162892.00
Report Date: 06/14/21

SAMPLE RESULTS

Lab ID: L2129255-07
Client ID: B-2 (24'-25')
Sample Location: RYE LAKE WFP
Date Collected: 06/02/21 10:00
Date Received: 06/02/21
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
n-Propylbenzene	ND		ug/kg	0.56	0.10	1
1,2,3-Trichlorobenzene	ND		ug/kg	1.1	0.18	1
1,2,4-Trichlorobenzene	ND		ug/kg	1.1	0.15	1
1,3,5-Trimethylbenzene	ND		ug/kg	1.1	0.11	1
1,2,4-Trimethylbenzene	ND		ug/kg	1.1	0.19	1
1,4-Dioxane	ND		ug/kg	44	20.	1
p-Diethylbenzene	ND		ug/kg	1.1	0.10	1
p-Ethyltoluene	ND		ug/kg	1.1	0.21	1
1,2,4,5-Tetramethylbenzene	ND		ug/kg	1.1	0.11	1
Ethyl ether	ND		ug/kg	1.1	0.19	1
trans-1,4-Dichloro-2-butene	ND		ug/kg	2.8	0.79	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	99		70-130
4-Bromofluorobenzene	101		70-130
Dibromofluoromethane	106		70-130

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2129255
Report Date: 06/14/21

SAMPLE RESULTS

Lab ID: L2129255-09
Client ID: B-29 (1'-2')
Sample Location: RYE LAKE WFP
Date Collected: 06/02/21 12:30
Date Received: 06/02/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 06/10/21 04:15
Analyst: NLK
Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methylene chloride	ND		ug/kg	5.4	2.5	1
1,1-Dichloroethane	ND		ug/kg	1.1	0.16	1
Chloroform	ND		ug/kg	1.6	0.15	1
Carbon tetrachloride	ND		ug/kg	1.1	0.25	1
1,2-Dichloropropane	ND		ug/kg	1.1	0.14	1
Dibromochloromethane	ND		ug/kg	1.1	0.15	1
1,1,2-Trichloroethane	ND		ug/kg	1.1	0.29	1
Tetrachloroethene	ND		ug/kg	0.54	0.21	1
Chlorobenzene	ND		ug/kg	0.54	0.14	1
Trichlorofluoromethane	ND		ug/kg	4.3	0.75	1
1,2-Dichloroethane	ND		ug/kg	1.1	0.28	1
1,1,1-Trichloroethane	ND		ug/kg	0.54	0.18	1
Bromodichloromethane	ND		ug/kg	0.54	0.12	1
trans-1,3-Dichloropropene	ND		ug/kg	1.1	0.30	1
cis-1,3-Dichloropropene	ND		ug/kg	0.54	0.17	1
1,3-Dichloropropene, Total	ND		ug/kg	0.54	0.17	1
1,1-Dichloropropene	ND		ug/kg	0.54	0.17	1
Bromoform	ND		ug/kg	4.3	0.27	1
1,1,2,2-Tetrachloroethane	ND		ug/kg	0.54	0.18	1
Benzene	ND		ug/kg	0.54	0.18	1
Toluene	ND		ug/kg	1.1	0.59	1
Ethylbenzene	ND		ug/kg	1.1	0.15	1
Chloromethane	ND		ug/kg	4.3	1.0	1
Bromomethane	ND		ug/kg	2.2	0.63	1
Vinyl chloride	ND		ug/kg	1.1	0.36	1
Chloroethane	ND		ug/kg	2.2	0.49	1
1,1-Dichloroethene	ND		ug/kg	1.1	0.26	1
trans-1,2-Dichloroethene	ND		ug/kg	1.6	0.15	1

Project Name: RYE LAKE WFP **Lab Number:** L2129255

Project Number: 41.0162892.00 **Report Date:** 06/14/21

SAMPLE RESULTS

Lab ID: L2129255-09 Date Collected: 06/02/21 12:30

Client ID: B-29 (1'-2') Date Received: 06/02/21

Sample Location: RYE LAKE WFP Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Trichloroethene	ND		ug/kg	0.54	0.15	1
1,2-Dichlorobenzene	ND		ug/kg	2.2	0.16	1
1,3-Dichlorobenzene	ND		ug/kg	2.2	0.16	1
1,4-Dichlorobenzene	ND		ug/kg	2.2	0.18	1
Methyl tert butyl ether	ND		ug/kg	2.2	0.22	1
p/m-Xylene	ND		ug/kg	2.2	0.61	1
o-Xylene	ND		ug/kg	1.1	0.32	1
Xylenes, Total	ND		ug/kg	1.1	0.32	1
cis-1,2-Dichloroethene	ND		ug/kg	1.1	0.19	1
1,2-Dichloroethene, Total	ND		ug/kg	1.1	0.15	1
Dibromomethane	ND		ug/kg	2.2	0.26	1
Styrene	ND		ug/kg	1.1	0.21	1
Dichlorodifluoromethane	ND		ug/kg	11	0.99	1
Acetone	13		ug/kg	11	5.2	1
Carbon disulfide	ND		ug/kg	11	4.9	1
2-Butanone	ND		ug/kg	11	2.4	1
Vinyl acetate	ND		ug/kg	11	2.3	1
4-Methyl-2-pentanone	ND		ug/kg	11	1.4	1
1,2,3-Trichloropropane	ND		ug/kg	2.2	0.14	1
2-Hexanone	ND		ug/kg	11	1.3	1
Bromochloromethane	ND		ug/kg	2.2	0.22	1
2,2-Dichloropropane	ND		ug/kg	2.2	0.22	1
1,2-Dibromoethane	ND		ug/kg	1.1	0.30	1
1,3-Dichloropropane	ND		ug/kg	2.2	0.18	1
1,1,1,2-Tetrachloroethane	ND		ug/kg	0.54	0.14	1
Bromobenzene	ND		ug/kg	2.2	0.16	1
n-Butylbenzene	ND		ug/kg	1.1	0.18	1
sec-Butylbenzene	ND		ug/kg	1.1	0.16	1
tert-Butylbenzene	ND		ug/kg	2.2	0.13	1
o-Chlorotoluene	ND		ug/kg	2.2	0.21	1
p-Chlorotoluene	ND		ug/kg	2.2	0.12	1
1,2-Dibromo-3-chloropropane	ND		ug/kg	3.2	1.1	1
Hexachlorobutadiene	ND		ug/kg	4.3	0.18	1
Isopropylbenzene	ND		ug/kg	1.1	0.12	1
p-Isopropyltoluene	ND		ug/kg	1.1	0.12	1
Naphthalene	ND		ug/kg	4.3	0.70	1
Acrylonitrile	ND		ug/kg	4.3	1.2	1

Project Name: RYE LAKE WFP
Lab Number: L2129255
Project Number: 41.0162892.00
Report Date: 06/14/21

SAMPLE RESULTS

Lab ID: L2129255-09
Client ID: B-29 (1'-2')
Sample Location: RYE LAKE WFP
Date Collected: 06/02/21 12:30
Date Received: 06/02/21
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
n-Propylbenzene	ND		ug/kg	1.1	0.18	1
1,2,3-Trichlorobenzene	ND		ug/kg	2.2	0.35	1
1,2,4-Trichlorobenzene	ND		ug/kg	2.2	0.29	1
1,3,5-Trimethylbenzene	ND		ug/kg	2.2	0.21	1
1,2,4-Trimethylbenzene	ND		ug/kg	2.2	0.36	1
1,4-Dioxane	ND		ug/kg	87	38.	1
p-Diethylbenzene	ND		ug/kg	2.2	0.19	1
p-Ethyltoluene	ND		ug/kg	2.2	0.42	1
1,2,4,5-Tetramethylbenzene	ND		ug/kg	2.2	0.21	1
Ethyl ether	ND		ug/kg	2.2	0.37	1
trans-1,4-Dichloro-2-butene	ND		ug/kg	5.4	1.5	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	104		70-130
Dibromofluoromethane	107		70-130

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2129255
Report Date: 06/14/21

SAMPLE RESULTS

Lab ID: L2129255-10
Client ID: B-29 (5'-6')
Sample Location: RYE LAKE WFP
Date Collected: 06/02/21 12:55
Date Received: 06/02/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 06/10/21 04:40
Analyst: NLK
Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methylene chloride	ND		ug/kg	3.3	1.5	1
1,1-Dichloroethane	ND		ug/kg	0.66	0.10	1
Chloroform	ND		ug/kg	0.99	0.09	1
Carbon tetrachloride	ND		ug/kg	0.66	0.15	1
1,2-Dichloropropane	ND		ug/kg	0.66	0.08	1
Dibromochloromethane	ND		ug/kg	0.66	0.09	1
1,1,2-Trichloroethane	ND		ug/kg	0.66	0.18	1
Tetrachloroethene	ND		ug/kg	0.33	0.13	1
Chlorobenzene	ND		ug/kg	0.33	0.08	1
Trichlorofluoromethane	ND		ug/kg	2.6	0.46	1
1,2-Dichloroethane	ND		ug/kg	0.66	0.17	1
1,1,1-Trichloroethane	ND		ug/kg	0.33	0.11	1
Bromodichloromethane	ND		ug/kg	0.33	0.07	1
trans-1,3-Dichloropropene	ND		ug/kg	0.66	0.18	1
cis-1,3-Dichloropropene	ND		ug/kg	0.33	0.10	1
1,3-Dichloropropene, Total	ND		ug/kg	0.33	0.10	1
1,1-Dichloropropene	ND		ug/kg	0.33	0.10	1
Bromoform	ND		ug/kg	2.6	0.16	1
1,1,2,2-Tetrachloroethane	ND		ug/kg	0.33	0.11	1
Benzene	0.12	J	ug/kg	0.33	0.11	1
Toluene	ND		ug/kg	0.66	0.36	1
Ethylbenzene	ND		ug/kg	0.66	0.09	1
Chloromethane	ND		ug/kg	2.6	0.62	1
Bromomethane	ND		ug/kg	1.3	0.38	1
Vinyl chloride	ND		ug/kg	0.66	0.22	1
Chloroethane	ND		ug/kg	1.3	0.30	1
1,1-Dichloroethene	ND		ug/kg	0.66	0.16	1
trans-1,2-Dichloroethene	ND		ug/kg	0.99	0.09	1

Project Name: RYE LAKE WFP **Lab Number:** L2129255

Project Number: 41.0162892.00 **Report Date:** 06/14/21

SAMPLE RESULTS

Lab ID: L2129255-10 Date Collected: 06/02/21 12:55

Client ID: B-29 (5'-6') Date Received: 06/02/21

Sample Location: RYE LAKE WFP Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Trichloroethene	ND		ug/kg	0.33	0.09	1
1,2-Dichlorobenzene	ND		ug/kg	1.3	0.10	1
1,3-Dichlorobenzene	ND		ug/kg	1.3	0.10	1
1,4-Dichlorobenzene	ND		ug/kg	1.3	0.11	1
Methyl tert butyl ether	ND		ug/kg	1.3	0.13	1
p/m-Xylene	ND		ug/kg	1.3	0.37	1
o-Xylene	ND		ug/kg	0.66	0.19	1
Xylenes, Total	ND		ug/kg	0.66	0.19	1
cis-1,2-Dichloroethene	ND		ug/kg	0.66	0.12	1
1,2-Dichloroethene, Total	ND		ug/kg	0.66	0.09	1
Dibromomethane	ND		ug/kg	1.3	0.16	1
Styrene	ND		ug/kg	0.66	0.13	1
Dichlorodifluoromethane	ND		ug/kg	6.6	0.60	1
Acetone	29		ug/kg	6.6	3.2	1
Carbon disulfide	ND		ug/kg	6.6	3.0	1
2-Butanone	3.3	J	ug/kg	6.6	1.5	1
Vinyl acetate	ND		ug/kg	6.6	1.4	1
4-Methyl-2-pentanone	ND		ug/kg	6.6	0.84	1
1,2,3-Trichloropropane	ND		ug/kg	1.3	0.08	1
2-Hexanone	ND		ug/kg	6.6	0.78	1
Bromochloromethane	ND		ug/kg	1.3	0.14	1
2,2-Dichloropropane	ND		ug/kg	1.3	0.13	1
1,2-Dibromoethane	ND		ug/kg	0.66	0.18	1
1,3-Dichloropropane	ND		ug/kg	1.3	0.11	1
1,1,1,2-Tetrachloroethane	ND		ug/kg	0.33	0.09	1
Bromobenzene	ND		ug/kg	1.3	0.10	1
n-Butylbenzene	ND		ug/kg	0.66	0.11	1
sec-Butylbenzene	ND		ug/kg	0.66	0.10	1
tert-Butylbenzene	ND		ug/kg	1.3	0.08	1
o-Chlorotoluene	ND		ug/kg	1.3	0.13	1
p-Chlorotoluene	ND		ug/kg	1.3	0.07	1
1,2-Dibromo-3-chloropropane	ND		ug/kg	2.0	0.66	1
Hexachlorobutadiene	ND		ug/kg	2.6	0.11	1
Isopropylbenzene	ND		ug/kg	0.66	0.07	1
p-Isopropyltoluene	0.10	J	ug/kg	0.66	0.07	1
Naphthalene	0.76	J	ug/kg	2.6	0.43	1
Acrylonitrile	ND		ug/kg	2.6	0.76	1

Project Name: RYE LAKE WFP
Lab Number: L2129255
Project Number: 41.0162892.00
Report Date: 06/14/21

SAMPLE RESULTS

Lab ID: L2129255-10
Client ID: B-29 (5'-6')
Sample Location: RYE LAKE WFP
Date Collected: 06/02/21 12:55
Date Received: 06/02/21
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
n-Propylbenzene	ND		ug/kg	0.66	0.11	1
1,2,3-Trichlorobenzene	ND		ug/kg	1.3	0.21	1
1,2,4-Trichlorobenzene	ND		ug/kg	1.3	0.18	1
1,3,5-Trimethylbenzene	ND		ug/kg	1.3	0.13	1
1,2,4-Trimethylbenzene	ND		ug/kg	1.3	0.22	1
1,4-Dioxane	ND		ug/kg	53	23.	1
p-Diethylbenzene	ND		ug/kg	1.3	0.12	1
p-Ethyltoluene	ND		ug/kg	1.3	0.25	1
1,2,4,5-Tetramethylbenzene	ND		ug/kg	1.3	0.13	1
Ethyl ether	ND		ug/kg	1.3	0.22	1
trans-1,4-Dichloro-2-butene	ND		ug/kg	3.3	0.94	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	105		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	103		70-130
Dibromofluoromethane	106		70-130

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2129255
Report Date: 06/14/21

SAMPLE RESULTS

Lab ID: L2129255-11
Client ID: B-29 (24'-25')
Sample Location: RYE LAKE WFP
Date Collected: 06/02/21 13:10
Date Received: 06/02/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 06/10/21 05:05
Analyst: NLK
Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methylene chloride	ND		ug/kg	4.5	2.1	1
1,1-Dichloroethane	ND		ug/kg	0.90	0.13	1
Chloroform	ND		ug/kg	1.3	0.12	1
Carbon tetrachloride	ND		ug/kg	0.90	0.21	1
1,2-Dichloropropane	ND		ug/kg	0.90	0.11	1
Dibromochloromethane	ND		ug/kg	0.90	0.12	1
1,1,2-Trichloroethane	ND		ug/kg	0.90	0.24	1
Tetrachloroethene	ND		ug/kg	0.45	0.18	1
Chlorobenzene	ND		ug/kg	0.45	0.11	1
Trichlorofluoromethane	ND		ug/kg	3.6	0.62	1
1,2-Dichloroethane	ND		ug/kg	0.90	0.23	1
1,1,1-Trichloroethane	ND		ug/kg	0.45	0.15	1
Bromodichloromethane	ND		ug/kg	0.45	0.10	1
trans-1,3-Dichloropropene	ND		ug/kg	0.90	0.24	1
cis-1,3-Dichloropropene	ND		ug/kg	0.45	0.14	1
1,3-Dichloropropene, Total	ND		ug/kg	0.45	0.14	1
1,1-Dichloropropene	ND		ug/kg	0.45	0.14	1
Bromoform	ND		ug/kg	3.6	0.22	1
1,1,2,2-Tetrachloroethane	ND		ug/kg	0.45	0.15	1
Benzene	ND		ug/kg	0.45	0.15	1
Toluene	ND		ug/kg	0.90	0.49	1
Ethylbenzene	ND		ug/kg	0.90	0.13	1
Chloromethane	ND		ug/kg	3.6	0.84	1
Bromomethane	ND		ug/kg	1.8	0.52	1
Vinyl chloride	ND		ug/kg	0.90	0.30	1
Chloroethane	ND		ug/kg	1.8	0.41	1
1,1-Dichloroethene	ND		ug/kg	0.90	0.21	1
trans-1,2-Dichloroethene	ND		ug/kg	1.3	0.12	1

Project Name: RYE LAKE WFP **Lab Number:** L2129255

Project Number: 41.0162892.00 **Report Date:** 06/14/21

SAMPLE RESULTS

Lab ID: L2129255-11 Date Collected: 06/02/21 13:10

Client ID: B-29 (24'-25') Date Received: 06/02/21

Sample Location: RYE LAKE WFP Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Trichloroethene	ND		ug/kg	0.45	0.12	1
1,2-Dichlorobenzene	ND		ug/kg	1.8	0.13	1
1,3-Dichlorobenzene	ND		ug/kg	1.8	0.13	1
1,4-Dichlorobenzene	ND		ug/kg	1.8	0.15	1
Methyl tert butyl ether	ND		ug/kg	1.8	0.18	1
p/m-Xylene	ND		ug/kg	1.8	0.50	1
o-Xylene	ND		ug/kg	0.90	0.26	1
Xylenes, Total	ND		ug/kg	0.90	0.26	1
cis-1,2-Dichloroethene	ND		ug/kg	0.90	0.16	1
1,2-Dichloroethene, Total	ND		ug/kg	0.90	0.12	1
Dibromomethane	ND		ug/kg	1.8	0.21	1
Styrene	ND		ug/kg	0.90	0.18	1
Dichlorodifluoromethane	ND		ug/kg	9.0	0.82	1
Acetone	ND		ug/kg	9.0	4.3	1
Carbon disulfide	ND		ug/kg	9.0	4.1	1
2-Butanone	ND		ug/kg	9.0	2.0	1
Vinyl acetate	ND		ug/kg	9.0	1.9	1
4-Methyl-2-pentanone	ND		ug/kg	9.0	1.2	1
1,2,3-Trichloropropane	ND		ug/kg	1.8	0.11	1
2-Hexanone	ND		ug/kg	9.0	1.1	1
Bromochloromethane	ND		ug/kg	1.8	0.18	1
2,2-Dichloropropane	ND		ug/kg	1.8	0.18	1
1,2-Dibromoethane	ND		ug/kg	0.90	0.25	1
1,3-Dichloropropane	ND		ug/kg	1.8	0.15	1
1,1,1,2-Tetrachloroethane	ND		ug/kg	0.45	0.12	1
Bromobenzene	ND		ug/kg	1.8	0.13	1
n-Butylbenzene	ND		ug/kg	0.90	0.15	1
sec-Butylbenzene	ND		ug/kg	0.90	0.13	1
tert-Butylbenzene	ND		ug/kg	1.8	0.11	1
o-Chlorotoluene	ND		ug/kg	1.8	0.17	1
p-Chlorotoluene	ND		ug/kg	1.8	0.10	1
1,2-Dibromo-3-chloropropane	ND		ug/kg	2.7	0.90	1
Hexachlorobutadiene	ND		ug/kg	3.6	0.15	1
Isopropylbenzene	ND		ug/kg	0.90	0.10	1
p-Isopropyltoluene	0.12	J	ug/kg	0.90	0.10	1
Naphthalene	ND		ug/kg	3.6	0.58	1
Acrylonitrile	ND		ug/kg	3.6	1.0	1

Project Name: RYE LAKE WFP
Lab Number: L2129255
Project Number: 41.0162892.00
Report Date: 06/14/21

SAMPLE RESULTS

Lab ID: L2129255-11
Client ID: B-29 (24'-25')
Sample Location: RYE LAKE WFP
Date Collected: 06/02/21 13:10
Date Received: 06/02/21
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
n-Propylbenzene	ND		ug/kg	0.90	0.15	1
1,2,3-Trichlorobenzene	ND		ug/kg	1.8	0.29	1
1,2,4-Trichlorobenzene	ND		ug/kg	1.8	0.24	1
1,3,5-Trimethylbenzene	ND		ug/kg	1.8	0.17	1
1,2,4-Trimethylbenzene	ND		ug/kg	1.8	0.30	1
1,4-Dioxane	ND		ug/kg	72	32.	1
p-Diethylbenzene	ND		ug/kg	1.8	0.16	1
p-Ethyltoluene	ND		ug/kg	1.8	0.34	1
1,2,4,5-Tetramethylbenzene	ND		ug/kg	1.8	0.17	1
Ethyl ether	ND		ug/kg	1.8	0.31	1
trans-1,4-Dichloro-2-butene	ND		ug/kg	4.5	1.3	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	101		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	102		70-130
Dibromofluoromethane	105		70-130

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2129255
Report Date: 06/14/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 06/09/21 21:03
Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01-03,05-07,09-11 Batch: WG1510159-5					
Methylene chloride	ND		ug/kg	5.0	2.3
1,1-Dichloroethane	ND		ug/kg	1.0	0.14
Chloroform	ND		ug/kg	1.5	0.14
Carbon tetrachloride	ND		ug/kg	1.0	0.23
1,2-Dichloropropane	ND		ug/kg	1.0	0.12
Dibromochloromethane	ND		ug/kg	1.0	0.14
1,1,2-Trichloroethane	ND		ug/kg	1.0	0.27
Tetrachloroethene	ND		ug/kg	0.50	0.20
Chlorobenzene	ND		ug/kg	0.50	0.13
Trichlorofluoromethane	ND		ug/kg	4.0	0.70
1,2-Dichloroethane	ND		ug/kg	1.0	0.26
1,1,1-Trichloroethane	ND		ug/kg	0.50	0.17
Bromodichloromethane	ND		ug/kg	0.50	0.11
trans-1,3-Dichloropropene	ND		ug/kg	1.0	0.27
cis-1,3-Dichloropropene	ND		ug/kg	0.50	0.16
1,3-Dichloropropene, Total	ND		ug/kg	0.50	0.16
1,1-Dichloropropene	ND		ug/kg	0.50	0.16
Bromoform	ND		ug/kg	4.0	0.25
1,1,2,2-Tetrachloroethane	ND		ug/kg	0.50	0.17
Benzene	ND		ug/kg	0.50	0.17
Toluene	ND		ug/kg	1.0	0.54
Ethylbenzene	ND		ug/kg	1.0	0.14
Chloromethane	ND		ug/kg	4.0	0.93
Bromomethane	ND		ug/kg	2.0	0.58
Vinyl chloride	ND		ug/kg	1.0	0.34
Chloroethane	ND		ug/kg	2.0	0.45
1,1-Dichloroethene	ND		ug/kg	1.0	0.24
trans-1,2-Dichloroethene	ND		ug/kg	1.5	0.14
Trichloroethene	ND		ug/kg	0.50	0.14

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2129255
Report Date: 06/14/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 06/09/21 21:03
Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01-03,05-07,09-11 Batch: WG1510159-5					
1,2-Dichlorobenzene	ND		ug/kg	2.0	0.14
1,3-Dichlorobenzene	ND		ug/kg	2.0	0.15
1,4-Dichlorobenzene	ND		ug/kg	2.0	0.17
Methyl tert butyl ether	ND		ug/kg	2.0	0.20
p/m-Xylene	ND		ug/kg	2.0	0.56
o-Xylene	ND		ug/kg	1.0	0.29
Xylenes, Total	ND		ug/kg	1.0	0.29
cis-1,2-Dichloroethene	ND		ug/kg	1.0	0.18
1,2-Dichloroethene, Total	ND		ug/kg	1.0	0.14
Dibromomethane	ND		ug/kg	2.0	0.24
Styrene	ND		ug/kg	1.0	0.20
Dichlorodifluoromethane	ND		ug/kg	10	0.92
Acetone	ND		ug/kg	10	4.8
Carbon disulfide	ND		ug/kg	10	4.6
2-Butanone	ND		ug/kg	10	2.2
Vinyl acetate	ND		ug/kg	10	2.2
4-Methyl-2-pentanone	ND		ug/kg	10	1.3
1,2,3-Trichloropropane	ND		ug/kg	2.0	0.13
2-Hexanone	ND		ug/kg	10	1.2
Bromochloromethane	ND		ug/kg	2.0	0.20
2,2-Dichloropropane	ND		ug/kg	2.0	0.20
1,2-Dibromoethane	ND		ug/kg	1.0	0.28
1,3-Dichloropropane	ND		ug/kg	2.0	0.17
1,1,1,2-Tetrachloroethane	ND		ug/kg	0.50	0.13
Bromobenzene	ND		ug/kg	2.0	0.14
n-Butylbenzene	ND		ug/kg	1.0	0.17
sec-Butylbenzene	ND		ug/kg	1.0	0.15
tert-Butylbenzene	ND		ug/kg	2.0	0.12
o-Chlorotoluene	ND		ug/kg	2.0	0.19

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2129255
Report Date: 06/14/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 06/09/21 21:03
Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01-03,05-07,09-11 Batch: WG1510159-5					
p-Chlorotoluene	ND		ug/kg	2.0	0.11
1,2-Dibromo-3-chloropropane	ND		ug/kg	3.0	1.0
Hexachlorobutadiene	ND		ug/kg	4.0	0.17
Isopropylbenzene	ND		ug/kg	1.0	0.11
p-Isopropyltoluene	ND		ug/kg	1.0	0.11
Naphthalene	ND		ug/kg	4.0	0.65
Acrylonitrile	ND		ug/kg	4.0	1.2
n-Propylbenzene	ND		ug/kg	1.0	0.17
1,2,3-Trichlorobenzene	ND		ug/kg	2.0	0.32
1,2,4-Trichlorobenzene	ND		ug/kg	2.0	0.27
1,3,5-Trimethylbenzene	ND		ug/kg	2.0	0.19
1,2,4-Trimethylbenzene	ND		ug/kg	2.0	0.33
1,4-Dioxane	ND		ug/kg	80	35.
p-Diethylbenzene	ND		ug/kg	2.0	0.18
p-Ethyltoluene	ND		ug/kg	2.0	0.38
1,2,4,5-Tetramethylbenzene	ND		ug/kg	2.0	0.19
Ethyl ether	ND		ug/kg	2.0	0.34
trans-1,4-Dichloro-2-butene	ND		ug/kg	5.0	1.4

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	93		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	105		70-130
Dibromofluoromethane	98		70-130

Lab Control Sample Analysis
Batch Quality Control

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2129255
Report Date: 06/14/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01-03,05-07,09-11 Batch: WG1510159-3 WG1510159-4								
Methylene chloride	101		97		70-130	4		30
1,1-Dichloroethane	92		89		70-130	3		30
Chloroform	91		88		70-130	3		30
Carbon tetrachloride	98		95		70-130	3		30
1,2-Dichloropropane	89		87		70-130	2		30
Dibromochloromethane	88		88		70-130	0		30
1,1,2-Trichloroethane	90		89		70-130	1		30
Tetrachloroethene	101		93		70-130	8		30
Chlorobenzene	97		93		70-130	4		30
Trichlorofluoromethane	102		93		70-139	9		30
1,2-Dichloroethane	86		84		70-130	2		30
1,1,1-Trichloroethane	93		90		70-130	3		30
Bromodichloromethane	93		92		70-130	1		30
trans-1,3-Dichloropropene	97		95		70-130	2		30
cis-1,3-Dichloropropene	91		90		70-130	1		30
1,1-Dichloropropene	98		93		70-130	5		30
Bromoform	88		89		70-130	1		30
1,1,2,2-Tetrachloroethane	95		94		70-130	1		30
Benzene	88		85		70-130	3		30
Toluene	88		85		70-130	3		30
Ethylbenzene	95		91		70-130	4		30
Chloromethane	96		88		52-130	9		30
Bromomethane	112		104		57-147	7		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: RYE LAKE WFP

Project Number: 41.0162892.00

Lab Number: L2129255

Report Date: 06/14/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01-03,05-07,09-11 Batch: WG1510159-3 WG1510159-4								
Vinyl chloride	99		93		67-130	6		30
Chloroethane	98		94		50-151	4		30
1,1-Dichloroethene	101		95		65-135	6		30
trans-1,2-Dichloroethene	96		92		70-130	4		30
Trichloroethene	91		87		70-130	4		30
1,2-Dichlorobenzene	91		89		70-130	2		30
1,3-Dichlorobenzene	92		89		70-130	3		30
1,4-Dichlorobenzene	90		87		70-130	3		30
Methyl tert butyl ether	92		91		66-130	1		30
p/m-Xylene	93		88		70-130	6		30
o-Xylene	93		90		70-130	3		30
cis-1,2-Dichloroethene	94		91		70-130	3		30
Dibromomethane	90		90		70-130	0		30
Styrene	90		87		70-130	3		30
Dichlorodifluoromethane	107		100		30-146	7		30
Acetone	100		88		54-140	13		30
Carbon disulfide	96		86		59-130	11		30
2-Butanone	92		83		70-130	10		30
Vinyl acetate	89		90		70-130	1		30
4-Methyl-2-pentanone	96		90		70-130	6		30
1,2,3-Trichloropropane	87		85		68-130	2		30
2-Hexanone	91		88		70-130	3		30
Bromochloromethane	91		91		70-130	0		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: RYE LAKE WFP

Project Number: 41.0162892.00

Lab Number: L2129255

Report Date: 06/14/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01-03,05-07,09-11 Batch: WG1510159-3 WG1510159-4								
2,2-Dichloropropane	97		94		70-130	3		30
1,2-Dibromoethane	90		88		70-130	2		30
1,3-Dichloropropane	91		90		69-130	1		30
1,1,1,2-Tetrachloroethane	89		85		70-130	5		30
Bromobenzene	91		91		70-130	0		30
n-Butylbenzene	102		95		70-130	7		30
sec-Butylbenzene	101		95		70-130	6		30
tert-Butylbenzene	101		96		70-130	5		30
o-Chlorotoluene	95		90		70-130	5		30
p-Chlorotoluene	94		90		70-130	4		30
1,2-Dibromo-3-chloropropane	95		97		68-130	2		30
Hexachlorobutadiene	100		95		67-130	5		30
Isopropylbenzene	98		95		70-130	3		30
p-Isopropyltoluene	104		98		70-130	6		30
Naphthalene	100		98		70-130	2		30
Acrylonitrile	90		90		70-130	0		30
n-Propylbenzene	99		93		70-130	6		30
1,2,3-Trichlorobenzene	98		95		70-130	3		30
1,2,4-Trichlorobenzene	102		98		70-130	4		30
1,3,5-Trimethylbenzene	100		95		70-130	5		30
1,2,4-Trimethylbenzene	100		95		70-130	5		30
1,4-Dioxane	93		97		65-136	4		30
p-Diethylbenzene	105		98		70-130	7		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: RYE LAKE WFP

Project Number: 41.0162892.00

Lab Number: L2129255

Report Date: 06/14/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01-03,05-07,09-11 Batch: WG1510159-3 WG1510159-4								
p-Ethyltoluene	102		96		70-130	6		30
1,2,4,5-Tetramethylbenzene	107		101		70-130	6		30
Ethyl ether	92		89		67-130	3		30
trans-1,4-Dichloro-2-butene	95		93		70-130	2		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	92		94		70-130
Toluene-d8	99		100		70-130
4-Bromofluorobenzene	111		103		70-130
Dibromofluoromethane	97		97		70-130

SEMIVOLATILES

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2129255
Report Date: 06/14/21

SAMPLE RESULTS

Lab ID: L2129255-04
Client ID: B-7 (15'-25')
Sample Location: RYE LAKE WFP

Date Collected: 06/02/21 08:30
Date Received: 06/02/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D
Analytical Date: 06/08/21 03:14
Analyst: EK
Percent Solids: 91%

Extraction Method: EPA 3546
Extraction Date: 06/04/21 11:32

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Acenaphthene	ND		ug/kg	140	19.	1
1,2,4-Trichlorobenzene	ND		ug/kg	180	21.	1
Hexachlorobenzene	ND		ug/kg	110	20.	1
Bis(2-chloroethyl)ether	ND		ug/kg	160	25.	1
2-Chloronaphthalene	ND		ug/kg	180	18.	1
1,2-Dichlorobenzene	ND		ug/kg	180	33.	1
1,3-Dichlorobenzene	ND		ug/kg	180	31.	1
1,4-Dichlorobenzene	ND		ug/kg	180	32.	1
3,3'-Dichlorobenzidine	ND		ug/kg	180	48.	1
2,4-Dinitrotoluene	ND		ug/kg	180	36.	1
2,6-Dinitrotoluene	ND		ug/kg	180	31.	1
Fluoranthene	ND		ug/kg	110	21.	1
4-Chlorophenyl phenyl ether	ND		ug/kg	180	19.	1
4-Bromophenyl phenyl ether	ND		ug/kg	180	28.	1
Bis(2-chloroisopropyl)ether	ND		ug/kg	220	31.	1
Bis(2-chloroethoxy)methane	ND		ug/kg	200	18.	1
Hexachlorobutadiene	ND		ug/kg	180	27.	1
Hexachlorocyclopentadiene	ND		ug/kg	520	160	1
Hexachloroethane	ND		ug/kg	140	29.	1
Isophorone	ND		ug/kg	160	24.	1
Naphthalene	ND		ug/kg	180	22.	1
Nitrobenzene	ND		ug/kg	160	27.	1
NDPA/DPA	ND		ug/kg	140	21.	1
n-Nitrosodi-n-propylamine	ND		ug/kg	180	28.	1
Bis(2-ethylhexyl)phthalate	ND		ug/kg	180	63.	1
Butyl benzyl phthalate	ND		ug/kg	180	46.	1
Di-n-butylphthalate	ND		ug/kg	180	34.	1
Di-n-octylphthalate	ND		ug/kg	180	62.	1

Project Name: RYE LAKE WFP **Lab Number:** L2129255

Project Number: 41.0162892.00 **Report Date:** 06/14/21

SAMPLE RESULTS

Lab ID: L2129255-04 Date Collected: 06/02/21 08:30

Client ID: B-7 (15'-25') Date Received: 06/02/21

Sample Location: RYE LAKE WFP Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Diethyl phthalate	ND		ug/kg	180	17.	1
Dimethyl phthalate	ND		ug/kg	180	38.	1
Benzo(a)anthracene	ND		ug/kg	110	20.	1
Benzo(a)pyrene	ND		ug/kg	140	44.	1
Benzo(b)fluoranthene	ND		ug/kg	110	31.	1
Benzo(k)fluoranthene	ND		ug/kg	110	29.	1
Chrysene	ND		ug/kg	110	19.	1
Acenaphthylene	ND		ug/kg	140	28.	1
Anthracene	ND		ug/kg	110	36.	1
Benzo(ghi)perylene	ND		ug/kg	140	21.	1
Fluorene	ND		ug/kg	180	18.	1
Phenanthrene	ND		ug/kg	110	22.	1
Dibenzo(a,h)anthracene	ND		ug/kg	110	21.	1
Indeno(1,2,3-cd)pyrene	ND		ug/kg	140	25.	1
Pyrene	ND		ug/kg	110	18.	1
Biphenyl	ND		ug/kg	420	42.	1
4-Chloroaniline	ND		ug/kg	180	33.	1
2-Nitroaniline	ND		ug/kg	180	35.	1
3-Nitroaniline	ND		ug/kg	180	34.	1
4-Nitroaniline	ND		ug/kg	180	75.	1
Dibenzofuran	ND		ug/kg	180	17.	1
2-Methylnaphthalene	ND		ug/kg	220	22.	1
1,2,4,5-Tetrachlorobenzene	ND		ug/kg	180	19.	1
Acetophenone	ND		ug/kg	180	22.	1
2,4,6-Trichlorophenol	ND		ug/kg	110	34.	1
p-Chloro-m-cresol	ND		ug/kg	180	27.	1
2-Chlorophenol	ND		ug/kg	180	22.	1
2,4-Dichlorophenol	ND		ug/kg	160	29.	1
2,4-Dimethylphenol	ND		ug/kg	180	60.	1
2-Nitrophenol	ND		ug/kg	390	68.	1
4-Nitrophenol	ND		ug/kg	260	74.	1
2,4-Dinitrophenol	ND		ug/kg	870	85.	1
4,6-Dinitro-o-cresol	ND		ug/kg	470	87.	1
Pentachlorophenol	ND		ug/kg	140	40.	1
Phenol	ND		ug/kg	180	28.	1
2-Methylphenol	ND		ug/kg	180	28.	1
3-Methylphenol/4-Methylphenol	ND		ug/kg	260	28.	1

Project Name: RYE LAKE WFP
Lab Number: L2129255
Project Number: 41.0162892.00
Report Date: 06/14/21

SAMPLE RESULTS

Lab ID: L2129255-04
Client ID: B-7 (15'-25')
Sample Location: RYE LAKE WFP
Date Collected: 06/02/21 08:30
Date Received: 06/02/21
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
2,4,5-Trichlorophenol	ND		ug/kg	180	35.	1
Benzoic Acid	ND		ug/kg	590	180	1
Benzyl Alcohol	ND		ug/kg	180	56.	1
Carbazole	ND		ug/kg	180	18.	1
1,4-Dioxane	ND		ug/kg	27	8.4	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	68		25-120
Phenol-d6	76		10-120
Nitrobenzene-d5	78		23-120
2-Fluorobiphenyl	70		30-120
2,4,6-Tribromophenol	67		10-136
4-Terphenyl-d14	75		18-120

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2129255
Report Date: 06/14/21

SAMPLE RESULTS

Lab ID: L2129255-08
Client ID: B-2 (15'-25')
Sample Location: RYE LAKE WFP

Date Collected: 06/02/21 09:45
Date Received: 06/02/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D
Analytical Date: 06/08/21 03:37
Analyst: EK
Percent Solids: 89%

Extraction Method: EPA 3546
Extraction Date: 06/04/21 11:32

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Acenaphthene	ND		ug/kg	150	19.	1
1,2,4-Trichlorobenzene	ND		ug/kg	180	21.	1
Hexachlorobenzene	ND		ug/kg	110	21.	1
Bis(2-chloroethyl)ether	ND		ug/kg	160	25.	1
2-Chloronaphthalene	ND		ug/kg	180	18.	1
1,2-Dichlorobenzene	ND		ug/kg	180	33.	1
1,3-Dichlorobenzene	ND		ug/kg	180	32.	1
1,4-Dichlorobenzene	ND		ug/kg	180	32.	1
3,3'-Dichlorobenzidine	ND		ug/kg	180	49.	1
2,4-Dinitrotoluene	ND		ug/kg	180	37.	1
2,6-Dinitrotoluene	ND		ug/kg	180	32.	1
Fluoranthene	ND		ug/kg	110	21.	1
4-Chlorophenyl phenyl ether	ND		ug/kg	180	20.	1
4-Bromophenyl phenyl ether	ND		ug/kg	180	28.	1
Bis(2-chloroisopropyl)ether	ND		ug/kg	220	31.	1
Bis(2-chloroethoxy)methane	ND		ug/kg	200	18.	1
Hexachlorobutadiene	ND		ug/kg	180	27.	1
Hexachlorocyclopentadiene	ND		ug/kg	530	170	1
Hexachloroethane	ND		ug/kg	150	30.	1
Isophorone	ND		ug/kg	160	24.	1
Naphthalene	ND		ug/kg	180	22.	1
Nitrobenzene	ND		ug/kg	160	27.	1
NDPA/DPA	ND		ug/kg	150	21.	1
n-Nitrosodi-n-propylamine	ND		ug/kg	180	28.	1
Bis(2-ethylhexyl)phthalate	ND		ug/kg	180	64.	1
Butyl benzyl phthalate	ND		ug/kg	180	46.	1
Di-n-butylphthalate	ND		ug/kg	180	35.	1
Di-n-octylphthalate	ND		ug/kg	180	63.	1

Project Name: RYE LAKE WFP **Lab Number:** L2129255

Project Number: 41.0162892.00 **Report Date:** 06/14/21

SAMPLE RESULTS

Lab ID: L2129255-08 Date Collected: 06/02/21 09:45

Client ID: B-2 (15'-25') Date Received: 06/02/21

Sample Location: RYE LAKE WFP Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Diethyl phthalate	ND		ug/kg	180	17.	1
Dimethyl phthalate	ND		ug/kg	180	39.	1
Benzo(a)anthracene	ND		ug/kg	110	21.	1
Benzo(a)pyrene	ND		ug/kg	150	45.	1
Benzo(b)fluoranthene	ND		ug/kg	110	31.	1
Benzo(k)fluoranthene	ND		ug/kg	110	29.	1
Chrysene	ND		ug/kg	110	19.	1
Acenaphthylene	ND		ug/kg	150	28.	1
Anthracene	ND		ug/kg	110	36.	1
Benzo(ghi)perylene	ND		ug/kg	150	22.	1
Fluorene	ND		ug/kg	180	18.	1
Phenanthrene	ND		ug/kg	110	22.	1
Dibenzo(a,h)anthracene	ND		ug/kg	110	21.	1
Indeno(1,2,3-cd)pyrene	ND		ug/kg	150	26.	1
Pyrene	ND		ug/kg	110	18.	1
Biphenyl	ND		ug/kg	420	43.	1
4-Chloroaniline	ND		ug/kg	180	34.	1
2-Nitroaniline	ND		ug/kg	180	36.	1
3-Nitroaniline	ND		ug/kg	180	35.	1
4-Nitroaniline	ND		ug/kg	180	76.	1
Dibenzofuran	ND		ug/kg	180	17.	1
2-Methylnaphthalene	ND		ug/kg	220	22.	1
1,2,4,5-Tetrachlorobenzene	ND		ug/kg	180	19.	1
Acetophenone	ND		ug/kg	180	23.	1
2,4,6-Trichlorophenol	ND		ug/kg	110	35.	1
p-Chloro-m-cresol	ND		ug/kg	180	27.	1
2-Chlorophenol	ND		ug/kg	180	22.	1
2,4-Dichlorophenol	ND		ug/kg	160	30.	1
2,4-Dimethylphenol	ND		ug/kg	180	61.	1
2-Nitrophenol	ND		ug/kg	400	69.	1
4-Nitrophenol	ND		ug/kg	260	75.	1
2,4-Dinitrophenol	ND		ug/kg	880	86.	1
4,6-Dinitro-o-cresol	ND		ug/kg	480	88.	1
Pentachlorophenol	ND		ug/kg	150	40.	1
Phenol	ND		ug/kg	180	28.	1
2-Methylphenol	ND		ug/kg	180	28.	1
3-Methylphenol/4-Methylphenol	ND		ug/kg	260	29.	1

Project Name: RYE LAKE WFP
Lab Number: L2129255
Project Number: 41.0162892.00
Report Date: 06/14/21

SAMPLE RESULTS

Lab ID: L2129255-08
Client ID: B-2 (15'-25')
Sample Location: RYE LAKE WFP
Date Collected: 06/02/21 09:45
Date Received: 06/02/21
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
2,4,5-Trichlorophenol	ND		ug/kg	180	35.	1
Benzoic Acid	ND		ug/kg	600	190	1
Benzyl Alcohol	ND		ug/kg	180	56.	1
Carbazole	ND		ug/kg	180	18.	1
1,4-Dioxane	ND		ug/kg	28	8.5	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	62		25-120
Phenol-d6	66		10-120
Nitrobenzene-d5	72		23-120
2-Fluorobiphenyl	62		30-120
2,4,6-Tribromophenol	63		10-136
4-Terphenyl-d14	75		18-120

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2129255
Report Date: 06/14/21

SAMPLE RESULTS

Lab ID: L2129255-12
Client ID: B-29 (0'-10')
Sample Location: RYE LAKE WFP

Date Collected: 06/02/21 12:30
Date Received: 06/02/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D
Analytical Date: 06/08/21 04:01
Analyst: EK
Percent Solids: 88%

Extraction Method: EPA 3546
Extraction Date: 06/04/21 11:32

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Acenaphthene	ND		ug/kg	150	19.	1
1,2,4-Trichlorobenzene	ND		ug/kg	180	21.	1
Hexachlorobenzene	ND		ug/kg	110	21.	1
Bis(2-chloroethyl)ether	ND		ug/kg	170	25.	1
2-Chloronaphthalene	ND		ug/kg	180	18.	1
1,2-Dichlorobenzene	ND		ug/kg	180	33.	1
1,3-Dichlorobenzene	ND		ug/kg	180	32.	1
1,4-Dichlorobenzene	ND		ug/kg	180	32.	1
3,3'-Dichlorobenzidine	ND		ug/kg	180	49.	1
2,4-Dinitrotoluene	ND		ug/kg	180	37.	1
2,6-Dinitrotoluene	ND		ug/kg	180	32.	1
Fluoranthene	26	J	ug/kg	110	21.	1
4-Chlorophenyl phenyl ether	ND		ug/kg	180	20.	1
4-Bromophenyl phenyl ether	ND		ug/kg	180	28.	1
Bis(2-chloroisopropyl)ether	ND		ug/kg	220	32.	1
Bis(2-chloroethoxy)methane	ND		ug/kg	200	19.	1
Hexachlorobutadiene	ND		ug/kg	180	27.	1
Hexachlorocyclopentadiene	ND		ug/kg	530	170	1
Hexachloroethane	ND		ug/kg	150	30.	1
Isophorone	ND		ug/kg	170	24.	1
Naphthalene	ND		ug/kg	180	23.	1
Nitrobenzene	ND		ug/kg	170	28.	1
NDPA/DPA	ND		ug/kg	150	21.	1
n-Nitrosodi-n-propylamine	ND		ug/kg	180	29.	1
Bis(2-ethylhexyl)phthalate	ND		ug/kg	180	64.	1
Butyl benzyl phthalate	ND		ug/kg	180	47.	1
Di-n-butylphthalate	ND		ug/kg	180	35.	1
Di-n-octylphthalate	ND		ug/kg	180	63.	1

Project Name: RYE LAKE WFP **Lab Number:** L2129255

Project Number: 41.0162892.00 **Report Date:** 06/14/21

SAMPLE RESULTS

Lab ID: L2129255-12 Date Collected: 06/02/21 12:30

Client ID: B-29 (0'-10') Date Received: 06/02/21

Sample Location: RYE LAKE WFP Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Diethyl phthalate	ND		ug/kg	180	17.	1
Dimethyl phthalate	ND		ug/kg	180	39.	1
Benzo(a)anthracene	ND		ug/kg	110	21.	1
Benzo(a)pyrene	ND		ug/kg	150	45.	1
Benzo(b)fluoranthene	ND		ug/kg	110	31.	1
Benzo(k)fluoranthene	ND		ug/kg	110	30.	1
Chrysene	ND		ug/kg	110	19.	1
Acenaphthylene	ND		ug/kg	150	29.	1
Anthracene	ND		ug/kg	110	36.	1
Benzo(ghi)perylene	ND		ug/kg	150	22.	1
Fluorene	ND		ug/kg	180	18.	1
Phenanthrene	31	J	ug/kg	110	23.	1
Dibenzo(a,h)anthracene	ND		ug/kg	110	21.	1
Indeno(1,2,3-cd)pyrene	ND		ug/kg	150	26.	1
Pyrene	22	J	ug/kg	110	18.	1
Biphenyl	ND		ug/kg	420	43.	1
4-Chloroaniline	ND		ug/kg	180	34.	1
2-Nitroaniline	ND		ug/kg	180	36.	1
3-Nitroaniline	ND		ug/kg	180	35.	1
4-Nitroaniline	ND		ug/kg	180	77.	1
Dibenzofuran	ND		ug/kg	180	18.	1
2-Methylnaphthalene	ND		ug/kg	220	22.	1
1,2,4,5-Tetrachlorobenzene	ND		ug/kg	180	19.	1
Acetophenone	ND		ug/kg	180	23.	1
2,4,6-Trichlorophenol	ND		ug/kg	110	35.	1
p-Chloro-m-cresol	ND		ug/kg	180	28.	1
2-Chlorophenol	ND		ug/kg	180	22.	1
2,4-Dichlorophenol	ND		ug/kg	170	30.	1
2,4-Dimethylphenol	ND		ug/kg	180	61.	1
2-Nitrophenol	ND		ug/kg	400	70.	1
4-Nitrophenol	ND		ug/kg	260	76.	1
2,4-Dinitrophenol	ND		ug/kg	890	87.	1
4,6-Dinitro-o-cresol	ND		ug/kg	480	89.	1
Pentachlorophenol	ND		ug/kg	150	41.	1
Phenol	ND		ug/kg	180	28.	1
2-Methylphenol	ND		ug/kg	180	29.	1
3-Methylphenol/4-Methylphenol	ND		ug/kg	270	29.	1

Project Name: RYE LAKE WFP
Lab Number: L2129255
Project Number: 41.0162892.00
Report Date: 06/14/21

SAMPLE RESULTS

Lab ID: L2129255-12
Client ID: B-29 (0'-10')
Sample Location: RYE LAKE WFP
Date Collected: 06/02/21 12:30
Date Received: 06/02/21
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
2,4,5-Trichlorophenol	ND		ug/kg	180	36.	1
Benzoic Acid	ND		ug/kg	600	190	1
Benzyl Alcohol	ND		ug/kg	180	57.	1
Carbazole	ND		ug/kg	180	18.	1
1,4-Dioxane	ND		ug/kg	28	8.5	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	72		25-120
Phenol-d6	78		10-120
Nitrobenzene-d5	80		23-120
2-Fluorobiphenyl	69		30-120
2,4,6-Tribromophenol	67		10-136
4-Terphenyl-d14	72		18-120

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2129255
Report Date: 06/14/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 06/07/21 02:47
Analyst: SZ

Extraction Method: EPA 3546
Extraction Date: 06/04/21 11:32

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 04,08,12 Batch: WG1507657-1					
Acenaphthene	ND		ug/kg	130	17.
1,2,4-Trichlorobenzene	ND		ug/kg	160	19.
Hexachlorobenzene	ND		ug/kg	99	18.
Bis(2-chloroethyl)ether	ND		ug/kg	150	22.
2-Chloronaphthalene	ND		ug/kg	160	16.
1,2-Dichlorobenzene	ND		ug/kg	160	30.
1,3-Dichlorobenzene	ND		ug/kg	160	28.
1,4-Dichlorobenzene	ND		ug/kg	160	29.
3,3'-Dichlorobenzidine	ND		ug/kg	160	44.
2,4-Dinitrotoluene	ND		ug/kg	160	33.
2,6-Dinitrotoluene	ND		ug/kg	160	28.
Fluoranthene	ND		ug/kg	99	19.
4-Chlorophenyl phenyl ether	ND		ug/kg	160	18.
4-Bromophenyl phenyl ether	ND		ug/kg	160	25.
Bis(2-chloroisopropyl)ether	ND		ug/kg	200	28.
Bis(2-chloroethoxy)methane	ND		ug/kg	180	16.
Hexachlorobutadiene	ND		ug/kg	160	24.
Hexachlorocyclopentadiene	ND		ug/kg	470	150
Hexachloroethane	ND		ug/kg	130	27.
Isophorone	ND		ug/kg	150	21.
Naphthalene	ND		ug/kg	160	20.
Nitrobenzene	ND		ug/kg	150	24.
NDPA/DPA	ND		ug/kg	130	19.
n-Nitrosodi-n-propylamine	ND		ug/kg	160	26.
Bis(2-ethylhexyl)phthalate	ND		ug/kg	160	57.
Butyl benzyl phthalate	ND		ug/kg	160	42.
Di-n-butylphthalate	ND		ug/kg	160	31.
Di-n-octylphthalate	ND		ug/kg	160	56.
Diethyl phthalate	ND		ug/kg	160	15.

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2129255
Report Date: 06/14/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 06/07/21 02:47
Analyst: SZ

Extraction Method: EPA 3546
Extraction Date: 06/04/21 11:32

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 04,08,12 Batch: WG1507657-1					
Dimethyl phthalate	ND		ug/kg	160	35.
Benzo(a)anthracene	ND		ug/kg	99	19.
Benzo(a)pyrene	ND		ug/kg	130	40.
Benzo(b)fluoranthene	ND		ug/kg	99	28.
Benzo(k)fluoranthene	ND		ug/kg	99	26.
Chrysene	ND		ug/kg	99	17.
Acenaphthylene	ND		ug/kg	130	26.
Anthracene	ND		ug/kg	99	32.
Benzo(ghi)perylene	ND		ug/kg	130	19.
Fluorene	ND		ug/kg	160	16.
Phenanthrene	ND		ug/kg	99	20.
Dibenzo(a,h)anthracene	ND		ug/kg	99	19.
Indeno(1,2,3-cd)pyrene	ND		ug/kg	130	23.
Pyrene	ND		ug/kg	99	16.
Biphenyl	ND		ug/kg	380	38.
4-Chloroaniline	ND		ug/kg	160	30.
2-Nitroaniline	ND		ug/kg	160	32.
3-Nitroaniline	ND		ug/kg	160	31.
4-Nitroaniline	ND		ug/kg	160	68.
Dibenzofuran	ND		ug/kg	160	16.
2-Methylnaphthalene	ND		ug/kg	200	20.
1,2,4,5-Tetrachlorobenzene	ND		ug/kg	160	17.
Acetophenone	ND		ug/kg	160	20.
2,4,6-Trichlorophenol	ND		ug/kg	99	31.
p-Chloro-m-cresol	ND		ug/kg	160	25.
2-Chlorophenol	ND		ug/kg	160	20.
2,4-Dichlorophenol	ND		ug/kg	150	27.
2,4-Dimethylphenol	ND		ug/kg	160	55.
2-Nitrophenol	ND		ug/kg	360	62.

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2129255
Report Date: 06/14/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 06/07/21 02:47
Analyst: SZ

Extraction Method: EPA 3546
Extraction Date: 06/04/21 11:32

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 04,08,12 Batch: WG1507657-1					
4-Nitrophenol	ND		ug/kg	230	68.
2,4-Dinitrophenol	ND		ug/kg	790	77.
4,6-Dinitro-o-cresol	ND		ug/kg	430	79.
Pentachlorophenol	ND		ug/kg	130	36.
Phenol	ND		ug/kg	160	25.
2-Methylphenol	ND		ug/kg	160	26.
3-Methylphenol/4-Methylphenol	ND		ug/kg	240	26.
2,4,5-Trichlorophenol	ND		ug/kg	160	32.
Benzoic Acid	ND		ug/kg	540	170
Benzyl Alcohol	ND		ug/kg	160	51.
Carbazole	ND		ug/kg	160	16.
1,4-Dioxane	ND		ug/kg	25	7.6

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	91		25-120
Phenol-d6	89		10-120
Nitrobenzene-d5	89		23-120
2-Fluorobiphenyl	85		30-120
2,4,6-Tribromophenol	97		10-136
4-Terphenyl-d14	101		18-120

Lab Control Sample Analysis

Batch Quality Control

Project Name: RYE LAKE WFP

Project Number: 41.0162892.00

Lab Number: L2129255

Report Date: 06/14/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 04,08,12 Batch: WG1507657-2 WG1507657-3								
Acenaphthene	99		99		31-137	0		50
1,2,4-Trichlorobenzene	93		92		38-107	1		50
Hexachlorobenzene	90		91		40-140	1		50
Bis(2-chloroethyl)ether	96		91		40-140	5		50
2-Chloronaphthalene	93		92		40-140	1		50
1,2-Dichlorobenzene	89		86		40-140	3		50
1,3-Dichlorobenzene	87		84		40-140	4		50
1,4-Dichlorobenzene	88		85		28-104	3		50
3,3'-Dichlorobenzidine	89		88		40-140	1		50
2,4-Dinitrotoluene	107		104		40-132	3		50
2,6-Dinitrotoluene	111		109		40-140	2		50
Fluoranthene	102		102		40-140	0		50
4-Chlorophenyl phenyl ether	95		96		40-140	1		50
4-Bromophenyl phenyl ether	94		94		40-140	0		50
Bis(2-chloroisopropyl)ether	101		99		40-140	2		50
Bis(2-chloroethoxy)methane	92		90		40-117	2		50
Hexachlorobutadiene	84		83		40-140	1		50
Hexachlorocyclopentadiene	85		86		40-140	1		50
Hexachloroethane	89		87		40-140	2		50
Isophorone	86		84		40-140	2		50
Naphthalene	91		88		40-140	3		50
Nitrobenzene	96		95		40-140	1		50
NDPA/DPA	101		100		36-157	1		50

Lab Control Sample Analysis

Batch Quality Control

Project Name: RYE LAKE WFP

Project Number: 41.0162892.00

Lab Number: L2129255

Report Date: 06/14/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 04,08,12 Batch: WG1507657-2 WG1507657-3								
n-Nitrosodi-n-propylamine	90		89		32-121	1		50
Bis(2-ethylhexyl)phthalate	110		107		40-140	3		50
Butyl benzyl phthalate	123		122		40-140	1		50
Di-n-butylphthalate	106		106		40-140	0		50
Di-n-octylphthalate	116		112		40-140	4		50
Diethyl phthalate	98		97		40-140	1		50
Dimethyl phthalate	93		93		40-140	0		50
Benzo(a)anthracene	97		95		40-140	2		50
Benzo(a)pyrene	103		99		40-140	4		50
Benzo(b)fluoranthene	103		100		40-140	3		50
Benzo(k)fluoranthene	103		98		40-140	5		50
Chrysene	98		96		40-140	2		50
Acenaphthylene	88		87		40-140	1		50
Anthracene	101		100		40-140	1		50
Benzo(ghi)perylene	103		99		40-140	4		50
Fluorene	98		98		40-140	0		50
Phenanthrene	99		98		40-140	1		50
Dibenzo(a,h)anthracene	104		102		40-140	2		50
Indeno(1,2,3-cd)pyrene	104		99		40-140	5		50
Pyrene	104		102		35-142	2		50
Biphenyl	96		94		37-127	2		50
4-Chloroaniline	66		67		40-140	2		50
2-Nitroaniline	115		115		47-134	0		50

Lab Control Sample Analysis
Batch Quality Control

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2129255
Report Date: 06/14/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 04,08,12 Batch: WG1507657-2 WG1507657-3								
3-Nitroaniline	102		102		26-129	0		50
4-Nitroaniline	115		115		41-125	0		50
Dibenzofuran	95		94		40-140	1		50
2-Methylnaphthalene	92		92		40-140	0		50
1,2,4,5-Tetrachlorobenzene	90		89		40-117	1		50
Acetophenone	92		90		14-144	2		50
2,4,6-Trichlorophenol	99		98		30-130	1		50
p-Chloro-m-cresol	99		95		26-103	4		50
2-Chlorophenol	**105**	Q	102		25-102	3		50
2,4-Dichlorophenol	104		100		30-130	4		50
2,4-Dimethylphenol	97		95		30-130	2		50
2-Nitrophenol	**140**	Q	**138**	Q	30-130	1		50
4-Nitrophenol	108		106		11-114	2		50
2,4-Dinitrophenol	126		127		4-130	1		50
4,6-Dinitro-o-cresol	**131**	Q	**131**	Q	10-130	0		50
Pentachlorophenol	86		88		17-109	2		50
Phenol	**101**	Q	**97**	Q	26-90	4		50
2-Methylphenol	105		104		30-130.	1		50
3-Methylphenol/4-Methylphenol	105		102		30-130	3		50
2,4,5-Trichlorophenol	103		102		30-130	1		50
Benzoic Acid	58		60		10-110	3		50
Benzyl Alcohol	96		95		40-140	1		50
Carbazole	103		101		54-128	2		50

Lab Control Sample Analysis

Batch Quality Control

Project Name: RYE LAKE WFP

Project Number: 41.0162892.00

Lab Number: L2129255

Report Date: 06/14/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 04,08,12 Batch: WG1507657-2 WG1507657-3								
1,4-Dioxane	60		56		40-140	7		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	106		102		25-120
Phenol-d6	104		98		10-120
Nitrobenzene-d5	99		97		23-120
2-Fluorobiphenyl	89		87		30-120
2,4,6-Tribromophenol	97		98		10-136
4-Terphenyl-d14	103		100		18-120

PCBS

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2129255
Report Date: 06/14/21

SAMPLE RESULTS

Lab ID: L2129255-04
Client ID: B-7 (15'-25')
Sample Location: RYE LAKE WFP

Date Collected: 06/02/21 08:30
Date Received: 06/02/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8082A
Analytical Date: 06/11/21 11:36
Analyst: CW
Percent Solids: 91%

Extraction Method: EPA 3546
Extraction Date: 06/10/21 14:19
Cleanup Method: EPA 3665A
Cleanup Date: 06/10/21
Cleanup Method: EPA 3660B
Cleanup Date: 06/11/21

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Polychlorinated Biphenyls by GC - Westborough Lab							
Aroclor 1016	ND		ug/kg	35.0	3.11	1	A
Aroclor 1221	ND		ug/kg	35.0	3.51	1	A
Aroclor 1232	ND		ug/kg	35.0	7.42	1	A
Aroclor 1242	ND		ug/kg	35.0	4.72	1	A
Aroclor 1248	ND		ug/kg	35.0	5.25	1	A
Aroclor 1254	ND		ug/kg	35.0	3.83	1	A
Aroclor 1260	ND		ug/kg	35.0	6.47	1	A
Aroclor 1262	ND		ug/kg	35.0	4.45	1	A
Aroclor 1268	ND		ug/kg	35.0	3.63	1	A
PCBs, Total	ND		ug/kg	35.0	3.11	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	84		30-150	A
Decachlorobiphenyl	76		30-150	A
2,4,5,6-Tetrachloro-m-xylene	86		30-150	B
Decachlorobiphenyl	68		30-150	B

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2129255
Report Date: 06/14/21

SAMPLE RESULTS

Lab ID: L2129255-08
Client ID: B-2 (15'-25')
Sample Location: RYE LAKE WFP

Date Collected: 06/02/21 09:45
Date Received: 06/02/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8082A
Analytical Date: 06/11/21 11:43
Analyst: CW
Percent Solids: 89%

Extraction Method: EPA 3546
Extraction Date: 06/10/21 14:19
Cleanup Method: EPA 3665A
Cleanup Date: 06/10/21
Cleanup Method: EPA 3660B
Cleanup Date: 06/11/21

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Polychlorinated Biphenyls by GC - Westborough Lab							
Aroclor 1016	ND		ug/kg	35.6	3.16	1	A
Aroclor 1221	ND		ug/kg	35.6	3.56	1	A
Aroclor 1232	ND		ug/kg	35.6	7.54	1	A
Aroclor 1242	ND		ug/kg	35.6	4.79	1	A
Aroclor 1248	ND		ug/kg	35.6	5.33	1	A
Aroclor 1254	ND		ug/kg	35.6	3.89	1	A
Aroclor 1260	ND		ug/kg	35.6	6.57	1	A
Aroclor 1262	ND		ug/kg	35.6	4.52	1	A
Aroclor 1268	ND		ug/kg	35.6	3.68	1	A
PCBs, Total	ND		ug/kg	35.6	3.16	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	78		30-150	A
Decachlorobiphenyl	70		30-150	A
2,4,5,6-Tetrachloro-m-xylene	80		30-150	B
Decachlorobiphenyl	71		30-150	B

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2129255
Report Date: 06/14/21

SAMPLE RESULTS

Lab ID: L2129255-12
Client ID: B-29 (0'-10')
Sample Location: RYE LAKE WFP

Date Collected: 06/02/21 12:30
Date Received: 06/02/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8082A
Analytical Date: 06/11/21 11:50
Analyst: CW
Percent Solids: 88%

Extraction Method: EPA 3546
Extraction Date: 06/10/21 14:19
Cleanup Method: EPA 3665A
Cleanup Date: 06/10/21
Cleanup Method: EPA 3660B
Cleanup Date: 06/11/21

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Polychlorinated Biphenyls by GC - Westborough Lab							
Aroclor 1016	ND		ug/kg	37.4	3.32	1	A
Aroclor 1221	ND		ug/kg	37.4	3.75	1	A
Aroclor 1232	ND		ug/kg	37.4	7.93	1	A
Aroclor 1242	ND		ug/kg	37.4	5.04	1	A
Aroclor 1248	ND		ug/kg	37.4	5.61	1	A
Aroclor 1254	ND		ug/kg	37.4	4.09	1	A
Aroclor 1260	ND		ug/kg	37.4	6.91	1	A
Aroclor 1262	ND		ug/kg	37.4	4.75	1	A
Aroclor 1268	ND		ug/kg	37.4	3.87	1	A
PCBs, Total	ND		ug/kg	37.4	3.32	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	92		30-150	A
Decachlorobiphenyl	86		30-150	A
2,4,5,6-Tetrachloro-m-xylene	91		30-150	B
Decachlorobiphenyl	84		30-150	B

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2129255
Report Date: 06/14/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8082A
Analytical Date: 06/11/21 11:14
Analyst: CW

Extraction Method: EPA 3546
Extraction Date: 06/10/21 12:40
Cleanup Method: EPA 3665A
Cleanup Date: 06/10/21
Cleanup Method: EPA 3660B
Cleanup Date: 06/11/21

Parameter	Result	Qualifier	Units	RL	MDL	Column
Polychlorinated Biphenyls by GC - Westborough Lab for sample(s): 04,08,12 Batch: WG1510358-1						
Aroclor 1016	ND		ug/kg	32.3	2.87	A
Aroclor 1221	ND		ug/kg	32.3	3.24	A
Aroclor 1232	ND		ug/kg	32.3	6.86	A
Aroclor 1242	ND		ug/kg	32.3	4.36	A
Aroclor 1248	ND		ug/kg	32.3	4.85	A
Aroclor 1254	ND		ug/kg	32.3	3.54	A
Aroclor 1260	ND		ug/kg	32.3	5.98	A
Aroclor 1262	ND		ug/kg	32.3	4.11	A
Aroclor 1268	5.07	J	ug/kg	32.3	3.35	B
PCBs, Total	5.07	J	ug/kg	32.3	2.87	B

Surrogate	%Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	77		30-150	A
Decachlorobiphenyl	68		30-150	A
2,4,5,6-Tetrachloro-m-xylene	79		30-150	B
Decachlorobiphenyl	71		30-150	B

Lab Control Sample Analysis

Batch Quality Control

Project Name: RYE LAKE WFP

Project Number: 41.0162892.00

Lab Number: L2129255

Report Date: 06/14/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
Polychlorinated Biphenyls by GC - Westborough Lab Associated sample(s): 04,08,12 Batch: WG1510358-2 WG1510358-3									
Aroclor 1016	67		65		40-140	3		50	A
Aroclor 1260	64		62		40-140	3		50	A

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	71		70		30-150	A
Decachlorobiphenyl	68		66		30-150	A
2,4,5,6-Tetrachloro-m-xylene	74		72		30-150	B
Decachlorobiphenyl	68		66		30-150	B

PESTICIDES

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2129255
Report Date: 06/14/21

SAMPLE RESULTS

Lab ID: L2129255-04
Client ID: B-7 (15'-25')
Sample Location: RYE LAKE WFP

Date Collected: 06/02/21 08:30
Date Received: 06/02/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8081B
Analytical Date: 06/05/21 16:29
Analyst: JMC
Percent Solids: 91%

Extraction Method: EPA 3546
Extraction Date: 06/04/21 09:53
Cleanup Method: EPA 3620B
Cleanup Date: 06/04/21

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Organochlorine Pesticides by GC - Westborough Lab							
Delta-BHC	ND		ug/kg	1.74	0.341	1	A
Lindane	ND		ug/kg	0.726	0.325	1	A
Alpha-BHC	ND		ug/kg	0.726	0.206	1	A
Beta-BHC	ND		ug/kg	1.74	0.661	1	A
Heptachlor	ND		ug/kg	0.872	0.391	1	A
Aldrin	ND		ug/kg	1.74	0.614	1	A
Heptachlor epoxide	ND		ug/kg	3.27	0.980	1	A
Endrin	ND		ug/kg	0.726	0.298	1	A
Endrin aldehyde	ND		ug/kg	2.18	0.763	1	A
Endrin ketone	ND		ug/kg	1.74	0.449	1	A
Dieldrin	ND		ug/kg	1.09	0.545	1	A
4,4'-DDE	ND		ug/kg	1.74	0.403	1	A
4,4'-DDD	ND		ug/kg	1.74	0.622	1	A
4,4'-DDT	ND		ug/kg	3.27	1.40	1	A
Endosulfan I	ND		ug/kg	1.74	0.412	1	A
Endosulfan II	ND		ug/kg	1.74	0.582	1	A
Endosulfan sulfate	ND		ug/kg	0.726	0.346	1	A
Methoxychlor	ND		ug/kg	3.27	1.02	1	A
Toxaphene	ND		ug/kg	32.7	9.15	1	A
cis-Chlordane	ND		ug/kg	2.18	0.607	1	A
trans-Chlordane	ND		ug/kg	2.18	0.575	1	A
Chlordane	ND		ug/kg	14.5	5.77	1	A

Project Name: RYE LAKE WFP **Lab Number:** L2129255

Project Number: 41.0162892.00 **Report Date:** 06/14/21

SAMPLE RESULTS

Lab ID: L2129255-04 Date Collected: 06/02/21 08:30

Client ID: B-7 (15'-25') Date Received: 06/02/21

Sample Location: RYE LAKE WFP Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Organochlorine Pesticides by GC - Westborough Lab							

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	62		30-150	A
Decachlorobiphenyl	68		30-150	A
2,4,5,6-Tetrachloro-m-xylene	62		30-150	B
Decachlorobiphenyl	73		30-150	B

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2129255
Report Date: 06/14/21

SAMPLE RESULTS

Lab ID: L2129255-08
Client ID: B-2 (15'-25')
Sample Location: RYE LAKE WFP

Date Collected: 06/02/21 09:45
Date Received: 06/02/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8081B
Analytical Date: 06/05/21 16:40
Analyst: JMC
Percent Solids: 89%

Extraction Method: EPA 3546
Extraction Date: 06/04/21 09:53
Cleanup Method: EPA 3620B
Cleanup Date: 06/04/21

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Organochlorine Pesticides by GC - Westborough Lab							
Delta-BHC	ND		ug/kg	1.72	0.337	1	A
Lindane	ND		ug/kg	0.717	0.321	1	A
Alpha-BHC	ND		ug/kg	0.717	0.204	1	A
Beta-BHC	ND		ug/kg	1.72	0.653	1	A
Heptachlor	ND		ug/kg	0.861	0.386	1	A
Aldrin	ND		ug/kg	1.72	0.606	1	A
Heptachlor epoxide	ND		ug/kg	3.23	0.969	1	A
Endrin	ND		ug/kg	0.717	0.294	1	A
Endrin aldehyde	ND		ug/kg	2.15	0.753	1	A
Endrin ketone	ND		ug/kg	1.72	0.443	1	A
Dieldrin	ND		ug/kg	1.08	0.538	1	A
4,4'-DDE	ND		ug/kg	1.72	0.398	1	A
4,4'-DDD	ND		ug/kg	1.72	0.614	1	A
4,4'-DDT	ND		ug/kg	3.23	1.38	1	A
Endosulfan I	ND		ug/kg	1.72	0.407	1	A
Endosulfan II	ND		ug/kg	1.72	0.575	1	A
Endosulfan sulfate	ND		ug/kg	0.717	0.342	1	A
Methoxychlor	ND		ug/kg	3.23	1.00	1	A
Toxaphene	ND		ug/kg	32.3	9.04	1	A
cis-Chlordane	ND		ug/kg	2.15	0.600	1	A
trans-Chlordane	ND		ug/kg	2.15	0.568	1	A
Chlordane	ND		ug/kg	14.3	5.70	1	A

Project Name: RYE LAKE WFP **Lab Number:** L2129255

Project Number: 41.0162892.00 **Report Date:** 06/14/21

SAMPLE RESULTS

Lab ID: L2129255-08 Date Collected: 06/02/21 09:45

Client ID: B-2 (15'-25') Date Received: 06/02/21

Sample Location: RYE LAKE WFP Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Organochlorine Pesticides by GC - Westborough Lab							

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	68		30-150	A
Decachlorobiphenyl	67		30-150	A
2,4,5,6-Tetrachloro-m-xylene	69		30-150	B
Decachlorobiphenyl	73		30-150	B

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2129255
Report Date: 06/14/21

SAMPLE RESULTS

Lab ID: L2129255-12
Client ID: B-29 (0'-10')
Sample Location: RYE LAKE WFP

Date Collected: 06/02/21 12:30
Date Received: 06/02/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8081B
Analytical Date: 06/05/21 16:51
Analyst: JMC
Percent Solids: 88%

Extraction Method: EPA 3546
Extraction Date: 06/04/21 09:53
Cleanup Method: EPA 3620B
Cleanup Date: 06/04/21

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Organochlorine Pesticides by GC - Westborough Lab							
Delta-BHC	ND		ug/kg	1.76	0.344	1	A
Lindane	ND		ug/kg	0.732	0.327	1	A
Alpha-BHC	ND		ug/kg	0.732	0.208	1	A
Beta-BHC	ND		ug/kg	1.76	0.666	1	A
Heptachlor	ND		ug/kg	0.878	0.394	1	A
Aldrin	ND		ug/kg	1.76	0.618	1	A
Heptachlor epoxide	ND		ug/kg	3.29	0.988	1	A
Endrin	ND		ug/kg	0.732	0.300	1	A
Endrin aldehyde	ND		ug/kg	2.19	0.768	1	A
Endrin ketone	ND		ug/kg	1.76	0.452	1	A
Dieldrin	ND		ug/kg	1.10	0.549	1	A
4,4'-DDE	ND		ug/kg	1.76	0.406	1	A
4,4'-DDD	ND		ug/kg	1.76	0.626	1	A
4,4'-DDT	ND		ug/kg	3.29	1.41	1	A
Endosulfan I	ND		ug/kg	1.76	0.415	1	A
Endosulfan II	ND		ug/kg	1.76	0.587	1	A
Endosulfan sulfate	ND		ug/kg	0.732	0.348	1	A
Methoxychlor	ND		ug/kg	3.29	1.02	1	A
Toxaphene	ND		ug/kg	32.9	9.22	1	A
cis-Chlordane	ND		ug/kg	2.19	0.612	1	A
trans-Chlordane	ND		ug/kg	2.19	0.579	1	A
Chlordane	ND		ug/kg	14.6	5.82	1	A

Project Name: RYE LAKE WFP **Lab Number:** L2129255

Project Number: 41.0162892.00 **Report Date:** 06/14/21

SAMPLE RESULTS

Lab ID: L2129255-12 Date Collected: 06/02/21 12:30

Client ID: B-29 (0'-10') Date Received: 06/02/21

Sample Location: RYE LAKE WFP Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Organochlorine Pesticides by GC - Westborough Lab							

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	66		30-150	A
Decachlorobiphenyl	65		30-150	A
2,4,5,6-Tetrachloro-m-xylene	63		30-150	B
Decachlorobiphenyl	70		30-150	B

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2129255
Report Date: 06/14/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8081B
Analytical Date: 06/04/21 21:22
Analyst: JMC

Extraction Method: EPA 3546
Extraction Date: 06/04/21 09:53
Cleanup Method: EPA 3620B
Cleanup Date: 06/04/21

Parameter	Result	Qualifier	Units	RL	MDL	Column
Organochlorine Pesticides by GC - Westborough Lab for sample(s): 04,08,12 Batch: WG1507591-1						
Delta-BHC	ND		ug/kg	1.52	0.297	A
Lindane	ND		ug/kg	0.632	0.282	A
Alpha-BHC	ND		ug/kg	0.632	0.179	A
Beta-BHC	ND		ug/kg	1.52	0.575	A
Heptachlor	ND		ug/kg	0.758	0.340	A
Aldrin	ND		ug/kg	1.52	0.534	A
Heptachlor epoxide	ND		ug/kg	2.84	0.853	A
Endrin	ND		ug/kg	0.632	0.259	A
Endrin aldehyde	ND		ug/kg	1.90	0.663	A
Endrin ketone	ND		ug/kg	1.52	0.390	A
Dieldrin	ND		ug/kg	0.948	0.474	A
4,4'-DDE	ND		ug/kg	1.52	0.351	A
4,4'-DDD	ND		ug/kg	1.52	0.541	A
4,4'-DDT	ND		ug/kg	2.84	1.22	A
Endosulfan I	ND		ug/kg	1.52	0.358	A
Endosulfan II	ND		ug/kg	1.52	0.507	A
Endosulfan sulfate	ND		ug/kg	0.632	0.301	A
Methoxychlor	ND		ug/kg	2.84	0.884	A
Toxaphene	ND		ug/kg	28.4	7.96	A
cis-Chlordane	ND		ug/kg	1.90	0.528	A
trans-Chlordane	ND		ug/kg	1.90	0.500	A
Chlordane	ND		ug/kg	12.6	5.02	A

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2129255
Report Date: 06/14/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8081B
Analytical Date: 06/04/21 21:22
Analyst: JMC

Extraction Method: EPA 3546
Extraction Date: 06/04/21 09:53
Cleanup Method: EPA 3620B
Cleanup Date: 06/04/21

Parameter	Result	Qualifier	Units	RL	MDL	Column
Organochlorine Pesticides by GC - Westborough Lab for sample(s): 04,08,12 Batch: WG1507591-1						

Surrogate	%Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	74		30-150	A
Decachlorobiphenyl	68		30-150	A
2,4,5,6-Tetrachloro-m-xylene	70		30-150	B
Decachlorobiphenyl	72		30-150	B

Lab Control Sample Analysis

Batch Quality Control

Project Name: RYE LAKE WFP

Project Number: 41.0162892.00

Lab Number: L2129255

Report Date: 06/14/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
Organochlorine Pesticides by GC - Westborough Lab Associated sample(s): 04,08,12 Batch: WG1507591-2 WG1507591-3									
Delta-BHC	75		88		30-150	16		30	A
Lindane	75		88		30-150	16		30	A
Alpha-BHC	79		93		30-150	16		30	A
Beta-BHC	66		76		30-150	14		30	A
Heptachlor	75		84		30-150	11		30	A
Aldrin	76		90		30-150	17		30	A
Heptachlor epoxide	70		81		30-150	15		30	A
Endrin	77		90		30-150	16		30	A
Endrin aldehyde	50		60		30-150	18		30	A
Endrin ketone	65		76		30-150	16		30	A
Dieldrin	81		95		30-150	16		30	A
4,4'-DDE	78		89		30-150	13		30	A
4,4'-DDD	75		89		30-150	17		30	A
4,4'-DDT	65		77		30-150	17		30	A
Endosulfan I	71		82		30-150	14		30	A
Endosulfan II	74		86		30-150	15		30	A
Endosulfan sulfate	57		66		30-150	15		30	A
Methoxychlor	52		61		30-150	16		30	A
cis-Chlordane	62		70		30-150	12		30	A
trans-Chlordane	78		90		30-150	14		30	A

Lab Control Sample Analysis
Batch Quality Control

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2129255
Report Date: 06/14/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Organochlorine Pesticides by GC - Westborough Lab Associated sample(s): 04,08,12 Batch: WG1507591-2 WG1507591-3								

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	75		82		30-150	A
Decachlorobiphenyl	75		83		30-150	A
2,4,5,6-Tetrachloro-m-xylene	70		78		30-150	B
Decachlorobiphenyl	78		91		30-150	B

METALS

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2129255
Report Date: 06/14/21

SAMPLE RESULTS

Lab ID: L2129255-04
Client ID: B-7 (15'-25')
Sample Location: RYE LAKE WFP
Date Collected: 06/02/21 08:30
Date Received: 06/02/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 91%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Aluminum, Total	6140		mg/kg	8.53	2.30	2	06/08/21 21:45	06/09/21 19:32	EPA 3050B	1,6010D	BV
Antimony, Total	ND		mg/kg	4.26	0.324	2	06/08/21 21:45	06/09/21 19:32	EPA 3050B	1,6010D	BV
Arsenic, Total	0.998		mg/kg	0.853	0.177	2	06/08/21 21:45	06/09/21 19:32	EPA 3050B	1,6010D	BV
Barium, Total	104		mg/kg	0.853	0.148	2	06/08/21 21:45	06/09/21 19:32	EPA 3050B	1,6010D	BV
Beryllium, Total	0.230	J	mg/kg	0.426	0.028	2	06/08/21 21:45	06/09/21 19:32	EPA 3050B	1,6010D	BV
Cadmium, Total	0.341	J	mg/kg	0.853	0.084	2	06/08/21 21:45	06/09/21 19:32	EPA 3050B	1,6010D	BV
Calcium, Total	1860		mg/kg	8.53	2.98	2	06/08/21 21:45	06/09/21 19:32	EPA 3050B	1,6010D	BV
Chromium, Total	19.7		mg/kg	0.853	0.082	2	06/08/21 21:45	06/09/21 19:32	EPA 3050B	1,6010D	BV
Cobalt, Total	6.86		mg/kg	1.70	0.142	2	06/08/21 21:45	06/09/21 19:32	EPA 3050B	1,6010D	BV
Copper, Total	12.7		mg/kg	0.853	0.220	2	06/08/21 21:45	06/09/21 19:32	EPA 3050B	1,6010D	BV
Iron, Total	13700		mg/kg	4.26	0.770	2	06/08/21 21:45	06/09/21 19:32	EPA 3050B	1,6010D	BV
Lead, Total	3.55	J	mg/kg	4.26	0.228	2	06/08/21 21:45	06/09/21 19:32	EPA 3050B	1,6010D	BV
Magnesium, Total	2710		mg/kg	8.53	1.31	2	06/08/21 21:45	06/09/21 19:32	EPA 3050B	1,6010D	BV
Manganese, Total	164		mg/kg	0.853	0.136	2	06/08/21 21:45	06/09/21 19:32	EPA 3050B	1,6010D	BV
Mercury, Total	ND		mg/kg	0.076	0.050	1	06/08/21 22:50	06/10/21 14:39	EPA 7471B	1,7471B	OU
Nickel, Total	10.6		mg/kg	2.13	0.206	2	06/08/21 21:45	06/09/21 19:32	EPA 3050B	1,6010D	BV
Potassium, Total	2260		mg/kg	213	12.3	2	06/08/21 21:45	06/09/21 19:32	EPA 3050B	1,6010D	BV
Selenium, Total	0.239	J	mg/kg	1.70	0.220	2	06/08/21 21:45	06/09/21 19:32	EPA 3050B	1,6010D	BV
Silver, Total	ND		mg/kg	0.853	0.241	2	06/08/21 21:45	06/09/21 19:32	EPA 3050B	1,6010D	BV
Sodium, Total	101	J	mg/kg	170	2.68	2	06/08/21 21:45	06/09/21 19:32	EPA 3050B	1,6010D	BV
Thallium, Total	ND		mg/kg	1.70	0.268	2	06/08/21 21:45	06/09/21 19:32	EPA 3050B	1,6010D	BV
Vanadium, Total	28.3		mg/kg	0.853	0.173	2	06/08/21 21:45	06/09/21 19:32	EPA 3050B	1,6010D	BV
Zinc, Total	27.6		mg/kg	4.26	0.250	2	06/08/21 21:45	06/09/21 19:32	EPA 3050B	1,6010D	BV

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2129255
Report Date: 06/14/21

SAMPLE RESULTS

Lab ID: L2129255-08
Client ID: B-2 (15'-25')
Sample Location: RYE LAKE WFP
Date Collected: 06/02/21 09:45
Date Received: 06/02/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 89%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Aluminum, Total	5780		mg/kg	8.55	2.31	2	06/08/21 21:45	06/09/21 19:37	EPA 3050B	1,6010D	BV
Antimony, Total	ND		mg/kg	4.28	0.325	2	06/08/21 21:45	06/09/21 19:37	EPA 3050B	1,6010D	BV
Arsenic, Total	0.941		mg/kg	0.855	0.178	2	06/08/21 21:45	06/09/21 19:37	EPA 3050B	1,6010D	BV
Barium, Total	74.2		mg/kg	0.855	0.149	2	06/08/21 21:45	06/09/21 19:37	EPA 3050B	1,6010D	BV
Beryllium, Total	0.188	J	mg/kg	0.428	0.028	2	06/08/21 21:45	06/09/21 19:37	EPA 3050B	1,6010D	BV
Cadmium, Total	0.308	J	mg/kg	0.855	0.084	2	06/08/21 21:45	06/09/21 19:37	EPA 3050B	1,6010D	BV
Calcium, Total	1730		mg/kg	8.55	2.99	2	06/08/21 21:45	06/09/21 19:37	EPA 3050B	1,6010D	BV
Chromium, Total	18.7		mg/kg	0.855	0.082	2	06/08/21 21:45	06/09/21 19:37	EPA 3050B	1,6010D	BV
Cobalt, Total	6.92		mg/kg	1.71	0.142	2	06/08/21 21:45	06/09/21 19:37	EPA 3050B	1,6010D	BV
Copper, Total	20.2		mg/kg	0.855	0.221	2	06/08/21 21:45	06/09/21 19:37	EPA 3050B	1,6010D	BV
Iron, Total	12400		mg/kg	4.28	0.772	2	06/08/21 21:45	06/09/21 19:37	EPA 3050B	1,6010D	BV
Lead, Total	3.13	J	mg/kg	4.28	0.229	2	06/08/21 21:45	06/09/21 19:37	EPA 3050B	1,6010D	BV
Magnesium, Total	2890		mg/kg	8.55	1.32	2	06/08/21 21:45	06/09/21 19:37	EPA 3050B	1,6010D	BV
Manganese, Total	166		mg/kg	0.855	0.136	2	06/08/21 21:45	06/09/21 19:37	EPA 3050B	1,6010D	BV
Mercury, Total	ND		mg/kg	0.079	0.051	1	06/08/21 22:50	06/10/21 14:42	EPA 7471B	1,7471B	OU
Nickel, Total	12.2		mg/kg	2.14	0.207	2	06/08/21 21:45	06/09/21 19:37	EPA 3050B	1,6010D	BV
Potassium, Total	2250		mg/kg	214	12.3	2	06/08/21 21:45	06/09/21 19:37	EPA 3050B	1,6010D	BV
Selenium, Total	0.316	J	mg/kg	1.71	0.221	2	06/08/21 21:45	06/09/21 19:37	EPA 3050B	1,6010D	BV
Silver, Total	ND		mg/kg	0.855	0.242	2	06/08/21 21:45	06/09/21 19:37	EPA 3050B	1,6010D	BV
Sodium, Total	110	J	mg/kg	171	2.69	2	06/08/21 21:45	06/09/21 19:37	EPA 3050B	1,6010D	BV
Thallium, Total	ND		mg/kg	1.71	0.269	2	06/08/21 21:45	06/09/21 19:37	EPA 3050B	1,6010D	BV
Vanadium, Total	25.3		mg/kg	0.855	0.174	2	06/08/21 21:45	06/09/21 19:37	EPA 3050B	1,6010D	BV
Zinc, Total	32.4		mg/kg	4.28	0.250	2	06/08/21 21:45	06/09/21 19:37	EPA 3050B	1,6010D	BV

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2129255
Report Date: 06/14/21

SAMPLE RESULTS

Lab ID: L2129255-12
Client ID: B-29 (0'-10')
Sample Location: RYE LAKE WFP
Date Collected: 06/02/21 12:30
Date Received: 06/02/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Aluminum, Total	10000		mg/kg	8.66	2.34	2	06/08/21 21:45	06/09/21 19:42	EPA 3050B	1,6010D	BV
Antimony, Total	ND		mg/kg	4.33	0.329	2	06/08/21 21:45	06/09/21 19:42	EPA 3050B	1,6010D	BV
Arsenic, Total	1.96		mg/kg	0.866	0.180	2	06/08/21 21:45	06/09/21 19:42	EPA 3050B	1,6010D	BV
Barium, Total	104		mg/kg	0.866	0.151	2	06/08/21 21:45	06/09/21 19:42	EPA 3050B	1,6010D	BV
Beryllium, Total	0.372	J	mg/kg	0.433	0.029	2	06/08/21 21:45	06/09/21 19:42	EPA 3050B	1,6010D	BV
Cadmium, Total	0.537	J	mg/kg	0.866	0.085	2	06/08/21 21:45	06/09/21 19:42	EPA 3050B	1,6010D	BV
Calcium, Total	1960		mg/kg	8.66	3.03	2	06/08/21 21:45	06/09/21 19:42	EPA 3050B	1,6010D	BV
Chromium, Total	34.8		mg/kg	0.866	0.083	2	06/08/21 21:45	06/09/21 19:42	EPA 3050B	1,6010D	BV
Cobalt, Total	12.2		mg/kg	1.73	0.144	2	06/08/21 21:45	06/09/21 19:42	EPA 3050B	1,6010D	BV
Copper, Total	23.8		mg/kg	0.866	0.223	2	06/08/21 21:45	06/09/21 19:42	EPA 3050B	1,6010D	BV
Iron, Total	20700		mg/kg	4.33	0.782	2	06/08/21 21:45	06/09/21 19:42	EPA 3050B	1,6010D	BV
Lead, Total	5.40		mg/kg	4.33	0.232	2	06/08/21 21:45	06/09/21 19:42	EPA 3050B	1,6010D	BV
Magnesium, Total	5100		mg/kg	8.66	1.33	2	06/08/21 21:45	06/09/21 19:42	EPA 3050B	1,6010D	BV
Manganese, Total	346		mg/kg	0.866	0.138	2	06/08/21 21:45	06/09/21 19:42	EPA 3050B	1,6010D	BV
Mercury, Total	ND		mg/kg	0.081	0.053	1	06/08/21 22:50	06/10/21 14:46	EPA 7471B	1,7471B	OU
Nickel, Total	21.3		mg/kg	2.16	0.210	2	06/08/21 21:45	06/09/21 19:42	EPA 3050B	1,6010D	BV
Potassium, Total	2770		mg/kg	216	12.5	2	06/08/21 21:45	06/09/21 19:42	EPA 3050B	1,6010D	BV
Selenium, Total	0.364	J	mg/kg	1.73	0.223	2	06/08/21 21:45	06/09/21 19:42	EPA 3050B	1,6010D	BV
Silver, Total	ND		mg/kg	0.866	0.245	2	06/08/21 21:45	06/09/21 19:42	EPA 3050B	1,6010D	BV
Sodium, Total	74.5	J	mg/kg	173	2.73	2	06/08/21 21:45	06/09/21 19:42	EPA 3050B	1,6010D	BV
Thallium, Total	ND		mg/kg	1.73	0.273	2	06/08/21 21:45	06/09/21 19:42	EPA 3050B	1,6010D	BV
Vanadium, Total	42.8		mg/kg	0.866	0.176	2	06/08/21 21:45	06/09/21 19:42	EPA 3050B	1,6010D	BV
Zinc, Total	50.9		mg/kg	4.33	0.254	2	06/08/21 21:45	06/09/21 19:42	EPA 3050B	1,6010D	BV

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2129255
Report Date: 06/14/21

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 04,08,12 Batch: WG1508669-1										
Aluminum, Total	ND		mg/kg	4.00	1.08	1	06/08/21 21:45	06/09/21 15:31	1,6010D	BV
Antimony, Total	ND		mg/kg	2.00	0.152	1	06/08/21 21:45	06/09/21 15:31	1,6010D	BV
Arsenic, Total	ND		mg/kg	0.400	0.083	1	06/08/21 21:45	06/09/21 15:31	1,6010D	BV
Barium, Total	ND		mg/kg	0.400	0.070	1	06/08/21 21:45	06/09/21 15:31	1,6010D	BV
Beryllium, Total	ND		mg/kg	0.200	0.013	1	06/08/21 21:45	06/09/21 15:31	1,6010D	BV
Cadmium, Total	ND		mg/kg	0.400	0.039	1	06/08/21 21:45	06/09/21 15:31	1,6010D	BV
Calcium, Total	ND		mg/kg	4.00	1.40	1	06/08/21 21:45	06/09/21 15:31	1,6010D	BV
Chromium, Total	ND		mg/kg	0.400	0.038	1	06/08/21 21:45	06/09/21 15:31	1,6010D	BV
Cobalt, Total	ND		mg/kg	0.800	0.066	1	06/08/21 21:45	06/09/21 15:31	1,6010D	BV
Copper, Total	ND		mg/kg	0.400	0.103	1	06/08/21 21:45	06/09/21 15:31	1,6010D	BV
Iron, Total	ND		mg/kg	2.00	0.361	1	06/08/21 21:45	06/09/21 15:31	1,6010D	BV
Lead, Total	ND		mg/kg	2.00	0.107	1	06/08/21 21:45	06/09/21 15:31	1,6010D	BV
Magnesium, Total	ND		mg/kg	4.00	0.616	1	06/08/21 21:45	06/09/21 15:31	1,6010D	BV
Manganese, Total	ND		mg/kg	0.400	0.064	1	06/08/21 21:45	06/09/21 15:31	1,6010D	BV
Nickel, Total	ND		mg/kg	1.00	0.097	1	06/08/21 21:45	06/09/21 15:31	1,6010D	BV
Potassium, Total	ND		mg/kg	100	5.76	1	06/08/21 21:45	06/09/21 15:31	1,6010D	BV
Selenium, Total	ND		mg/kg	0.800	0.103	1	06/08/21 21:45	06/09/21 15:31	1,6010D	BV
Silver, Total	ND		mg/kg	0.400	0.113	1	06/08/21 21:45	06/09/21 15:31	1,6010D	BV
Sodium, Total	2.83	J	mg/kg	80.0	1.26	1	06/08/21 21:45	06/09/21 15:31	1,6010D	BV
Thallium, Total	ND		mg/kg	0.800	0.126	1	06/08/21 21:45	06/09/21 15:31	1,6010D	BV
Vanadium, Total	ND		mg/kg	0.400	0.081	1	06/08/21 21:45	06/09/21 15:31	1,6010D	BV
Zinc, Total	ND		mg/kg	2.00	0.117	1	06/08/21 21:45	06/09/21 15:31	1,6010D	BV

Prep Information

Digestion Method: EPA 3050B

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 04,08,12 Batch: WG1508672-1										
Mercury, Total	ND		mg/kg	0.083	0.054	1	06/08/21 22:50	06/09/21 17:58	1,7471B	OU

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2129255
Report Date: 06/14/21

Method Blank Analysis
Batch Quality Control

Prep Information

Digestion Method: EPA 7471B

Lab Control Sample Analysis

Batch Quality Control

Project Name: RYE LAKE WFP

Project Number: 41.0162892.00

Lab Number: L2129255

Report Date: 06/14/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 04,08,12 Batch: WG1508669-2 SRM Lot Number: D109-540								
Aluminum, Total	67		-		50-150	-		
Antimony, Total	133		-		19-250	-		
Arsenic, Total	92		-		70-130	-		
Barium, Total	85		-		75-125	-		
Beryllium, Total	94		-		75-125	-		
Cadmium, Total	101		-		75-125	-		
Calcium, Total	88		-		73-128	-		
Chromium, Total	92		-		70-130	-		
Cobalt, Total	98		-		75-125	-		
Copper, Total	96		-		75-125	-		
Iron, Total	79		-		35-165	-		
Lead, Total	84		-		72-128	-		
Magnesium, Total	78		-		62-138	-		
Manganese, Total	87		-		74-126	-		
Nickel, Total	97		-		70-130	-		
Potassium, Total	76		-		59-141	-		
Selenium, Total	96		-		68-132	-		
Silver, Total	84		-		68-131	-		
Sodium, Total	99		-		35-165	-		
Thallium, Total	93		-		68-131	-		
Vanadium, Total	87		-		59-141	-		

Lab Control Sample Analysis

Batch Quality Control

Project Name: RYE LAKE WFP

Project Number: 41.0162892.00

Lab Number: L2129255

Report Date: 06/14/21

Parameter	LCS %Recovery	LCSD %Recovery	%Recovery Limits	RPD	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 04,08,12 Batch: WG1508669-2 SRM Lot Number: D109-540					
Zinc, Total	88	-	70-130	-	
Total Metals - Mansfield Lab Associated sample(s): 04,08,12 Batch: WG1508672-2 SRM Lot Number: D109-540					
Mercury, Total	79	-	60-140	-	

Matrix Spike Analysis
Batch Quality Control

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2129255
Report Date: 06/14/21

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 04,08,12 QC Batch ID: WG1508669-3 QC Sample: L2128761-01 Client ID: MS Sample												
Aluminum, Total	5260	171	5890	**368**	Q	-	-		75-125	-		20
Antimony, Total	ND	42.8	38.3	89		-	-		75-125	-		20
Arsenic, Total	3.22	10.3	14.4	109		-	-		75-125	-		20
Barium, Total	109	171	403	**172**	Q	-	-		75-125	-		20
Beryllium, Total	0.279J	4.28	4.51	105		-	-		75-125	-		20
Cadmium, Total	0.423J	4.36	4.72	108		-	-		75-125	-		20
Calcium, Total	10600	856	11700	**128**	Q	-	-		75-125	-		20
Chromium, Total	15.8	17.1	31.2	90		-	-		75-125	-		20
Cobalt, Total	13.9	42.8	52.0	89		-	-		75-125	-		20
Copper, Total	27.6	21.4	60.0	**151**	Q	-	-		75-125	-		20
Iron, Total	12400	85.6	13400	**1170**	Q	-	-		75-125	-		20
Lead, Total	80.7	43.6	135	124		-	-		75-125	-		20
Magnesium, Total	2270	856	3720	**169**	Q	-	-		75-125	-		20
Manganese, Total	284	42.8	313	**68**	Q	-	-		75-125	-		20
Nickel, Total	20.2	42.8	61.0	95		-	-		75-125	-		20
Potassium, Total	946	856	1880	109		-	-		75-125	-		20
Selenium, Total	0.271J	10.3	10.5	102		-	-		75-125	-		20
Silver, Total	ND	25.7	23.8	93		-	-		75-125	-		20
Sodium, Total	192	856	1050	100		-	-		75-125	-		20
Thallium, Total	ND	10.3	9.29	90		-	-		75-125	-		20
Vanadium, Total	20.2	42.8	69.7	116		-	-		75-125	-		20

Matrix Spike Analysis
Batch Quality Control

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2129255
Report Date: 06/14/21

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Found	MSD %Recovery	Recovery Limits	RPD	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 04,08,12 QC Batch ID: WG1508669-3 QC Sample: L2128761-01 Client ID: MS Sample									
Zinc, Total	82.5	42.8	134	120	-	-	75-125	-	20
Total Metals - Mansfield Lab Associated sample(s): 04,08,12 QC Batch ID: WG1508672-3 QC Sample: L2128761-01 Client ID: MS Sample									
Mercury, Total	0.075	0.142	0.245	120	-	-	80-120	-	20

Lab Duplicate Analysis
Batch Quality Control

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2129255
Report Date: 06/14/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 04,08,12 QC Batch ID: WG1508669-4 QC Sample: L2128761-01 Client ID: DUP Sample						
Aluminum, Total	5260	6010	mg/kg	13		20
Antimony, Total	ND	ND	mg/kg	NC		20
Arsenic, Total	3.22	3.10	mg/kg	4		20
Barium, Total	109	118	mg/kg	8		20
Beryllium, Total	0.279J	0.324J	mg/kg	NC		20
Cadmium, Total	0.423J	0.448J	mg/kg	NC		20
Calcium, Total	10600	10100	mg/kg	5		20
Chromium, Total	15.8	14.8	mg/kg	7		20
Cobalt, Total	13.9	10.4	mg/kg	**29**	Q	20
Copper, Total	27.6	32.0	mg/kg	15		20
Iron, Total	12400	13000	mg/kg	5		20
Lead, Total	80.7	75.1	mg/kg	7		20
Magnesium, Total	2270	2900	mg/kg	**24**	Q	20
Manganese, Total	284	292	mg/kg	3		20
Nickel, Total	20.2	24.2	mg/kg	18		20
Potassium, Total	946	1170	mg/kg	**21**	Q	20
Selenium, Total	0.271J	ND	mg/kg	NC		20
Silver, Total	ND	ND	mg/kg	NC		20
Sodium, Total	192	224	mg/kg	15		20

Lab Duplicate Analysis
Batch Quality Control

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2129255
Report Date: 06/14/21

Parameter	Native Sample	Duplicate Sample	Units	RPD		RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 04,08,12 QC Batch ID: WG1508669-4 QC Sample: L2128761-01 Client ID: DUP Sample						
Thallium, Total	ND	ND	mg/kg	NC		20
Vanadium, Total	20.2	23.1	mg/kg	13		20
Zinc, Total	82.5	102	mg/kg	**21**	Q	20
Total Metals - Mansfield Lab Associated sample(s): 04,08,12 QC Batch ID: WG1508672-4 QC Sample: L2128761-01 Client ID: DUP Sample						
Mercury, Total	0.075	0.094	mg/kg	**22**	Q	20

INORGANICS
&
MISCELLANEOUS

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2129255
Report Date: 06/14/21

SAMPLE RESULTS

Lab ID: L2129255-01
Client ID: B-7 (16'-17')
Sample Location: RYE LAKE WFP

Date Collected: 06/02/21 08:30
Date Received: 06/02/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	85.6		%	0.100	NA	1	-	06/04/21 09:28	121,2540G	RI

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2129255
Report Date: 06/14/21

SAMPLE RESULTS

Lab ID: L2129255-02
Client ID: B-7 (20'-21')
Sample Location: RYE LAKE WFP

Date Collected: 06/02/21 08:45
Date Received: 06/02/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	89.6		%	0.100	NA	1	-	06/04/21 09:28	121,2540G	RI

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2129255
Report Date: 06/14/21

SAMPLE RESULTS

Lab ID: L2129255-03
Client ID: B-7 (24'-25')
Sample Location: RYE LAKE WFP

Date Collected: 06/02/21 08:55
Date Received: 06/02/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	89.0		%	0.100	NA	1	-	06/04/21 09:28	121,2540G	RI

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2129255
Report Date: 06/14/21

SAMPLE RESULTS

Lab ID: L2129255-04
Client ID: B-7 (15'-25')
Sample Location: RYE LAKE WFP

Date Collected: 06/02/21 08:30
Date Received: 06/02/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	90.7		%	0.100	NA	1	-	06/04/21 09:28	121,2540G	RI

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2129255
Report Date: 06/14/21

SAMPLE RESULTS

Lab ID: L2129255-05
Client ID: B-2 (16'-17')
Sample Location: RYE LAKE WFP

Date Collected: 06/02/21 09:45
Date Received: 06/02/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	88.6		%	0.100	NA	1	-	06/04/21 09:28	121,2540G	RI

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2129255
Report Date: 06/14/21

SAMPLE RESULTS

Lab ID: L2129255-06
Client ID: B-2 (20'-21')
Sample Location: RYE LAKE WFP

Date Collected: 06/02/21 09:51
Date Received: 06/02/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	89.5		%	0.100	NA	1	-	06/04/21 09:28	121,2540G	RI

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2129255
Report Date: 06/14/21

SAMPLE RESULTS

Lab ID: L2129255-07
Client ID: B-2 (24'-25')
Sample Location: RYE LAKE WFP

Date Collected: 06/02/21 10:00
Date Received: 06/02/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	91.8		%	0.100	NA	1	-	06/04/21 09:28	121,2540G	RI

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2129255
Report Date: 06/14/21

SAMPLE RESULTS

Lab ID: L2129255-08
Client ID: B-2 (15'-25')
Sample Location: RYE LAKE WFP

Date Collected: 06/02/21 09:45
Date Received: 06/02/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	89.0		%	0.100	NA	1	-	06/04/21 09:28	121,2540G	RI

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2129255
Report Date: 06/14/21

SAMPLE RESULTS

Lab ID: L2129255-09
Client ID: B-29 (1'-2')
Sample Location: RYE LAKE WFP

Date Collected: 06/02/21 12:30
Date Received: 06/02/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	87.8		%	0.100	NA	1	-	06/04/21 09:28	121,2540G	RI

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2129255
Report Date: 06/14/21

SAMPLE RESULTS

Lab ID: L2129255-10
Client ID: B-29 (5'-6')
Sample Location: RYE LAKE WFP

Date Collected: 06/02/21 12:55
Date Received: 06/02/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	87.8		%	0.100	NA	1	-	06/04/21 09:28	121,2540G	RI

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2129255
Report Date: 06/14/21

SAMPLE RESULTS

Lab ID: L2129255-11
Client ID: B-29 (24'-25')
Sample Location: RYE LAKE WFP

Date Collected: 06/02/21 13:10
Date Received: 06/02/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	87.8		%	0.100	NA	1	-	06/04/21 09:28	121,2540G	RI

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2129255
Report Date: 06/14/21

SAMPLE RESULTS

Lab ID: L2129255-12
Client ID: B-29 (0'-10')
Sample Location: RYE LAKE WFP
Sample Depth:
Matrix: Soil

Date Collected: 06/02/21 12:30
Date Received: 06/02/21
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	87.8		%	0.100	NA	1	-	06/04/21 09:28	121,2540G	RI

Lab Duplicate Analysis

Batch Quality Control

Project Name: RYE LAKE WFP

Project Number: 41.0162892.00

Lab Number: L2129255

Report Date: 06/14/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-12 QC Batch ID: WG1507567-1 QC Sample: L2129255-01 Client ID: B-7 (16'-17')						
Solids, Total	85.6	85.6	%	0		20

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2129255
Report Date: 06/14/21

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2129255-01A	Vial MeOH preserved	A	NA		3.8	Y	Absent		NYTCL-8260HLW(14)
L2129255-01B	Vial water preserved	A	NA		3.8	Y	Absent	04-JUN-21 07:45	NYTCL-8260HLW(14)
L2129255-01C	Vial water preserved	A	NA		3.8	Y	Absent	04-JUN-21 07:45	NYTCL-8260HLW(14)
L2129255-01D	Plastic 120ml unpreserved	A	NA		3.8	Y	Absent		TS(7)
L2129255-02A	Vial MeOH preserved	A	NA		3.8	Y	Absent		NYTCL-8260HLW(14)
L2129255-02B	Vial water preserved	A	NA		3.8	Y	Absent	04-JUN-21 07:45	NYTCL-8260HLW(14)
L2129255-02C	Vial water preserved	A	NA		3.8	Y	Absent	04-JUN-21 07:45	NYTCL-8260HLW(14)
L2129255-02D	Plastic 120ml unpreserved	A	NA		3.8	Y	Absent		TS(7)
L2129255-03A	Vial MeOH preserved	A	NA		3.8	Y	Absent		NYTCL-8260HLW(14)
L2129255-03B	Vial water preserved	A	NA		3.8	Y	Absent	04-JUN-21 07:45	NYTCL-8260HLW(14)
L2129255-03C	Vial water preserved	A	NA		3.8	Y	Absent	04-JUN-21 07:45	NYTCL-8260HLW(14)
L2129255-03D	Plastic 120ml unpreserved	A	NA		3.8	Y	Absent		TS(7)
L2129255-04A	Plastic 120ml unpreserved	A	NA		3.8	Y	Absent		TS(7)
L2129255-04B	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.8	Y	Absent		BE-TI(180),AS-TI(180),BA-TI(180),AG-TI(180),TL-TI(180),CR-TI(180),AL-TI(180),NI-TI(180),SB-TI(180),ZN-TI(180),PB-TI(180),SE-TI(180),CU-TI(180),V-TI(180),CO-TI(180),MG-TI(180),MN-TI(180),HG-T(28),FE-TI(180),CA-TI(180),CD-TI(180),NA-TI(180),K-TI(180)
L2129255-04C	Glass 250ml/8oz unpreserved	A	NA		3.8	Y	Absent		NYTCL-8270(14),NYTCL-8081(14),NYTCL-8082(365)
L2129255-05A	Vial MeOH preserved	A	NA		3.8	Y	Absent		NYTCL-8260HLW(14)
L2129255-05B	Vial water preserved	A	NA		3.8	Y	Absent	04-JUN-21 07:45	NYTCL-8260HLW(14)
L2129255-05C	Vial water preserved	A	NA		3.8	Y	Absent	04-JUN-21 07:45	NYTCL-8260HLW(14)
L2129255-05D	Plastic 120ml unpreserved	A	NA		3.8	Y	Absent		TS(7)
L2129255-06A	Vial MeOH preserved	A	NA		3.8	Y	Absent		NYTCL-8260HLW(14)

*Values in parentheses indicate holding time in days

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2129255
Report Date: 06/14/21

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2129255-06B	Vial water preserved	A	NA		3.8	Y	Absent	04-JUN-21 07:45	NYTCL-8260HLW(14)
L2129255-06C	Vial water preserved	A	NA		3.8	Y	Absent	04-JUN-21 07:45	NYTCL-8260HLW(14)
L2129255-06D	Plastic 120ml unpreserved	A	NA		3.8	Y	Absent		TS(7)
L2129255-07A	Vial MeOH preserved	A	NA		3.8	Y	Absent		NYTCL-8260HLW(14)
L2129255-07B	Vial water preserved	A	NA		3.8	Y	Absent	04-JUN-21 07:45	NYTCL-8260HLW(14)
L2129255-07C	Vial water preserved	A	NA		3.8	Y	Absent	04-JUN-21 07:45	NYTCL-8260HLW(14)
L2129255-07D	Plastic 120ml unpreserved	A	NA		3.8	Y	Absent		TS(7)
L2129255-08A	Plastic 120ml unpreserved	A	NA		3.8	Y	Absent		TS(7)
L2129255-08B	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.8	Y	Absent		BE-TI(180),AS-TI(180),BA-TI(180),AG-TI(180),TL-TI(180),NI-TI(180),AL-TI(180),CR-TI(180),SB-TI(180),SE-TI(180),CU-TI(180),PB-TI(180),ZN-TI(180),CO-TI(180),V-TI(180),MN-TI(180),FE-TI(180),MG-TI(180),HG-T(28),CD-TI(180),NA-TI(180),K-TI(180),CA-TI(180)
L2129255-08C	Glass 250ml/8oz unpreserved	A	NA		3.8	Y	Absent		NYTCL-8270(14),NYTCL-8081(14),NYTCL-8082(365)
L2129255-09A	Vial MeOH preserved	A	NA		3.8	Y	Absent		NYTCL-8260HLW(14)
L2129255-09B	Vial water preserved	A	NA		3.8	Y	Absent	04-JUN-21 07:45	NYTCL-8260HLW(14)
L2129255-09C	Vial water preserved	A	NA		3.8	Y	Absent	04-JUN-21 07:45	NYTCL-8260HLW(14)
L2129255-10A	Vial MeOH preserved	A	NA		3.8	Y	Absent		NYTCL-8260HLW(14)
L2129255-10B	Vial water preserved	A	NA		3.8	Y	Absent	04-JUN-21 07:45	NYTCL-8260HLW(14)
L2129255-10C	Vial water preserved	A	NA		3.8	Y	Absent	04-JUN-21 07:45	NYTCL-8260HLW(14)
L2129255-11A	Vial MeOH preserved	A	NA		3.8	Y	Absent		NYTCL-8260HLW(14)
L2129255-11B	Vial water preserved	A	NA		3.8	Y	Absent	04-JUN-21 07:45	NYTCL-8260HLW(14)
L2129255-11C	Vial water preserved	A	NA		3.8	Y	Absent	04-JUN-21 07:45	NYTCL-8260HLW(14)
L2129255-12A	Plastic 120ml unpreserved	A	NA		3.8	Y	Absent		TS(7)
L2129255-12B	Metals Only-Glass 60mL/2oz unpreserved	A	NA		3.8	Y	Absent		BE-TI(180),AS-TI(180),BA-TI(180),AG-TI(180),AL-TI(180),TL-TI(180),CR-TI(180),NI-TI(180),SB-TI(180),CU-TI(180),ZN-TI(180),PB-TI(180),SE-TI(180),CO-TI(180),V-TI(180),MG-TI(180),HG-T(28),FE-TI(180),MN-TI(180),NA-TI(180),CD-TI(180),K-TI(180),CA-TI(180)
L2129255-12C	Glass 250ml/8oz unpreserved	A	NA		3.8	Y	Absent		NYTCL-8270(14),NYTCL-8081(14),NYTCL-8082(365)

*Values in parentheses indicate holding time in days

Project Name:	RYE LAKE WFP	**Lab Number:**	L2129255
Project Number:	41.0162892.00	**Report Date:**	06/14/21

GLOSSARY

Acronyms

DL - Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

EDL - Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).

EMPC - Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.

EPA - Environmental Protection Agency.

LCS - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LCSD - Laboratory Control Sample Duplicate: Refer to LCS.

LFB - Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LOD - Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

LOQ - Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

MDL - Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

MS - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.

MSD - Matrix Spike Sample Duplicate: Refer to MS.

NA - Not Applicable.

NC - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.

NDPA/DPA - N-Nitrosodiphenylamine/Diphenylamine.

NI - Not Ignitable.

NP - Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.

NR - No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.

RL - Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

RPD - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

SRM - Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.

STLP - Semi-dynamic Tank Leaching Procedure per EPA Method 1315.

TEF - Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.

TEQ - Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.

TIC - Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers

Project Name:	RYE LAKE WFP	**Lab Number:**	L2129255
Project Number:	41.0162892.00	**Report Date:**	06/14/21

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. (Note: 'PFAS, Total (6)' is applicable to MassDEP DW compliance analysis only.). If a 'Total' result is requested, the results of its individual components will also be reported.

The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA,this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

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

F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

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

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

Report Format: DU Report with 'J' Qualifiers

Project Name:	RYE LAKE WFP	**Lab Number:**	L2129255
Project Number:	41.0162892.00	**Report Date:**	06/14/21

Data Qualifiers

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

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

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

Project Name:	RYE LAKE WFP	**Lab Number:**	L2129255
Project Number:	41.0162892.00	**Report Date:**	06/14/21

REFERENCES

1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.

121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene
EPA 625/625.1: alpha-Terpineol
EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D/8270E: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522, EPA 537.1.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

NEW YORK CHAIN OF CUSTODY

ALPHA ANALYTICAL

Westborough, MA 01581
8 Walkup Dr.
TEL: 508-898-9220
FAX: 508-898-9193

Mansfield, MA 02048
320 Forbes Blvd
TEL: 508-822-9300
FAX: 508-822-3288

Service Centers
Mahwah, NJ 07430: 35 Whitney Rd, Suite 5
Albany, NY 12205: 14 Walker Way
Tonawanda, NY 14150: 275 Cooper Ave, Suite 105

Page of

Date Rec'd in Lab: 06/02/21

ALPHA Job #: L2129255

Client Information
Client: GZA GeoEnvironmental
Address: 104 West 29th St
New York, NY
Phone: 212-594-8140
Fax:
Email: matthew.delbalzo@gza.com

Project Information
Project Name: RYE LAKE WFP
Project Location: RYE LAKE WFP
Project #: 41.0162892.00
(Use Project name as Project #) ☐
Project Manager: Matt DelBalzo
ALPHAQuote #:

Turn-Around Time
Standard ☑ Due Date:
Rush (only if pre approved) ☐ # of Days:

Deliverables
☐ ASP-A ☐ ASP-B
☐ EQuIS (1 File) ☐ EQuIS (4 File)
☐ Other

Billing Information
☐ Same as Client Info
PO #

Regulatory Requirement
☐ NY TOGS ☐ NY Part 375
☐ AWQ Standards ☐ NY CP-51
☐ NY Restricted Use ☐ Other
☐ NY Unrestricted Use
☐ NYC Sewer Discharge

Disposal Site Information
Please identify below location of applicable disposal facilities.
Disposal Facility:
☑ NJ ☑ NY
☑ Other: PA

These samples have been previously analyzed by Alpha ☐

Other project specific requirements/comments:

Please specify Metals or TAL.

ANALYSIS

Sample Filtration
☐ Done
☐ Lab to do
Preservation
☐ Lab to do
(Please Specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	VOCs (8260)	SVOCs (8270)	PCBs (8082)	Pesticides (8081)	Tal Metals				Total Bottle	Sample Specific Comments
29255-01	B-7 (16'-17')	6/2/21	8:30	SOIL	A.A.	X									
02	B-7 (20'-21')	6/2/21	8:45	SOIL	A.A.	X									
03	B-7 (24'-25')	6/2/21	8:55	SOIL	A.A.	X									
04	B-7 (15'-25')	6/2/21	8:30	SOIL	A.A.		X	X	X	X					
06,07,05	B-2 (16'-17') & (20'-21') & (24'-25')	6/2/21	9:45 9:51 10:00	SOIL	A.A.	X									
08,26	B-2 (15'-25')	6/2/21	9:45	SOIL	A.A.		X	X	X	X					
10,11,09	B-29 (1'-2') & (5'-6') & (24'-25')	6/2/21	1230, 1255, 1310	SOIL	A.A.	X									
16,17,12	B-29 (0'-10')	6/2/21	12:30	SOIL	A.A.		X	X	X	X					

Preservative Code:
A = None
B = HCl
C = HNO_3
D = H_2SO_4
E = NaOH
F = MeOH
G = $NaHSO_4$
H = $Na_2S_2O_3$
K/E = Zn Ac/NaOH
O = Other

Container Code
P = Plastic
A = Amber Glass
V = Vial
G = Glass
B = Bacteria Cup
C = Cube
O = Other
E = Encore
D = BOD Bottle

Westboro: Certification No: MA935
Mansfield: Certification No: MA015

Container Type
Preservative

Relinquished By:	Date/Time	Received By:	Date/Time
Allan Amador	6/2/21, 13:30		6/2/21 13:30
			6/2/21 17:45
	6/2/21 17:35		
	6/2/21 21:43		6/2/21 2143

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. BY EXECUTING THIS COC, THE CLIENT HAS READ AND AGREES TO BE BOUND BY ALPHA'S TERMS & CONDITIONS. (See reverse side.)

Form No: 01-25 HC (rev. 30-Sept-2013)

ANALYTICAL REPORT

Lab Number:	L2129818
Client:	GZA GeoEnvironmental, Inc. 104 West 29th Street, 10th Floor New York, NY 10001
ATTN:	Matthew Del Balzo
Phone:	(212) 594-8140
Project Name:	RYE LAKE WFP
Project Number:	41.0162892.00
Report Date:	06/14/21

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2129818
Report Date: 06/14/21

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2129818-01	B-19 (1'-2')	SOIL	RYE LAKE WFP	06/03/21 12:15	06/03/21
L2129818-02	B-19 (5'-6')	SOIL	RYE LAKE WFP	06/03/21 12:30	06/03/21
L2129818-03	B-19 (9'-10')	SOIL	RYE LAKE WFP	06/03/21 12:30	06/03/21
L2129818-04	B-19 (0'-10')	SOIL	RYE LAKE WFP	06/03/21 12:15	06/03/21

Project Name:	RYE LAKE WFP	**Lab Number:**	L2129818
Project Number:	41.0162892.00	**Report Date:**	06/14/21

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2129818
Report Date: 06/14/21

Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Total Metals

L2129818-04: The sample has elevated detection limits for all elements, with the exception of mercury, due to the dilution required by matrix interferences encountered during analysis.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Jennifer L Clements

Title: Technical Director/Representative Date: 06/14/21

ORGANICS

VOLATILES

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2129818
Report Date: 06/14/21

SAMPLE RESULTS

Lab ID: L2129818-01
Client ID: B-19 (1'-2')
Sample Location: RYE LAKE WFP
Date Collected: 06/03/21 12:15
Date Received: 06/03/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 06/10/21 20:32
Analyst: NLK
Percent Solids: 87%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methylene chloride	ND		ug/kg	3.2	1.5	1
1,1-Dichloroethane	ND		ug/kg	0.65	0.09	1
Chloroform	ND		ug/kg	0.98	0.09	1
Carbon tetrachloride	ND		ug/kg	0.65	0.15	1
1,2-Dichloropropane	ND		ug/kg	0.65	0.08	1
Dibromochloromethane	ND		ug/kg	0.65	0.09	1
1,1,2-Trichloroethane	ND		ug/kg	0.65	0.17	1
Tetrachloroethene	ND		ug/kg	0.32	0.13	1
Chlorobenzene	ND		ug/kg	0.32	0.08	1
Trichlorofluoromethane	ND		ug/kg	2.6	0.45	1
1,2-Dichloroethane	ND		ug/kg	0.65	0.17	1
1,1,1-Trichloroethane	ND		ug/kg	0.32	0.11	1
Bromodichloromethane	ND		ug/kg	0.32	0.07	1
trans-1,3-Dichloropropene	ND		ug/kg	0.65	0.18	1
cis-1,3-Dichloropropene	ND		ug/kg	0.32	0.10	1
1,3-Dichloropropene, Total	ND		ug/kg	0.32	0.10	1
1,1-Dichloropropene	ND		ug/kg	0.32	0.10	1
Bromoform	ND		ug/kg	2.6	0.16	1
1,1,2,2-Tetrachloroethane	ND		ug/kg	0.32	0.11	1
Benzene	ND		ug/kg	0.32	0.11	1
Toluene	ND		ug/kg	0.65	0.35	1
Ethylbenzene	ND		ug/kg	0.65	0.09	1
Chloromethane	ND		ug/kg	2.6	0.60	1
Bromomethane	ND		ug/kg	1.3	0.38	1
Vinyl chloride	ND		ug/kg	0.65	0.22	1
Chloroethane	ND		ug/kg	1.3	0.29	1
1,1-Dichloroethene	ND		ug/kg	0.65	0.15	1
trans-1,2-Dichloroethene	ND		ug/kg	0.98	0.09	1

Project Name: RYE LAKE WFP **Lab Number:** L2129818

Project Number: 41.0162892.00 **Report Date:** 06/14/21

SAMPLE RESULTS

Lab ID: L2129818-01 Date Collected: 06/03/21 12:15

Client ID: B-19 (1'-2') Date Received: 06/03/21

Sample Location: RYE LAKE WFP Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Trichloroethene	ND		ug/kg	0.32	0.09	1
1,2-Dichlorobenzene	ND		ug/kg	1.3	0.09	1
1,3-Dichlorobenzene	ND		ug/kg	1.3	0.10	1
1,4-Dichlorobenzene	ND		ug/kg	1.3	0.11	1
Methyl tert butyl ether	ND		ug/kg	1.3	0.13	1
p/m-Xylene	ND		ug/kg	1.3	0.36	1
o-Xylene	ND		ug/kg	0.65	0.19	1
Xylenes, Total	ND		ug/kg	0.65	0.19	1
cis-1,2-Dichloroethene	ND		ug/kg	0.65	0.11	1
1,2-Dichloroethene, Total	ND		ug/kg	0.65	0.09	1
Dibromomethane	ND		ug/kg	1.3	0.15	1
Styrene	ND		ug/kg	0.65	0.13	1
Dichlorodifluoromethane	ND		ug/kg	6.5	0.59	1
Acetone	4.6	J	ug/kg	6.5	3.1	1
Carbon disulfide	ND		ug/kg	6.5	3.0	1
2-Butanone	ND		ug/kg	6.5	1.4	1
Vinyl acetate	ND		ug/kg	6.5	1.4	1
4-Methyl-2-pentanone	ND		ug/kg	6.5	0.83	1
1,2,3-Trichloropropane	ND		ug/kg	1.3	0.08	1
2-Hexanone	ND		ug/kg	6.5	0.77	1
Bromochloromethane	ND		ug/kg	1.3	0.13	1
2,2-Dichloropropane	ND		ug/kg	1.3	0.13	1
1,2-Dibromoethane	ND		ug/kg	0.65	0.18	1
1,3-Dichloropropane	ND		ug/kg	1.3	0.11	1
1,1,1,2-Tetrachloroethane	ND		ug/kg	0.32	0.09	1
Bromobenzene	ND		ug/kg	1.3	0.09	1
n-Butylbenzene	ND		ug/kg	0.65	0.11	1
sec-Butylbenzene	ND		ug/kg	0.65	0.10	1
tert-Butylbenzene	ND		ug/kg	1.3	0.08	1
o-Chlorotoluene	ND		ug/kg	1.3	0.12	1
p-Chlorotoluene	ND		ug/kg	1.3	0.07	1
1,2-Dibromo-3-chloropropane	ND		ug/kg	2.0	0.65	1
Hexachlorobutadiene	ND		ug/kg	2.6	0.11	1
Isopropylbenzene	ND		ug/kg	0.65	0.07	1
p-Isopropyltoluene	0.11	J	ug/kg	0.65	0.07	1
Naphthalene	ND		ug/kg	2.6	0.42	1
Acrylonitrile	ND		ug/kg	2.6	0.75	1

Project Name: RYE LAKE WFP
Lab Number: L2129818
Project Number: 41.0162892.00
Report Date: 06/14/21

SAMPLE RESULTS

Lab ID: L2129818-01
Client ID: B-19 (1'-2')
Sample Location: RYE LAKE WFP
Date Collected: 06/03/21 12:15
Date Received: 06/03/21
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
n-Propylbenzene	ND		ug/kg	0.65	0.11	1
1,2,3-Trichlorobenzene	ND		ug/kg	1.3	0.21	1
1,2,4-Trichlorobenzene	ND		ug/kg	1.3	0.18	1
1,3,5-Trimethylbenzene	ND		ug/kg	1.3	0.12	1
1,2,4-Trimethylbenzene	ND		ug/kg	1.3	0.22	1
1,4-Dioxane	ND		ug/kg	52	23.	1
p-Diethylbenzene	ND		ug/kg	1.3	0.12	1
p-Ethyltoluene	ND		ug/kg	1.3	0.25	1
1,2,4,5-Tetramethylbenzene	ND		ug/kg	1.3	0.12	1
Ethyl ether	ND		ug/kg	1.3	0.22	1
trans-1,4-Dichloro-2-butene	ND		ug/kg	3.2	0.92	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	106		70-130
Toluene-d8	96		70-130
4-Bromofluorobenzene	96		70-130
Dibromofluoromethane	104		70-130

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2129818
Report Date: 06/14/21

SAMPLE RESULTS

Lab ID: L2129818-02
Client ID: B-19 (5'-6')
Sample Location: RYE LAKE WFP
Date Collected: 06/03/21 12:30
Date Received: 06/03/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 06/10/21 20:59
Analyst: NLK
Percent Solids: 93%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methylene chloride	ND		ug/kg	3.0	1.4	1
1,1-Dichloroethane	ND		ug/kg	0.60	0.09	1
Chloroform	ND		ug/kg	0.90	0.08	1
Carbon tetrachloride	ND		ug/kg	0.60	0.14	1
1,2-Dichloropropane	ND		ug/kg	0.60	0.08	1
Dibromochloromethane	ND		ug/kg	0.60	0.08	1
1,1,2-Trichloroethane	ND		ug/kg	0.60	0.16	1
Tetrachloroethene	ND		ug/kg	0.30	0.12	1
Chlorobenzene	ND		ug/kg	0.30	0.08	1
Trichlorofluoromethane	ND		ug/kg	2.4	0.42	1
1,2-Dichloroethane	ND		ug/kg	0.60	0.15	1
1,1,1-Trichloroethane	ND		ug/kg	0.30	0.10	1
Bromodichloromethane	ND		ug/kg	0.30	0.07	1
trans-1,3-Dichloropropene	ND		ug/kg	0.60	0.16	1
cis-1,3-Dichloropropene	ND		ug/kg	0.30	0.10	1
1,3-Dichloropropene, Total	ND		ug/kg	0.30	0.10	1
1,1-Dichloropropene	ND		ug/kg	0.30	0.10	1
Bromoform	ND		ug/kg	2.4	0.15	1
1,1,2,2-Tetrachloroethane	ND		ug/kg	0.30	0.10	1
Benzene	ND		ug/kg	0.30	0.10	1
Toluene	ND		ug/kg	0.60	0.33	1
Ethylbenzene	ND		ug/kg	0.60	0.09	1
Chloromethane	ND		ug/kg	2.4	0.56	1
Bromomethane	ND		ug/kg	1.2	0.35	1
Vinyl chloride	ND		ug/kg	0.60	0.20	1
Chloroethane	ND		ug/kg	1.2	0.27	1
1,1-Dichloroethene	ND		ug/kg	0.60	0.14	1
trans-1,2-Dichloroethene	ND		ug/kg	0.90	0.08	1

Project Name: RYE LAKE WFP **Lab Number:** L2129818

Project Number: 41.0162892.00 **Report Date:** 06/14/21

SAMPLE RESULTS

Lab ID: L2129818-02 Date Collected: 06/03/21 12:30

Client ID: B-19 (5'-6') Date Received: 06/03/21

Sample Location: RYE LAKE WFP Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Trichloroethene	ND		ug/kg	0.30	0.08	1
1,2-Dichlorobenzene	ND		ug/kg	1.2	0.09	1
1,3-Dichlorobenzene	ND		ug/kg	1.2	0.09	1
1,4-Dichlorobenzene	ND		ug/kg	1.2	0.10	1
Methyl tert butyl ether	ND		ug/kg	1.2	0.12	1
p/m-Xylene	ND		ug/kg	1.2	0.34	1
o-Xylene	ND		ug/kg	0.60	0.17	1
Xylenes, Total	ND		ug/kg	0.60	0.17	1
cis-1,2-Dichloroethene	ND		ug/kg	0.60	0.10	1
1,2-Dichloroethene, Total	ND		ug/kg	0.60	0.08	1
Dibromomethane	ND		ug/kg	1.2	0.14	1
Styrene	ND		ug/kg	0.60	0.12	1
Dichlorodifluoromethane	ND		ug/kg	6.0	0.55	1
Acetone	3.1	J	ug/kg	6.0	2.9	1
Carbon disulfide	2.9	J	ug/kg	6.0	2.7	1
2-Butanone	ND		ug/kg	6.0	1.3	1
Vinyl acetate	ND		ug/kg	6.0	1.3	1
4-Methyl-2-pentanone	ND		ug/kg	6.0	0.77	1
1,2,3-Trichloropropane	ND		ug/kg	1.2	0.08	1
2-Hexanone	ND		ug/kg	6.0	0.71	1
Bromochloromethane	ND		ug/kg	1.2	0.12	1
2,2-Dichloropropane	ND		ug/kg	1.2	0.12	1
1,2-Dibromoethane	ND		ug/kg	0.60	0.17	1
1,3-Dichloropropane	ND		ug/kg	1.2	0.10	1
1,1,1,2-Tetrachloroethane	ND		ug/kg	0.30	0.08	1
Bromobenzene	ND		ug/kg	1.2	0.09	1
n-Butylbenzene	ND		ug/kg	0.60	0.10	1
sec-Butylbenzene	ND		ug/kg	0.60	0.09	1
tert-Butylbenzene	ND		ug/kg	1.2	0.07	1
o-Chlorotoluene	ND		ug/kg	1.2	0.11	1
p-Chlorotoluene	ND		ug/kg	1.2	0.07	1
1,2-Dibromo-3-chloropropane	ND		ug/kg	1.8	0.60	1
Hexachlorobutadiene	ND		ug/kg	2.4	0.10	1
Isopropylbenzene	ND		ug/kg	0.60	0.07	1
p-Isopropyltoluene	ND		ug/kg	0.60	0.07	1
Naphthalene	ND		ug/kg	2.4	0.39	1
Acrylonitrile	ND		ug/kg	2.4	0.69	1

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2129818
Report Date: 06/14/21

SAMPLE RESULTS

Lab ID: L2129818-02
Client ID: B-19 (5'-6')
Sample Location: RYE LAKE WFP
Date Collected: 06/03/21 12:30
Date Received: 06/03/21
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
n-Propylbenzene	ND		ug/kg	0.60	0.10	1
1,2,3-Trichlorobenzene	ND		ug/kg	1.2	0.19	1
1,2,4-Trichlorobenzene	ND		ug/kg	1.2	0.16	1
1,3,5-Trimethylbenzene	ND		ug/kg	1.2	0.12	1
1,2,4-Trimethylbenzene	ND		ug/kg	1.2	0.20	1
1,4-Dioxane	ND		ug/kg	48	21.	1
p-Diethylbenzene	ND		ug/kg	1.2	0.11	1
p-Ethyltoluene	ND		ug/kg	1.2	0.23	1
1,2,4,5-Tetramethylbenzene	ND		ug/kg	1.2	0.11	1
Ethyl ether	ND		ug/kg	1.2	0.20	1
trans-1,4-Dichloro-2-butene	ND		ug/kg	3.0	0.85	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	105		70-130
Toluene-d8	96		70-130
4-Bromofluorobenzene	95		70-130
Dibromofluoromethane	105		70-130

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2129818
Report Date: 06/14/21

SAMPLE RESULTS

Lab ID: L2129818-03
Client ID: B-19 (9'-10')
Sample Location: RYE LAKE WFP
Date Collected: 06/03/21 12:30
Date Received: 06/03/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 06/10/21 21:25
Analyst: NLK
Percent Solids: 90%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methylene chloride	ND		ug/kg	3.2	1.4	1
1,1-Dichloroethane	ND		ug/kg	0.63	0.09	1
Chloroform	ND		ug/kg	0.95	0.09	1
Carbon tetrachloride	ND		ug/kg	0.63	0.14	1
1,2-Dichloropropane	ND		ug/kg	0.63	0.08	1
Dibromochloromethane	ND		ug/kg	0.63	0.09	1
1,1,2-Trichloroethane	ND		ug/kg	0.63	0.17	1
Tetrachloroethene	ND		ug/kg	0.32	0.12	1
Chlorobenzene	ND		ug/kg	0.32	0.08	1
Trichlorofluoromethane	ND		ug/kg	2.5	0.44	1
1,2-Dichloroethane	ND		ug/kg	0.63	0.16	1
1,1,1-Trichloroethane	ND		ug/kg	0.32	0.10	1
Bromodichloromethane	ND		ug/kg	0.32	0.07	1
trans-1,3-Dichloropropene	ND		ug/kg	0.63	0.17	1
cis-1,3-Dichloropropene	ND		ug/kg	0.32	0.10	1
1,3-Dichloropropene, Total	ND		ug/kg	0.32	0.10	1
1,1-Dichloropropene	ND		ug/kg	0.32	0.10	1
Bromoform	ND		ug/kg	2.5	0.16	1
1,1,2,2-Tetrachloroethane	ND		ug/kg	0.32	0.10	1
Benzene	ND		ug/kg	0.32	0.10	1
Toluene	ND		ug/kg	0.63	0.34	1
Ethylbenzene	ND		ug/kg	0.63	0.09	1
Chloromethane	ND		ug/kg	2.5	0.59	1
Bromomethane	ND		ug/kg	1.3	0.37	1
Vinyl chloride	ND		ug/kg	0.63	0.21	1
Chloroethane	ND		ug/kg	1.3	0.28	1
1,1-Dichloroethene	ND		ug/kg	0.63	0.15	1
trans-1,2-Dichloroethene	ND		ug/kg	0.95	0.09	1

Project Name: RYE LAKE WFP **Lab Number:** L2129818

Project Number: 41.0162892.00 **Report Date:** 06/14/21

SAMPLE RESULTS

Lab ID: L2129818-03 Date Collected: 06/03/21 12:30

Client ID: B-19 (9'-10') Date Received: 06/03/21

Sample Location: RYE LAKE WFP Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Trichloroethene	ND		ug/kg	0.32	0.09	1
1,2-Dichlorobenzene	ND		ug/kg	1.3	0.09	1
1,3-Dichlorobenzene	ND		ug/kg	1.3	0.09	1
1,4-Dichlorobenzene	ND		ug/kg	1.3	0.11	1
Methyl tert butyl ether	ND		ug/kg	1.3	0.13	1
p/m-Xylene	ND		ug/kg	1.3	0.35	1
o-Xylene	ND		ug/kg	0.63	0.18	1
Xylenes, Total	ND		ug/kg	0.63	0.18	1
cis-1,2-Dichloroethene	ND		ug/kg	0.63	0.11	1
1,2-Dichloroethene, Total	ND		ug/kg	0.63	0.09	1
Dibromomethane	ND		ug/kg	1.3	0.15	1
Styrene	ND		ug/kg	0.63	0.12	1
Dichlorodifluoromethane	ND		ug/kg	6.3	0.58	1
Acetone	ND		ug/kg	6.3	3.0	1
Carbon disulfide	ND		ug/kg	6.3	2.9	1
2-Butanone	ND		ug/kg	6.3	1.4	1
Vinyl acetate	ND		ug/kg	6.3	1.4	1
4-Methyl-2-pentanone	ND		ug/kg	6.3	0.81	1
1,2,3-Trichloropropane	ND		ug/kg	1.3	0.08	1
2-Hexanone	ND		ug/kg	6.3	0.74	1
Bromochloromethane	ND		ug/kg	1.3	0.13	1
2,2-Dichloropropane	ND		ug/kg	1.3	0.13	1
1,2-Dibromoethane	ND		ug/kg	0.63	0.18	1
1,3-Dichloropropane	ND		ug/kg	1.3	0.10	1
1,1,1,2-Tetrachloroethane	ND		ug/kg	0.32	0.08	1
Bromobenzene	ND		ug/kg	1.3	0.09	1
n-Butylbenzene	ND		ug/kg	0.63	0.10	1
sec-Butylbenzene	ND		ug/kg	0.63	0.09	1
tert-Butylbenzene	ND		ug/kg	1.3	0.07	1
o-Chlorotoluene	ND		ug/kg	1.3	0.12	1
p-Chlorotoluene	ND		ug/kg	1.3	0.07	1
1,2-Dibromo-3-chloropropane	ND		ug/kg	1.9	0.63	1
Hexachlorobutadiene	ND		ug/kg	2.5	0.11	1
Isopropylbenzene	ND		ug/kg	0.63	0.07	1
p-Isopropyltoluene	ND		ug/kg	0.63	0.07	1
Naphthalene	ND		ug/kg	2.5	0.41	1
Acrylonitrile	ND		ug/kg	2.5	0.73	1

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2129818
Report Date: 06/14/21

SAMPLE RESULTS

Lab ID: L2129818-03
Client ID: B-19 (9'-10')
Sample Location: RYE LAKE WFP
Date Collected: 06/03/21 12:30
Date Received: 06/03/21
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
n-Propylbenzene	ND		ug/kg	0.63	0.11	1
1,2,3-Trichlorobenzene	ND		ug/kg	1.3	0.20	1
1,2,4-Trichlorobenzene	ND		ug/kg	1.3	0.17	1
1,3,5-Trimethylbenzene	ND		ug/kg	1.3	0.12	1
1,2,4-Trimethylbenzene	ND		ug/kg	1.3	0.21	1
1,4-Dioxane	ND		ug/kg	50	22.	1
p-Diethylbenzene	ND		ug/kg	1.3	0.11	1
p-Ethyltoluene	ND		ug/kg	1.3	0.24	1
1,2,4,5-Tetramethylbenzene	ND		ug/kg	1.3	0.12	1
Ethyl ether	ND		ug/kg	1.3	0.22	1
trans-1,4-Dichloro-2-butene	ND		ug/kg	3.2	0.90	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	107		70-130
Toluene-d8	98		70-130
4-Bromofluorobenzene	98		70-130
Dibromofluoromethane	104		70-130

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2129818
Report Date: 06/14/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 06/10/21 19:42
Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01-03 Batch: WG1510815-5					
Methylene chloride	ND		ug/kg	5.0	2.3
1,1-Dichloroethane	ND		ug/kg	1.0	0.14
Chloroform	ND		ug/kg	1.5	0.14
Carbon tetrachloride	ND		ug/kg	1.0	0.23
1,2-Dichloropropane	ND		ug/kg	1.0	0.12
Dibromochloromethane	ND		ug/kg	1.0	0.14
1,1,2-Trichloroethane	ND		ug/kg	1.0	0.27
Tetrachloroethene	ND		ug/kg	0.50	0.20
Chlorobenzene	ND		ug/kg	0.50	0.13
Trichlorofluoromethane	ND		ug/kg	4.0	0.70
1,2-Dichloroethane	ND		ug/kg	1.0	0.26
1,1,1-Trichloroethane	ND		ug/kg	0.50	0.17
Bromodichloromethane	ND		ug/kg	0.50	0.11
trans-1,3-Dichloropropene	ND		ug/kg	1.0	0.27
cis-1,3-Dichloropropene	ND		ug/kg	0.50	0.16
1,3-Dichloropropene, Total	ND		ug/kg	0.50	0.16
1,1-Dichloropropene	ND		ug/kg	0.50	0.16
Bromoform	ND		ug/kg	4.0	0.25
1,1,2,2-Tetrachloroethane	ND		ug/kg	0.50	0.17
Benzene	ND		ug/kg	0.50	0.17
Toluene	ND		ug/kg	1.0	0.54
Ethylbenzene	ND		ug/kg	1.0	0.14
Chloromethane	ND		ug/kg	4.0	0.93
Bromomethane	ND		ug/kg	2.0	0.58
Vinyl chloride	ND		ug/kg	1.0	0.34
Chloroethane	ND		ug/kg	2.0	0.45
1,1-Dichloroethene	ND		ug/kg	1.0	0.24
trans-1,2-Dichloroethene	ND		ug/kg	1.5	0.14
Trichloroethene	ND		ug/kg	0.50	0.14

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2129818
Report Date: 06/14/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 06/10/21 19:42
Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01-03 Batch: WG1510815-5					
1,2-Dichlorobenzene	ND		ug/kg	2.0	0.14
1,3-Dichlorobenzene	ND		ug/kg	2.0	0.15
1,4-Dichlorobenzene	ND		ug/kg	2.0	0.17
Methyl tert butyl ether	ND		ug/kg	2.0	0.20
p/m-Xylene	ND		ug/kg	2.0	0.56
o-Xylene	ND		ug/kg	1.0	0.29
Xylenes, Total	ND		ug/kg	1.0	0.29
cis-1,2-Dichloroethene	ND		ug/kg	1.0	0.18
1,2-Dichloroethene, Total	ND		ug/kg	1.0	0.14
Dibromomethane	ND		ug/kg	2.0	0.24
Styrene	0.44	J	ug/kg	1.0	0.20
Dichlorodifluoromethane	ND		ug/kg	10	0.92
Acetone	ND		ug/kg	10	4.8
Carbon disulfide	ND		ug/kg	10	4.6
2-Butanone	2.4	J	ug/kg	10	2.2
Vinyl acetate	ND		ug/kg	10	2.2
4-Methyl-2-pentanone	ND		ug/kg	10	1.3
1,2,3-Trichloropropane	ND		ug/kg	2.0	0.13
2-Hexanone	ND		ug/kg	10	1.2
Bromochloromethane	ND		ug/kg	2.0	0.20
2,2-Dichloropropane	ND		ug/kg	2.0	0.20
1,2-Dibromoethane	ND		ug/kg	1.0	0.28
1,3-Dichloropropane	ND		ug/kg	2.0	0.17
1,1,1,2-Tetrachloroethane	ND		ug/kg	0.50	0.13
Bromobenzene	ND		ug/kg	2.0	0.14
n-Butylbenzene	ND		ug/kg	1.0	0.17
sec-Butylbenzene	ND		ug/kg	1.0	0.15
tert-Butylbenzene	ND		ug/kg	2.0	0.12
o-Chlorotoluene	ND		ug/kg	2.0	0.19

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2129818
Report Date: 06/14/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 06/10/21 19:42
Analyst: AJK

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01-03 Batch: WG1510815-5					
p-Chlorotoluene	ND		ug/kg	2.0	0.11
1,2-Dibromo-3-chloropropane	ND		ug/kg	3.0	1.0
Hexachlorobutadiene	0.17	J	ug/kg	4.0	0.17
Isopropylbenzene	ND		ug/kg	1.0	0.11
p-Isopropyltoluene	0.11	J	ug/kg	1.0	0.11
Naphthalene	ND		ug/kg	4.0	0.65
Acrylonitrile	ND		ug/kg	4.0	1.2
n-Propylbenzene	ND		ug/kg	1.0	0.17
1,2,3-Trichlorobenzene	ND		ug/kg	2.0	0.32
1,2,4-Trichlorobenzene	ND		ug/kg	2.0	0.27
1,3,5-Trimethylbenzene	ND		ug/kg	2.0	0.19
1,2,4-Trimethylbenzene	ND		ug/kg	2.0	0.33
1,4-Dioxane	ND		ug/kg	80	35.
p-Diethylbenzene	ND		ug/kg	2.0	0.18
p-Ethyltoluene	ND		ug/kg	2.0	0.38
1,2,4,5-Tetramethylbenzene	ND		ug/kg	2.0	0.19
Ethyl ether	ND		ug/kg	2.0	0.34
trans-1,4-Dichloro-2-butene	ND		ug/kg	5.0	1.4

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	99		70-130
Toluene-d8	97		70-130
4-Bromofluorobenzene	97		70-130
Dibromofluoromethane	100		70-130

Lab Control Sample Analysis
Batch Quality Control

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2129818
Report Date: 06/14/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01-03 Batch: WG1510815-3 WG1510815-4								
Methylene chloride	94		97		70-130	3		30
1,1-Dichloroethane	100		102		70-130	2		30
Chloroform	102		105		70-130	3		30
Carbon tetrachloride	104		108		70-130	4		30
1,2-Dichloropropane	100		104		70-130	4		30
Dibromochloromethane	92		98		70-130	6		30
1,1,2-Trichloroethane	92		98		70-130	6		30
Tetrachloroethene	100		104		70-130	4		30
Chlorobenzene	96		100		70-130	4		30
Trichlorofluoromethane	103		105		70-139	2		30
1,2-Dichloroethane	99		103		70-130	4		30
1,1,1-Trichloroethane	105		110		70-130	5		30
Bromodichloromethane	104		108		70-130	4		30
trans-1,3-Dichloropropene	101		106		70-130	5		30
cis-1,3-Dichloropropene	108		112		70-130	4		30
1,1-Dichloropropene	105		108		70-130	3		30
Bromoform	97		106		70-130	9		30
1,1,2,2-Tetrachloroethane	90		97		70-130	7		30
Benzene	101		103		70-130	2		30
Toluene	95		97		70-130	2		30
Ethylbenzene	97		100		70-130	3		30
Chloromethane	89		88		52-130	1		30
Bromomethane	100		104		57-147	4		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: RYE LAKE WFP

Project Number: 41.0162892.00

Lab Number: L2129818

Report Date: 06/14/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01-03 Batch: WG1510815-3 WG1510815-4								
Vinyl chloride	99		100		67-130	1		30
Chloroethane	108		108		50-151	0		30
1,1-Dichloroethene	103		106		65-135	3		30
trans-1,2-Dichloroethene	104		106		70-130	2		30
Trichloroethene	104		106		70-130	2		30
1,2-Dichlorobenzene	96		100		70-130	4		30
1,3-Dichlorobenzene	97		100		70-130	3		30
1,4-Dichlorobenzene	93		97		70-130	4		30
Methyl tert butyl ether	98		103		66-130	5		30
p/m-Xylene	95		99		70-130	4		30
o-Xylene	98		100		70-130	2		30
cis-1,2-Dichloroethene	104		108		70-130	4		30
Dibromomethane	103		107		70-130	4		30
Styrene	101		106		70-130	5		30
Dichlorodifluoromethane	90		91		30-146	1		30
Acetone	97		100		54-140	3		30
Carbon disulfide	96		98		59-130	2		30
2-Butanone	90		87		70-130	3		30
Vinyl acetate	91		101		70-130	10		30
4-Methyl-2-pentanone	94		101		70-130	7		30
1,2,3-Trichloropropane	89		96		68-130	8		30
2-Hexanone	82		89		70-130	8		30
Bromochloromethane	105		111		70-130	6		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2129818
Report Date: 06/14/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01-03 Batch: WG1510815-3 WG1510815-4								
2,2-Dichloropropane	105		108		70-130	3		30
1,2-Dibromoethane	92		97		70-130	5		30
1,3-Dichloropropane	96		101		69-130	5		30
1,1,1,2-Tetrachloroethane	97		102		70-130	5		30
Bromobenzene	97		102		70-130	5		30
n-Butylbenzene	97		100		70-130	3		30
sec-Butylbenzene	96		100		70-130	4		30
tert-Butylbenzene	98		103		70-130	5		30
o-Chlorotoluene	93		95		70-130	2		30
p-Chlorotoluene	95		98		70-130	3		30
1,2-Dibromo-3-chloropropane	83		90		68-130	8		30
Hexachlorobutadiene	96		99		67-130	3		30
Isopropylbenzene	98		103		70-130	5		30
p-Isopropyltoluene	98		102		70-130	4		30
Naphthalene	93		99		70-130	6		30
Acrylonitrile	89		94		70-130	5		30
n-Propylbenzene	97		100		70-130	3		30
1,2,3-Trichlorobenzene	96		101		70-130	5		30
1,2,4-Trichlorobenzene	98		102		70-130	4		30
1,3,5-Trimethylbenzene	98		102		70-130	4		30
1,2,4-Trimethylbenzene	99		103		70-130	4		30
1,4-Dioxane	98		101		65-136	3		30
p-Diethylbenzene	99		103		70-130	4		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: RYE LAKE WFP

Project Number: 41.0162892.00

Lab Number: L2129818

Report Date: 06/14/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01-03 Batch: WG1510815-3 WG1510815-4								
p-Ethyltoluene	99		102		70-130	3		30
1,2,4,5-Tetramethylbenzene	99		102		70-130	3		30
Ethyl ether	100		105		67-130	5		30
trans-1,4-Dichloro-2-butene	92		99		70-130	7		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	98		100		70-130
Toluene-d8	97		97		70-130
4-Bromofluorobenzene	97		101		70-130
Dibromofluoromethane	103		103		70-130

SEMIVOLATILES

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2129818
Report Date: 06/14/21

SAMPLE RESULTS

Lab ID: L2129818-04
Client ID: B-19 (0'-10')
Sample Location: RYE LAKE WFP

Date Collected: 06/03/21 12:15
Date Received: 06/03/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D
Analytical Date: 06/13/21 21:10
Analyst: SZ
Percent Solids: 91%

Extraction Method: EPA 3546
Extraction Date: 06/11/21 18:47

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Acenaphthene	ND		ug/kg	150	19.	1
1,2,4-Trichlorobenzene	ND		ug/kg	180	21.	1
Hexachlorobenzene	ND		ug/kg	110	20.	1
Bis(2-chloroethyl)ether	ND		ug/kg	160	25.	1
2-Chloronaphthalene	ND		ug/kg	180	18.	1
1,2-Dichlorobenzene	ND		ug/kg	180	33.	1
1,3-Dichlorobenzene	ND		ug/kg	180	31.	1
1,4-Dichlorobenzene	ND		ug/kg	180	32.	1
3,3'-Dichlorobenzidine	ND		ug/kg	180	48.	1
2,4-Dinitrotoluene	ND		ug/kg	180	36.	1
2,6-Dinitrotoluene	ND		ug/kg	180	31.	1
Fluoranthene	ND		ug/kg	110	21.	1
4-Chlorophenyl phenyl ether	ND		ug/kg	180	20.	1
4-Bromophenyl phenyl ether	ND		ug/kg	180	28.	1
Bis(2-chloroisopropyl)ether	ND		ug/kg	220	31.	1
Bis(2-chloroethoxy)methane	ND		ug/kg	200	18.	1
Hexachlorobutadiene	ND		ug/kg	180	27.	1
Hexachlorocyclopentadiene	ND		ug/kg	520	160	1
Hexachloroethane	ND		ug/kg	150	30.	1
Isophorone	ND		ug/kg	160	24.	1
Naphthalene	ND		ug/kg	180	22.	1
Nitrobenzene	ND		ug/kg	160	27.	1
NDPA/DPA	ND		ug/kg	150	21.	1
n-Nitrosodi-n-propylamine	ND		ug/kg	180	28.	1
Bis(2-ethylhexyl)phthalate	ND		ug/kg	180	63.	1
Butyl benzyl phthalate	ND		ug/kg	180	46.	1
Di-n-butylphthalate	ND		ug/kg	180	35.	1
Di-n-octylphthalate	ND		ug/kg	180	62.	1

Project Name: RYE LAKE WFP **Lab Number:** L2129818

Project Number: 41.0162892.00 **Report Date:** 06/14/21

SAMPLE RESULTS

Lab ID: L2129818-04 Date Collected: 06/03/21 12:15

Client ID: B-19 (0'-10') Date Received: 06/03/21

Sample Location: RYE LAKE WFP Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Diethyl phthalate	ND		ug/kg	180	17.	1
Dimethyl phthalate	ND		ug/kg	180	38.	1
Benzo(a)anthracene	ND		ug/kg	110	20.	1
Benzo(a)pyrene	ND		ug/kg	150	44.	1
Benzo(b)fluoranthene	ND		ug/kg	110	31.	1
Benzo(k)fluoranthene	ND		ug/kg	110	29.	1
Chrysene	ND		ug/kg	110	19.	1
Acenaphthylene	ND		ug/kg	150	28.	1
Anthracene	ND		ug/kg	110	36.	1
Benzo(ghi)perylene	ND		ug/kg	150	21.	1
Fluorene	ND		ug/kg	180	18.	1
Phenanthrene	ND		ug/kg	110	22.	1
Dibenzo(a,h)anthracene	ND		ug/kg	110	21.	1
Indeno(1,2,3-cd)pyrene	ND		ug/kg	150	25.	1
Pyrene	ND		ug/kg	110	18.	1
Biphenyl	ND		ug/kg	420	42.	1
4-Chloroaniline	ND		ug/kg	180	33.	1
2-Nitroaniline	ND		ug/kg	180	35.	1
3-Nitroaniline	ND		ug/kg	180	34.	1
4-Nitroaniline	ND		ug/kg	180	76.	1
Dibenzofuran	ND		ug/kg	180	17.	1
2-Methylnaphthalene	ND		ug/kg	220	22.	1
1,2,4,5-Tetrachlorobenzene	ND		ug/kg	180	19.	1
Acetophenone	ND		ug/kg	180	22.	1
2,4,6-Trichlorophenol	ND		ug/kg	110	35.	1
p-Chloro-m-cresol	ND		ug/kg	180	27.	1
2-Chlorophenol	ND		ug/kg	180	22.	1
2,4-Dichlorophenol	ND		ug/kg	160	29.	1
2,4-Dimethylphenol	ND		ug/kg	180	60.	1
2-Nitrophenol	ND		ug/kg	390	69.	1
4-Nitrophenol	ND		ug/kg	260	74.	1
2,4-Dinitrophenol	ND		ug/kg	880	85.	1
4,6-Dinitro-o-cresol	ND		ug/kg	470	88.	1
Pentachlorophenol	ND		ug/kg	150	40.	1
Phenol	ND		ug/kg	180	28.	1
2-Methylphenol	ND		ug/kg	180	28.	1
3-Methylphenol/4-Methylphenol	ND		ug/kg	260	28.	1

Project Name: RYE LAKE WFP
Lab Number: L2129818
Project Number: 41.0162892.00
Report Date: 06/14/21

SAMPLE RESULTS

Lab ID: L2129818-04
Client ID: B-19 (0'-10')
Sample Location: RYE LAKE WFP
Date Collected: 06/03/21 12:15
Date Received: 06/03/21
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
2,4,5-Trichlorophenol	ND		ug/kg	180	35.	1
Benzoic Acid	ND		ug/kg	590	180	1
Benzyl Alcohol	ND		ug/kg	180	56.	1
Carbazole	ND		ug/kg	180	18.	1
1,4-Dioxane	ND		ug/kg	27	8.4	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	88		25-120
Phenol-d6	90		10-120
Nitrobenzene-d5	98		23-120
2-Fluorobiphenyl	94		30-120
2,4,6-Tribromophenol	104		10-136
4-Terphenyl-d14	88		18-120

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2129818
Report Date: 06/14/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 06/13/21 19:59
Analyst: SZ

Extraction Method: EPA 3546
Extraction Date: 06/11/21 11:06

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 04 Batch: WG1510908-1					
Acenaphthene	ND		ug/kg	130	17.
1,2,4-Trichlorobenzene	ND		ug/kg	160	19.
Hexachlorobenzene	ND		ug/kg	100	18.
Bis(2-chloroethyl)ether	ND		ug/kg	150	22.
2-Chloronaphthalene	ND		ug/kg	160	16.
1,2-Dichlorobenzene	ND		ug/kg	160	30.
1,3-Dichlorobenzene	ND		ug/kg	160	28.
1,4-Dichlorobenzene	ND		ug/kg	160	29.
3,3'-Dichlorobenzidine	ND		ug/kg	160	44.
2,4-Dinitrotoluene	ND		ug/kg	160	33.
2,6-Dinitrotoluene	ND		ug/kg	160	28.
Fluoranthene	ND		ug/kg	100	19.
4-Chlorophenyl phenyl ether	ND		ug/kg	160	18.
4-Bromophenyl phenyl ether	ND		ug/kg	160	25.
Bis(2-chloroisopropyl)ether	ND		ug/kg	200	28.
Bis(2-chloroethoxy)methane	ND		ug/kg	180	17.
Hexachlorobutadiene	ND		ug/kg	160	24.
Hexachlorocyclopentadiene	ND		ug/kg	470	150
Hexachloroethane	ND		ug/kg	130	27.
Isophorone	ND		ug/kg	150	22.
Naphthalene	ND		ug/kg	160	20.
Nitrobenzene	ND		ug/kg	150	24.
NDPA/DPA	ND		ug/kg	130	19.
n-Nitrosodi-n-propylamine	ND		ug/kg	160	26.
Bis(2-ethylhexyl)phthalate	ND		ug/kg	160	57.
Butyl benzyl phthalate	ND		ug/kg	160	42.
Di-n-butylphthalate	ND		ug/kg	160	31.
Di-n-octylphthalate	ND		ug/kg	160	56.
Diethyl phthalate	ND		ug/kg	160	15.

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2129818
Report Date: 06/14/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 06/13/21 19:59
Analyst: SZ

Extraction Method: EPA 3546
Extraction Date: 06/11/21 11:06

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 04 Batch: WG1510908-1					
Dimethyl phthalate	ND		ug/kg	160	35.
Benzo(a)anthracene	ND		ug/kg	100	19.
Benzo(a)pyrene	ND		ug/kg	130	40.
Benzo(b)fluoranthene	ND		ug/kg	100	28.
Benzo(k)fluoranthene	ND		ug/kg	100	26.
Chrysene	ND		ug/kg	100	17.
Acenaphthylene	ND		ug/kg	130	26.
Anthracene	ND		ug/kg	100	32.
Benzo(ghi)perylene	ND		ug/kg	130	20.
Fluorene	ND		ug/kg	160	16.
Phenanthrene	ND		ug/kg	100	20.
Dibenzo(a,h)anthracene	ND		ug/kg	100	19.
Indeno(1,2,3-cd)pyrene	ND		ug/kg	130	23.
Pyrene	ND		ug/kg	100	16.
Biphenyl	ND		ug/kg	380	38.
4-Chloroaniline	ND		ug/kg	160	30.
2-Nitroaniline	ND		ug/kg	160	32.
3-Nitroaniline	ND		ug/kg	160	31.
4-Nitroaniline	ND		ug/kg	160	69.
Dibenzofuran	ND		ug/kg	160	16.
2-Methylnaphthalene	ND		ug/kg	200	20.
1,2,4,5-Tetrachlorobenzene	ND		ug/kg	160	17.
Acetophenone	ND		ug/kg	160	20.
2,4,6-Trichlorophenol	ND		ug/kg	100	31.
p-Chloro-m-cresol	ND		ug/kg	160	25.
2-Chlorophenol	ND		ug/kg	160	20.
2,4-Dichlorophenol	ND		ug/kg	150	27.
2,4-Dimethylphenol	ND		ug/kg	160	55.
2-Nitrophenol	ND		ug/kg	360	62.

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2129818
Report Date: 06/14/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 06/13/21 19:59
Analyst: SZ

Extraction Method: EPA 3546
Extraction Date: 06/11/21 11:06

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 04 Batch: WG1510908-1					
4-Nitrophenol	ND		ug/kg	230	68.
2,4-Dinitrophenol	ND		ug/kg	800	77.
4,6-Dinitro-o-cresol	ND		ug/kg	430	80.
Pentachlorophenol	ND		ug/kg	130	36.
Phenol	ND		ug/kg	160	25.
2-Methylphenol	ND		ug/kg	160	26.
3-Methylphenol/4-Methylphenol	ND		ug/kg	240	26.
2,4,5-Trichlorophenol	ND		ug/kg	160	32.
Benzoic Acid	ND		ug/kg	540	170
Benzyl Alcohol	ND		ug/kg	160	51.
Carbazole	ND		ug/kg	160	16.
1,4-Dioxane	ND		ug/kg	25	7.6

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	102		25-120
Phenol-d6	105		10-120
Nitrobenzene-d5	114		23-120
2-Fluorobiphenyl	108		30-120
2,4,6-Tribromophenol	113		10-136
4-Terphenyl-d14	104		18-120

Lab Control Sample Analysis
Batch Quality Control

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2129818
Report Date: 06/14/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 04 Batch: WG1510908-2 WG1510908-3								
Acenaphthene	99		98		31-137	1		50
1,2,4-Trichlorobenzene	100		105		38-107	5		50
Hexachlorobenzene	104		104		40-140	0		50
Bis(2-chloroethyl)ether	93		97		40-140	4		50
2-Chloronaphthalene	101		105		40-140	4		50
1,2-Dichlorobenzene	93		100		40-140	7		50
1,3-Dichlorobenzene	92		95		40-140	3		50
1,4-Dichlorobenzene	92		99		28-104	7		50
3,3'-Dichlorobenzidine	97		94		40-140	3		50
2,4-Dinitrotoluene	111		112		40-132	1		50
2,6-Dinitrotoluene	102		103		40-140	1		50
Fluoranthene	99		99		40-140	0		50
4-Chlorophenyl phenyl ether	101		101		40-140	0		50
4-Bromophenyl phenyl ether	102		100		40-140	2		50
Bis(2-chloroisopropyl)ether	127		138		40-140	8		50
Bis(2-chloroethoxy)methane	103		106		40-117	3		50
Hexachlorobutadiene	101		105		40-140	4		50
Hexachlorocyclopentadiene	72		74		40-140	3		50
Hexachloroethane	98		105		40-140	7		50
Isophorone	116		119		40-140	3		50
Naphthalene	95		99		40-140	4		50
Nitrobenzene	111		116		40-140	4		50
NDPA/DPA	101		102		36-157	1		50

Lab Control Sample Analysis

Batch Quality Control

Project Name: RYE LAKE WFP

Project Number: 41.0162892.00

Lab Number: L2129818

Report Date: 06/14/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 04 Batch: WG1510908-2 WG1510908-3								
n-Nitrosodi-n-propylamine	114		118		32-121	3		50
Bis(2-ethylhexyl)phthalate	124		128		40-140	3		50
Butyl benzyl phthalate	114		119		40-140	4		50
Di-n-butylphthalate	116		120		40-140	3		50
Di-n-octylphthalate	111		113		40-140	2		50
Diethyl phthalate	108		109		40-140	1		50
Dimethyl phthalate	108		110		40-140	2		50
Benzo(a)anthracene	101		103		40-140	2		50
Benzo(a)pyrene	105		105		40-140	0		50
Benzo(b)fluoranthene	102		103		40-140	1		50
Benzo(k)fluoranthene	104		104		40-140	0		50
Chrysene	100		99		40-140	1		50
Acenaphthylene	107		106		40-140	1		50
Anthracene	100		101		40-140	1		50
Benzo(ghi)perylene	102		105		40-140	3		50
Fluorene	98		98		40-140	0		50
Phenanthrene	97		99		40-140	2		50
Dibenzo(a,h)anthracene	104		105		40-140	1		50
Indeno(1,2,3-cd)pyrene	102		104		40-140	2		50
Pyrene	97		99		35-142	2		50
Biphenyl	96		98		37-127	2		50
4-Chloroaniline	111		106		40-140	5		50
2-Nitroaniline	115		120		47-134	4		50

Lab Control Sample Analysis
Batch Quality Control

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2129818
Report Date: 06/14/21

Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 04 Batch: WG1510908-2 WG1510908-3

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
3-Nitroaniline	90		84		26-129	7		50
4-Nitroaniline	102		103		41-125	1		50
Dibenzofuran	99		99		40-140	0		50
2-Methylnaphthalene	99		103		40-140	4		50
1,2,4,5-Tetrachlorobenzene	94		96		40-117	2		50
Acetophenone	100		107		14-144	7		50
2,4,6-Trichlorophenol	106		109		30-130	3		50
p-Chloro-m-cresol	**108**	Q	**112**	Q	26-103	4		50
2-Chlorophenol	98		102		25-102	4		50
2,4-Dichlorophenol	109		112		30-130	3		50
2,4-Dimethylphenol	110		113		30-130	3		50
2-Nitrophenol	112		117		30-130	4		50
4-Nitrophenol	**116**	Q	**119**	Q	11-114	3		50
2,4-Dinitrophenol	77		78		4-130	1		50
4,6-Dinitro-o-cresol	96		99		10-130	3		50
Pentachlorophenol	97		94		17-109	3		50
Phenol	**94**	Q	**97**	Q	26-90	3		50
2-Methylphenol	104		108		30-130.	4		50
3-Methylphenol/4-Methylphenol	104		108		30-130	4		50
2,4,5-Trichlorophenol	110		110		30-130	0		50
Benzoic Acid	38		38		10-110	0		50
Benzyl Alcohol	113		118		40-140	4		50
Carbazole	100		100		54-128	0		50

Lab Control Sample Analysis

Batch Quality Control

Project Name: RYE LAKE WFP

Project Number: 41.0162892.00

Lab Number: L2129818

Report Date: 06/14/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 04 Batch: WG1510908-2 WG1510908-3								
1,4-Dioxane	75		78		40-140	4		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	92		99		25-120
Phenol-d6	97		102		10-120
Nitrobenzene-d5	106		112		23-120
2-Fluorobiphenyl	100		102		30-120
2,4,6-Tribromophenol	108		110		10-136
4-Terphenyl-d14	96		99		18-120

PCBS

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2129818
Report Date: 06/14/21

SAMPLE RESULTS

Lab ID: L2129818-04
Client ID: B-19 (0'-10')
Sample Location: RYE LAKE WFP

Date Collected: 06/03/21 12:15
Date Received: 06/03/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8082A
Analytical Date: 06/13/21 21:36
Analyst: CW
Percent Solids: 91%

Extraction Method: EPA 3546
Extraction Date: 06/11/21 21:45
Cleanup Method: EPA 3665A
Cleanup Date: 06/13/21
Cleanup Method: EPA 3660B
Cleanup Date: 06/13/21

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Polychlorinated Biphenyls by GC - Westborough Lab							
Aroclor 1016	ND		ug/kg	35.7	3.17	1	A
Aroclor 1221	ND		ug/kg	35.7	3.58	1	A
Aroclor 1232	ND		ug/kg	35.7	7.58	1	A
Aroclor 1242	ND		ug/kg	35.7	4.82	1	A
Aroclor 1248	ND		ug/kg	35.7	5.36	1	A
Aroclor 1254	ND		ug/kg	35.7	3.91	1	A
Aroclor 1260	ND		ug/kg	35.7	6.60	1	A
Aroclor 1262	ND		ug/kg	35.7	4.54	1	A
Aroclor 1268	ND		ug/kg	35.7	3.70	1	A
PCBs, Total	ND		ug/kg	35.7	3.17	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	69		30-150	A
Decachlorobiphenyl	66		30-150	A
2,4,5,6-Tetrachloro-m-xylene	72		30-150	B
Decachlorobiphenyl	67		30-150	B

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2129818
Report Date: 06/14/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8082A
Analytical Date: 06/12/21 08:22
Analyst: JM

Extraction Method: EPA 3546
Extraction Date: 06/11/21 09:35
Cleanup Method: EPA 3665A
Cleanup Date: 06/11/21
Cleanup Method: EPA 3660B
Cleanup Date: 06/12/21

Parameter	Result	Qualifier	Units	RL	MDL	Column
Polychlorinated Biphenyls by GC - Westborough Lab for sample(s): 04 Batch: WG1510843-1						
Aroclor 1016	ND		ug/kg	33.2	2.95	A
Aroclor 1221	ND		ug/kg	33.2	3.32	A
Aroclor 1232	ND		ug/kg	33.2	7.03	A
Aroclor 1242	ND		ug/kg	33.2	4.47	A
Aroclor 1248	ND		ug/kg	33.2	4.98	A
Aroclor 1254	ND		ug/kg	33.2	3.63	A
Aroclor 1260	ND		ug/kg	33.2	6.13	A
Aroclor 1262	ND		ug/kg	33.2	4.21	A
Aroclor 1268	ND		ug/kg	33.2	3.44	A
PCBs, Total	ND		ug/kg	33.2	2.95	A

Surrogate	%Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	73		30-150	A
Decachlorobiphenyl	73		30-150	A
2,4,5,6-Tetrachloro-m-xylene	77		30-150	B
Decachlorobiphenyl	71		30-150	B

Lab Control Sample Analysis

Batch Quality Control

Project Name: RYE LAKE WFP

Project Number: 41.0162892.00

Lab Number: L2129818

Report Date: 06/14/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
Polychlorinated Biphenyls by GC - Westborough Lab Associated sample(s): 04 Batch: WG1510843-2 WG1510843-3									
Aroclor 1016	82		80		40-140	2		50	A
Aroclor 1260	77		74		40-140	4		50	A

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	73		71		30-150	A
Decachlorobiphenyl	69		66		30-150	A
2,4,5,6-Tetrachloro-m-xylene	76		77		30-150	B
Decachlorobiphenyl	71		71		30-150	B

PESTICIDES

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2129818
Report Date: 06/14/21

SAMPLE RESULTS

Lab ID: L2129818-04
Client ID: B-19 (0'-10')
Sample Location: RYE LAKE WFP

Date Collected: 06/03/21 12:15
Date Received: 06/03/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8081B
Analytical Date: 06/13/21 18:02
Analyst: AR
Percent Solids: 91%

Extraction Method: EPA 3546
Extraction Date: 06/11/21 21:54
Cleanup Method: EPA 3620B
Cleanup Date: 06/13/21

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Organochlorine Pesticides by GC - Westborough Lab							
Delta-BHC	ND		ug/kg	1.72	0.338	1	A
Lindane	ND		ug/kg	0.718	0.321	1	A
Alpha-BHC	ND		ug/kg	0.718	0.204	1	A
Beta-BHC	ND		ug/kg	1.72	0.654	1	A
Heptachlor	ND		ug/kg	0.862	0.386	1	A
Aldrin	ND		ug/kg	1.72	0.607	1	A
Heptachlor epoxide	ND		ug/kg	3.23	0.970	1	A
Endrin	ND		ug/kg	0.718	0.294	1	A
Endrin aldehyde	ND		ug/kg	2.16	0.754	1	A
Endrin ketone	ND		ug/kg	1.72	0.444	1	A
Dieldrin	ND		ug/kg	1.08	0.539	1	A
4,4'-DDE	ND		ug/kg	1.72	0.399	1	A
4,4'-DDD	ND		ug/kg	1.72	0.615	1	A
4,4'-DDT	ND		ug/kg	3.23	1.39	1	A
Endosulfan I	ND		ug/kg	1.72	0.407	1	A
Endosulfan II	ND		ug/kg	1.72	0.576	1	A
Endosulfan sulfate	ND		ug/kg	0.718	0.342	1	A
Methoxychlor	ND		ug/kg	3.23	1.00	1	A
Toxaphene	ND		ug/kg	32.3	9.05	1	A
cis-Chlordane	ND		ug/kg	2.16	0.600	1	A
trans-Chlordane	ND		ug/kg	2.16	0.569	1	A
Chlordane	ND		ug/kg	14.4	5.71	1	A

Project Name: RYE LAKE WFP **Lab Number:** L2129818

Project Number: 41.0162892.00 **Report Date:** 06/14/21

SAMPLE RESULTS

Lab ID: L2129818-04 Date Collected: 06/03/21 12:15

Client ID: B-19 (0'-10') Date Received: 06/03/21

Sample Location: RYE LAKE WFP Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Organochlorine Pesticides by GC - Westborough Lab							

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	70		30-150	A
Decachlorobiphenyl	55		30-150	A
2,4,5,6-Tetrachloro-m-xylene	57		30-150	B
Decachlorobiphenyl	52		30-150	B

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2129818
Report Date: 06/14/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8081B
Analytical Date: 06/13/21 19:10
Analyst: AR

Extraction Method: EPA 3546
Extraction Date: 06/11/21 21:54
Cleanup Method: EPA 3620B
Cleanup Date: 06/13/21

Parameter	Result	Qualifier	Units	RL	MDL	Column
Organochlorine Pesticides by GC - Westborough Lab for sample(s): 04 Batch: WG1511158-1						
Delta-BHC	ND		ug/kg	1.52	0.298	A
Lindane	ND		ug/kg	0.634	0.284	A
Alpha-BHC	ND		ug/kg	0.634	0.180	A
Beta-BHC	ND		ug/kg	1.52	0.577	A
Heptachlor	ND		ug/kg	0.761	0.341	A
Aldrin	ND		ug/kg	1.52	0.536	A
Heptachlor epoxide	ND		ug/kg	2.86	0.856	A
Endrin	ND		ug/kg	0.634	0.260	A
Endrin aldehyde	ND		ug/kg	1.90	0.666	A
Endrin ketone	ND		ug/kg	1.52	0.392	A
Dieldrin	ND		ug/kg	0.952	0.476	A
4,4'-DDE	ND		ug/kg	1.52	0.352	A
4,4'-DDD	ND		ug/kg	1.52	0.543	A
4,4'-DDT	ND		ug/kg	2.86	1.22	A
Endosulfan I	ND		ug/kg	1.52	0.360	A
Endosulfan II	ND		ug/kg	1.52	0.509	A
Endosulfan sulfate	ND		ug/kg	0.634	0.302	A
Methoxychlor	ND		ug/kg	2.86	0.888	A
Toxaphene	ND		ug/kg	28.6	7.99	A
cis-Chlordane	ND		ug/kg	1.90	0.530	A
trans-Chlordane	ND		ug/kg	1.90	0.502	A
Chlordane	ND		ug/kg	12.7	5.04	A

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2129818
Report Date: 06/14/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8081B
Analytical Date: 06/13/21 19:10
Analyst: AR

Extraction Method: EPA 3546
Extraction Date: 06/11/21 21:54
Cleanup Method: EPA 3620B
Cleanup Date: 06/13/21

Parameter	Result	Qualifier	Units	RL	MDL	Column
Organochlorine Pesticides by GC - Westborough Lab for sample(s): 04 Batch: WG1511158-1						

Surrogate	%Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	62		30-150	A
Decachlorobiphenyl	68		30-150	A
2,4,5,6-Tetrachloro-m-xylene	57		30-150	B
Decachlorobiphenyl	53		30-150	B

Lab Control Sample Analysis

Batch Quality Control

Project Name: RYE LAKE WFP

Project Number: 41.0162892.00

Lab Number: L2129818

Report Date: 06/14/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
Organochlorine Pesticides by GC - Westborough Lab Associated sample(s): 04 Batch: WG1511158-2 WG1511158-3									
Delta-BHC	73		70		30-150	4		30	A
Lindane	69		66		30-150	4		30	A
Alpha-BHC	63		60		30-150	5		30	A
Beta-BHC	70		67		30-150	4		30	A
Heptachlor	72		70		30-150	3		30	A
Aldrin	66		61		30-150	8		30	A
Heptachlor epoxide	64		62		30-150	3		30	A
Endrin	76		72		30-150	5		30	A
Endrin aldehyde	54		53		30-150	2		30	A
Endrin ketone	67		67		30-150	0		30	A
Dieldrin	73		70		30-150	4		30	A
4,4'-DDE	64		61		30-150	5		30	A
4,4'-DDD	77		72		30-150	7		30	A
4,4'-DDT	79		74		30-150	7		30	A
Endosulfan I	63		60		30-150	5		30	A
Endosulfan II	74		71		30-150	4		30	A
Endosulfan sulfate	61		61		30-150	0		30	A
Methoxychlor	89		84		30-150	6		30	A
cis-Chlordane	51		48		30-150	6		30	A
trans-Chlordane	76		73		30-150	4		30	A

Lab Control Sample Analysis

Batch Quality Control

Project Name: RYE LAKE WFP

Project Number: 41.0162892.00

Lab Number: L2129818

Report Date: 06/14/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Organochlorine Pesticides by GC - Westborough Lab Associated sample(s): 04 Batch: WG1511158-2 WG1511158-3								

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	69		64		30-150	A
Decachlorobiphenyl	82		78		30-150	A
2,4,5,6-Tetrachloro-m-xylene	59		55		30-150	B
Decachlorobiphenyl	61		58		30-150	B

METALS

Project Name: RYE LAKE WFP
Lab Number: L2129818
Project Number: 41.0162892.00
Report Date: 06/14/21

SAMPLE RESULTS

Lab ID: L2129818-04
Client ID: B-19 (0'-10')
Sample Location: RYE LAKE WFP
Date Collected: 06/03/21 12:15
Date Received: 06/03/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 91%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Aluminum, Total	8020		mg/kg	8.36	2.26	2	06/09/21 21:17	06/10/21 18:30	EPA 3050B	1,6010D	BV
Antimony, Total	ND		mg/kg	4.18	0.318	2	06/09/21 21:17	06/10/21 18:30	EPA 3050B	1,6010D	BV
Arsenic, Total	0.819	J	mg/kg	0.836	0.174	2	06/09/21 21:17	06/10/21 18:30	EPA 3050B	1,6010D	BV
Barium, Total	90.0		mg/kg	0.836	0.145	2	06/09/21 21:17	06/10/21 18:30	EPA 3050B	1,6010D	BV
Beryllium, Total	ND		mg/kg	0.418	0.028	2	06/09/21 21:17	06/10/21 18:30	EPA 3050B	1,6010D	BV
Cadmium, Total	0.334	J	mg/kg	0.836	0.082	2	06/09/21 21:17	06/10/21 18:30	EPA 3050B	1,6010D	BV
Calcium, Total	1670		mg/kg	8.36	2.92	2	06/09/21 21:17	06/10/21 18:30	EPA 3050B	1,6010D	BV
Chromium, Total	16.7		mg/kg	0.836	0.080	2	06/09/21 21:17	06/10/21 18:30	EPA 3050B	1,6010D	BV
Cobalt, Total	6.02		mg/kg	1.67	0.139	2	06/09/21 21:17	06/10/21 18:30	EPA 3050B	1,6010D	BV
Copper, Total	11.3		mg/kg	0.836	0.216	2	06/09/21 21:17	06/10/21 18:30	EPA 3050B	1,6010D	BV
Iron, Total	13800		mg/kg	4.18	0.754	2	06/09/21 21:17	06/10/21 18:30	EPA 3050B	1,6010D	BV
Lead, Total	2.56	J	mg/kg	4.18	0.224	2	06/09/21 21:17	06/10/21 18:30	EPA 3050B	1,6010D	BV
Magnesium, Total	3020		mg/kg	8.36	1.29	2	06/09/21 21:17	06/10/21 18:30	EPA 3050B	1,6010D	BV
Manganese, Total	241		mg/kg	0.836	0.133	2	06/09/21 21:17	06/10/21 18:30	EPA 3050B	1,6010D	BV
Mercury, Total	ND		mg/kg	0.078	0.051	1	06/09/21 22:00	06/10/21 16:48	EPA 7471B	1,7471B	OU
Nickel, Total	12.5		mg/kg	2.09	0.202	2	06/09/21 21:17	06/10/21 18:30	EPA 3050B	1,6010D	BV
Potassium, Total	2250		mg/kg	209	12.0	2	06/09/21 21:17	06/10/21 18:30	EPA 3050B	1,6010D	BV
Selenium, Total	ND		mg/kg	1.67	0.216	2	06/09/21 21:17	06/10/21 18:30	EPA 3050B	1,6010D	BV
Silver, Total	ND		mg/kg	0.836	0.236	2	06/09/21 21:17	06/10/21 18:30	EPA 3050B	1,6010D	BV
Sodium, Total	104	J	mg/kg	167	2.63	2	06/09/21 21:17	06/10/21 18:30	EPA 3050B	1,6010D	BV
Thallium, Total	ND		mg/kg	1.67	0.263	2	06/09/21 21:17	06/10/21 18:30	EPA 3050B	1,6010D	BV
Vanadium, Total	25.3		mg/kg	0.836	0.170	2	06/09/21 21:17	06/10/21 18:30	EPA 3050B	1,6010D	BV
Zinc, Total	27.8		mg/kg	4.18	0.245	2	06/09/21 21:17	06/10/21 18:30	EPA 3050B	1,6010D	BV

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2129818
Report Date: 06/14/21

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 04 Batch: WG1509280-1										
Aluminum, Total	ND		mg/kg	4.00	1.08	1	06/09/21 21:17	06/10/21 17:59	1,6010D	BV
Antimony, Total	ND		mg/kg	2.00	0.152	1	06/09/21 21:17	06/10/21 17:59	1,6010D	BV
Arsenic, Total	ND		mg/kg	0.400	0.083	1	06/09/21 21:17	06/10/21 17:59	1,6010D	BV
Barium, Total	ND		mg/kg	0.400	0.070	1	06/09/21 21:17	06/10/21 17:59	1,6010D	BV
Beryllium, Total	ND		mg/kg	0.200	0.013	1	06/09/21 21:17	06/10/21 17:59	1,6010D	BV
Cadmium, Total	ND		mg/kg	0.400	0.039	1	06/09/21 21:17	06/10/21 17:59	1,6010D	BV
Calcium, Total	ND		mg/kg	4.00	1.40	1	06/09/21 21:17	06/10/21 17:59	1,6010D	BV
Chromium, Total	ND		mg/kg	0.400	0.038	1	06/09/21 21:17	06/10/21 17:59	1,6010D	BV
Cobalt, Total	ND		mg/kg	0.800	0.066	1	06/09/21 21:17	06/10/21 17:59	1,6010D	BV
Copper, Total	ND		mg/kg	0.400	0.103	1	06/09/21 21:17	06/10/21 17:59	1,6010D	BV
Iron, Total	ND		mg/kg	2.00	0.361	1	06/09/21 21:17	06/10/21 17:59	1,6010D	BV
Lead, Total	ND		mg/kg	2.00	0.107	1	06/09/21 21:17	06/10/21 17:59	1,6010D	BV
Magnesium, Total	ND		mg/kg	4.00	0.616	1	06/09/21 21:17	06/10/21 17:59	1,6010D	BV
Manganese, Total	ND		mg/kg	0.400	0.064	1	06/09/21 21:17	06/10/21 17:59	1,6010D	BV
Nickel, Total	ND		mg/kg	1.00	0.097	1	06/09/21 21:17	06/10/21 17:59	1,6010D	BV
Potassium, Total	ND		mg/kg	100	5.76	1	06/09/21 21:17	06/10/21 17:59	1,6010D	BV
Selenium, Total	ND		mg/kg	0.800	0.103	1	06/09/21 21:17	06/10/21 17:59	1,6010D	BV
Silver, Total	ND		mg/kg	0.400	0.113	1	06/09/21 21:17	06/10/21 17:59	1,6010D	BV
Sodium, Total	11.7	J	mg/kg	80.0	1.26	1	06/09/21 21:17	06/10/21 17:59	1,6010D	BV
Thallium, Total	ND		mg/kg	0.800	0.126	1	06/09/21 21:17	06/10/21 17:59	1,6010D	BV
Vanadium, Total	ND		mg/kg	0.400	0.081	1	06/09/21 21:17	06/10/21 17:59	1,6010D	BV
Zinc, Total	ND		mg/kg	2.00	0.117	1	06/09/21 21:17	06/10/21 17:59	1,6010D	BV

Prep Information

Digestion Method: EPA 3050B

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 04 Batch: WG1509282-1										
Mercury, Total	ND		mg/kg	0.083	0.054	1	06/09/21 22:00	06/10/21 16:22	1,7471B	OU

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2129818
Report Date: 06/14/21

Method Blank Analysis
Batch Quality Control

Prep Information

Digestion Method: EPA 7471B

Lab Control Sample Analysis

Batch Quality Control

Project Name: RYE LAKE WFP

Project Number: 41.0162892.00

Lab Number: L2129818

Report Date: 06/14/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 04 Batch: WG1509280-2 SRM Lot Number: D109-540								
Aluminum, Total	78		-		50-150	-		
Antimony, Total	140		-		19-250	-		
Arsenic, Total	104		-		70-130	-		
Barium, Total	100		-		75-125	-		
Beryllium, Total	98		-		75-125	-		
Cadmium, Total	102		-		75-125	-		
Calcium, Total	97		-		73-128	-		
Chromium, Total	99		-		70-130	-		
Cobalt, Total	100		-		75-125	-		
Copper, Total	102		-		75-125	-		
Iron, Total	107		-		35-165	-		
Lead, Total	102		-		72-128	-		
Magnesium, Total	94		-		62-138	-		
Manganese, Total	102		-		74-126	-		
Nickel, Total	102		-		70-130	-		
Potassium, Total	92		-		59-141	-		
Selenium, Total	106		-		68-132	-		
Silver, Total	99		-		68-131	-		
Sodium, Total	105		-		35-165	-		
Thallium, Total	105		-		68-131	-		
Vanadium, Total	104		-		59-141	-		

Lab Control Sample Analysis

Batch Quality Control

Project Name: RYE LAKE WFP

Project Number: 41.0162892.00

Lab Number: L2129818

Report Date: 06/14/21

Parameter	LCS %Recovery	LCSD %Recovery	%Recovery Limits	RPD	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 04 Batch: WG1509280-2 SRM Lot Number: D109-540					
Zinc, Total	104	-	70-130	-	
Total Metals - Mansfield Lab Associated sample(s): 04 Batch: WG1509282-2 SRM Lot Number: D109-540					
Mercury, Total	77	-	60-140	-	

Matrix Spike Analysis
Batch Quality Control

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2129818
Report Date: 06/14/21

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 04 QC Batch ID: WG1509280-3 QC Sample: L2129536-01 Client ID: MS Sample												
Aluminum, Total	10400	171	11200	**468**	Q	-	-		75-125	-		20
Antimony, Total	0.328J	42.7	34.2	80		-	-		75-125	-		20
Arsenic, Total	15.0	10.2	22.3	**71**	Q	-	-		75-125	-		20
Barium, Total	60.5	171	220	93		-	-		75-125	-		20
Beryllium, Total	0.265	4.27	3.98	87		-	-		75-125	-		20
Cadmium, Total	0.636	4.36	4.56	90		-	-		75-125	-		20
Calcium, Total	4080	854	6830	**322**	Q	-	-		75-125	-		20
Chromium, Total	43.5	17.1	61.9	108		-	-		75-125	-		20
Cobalt, Total	9.07	42.7	43.7	81		-	-		75-125	-		20
Copper, Total	104	21.4	123	89		-	-		75-125	-		20
Iron, Total	15500	85.4	15000	**0**	Q	-	-		75-125	-		20
Lead, Total	229	43.6	281	119		-	-		75-125	-		20
Magnesium, Total	6440	854	7260	96		-	-		75-125	-		20
Manganese, Total	352	42.7	404	122		-	-		75-125	-		20
Nickel, Total	38.2	42.7	74.7	85		-	-		75-125	-		20
Potassium, Total	2560	854	3720	**136**	Q	-	-		75-125	-		20
Selenium, Total	ND	10.2	9.10	89		-	-		75-125	-		20
Silver, Total	ND	25.6	22.8	89		-	-		75-125	-		20
Sodium, Total	401	854	1180	91		-	-		75-125	-		20
Thallium, Total	ND	10.2	6.51	**64**	Q	-	-		75-125	-		20
Vanadium, Total	33.9	42.7	70.2	85		-	-		75-125	-		20

Matrix Spike Analysis
Batch Quality Control

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2129818
Report Date: 06/14/21

Parameter	Native Sample	MS Added	MS Found	MS %Recovery		MSD Found	MSD %Recovery	Recovery Limits	RPD	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 04 QC Batch ID: WG1509280-3 QC Sample: L2129536-01 Client ID: MS Sample										
Zinc, Total	122	42.7	168	108		-	-	75-125	-	20
Total Metals - Mansfield Lab Associated sample(s): 04 QC Batch ID: WG1509282-3 QC Sample: L2130158-01 Client ID: MS Sample										
Mercury, Total	ND	0.148	ND	**0**	Q	-	-	80-120	-	20

Lab Duplicate Analysis

Batch Quality Control

Project Name: RYE LAKE WFP

Project Number: 41.0162892.00

Lab Number: L2129818

Report Date: 06/14/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 04 QC Batch ID: WG1509280-4 QC Sample: L2129536-01 Client ID: DUP Sample						
Arsenic, Total	15.0	12.9	mg/kg	15		20
Barium, Total	60.5	65.6	mg/kg	8		20
Cadmium, Total	0.636	0.646	mg/kg	2		20
Chromium, Total	43.5	46.6	mg/kg	7		20
Lead, Total	229	223	mg/kg	3		20
Selenium, Total	ND	ND	mg/kg	NC		20
Silver, Total	ND	ND	mg/kg	NC		20
Total Metals - Mansfield Lab Associated sample(s): 04 QC Batch ID: WG1509282-4 QC Sample: L2130158-01 Client ID: DUP Sample						
Mercury, Total	ND	ND	mg/kg	NC		20

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Serial Dilution Analysis
Batch Quality Control

Lab Number: L2129818
Report Date: 06/14/21

Parameter	Native Sample	Serial Dilution	Units	% D	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 04 QC Batch ID: WG1509280-6 QC Sample: L2129536-01 Client ID: DUP Sample						
Arsenic, Total	15.0	15.8	mg/kg	5		20
Barium, Total	60.5	68.2	mg/kg	13		20
Chromium, Total	43.5	50.5	mg/kg	16		20
Lead, Total	229	275	mg/kg	20		20

INORGANICS
&
MISCELLANEOUS

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2129818
Report Date: 06/14/21

SAMPLE RESULTS

Lab ID: L2129818-01
Client ID: B-19 (1'-2')
Sample Location: RYE LAKE WFP

Date Collected: 06/03/21 12:15
Date Received: 06/03/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	86.5		%	0.100	NA	1	-	06/05/21 13:19	121,2540G	RI

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2129818
Report Date: 06/14/21

SAMPLE RESULTS

Lab ID: L2129818-02
Client ID: B-19 (5'-6')
Sample Location: RYE LAKE WFP

Date Collected: 06/03/21 12:30
Date Received: 06/03/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	93.4		%	0.100	NA	1	-	06/05/21 13:19	121,2540G	RI

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2129818
Report Date: 06/14/21

SAMPLE RESULTS

Lab ID: L2129818-03
Client ID: B-19 (9'-10')
Sample Location: RYE LAKE WFP

Date Collected: 06/03/21 12:30
Date Received: 06/03/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	90.4		%	0.100	NA	1	-	06/05/21 13:19	121,2540G	RI

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2129818
Report Date: 06/14/21

SAMPLE RESULTS

Lab ID: L2129818-04
Client ID: B-19 (0'-10')
Sample Location: RYE LAKE WFP

Date Collected: 06/03/21 12:15
Date Received: 06/03/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	90.8		%	0.100	NA	1	-	06/05/21 13:19	121,2540G	RI

Lab Duplicate Analysis

Batch Quality Control

Project Name: RYE LAKE WFP

Project Number: 41.0162892.00

Lab Number: L2129818

Report Date: 06/14/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-04 QC Batch ID: WG1508071-1 QC Sample: L2129818-01 Client ID: B-19 (1'-2')						
Solids, Total	86.5	85.2	%	2		20

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2129818
Report Date: 06/14/21

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2129818-01A	Vial MeOH preserved	A	NA		2.2	Y	Absent		NYTCL-8260HLW(14)
L2129818-01B	Vial water preserved	A	NA		2.2	Y	Absent	05-JUN-21 11:24	NYTCL-8260HLW(14)
L2129818-01C	Vial water preserved	A	NA		2.2	Y	Absent	05-JUN-21 11:24	NYTCL-8260HLW(14)
L2129818-01D	Plastic 2oz unpreserved for TS	A	NA		2.2	Y	Absent		TS(7)
L2129818-02A	Vial MeOH preserved	A	NA		2.2	Y	Absent		NYTCL-8260HLW(14)
L2129818-02B	Vial water preserved	A	NA		2.2	Y	Absent	05-JUN-21 11:24	NYTCL-8260HLW(14)
L2129818-02C	Vial water preserved	A	NA		2.2	Y	Absent	05-JUN-21 11:24	NYTCL-8260HLW(14)
L2129818-02D	Plastic 2oz unpreserved for TS	A	NA		2.2	Y	Absent		TS(7)
L2129818-03A	Vial water preserved	A	NA		2.2	Y	Absent		NYTCL-8260HLW(14)
L2129818-03B	Vial MeOH preserved	A	NA		2.2	Y	Absent		NYTCL-8260HLW(14)
L2129818-03C	Vial water preserved	A	NA		2.2	Y	Absent	05-JUN-21 11:24	NYTCL-8260HLW(14)
L2129818-03D	Plastic 2oz unpreserved for TS	A	NA		2.2	Y	Absent		TS(7)
L2129818-04A	Metals Only-Glass 60mL/2oz unpreserved	A	NA		2.2	Y	Absent		BE-TI(180),AS-TI(180),BA-TI(180),AG-TI(180),CR-TI(180),NI-TI(180),TL-TI(180),AL-TI(180),CU-TI(180),SE-TI(180),ZN-TI(180),PB-TI(180),SB-TI(180),CO-TI(180),V-TI(180),HG-T(28),MN-TI(180),FE-TI(180),MG-TI(180),K-TI(180),NA-TI(180),CD-TI(180),CA-TI(180)
L2129818-04B	Glass 250ml/8oz unpreserved	A	NA		2.2	Y	Absent		NYTCL-8270(14),TS(7),NYTCL-8081(14),NYTCL-8082(365)

*Values in parentheses indicate holding time in days

Project Name:	RYE LAKE WFP	**Lab Number:**	L2129818
Project Number:	41.0162892.00	**Report Date:**	06/14/21

GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers

Project Name:	RYE LAKE WFP	**Lab Number:**	L2129818
Project Number:	41.0162892.00	**Report Date:**	06/14/21

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. (Note: 'PFAS, Total (6)' is applicable to MassDEP DW compliance analysis only.). If a 'Total' result is requested, the results of its individual components will also be reported.

The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA,this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

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

F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

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

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

Report Format: DU Report with 'J' Qualifiers

Project Name:	RYE LAKE WFP	**Lab Number:**	L2129818
Project Number:	41.0162892.00	**Report Date:**	06/14/21

Data Qualifiers

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

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

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

Project Name:	RYE LAKE WFP	**Lab Number:**	L2129818
Project Number:	41.0162892.00	**Report Date:**	06/14/21

REFERENCES

1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.

121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene
EPA 625/625.1: alpha-Terpineol
EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D/8270E: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522, EPA 537.1.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

NEW YORK CHAIN OF CUSTODY

ALPHA ANALYTICAL

Westborough, MA 01581 — 8 Walkup Dr. — TEL: 508-898-9220 — FAX: 508-898-9193

Mansfield, MA 02048 — 320 Forbes Blvd — TEL: 508-822-9300 — FAX: 508-822-3288

Service Centers
Mahwah, NJ 07430: 35 Whitney Rd, Suite 5
Albany, NY 12205: 14 Walker Way
Tonawanda, NY 14150: 275 Cooper Ave, Suite 105

Page of

Date Rec'd in Lab: 6/4/21

ALPHA Job #: L2129818

Client Information
Client: GZA GeoEnvironmental
Address: 104 West 29th St
New York, NY
Phone: 212-594-8140
Fax:
Email: matthew.delbalzo@gza.com

Project Information
Project Name: RYE LAKE WFP
Project Location: RYE LAKE WFP
Project #: 41.0162892.00
(Use Project name as Project #) ☐
Project Manager: Matt DelBalzo
ALPHAQuote #:

Turn-Around Time
Standard ☑ Due Date:
Rush (only if pre approved) ☐ # of Days:

These samples have been previously analyzed by Alpha ☐

Other project specific requirements/comments:

Please specify Metals or TAL.

Deliverables
☐ ASP-A ☐ ASP-B
☐ EQuIS (1 File) ☐ EQuIS (4 File)
☐ Other

Regulatory Requirement
☐ NY TOGS ☐ NY Part 375
☐ AWQ Standards ☐ NY CP-51
☐ NY Restricted Use ☐ Other
☐ NY Unrestricted Use
☐ NYC Sewer Discharge

Billing Information
☐ Same as Client Info
PO #

Disposal Site Information
Please identify below location of applicable disposal facilities.
Disposal Facility:
☑ NJ ☑ NY
☑ Other: PA

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	VOCs (8260)	SVOCs (8270)	PCBs (8082)	Pesticides (8081)	Tal Metals				Sample Specific Comments	Total Bottle
2918-01	B-19 (1'-2')	6/3/21	1215	SOIL	A.A.	X									
02	B-19 (5'-6')	6/3/21	1230	SOIL	A.A.	X									
03	B-19 (9'-10')	6/3/21	1230	SOIL	A.A.	X									
04	B-19 (0'-10')	6/3/21	1215	SOIL	A.A.		X	X	X	X					

ANALYSIS

Sample Filtration
☐ Done
☐ Lab to do
Preservation
☐ Lab to do
(Please Specify below)

Preservative Code:
A = None
B = HCl
C = HNO_3
D = H_2SO_4
E = NaOH
F = MeOH
G = $NaHSO_4$
H = $Na_2S_2O_3$
K/E = Zn Ac/NaOH
O = Other

Container Code
P = Plastic
A = Amber Glass
V = Vial
G = Glass
B = Bacteria Cup
C = Cube
O = Other
E = Encore
D = BOD Bottle

Westboro: Certification No: MA935
Mansfield: Certification No: MA015

Container Type
Preservative

Relinquished By:	Date/Time	Received By:	Date/Time
Allan Amador	6/3/21, 545PM	(AAL)	6/3/21 1748
(AAL)	6/3/21 1910		6/4/21 2000
	6/4/21 0030		6/4/21 0036

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. BY EXECUTING THIS COC, THE CLIENT HAS READ AND AGREES TO BE BOUND BY ALPHA'S TERMS & CONDITIONS. (See reverse side.)

Form No: 01-25 HC (rev. 30-Sept-2013)

ANALYTICAL REPORT

Lab Number:	L2130255
Client:	GZA GeoEnvironmental, Inc. 104 West 29th Street, 10th Floor New York, NY 10001
ATTN:	Matthew Del Balzo
Phone:	(212) 594-8140
Project Name:	RYE LAKE WFP
Project Number:	41.0162892.00
Report Date:	06/16/21

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2130255
Report Date: 06/16/21

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2130255-01	B-16 (1'-2')	SOIL	RYE LAKE WFP	06/04/21 11:00	06/04/21
L2130255-02	B-16 (4'-5')	SOIL	RYE LAKE WFP	06/04/21 11:00	06/04/21

Project Name:	RYE LAKE WFP	**Lab Number:**	L2130255
Project Number:	41.0162892.00	**Report Date:**	06/16/21

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name:	RYE LAKE WFP	**Lab Number:**	L2130255
Project Number:	41.0162892.00	**Report Date:**	06/16/21

Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Sample Receipt

The analyses performed were specified by the client.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Cristin Walker

Title: Technical Director/Representative Date: 06/16/21

ORGANICS

VOLATILES

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2130255
Report Date: 06/16/21

SAMPLE RESULTS

Lab ID: L2130255-01
Client ID: B-16 (1'-2')
Sample Location: RYE LAKE WFP
Date Collected: 06/04/21 11:00
Date Received: 06/04/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 06/15/21 14:20
Analyst: AJK
Percent Solids: 86%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methylene chloride	ND		ug/kg	4.3	2.0	1
1,1-Dichloroethane	ND		ug/kg	0.85	0.12	1
Chloroform	ND		ug/kg	1.3	0.12	1
Carbon tetrachloride	ND		ug/kg	0.85	0.20	1
1,2-Dichloropropane	ND		ug/kg	0.85	0.11	1
Dibromochloromethane	ND		ug/kg	0.85	0.12	1
1,1,2-Trichloroethane	ND		ug/kg	0.85	0.23	1
Tetrachloroethene	ND		ug/kg	0.43	0.17	1
Chlorobenzene	ND		ug/kg	0.43	0.11	1
Trichlorofluoromethane	ND		ug/kg	3.4	0.59	1
1,2-Dichloroethane	ND		ug/kg	0.85	0.22	1
1,1,1-Trichloroethane	ND		ug/kg	0.43	0.14	1
Bromodichloromethane	ND		ug/kg	0.43	0.09	1
trans-1,3-Dichloropropene	ND		ug/kg	0.85	0.23	1
cis-1,3-Dichloropropene	ND		ug/kg	0.43	0.13	1
1,3-Dichloropropene, Total	ND		ug/kg	0.43	0.13	1
1,1-Dichloropropene	ND		ug/kg	0.43	0.14	1
Bromoform	ND		ug/kg	3.4	0.21	1
1,1,2,2-Tetrachloroethane	ND		ug/kg	0.43	0.14	1
Benzene	ND		ug/kg	0.43	0.14	1
Toluene	ND		ug/kg	0.85	0.46	1
Ethylbenzene	ND		ug/kg	0.85	0.12	1
Chloromethane	ND		ug/kg	3.4	0.79	1
Bromomethane	ND		ug/kg	1.7	0.50	1
Vinyl chloride	ND		ug/kg	0.85	0.28	1
Chloroethane	ND		ug/kg	1.7	0.38	1
1,1-Dichloroethene	ND		ug/kg	0.85	0.20	1
trans-1,2-Dichloroethene	ND		ug/kg	1.3	0.12	1

Project Name: RYE LAKE WFP **Lab Number:** L2130255

Project Number: 41.0162892.00 **Report Date:** 06/16/21

SAMPLE RESULTS

Lab ID: L2130255-01 Date Collected: 06/04/21 11:00

Client ID: B-16 (1'-2') Date Received: 06/04/21

Sample Location: RYE LAKE WFP Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Trichloroethene	ND		ug/kg	0.43	0.12	1
1,2-Dichlorobenzene	ND		ug/kg	1.7	0.12	1
1,3-Dichlorobenzene	ND		ug/kg	1.7	0.13	1
1,4-Dichlorobenzene	ND		ug/kg	1.7	0.14	1
Methyl tert butyl ether	ND		ug/kg	1.7	0.17	1
p/m-Xylene	ND		ug/kg	1.7	0.48	1
o-Xylene	ND		ug/kg	0.85	0.25	1
Xylenes, Total	ND		ug/kg	0.85	0.25	1
cis-1,2-Dichloroethene	ND		ug/kg	0.85	0.15	1
1,2-Dichloroethene, Total	ND		ug/kg	0.85	0.12	1
Dibromomethane	ND		ug/kg	1.7	0.20	1
Styrene	ND		ug/kg	0.85	0.17	1
Dichlorodifluoromethane	ND		ug/kg	8.5	0.78	1
Acetone	ND		ug/kg	8.5	4.1	1
Carbon disulfide	ND		ug/kg	8.5	3.9	1
2-Butanone	ND		ug/kg	8.5	1.9	1
Vinyl acetate	ND		ug/kg	8.5	1.8	1
4-Methyl-2-pentanone	ND		ug/kg	8.5	1.1	1
1,2,3-Trichloropropane	ND		ug/kg	1.7	0.11	1
2-Hexanone	ND		ug/kg	8.5	1.0	1
Bromochloromethane	ND		ug/kg	1.7	0.17	1
2,2-Dichloropropane	ND		ug/kg	1.7	0.17	1
1,2-Dibromoethane	ND		ug/kg	0.85	0.24	1
1,3-Dichloropropane	ND		ug/kg	1.7	0.14	1
1,1,1,2-Tetrachloroethane	ND		ug/kg	0.43	0.11	1
Bromobenzene	ND		ug/kg	1.7	0.12	1
n-Butylbenzene	ND		ug/kg	0.85	0.14	1
sec-Butylbenzene	ND		ug/kg	0.85	0.12	1
tert-Butylbenzene	ND		ug/kg	1.7	0.10	1
o-Chlorotoluene	ND		ug/kg	1.7	0.16	1
p-Chlorotoluene	ND		ug/kg	1.7	0.09	1
1,2-Dibromo-3-chloropropane	ND		ug/kg	2.6	0.85	1
Hexachlorobutadiene	ND		ug/kg	3.4	0.14	1
Isopropylbenzene	ND		ug/kg	0.85	0.09	1
p-Isopropyltoluene	ND		ug/kg	0.85	0.09	1
Naphthalene	ND		ug/kg	3.4	0.55	1
Acrylonitrile	ND		ug/kg	3.4	0.98	1

Project Name: RYE LAKE WFP
Lab Number: L2130255
Project Number: 41.0162892.00
Report Date: 06/16/21

SAMPLE RESULTS

Lab ID: L2130255-01
Client ID: B-16 (1'-2')
Sample Location: RYE LAKE WFP
Date Collected: 06/04/21 11:00
Date Received: 06/04/21
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
n-Propylbenzene	ND		ug/kg	0.85	0.14	1
1,2,3-Trichlorobenzene	ND		ug/kg	1.7	0.27	1
1,2,4-Trichlorobenzene	ND		ug/kg	1.7	0.23	1
1,3,5-Trimethylbenzene	ND		ug/kg	1.7	0.16	1
1,2,4-Trimethylbenzene	ND		ug/kg	1.7	0.28	1
1,4-Dioxane	ND		ug/kg	68	30.	1
p-Diethylbenzene	ND		ug/kg	1.7	0.15	1
p-Ethyltoluene	ND		ug/kg	1.7	0.33	1
1,2,4,5-Tetramethylbenzene	ND		ug/kg	1.7	0.16	1
Ethyl ether	ND		ug/kg	1.7	0.29	1
trans-1,4-Dichloro-2-butene	ND		ug/kg	4.3	1.2	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	93		70-130
4-Bromofluorobenzene	95		70-130
Dibromofluoromethane	105		70-130

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2130255
Report Date: 06/16/21

SAMPLE RESULTS

Lab ID: L2130255-02
Client ID: B-16 (4'-5')
Sample Location: RYE LAKE WFP
Date Collected: 06/04/21 11:00
Date Received: 06/04/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 06/15/21 14:46
Analyst: AJK
Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Methylene chloride	ND		ug/kg	4.1	1.9	1
1,1-Dichloroethane	ND		ug/kg	0.82	0.12	1
Chloroform	ND		ug/kg	1.2	0.11	1
Carbon tetrachloride	ND		ug/kg	0.82	0.19	1
1,2-Dichloropropane	ND		ug/kg	0.82	0.10	1
Dibromochloromethane	ND		ug/kg	0.82	0.11	1
1,1,2-Trichloroethane	ND		ug/kg	0.82	0.22	1
Tetrachloroethene	ND		ug/kg	0.41	0.16	1
Chlorobenzene	ND		ug/kg	0.41	0.10	1
Trichlorofluoromethane	ND		ug/kg	3.3	0.57	1
1,2-Dichloroethane	ND		ug/kg	0.82	0.21	1
1,1,1-Trichloroethane	ND		ug/kg	0.41	0.14	1
Bromodichloromethane	ND		ug/kg	0.41	0.09	1
trans-1,3-Dichloropropene	ND		ug/kg	0.82	0.22	1
cis-1,3-Dichloropropene	ND		ug/kg	0.41	0.13	1
1,3-Dichloropropene, Total	ND		ug/kg	0.41	0.13	1
1,1-Dichloropropene	ND		ug/kg	0.41	0.13	1
Bromoform	ND		ug/kg	3.3	0.20	1
1,1,2,2-Tetrachloroethane	ND		ug/kg	0.41	0.14	1
Benzene	ND		ug/kg	0.41	0.14	1
Toluene	ND		ug/kg	0.82	0.44	1
Ethylbenzene	ND		ug/kg	0.82	0.12	1
Chloromethane	ND		ug/kg	3.3	0.76	1
Bromomethane	ND		ug/kg	1.6	0.48	1
Vinyl chloride	ND		ug/kg	0.82	0.27	1
Chloroethane	ND		ug/kg	1.6	0.37	1
1,1-Dichloroethene	ND		ug/kg	0.82	0.19	1
trans-1,2-Dichloroethene	ND		ug/kg	1.2	0.11	1

Project Name: RYE LAKE WFP **Lab Number:** L2130255

Project Number: 41.0162892.00 **Report Date:** 06/16/21

SAMPLE RESULTS

Lab ID: L2130255-02 Date Collected: 06/04/21 11:00

Client ID: B-16 (4'-5') Date Received: 06/04/21

Sample Location: RYE LAKE WFP Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
Trichloroethene	ND		ug/kg	0.41	0.11	1
1,2-Dichlorobenzene	ND		ug/kg	1.6	0.12	1
1,3-Dichlorobenzene	ND		ug/kg	1.6	0.12	1
1,4-Dichlorobenzene	ND		ug/kg	1.6	0.14	1
Methyl tert butyl ether	ND		ug/kg	1.6	0.16	1
p/m-Xylene	ND		ug/kg	1.6	0.46	1
o-Xylene	ND		ug/kg	0.82	0.24	1
Xylenes, Total	ND		ug/kg	0.82	0.24	1
cis-1,2-Dichloroethene	ND		ug/kg	0.82	0.14	1
1,2-Dichloroethene, Total	ND		ug/kg	0.82	0.11	1
Dibromomethane	ND		ug/kg	1.6	0.19	1
Styrene	ND		ug/kg	0.82	0.16	1
Dichlorodifluoromethane	ND		ug/kg	8.2	0.75	1
Acetone	4.7	J	ug/kg	8.2	3.9	1
Carbon disulfide	ND		ug/kg	8.2	3.7	1
2-Butanone	ND		ug/kg	8.2	1.8	1
Vinyl acetate	ND		ug/kg	8.2	1.8	1
4-Methyl-2-pentanone	ND		ug/kg	8.2	1.0	1
1,2,3-Trichloropropane	ND		ug/kg	1.6	0.10	1
2-Hexanone	ND		ug/kg	8.2	0.96	1
Bromochloromethane	ND		ug/kg	1.6	0.17	1
2,2-Dichloropropane	ND		ug/kg	1.6	0.16	1
1,2-Dibromoethane	ND		ug/kg	0.82	0.23	1
1,3-Dichloropropane	ND		ug/kg	1.6	0.14	1
1,1,1,2-Tetrachloroethane	ND		ug/kg	0.41	0.11	1
Bromobenzene	ND		ug/kg	1.6	0.12	1
n-Butylbenzene	ND		ug/kg	0.82	0.14	1
sec-Butylbenzene	ND		ug/kg	0.82	0.12	1
tert-Butylbenzene	ND		ug/kg	1.6	0.10	1
o-Chlorotoluene	ND		ug/kg	1.6	0.16	1
p-Chlorotoluene	ND		ug/kg	1.6	0.09	1
1,2-Dibromo-3-chloropropane	ND		ug/kg	2.4	0.82	1
Hexachlorobutadiene	ND		ug/kg	3.3	0.14	1
Isopropylbenzene	ND		ug/kg	0.82	0.09	1
p-Isopropyltoluene	14		ug/kg	0.82	0.09	1
Naphthalene	ND		ug/kg	3.3	0.53	1
Acrylonitrile	ND		ug/kg	3.3	0.94	1

Project Name: RYE LAKE WFP
Lab Number: L2130255
Project Number: 41.0162892.00
Report Date: 06/16/21

SAMPLE RESULTS

Lab ID: L2130255-02
Client ID: B-16 (4'-5')
Sample Location: RYE LAKE WFP
Date Collected: 06/04/21 11:00
Date Received: 06/04/21
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by EPA 5035 Low - Westborough Lab						
n-Propylbenzene	ND		ug/kg	0.82	0.14	1
1,2,3-Trichlorobenzene	ND		ug/kg	1.6	0.26	1
1,2,4-Trichlorobenzene	ND		ug/kg	1.6	0.22	1
1,3,5-Trimethylbenzene	ND		ug/kg	1.6	0.16	1
1,2,4-Trimethylbenzene	ND		ug/kg	1.6	0.27	1
1,4-Dioxane	ND		ug/kg	65	29.	1
p-Diethylbenzene	ND		ug/kg	1.6	0.14	1
p-Ethyltoluene	ND		ug/kg	1.6	0.31	1
1,2,4,5-Tetramethylbenzene	ND		ug/kg	1.6	0.16	1
Ethyl ether	ND		ug/kg	1.6	0.28	1
trans-1,4-Dichloro-2-butene	ND		ug/kg	4.1	1.2	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	95		70-130
Toluene-d8	93		70-130
4-Bromofluorobenzene	98		70-130
Dibromofluoromethane	103		70-130

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2130255
Report Date: 06/16/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 06/15/21 06:36
Analyst: MV

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01-02 Batch: WG1512152-5					
Methylene chloride	ND		ug/kg	5.0	2.3
1,1-Dichloroethane	ND		ug/kg	1.0	0.14
Chloroform	ND		ug/kg	1.5	0.14
Carbon tetrachloride	ND		ug/kg	1.0	0.23
1,2-Dichloropropane	ND		ug/kg	1.0	0.12
Dibromochloromethane	ND		ug/kg	1.0	0.14
1,1,2-Trichloroethane	ND		ug/kg	1.0	0.27
Tetrachloroethene	ND		ug/kg	0.50	0.20
Chlorobenzene	ND		ug/kg	0.50	0.13
Trichlorofluoromethane	ND		ug/kg	4.0	0.70
1,2-Dichloroethane	ND		ug/kg	1.0	0.26
1,1,1-Trichloroethane	ND		ug/kg	0.50	0.17
Bromodichloromethane	ND		ug/kg	0.50	0.11
trans-1,3-Dichloropropene	ND		ug/kg	1.0	0.27
cis-1,3-Dichloropropene	ND		ug/kg	0.50	0.16
1,3-Dichloropropene, Total	ND		ug/kg	0.50	0.16
1,1-Dichloropropene	ND		ug/kg	0.50	0.16
Bromoform	ND		ug/kg	4.0	0.25
1,1,2,2-Tetrachloroethane	ND		ug/kg	0.50	0.17
Benzene	ND		ug/kg	0.50	0.17
Toluene	ND		ug/kg	1.0	0.54
Ethylbenzene	ND		ug/kg	1.0	0.14
Chloromethane	ND		ug/kg	4.0	0.93
Bromomethane	ND		ug/kg	2.0	0.58
Vinyl chloride	ND		ug/kg	1.0	0.34
Chloroethane	ND		ug/kg	2.0	0.45
1,1-Dichloroethene	ND		ug/kg	1.0	0.24
trans-1,2-Dichloroethene	ND		ug/kg	1.5	0.14
Trichloroethene	ND		ug/kg	0.50	0.14

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2130255
Report Date: 06/16/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 06/15/21 06:36
Analyst: MV

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01-02 Batch: WG1512152-5					
1,2-Dichlorobenzene	ND		ug/kg	2.0	0.14
1,3-Dichlorobenzene	ND		ug/kg	2.0	0.15
1,4-Dichlorobenzene	ND		ug/kg	2.0	0.17
Methyl tert butyl ether	ND		ug/kg	2.0	0.20
p/m-Xylene	ND		ug/kg	2.0	0.56
o-Xylene	ND		ug/kg	1.0	0.29
Xylenes, Total	ND		ug/kg	1.0	0.29
cis-1,2-Dichloroethene	ND		ug/kg	1.0	0.18
1,2-Dichloroethene, Total	ND		ug/kg	1.0	0.14
Dibromomethane	ND		ug/kg	2.0	0.24
Styrene	ND		ug/kg	1.0	0.20
Dichlorodifluoromethane	ND		ug/kg	10	0.92
Acetone	ND		ug/kg	10	4.8
Carbon disulfide	ND		ug/kg	10	4.6
2-Butanone	ND		ug/kg	10	2.2
Vinyl acetate	ND		ug/kg	10	2.2
4-Methyl-2-pentanone	ND		ug/kg	10	1.3
1,2,3-Trichloropropane	ND		ug/kg	2.0	0.13
2-Hexanone	ND		ug/kg	10	1.2
Bromochloromethane	ND		ug/kg	2.0	0.20
2,2-Dichloropropane	ND		ug/kg	2.0	0.20
1,2-Dibromoethane	ND		ug/kg	1.0	0.28
1,3-Dichloropropane	ND		ug/kg	2.0	0.17
1,1,1,2-Tetrachloroethane	ND		ug/kg	0.50	0.13
Bromobenzene	ND		ug/kg	2.0	0.14
n-Butylbenzene	ND		ug/kg	1.0	0.17
sec-Butylbenzene	ND		ug/kg	1.0	0.15
tert-Butylbenzene	ND		ug/kg	2.0	0.12
o-Chlorotoluene	ND		ug/kg	2.0	0.19

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2130255
Report Date: 06/16/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 06/15/21 06:36
Analyst: MV

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by EPA 5035 Low - Westborough Lab for sample(s): 01-02 Batch: WG1512152-5					
p-Chlorotoluene	ND		ug/kg	2.0	0.11
1,2-Dibromo-3-chloropropane	ND		ug/kg	3.0	1.0
Hexachlorobutadiene	ND		ug/kg	4.0	0.17
Isopropylbenzene	ND		ug/kg	1.0	0.11
p-Isopropyltoluene	ND		ug/kg	1.0	0.11
Naphthalene	0.66	J	ug/kg	4.0	0.65
Acrylonitrile	ND		ug/kg	4.0	1.2
n-Propylbenzene	ND		ug/kg	1.0	0.17
1,2,3-Trichlorobenzene	ND		ug/kg	2.0	0.32
1,2,4-Trichlorobenzene	ND		ug/kg	2.0	0.27
1,3,5-Trimethylbenzene	ND		ug/kg	2.0	0.19
1,2,4-Trimethylbenzene	ND		ug/kg	2.0	0.33
1,4-Dioxane	ND		ug/kg	80	35.
p-Diethylbenzene	ND		ug/kg	2.0	0.18
p-Ethyltoluene	ND		ug/kg	2.0	0.38
1,2,4,5-Tetramethylbenzene	ND		ug/kg	2.0	0.19
Ethyl ether	ND		ug/kg	2.0	0.34
trans-1,4-Dichloro-2-butene	ND		ug/kg	5.0	1.4

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	96		70-130
Toluene-d8	96		70-130
4-Bromofluorobenzene	97		70-130
Dibromofluoromethane	101		70-130

Lab Control Sample Analysis
Batch Quality Control

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2130255
Report Date: 06/16/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01-02 Batch: WG1512152-3 WG1512152-4								
Methylene chloride	94		91		70-130	3		30
1,1-Dichloroethane	98		96		70-130	2		30
Chloroform	103		101		70-130	2		30
Carbon tetrachloride	104		103		70-130	1		30
1,2-Dichloropropane	99		97		70-130	2		30
Dibromochloromethane	94		94		70-130	0		30
1,1,2-Trichloroethane	96		94		70-130	2		30
Tetrachloroethene	98		98		70-130	0		30
Chlorobenzene	97		96		70-130	1		30
Trichlorofluoromethane	100		98		70-139	2		30
1,2-Dichloroethane	101		96		70-130	5		30
1,1,1-Trichloroethane	104		103		70-130	1		30
Bromodichloromethane	103		101		70-130	2		30
trans-1,3-Dichloropropene	104		101		70-130	3		30
cis-1,3-Dichloropropene	109		106		70-130	3		30
1,1-Dichloropropene	104		101		70-130	3		30
Bromoform	104		98		70-130	6		30
1,1,2,2-Tetrachloroethane	97		90		70-130	7		30
Benzene	100		99		70-130	1		30
Toluene	93		92		70-130	1		30
Ethylbenzene	94		94		70-130	0		30
Chloromethane	81		74		52-130	9		30
Bromomethane	94		94		57-147	0		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: RYE LAKE WFP

Project Number: 41.0162892.00

Lab Number: L2130255

Report Date: 06/16/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01-02 Batch: WG1512152-3 WG1512152-4								
Vinyl chloride	93		88		67-130	6		30
Chloroethane	100		96		50-151	4		30
1,1-Dichloroethene	103		100		65-135	3		30
trans-1,2-Dichloroethene	104		101		70-130	3		30
Trichloroethene	103		102		70-130	1		30
1,2-Dichlorobenzene	97		94		70-130	3		30
1,3-Dichlorobenzene	98		96		70-130	2		30
1,4-Dichlorobenzene	96		92		70-130	4		30
Methyl tert butyl ether	103		99		66-130	4		30
p/m-Xylene	94		94		70-130	0		30
o-Xylene	96		95		70-130	1		30
cis-1,2-Dichloroethene	104		104		70-130	0		30
Dibromomethane	105		102		70-130	3		30
Styrene	100		99		70-130	1		30
Dichlorodifluoromethane	77		73		30-146	5		30
Acetone	105		92		54-140	13		30
Carbon disulfide	95		93		59-130	2		30
2-Butanone	89		79		70-130	12		30
Vinyl acetate	97		90		70-130	7		30
4-Methyl-2-pentanone	100		91		70-130	9		30
1,2,3-Trichloropropane	98		91		68-130	7		30
2-Hexanone	90		83		70-130	8		30
Bromochloromethane	109		106		70-130	3		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2130255
Report Date: 06/16/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01-02 Batch: WG1512152-3 WG1512152-4								
2,2-Dichloropropane	107		105		70-130	2		30
1,2-Dibromoethane	96		94		70-130	2		30
1,3-Dichloropropane	99		95		69-130	4		30
1,1,1,2-Tetrachloroethane	98		97		70-130	1		30
Bromobenzene	98		95		70-130	3		30
n-Butylbenzene	98		94		70-130	4		30
sec-Butylbenzene	98		94		70-130	4		30
tert-Butylbenzene	99		96		70-130	3		30
o-Chlorotoluene	78		74		70-130	5		30
p-Chlorotoluene	98		94		70-130	4		30
1,2-Dibromo-3-chloropropane	91		87		68-130	4		30
Hexachlorobutadiene	96		94		67-130	2		30
Isopropylbenzene	100		96		70-130	4		30
p-Isopropyltoluene	99		96		70-130	3		30
Naphthalene	98		94		70-130	4		30
Acrylonitrile	94		83		70-130	12		30
n-Propylbenzene	97		94		70-130	3		30
1,2,3-Trichlorobenzene	97		95		70-130	2		30
1,2,4-Trichlorobenzene	101		98		70-130	3		30
1,3,5-Trimethylbenzene	99		95		70-130	4		30
1,2,4-Trimethylbenzene	101		97		70-130	4		30
1,4-Dioxane	88		82		65-136	7		30
p-Diethylbenzene	100		98		70-130	2		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: RYE LAKE WFP

Project Number: 41.0162892.00

Lab Number: L2130255

Report Date: 06/16/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by EPA 5035 Low - Westborough Lab Associated sample(s): 01-02 Batch: WG1512152-3 WG1512152-4								
p-Ethyltoluene	100		96		70-130	4		30
1,2,4,5-Tetramethylbenzene	102		98		70-130	4		30
Ethyl ether	105		99		67-130	6		30
trans-1,4-Dichloro-2-butene	102		92		70-130	10		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	99		97		70-130
Toluene-d8	97		97		70-130
4-Bromofluorobenzene	104		99		70-130
Dibromofluoromethane	104		104		70-130

INORGANICS
&
MISCELLANEOUS

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2130255
Report Date: 06/16/21

SAMPLE RESULTS

Lab ID: L2130255-01
Client ID: B-16 (1'-2')
Sample Location: RYE LAKE WFP

Date Collected: 06/04/21 11:00
Date Received: 06/04/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	86.4		%	0.100	NA	1	-	06/09/21 12:33	121,2540G	RI

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2130255
Report Date: 06/16/21

SAMPLE RESULTS

Lab ID: L2130255-02
Client ID: B-16 (4'-5')
Sample Location: RYE LAKE WFP

Date Collected: 06/04/21 11:00
Date Received: 06/04/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	84.3		%	0.100	NA	1	-	06/09/21 12:33	121,2540G	RI

Lab Duplicate Analysis

Batch Quality Control

Project Name: RYE LAKE WFP

Project Number: 41.0162892.00

Lab Number: L2130255

Report Date: 06/16/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-02 QC Batch ID: WG1509645-1 QC Sample: L2128712-03 Client ID: DUP Sample						
Solids, Total	82.1	82.2	%	0		20

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2130255
Report Date: 06/16/21

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2130255-01A	Vial MeOH preserved	A	NA		2.2	Y	Absent		NYTCL-8260HLW(14)
L2130255-01B	Vial water preserved	A	NA		2.2	Y	Absent	05-JUN-21 18:10	NYTCL-8260HLW(14)
L2130255-01C	Vial water preserved	A	NA		2.2	Y	Absent	05-JUN-21 18:10	NYTCL-8260HLW(14)
L2130255-01D	Plastic 2oz unpreserved for TS	A	NA		2.2	Y	Absent		TS(7)
L2130255-02A	Vial MeOH preserved	A	NA		2.2	Y	Absent		NYTCL-8260HLW(14)
L2130255-02B	Vial water preserved	A	NA		2.2	Y	Absent	05-JUN-21 18:10	NYTCL-8260HLW(14)
L2130255-02C	Vial water preserved	A	NA		2.2	Y	Absent	05-JUN-21 18:10	NYTCL-8260HLW(14)
L2130255-02D	Plastic 2oz unpreserved for TS	A	NA		2.2	Y	Absent		TS(7)

*Values in parentheses indicate holding time in days

Project Name:	RYE LAKE WFP	**Lab Number:**	L2130255
Project Number:	41.0162892.00	**Report Date:**	06/16/21

GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers

Project Name:	RYE LAKE WFP	**Lab Number:**	L2130255
Project Number:	41.0162892.00	**Report Date:**	06/16/21

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. (Note: 'PFAS, Total (6)' is applicable to MassDEP DW compliance analysis only.). If a 'Total' result is requested, the results of its individual components will also be reported.

The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA,this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

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

F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

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

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

Report Format: DU Report with 'J' Qualifiers

Project Name:	RYE LAKE WFP	**Lab Number:**	L2130255
Project Number:	41.0162892.00	**Report Date:**	06/16/21

Data Qualifiers

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

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

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

Project Name:	RYE LAKE WFP	**Lab Number:**	L2130255
Project Number:	41.0162892.00	**Report Date:**	06/16/21

REFERENCES

1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.

121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene
EPA 625/625.1: alpha-Terpineol
EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D/8270E: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522, EPA 537.1.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

ALPHA ANALYTICAL

Westborough, MA 01581
8 Walkup Dr.
TEL: 508-898-9220
FAX: 508-898-9193

Mansfield, MA 02048
320 Forbes Blvd
TEL: 508-822-9300
FAX: 508-822-3288

NEW JERSEY CHAIN OF CUSTODY

Service Centers
Mahwah, NJ 07430: 35 Whitney Rd, Suite 5
Albany, NY 12205: 14 Walker Way
Tonawanda, NY 14150: 275 Cooper Ave, Suite 105

Page of

Date Rec'd in Lab: 6/5/21

ALPHA Job #: L2130255

Client Information
Client: GZA GeoEnvironmental
Address: 104 W 29th St
New York, NY
Phone: 212-594-8140
Fax:
Email: matthew.delbalzo@gza.com

Project Information
Project Name: RYE LAKE WFP
Project Location: RYE LAKE WFP
Project #: 41.0162892.00
(Use Project name as Project #) ☐
Project Manager: Matt DelBalzo
ALPHAQuote #:

Turn-Around Time
Standard ☑ Due Date:
Rush (only if pre approved) ☐ # of Days:

These samples have been previously analyzed by Alpha ☐

Deliverables
☐ NJ Full / Reduced
☐ EQuIS (1 File) ☐ EQuIS (4 File)
☐ Other

Regulatory Requirement
☐ SRS Residential/Non Residential
☐ SRS Impact to Groundwater
☐ NJ Ground Water Quality Standards
☐ NJ IGW SPLP Leachate Criteria
☐ Other

Billing Information
☐ Same as Client Info
PO #

Site Information
Is this site impacted by Petroleum? Yes ☐
Petroleum Product:
DISPOSAL FACILITY
☒ NJ ☒ NY
☑ other: PA

For EPH, selection is REQUIRED:
☐ Category 1
☐ Category 2

For VOC, selection is REQUIRED:
☐ 1,4-Dioxane
☐ 8011

Other project specific requirements/comments:
Please specify Metals or TAL.

ANALYSIS
VOCs (8260) | SVOCs (8270) | PCBs (8082) | Pesticides (8081) | Tal Metals

Sample Filtration
☐ Done
☐ Lab to do
Preservation
☐ Lab to do
(Please Specify below)

Sample Specific Comments

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	VOCs (8260)	SVOCs (8270)	PCBs (8082)	Pesticides (8081)	Tal Metals	Total Bottle
30255-01	B-16 (1'-2')	6/4/21	11:00	Soil	A.A.	✓					
02	B-16 (4'-5')	6/4/21	11:00	Soil	A.A.	✓					

Preservative Code:
A = None
B = HCl
C = HNO_3
D = H_2SO_4
E = NaOH
F = MeOH
G = $NaHSO_4$
H = $Na_2S_2O_3$
K/E = Zn Ac/NaOH
O = Other

Container Code
P = Plastic
A = Amber Glass
V = Vial
G = Glass
B = Bacteria Cup
C = Cube
O = Other
E = Encore
D = BOD Bottle

Westboro: Certification No: MA935
Mansfield: Certification No: MA015

Container Type									
Preservative									

Relinquished By:	Date/Time	Received By:	Date/Time
Allan Amador	4:50 PM, 6/4/21		
	6/4 2122		6/4/21 2200
	6/5/21 0230		6/5/21 02:30

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. BY EXECUTING THIS COC, THE CLIENT HAS READ AND AGREES TO BE BOUND BY ALPHA'S TERMS & CONDITIONS. (See reverse side.)

Form No: 01-14 HC (rev. 30-Sept-2013)

ANALYTICAL REPORT

Lab Number:	L2132604
Client:	GZA GeoEnvironmental, Inc. 104 West 29th Street, 10th Floor New York, NY 10001
ATTN:	Matthew Del Balzo
Phone:	(212) 594-8140
Project Name:	RYE LAKE WFP
Project Number:	41.0162892.01
Report Date:	06/25/21

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com

Project Name: RYE LAKE WFP
Project Number: 41.0162892.01

Lab Number: L2132604
Report Date: 06/25/21

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2132604-01	MW-29	WATER	Not Specified	06/16/21 10:50	06/16/21
L2132604-02	MW-3A	WATER	Not Specified	06/16/21 13:00	06/16/21
L2132604-03	EW-01	WATER	Not Specified	06/16/21 14:15	06/16/21

Project Name:	RYE LAKE WFP	**Lab Number:**	L2132604
Project Number:	41.0162892.01	**Report Date:**	06/25/21

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name:	RYE LAKE WFP	**Lab Number:**	L2132604
Project Number:	41.0162892.01	**Report Date:**	06/25/21

Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Tiffani Morrissey - Tiffani Morrissey

Title: Technical Director/Representative Date: 06/25/21

ORGANICS

VOLATILES

Project Name: RYE LAKE WFP
Project Number: 41.0162892.01
Lab Number: L2132604
Report Date: 06/25/21

SAMPLE RESULTS

Lab ID: L2132604-01
Client ID: MW-29
Sample Location: Not Specified
Date Collected: 06/16/21 10:50
Date Received: 06/16/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8260C
Analytical Date: 06/22/21 12:22
Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methylene chloride	ND		ug/l	2.5	0.70	1
1,1-Dichloroethane	ND		ug/l	2.5	0.70	1
Chloroform	ND		ug/l	2.5	0.70	1
Carbon tetrachloride	ND		ug/l	0.50	0.13	1
1,2-Dichloropropane	ND		ug/l	1.0	0.14	1
Dibromochloromethane	ND		ug/l	0.50	0.15	1
1,1,2-Trichloroethane	ND		ug/l	1.5	0.50	1
Tetrachloroethene	ND		ug/l	0.50	0.18	1
Chlorobenzene	ND		ug/l	2.5	0.70	1
Trichlorofluoromethane	ND		ug/l	2.5	0.70	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
1,1,1-Trichloroethane	ND		ug/l	2.5	0.70	1
Bromodichloromethane	ND		ug/l	0.50	0.19	1
trans-1,3-Dichloropropene	ND		ug/l	0.50	0.16	1
cis-1,3-Dichloropropene	ND		ug/l	0.50	0.14	1
1,3-Dichloropropene, Total	ND		ug/l	0.50	0.14	1
1,1-Dichloropropene	ND		ug/l	2.5	0.70	1
Bromoform	ND		ug/l	2.0	0.65	1
1,1,2,2-Tetrachloroethane	ND		ug/l	0.50	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
Toluene	ND		ug/l	2.5	0.70	1
Ethylbenzene	ND		ug/l	2.5	0.70	1
Chloromethane	ND		ug/l	2.5	0.70	1
Bromomethane	ND		ug/l	2.5	0.70	1
Vinyl chloride	ND		ug/l	1.0	0.07	1
Chloroethane	ND		ug/l	2.5	0.70	1
1,1-Dichloroethene	ND		ug/l	0.50	0.17	1
trans-1,2-Dichloroethene	ND		ug/l	2.5	0.70	1

Project Name: RYE LAKE WFP
Project Number: 41.0162892.01
Lab Number: L2132604
Report Date: 06/25/21

SAMPLE RESULTS

Lab ID: L2132604-01
Client ID: MW-29
Sample Location: Not Specified
Date Collected: 06/16/21 10:50
Date Received: 06/16/21
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Trichloroethene	ND		ug/l	0.50	0.18	1
1,2-Dichlorobenzene	ND		ug/l	2.5	0.70	1
1,3-Dichlorobenzene	ND		ug/l	2.5	0.70	1
1,4-Dichlorobenzene	ND		ug/l	2.5	0.70	1
Methyl tert butyl ether	ND		ug/l	2.5	0.70	1
p/m-Xylene	ND		ug/l	2.5	0.70	1
o-Xylene	ND		ug/l	2.5	0.70	1
Xylenes, Total	ND		ug/l	2.5	0.70	1
cis-1,2-Dichloroethene	ND		ug/l	2.5	0.70	1
1,2-Dichloroethene, Total	ND		ug/l	2.5	0.70	1
Dibromomethane	ND		ug/l	5.0	1.0	1
1,2,3-Trichloropropane	ND		ug/l	2.5	0.70	1
Acrylonitrile	ND		ug/l	5.0	1.5	1
Styrene	ND		ug/l	2.5	0.70	1
Dichlorodifluoromethane	ND		ug/l	5.0	1.0	1
Acetone	ND		ug/l	5.0	1.5	1
Carbon disulfide	ND		ug/l	5.0	1.0	1
2-Butanone	ND		ug/l	5.0	1.9	1
Vinyl acetate	ND		ug/l	5.0	1.0	1
4-Methyl-2-pentanone	ND		ug/l	5.0	1.0	1
2-Hexanone	ND		ug/l	5.0	1.0	1
Bromochloromethane	ND		ug/l	2.5	0.70	1
2,2-Dichloropropane	ND		ug/l	2.5	0.70	1
1,2-Dibromoethane	ND		ug/l	2.0	0.65	1
1,3-Dichloropropane	ND		ug/l	2.5	0.70	1
1,1,1,2-Tetrachloroethane	ND		ug/l	2.5	0.70	1
Bromobenzene	ND		ug/l	2.5	0.70	1
n-Butylbenzene	ND		ug/l	2.5	0.70	1
sec-Butylbenzene	ND		ug/l	2.5	0.70	1
tert-Butylbenzene	ND		ug/l	2.5	0.70	1
o-Chlorotoluene	ND		ug/l	2.5	0.70	1
p-Chlorotoluene	ND		ug/l	2.5	0.70	1
1,2-Dibromo-3-chloropropane	ND		ug/l	2.5	0.70	1
Hexachlorobutadiene	ND		ug/l	2.5	0.70	1
Isopropylbenzene	ND		ug/l	2.5	0.70	1
p-Isopropyltoluene	ND		ug/l	2.5	0.70	1
Naphthalene	ND		ug/l	2.5	0.70	1

Project Name: RYE LAKE WFP
Lab Number: L2132604
Project Number: 41.0162892.01
Report Date: 06/25/21

SAMPLE RESULTS

Lab ID: L2132604-01
Client ID: MW-29
Sample Location: Not Specified
Date Collected: 06/16/21 10:50
Date Received: 06/16/21
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
n-Propylbenzene	ND		ug/l	2.5	0.70	1
1,2,3-Trichlorobenzene	ND		ug/l	2.5	0.70	1
1,2,4-Trichlorobenzene	ND		ug/l	2.5	0.70	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.70	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.70	1
1,4-Dioxane	ND		ug/l	250	61.	1
p-Diethylbenzene	ND		ug/l	2.0	0.70	1
p-Ethyltoluene	ND		ug/l	2.0	0.70	1
1,2,4,5-Tetramethylbenzene	ND		ug/l	2.0	0.54	1
Ethyl ether	ND		ug/l	2.5	0.70	1
trans-1,4-Dichloro-2-butene	ND		ug/l	2.5	0.70	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	122		70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	101		70-130
Dibromofluoromethane	106		70-130

Project Name: RYE LAKE WFP
Project Number: 41.0162892.01
Lab Number: L2132604
Report Date: 06/25/21

SAMPLE RESULTS

Lab ID: L2132604-02
Client ID: MW-3A
Sample Location: Not Specified
Date Collected: 06/16/21 13:00
Date Received: 06/16/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8260C
Analytical Date: 06/22/21 12:49
Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methylene chloride	ND		ug/l	2.5	0.70	1
1,1-Dichloroethane	ND		ug/l	2.5	0.70	1
Chloroform	ND		ug/l	2.5	0.70	1
Carbon tetrachloride	ND		ug/l	0.50	0.13	1
1,2-Dichloropropane	ND		ug/l	1.0	0.14	1
Dibromochloromethane	ND		ug/l	0.50	0.15	1
1,1,2-Trichloroethane	ND		ug/l	1.5	0.50	1
Tetrachloroethene	ND		ug/l	0.50	0.18	1
Chlorobenzene	ND		ug/l	2.5	0.70	1
Trichlorofluoromethane	ND		ug/l	2.5	0.70	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
1,1,1-Trichloroethane	ND		ug/l	2.5	0.70	1
Bromodichloromethane	ND		ug/l	0.50	0.19	1
trans-1,3-Dichloropropene	ND		ug/l	0.50	0.16	1
cis-1,3-Dichloropropene	ND		ug/l	0.50	0.14	1
1,3-Dichloropropene, Total	ND		ug/l	0.50	0.14	1
1,1-Dichloropropene	ND		ug/l	2.5	0.70	1
Bromoform	ND		ug/l	2.0	0.65	1
1,1,2,2-Tetrachloroethane	ND		ug/l	0.50	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
Toluene	ND		ug/l	2.5	0.70	1
Ethylbenzene	ND		ug/l	2.5	0.70	1
Chloromethane	ND		ug/l	2.5	0.70	1
Bromomethane	ND		ug/l	2.5	0.70	1
Vinyl chloride	ND		ug/l	1.0	0.07	1
Chloroethane	ND		ug/l	2.5	0.70	1
1,1-Dichloroethene	ND		ug/l	0.50	0.17	1
trans-1,2-Dichloroethene	ND		ug/l	2.5	0.70	1

Project Name: RYE LAKE WFP **Lab Number:** L2132604

Project Number: 41.0162892.01 **Report Date:** 06/25/21

SAMPLE RESULTS

Lab ID: L2132604-02 Date Collected: 06/16/21 13:00

Client ID: MW-3A Date Received: 06/16/21

Sample Location: Not Specified Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Trichloroethene	ND		ug/l	0.50	0.18	1
1,2-Dichlorobenzene	ND		ug/l	2.5	0.70	1
1,3-Dichlorobenzene	ND		ug/l	2.5	0.70	1
1,4-Dichlorobenzene	ND		ug/l	2.5	0.70	1
Methyl tert butyl ether	ND		ug/l	2.5	0.70	1
p/m-Xylene	ND		ug/l	2.5	0.70	1
o-Xylene	ND		ug/l	2.5	0.70	1
Xylenes, Total	ND		ug/l	2.5	0.70	1
cis-1,2-Dichloroethene	ND		ug/l	2.5	0.70	1
1,2-Dichloroethene, Total	ND		ug/l	2.5	0.70	1
Dibromomethane	ND		ug/l	5.0	1.0	1
1,2,3-Trichloropropane	ND		ug/l	2.5	0.70	1
Acrylonitrile	ND		ug/l	5.0	1.5	1
Styrene	ND		ug/l	2.5	0.70	1
Dichlorodifluoromethane	ND		ug/l	5.0	1.0	1
Acetone	ND		ug/l	5.0	1.5	1
Carbon disulfide	ND		ug/l	5.0	1.0	1
2-Butanone	ND		ug/l	5.0	1.9	1
Vinyl acetate	ND		ug/l	5.0	1.0	1
4-Methyl-2-pentanone	ND		ug/l	5.0	1.0	1
2-Hexanone	ND		ug/l	5.0	1.0	1
Bromochloromethane	ND		ug/l	2.5	0.70	1
2,2-Dichloropropane	ND		ug/l	2.5	0.70	1
1,2-Dibromoethane	ND		ug/l	2.0	0.65	1
1,3-Dichloropropane	ND		ug/l	2.5	0.70	1
1,1,1,2-Tetrachloroethane	ND		ug/l	2.5	0.70	1
Bromobenzene	ND		ug/l	2.5	0.70	1
n-Butylbenzene	ND		ug/l	2.5	0.70	1
sec-Butylbenzene	ND		ug/l	2.5	0.70	1
tert-Butylbenzene	ND		ug/l	2.5	0.70	1
o-Chlorotoluene	ND		ug/l	2.5	0.70	1
p-Chlorotoluene	ND		ug/l	2.5	0.70	1
1,2-Dibromo-3-chloropropane	ND		ug/l	2.5	0.70	1
Hexachlorobutadiene	ND		ug/l	2.5	0.70	1
Isopropylbenzene	ND		ug/l	2.5	0.70	1
p-Isopropyltoluene	ND		ug/l	2.5	0.70	1
Naphthalene	ND		ug/l	2.5	0.70	1

Project Name: RYE LAKE WFP
Project Number: 41.0162892.01
Lab Number: L2132604
Report Date: 06/25/21

SAMPLE RESULTS

Lab ID: L2132604-02
Client ID: MW-3A
Sample Location: Not Specified
Date Collected: 06/16/21 13:00
Date Received: 06/16/21
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
n-Propylbenzene	ND		ug/l	2.5	0.70	1
1,2,3-Trichlorobenzene	ND		ug/l	2.5	0.70	1
1,2,4-Trichlorobenzene	ND		ug/l	2.5	0.70	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.70	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.70	1
1,4-Dioxane	ND		ug/l	250	61.	1
p-Diethylbenzene	ND		ug/l	2.0	0.70	1
p-Ethyltoluene	ND		ug/l	2.0	0.70	1
1,2,4,5-Tetramethylbenzene	ND		ug/l	2.0	0.54	1
Ethyl ether	ND		ug/l	2.5	0.70	1
trans-1,4-Dichloro-2-butene	ND		ug/l	2.5	0.70	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	129		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	101		70-130
Dibromofluoromethane	114		70-130

Project Name: RYE LAKE WFP
Project Number: 41.0162892.01
Lab Number: L2132604
Report Date: 06/25/21

SAMPLE RESULTS

Lab ID: L2132604-03
Client ID: EW-01
Sample Location: Not Specified

Date Collected: 06/16/21 14:15
Date Received: 06/16/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8260C
Analytical Date: 06/22/21 13:16
Analyst: LAC

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methylene chloride	ND		ug/l	2.5	0.70	1
1,1-Dichloroethane	ND		ug/l	2.5	0.70	1
Chloroform	ND		ug/l	2.5	0.70	1
Carbon tetrachloride	ND		ug/l	0.50	0.13	1
1,2-Dichloropropane	ND		ug/l	1.0	0.14	1
Dibromochloromethane	ND		ug/l	0.50	0.15	1
1,1,2-Trichloroethane	ND		ug/l	1.5	0.50	1
Tetrachloroethene	ND		ug/l	0.50	0.18	1
Chlorobenzene	ND		ug/l	2.5	0.70	1
Trichlorofluoromethane	ND		ug/l	2.5	0.70	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
1,1,1-Trichloroethane	ND		ug/l	2.5	0.70	1
Bromodichloromethane	ND		ug/l	0.50	0.19	1
trans-1,3-Dichloropropene	ND		ug/l	0.50	0.16	1
cis-1,3-Dichloropropene	ND		ug/l	0.50	0.14	1
1,3-Dichloropropene, Total	ND		ug/l	0.50	0.14	1
1,1-Dichloropropene	ND		ug/l	2.5	0.70	1
Bromoform	ND		ug/l	2.0	0.65	1
1,1,2,2-Tetrachloroethane	ND		ug/l	0.50	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
Toluene	ND		ug/l	2.5	0.70	1
Ethylbenzene	ND		ug/l	2.5	0.70	1
Chloromethane	ND		ug/l	2.5	0.70	1
Bromomethane	ND		ug/l	2.5	0.70	1
Vinyl chloride	ND		ug/l	1.0	0.07	1
Chloroethane	ND		ug/l	2.5	0.70	1
1,1-Dichloroethene	ND		ug/l	0.50	0.17	1
trans-1,2-Dichloroethene	ND		ug/l	2.5	0.70	1

Project Name: RYE LAKE WFP **Lab Number:** L2132604

Project Number: 41.0162892.01 **Report Date:** 06/25/21

SAMPLE RESULTS

Lab ID: L2132604-03 Date Collected: 06/16/21 14:15

Client ID: EW-01 Date Received: 06/16/21

Sample Location: Not Specified Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Trichloroethene	ND		ug/l	0.50	0.18	1
1,2-Dichlorobenzene	ND		ug/l	2.5	0.70	1
1,3-Dichlorobenzene	ND		ug/l	2.5	0.70	1
1,4-Dichlorobenzene	ND		ug/l	2.5	0.70	1
Methyl tert butyl ether	ND		ug/l	2.5	0.70	1
p/m-Xylene	ND		ug/l	2.5	0.70	1
o-Xylene	ND		ug/l	2.5	0.70	1
Xylenes, Total	ND		ug/l	2.5	0.70	1
cis-1,2-Dichloroethene	ND		ug/l	2.5	0.70	1
1,2-Dichloroethene, Total	ND		ug/l	2.5	0.70	1
Dibromomethane	ND		ug/l	5.0	1.0	1
1,2,3-Trichloropropane	ND		ug/l	2.5	0.70	1
Acrylonitrile	ND		ug/l	5.0	1.5	1
Styrene	ND		ug/l	2.5	0.70	1
Dichlorodifluoromethane	ND		ug/l	5.0	1.0	1
Acetone	ND		ug/l	5.0	1.5	1
Carbon disulfide	ND		ug/l	5.0	1.0	1
2-Butanone	ND		ug/l	5.0	1.9	1
Vinyl acetate	ND		ug/l	5.0	1.0	1
4-Methyl-2-pentanone	ND		ug/l	5.0	1.0	1
2-Hexanone	ND		ug/l	5.0	1.0	1
Bromochloromethane	ND		ug/l	2.5	0.70	1
2,2-Dichloropropane	ND		ug/l	2.5	0.70	1
1,2-Dibromoethane	ND		ug/l	2.0	0.65	1
1,3-Dichloropropane	ND		ug/l	2.5	0.70	1
1,1,1,2-Tetrachloroethane	ND		ug/l	2.5	0.70	1
Bromobenzene	ND		ug/l	2.5	0.70	1
n-Butylbenzene	ND		ug/l	2.5	0.70	1
sec-Butylbenzene	ND		ug/l	2.5	0.70	1
tert-Butylbenzene	ND		ug/l	2.5	0.70	1
o-Chlorotoluene	ND		ug/l	2.5	0.70	1
p-Chlorotoluene	ND		ug/l	2.5	0.70	1
1,2-Dibromo-3-chloropropane	ND		ug/l	2.5	0.70	1
Hexachlorobutadiene	ND		ug/l	2.5	0.70	1
Isopropylbenzene	ND		ug/l	2.5	0.70	1
p-Isopropyltoluene	ND		ug/l	2.5	0.70	1
Naphthalene	ND		ug/l	2.5	0.70	1

Project Name: RYE LAKE WFP
Lab Number: L2132604
Project Number: 41.0162892.01
Report Date: 06/25/21

SAMPLE RESULTS

Lab ID: L2132604-03
Client ID: EW-01
Sample Location: Not Specified

Date Collected: 06/16/21 14:15
Date Received: 06/16/21
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
n-Propylbenzene	ND		ug/l	2.5	0.70	1
1,2,3-Trichlorobenzene	ND		ug/l	2.5	0.70	1
1,2,4-Trichlorobenzene	ND		ug/l	2.5	0.70	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.70	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.70	1
1,4-Dioxane	ND		ug/l	250	61.	1
p-Diethylbenzene	ND		ug/l	2.0	0.70	1
p-Ethyltoluene	ND		ug/l	2.0	0.70	1
1,2,4,5-Tetramethylbenzene	ND		ug/l	2.0	0.54	1
Ethyl ether	ND		ug/l	2.5	0.70	1
trans-1,4-Dichloro-2-butene	ND		ug/l	2.5	0.70	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	126		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	102		70-130
Dibromofluoromethane	110		70-130

Project Name: RYE LAKE WFP
Project Number: 41.0162892.01
Lab Number: L2132604
Report Date: 06/25/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 06/22/21 10:06
Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01-03 Batch: WG1515508-5					
Methylene chloride	ND		ug/l	2.5	0.70
1,1-Dichloroethane	ND		ug/l	2.5	0.70
Chloroform	ND		ug/l	2.5	0.70
Carbon tetrachloride	ND		ug/l	0.50	0.13
1,2-Dichloropropane	ND		ug/l	1.0	0.14
Dibromochloromethane	ND		ug/l	0.50	0.15
1,1,2-Trichloroethane	ND		ug/l	1.5	0.50
Tetrachloroethene	ND		ug/l	0.50	0.18
Chlorobenzene	ND		ug/l	2.5	0.70
Trichlorofluoromethane	ND		ug/l	2.5	0.70
1,2-Dichloroethane	ND		ug/l	0.50	0.13
1,1,1-Trichloroethane	ND		ug/l	2.5	0.70
Bromodichloromethane	ND		ug/l	0.50	0.19
trans-1,3-Dichloropropene	ND		ug/l	0.50	0.16
cis-1,3-Dichloropropene	ND		ug/l	0.50	0.14
1,3-Dichloropropene, Total	ND		ug/l	0.50	0.14
1,1-Dichloropropene	ND		ug/l	2.5	0.70
Bromoform	ND		ug/l	2.0	0.65
1,1,2,2-Tetrachloroethane	ND		ug/l	0.50	0.17
Benzene	ND		ug/l	0.50	0.16
Toluene	ND		ug/l	2.5	0.70
Ethylbenzene	ND		ug/l	2.5	0.70
Chloromethane	ND		ug/l	2.5	0.70
Bromomethane	ND		ug/l	2.5	0.70
Vinyl chloride	ND		ug/l	1.0	0.07
Chloroethane	ND		ug/l	2.5	0.70
1,1-Dichloroethene	ND		ug/l	0.50	0.17
trans-1,2-Dichloroethene	ND		ug/l	2.5	0.70
Trichloroethene	ND		ug/l	0.50	0.18

Project Name: RYE LAKE WFP
Project Number: 41.0162892.01
Lab Number: L2132604
Report Date: 06/25/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 06/22/21 10:06
Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01-03 Batch: WG1515508-5					
1,2-Dichlorobenzene	ND		ug/l	2.5	0.70
1,3-Dichlorobenzene	ND		ug/l	2.5	0.70
1,4-Dichlorobenzene	ND		ug/l	2.5	0.70
Methyl tert butyl ether	ND		ug/l	2.5	0.70
p/m-Xylene	ND		ug/l	2.5	0.70
o-Xylene	ND		ug/l	2.5	0.70
Xylenes, Total	ND		ug/l	2.5	0.70
cis-1,2-Dichloroethene	ND		ug/l	2.5	0.70
1,2-Dichloroethene, Total	ND		ug/l	2.5	0.70
Dibromomethane	ND		ug/l	5.0	1.0
1,2,3-Trichloropropane	ND		ug/l	2.5	0.70
Acrylonitrile	ND		ug/l	5.0	1.5
Styrene	ND		ug/l	2.5	0.70
Dichlorodifluoromethane	ND		ug/l	5.0	1.0
Acetone	ND		ug/l	5.0	1.5
Carbon disulfide	ND		ug/l	5.0	1.0
2-Butanone	ND		ug/l	5.0	1.9
Vinyl acetate	ND		ug/l	5.0	1.0
4-Methyl-2-pentanone	ND		ug/l	5.0	1.0
2-Hexanone	ND		ug/l	5.0	1.0
Bromochloromethane	ND		ug/l	2.5	0.70
2,2-Dichloropropane	ND		ug/l	2.5	0.70
1,2-Dibromoethane	ND		ug/l	2.0	0.65
1,3-Dichloropropane	ND		ug/l	2.5	0.70
1,1,1,2-Tetrachloroethane	ND		ug/l	2.5	0.70
Bromobenzene	ND		ug/l	2.5	0.70
n-Butylbenzene	ND		ug/l	2.5	0.70
sec-Butylbenzene	ND		ug/l	2.5	0.70
tert-Butylbenzene	ND		ug/l	2.5	0.70

Project Name: RYE LAKE WFP
Project Number: 41.0162892.01
Lab Number: L2132604
Report Date: 06/25/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 06/22/21 10:06
Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01-03 Batch: WG1515508-5					
o-Chlorotoluene	ND		ug/l	2.5	0.70
p-Chlorotoluene	ND		ug/l	2.5	0.70
1,2-Dibromo-3-chloropropane	ND		ug/l	2.5	0.70
Hexachlorobutadiene	ND		ug/l	2.5	0.70
Isopropylbenzene	ND		ug/l	2.5	0.70
p-Isopropyltoluene	ND		ug/l	2.5	0.70
Naphthalene	ND		ug/l	2.5	0.70
n-Propylbenzene	ND		ug/l	2.5	0.70
1,2,3-Trichlorobenzene	ND		ug/l	2.5	0.70
1,2,4-Trichlorobenzene	ND		ug/l	2.5	0.70
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.70
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.70
1,4-Dioxane	ND		ug/l	250	61.
p-Diethylbenzene	ND		ug/l	2.0	0.70
p-Ethyltoluene	ND		ug/l	2.0	0.70
1,2,4,5-Tetramethylbenzene	ND		ug/l	2.0	0.54
Ethyl ether	ND		ug/l	2.5	0.70
trans-1,4-Dichloro-2-butene	ND		ug/l	2.5	0.70

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	118		70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	101		70-130
Dibromofluoromethane	107		70-130

Lab Control Sample Analysis
Batch Quality Control

Project Name: RYE LAKE WFP
Project Number: 41.0162892.01

Lab Number: L2132604
Report Date: 06/25/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-03 Batch: WG1515508-3 WG1515508-4								
Methylene chloride	100		110		70-130	10		20
1,1-Dichloroethane	100		110		70-130	10		20
Chloroform	110		120		70-130	9		20
Carbon tetrachloride	100		120		63-132	18		20
1,2-Dichloropropane	94		100		70-130	6		20
Dibromochloromethane	100		120		63-130	18		20
1,1,2-Trichloroethane	99		110		70-130	11		20
Tetrachloroethene	120		120		70-130	0		20
Chlorobenzene	100		110		75-130	10		20
Trichlorofluoromethane	120		130		62-150	8		20
1,2-Dichloroethane	110		120		70-130	9		20
1,1,1-Trichloroethane	110		120		67-130	9		20
Bromodichloromethane	100		120		67-130	18		20
trans-1,3-Dichloropropene	88		100		70-130	13		20
cis-1,3-Dichloropropene	93		100		70-130	7		20
1,1-Dichloropropene	100		110		70-130	10		20
Bromoform	100		110		54-136	10		20
1,1,2,2-Tetrachloroethane	100		110		67-130	10		20
Benzene	99		110		70-130	11		20
Toluene	100		110		70-130	10		20
Ethylbenzene	100		110		70-130	10		20
Chloromethane	85		85		64-130	0		20
Bromomethane	79		95		39-139	18		20

Lab Control Sample Analysis
Batch Quality Control

Project Name: RYE LAKE WFP
Project Number: 41.0162892.01

Lab Number: L2132604
Report Date: 06/25/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-03 Batch: WG1515508-3 WG1515508-4								
Vinyl chloride	97		100		55-140	3		20
Chloroethane	97		98		55-138	1		20
1,1-Dichloroethene	100		110		61-145	10		20
trans-1,2-Dichloroethene	100		110		70-130	10		20
Trichloroethene	100		100		70-130	0		20
1,2-Dichlorobenzene	100		110		70-130	10		20
1,3-Dichlorobenzene	110		110		70-130	0		20
1,4-Dichlorobenzene	110		110		70-130	0		20
Methyl tert butyl ether	77		100		63-130	**26**	Q	20
p/m-Xylene	100		110		70-130	10		20
o-Xylene	100		110		70-130	10		20
cis-1,2-Dichloroethene	100		110		70-130	10		20
Dibromomethane	100		120		70-130	18		20
1,2,3-Trichloropropane	93		100		64-130	7		20
Acrylonitrile	96		95		70-130	1		20
Styrene	105		115		70-130	9		20
Dichlorodifluoromethane	100		110		36-147	10		20
Acetone	**150**	Q	110		58-148	**31**	Q	20
Carbon disulfide	100		110		51-130	10		20
2-Butanone	77		89		63-138	14		20
Vinyl acetate	97		120		70-130	**21**	Q	20
4-Methyl-2-pentanone	94		96		59-130	2		20
2-Hexanone	86		92		57-130	7		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: RYE LAKE WFP

Project Number: 41.0162892.01

Lab Number: L2132604

Report Date: 06/25/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-03 Batch: WG1515508-3 WG1515508-4								
Bromochloromethane	110		120		70-130	9		20
2,2-Dichloropropane	**61**	Q	110		63-133	**57**	Q	20
1,2-Dibromoethane	100		110		70-130	10		20
1,3-Dichloropropane	100		110		70-130	10		20
1,1,1,2-Tetrachloroethane	110		110		64-130	0		20
Bromobenzene	110		110		70-130	0		20
n-Butylbenzene	100		100		53-136	0		20
sec-Butylbenzene	100		110		70-130	10		20
tert-Butylbenzene	100		110		70-130	10		20
o-Chlorotoluene	100		110		70-130	10		20
p-Chlorotoluene	100		110		70-130	10		20
1,2-Dibromo-3-chloropropane	99		110		41-144	11		20
Hexachlorobutadiene	130		**140**	Q	63-130	7		20
Isopropylbenzene	98		100		70-130	2		20
p-Isopropyltoluene	100		110		70-130	10		20
Naphthalene	86		99		70-130	14		20
n-Propylbenzene	99		100		69-130	1		20
1,2,3-Trichlorobenzene	100		110		70-130	10		20
1,2,4-Trichlorobenzene	110		120		70-130	9		20
1,3,5-Trimethylbenzene	100		110		64-130	10		20
1,2,4-Trimethylbenzene	100		110		70-130	10		20
1,4-Dioxane	100		112		56-162	11		20
p-Diethylbenzene	99		110		70-130	11		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: RYE LAKE WFP

Project Number: 41.0162892.01

Lab Number: L2132604

Report Date: 06/25/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-03 Batch: WG1515508-3 WG1515508-4								
p-Ethyltoluene	100		100		70-130	0		20
1,2,4,5-Tetramethylbenzene	100		110		70-130	10		20
Ethyl ether	88		100		59-134	13		20
trans-1,4-Dichloro-2-butene	**49**	Q	**67**	Q	70-130	**31**	Q	20

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	119		120		70-130
Toluene-d8	106		106		70-130
4-Bromofluorobenzene	105		101		70-130
Dibromofluoromethane	109		107		70-130

SEMIVOLATILES

Project Name: RYE LAKE WFP
Project Number: 41.0162892.01

Lab Number: L2132604
Report Date: 06/25/21

SAMPLE RESULTS

Lab ID: L2132604-01
Client ID: MW-29
Sample Location: Not Specified

Date Collected: 06/16/21 10:50
Date Received: 06/16/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8270D
Analytical Date: 06/22/21 19:23
Analyst: JG

Extraction Method: EPA 3510C
Extraction Date: 06/22/21 00:50

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
1,2,4-Trichlorobenzene	ND		ug/l	5.0	0.50	1
Bis(2-chloroethyl)ether	ND		ug/l	2.0	0.50	1
1,2-Dichlorobenzene	ND		ug/l	2.0	0.45	1
1,3-Dichlorobenzene	ND		ug/l	2.0	0.40	1
1,4-Dichlorobenzene	ND		ug/l	2.0	0.43	1
3,3'-Dichlorobenzidine	ND		ug/l	5.0	1.6	1
2,4-Dinitrotoluene	ND		ug/l	5.0	1.2	1
2,6-Dinitrotoluene	ND		ug/l	5.0	0.93	1
4-Chlorophenyl phenyl ether	ND		ug/l	2.0	0.49	1
4-Bromophenyl phenyl ether	ND		ug/l	2.0	0.38	1
Bis(2-chloroisopropyl)ether	ND		ug/l	2.0	0.53	1
Bis(2-chloroethoxy)methane	ND		ug/l	5.0	0.50	1
Hexachlorocyclopentadiene	ND		ug/l	20	0.69	1
Isophorone	ND		ug/l	5.0	1.2	1
Nitrobenzene	ND		ug/l	2.0	0.77	1
NDPA/DPA	ND		ug/l	2.0	0.42	1
n-Nitrosodi-n-propylamine	ND		ug/l	5.0	0.64	1
Bis(2-ethylhexyl)phthalate	ND		ug/l	3.0	1.5	1
Butyl benzyl phthalate	ND		ug/l	5.0	1.2	1
Di-n-butylphthalate	ND		ug/l	5.0	0.39	1
Di-n-octylphthalate	ND		ug/l	5.0	1.3	1
Diethyl phthalate	ND		ug/l	5.0	0.38	1
Dimethyl phthalate	ND		ug/l	5.0	1.8	1
Biphenyl	ND		ug/l	2.0	0.46	1
4-Chloroaniline	ND		ug/l	5.0	1.1	1
2-Nitroaniline	ND		ug/l	5.0	0.50	1
3-Nitroaniline	ND		ug/l	5.0	0.81	1
4-Nitroaniline	ND		ug/l	5.0	0.80	1

Project Name: RYE LAKE WFP
Project Number: 41.0162892.01
Lab Number: L2132604
Report Date: 06/25/21

SAMPLE RESULTS

Lab ID: L2132604-01
Client ID: MW-29
Sample Location: Not Specified
Date Collected: 06/16/21 10:50
Date Received: 06/16/21
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Dibenzofuran	ND		ug/l	2.0	0.50	1
1,2,4,5-Tetrachlorobenzene	ND		ug/l	10	0.44	1
Acetophenone	ND		ug/l	5.0	0.53	1
2,4,6-Trichlorophenol	ND		ug/l	5.0	0.61	1
p-Chloro-m-cresol	ND		ug/l	2.0	0.35	1
2-Chlorophenol	ND		ug/l	2.0	0.48	1
2,4-Dichlorophenol	ND		ug/l	5.0	0.41	1
2,4-Dimethylphenol	ND		ug/l	5.0	1.8	1
2-Nitrophenol	ND		ug/l	10	0.85	1
4-Nitrophenol	ND		ug/l	10	0.67	1
2,4-Dinitrophenol	ND		ug/l	20	6.6	1
4,6-Dinitro-o-cresol	ND		ug/l	10	1.8	1
Phenol	ND		ug/l	5.0	0.57	1
2-Methylphenol	ND		ug/l	5.0	0.49	1
3-Methylphenol/4-Methylphenol	ND		ug/l	5.0	0.48	1
2,4,5-Trichlorophenol	ND		ug/l	5.0	0.77	1
Benzoic Acid	ND		ug/l	50	2.6	1
Benzyl Alcohol	ND		ug/l	2.0	0.59	1
Carbazole	ND		ug/l	2.0	0.49	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	56		21-120
Phenol-d6	50		10-120
Nitrobenzene-d5	73		23-120
2-Fluorobiphenyl	58		15-120
2,4,6-Tribromophenol	57		10-120
4-Terphenyl-d14	64		41-149

Project Name: RYE LAKE WFP
Project Number: 41.0162892.01

Lab Number: L2132604
Report Date: 06/25/21

SAMPLE RESULTS

Lab ID: L2132604-01
Client ID: MW-29
Sample Location: Not Specified

Date Collected: 06/16/21 10:50
Date Received: 06/16/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8270D-SIM
Analytical Date: 06/24/21 12:54
Analyst: RP

Extraction Method: EPA 3510C
Extraction Date: 06/22/21 00:52

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Acenaphthene	0.03	J	ug/l	0.10	0.01	1
2-Chloronaphthalene	ND		ug/l	0.20	0.02	1
Fluoranthene	0.12		ug/l	0.10	0.02	1
Hexachlorobutadiene	ND		ug/l	0.50	0.05	1
Naphthalene	0.26		ug/l	0.10	0.05	1
Benzo(a)anthracene	0.05	J	ug/l	0.10	0.02	1
Benzo(a)pyrene	0.05	J	ug/l	0.10	0.02	1
Benzo(b)fluoranthene	0.06	J	ug/l	0.10	0.01	1
Benzo(k)fluoranthene	0.03	J	ug/l	0.10	0.01	1
Chrysene	0.04	J	ug/l	0.10	0.01	1
Acenaphthylene	0.03	J	ug/l	0.10	0.01	1
Anthracene	0.05	J	ug/l	0.10	0.01	1
Benzo(ghi)perylene	0.07	J	ug/l	0.10	0.01	1
Fluorene	0.05	J	ug/l	0.10	0.01	1
Phenanthrene	0.17		ug/l	0.10	0.02	1
Dibenzo(a,h)anthracene	0.02	J	ug/l	0.10	0.01	1
Indeno(1,2,3-cd)pyrene	0.07	J	ug/l	0.10	0.01	1
Pyrene	0.08	J	ug/l	0.10	0.02	1
2-Methylnaphthalene	0.04	J	ug/l	0.10	0.02	1
Pentachlorophenol	ND		ug/l	0.80	0.01	1
Hexachlorobenzene	ND		ug/l	0.80	0.01	1
Hexachloroethane	ND		ug/l	0.80	0.06	1

Project Name: RYE LAKE WFP
Lab Number: L2132604
Project Number: 41.0162892.01
Report Date: 06/25/21

SAMPLE RESULTS

Lab ID: L2132604-01
Client ID: MW-29
Sample Location: Not Specified
Date Collected: 06/16/21 10:50
Date Received: 06/16/21
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	60		21-120
Phenol-d6	48		10-120
Nitrobenzene-d5	73		23-120
2-Fluorobiphenyl	75		15-120
2,4,6-Tribromophenol	107		10-120
4-Terphenyl-d14	81		41-149

Project Name: RYE LAKE WFP
Project Number: 41.0162892.01

Lab Number: L2132604
Report Date: 06/25/21

SAMPLE RESULTS

Lab ID: L2132604-02
Client ID: MW-3A
Sample Location: Not Specified

Date Collected: 06/16/21 13:00
Date Received: 06/16/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8270D
Analytical Date: 06/22/21 19:48
Analyst: JG

Extraction Method: EPA 3510C
Extraction Date: 06/22/21 00:50

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
1,2,4-Trichlorobenzene	ND		ug/l	5.0	0.50	1
Bis(2-chloroethyl)ether	ND		ug/l	2.0	0.50	1
1,2-Dichlorobenzene	ND		ug/l	2.0	0.45	1
1,3-Dichlorobenzene	ND		ug/l	2.0	0.40	1
1,4-Dichlorobenzene	ND		ug/l	2.0	0.43	1
3,3'-Dichlorobenzidine	ND		ug/l	5.0	1.6	1
2,4-Dinitrotoluene	ND		ug/l	5.0	1.2	1
2,6-Dinitrotoluene	ND		ug/l	5.0	0.93	1
4-Chlorophenyl phenyl ether	ND		ug/l	2.0	0.49	1
4-Bromophenyl phenyl ether	ND		ug/l	2.0	0.38	1
Bis(2-chloroisopropyl)ether	ND		ug/l	2.0	0.53	1
Bis(2-chloroethoxy)methane	ND		ug/l	5.0	0.50	1
Hexachlorocyclopentadiene	ND		ug/l	20	0.69	1
Isophorone	ND		ug/l	5.0	1.2	1
Nitrobenzene	ND		ug/l	2.0	0.77	1
NDPA/DPA	ND		ug/l	2.0	0.42	1
n-Nitrosodi-n-propylamine	ND		ug/l	5.0	0.64	1
Bis(2-ethylhexyl)phthalate	ND		ug/l	3.0	1.5	1
Butyl benzyl phthalate	ND		ug/l	5.0	1.2	1
Di-n-butylphthalate	ND		ug/l	5.0	0.39	1
Di-n-octylphthalate	ND		ug/l	5.0	1.3	1
Diethyl phthalate	0.48	J	ug/l	5.0	0.38	1
Dimethyl phthalate	ND		ug/l	5.0	1.8	1
Biphenyl	ND		ug/l	2.0	0.46	1
4-Chloroaniline	ND		ug/l	5.0	1.1	1
2-Nitroaniline	ND		ug/l	5.0	0.50	1
3-Nitroaniline	ND		ug/l	5.0	0.81	1
4-Nitroaniline	ND		ug/l	5.0	0.80	1

Project Name: RYE LAKE WFP **Lab Number:** L2132604

Project Number: 41.0162892.01 **Report Date:** 06/25/21

SAMPLE RESULTS

Lab ID: L2132604-02 Date Collected: 06/16/21 13:00

Client ID: MW-3A Date Received: 06/16/21

Sample Location: Not Specified Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Dibenzofuran	ND		ug/l	2.0	0.50	1
1,2,4,5-Tetrachlorobenzene	ND		ug/l	10	0.44	1
Acetophenone	ND		ug/l	5.0	0.53	1
2,4,6-Trichlorophenol	ND		ug/l	5.0	0.61	1
p-Chloro-m-cresol	ND		ug/l	2.0	0.35	1
2-Chlorophenol	ND		ug/l	2.0	0.48	1
2,4-Dichlorophenol	ND		ug/l	5.0	0.41	1
2,4-Dimethylphenol	ND		ug/l	5.0	1.8	1
2-Nitrophenol	ND		ug/l	10	0.85	1
4-Nitrophenol	ND		ug/l	10	0.67	1
2,4-Dinitrophenol	ND		ug/l	20	6.6	1
4,6-Dinitro-o-cresol	ND		ug/l	10	1.8	1
Phenol	ND		ug/l	5.0	0.57	1
2-Methylphenol	ND		ug/l	5.0	0.49	1
3-Methylphenol/4-Methylphenol	ND		ug/l	5.0	0.48	1
2,4,5-Trichlorophenol	ND		ug/l	5.0	0.77	1
Benzoic Acid	ND		ug/l	50	2.6	1
Benzyl Alcohol	ND		ug/l	2.0	0.59	1
Carbazole	ND		ug/l	2.0	0.49	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	70		21-120
Phenol-d6	60		10-120
Nitrobenzene-d5	89		23-120
2-Fluorobiphenyl	67		15-120
2,4,6-Tribromophenol	61		10-120
4-Terphenyl-d14	69		41-149

Project Name: RYE LAKE WFP
Project Number: 41.0162892.01

Lab Number: L2132604
Report Date: 06/25/21

SAMPLE RESULTS

Lab ID: L2132604-02
Client ID: MW-3A
Sample Location: Not Specified

Date Collected: 06/16/21 13:00
Date Received: 06/16/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8270D-SIM
Analytical Date: 06/22/21 20:26
Analyst: JJW

Extraction Method: EPA 3510C
Extraction Date: 06/22/21 00:52

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Acenaphthene	ND		ug/l	0.10	0.01	1
2-Chloronaphthalene	ND		ug/l	0.20	0.02	1
Fluoranthene	ND		ug/l	0.10	0.02	1
Hexachlorobutadiene	ND		ug/l	0.50	0.05	1
Naphthalene	ND		ug/l	0.10	0.05	1
Benzo(a)anthracene	ND		ug/l	0.10	0.02	1
Benzo(a)pyrene	ND		ug/l	0.10	0.02	1
Benzo(b)fluoranthene	ND		ug/l	0.10	0.01	1
Benzo(k)fluoranthene	ND		ug/l	0.10	0.01	1
Chrysene	ND		ug/l	0.10	0.01	1
Acenaphthylene	ND		ug/l	0.10	0.01	1
Anthracene	ND		ug/l	0.10	0.01	1
Benzo(ghi)perylene	ND		ug/l	0.10	0.01	1
Fluorene	ND		ug/l	0.10	0.01	1
Phenanthrene	ND		ug/l	0.10	0.02	1
Dibenzo(a,h)anthracene	ND		ug/l	0.10	0.01	1
Indeno(1,2,3-cd)pyrene	ND		ug/l	0.10	0.01	1
Pyrene	ND		ug/l	0.10	0.02	1
2-Methylnaphthalene	ND		ug/l	0.10	0.02	1
Pentachlorophenol	ND		ug/l	0.80	0.01	1
Hexachlorobenzene	ND		ug/l	0.80	0.01	1
Hexachloroethane	ND		ug/l	0.80	0.06	1

Project Name: RYE LAKE WFP
Lab Number: L2132604
Project Number: 41.0162892.01
Report Date: 06/25/21

SAMPLE RESULTS

Lab ID: L2132604-02
Client ID: MW-3A
Sample Location: Not Specified
Date Collected: 06/16/21 13:00
Date Received: 06/16/21
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	67		21-120
Phenol-d6	62		10-120
Nitrobenzene-d5	76		23-120
2-Fluorobiphenyl	73		15-120
2,4,6-Tribromophenol	112		10-120
4-Terphenyl-d14	78		41-149

Project Name: RYE LAKE WFP
Project Number: 41.0162892.01
Lab Number: L2132604
Report Date: 06/25/21

SAMPLE RESULTS

Lab ID: L2132604-03
Client ID: EW-01
Sample Location: Not Specified

Date Collected: 06/16/21 14:15
Date Received: 06/16/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8270D
Analytical Date: 06/22/21 20:14
Analyst: JG

Extraction Method: EPA 3510C
Extraction Date: 06/22/21 00:50

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
1,2,4-Trichlorobenzene	ND		ug/l	5.0	0.50	1
Bis(2-chloroethyl)ether	ND		ug/l	2.0	0.50	1
1,2-Dichlorobenzene	ND		ug/l	2.0	0.45	1
1,3-Dichlorobenzene	ND		ug/l	2.0	0.40	1
1,4-Dichlorobenzene	ND		ug/l	2.0	0.43	1
3,3'-Dichlorobenzidine	ND		ug/l	5.0	1.6	1
2,4-Dinitrotoluene	ND		ug/l	5.0	1.2	1
2,6-Dinitrotoluene	ND		ug/l	5.0	0.93	1
4-Chlorophenyl phenyl ether	ND		ug/l	2.0	0.49	1
4-Bromophenyl phenyl ether	ND		ug/l	2.0	0.38	1
Bis(2-chloroisopropyl)ether	ND		ug/l	2.0	0.53	1
Bis(2-chloroethoxy)methane	ND		ug/l	5.0	0.50	1
Hexachlorocyclopentadiene	ND		ug/l	20	0.69	1
Isophorone	ND		ug/l	5.0	1.2	1
Nitrobenzene	ND		ug/l	2.0	0.77	1
NDPA/DPA	ND		ug/l	2.0	0.42	1
n-Nitrosodi-n-propylamine	ND		ug/l	5.0	0.64	1
Bis(2-ethylhexyl)phthalate	ND		ug/l	3.0	1.5	1
Butyl benzyl phthalate	ND		ug/l	5.0	1.2	1
Di-n-butylphthalate	ND		ug/l	5.0	0.39	1
Di-n-octylphthalate	ND		ug/l	5.0	1.3	1
Diethyl phthalate	ND		ug/l	5.0	0.38	1
Dimethyl phthalate	ND		ug/l	5.0	1.8	1
Biphenyl	ND		ug/l	2.0	0.46	1
4-Chloroaniline	ND		ug/l	5.0	1.1	1
2-Nitroaniline	ND		ug/l	5.0	0.50	1
3-Nitroaniline	ND		ug/l	5.0	0.81	1
4-Nitroaniline	ND		ug/l	5.0	0.80	1

Project Name: RYE LAKE WFP
Project Number: 41.0162892.01
Lab Number: L2132604
Report Date: 06/25/21

SAMPLE RESULTS

Lab ID: L2132604-03
Client ID: EW-01
Sample Location: Not Specified
Date Collected: 06/16/21 14:15
Date Received: 06/16/21
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Dibenzofuran	ND		ug/l	2.0	0.50	1
1,2,4,5-Tetrachlorobenzene	ND		ug/l	10	0.44	1
Acetophenone	ND		ug/l	5.0	0.53	1
2,4,6-Trichlorophenol	ND		ug/l	5.0	0.61	1
p-Chloro-m-cresol	ND		ug/l	2.0	0.35	1
2-Chlorophenol	ND		ug/l	2.0	0.48	1
2,4-Dichlorophenol	ND		ug/l	5.0	0.41	1
2,4-Dimethylphenol	ND		ug/l	5.0	1.8	1
2-Nitrophenol	ND		ug/l	10	0.85	1
4-Nitrophenol	ND		ug/l	10	0.67	1
2,4-Dinitrophenol	ND		ug/l	20	6.6	1
4,6-Dinitro-o-cresol	ND		ug/l	10	1.8	1
Phenol	ND		ug/l	5.0	0.57	1
2-Methylphenol	ND		ug/l	5.0	0.49	1
3-Methylphenol/4-Methylphenol	ND		ug/l	5.0	0.48	1
2,4,5-Trichlorophenol	ND		ug/l	5.0	0.77	1
Benzoic Acid	ND		ug/l	50	2.6	1
Benzyl Alcohol	ND		ug/l	2.0	0.59	1
Carbazole	ND		ug/l	2.0	0.49	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	68		21-120
Phenol-d6	60		10-120
Nitrobenzene-d5	81		23-120
2-Fluorobiphenyl	62		15-120
2,4,6-Tribromophenol	54		10-120
4-Terphenyl-d14	67		41-149

Project Name: RYE LAKE WFP
Project Number: 41.0162892.01

Lab Number: L2132604
Report Date: 06/25/21

SAMPLE RESULTS

Lab ID: L2132604-03
Client ID: EW-01
Sample Location: Not Specified

Date Collected: 06/16/21 14:15
Date Received: 06/16/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8270D-SIM
Analytical Date: 06/22/21 20:45
Analyst: JJW

Extraction Method: EPA 3510C
Extraction Date: 06/22/21 00:52

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Acenaphthene	ND		ug/l	0.10	0.01	1
2-Chloronaphthalene	ND		ug/l	0.20	0.02	1
Fluoranthene	ND		ug/l	0.10	0.02	1
Hexachlorobutadiene	ND		ug/l	0.50	0.05	1
Naphthalene	ND		ug/l	0.10	0.05	1
Benzo(a)anthracene	ND		ug/l	0.10	0.02	1
Benzo(a)pyrene	ND		ug/l	0.10	0.02	1
Benzo(b)fluoranthene	ND		ug/l	0.10	0.01	1
Benzo(k)fluoranthene	ND		ug/l	0.10	0.01	1
Chrysene	ND		ug/l	0.10	0.01	1
Acenaphthylene	ND		ug/l	0.10	0.01	1
Anthracene	ND		ug/l	0.10	0.01	1
Benzo(ghi)perylene	ND		ug/l	0.10	0.01	1
Fluorene	ND		ug/l	0.10	0.01	1
Phenanthrene	ND		ug/l	0.10	0.02	1
Dibenzo(a,h)anthracene	ND		ug/l	0.10	0.01	1
Indeno(1,2,3-cd)pyrene	ND		ug/l	0.10	0.01	1
Pyrene	ND		ug/l	0.10	0.02	1
2-Methylnaphthalene	ND		ug/l	0.10	0.02	1
Pentachlorophenol	ND		ug/l	0.80	0.01	1
Hexachlorobenzene	ND		ug/l	0.80	0.01	1
Hexachloroethane	ND		ug/l	0.80	0.06	1

Project Name: RYE LAKE WFP
Lab Number: L2132604
Project Number: 41.0162892.01
Report Date: 06/25/21

SAMPLE RESULTS

Lab ID: L2132604-03
Client ID: EW-01
Sample Location: Not Specified

Date Collected: 06/16/21 14:15
Date Received: 06/16/21
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

Semivolatile Organics by GC/MS-SIM - Westborough Lab

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	71		21-120
Phenol-d6	62		10-120
Nitrobenzene-d5	82		23-120
2-Fluorobiphenyl	77		15-120
2,4,6-Tribromophenol	100		10-120
4-Terphenyl-d14	86		41-149

Project Name: RYE LAKE WFP
Project Number: 41.0162892.01

Lab Number: L2132604
Report Date: 06/25/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 06/22/21 12:06
Analyst: JG

Extraction Method: EPA 3510C
Extraction Date: 06/21/21 13:44

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 01-03 Batch: WG1514908-1					
Acenaphthene	ND		ug/l	2.0	0.44
1,2,4-Trichlorobenzene	ND		ug/l	5.0	0.50
Hexachlorobenzene	ND		ug/l	2.0	0.46
Bis(2-chloroethyl)ether	ND		ug/l	2.0	0.50
2-Chloronaphthalene	ND		ug/l	2.0	0.44
1,2-Dichlorobenzene	ND		ug/l	2.0	0.45
1,3-Dichlorobenzene	ND		ug/l	2.0	0.40
1,4-Dichlorobenzene	ND		ug/l	2.0	0.43
3,3'-Dichlorobenzidine	ND		ug/l	5.0	1.6
2,4-Dinitrotoluene	ND		ug/l	5.0	1.2
2,6-Dinitrotoluene	ND		ug/l	5.0	0.93
Fluoranthene	ND		ug/l	2.0	0.26
4-Chlorophenyl phenyl ether	ND		ug/l	2.0	0.49
4-Bromophenyl phenyl ether	ND		ug/l	2.0	0.38
Bis(2-chloroisopropyl)ether	ND		ug/l	2.0	0.53
Bis(2-chloroethoxy)methane	ND		ug/l	5.0	0.50
Hexachlorobutadiene	ND		ug/l	2.0	0.66
Hexachlorocyclopentadiene	ND		ug/l	20	0.69
Hexachloroethane	ND		ug/l	2.0	0.58
Isophorone	ND		ug/l	5.0	1.2
Naphthalene	ND		ug/l	2.0	0.46
Nitrobenzene	ND		ug/l	2.0	0.77
NDPA/DPA	ND		ug/l	2.0	0.42
n-Nitrosodi-n-propylamine	ND		ug/l	5.0	0.64
Bis(2-ethylhexyl)phthalate	ND		ug/l	3.0	1.5
Butyl benzyl phthalate	ND		ug/l	5.0	1.2
Di-n-butylphthalate	ND		ug/l	5.0	0.39
Di-n-octylphthalate	ND		ug/l	5.0	1.3
Diethyl phthalate	ND		ug/l	5.0	0.38

Project Name: RYE LAKE WFP
Project Number: 41.0162892.01
Lab Number: L2132604
Report Date: 06/25/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 06/22/21 12:06
Analyst: JG

Extraction Method: EPA 3510C
Extraction Date: 06/21/21 13:44

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 01-03 Batch: WG1514908-1					
Dimethyl phthalate	ND		ug/l	5.0	1.8
Benzo(a)anthracene	ND		ug/l	2.0	0.32
Benzo(a)pyrene	ND		ug/l	2.0	0.41
Benzo(b)fluoranthene	ND		ug/l	2.0	0.35
Benzo(k)fluoranthene	ND		ug/l	2.0	0.37
Chrysene	ND		ug/l	2.0	0.34
Acenaphthylene	ND		ug/l	2.0	0.46
Anthracene	ND		ug/l	2.0	0.33
Benzo(ghi)perylene	ND		ug/l	2.0	0.30
Fluorene	ND		ug/l	2.0	0.41
Phenanthrene	ND		ug/l	2.0	0.33
Dibenzo(a,h)anthracene	ND		ug/l	2.0	0.32
Indeno(1,2,3-cd)pyrene	ND		ug/l	2.0	0.40
Pyrene	ND		ug/l	2.0	0.28
Biphenyl	ND		ug/l	2.0	0.46
4-Chloroaniline	ND		ug/l	5.0	1.1
2-Nitroaniline	ND		ug/l	5.0	0.50
3-Nitroaniline	ND		ug/l	5.0	0.81
4-Nitroaniline	ND		ug/l	5.0	0.80
Dibenzofuran	ND		ug/l	2.0	0.50
2-Methylnaphthalene	ND		ug/l	2.0	0.45
1,2,4,5-Tetrachlorobenzene	ND		ug/l	10	0.44
Acetophenone	ND		ug/l	5.0	0.53
2,4,6-Trichlorophenol	ND		ug/l	5.0	0.61
p-Chloro-m-cresol	ND		ug/l	2.0	0.35
2-Chlorophenol	ND		ug/l	2.0	0.48
2,4-Dichlorophenol	ND		ug/l	5.0	0.41
2,4-Dimethylphenol	ND		ug/l	5.0	1.8
2-Nitrophenol	ND		ug/l	10	0.85

Project Name: RYE LAKE WFP
Project Number: 41.0162892.01
Lab Number: L2132604
Report Date: 06/25/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 06/22/21 12:06
Analyst: JG

Extraction Method: EPA 3510C
Extraction Date: 06/21/21 13:44

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 01-03 Batch: WG1514908-1					
4-Nitrophenol	ND		ug/l	10	0.67
2,4-Dinitrophenol	ND		ug/l	20	6.6
4,6-Dinitro-o-cresol	ND		ug/l	10	1.8
Pentachlorophenol	ND		ug/l	10	1.8
Phenol	ND		ug/l	5.0	0.57
2-Methylphenol	ND		ug/l	5.0	0.49
3-Methylphenol/4-Methylphenol	ND		ug/l	5.0	0.48
2,4,5-Trichlorophenol	ND		ug/l	5.0	0.77
Benzoic Acid	ND		ug/l	50	2.6
Benzyl Alcohol	ND		ug/l	2.0	0.59
Carbazole	ND		ug/l	2.0	0.49

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	77		21-120
Phenol-d6	68		10-120
Nitrobenzene-d5	100		23-120
2-Fluorobiphenyl	83		15-120
2,4,6-Tribromophenol	83		10-120
4-Terphenyl-d14	93		41-149

Project Name: RYE LAKE WFP
Project Number: 41.0162892.01

Lab Number: L2132604
Report Date: 06/25/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D-SIM
Analytical Date: 06/22/21 19:06
Analyst: DV

Extraction Method: EPA 3510C
Extraction Date: 06/21/21 13:54

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 01-03 Batch: WG1514912-1					
Acenaphthene	ND		ug/l	0.10	0.01
2-Chloronaphthalene	ND		ug/l	0.20	0.02
Fluoranthene	ND		ug/l	0.10	0.02
Hexachlorobutadiene	ND		ug/l	0.50	0.05
Naphthalene	ND		ug/l	0.10	0.05
Benzo(a)anthracene	ND		ug/l	0.10	0.02
Benzo(a)pyrene	ND		ug/l	0.10	0.02
Benzo(b)fluoranthene	ND		ug/l	0.10	0.01
Benzo(k)fluoranthene	ND		ug/l	0.10	0.01
Chrysene	ND		ug/l	0.10	0.01
Acenaphthylene	ND		ug/l	0.10	0.01
Anthracene	ND		ug/l	0.10	0.01
Benzo(ghi)perylene	ND		ug/l	0.10	0.01
Fluorene	ND		ug/l	0.10	0.01
Phenanthrene	ND		ug/l	0.10	0.02
Dibenzo(a,h)anthracene	ND		ug/l	0.10	0.01
Indeno(1,2,3-cd)pyrene	ND		ug/l	0.10	0.01
Pyrene	ND		ug/l	0.10	0.02
2-Methylnaphthalene	ND		ug/l	0.10	0.02
Pentachlorophenol	ND		ug/l	0.80	0.01
Hexachlorobenzene	ND		ug/l	0.80	0.01
Hexachloroethane	ND		ug/l	0.80	0.06

Project Name: RYE LAKE WFP
Project Number: 41.0162892.01
Lab Number: L2132604
Report Date: 06/25/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D-SIM
Analytical Date: 06/22/21 19:06
Analyst: DV

Extraction Method: EPA 3510C
Extraction Date: 06/21/21 13:54

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 01-03 Batch: WG1514912-1					

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	61		21-120
Phenol-d6	50		10-120
Nitrobenzene-d5	70		23-120
2-Fluorobiphenyl	69		15-120
2,4,6-Tribromophenol	106		10-120
4-Terphenyl-d14	84		41-149

Lab Control Sample Analysis

Batch Quality Control

Project Name: RYE LAKE WFP

Project Number: 41.0162892.01

Lab Number: L2132604

Report Date: 06/25/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-03 Batch: WG1514908-2 WG1514908-3								
Acenaphthene	69		66		37-111	4		30
1,2,4-Trichlorobenzene	67		63		39-98	6		30
Hexachlorobenzene	72		72		40-140	0		30
Bis(2-chloroethyl)ether	76		74		40-140	3		30
2-Chloronaphthalene	66		66		40-140	0		30
1,2-Dichlorobenzene	62		59		40-140	5		30
1,3-Dichlorobenzene	63		56		40-140	12		30
1,4-Dichlorobenzene	65		59		36-97	10		30
3,3'-Dichlorobenzidine	58		59		40-140	2		30
2,4-Dinitrotoluene	79		85		48-143	7		30
2,6-Dinitrotoluene	79		81		40-140	3		30
Fluoranthene	74		73		40-140	1		30
4-Chlorophenyl phenyl ether	76		76		40-140	0		30
4-Bromophenyl phenyl ether	76		75		40-140	1		30
Bis(2-chloroisopropyl)ether	97		93		40-140	4		30
Bis(2-chloroethoxy)methane	77		73		40-140	5		30
Hexachlorobutadiene	68		64		40-140	6		30
Hexachlorocyclopentadiene	63		64		40-140	2		30
Hexachloroethane	70		72		40-140	3		30
Isophorone	70		66		40-140	6		30
Naphthalene	63		65		40-140	3		30
Nitrobenzene	83		82		40-140	1		30
NDPA/DPA	72		71		40-140	1		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: RYE LAKE WFP
Project Number: 41.0162892.01

Lab Number: L2132604
Report Date: 06/25/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-03 Batch: WG1514908-2 WG1514908-3								
n-Nitrosodi-n-propylamine	81		83		29-132	2		30
Bis(2-ethylhexyl)phthalate	85		78		40-140	9		30
Butyl benzyl phthalate	81		79		40-140	3		30
Di-n-butylphthalate	74		74		40-140	0		30
Di-n-octylphthalate	75		70		40-140	7		30
Diethyl phthalate	78		75		40-140	4		30
Dimethyl phthalate	70		70		40-140	0		30
Benzo(a)anthracene	72		71		40-140	1		30
Benzo(a)pyrene	71		70		40-140	1		30
Benzo(b)fluoranthene	73		68		40-140	7		30
Benzo(k)fluoranthene	71		70		40-140	1		30
Chrysene	74		73		40-140	1		30
Acenaphthylene	65		64		45-123	2		30
Anthracene	68		71		40-140	4		30
Benzo(ghi)perylene	70		66		40-140	6		30
Fluorene	72		71		40-140	1		30
Phenanthrene	68		70		40-140	3		30
Dibenzo(a,h)anthracene	72		70		40-140	3		30
Indeno(1,2,3-cd)pyrene	63		63		40-140	0		30
Pyrene	74		74		26-127	0		30
Biphenyl	68		66		40-140	3		30
4-Chloroaniline	82		84		40-140	2		30
2-Nitroaniline	80		78		52-143	3		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: RYE LAKE WFP
Project Number: 41.0162892.01

Lab Number: L2132604
Report Date: 06/25/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-03 Batch: WG1514908-2 WG1514908-3								
3-Nitroaniline	75		74		25-145	1		30
4-Nitroaniline	78		79		51-143	1		30
Dibenzofuran	69		70		40-140	1		30
2-Methylnaphthalene	65		64		40-140	2		30
1,2,4,5-Tetrachlorobenzene	72		69		2-134	4		30
Acetophenone	64		67		39-129	5		30
2,4,6-Trichlorophenol	75		77		30-130	3		30
p-Chloro-m-cresol	83		85		23-97	2		30
2-Chlorophenol	72		71		27-123	1		30
2,4-Dichlorophenol	73		75		30-130	3		30
2,4-Dimethylphenol	70		69		30-130	1		30
2-Nitrophenol	85		83		30-130	2		30
4-Nitrophenol	**92**	Q	**92**	Q	10-80	0		30
2,4-Dinitrophenol	100		100		20-130	0		30
4,6-Dinitro-o-cresol	97		98		20-164	1		30
Pentachlorophenol	89		92		9-103	3		30
Phenol	62		58		12-110	7		30
2-Methylphenol	72		73		30-130	1		30
3-Methylphenol/4-Methylphenol	72		72		30-130	0		30
2,4,5-Trichlorophenol	79		77		30-130	3		30
Benzoic Acid	68		66		10-164	3		30
Benzyl Alcohol	80		76		26-116	5		30
Carbazole	72		73		55-144	1		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: RYE LAKE WFP

Project Number: 41.0162892.01

Lab Number: L2132604

Report Date: 06/25/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-03 Batch: WG1514908-2 WG1514908-3								

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	66		64		21-120
Phenol-d6	61		62		10-120
Nitrobenzene-d5	78		79		23-120
2-Fluorobiphenyl	66		65		15-120
2,4,6-Tribromophenol	73		76		10-120
4-Terphenyl-d14	77		75		41-149

Lab Control Sample Analysis
Batch Quality Control

Project Name: RYE LAKE WFP
Project Number: 41.0162892.01

Lab Number: L2132604
Report Date: 06/25/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 01-03 Batch: WG1514912-2 WG1514912-3								
Acenaphthene	98		65		40-140	40		40
2-Chloronaphthalene	96		63		40-140	**42**	Q	40
Fluoranthene	106		72		40-140	38		40
Hexachlorobutadiene	86		56		40-140	**42**	Q	40
Naphthalene	91		60		40-140	**41**	Q	40
Benzo(a)anthracene	100		66		40-140	**41**	Q	40
Benzo(a)pyrene	105		71		40-140	39		40
Benzo(b)fluoranthene	113		71		40-140	**46**	Q	40
Benzo(k)fluoranthene	106		76		40-140	33		40
Chrysene	103		71		40-140	37		40
Acenaphthylene	96		63		40-140	**42**	Q	40
Anthracene	104		69		40-140	40		40
Benzo(ghi)perylene	101		69		40-140	38		40
Fluorene	106		70		40-140	**41**	Q	40
Phenanthrene	99		67		40-140	39		40
Dibenzo(a,h)anthracene	108		73		40-140	39		40
Indeno(1,2,3-cd)pyrene	103		70		40-140	38		40
Pyrene	104		70		40-140	39		40
2-Methylnaphthalene	95		63		40-140	**41**	Q	40
Pentachlorophenol	**157**	Q	105		40-140	40		40
Hexachlorobenzene	99		66		40-140	40		40
Hexachloroethane	88		58		40-140	**41**	Q	40

Lab Control Sample Analysis
Batch Quality Control

Project Name: RYE LAKE WFP
Project Number: 41.0162892.01

Lab Number: L2132604
Report Date: 06/25/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 01-03 Batch: WG1514912-2 WG1514912-3								

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	82		54		21-120
Phenol-d6	70		45		10-120
Nitrobenzene-d5	94		61		23-120
2-Fluorobiphenyl	91		61		15-120
2,4,6-Tribromophenol	**163**	Q	110		10-120
4-Terphenyl-d14	110		74		41-149

PCBS

Project Name: RYE LAKE WFP
Project Number: 41.0162892.01

Lab Number: L2132604
Report Date: 06/25/21

SAMPLE RESULTS

Lab ID: L2132604-01
Client ID: MW-29
Sample Location: Not Specified

Date Collected: 06/16/21 10:50
Date Received: 06/16/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8082A
Analytical Date: 06/24/21 10:19
Analyst: JM

Extraction Method: EPA 3510C
Extraction Date: 06/23/21 19:10
Cleanup Method: EPA 3665A
Cleanup Date: 06/24/21
Cleanup Method: EPA 3660B
Cleanup Date: 06/24/21

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Polychlorinated Biphenyls by GC - Westborough Lab							
Aroclor 1016	ND		ug/l	0.071	0.061	1	A
Aroclor 1221	ND		ug/l	0.071	0.061	1	A
Aroclor 1232	ND		ug/l	0.071	0.061	1	A
Aroclor 1242	ND		ug/l	0.071	0.061	1	A
Aroclor 1248	ND		ug/l	0.071	0.061	1	A
Aroclor 1254	ND		ug/l	0.071	0.061	1	B
Aroclor 1260	ND		ug/l	0.071	0.061	1	A
Aroclor 1262	ND		ug/l	0.071	0.061	1	A
Aroclor 1268	ND		ug/l	0.071	0.061	1	A
PCBs, Total	ND		ug/l	0.071	0.061	1	B

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	60		30-150	A
Decachlorobiphenyl	65		30-150	A
2,4,5,6-Tetrachloro-m-xylene	67		30-150	B
Decachlorobiphenyl	72		30-150	B

Project Name: RYE LAKE WFP
Project Number: 41.0162892.01

Lab Number: L2132604
Report Date: 06/25/21

SAMPLE RESULTS

Lab ID: L2132604-02
Client ID: MW-3A
Sample Location: Not Specified

Date Collected: 06/16/21 13:00
Date Received: 06/16/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8082A
Analytical Date: 06/24/21 10:26
Analyst: JM

Extraction Method: EPA 3510C
Extraction Date: 06/23/21 19:10
Cleanup Method: EPA 3665A
Cleanup Date: 06/24/21
Cleanup Method: EPA 3660B
Cleanup Date: 06/24/21

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Polychlorinated Biphenyls by GC - Westborough Lab							
Aroclor 1016	ND		ug/l	0.071	0.061	1	A
Aroclor 1221	ND		ug/l	0.071	0.061	1	A
Aroclor 1232	ND		ug/l	0.071	0.061	1	A
Aroclor 1242	ND		ug/l	0.071	0.061	1	A
Aroclor 1248	ND		ug/l	0.071	0.061	1	A
Aroclor 1254	ND		ug/l	0.071	0.061	1	B
Aroclor 1260	ND		ug/l	0.071	0.061	1	A
Aroclor 1262	ND		ug/l	0.071	0.061	1	A
Aroclor 1268	ND		ug/l	0.071	0.061	1	A
PCBs, Total	ND		ug/l	0.071	0.061	1	B

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	59		30-150	A
Decachlorobiphenyl	58		30-150	A
2,4,5,6-Tetrachloro-m-xylene	65		30-150	B
Decachlorobiphenyl	65		30-150	B

Project Name: RYE LAKE WFP
Project Number: 41.0162892.01
Lab Number: L2132604
Report Date: 06/25/21

SAMPLE RESULTS

Lab ID: L2132604-03
Client ID: EW-01
Sample Location: Not Specified

Date Collected: 06/16/21 14:15
Date Received: 06/16/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8082A
Analytical Date: 06/24/21 10:34
Analyst: JM

Extraction Method: EPA 3510C
Extraction Date: 06/23/21 19:10
Cleanup Method: EPA 3665A
Cleanup Date: 06/24/21
Cleanup Method: EPA 3660B
Cleanup Date: 06/24/21

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Polychlorinated Biphenyls by GC - Westborough Lab							
Aroclor 1016	ND		ug/l	0.071	0.061	1	A
Aroclor 1221	ND		ug/l	0.071	0.061	1	A
Aroclor 1232	ND		ug/l	0.071	0.061	1	A
Aroclor 1242	ND		ug/l	0.071	0.061	1	A
Aroclor 1248	ND		ug/l	0.071	0.061	1	A
Aroclor 1254	ND		ug/l	0.071	0.061	1	B
Aroclor 1260	ND		ug/l	0.071	0.061	1	A
Aroclor 1262	ND		ug/l	0.071	0.061	1	A
Aroclor 1268	ND		ug/l	0.071	0.061	1	A
PCBs, Total	ND		ug/l	0.071	0.061	1	B

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	60		30-150	A
Decachlorobiphenyl	52		30-150	A
2,4,5,6-Tetrachloro-m-xylene	65		30-150	B
Decachlorobiphenyl	61		30-150	B

Project Name: RYE LAKE WFP
Project Number: 41.0162892.01

Lab Number: L2132604
Report Date: 06/25/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8082A
Analytical Date: 06/24/21 09:55
Analyst: JM

Extraction Method: EPA 3510C
Extraction Date: 06/23/21 19:10
Cleanup Method: EPA 3665A
Cleanup Date: 06/24/21
Cleanup Method: EPA 3660B
Cleanup Date: 06/24/21

Parameter	Result	Qualifier	Units	RL	MDL	Column
Polychlorinated Biphenyls by GC - Westborough Lab for sample(s): 01-03 Batch: WG1516231-1						
Aroclor 1016	ND		ug/l	0.071	0.061	A
Aroclor 1221	ND		ug/l	0.071	0.061	A
Aroclor 1232	ND		ug/l	0.071	0.061	A
Aroclor 1242	ND		ug/l	0.071	0.061	A
Aroclor 1248	ND		ug/l	0.071	0.061	A
Aroclor 1254	ND		ug/l	0.071	0.061	A
Aroclor 1260	ND		ug/l	0.071	0.061	A
Aroclor 1262	ND		ug/l	0.071	0.061	A
Aroclor 1268	ND		ug/l	0.071	0.061	A
PCBs, Total	ND		ug/l	0.071	0.061	A

Surrogate	%Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	66		30-150	A
Decachlorobiphenyl	68		30-150	A
2,4,5,6-Tetrachloro-m-xylene	72		30-150	B
Decachlorobiphenyl	75		30-150	B

Lab Control Sample Analysis
Batch Quality Control

Project Name: RYE LAKE WFP
Project Number: 41.0162892.01

Lab Number: L2132604
Report Date: 06/25/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
Polychlorinated Biphenyls by GC - Westborough Lab Associated sample(s): 01-03 Batch: WG1516231-2 WG1516231-3									
Aroclor 1016	49		51		40-140	4		50	A
Aroclor 1260	49		50		40-140	2		50	A

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	55		57		30-150	A
Decachlorobiphenyl	56		59		30-150	A
2,4,5,6-Tetrachloro-m-xylene	60		61		30-150	B
Decachlorobiphenyl	64		63		30-150	B

PESTICIDES

Project Name: RYE LAKE WFP
Project Number: 41.0162892.01

Lab Number: L2132604
Report Date: 06/25/21

SAMPLE RESULTS

Lab ID: L2132604-01
Client ID: MW-29
Sample Location: Not Specified

Date Collected: 06/16/21 10:50
Date Received: 06/16/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8081B
Analytical Date: 06/24/21 12:54
Analyst: AR

Extraction Method: EPA 3510C
Extraction Date: 06/23/21 08:29

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Organochlorine Pesticides by GC - Westborough Lab							
Delta-BHC	ND		ug/l	0.014	0.003	1	A
Lindane	ND		ug/l	0.014	0.003	1	A
Alpha-BHC	ND		ug/l	0.014	0.003	1	A
Beta-BHC	ND		ug/l	0.014	0.004	1	A
Heptachlor	ND		ug/l	0.014	0.002	1	A
Aldrin	ND		ug/l	0.014	0.002	1	A
Heptachlor epoxide	ND		ug/l	0.014	0.003	1	A
Endrin	ND		ug/l	0.029	0.003	1	A
Endrin aldehyde	ND		ug/l	0.029	0.006	1	A
Endrin ketone	ND		ug/l	0.029	0.003	1	A
Dieldrin	ND		ug/l	0.029	0.003	1	A
4,4'-DDE	ND		ug/l	0.029	0.003	1	A
4,4'-DDD	ND		ug/l	0.029	0.003	1	A
4,4'-DDT	ND		ug/l	0.029	0.003	1	A
Endosulfan I	ND		ug/l	0.014	0.002	1	A
Endosulfan II	ND		ug/l	0.029	0.004	1	A
Endosulfan sulfate	ND		ug/l	0.029	0.003	1	A
Methoxychlor	ND		ug/l	0.143	0.005	1	A
Toxaphene	ND		ug/l	0.143	0.045	1	A
cis-Chlordane	ND		ug/l	0.014	0.005	1	A
trans-Chlordane	ND		ug/l	0.014	0.004	1	A
Chlordane	ND		ug/l	0.143	0.033	1	A

Project Name: RYE LAKE WFP **Lab Number:** L2132604

Project Number: 41.0162892.01 **Report Date:** 06/25/21

SAMPLE RESULTS

Lab ID: L2132604-01 Date Collected: 06/16/21 10:50

Client ID: MW-29 Date Received: 06/16/21

Sample Location: Not Specified Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Organochlorine Pesticides by GC - Westborough Lab							

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	40		30-150	A
Decachlorobiphenyl	54		30-150	A
2,4,5,6-Tetrachloro-m-xylene	36		30-150	B
Decachlorobiphenyl	40		30-150	B

Project Name: RYE LAKE WFP
Project Number: 41.0162892.01

Lab Number: L2132604
Report Date: 06/25/21

SAMPLE RESULTS

Lab ID: L2132604-01
Client ID: MW-29
Sample Location: Not Specified

Date Collected: 06/16/21 10:50
Date Received: 06/16/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8151A
Analytical Date: 06/19/21 13:14
Analyst: AR

Extraction Method: EPA 8151A
Extraction Date: 06/18/21 00:52

Methylation Date: 06/18/21 21:55

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Chlorinated Herbicides by GC - Westborough Lab							
2,4-D	ND		ug/l	10.0	0.498	1	A
2,4,5-T	ND		ug/l	2.00	0.531	1	A
2,4,5-TP (Silvex)	ND		ug/l	2.00	0.539	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DCAA	98		30-150	A
DCAA	98		30-150	B

Project Name: RYE LAKE WFP
Project Number: 41.0162892.01

Lab Number: L2132604
Report Date: 06/25/21

SAMPLE RESULTS

Lab ID: L2132604-02
Client ID: MW-3A
Sample Location: Not Specified

Date Collected: 06/16/21 13:00
Date Received: 06/16/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8081B
Analytical Date: 06/24/21 13:05
Analyst: AR

Extraction Method: EPA 3510C
Extraction Date: 06/23/21 08:29

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Organochlorine Pesticides by GC - Westborough Lab							
Delta-BHC	ND		ug/l	0.014	0.003	1	A
Lindane	ND		ug/l	0.014	0.003	1	A
Alpha-BHC	ND		ug/l	0.014	0.003	1	A
Beta-BHC	ND		ug/l	0.014	0.004	1	A
Heptachlor	ND		ug/l	0.014	0.002	1	A
Aldrin	ND		ug/l	0.014	0.002	1	A
Heptachlor epoxide	ND		ug/l	0.014	0.003	1	A
Endrin	ND		ug/l	0.029	0.003	1	A
Endrin aldehyde	ND		ug/l	0.029	0.006	1	A
Endrin ketone	ND		ug/l	0.029	0.003	1	A
Dieldrin	ND		ug/l	0.029	0.003	1	A
4,4'-DDE	ND		ug/l	0.029	0.003	1	A
4,4'-DDD	ND		ug/l	0.029	0.003	1	A
4,4'-DDT	ND		ug/l	0.029	0.003	1	A
Endosulfan I	ND		ug/l	0.014	0.002	1	A
Endosulfan II	ND		ug/l	0.029	0.004	1	A
Endosulfan sulfate	ND		ug/l	0.029	0.003	1	A
Methoxychlor	ND		ug/l	0.143	0.005	1	A
Toxaphene	ND		ug/l	0.143	0.045	1	A
cis-Chlordane	ND		ug/l	0.014	0.005	1	A
trans-Chlordane	ND		ug/l	0.014	0.004	1	A
Chlordane	ND		ug/l	0.143	0.033	1	A

Project Name: RYE LAKE WFP **Lab Number:** L2132604

Project Number: 41.0162892.01 **Report Date:** 06/25/21

SAMPLE RESULTS

Lab ID: L2132604-02 Date Collected: 06/16/21 13:00

Client ID: MW-3A Date Received: 06/16/21

Sample Location: Not Specified Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Organochlorine Pesticides by GC - Westborough Lab							

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	49		30-150	A
Decachlorobiphenyl	62		30-150	A
2,4,5,6-Tetrachloro-m-xylene	45		30-150	B
Decachlorobiphenyl	49		30-150	B

Project Name: RYE LAKE WFP
Project Number: 41.0162892.01

Lab Number: L2132604
Report Date: 06/25/21

SAMPLE RESULTS

Lab ID: L2132604-02
Client ID: MW-3A
Sample Location: Not Specified

Date Collected: 06/16/21 13:00
Date Received: 06/16/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8151A
Analytical Date: 06/19/21 13:32
Analyst: AR

Extraction Method: EPA 8151A
Extraction Date: 06/18/21 00:52

Methylation Date: 06/18/21 21:55

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Chlorinated Herbicides by GC - Westborough Lab							
2,4-D	ND		ug/l	10.0	0.498	1	A
2,4,5-T	ND		ug/l	2.00	0.531	1	A
2,4,5-TP (Silvex)	ND		ug/l	2.00	0.539	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DCAA	92		30-150	A
DCAA	91		30-150	B

Project Name: RYE LAKE WFP
Project Number: 41.0162892.01

Lab Number: L2132604
Report Date: 06/25/21

SAMPLE RESULTS

Lab ID: L2132604-03
Client ID: EW-01
Sample Location: Not Specified

Date Collected: 06/16/21 14:15
Date Received: 06/16/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8081B
Analytical Date: 06/24/21 13:16
Analyst: AR

Extraction Method: EPA 3510C
Extraction Date: 06/23/21 08:29

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Organochlorine Pesticides by GC - Westborough Lab							
Delta-BHC	ND		ug/l	0.014	0.003	1	A
Lindane	ND		ug/l	0.014	0.003	1	A
Alpha-BHC	ND		ug/l	0.014	0.003	1	A
Beta-BHC	ND		ug/l	0.014	0.004	1	A
Heptachlor	ND		ug/l	0.014	0.002	1	A
Aldrin	ND		ug/l	0.014	0.002	1	A
Heptachlor epoxide	ND		ug/l	0.014	0.003	1	A
Endrin	ND		ug/l	0.029	0.003	1	A
Endrin aldehyde	ND		ug/l	0.029	0.006	1	A
Endrin ketone	ND		ug/l	0.029	0.003	1	A
Dieldrin	ND		ug/l	0.029	0.003	1	A
4,4'-DDE	ND		ug/l	0.029	0.003	1	A
4,4'-DDD	ND		ug/l	0.029	0.003	1	A
4,4'-DDT	ND		ug/l	0.029	0.003	1	A
Endosulfan I	ND		ug/l	0.014	0.002	1	A
Endosulfan II	ND		ug/l	0.029	0.004	1	A
Endosulfan sulfate	ND		ug/l	0.029	0.003	1	A
Methoxychlor	ND		ug/l	0.143	0.005	1	A
Toxaphene	ND		ug/l	0.143	0.045	1	A
cis-Chlordane	ND		ug/l	0.014	0.005	1	A
trans-Chlordane	ND		ug/l	0.014	0.004	1	A
Chlordane	ND		ug/l	0.143	0.033	1	A

Project Name: RYE LAKE WFP **Lab Number:** L2132604

Project Number: 41.0162892.01 **Report Date:** 06/25/21

SAMPLE RESULTS

Lab ID: L2132604-03 Date Collected: 06/16/21 14:15

Client ID: EW-01 Date Received: 06/16/21

Sample Location: Not Specified Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Organochlorine Pesticides by GC - Westborough Lab							

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	42		30-150	A
Decachlorobiphenyl	43		30-150	A
2,4,5,6-Tetrachloro-m-xylene	39		30-150	B
Decachlorobiphenyl	34		30-150	B

Project Name: RYE LAKE WFP
Project Number: 41.0162892.01

Lab Number: L2132604
Report Date: 06/25/21

SAMPLE RESULTS

Lab ID: L2132604-03
Client ID: EW-01
Sample Location: Not Specified

Date Collected: 06/16/21 14:15
Date Received: 06/16/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8151A
Analytical Date: 06/19/21 13:51
Analyst: AR

Extraction Method: EPA 8151A
Extraction Date: 06/18/21 00:52

Methylation Date: 06/18/21 21:55

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Chlorinated Herbicides by GC - Westborough Lab							
2,4-D	ND		ug/l	10.0	0.498	1	A
2,4,5-T	ND		ug/l	2.00	0.531	1	A
2,4,5-TP (Silvex)	ND		ug/l	2.00	0.539	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DCAA	97		30-150	A
DCAA	93		30-150	B

Project Name: RYE LAKE WFP
Project Number: 41.0162892.01
Lab Number: L2132604
Report Date: 06/25/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8151A
Analytical Date: 06/19/21 11:24
Analyst: AR

Extraction Method: EPA 8151A
Extraction Date: 06/17/21 10:16

Methylation Date: 06/18/21 21:55

Parameter	Result	Qualifier	Units	RL	MDL	Column
Chlorinated Herbicides by GC - Westborough Lab for sample(s): 01-03 Batch: WG1513385-1						
2,4-D	ND		ug/l	10.0	0.498	A
2,4,5-T	ND		ug/l	2.00	0.531	A
2,4,5-TP (Silvex)	ND		ug/l	2.00	0.539	A

Surrogate	%Recovery	Qualifier	Acceptance Criteria	Column
DCAA	95		30-150	A
DCAA	90		30-150	B

Project Name: RYE LAKE WFP
Project Number: 41.0162892.01
Lab Number: L2132604
Report Date: 06/25/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8081B
Analytical Date: 06/24/21 12:21
Analyst: AR

Extraction Method: EPA 3510C
Extraction Date: 06/23/21 08:29

Parameter	Result	Qualifier	Units	RL	MDL	Column
Organochlorine Pesticides by GC - Westborough Lab for sample(s): 01-03 Batch: WG1515832-1						
Delta-BHC	ND		ug/l	0.014	0.003	A
Lindane	ND		ug/l	0.014	0.003	A
Alpha-BHC	ND		ug/l	0.014	0.003	A
Beta-BHC	ND		ug/l	0.014	0.004	A
Heptachlor	ND		ug/l	0.014	0.002	A
Aldrin	ND		ug/l	0.014	0.002	A
Heptachlor epoxide	ND		ug/l	0.014	0.003	A
Endrin	ND		ug/l	0.029	0.003	A
Endrin aldehyde	ND		ug/l	0.029	0.006	A
Endrin ketone	ND		ug/l	0.029	0.003	A
Dieldrin	ND		ug/l	0.029	0.003	A
4,4'-DDE	ND		ug/l	0.029	0.003	A
4,4'-DDD	ND		ug/l	0.029	0.003	A
4,4'-DDT	ND		ug/l	0.029	0.003	A
Endosulfan I	ND		ug/l	0.014	0.002	A
Endosulfan II	ND		ug/l	0.029	0.004	A
Endosulfan sulfate	ND		ug/l	0.029	0.003	A
Methoxychlor	ND		ug/l	0.143	0.005	A
Toxaphene	ND		ug/l	0.143	0.045	A
cis-Chlordane	ND		ug/l	0.014	0.005	A
trans-Chlordane	ND		ug/l	0.014	0.004	A
Chlordane	ND		ug/l	0.143	0.033	A

Project Name: RYE LAKE WFP
Project Number: 41.0162892.01
Lab Number: L2132604
Report Date: 06/25/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8081B
Analytical Date: 06/24/21 12:21
Analyst: AR

Extraction Method: EPA 3510C
Extraction Date: 06/23/21 08:29

Parameter	Result	Qualifier	Units	RL	MDL	Column
Organochlorine Pesticides by GC - Westborough Lab for sample(s): 01-03 Batch: WG1515832-1						

Surrogate	%Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	47		30-150	A
Decachlorobiphenyl	64		30-150	A
2,4,5,6-Tetrachloro-m-xylene	45		30-150	B
Decachlorobiphenyl	52		30-150	B

Lab Control Sample Analysis

Batch Quality Control

Project Name: RYE LAKE WFP

Project Number: 41.0162892.01

Lab Number: L2132604

Report Date: 06/25/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
Chlorinated Herbicides by GC - Westborough Lab Associated sample(s): 01-03 Batch: WG1513385-2 WG1513385-3									
2,4-D	90		94		30-150	4		25	A
2,4,5-T	86		89		30-150	3		25	A
2,4,5-TP (Silvex)	84		87		30-150	4		25	A

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria	Column
DCAA	95		98		30-150	A
DCAA	96		99		30-150	B

Lab Control Sample Analysis

Batch Quality Control

Project Name: RYE LAKE WFP

Project Number: 41.0162892.01

Lab Number: L2132604

Report Date: 06/25/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
Organochlorine Pesticides by GC - Westborough Lab Associated sample(s): 01-03 Batch: WG1515832-2 WG1515832-3									
Delta-BHC	36		39		30-150	7		20	A
Lindane	50		52		30-150	4		20	A
Alpha-BHC	38		45		30-150	17		20	A
Beta-BHC	41		45		30-150	9		20	A
Heptachlor	41		48		30-150	16		20	A
Aldrin	37		45		30-150	20		20	A
Heptachlor epoxide	39		46		30-150	17		20	A
Endrin	40		46		30-150	15		20	A
Endrin aldehyde	38		40		30-150	4		20	A
Endrin ketone	45		50		30-150	11		20	A
Dieldrin	41		50		30-150	19		20	A
4,4'-DDE	38		47		30-150	20		20	A
4,4'-DDD	40		47		30-150	16		20	A
4,4'-DDT	44		51		30-150	14		20	A
Endosulfan I	38		45		30-150	15		20	A
Endosulfan II	42		48		30-150	13		20	A
Endosulfan sulfate	40		44		30-150	10		20	A
Methoxychlor	49		55		30-150	13		20	A
cis-Chlordane	36		43		30-150	16		20	A
trans-Chlordane	41		49		30-150	18		20	A

Lab Control Sample Analysis

Batch Quality Control

Project Name: RYE LAKE WFP

Project Number: 41.0162892.01

Lab Number: L2132604

Report Date: 06/25/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Organochlorine Pesticides by GC - Westborough Lab Associated sample(s): 01-03 Batch: WG1515832-2 WG1515832-3								

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	42		43		30-150	A
Decachlorobiphenyl	54		55		30-150	A
2,4,5,6-Tetrachloro-m-xylene	39		41		30-150	B
Decachlorobiphenyl	42		44		30-150	B

METALS

Project Name: RYE LAKE WFP
Project Number: 41.0162892.01
Lab Number: L2132604
Report Date: 06/25/21

SAMPLE RESULTS

Lab ID: L2132604-01
Client ID: MW-29
Sample Location: Not Specified
Sample Depth:
Matrix: Water

Date Collected: 06/16/21 10:50
Date Received: 06/16/21
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Aluminum, Total	0.133		mg/l	0.0100	0.00327	1	06/21/21 15:42	06/23/21 21:03	EPA 3005A	1,6020B	CD
Antimony, Total	ND		mg/l	0.00400	0.00042	1	06/21/21 15:42	06/23/21 21:03	EPA 3005A	1,6020B	CD
Arsenic, Total	ND		mg/l	0.00050	0.00016	1	06/21/21 15:42	06/23/21 21:03	EPA 3005A	1,6020B	CD
Barium, Total	0.04901		mg/l	0.00050	0.00017	1	06/21/21 15:42	06/23/21 21:03	EPA 3005A	1,6020B	CD
Beryllium, Total	ND		mg/l	0.00050	0.00010	1	06/21/21 15:42	06/23/21 21:03	EPA 3005A	1,6020B	CD
Cadmium, Total	ND		mg/l	0.00020	0.00005	1	06/21/21 15:42	06/23/21 21:03	EPA 3005A	1,6020B	CD
Calcium, Total	31.6		mg/l	0.100	0.0394	1	06/21/21 15:42	06/23/21 21:03	EPA 3005A	1,6020B	CD
Chromium, Total	0.00085	J	mg/l	0.00100	0.00017	1	06/21/21 15:42	06/23/21 21:03	EPA 3005A	1,6020B	CD
Cobalt, Total	0.00058		mg/l	0.00050	0.00016	1	06/21/21 15:42	06/23/21 21:03	EPA 3005A	1,6020B	CD
Copper, Total	0.00074	J	mg/l	0.00100	0.00038	1	06/21/21 15:42	06/23/21 21:03	EPA 3005A	1,6020B	CD
Iron, Total	0.267		mg/l	0.0500	0.0191	1	06/21/21 15:42	06/23/21 21:03	EPA 3005A	1,6020B	CD
Lead, Total	ND		mg/l	0.00100	0.00034	1	06/21/21 15:42	06/23/21 21:03	EPA 3005A	1,6020B	CD
Magnesium, Total	12.4		mg/l	0.0700	0.0242	1	06/21/21 15:42	06/23/21 21:03	EPA 3005A	1,6020B	CD
Manganese, Total	0.08365		mg/l	0.00100	0.00044	1	06/21/21 15:42	06/23/21 21:03	EPA 3005A	1,6020B	CD
Mercury, Total	ND		mg/l	0.00020	0.00009	1	06/21/21 15:46	06/24/21 15:02	EPA 7470A	1,7470A	OU
Nickel, Total	0.00151	J	mg/l	0.00200	0.00055	1	06/21/21 15:42	06/23/21 21:03	EPA 3005A	1,6020B	CD
Potassium, Total	2.80		mg/l	0.100	0.0309	1	06/21/21 15:42	06/23/21 21:03	EPA 3005A	1,6020B	CD
Selenium, Total	ND		mg/l	0.00500	0.00173	1	06/21/21 15:42	06/23/21 21:03	EPA 3005A	1,6020B	CD
Silver, Total	ND		mg/l	0.00040	0.00016	1	06/21/21 15:42	06/23/21 21:03	EPA 3005A	1,6020B	CD
Sodium, Total	8.75		mg/l	0.100	0.0293	1	06/21/21 15:42	06/23/21 21:03	EPA 3005A	1,6020B	CD
Thallium, Total	ND		mg/l	0.00100	0.00014	1	06/21/21 15:42	06/23/21 21:03	EPA 3005A	1,6020B	CD
Vanadium, Total	ND		mg/l	0.00500	0.00157	1	06/21/21 15:42	06/23/21 21:03	EPA 3005A	1,6020B	CD
Zinc, Total	0.00417	J	mg/l	0.01000	0.00341	1	06/21/21 15:42	06/23/21 21:03	EPA 3005A	1,6020B	CD

Project Name: RYE LAKE WFP
Project Number: 41.0162892.01
Lab Number: L2132604
Report Date: 06/25/21

SAMPLE RESULTS

Lab ID: L2132604-02
Client ID: MW-3A
Sample Location: Not Specified
Sample Depth:
Matrix: Water

Date Collected: 06/16/21 13:00
Date Received: 06/16/21
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Aluminum, Total	0.0381		mg/l	0.0100	0.00327	1	06/21/21 15:42	06/23/21 21:08	EPA 3005A	1,6020B	CD
Antimony, Total	ND		mg/l	0.00400	0.00042	1	06/21/21 15:42	06/23/21 21:08	EPA 3005A	1,6020B	CD
Arsenic, Total	ND		mg/l	0.00050	0.00016	1	06/21/21 15:42	06/23/21 21:08	EPA 3005A	1,6020B	CD
Barium, Total	0.02402		mg/l	0.00050	0.00017	1	06/21/21 15:42	06/23/21 21:08	EPA 3005A	1,6020B	CD
Beryllium, Total	ND		mg/l	0.00050	0.00010	1	06/21/21 15:42	06/23/21 21:08	EPA 3005A	1,6020B	CD
Cadmium, Total	ND		mg/l	0.00020	0.00005	1	06/21/21 15:42	06/23/21 21:08	EPA 3005A	1,6020B	CD
Calcium, Total	13.9		mg/l	0.100	0.0394	1	06/21/21 15:42	06/23/21 21:08	EPA 3005A	1,6020B	CD
Chromium, Total	0.00026	J	mg/l	0.00100	0.00017	1	06/21/21 15:42	06/23/21 21:08	EPA 3005A	1,6020B	CD
Cobalt, Total	ND		mg/l	0.00050	0.00016	1	06/21/21 15:42	06/23/21 21:08	EPA 3005A	1,6020B	CD
Copper, Total	0.00091	J	mg/l	0.00100	0.00038	1	06/21/21 15:42	06/23/21 21:08	EPA 3005A	1,6020B	CD
Iron, Total	0.0682		mg/l	0.0500	0.0191	1	06/21/21 15:42	06/23/21 21:08	EPA 3005A	1,6020B	CD
Lead, Total	ND		mg/l	0.00100	0.00034	1	06/21/21 15:42	06/23/21 21:08	EPA 3005A	1,6020B	CD
Magnesium, Total	5.48		mg/l	0.0700	0.0242	1	06/21/21 15:42	06/23/21 21:08	EPA 3005A	1,6020B	CD
Manganese, Total	0.00970		mg/l	0.00100	0.00044	1	06/21/21 15:42	06/23/21 21:08	EPA 3005A	1,6020B	CD
Mercury, Total	ND		mg/l	0.00020	0.00009	1	06/21/21 15:46	06/24/21 15:05	EPA 7470A	1,7470A	OU
Nickel, Total	ND		mg/l	0.00200	0.00055	1	06/21/21 15:42	06/23/21 21:08	EPA 3005A	1,6020B	CD
Potassium, Total	0.940		mg/l	0.100	0.0309	1	06/21/21 15:42	06/23/21 21:08	EPA 3005A	1,6020B	CD
Selenium, Total	ND		mg/l	0.00500	0.00173	1	06/21/21 15:42	06/23/21 21:08	EPA 3005A	1,6020B	CD
Silver, Total	ND		mg/l	0.00040	0.00016	1	06/21/21 15:42	06/23/21 21:08	EPA 3005A	1,6020B	CD
Sodium, Total	4.03		mg/l	0.100	0.0293	1	06/21/21 15:42	06/23/21 21:08	EPA 3005A	1,6020B	CD
Thallium, Total	ND		mg/l	0.00100	0.00014	1	06/21/21 15:42	06/23/21 21:08	EPA 3005A	1,6020B	CD
Vanadium, Total	ND		mg/l	0.00500	0.00157	1	06/21/21 15:42	06/23/21 21:08	EPA 3005A	1,6020B	CD
Zinc, Total	ND		mg/l	0.01000	0.00341	1	06/21/21 15:42	06/23/21 21:08	EPA 3005A	1,6020B	CD

Project Name: RYE LAKE WFP
Project Number: 41.0162892.01
Lab Number: L2132604
Report Date: 06/25/21

SAMPLE RESULTS

Lab ID: L2132604-03
Client ID: EW-01
Sample Location: Not Specified
Date Collected: 06/16/21 14:15
Date Received: 06/16/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Aluminum, Total	81.8		mg/l	0.0100	0.00327	1	06/21/21 15:42	06/23/21 21:13	EPA 3005A	1,6020B	CD
Antimony, Total	ND		mg/l	0.00400	0.00042	1	06/21/21 15:42	06/23/21 21:13	EPA 3005A	1,6020B	CD
Arsenic, Total	0.00681		mg/l	0.00050	0.00016	1	06/21/21 15:42	06/23/21 21:13	EPA 3005A	1,6020B	CD
Barium, Total	1.782		mg/l	0.00050	0.00017	1	06/21/21 15:42	06/23/21 21:13	EPA 3005A	1,6020B	CD
Beryllium, Total	0.00159		mg/l	0.00050	0.00010	1	06/21/21 15:42	06/23/21 21:13	EPA 3005A	1,6020B	CD
Cadmium, Total	0.00101		mg/l	0.00020	0.00005	1	06/21/21 15:42	06/23/21 21:13	EPA 3005A	1,6020B	CD
Calcium, Total	70.5		mg/l	0.100	0.0394	1	06/21/21 15:42	06/23/21 21:13	EPA 3005A	1,6020B	CD
Chromium, Total	0.2850		mg/l	0.00100	0.00017	1	06/21/21 15:42	06/23/21 21:13	EPA 3005A	1,6020B	CD
Cobalt, Total	0.08033		mg/l	0.00050	0.00016	1	06/21/21 15:42	06/23/21 21:13	EPA 3005A	1,6020B	CD
Copper, Total	0.2302		mg/l	0.00100	0.00038	1	06/21/21 15:42	06/23/21 21:13	EPA 3005A	1,6020B	CD
Iron, Total	164.		mg/l	0.0500	0.0191	1	06/21/21 15:42	06/23/21 21:13	EPA 3005A	1,6020B	CD
Lead, Total	0.03786		mg/l	0.00100	0.00034	1	06/21/21 15:42	06/23/21 21:13	EPA 3005A	1,6020B	CD
Magnesium, Total	63.3		mg/l	0.0700	0.0242	1	06/21/21 15:42	06/23/21 21:13	EPA 3005A	1,6020B	CD
Manganese, Total	4.120		mg/l	0.00100	0.00044	1	06/21/21 15:42	06/23/21 21:13	EPA 3005A	1,6020B	CD
Mercury, Total	ND		mg/l	0.00020	0.00009	1	06/21/21 15:46	06/24/21 15:09	EPA 7470A	1,7470A	OU
Nickel, Total	0.1773		mg/l	0.00200	0.00055	1	06/21/21 15:42	06/23/21 21:13	EPA 3005A	1,6020B	CD
Potassium, Total	40.4		mg/l	0.100	0.0309	1	06/21/21 15:42	06/23/21 21:13	EPA 3005A	1,6020B	CD
Selenium, Total	0.0107		mg/l	0.00500	0.00173	1	06/21/21 15:42	06/23/21 21:13	EPA 3005A	1,6020B	CD
Silver, Total	0.00033	J	mg/l	0.00040	0.00016	1	06/21/21 15:42	06/23/21 21:13	EPA 3005A	1,6020B	CD
Sodium, Total	10.8		mg/l	0.100	0.0293	1	06/21/21 15:42	06/23/21 21:13	EPA 3005A	1,6020B	CD
Thallium, Total	0.00181		mg/l	0.00100	0.00014	1	06/21/21 15:42	06/23/21 21:13	EPA 3005A	1,6020B	CD
Vanadium, Total	0.2344		mg/l	0.00500	0.00157	1	06/21/21 15:42	06/23/21 21:13	EPA 3005A	1,6020B	CD
Zinc, Total	0.3568		mg/l	0.01000	0.00341	1	06/21/21 15:42	06/23/21 21:13	EPA 3005A	1,6020B	CD

Project Name: RYE LAKE WFP
Project Number: 41.0162892.01
Lab Number: L2132604
Report Date: 06/25/21

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01-03 Batch: WG1514761-1										
Aluminum, Total	ND		mg/l	0.0100	0.00327	1	06/21/21 15:42	06/23/21 18:16	1,6020B	CD
Antimony, Total	ND		mg/l	0.00400	0.00042	1	06/21/21 15:42	06/23/21 18:16	1,6020B	CD
Arsenic, Total	ND		mg/l	0.00050	0.00016	1	06/21/21 15:42	06/23/21 18:16	1,6020B	CD
Barium, Total	ND		mg/l	0.00050	0.00017	1	06/21/21 15:42	06/23/21 18:16	1,6020B	CD
Beryllium, Total	ND		mg/l	0.00050	0.00010	1	06/21/21 15:42	06/23/21 18:16	1,6020B	CD
Cadmium, Total	ND		mg/l	0.00020	0.00005	1	06/21/21 15:42	06/23/21 18:16	1,6020B	CD
Calcium, Total	ND		mg/l	0.100	0.0394	1	06/21/21 15:42	06/23/21 18:16	1,6020B	CD
Chromium, Total	ND		mg/l	0.00100	0.00017	1	06/21/21 15:42	06/23/21 18:16	1,6020B	CD
Cobalt, Total	ND		mg/l	0.00050	0.00016	1	06/21/21 15:42	06/23/21 18:16	1,6020B	CD
Copper, Total	ND		mg/l	0.00100	0.00038	1	06/21/21 15:42	06/23/21 18:16	1,6020B	CD
Iron, Total	ND		mg/l	0.0500	0.0191	1	06/21/21 15:42	06/23/21 18:16	1,6020B	CD
Lead, Total	ND		mg/l	0.00100	0.00034	1	06/21/21 15:42	06/23/21 18:16	1,6020B	CD
Magnesium, Total	ND		mg/l	0.0700	0.0242	1	06/21/21 15:42	06/23/21 18:16	1,6020B	CD
Manganese, Total	0.00628	J	mg/l	0.00700	0.00044	1	06/21/21 15:42	06/23/21 18:16	1,6020B	CD
Nickel, Total	ND		mg/l	0.00200	0.00055	1	06/21/21 15:42	06/23/21 18:16	1,6020B	CD
Potassium, Total	ND		mg/l	0.100	0.0309	1	06/21/21 15:42	06/23/21 18:16	1,6020B	CD
Selenium, Total	ND		mg/l	0.00500	0.00173	1	06/21/21 15:42	06/23/21 18:16	1,6020B	CD
Silver, Total	ND		mg/l	0.00040	0.00016	1	06/21/21 15:42	06/23/21 18:16	1,6020B	CD
Sodium, Total	ND		mg/l	0.100	0.0293	1	06/21/21 15:42	06/23/21 18:16	1,6020B	CD
Thallium, Total	0.00023	J	mg/l	0.00100	0.00014	1	06/21/21 15:42	06/23/21 18:16	1,6020B	CD
Vanadium, Total	ND		mg/l	0.00500	0.00157	1	06/21/21 15:42	06/23/21 18:16	1,6020B	CD
Zinc, Total	ND		mg/l	0.01000	0.00341	1	06/21/21 15:42	06/23/21 18:16	1,6020B	CD

Prep Information

Digestion Method: EPA 3005A

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01-03 Batch: WG1514766-1										
Mercury, Total	ND		mg/l	0.00020	0.00009	1	06/21/21 15:46	06/24/21 14:24	1,7470A	OU

Project Name: RYE LAKE WFP
Project Number: 41.0162892.01
Lab Number: L2132604
Report Date: 06/25/21

Method Blank Analysis
Batch Quality Control

Prep Information

Digestion Method: EPA 7470A

Lab Control Sample Analysis

Batch Quality Control

Project Name: RYE LAKE WFP

Project Number: 41.0162892.01

Lab Number: L2132604

Report Date: 06/25/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-03 Batch: WG1514761-2								
Aluminum, Total	96		-		80-120	-		
Antimony, Total	86		-		80-120	-		
Arsenic, Total	94		-		80-120	-		
Barium, Total	98		-		80-120	-		
Beryllium, Total	100		-		80-120	-		
Cadmium, Total	108		-		80-120	-		
Calcium, Total	92		-		80-120	-		
Chromium, Total	92		-		80-120	-		
Cobalt, Total	94		-		80-120	-		
Copper, Total	96		-		80-120	-		
Iron, Total	92		-		80-120	-		
Lead, Total	111		-		80-120	-		
Magnesium, Total	98		-		80-120	-		
Manganese, Total	92		-		80-120	-		
Nickel, Total	92		-		80-120	-		
Potassium, Total	97		-		80-120	-		
Selenium, Total	92		-		80-120	-		
Silver, Total	99		-		80-120	-		
Sodium, Total	98		-		80-120	-		
Thallium, Total	106		-		80-120	-		
Vanadium, Total	91		-		80-120	-		

Lab Control Sample Analysis

Batch Quality Control

Project Name: RYE LAKE WFP

Project Number: 41.0162892.01

Lab Number: L2132604

Report Date: 06/25/21

Parameter	LCS %Recovery	LCSD %Recovery	%Recovery Limits	RPD	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-03 Batch: WG1514761-2					
Zinc, Total	97	-	80-120	-	
Total Metals - Mansfield Lab Associated sample(s): 01-03 Batch: WG1514766-2					
Mercury, Total	100	-	80-120	-	

Matrix Spike Analysis
Batch Quality Control

Project Name: RYE LAKE WFP
Project Number: 41.0162892.01

Lab Number: L2132604
Report Date: 06/25/21

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-03 QC Batch ID: WG1514761-3 QC Sample: L2132198-11 Client ID: MS Sample												
Aluminum, Total	0.0168	2	1.96	97		-	-		75-125	-		20
Antimony, Total	ND	0.5	0.4347	87		-	-		75-125	-		20
Arsenic, Total	ND	0.12	0.1117	93		-	-		75-125	-		20
Barium, Total	0.00134	2	1.965	98		-	-		75-125	-		20
Beryllium, Total	ND	0.05	0.04951	99		-	-		75-125	-		20
Cadmium, Total	ND	0.051	0.05624	110		-	-		75-125	-		20
Calcium, Total	0.0657J	10	9.67	97		-	-		75-125	-		20
Chromium, Total	ND	0.2	0.1911	96		-	-		75-125	-		20
Cobalt, Total	0.00030J	0.5	0.4741	95		-	-		75-125	-		20
Copper, Total	ND	0.25	0.2364	94		-	-		75-125	-		20
Iron, Total	ND	1	0.985	98		-	-		75-125	-		20
Lead, Total	ND	0.51	0.5397	106		-	-		75-125	-		20
Magnesium, Total	ND	10	9.97	100		-	-		75-125	-		20
Manganese, Total	0.00057J	0.5	0.4739	95		-	-		75-125	-		20
Nickel, Total	ND	0.5	0.4571	91		-	-		75-125	-		20
Potassium, Total	ND	10	9.91	99		-	-		75-125	-		20
Selenium, Total	ND	0.12	0.114	95		-	-		75-125	-		20
Silver, Total	ND	0.05	0.04901	98		-	-		75-125	-		20
Sodium, Total	0.226	10	10.2	100		-	-		75-125	-		20
Thallium, Total	ND	0.12	0.1291	108		-	-		75-125	-		20
Vanadium, Total	ND	0.5	0.4514	90		-	-		75-125	-		20

Matrix Spike Analysis
Batch Quality Control

Project Name: RYE LAKE WFP
Project Number: 41.0162892.01

Lab Number: L2132604
Report Date: 06/25/21

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Found	MSD %Recovery	Recovery Limits	RPD	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-03 QC Batch ID: WG1514761-3 QC Sample: L2132198-11 Client ID: MS Sample									
Zinc, Total	ND	0.5	0.4978	100	-	-	75-125	-	20
Total Metals - Mansfield Lab Associated sample(s): 01-03 QC Batch ID: WG1514766-3 QC Sample: L2132424-14 Client ID: MS Sample									
Mercury, Total	ND	0.005	0.00494	99	-	-	75-125	-	20

Lab Duplicate Analysis
Batch Quality Control

Project Name: RYE LAKE WFP
Project Number: 41.0162892.01

Lab Number: L2132604
Report Date: 06/25/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-03 QC Batch ID: WG1514761-4 QC Sample: L2132198-11 Client ID: DUP Sample						
Aluminum, Total	0.0168	ND	mg/l	NC		20
Antimony, Total	ND	ND	mg/l	NC		20
Arsenic, Total	ND	ND	mg/l	NC		20
Barium, Total	0.00134	0.00049J	mg/l	NC		20
Beryllium, Total	ND	ND	mg/l	NC		20
Cadmium, Total	ND	ND	mg/l	NC		20
Calcium, Total	0.0657J	0.0547J	mg/l	NC		20
Chromium, Total	ND	ND	mg/l	NC		20
Cobalt, Total	0.00030J	ND	mg/l	NC		20
Copper, Total	ND	ND	mg/l	NC		20
Iron, Total	ND	ND	mg/l	NC		20
Lead, Total	ND	ND	mg/l	NC		20
Magnesium, Total	ND	ND	mg/l	NC		20
Manganese, Total	0.00057J	0.00550	mg/l	NC		20
Nickel, Total	ND	ND	mg/l	NC		20
Potassium, Total	ND	ND	mg/l	NC		20
Selenium, Total	ND	ND	mg/l	NC		20
Silver, Total	ND	ND	mg/l	NC		20
Sodium, Total	0.226	0.226	mg/l	0		20

Lab Duplicate Analysis
Batch Quality Control

Project Name: RYE LAKE WFP
Project Number: 41.0162892.01

Lab Number: L2132604
Report Date: 06/25/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-03 QC Batch ID: WG1514761-4 QC Sample: L2132198-11 Client ID: DUP Sample					
Thallium, Total	ND	0.00027J	mg/l	NC	20
Vanadium, Total	ND	ND	mg/l	NC	20
Zinc, Total	ND	ND	mg/l	NC	20
Total Metals - Mansfield Lab Associated sample(s): 01-03 QC Batch ID: WG1514766-4 QC Sample: L2132424-14 Client ID: DUP Sample					
Mercury, Total	ND	ND	mg/l	NC	20

Project Name: RYE LAKE WFP
Project Number: 41.0162892.01

Lab Number: L2132604
Report Date: 06/25/21

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent
B	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2132604-01A	Vial HCl preserved	A	NA		2.8	Y	Absent		NYTCL-8260(14)
L2132604-01B	Vial HCl preserved	A	NA		2.8	Y	Absent		NYTCL-8260(14)
L2132604-01C	Vial HCl preserved	A	NA		2.8	Y	Absent		NYTCL-8260(14)
L2132604-01D	Amber 120ml unpreserved	A	7	7	2.8	Y	Absent		NYTCL-8081(7)
L2132604-01E	Amber 120ml unpreserved	A	7	7	2.8	Y	Absent		NYTCL-8081(7)
L2132604-01F	Amber 120ml unpreserved	A	7	7	2.8	Y	Absent		NYTCL-8082-LVI(365)
L2132604-01G	Amber 120ml unpreserved	A	7	7	2.8	Y	Absent		NYTCL-8082-LVI(365)
L2132604-01I	Plastic 250ml HNO3 preserved	A	<2	<2	2.8	Y	Absent		SE-6020T(180),BA-6020T(180),FE-6020T(180),TL-6020T(180),CR-6020T(180),K-6020T(180),NI-6020T(180),CA-6020T(180),CU-6020T(180),ZN-6020T(180),NA-6020T(180),PB-6020T(180),BE-6020T(180),MN-6020T(180),SB-6020T(180),AS-6020T(180),V-6020T(180),MG-6020T(180),AG-6020T(180),CD-6020T(180),AL-6020T(180),HG-T(28),CO-6020T(180)
L2132604-01J	Amber 250ml unpreserved	A	7	7	2.8	Y	Absent		NYTCL-8270-SIM-LVI(7),NYTCL-8270-LVI(7)
L2132604-01K	Amber 250ml unpreserved	A	7	7	2.8	Y	Absent		NYTCL-8270-SIM-LVI(7),NYTCL-8270-LVI(7)
L2132604-01L	Amber 1000ml unpreserved	A	7	7	2.8	Y	Absent		HERB-APA(7)
L2132604-01M	Amber 1000ml unpreserved	A	7	7	2.8	Y	Absent		HERB-APA(7)
L2132604-02A	Vial HCl preserved	B	NA		3.3	Y	Absent		NYTCL-8260(14)
L2132604-02B	Vial HCl preserved	B	NA		3.3	Y	Absent		NYTCL-8260(14)
L2132604-02C	Vial HCl preserved	B	NA		3.3	Y	Absent		NYTCL-8260(14)
L2132604-02D	Amber 120ml unpreserved	B	7	7	3.3	Y	Absent		NYTCL-8081(7)
L2132604-02E	Amber 120ml unpreserved	B	7	7	3.3	Y	Absent		NYTCL-8081(7)
L2132604-02F	Amber 120ml unpreserved	B	7	7	3.3	Y	Absent		NYTCL-8082-LVI(365)

*Values in parentheses indicate holding time in days

Project Name: RYE LAKE WFP
Project Number: 41.0162892.01

Lab Number: L2132604
Report Date: 06/25/21

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2132604-02G	Amber 120ml unpreserved	B	7	7	3.3	Y	Absent		NYTCL-8082-LVI(365)
L2132604-02I	Plastic 250ml HNO3 preserved	B	<2	<2	3.3	Y	Absent		TL-6020T(180),BA-6020T(180),FE-6020T(180),SE-6020T(180),K-6020T(180),CA-6020T(180),CR-6020T(180),NI-6020T(180),NA-6020T(180),CU-6020T(180),ZN-6020T(180),PB-6020T(180),BE-6020T(180),MN-6020T(180),V-6020T(180),SB-6020T(180),AS-6020T(180),HG-T(28),AL-6020T(180),MG-6020T(180),CD-6020T(180),AG-6020T(180),CO-6020T(180)
L2132604-02J	Amber 250ml unpreserved	B	7	7	3.3	Y	Absent		NYTCL-8270-SIM-LVI(7),NYTCL-8270-LVI(7)
L2132604-02K	Amber 250ml unpreserved	B	7	7	3.3	Y	Absent		NYTCL-8270-SIM-LVI(7),NYTCL-8270-LVI(7)
L2132604-02L	Amber 1000ml unpreserved	B	7	7	3.3	Y	Absent		HERB-APA(7)
L2132604-02M	Amber 1000ml unpreserved	B	7	7	3.3	Y	Absent		HERB-APA(7)
L2132604-03A	Vial HCl preserved	B	NA		3.3	Y	Absent		NYTCL-8260(14)
L2132604-03B	Vial HCl preserved	B	NA		3.3	Y	Absent		NYTCL-8260(14)
L2132604-03C	Vial HCl preserved	B	NA		3.3	Y	Absent		NYTCL-8260(14)
L2132604-03D	Amber 120ml unpreserved	B	7	7	3.3	Y	Absent		NYTCL-8081(7)
L2132604-03E	Amber 120ml unpreserved	B	7	7	3.3	Y	Absent		NYTCL-8081(7)
L2132604-03F	Amber 120ml unpreserved	B	7	7	3.3	Y	Absent		NYTCL-8082-LVI(365)
L2132604-03G	Amber 120ml unpreserved	B	7	7	3.3	Y	Absent		NYTCL-8082-LVI(365)
L2132604-03I	Plastic 250ml HNO3 preserved	B	<2	<2	3.3	Y	Absent		BA-6020T(180),FE-6020T(180),SE-6020T(180),TL-6020T(180),CA-6020T(180),CR-6020T(180),NI-6020T(180),K-6020T(180),ZN-6020T(180),CU-6020T(180),NA-6020T(180),PB-6020T(180),BE-6020T(180),MN-6020T(180),AS-6020T(180),V-6020T(180),SB-6020T(180),AL-6020T(180),MG-6020T(180),CD-6020T(180),AG-6020T(180),HG-T(28),CO-6020T(180)
L2132604-03J	Amber 250ml unpreserved	B	7	7	3.3	Y	Absent		NYTCL-8270-SIM-LVI(7),NYTCL-8270-LVI(7)
L2132604-03K	Amber 250ml unpreserved	B	7	7	3.3	Y	Absent		NYTCL-8270-SIM-LVI(7),NYTCL-8270-LVI(7)
L2132604-03L	Amber 1000ml unpreserved	B	7	7	3.3	Y	Absent		HERB-APA(7)
L2132604-03M	Amber 1000ml unpreserved	B	7	7	3.3	Y	Absent		HERB-APA(7)

*Values in parentheses indicate holding time in days

Project Name:	RYE LAKE WFP	**Lab Number:**	L2132604
Project Number:	41.0162892.01	**Report Date:**	06/25/21

GLOSSARY

Acronyms

DL - Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

EDL - Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).

EMPC - Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.

EPA - Environmental Protection Agency.

LCS - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LCSD - Laboratory Control Sample Duplicate: Refer to LCS.

LFB - Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LOD - Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

LOQ - Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

MDL - Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

MS - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.

MSD - Matrix Spike Sample Duplicate: Refer to MS.

NA - Not Applicable.

NC - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.

NDPA/DPA - N-Nitrosodiphenylamine/Diphenylamine.

NI - Not Ignitable.

NP - Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.

NR - No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.

RL - Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

RPD - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

SRM - Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.

STLP - Semi-dynamic Tank Leaching Procedure per EPA Method 1315.

TEF - Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.

TEQ - Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.

TIC - Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers

Project Name:	RYE LAKE WFP	**Lab Number:**	L2132604
Project Number:	41.0162892.01	**Report Date:**	06/25/21

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA,this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

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

F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

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

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

Report Format: DU Report with 'J' Qualifiers

Project Name:	RYE LAKE WFP	**Lab Number:**	L2132604
Project Number:	41.0162892.01	**Report Date:**	06/25/21

Data Qualifiers

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

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

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

Project Name:	RYE LAKE WFP	**Lab Number:**	L2132604
Project Number:	41.0162892.01	**Report Date:**	06/25/21

REFERENCES

1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene
EPA 625/625.1: alpha-Terpineol
EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D/8270E: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522, EPA 537.1.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

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Page 1 of 1

Date Rec'd in Lab: 6/16/21

ALPHA Job #: L2132607

Client Information
Client: GZA GeoEnvironmental
Address: 104 West 29th St. New York, NY
Phone: (212) 594-8140
Fax:
Email: Matthew.DelBalzo@gza.com

Project Information
Project Name: Rye Lake WFP
Project Location:
Project #: 41.0162892.01
(Use Project name as Project #) ☐
Project Manager: Matt Del Balzo
ALPHAQuote #:

Turn-Around Time
Standard ☒ Due Date:
Rush (only if pre approved) ☐ # of Days:

These samples have been previously analyzed by Alpha ☐

Other project specific requirements/comments:

Please specify Metals or TAL.

Deliverables
☐ ASP-A ☐ ASP-B
☐ EQuIS (1 File) ☐ EQuIS (4 File)
☐ Other

Regulatory Requirement
☒ NY TOGS ☐ NY Part 375
☒ AWQ Standards ☐ NY CP-51
☐ NY Restricted Use ☐ Other
☐ NY Unrestricted Use
☐ NYC Sewer Discharge

Billing Information
☐ Same as Client Info
PO #

Disposal Site Information
Please identify below location of applicable disposal facilities.
Disposal Facility:
☐ NJ ☐ NY
☐ Other:

ANALYSIS

Sample Filtration
☐ Done
☐ Lab to do
Preservation
☐ Lab to do
(Please Specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	VOCs	SVOCs	TAL Metals	TCL Pest/Herb	TCL PCBs				Sample Specific Comments	Total Bottle
L2132607-01	MW-2A	6/16/21	10:50	GW	MD	X	X	X	X	X					
-02	MW-3A	6/16/21	13:00	GW	MD	X	X	X	X	X					
-03	EW-01	6/16/21	14:15	GW	MD	X	X	X	X	X					

Container Type
Preservative

Preservative Code:
A = None
B = HCl
C = HNO_3
D = H_2SO_4
E = NaOH
F = MeOH
G = $NaHSO_4$
H = $Na_2S_2O_3$
K/E = Zn Ac/NaOH
O = Other

Container Code
P = Plastic
A = Amber Glass
V = Vial
G = Glass
B = Bacteria Cup
C = Cube
O = Other
E = Encore
D = BOD Bottle

Westboro: Certification No: MA935
Mansfield: Certification No: MA015

Relinquished By:	Date/Time	Received By:	Date/Time
Matt Del Balzo GZA	6/16/21 14:43		6/16/21 1443
	6/16/21 1650	Paul Mangella	6/16/21 1700
Paul Mangella	6/16/21 2223		6/16/21 2223

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. BY EXECUTING THIS COC, THE CLIENT HAS READ AND AGREES TO BE BOUND BY ALPHA'S TERMS & CONDITIONS. (See reverse side.)

Form No: 01-25 HC (rev. 30-Sept-2013)

ANALYTICAL REPORT

Lab Number:	L2133087
Client:	GZA GeoEnvironmental, Inc. 104 West 29th Street, 10th Floor New York, NY 10001
ATTN:	Matthew Del Balzo
Phone:	(212) 594-8140
Project Name:	RYE LAKE WFP
Project Number:	41.0162892.00
Report Date:	06/22/21

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2133087
Report Date: 06/22/21

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2133087-01	B-24 (0'-5')	SOIL	Not Specified	05/26/21 09:10	05/26/21
L2133087-02	B-13 (0'-5')	SOIL	Not Specified	05/26/21 11:15	05/26/21
L2133087-03	B-10 (0'-5')	SOIL	Not Specified	05/26/21 12:36	05/26/21

Project Name:	RYE LAKE WFP	**Lab Number:**	L2133087
Project Number:	41.0162892.00	**Report Date:**	06/22/21

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2133087
Report Date: 06/22/21

Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

Herbicides

L2133087-01, -02, and -03 were extracted with the method required holding time exceeded.

Cyanide, Reactive

L2133087-01, -02, and -03 were analyzed with the method required holding time exceeded.

Sulfide, Reactive

L2133087-01, -02, and -03 were analyzed with the method required holding time exceeded.

Ignitability

L2133087-01, -02, and -03 were analyzed with the method required holding time exceeded.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Michelle M. Morris

Title: Technical Director/Representative Date: 06/22/21

ORGANICS

PESTICIDES

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2133087
Report Date: 06/22/21

SAMPLE RESULTS

Lab ID: L2133087-01
Client ID: B-24 (0'-5')
Sample Location: Not Specified

Date Collected: 05/26/21 09:10
Date Received: 05/26/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8151A
Analytical Date: 06/20/21 19:02
Analyst: AR
Percent Solids: 83%
Methylation Date: 06/19/21 16:06

Extraction Method: EPA 8151A
Extraction Date: 06/18/21 11:43

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Chlorinated Herbicides by GC - Westborough Lab							
2,4-D	ND		ug/kg	195	12.3	1	A
2,4,5-T	ND		ug/kg	195	6.06	1	A
2,4,5-TP (Silvex)	ND		ug/kg	195	5.20	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DCAA	80		30-150	A
DCAA	71		30-150	B

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2133087
Report Date: 06/22/21

SAMPLE RESULTS

Lab ID: L2133087-02
Client ID: B-13 (0'-5')
Sample Location: Not Specified

Date Collected: 05/26/21 11:15
Date Received: 05/26/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8151A
Analytical Date: 06/20/21 19:20
Analyst: AR
Percent Solids: 91%
Methylation Date: 06/19/21 16:06

Extraction Method: EPA 8151A
Extraction Date: 06/18/21 12:02

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Chlorinated Herbicides by GC - Westborough Lab							
2,4-D	ND		ug/kg	182	11.4	1	A
2,4,5-T	ND		ug/kg	182	5.63	1	A
2,4,5-TP (Silvex)	ND		ug/kg	182	4.83	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DCAA	79		30-150	A
DCAA	73		30-150	B

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2133087
Report Date: 06/22/21

SAMPLE RESULTS

Lab ID: L2133087-03
Client ID: B-10 (0'-5')
Sample Location: Not Specified

Date Collected: 05/26/21 12:36
Date Received: 05/26/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8151A
Analytical Date: 06/20/21 19:38
Analyst: AR
Percent Solids: 89%
Methylation Date: 06/19/21 16:06

Extraction Method: EPA 8151A
Extraction Date: 06/18/21 12:02

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Chlorinated Herbicides by GC - Westborough Lab							
2,4-D	ND		ug/kg	185	11.6	1	A
2,4,5-T	ND		ug/kg	185	5.73	1	A
2,4,5-TP (Silvex)	ND		ug/kg	185	4.91	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DCAA	85		30-150	A
DCAA	79		30-150	B

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2133087
Report Date: 06/22/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8151A
Analytical Date: 06/20/21 17:49
Analyst: AR

Extraction Method: EPA 8151A
Extraction Date: 06/18/21 11:43

Methylation Date: 06/19/21 16:06

Parameter	Result	Qualifier	Units	RL	MDL	Column
Chlorinated Herbicides by GC - Westborough Lab for sample(s): 01-03 Batch: WG1513946-1						
2,4-D	ND		ug/kg	161	10.2	A
2,4,5-T	ND		ug/kg	161	5.00	A
2,4,5-TP (Silvex)	ND		ug/kg	161	4.29	A

Surrogate	%Recovery	Qualifier	Acceptance Criteria	Column
DCAA	81		30-150	A
DCAA	76		30-150	B

Lab Control Sample Analysis

Batch Quality Control

Project Name: RYE LAKE WFP

Project Number: 41.0162892.00

Lab Number: L2133087

Report Date: 06/22/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
Chlorinated Herbicides by GC - Westborough Lab Associated sample(s): 01-03 Batch: WG1513946-2 WG1513946-3									
2,4-D	88		87		30-150	1		30	A
2,4,5-T	78		82		30-150	5		30	A
2,4,5-TP (Silvex)	80		81		30-150	1		30	A

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria	Column
DCAA	79		76		30-150	A
DCAA	75		75		30-150	B

METALS

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2133087
Report Date: 06/22/21

SAMPLE RESULTS

Lab ID: L2133087-01
Client ID: B-24 (0'-5')
Sample Location: Not Specified
Sample Depth:
Matrix: Soil
Percent Solids: 83%

Date Collected: 05/26/21 09:10
Date Received: 05/26/21
Field Prep: Not Specified
TCLP/SPLP Ext. Date: 06/19/21 23:15

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
TCLP Metals by EPA 1311 - Mansfield Lab											
Arsenic, TCLP	ND		mg/l	1.00	0.019	1	06/22/21 06:30	06/22/21 12:52	EPA 3015	1,6010D	SV
Barium, TCLP	0.552		mg/l	0.500	0.021	1	06/22/21 06:30	06/22/21 12:52	EPA 3015	1,6010D	SV
Cadmium, TCLP	ND		mg/l	0.100	0.010	1	06/22/21 06:30	06/22/21 12:52	EPA 3015	1,6010D	SV
Chromium, TCLP	ND		mg/l	0.200	0.021	1	06/22/21 06:30	06/22/21 12:52	EPA 3015	1,6010D	SV
Lead, TCLP	ND		mg/l	0.500	0.027	1	06/22/21 06:30	06/22/21 12:52	EPA 3015	1,6010D	SV
Mercury, TCLP	ND		mg/l	0.0010	0.0005	1	06/22/21 05:55	06/22/21 09:59	EPA 7470A	1,7470A	OU
Selenium, TCLP	ND		mg/l	0.500	0.035	1	06/22/21 06:30	06/22/21 12:52	EPA 3015	1,6010D	SV
Silver, TCLP	ND		mg/l	0.100	0.028	1	06/22/21 06:30	06/22/21 12:52	EPA 3015	1,6010D	SV

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2133087
Report Date: 06/22/21

SAMPLE RESULTS

Lab ID: L2133087-02
Client ID: B-13 (0'-5')
Sample Location: Not Specified
Sample Depth:
Matrix: Soil
Percent Solids: 91%

Date Collected: 05/26/21 11:15
Date Received: 05/26/21
Field Prep: Not Specified
TCLP/SPLP Ext. Date: 06/19/21 23:15

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
TCLP Metals by EPA 1311 - Mansfield Lab											
Arsenic, TCLP	0.024	J	mg/l	1.00	0.019	1	06/22/21 06:30	06/22/21 12:43	EPA 3015	1,6010D	SV
Barium, TCLP	1.42		mg/l	0.500	0.021	1	06/22/21 06:30	06/22/21 12:43	EPA 3015	1,6010D	SV
Cadmium, TCLP	ND		mg/l	0.100	0.010	1	06/22/21 06:30	06/22/21 12:43	EPA 3015	1,6010D	SV
Chromium, TCLP	ND		mg/l	0.200	0.021	1	06/22/21 06:30	06/22/21 12:43	EPA 3015	1,6010D	SV
Lead, TCLP	ND		mg/l	0.500	0.027	1	06/22/21 06:30	06/22/21 12:43	EPA 3015	1,6010D	SV
Mercury, TCLP	ND		mg/l	0.0010	0.0005	1	06/22/21 05:55	06/22/21 09:49	EPA 7470A	1,7470A	OU
Selenium, TCLP	ND		mg/l	0.500	0.035	1	06/22/21 06:30	06/22/21 12:43	EPA 3015	1,6010D	SV
Silver, TCLP	ND		mg/l	0.100	0.028	1	06/22/21 06:30	06/22/21 12:43	EPA 3015	1,6010D	SV

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2133087
Report Date: 06/22/21

SAMPLE RESULTS

Lab ID: L2133087-03
Client ID: B-10 (0'-5')
Sample Location: Not Specified
Sample Depth:
Matrix: Soil
Percent Solids: 89%

Date Collected: 05/26/21 12:36
Date Received: 05/26/21
Field Prep: Not Specified
TCLP/SPLP Ext. Date: 06/19/21 23:15

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
TCLP Metals by EPA 1311 - Mansfield Lab											
Arsenic, TCLP	0.030	J	mg/l	1.00	0.019	1	06/22/21 06:30	06/22/21 12:47	EPA 3015	1,6010D	SV
Barium, TCLP	0.651		mg/l	0.500	0.021	1	06/22/21 06:30	06/22/21 12:47	EPA 3015	1,6010D	SV
Cadmium, TCLP	ND		mg/l	0.100	0.010	1	06/22/21 06:30	06/22/21 12:47	EPA 3015	1,6010D	SV
Chromium, TCLP	ND		mg/l	0.200	0.021	1	06/22/21 06:30	06/22/21 12:47	EPA 3015	1,6010D	SV
Lead, TCLP	ND		mg/l	0.500	0.027	1	06/22/21 06:30	06/22/21 12:47	EPA 3015	1,6010D	SV
Mercury, TCLP	ND		mg/l	0.0010	0.0005	1	06/22/21 05:55	06/22/21 10:02	EPA 7470A	1,7470A	OU
Selenium, TCLP	ND		mg/l	0.500	0.035	1	06/22/21 06:30	06/22/21 12:47	EPA 3015	1,6010D	SV
Silver, TCLP	ND		mg/l	0.100	0.028	1	06/22/21 06:30	06/22/21 12:47	EPA 3015	1,6010D	SV

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2133087
Report Date: 06/22/21

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
TCLP Metals by EPA 1311 - Mansfield Lab for sample(s): 01-03 Batch: WG1514842-1										
Arsenic, TCLP	0.021	J	mg/l	1.00	0.019	1	06/22/21 06:30	06/22/21 12:35	1,6010D	SV
Barium, TCLP	ND		mg/l	0.500	0.021	1	06/22/21 06:30	06/22/21 12:35	1,6010D	SV
Cadmium, TCLP	ND		mg/l	0.100	0.010	1	06/22/21 06:30	06/22/21 12:35	1,6010D	SV
Chromium, TCLP	ND		mg/l	0.200	0.021	1	06/22/21 06:30	06/22/21 12:35	1,6010D	SV
Lead, TCLP	ND		mg/l	0.500	0.027	1	06/22/21 06:30	06/22/21 12:35	1,6010D	SV
Selenium, TCLP	ND		mg/l	0.500	0.035	1	06/22/21 06:30	06/22/21 12:35	1,6010D	SV
Silver, TCLP	ND		mg/l	0.100	0.028	1	06/22/21 06:30	06/22/21 12:35	1,6010D	SV

Prep Information

Digestion Method: EPA 3015
TCLP/SPLP Extraction Date: 06/18/21 15:31

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
TCLP Metals by EPA 1311 - Mansfield Lab for sample(s): 01-03 Batch: WG1514844-1										
Mercury, TCLP	ND		mg/l	0.0010	0.0005	1	06/22/21 05:55	06/22/21 09:42	1,7470A	OU

Prep Information

Digestion Method: EPA 7470A
TCLP/SPLP Extraction Date: 06/18/21 15:31

Lab Control Sample Analysis

Batch Quality Control

Project Name: RYE LAKE WFP

Project Number: 41.0162892.00

Lab Number: L2133087

Report Date: 06/22/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
TCLP Metals by EPA 1311 - Mansfield Lab Associated sample(s): 01-03 Batch: WG1514842-2								
Arsenic, TCLP	104		-		75-125	-		20
Barium, TCLP	100		-		75-125	-		20
Cadmium, TCLP	104		-		75-125	-		20
Chromium, TCLP	97		-		75-125	-		20
Lead, TCLP	95		-		75-125	-		20
Selenium, TCLP	97		-		75-125	-		20
Silver, TCLP	93		-		75-125	-		20
TCLP Metals by EPA 1311 - Mansfield Lab Associated sample(s): 01-03 Batch: WG1514844-2								
Mercury, TCLP	94		-		80-120	-		

Matrix Spike Analysis
Batch Quality Control

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2133087
Report Date: 06/22/21

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
TCLP Metals by EPA 1311 - Mansfield Lab Associated sample(s): 01-03 QC Batch ID: WG1514842-3 QC Sample: L2133087-01 Client ID: B-24 (0'-5')												
Arsenic, TCLP	ND	1.2	1.27	106		-	-		75-125	-		20
Barium, TCLP	0.552	20	20.8	101		-	-		75-125	-		20
Cadmium, TCLP	ND	0.51	0.548	107		-	-		75-125	-		20
Chromium, TCLP	ND	2	1.97	98		-	-		75-125	-		20
Lead, TCLP	ND	5.1	5.02	98		-	-		75-125	-		20
Selenium, TCLP	ND	1.2	1.21	101		-	-		75-125	-		20
Silver, TCLP	ND	0.5	0.482	96		-	-		75-125	-		20
TCLP Metals by EPA 1311 - Mansfield Lab Associated sample(s): 01-03 QC Batch ID: WG1514844-3 QC Sample: L2133087-02 Client ID: B-13 (0'-5')												
Mercury, TCLP	ND	0.025	0.0239	96		-	-		80-120	-		20

Lab Duplicate Analysis
Batch Quality Control

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2133087
Report Date: 06/22/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
TCLP Metals by EPA 1311 - Mansfield Lab Associated sample(s): 01-03 QC Batch ID: WG1514842-4 QC Sample: L2133087-01 Client ID: B-24 (0'-5')						
Arsenic, TCLP	ND	0.024J	mg/l	NC		20
Barium, TCLP	0.552	0.570	mg/l	3		20
Cadmium, TCLP	ND	ND	mg/l	NC		20
Chromium, TCLP	ND	ND	mg/l	NC		20
Lead, TCLP	ND	ND	mg/l	NC		20
Selenium, TCLP	ND	ND	mg/l	NC		20
Silver, TCLP	ND	ND	mg/l	NC		20
TCLP Metals by EPA 1311 - Mansfield Lab Associated sample(s): 01-03 QC Batch ID: WG1514844-4 QC Sample: L2133087-02 Client ID: B-13 (0'-5')						
Mercury, TCLP	ND	ND	mg/l	NC		20

INORGANICS
&
MISCELLANEOUS

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2133087
Report Date: 06/22/21

SAMPLE RESULTS

Lab ID: L2133087-01
Client ID: B-24 (0'-5')
Sample Location: Not Specified

Sample Depth:
Matrix: Soil

Date Collected: 05/26/21 09:10
Date Received: 05/26/21
Field Prep: Not Specified

Test Material Information

Source of Material:	Unknown
Description of Material:	Non-Metallic - Damp Soil
Particle Size:	Coarse
Preliminary Burning Time (sec):	120

Parameter	Result	Date Analyzed	Analytical Method	Analyst
Ignitability of Solids - Westborough Lab				
Ignitability	NI	06/18/21 09:30	1,1030	IS

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2133087
Report Date: 06/22/21

SAMPLE RESULTS

Lab ID: L2133087-02
Client ID: B-13 (0'-5')
Sample Location: Not Specified

Sample Depth:
Matrix: Soil

Date Collected: 05/26/21 11:15
Date Received: 05/26/21
Field Prep: Not Specified

Test Material Information

Source of Material: Unknown
Description of Material: Non-Metallic - Damp Soil
Particle Size: Coarse
Preliminary Burning Time (sec): 120

Parameter	Result	Date Analyzed	Analytical Method	Analyst
Ignitability of Solids - Westborough Lab				
Ignitability	NI	06/18/21 09:30	1,1030	IS

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2133087
Report Date: 06/22/21

SAMPLE RESULTS

Lab ID: L2133087-03
Client ID: B-10 (0'-5')
Sample Location: Not Specified

Date Collected: 05/26/21 12:36
Date Received: 05/26/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Test Material Information

Source of Material:	Unknown
Description of Material:	Non-Metallic - Damp Soil
Particle Size:	Medium
Preliminary Burning Time (sec):	120

Parameter	Result	Date Analyzed	Analytical Method	Analyst
Ignitability of Solids - Westborough Lab				
Ignitability	NI	06/18/21 09:30	1,1030	IS

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2133087
Report Date: 06/22/21

SAMPLE RESULTS

Lab ID: L2133087-01
Client ID: B-24 (0'-5')
Sample Location: Not Specified

Date Collected: 05/26/21 09:10
Date Received: 05/26/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	83.4		%	0.100	NA	1	-	05/28/21 08:26	121,2540G	RI
pH (H)	5.2		SU	-	NA	1	-	06/19/21 04:22	1,9045D	KA
Cyanide, Reactive	ND		mg/kg	10	10.	1	06/18/21 19:55	06/18/21 21:20	125,7.3	NA
Sulfide, Reactive	ND		mg/kg	10	10.	1	06/18/21 19:55	06/18/21 20:59	125,7.3	NA

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2133087
Report Date: 06/22/21

SAMPLE RESULTS

Lab ID: L2133087-02
Client ID: B-13 (0'-5')
Sample Location: Not Specified

Date Collected: 05/26/21 11:15
Date Received: 05/26/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	91.3		%	0.100	NA	1	-	05/28/21 08:00	121,2540G	RI
pH (H)	5.2		SU	-	NA	1	-	06/19/21 04:22	1,9045D	KA
Cyanide, Reactive	ND		mg/kg	10	10.	1	06/18/21 19:55	06/18/21 21:21	125,7.3	NA
Sulfide, Reactive	ND		mg/kg	10	10.	1	06/18/21 19:55	06/18/21 21:00	125,7.3	NA

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2133087
Report Date: 06/22/21

SAMPLE RESULTS

Lab ID: L2133087-03
Client ID: B-10 (0'-5')
Sample Location: Not Specified

Date Collected: 05/26/21 12:36
Date Received: 05/26/21
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	89.3		%	0.100	NA	1	-	05/28/21 08:00	121,2540G	RI
pH (H)	5.1		SU	-	NA	1	-	06/19/21 04:22	1,9045D	KA
Cyanide, Reactive	ND		mg/kg	10	10.	1	06/18/21 19:55	06/18/21 21:21	125,7.3	NA
Sulfide, Reactive	ND		mg/kg	10	10.	1	06/18/21 19:55	06/18/21 21:00	125,7.3	NA

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2133087
Report Date: 06/22/21

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab for sample(s): 01-03 Batch: WG1514062-1										
Sulfide, Reactive	ND		mg/kg	10	10.	1	06/18/21 19:55	06/18/21 20:55	125,7.3	NA
General Chemistry - Westborough Lab for sample(s): 01-03 Batch: WG1514064-1										
Cyanide, Reactive	ND		mg/kg	10	10.	1	06/18/21 19:55	06/18/21 21:17	125,7.3	NA

Lab Control Sample Analysis

Batch Quality Control

Project Name: RYE LAKE WFP

Project Number: 41.0162892.00

Lab Number: L2133087

Report Date: 06/22/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-03 Batch: WG1514062-2								
Sulfide, Reactive	96		-		60-125	-		40
General Chemistry - Westborough Lab Associated sample(s): 01-03 Batch: WG1514064-2								
Cyanide, Reactive	83		-		30-125	-		40
General Chemistry - Westborough Lab Associated sample(s): 01-03 Batch: WG1514165-1								
pH	100		-		99-101	-		

Lab Duplicate Analysis

Batch Quality Control

Project Name: RYE LAKE WFP

Project Number: 41.0162892.00

Lab Number: L2133087

Report Date: 06/22/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 02-03 QC Batch ID: WG1504826-1 QC Sample: L2128025-02 Client ID: DUP Sample						
Solids, Total	78.3	79.5	%	2		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1504840-1 QC Sample: L2128025-01 Client ID: DUP Sample						
Solids, Total	85.6	83.6	%	2		20
General Chemistry - Westborough Lab Associated sample(s): 01-03 QC Batch ID: WG1514062-3 QC Sample: L2133087-01 Client ID: B-24 (0'-5')						
Sulfide, Reactive	ND	ND	mg/kg	NC		40
General Chemistry - Westborough Lab Associated sample(s): 01-03 QC Batch ID: WG1514064-3 QC Sample: L2133087-01 Client ID: B-24 (0'-5')						
Cyanide, Reactive	ND	ND	mg/kg	NC		40
General Chemistry - Westborough Lab Associated sample(s): 01-03 QC Batch ID: WG1514165-2 QC Sample: L2132313-01 Client ID: DUP Sample						
pH	8.0	8.2	SU	2		5

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00

Lab Number: L2133087
Report Date: 06/22/21

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2133087-01B	Glass 120ml/4oz unpreserved	A	NA		2.5	Y	Absent		IGNIT-1030(14),REACTS(14),HERB-APA(14),PH-9045(1),REACTCN(14)
L2133087-01C	Glass 500ml/16oz unpreserved	A	NA		2.5	Y	Absent		IGNIT-1030(14),REACTS(14),HERB-APA(14),PH-9045(1),REACTCN(14)
L2133087-01X	Plastic 120ml HNO3 preserved Extracts	A	NA		2.5	Y	Absent		CD-CI(180),BA-CI(180),AS-CI(180),HG-C(28),PB-CI(180),CR-CI(180),SE-CI(180),AG-CI(180)
L2133087-01X9	Tumble Vessel	A	NA		2.5	Y	Absent		-
L2133087-02B	Glass 120ml/4oz unpreserved	A	NA		2.5	Y	Absent		IGNIT-1030(14),REACTS(14),HERB-APA(14),PH-9045(1),REACTCN(14)
L2133087-02C	Glass 500ml/16oz unpreserved	A	NA		2.5	Y	Absent		IGNIT-1030(14),REACTS(14),HERB-APA(14),PH-9045(1),REACTCN(14)
L2133087-02X	Plastic 120ml HNO3 preserved Extracts	A	NA		2.5	Y	Absent		CD-CI(180),AS-CI(180),BA-CI(180),HG-C(28),PB-CI(180),CR-CI(180),SE-CI(180),AG-CI(180)
L2133087-02X9	Tumble Vessel	A	NA		2.5	Y	Absent		-
L2133087-03B	Glass 120ml/4oz unpreserved	A	NA		2.5	Y	Absent		REACTS(14),IGNIT-1030(14),HERB-APA(14),PH-9045(1),REACTCN(14)
L2133087-03C	Glass 500ml/16oz unpreserved	A	NA		2.5	Y	Absent		REACTS(14),IGNIT-1030(14),HERB-APA(14),PH-9045(1),REACTCN(14)
L2133087-03X	Plastic 120ml HNO3 preserved Extracts	A	NA		2.5	Y	Absent		CD-CI(180),BA-CI(180),AS-CI(180),HG-C(28),PB-CI(180),SE-CI(180),CR-CI(180),AG-CI(180)
L2133087-03X9	Tumble Vessel	A	NA		2.5	Y	Absent		-

*Values in parentheses indicate holding time in days

Project Name:	RYE LAKE WFP	**Lab Number:**	L2133087
Project Number:	41.0162892.00	**Report Date:**	06/22/21

GLOSSARY

Acronyms

DL - Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

EDL - Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).

EMPC - Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.

EPA - Environmental Protection Agency.

LCS - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LCSD - Laboratory Control Sample Duplicate: Refer to LCS.

LFB - Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LOD - Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

LOQ - Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)

MDL - Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

MS - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.

MSD - Matrix Spike Sample Duplicate: Refer to MS.

NA - Not Applicable.

NC - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.

NDPA/DPA - N-Nitrosodiphenylamine/Diphenylamine.

NI - Not Ignitable.

NP - Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.

NR - No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.

RL - Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

RPD - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

SRM - Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.

STLP - Semi-dynamic Tank Leaching Procedure per EPA Method 1315.

TEF - Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.

TEQ - Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.

TIC - Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers

Project Name:	RYE LAKE WFP	**Lab Number:**	L2133087
Project Number:	41.0162892.00	**Report Date:**	06/22/21

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA,this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

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

F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

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

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

Report Format: DU Report with 'J' Qualifiers

Project Name:	RYE LAKE WFP	**Lab Number:**	L2133087
Project Number:	41.0162892.00	**Report Date:**	06/22/21

Data Qualifiers

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

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

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

Report Format: DU Report with 'J' Qualifiers

Project Name: RYE LAKE WFP
Project Number: 41.0162892.00
Lab Number: L2133087
Report Date: 06/22/21

REFERENCES

1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.

121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

125 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates IIIA, April 1998.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene
EPA 625/625.1: alpha-Terpineol
EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D/8270E: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522, EPA 537.1.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

ALPHA

Westborough, MA 01581
8 Walkup Dr.
TEL: 508-898-9220
FAX: 508-898-9193

Mansfield, MA 02048
320 Forbes Blvd
TEL: 508-822-9300
FAX: 508-822-3288

NEW YORK CHAIN OF CUSTODY

Service Centers
Mahwah, NJ 07430: 35 Whitney Rd, Suite 5
Albany, NY 12205: 14 Walker Way
Tonawanda, NY 14150: 275 Cooper Ave, Suite 105

Page 2 of 2

Date Rec'd in Lab: 5/26/21

ALPHA Job #: L2133025

Client Information
Client: GZA GeoEnvironmental
Address: 104 West 29th St
New York, NY
Phone: 212-594-8140
Fax:
Email: Matthew.Delbalzo@gza.com

Project Information
Project Name: Rye Lake WFP
Project Location:
Project #: 41.0162892.00
(Use Project name as Project #) ☐
Project Manager: Matt DelBalzo
ALPHAQuote #:

Turn-Around Time
Standard ☑ Due Date:
Rush (only if pre approved) ☐ # of Days:

Deliverables
☐ ASP-A ☐ ASP-B
☐ EQuIS (1 File) ☐ EQuIS (4 File)
☐ Other

Regulatory Requirement
☐ NY TOGS ☐ NY Part 375
☐ AWQ Standards ☐ NY CP-51
☐ NY Restricted Use ☐ Other
☐ NY Unrestricted Use
☐ NYC Sewer Discharge

Billing Information
☐ Same as Client Info
PO #

Disposal Site Information
Please identify below location of applicable disposal facilities.
Disposal Facility:
☑ NJ ☑ NY
☑ Other: PA

These samples have been previously analyzed by Alpha ☐

Other project specific requirements/comments:

Please specify Metals or TAL.

Sample Filtration
☐ Done
☐ Lab to do
Preservation
☐ Lab to do
(Please Specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	VOCs (8260)	SVOCs (8270)	TAL Metals (6010)	Pesticides (8081)	Herbicides (8151)	PCBs (8082)	TCLP RCRA 8 Metal	Haz. Charact.	Sample Specific Comments	Total Bottle
L2133025-11	B-24 (1'-2')	5/26/21	9:10AM	Soil	A.A.	X									
33087-01 -12	B-24 (0'-5')	5/26/21	9:10AM	Soil	A.A.		X	X	X	X	X	X	X		
-13	B-13 (1'-2')	5/26/21	11:15AM	Soil	A.A	X									
-02 -14	B-13 (0'-5')	5/26/21	11:15AM	Soil	A.A		X	X	X	X	X	X	X		
-15	B-10 (1'-2')	5/26/21	12:36PM	Soil	A.A	X									
-03 -16	B-10 (0'-5')	5/26/21	12:36PM	Soil	A.A.		X	X	X	X	X	X	X		

Preservative Code:
A = None
B = HCl
C = HNO_3
D = H_2SO_4
E = NaOH
F = MeOH
G = $NaHSO_4$
H = $Na_2S_2O_3$
K/E = Zn Ac/NaOH
O = Other

Container Code
P = Plastic
A = Amber Glass
V = Vial
G = Glass
B = Bacteria Cup
C = Cube
O = Other
E = Encore
D = BOD Bottle

Westboro: Certification No: MA935
Mansfield: Certification No: MA015

Container Type
Preservative

Relinquished By:	Date/Time	Received By:	Date/Time
Allan Amador/GZA	05/26/21, 2:00PM	Alpha	5/26/21 14:02
Alpha	5/26/21, 18:19	Paul Mansfield	5/26/21 18:20
Paul Mansfield	5/26/21 23:13		5/26/21 23:13

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. BY EXECUTING THIS COC, THE CLIENT HAS READ AND AGREES TO BE BOUND BY ALPHA'S TERMS & CONDITIONS. (See reverse side.)

Form No: 01-25 HC (rev. 30-Sept-2013)



GZA GeoEnvironmental of New York



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GEOTECHNICAL ENGINEERING REPORT

WESTCHESTER JOINT WATER WORKS
Filtration

PROPOSED FILTRATION PLANT
WEST HARRISON, NEW YORK

February 21, 2023
File No. 41.0162892.00



PREPARED FOR:

Hazen

498 Seventh Avenue, 11th Floor
New York, New York

GZA GeoEnvironmental of New York
104 West 29th Street, Floor 10 | New York, New York 10001
212-594-8140

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February 21, 2023
File No. 41.0162892.00

Mrs. Eliora Camilleri
Hazen and Sawyer
498 Seventh Avenue, 11th Floor
New York, NY 10018

Re: Geotechnical Engineering Report
Westchester Joint Water Works (WJWW)
Rye Lake Water Filtration Plant
West Harrison, New York
Hazen No. 90388-000

Dear Mrs. Camilleri:

In accordance with the scope of services and contract requirements, GZA GeoEnvironmental of New York (GZA) is pleased to submit our Geotechnical Engineering Report to Hazen & Sawyer (Hazen) for the proposed Westchester Joint Water Works (WJWW) Filtration Plant in West Harrison New York. Our services have been provided in accordance with our revised agreement for professional services dated April 13, 2021. An Environmental Waste Characterization Report summarizing the environmental sampling and testing as part of this program will be provided under separate cover.

We appreciate the opportunity to be of service for this project. Please call us if you have any questions regarding this report.

Very truly yours,
GZA GEOENVIRONMENTAL OF NEW YORK

Dharmil S. Patel, P.E.
Project Manager

Cassandra A. Wetzel, P.E.
Vice President

William H. Hover, P.E.
Consultant Reviewer

Rev.	Issue Date	Description
00	07-13-2021	Initial Submission
01	08-27-2021	Revised based on Comments dated 07-29-2021 and additional Test Pit excavations performed on 08-20-2021
02	01-27-2022	Revised based on comments dated 09-17-2021 and additional Test Pit excavations performed on 11-04-2021
03	03-16-2022	Revised based on comments dated 02-15-2022
04	02-17-2023	Revised based on updated layout

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1.0 INTRODUCTION

1.1 GENERAL

On behalf of Hazen & Sawyer (Hazen), GZA GeoEnvironmental of New York (GZA) prepared this report to present Geotechnical Engineering/Construction Recommendations for the proposed Westchester Joint Water Works (WJWW) Filtration Plant in West Harrison, New York (Site). The Site is bounded by Tower Road to the south, Westchester County Airport to the east, Purchase Street to the west, and wooded area to the north, a site location Map is included as **Figure 1.**

1.2 SCOPE OF SERVICES

Our services were performed in accordance with subconsultant agreement HAZEN-WJWW RLFF between Hazen and GZA, dated January 29, 2021, executed on April 29, 2021, and are subject to the terms of our proposal and the limitations presented in **Appendix A**.

Our scope of services included:

- A subsurface exploration program consisting of 28 test borings, installation of two temporary groundwater monitoring wells
- Excavation and documentation of 13 test pits
- Permeability testing and groundwater monitoring
- Geotechnical laboratory testing
- Research of readily available subsurface data in the project vicinity
- Geotechnical engineering analyses of the subsurface conditions encountered at the site
- This geotechnical engineering report which summarizes our observations and engineering recommendations for the project.

We note that the environmental waste characterization sampling and laboratory testing performed during this investigation are summarized in a stand-alone Waste Characterization Report dated July 9. 2021.

1.3 DATUM

Elevations (El.) in this report are in feet and are referenced to the North American Vertical Datum of 1988 (NAVD 88), unless otherwise noted.

1.4 EXISTING CONDITIONS

The site consists of wooded and undeveloped areas and is bounded by Tower Road to the south, Westchester County Airport to the east, Purchase Street to the west, and wooded area to the north. The site is located within 1,000 feet of Rye Lake to the west. A stream that drains north into Rye Lake is located east of the site along a fence that separates the site

from Westchester County (White Plains) Airport. Existing ground surface at the site ranges from approximately El. 414 to El. 396, generally sloping down from south to north and west to east.

1.5 PROJECT BACKGROUND PROPOSED CONSTRUCTION

We understand that WJWW is considering constructing a new 30-to-40-million gallons per day (MGD) water filtration plant. Water is currently pumped from Rye Lake (north of the site) through a water main along Purchase Street (west of the site) to water tanks about 800 feet south of Tower Road (south of the site). It is planned to redirect the water from Rye Lake to the new filtration plant through a new water main that will enter the site from Purchase Street.

We understand that the water filtration plant consist of constructing a structure approximately 37.5-foot high with a below grade level and other ancillary structures including above-ground emergency generators and bioretention cell. The proposed combined wastewater tanks previously proposed east of the building have been relocated to be within the footprint of the main water filtration plant building (northwest section of the building). The proposed water filtration plant first floor elevation is approximately El. 407 and proposed below-grade level is approximately El. 383. The combined washwater tank has a floor elevation which pitches from El. 374.42 to 372. The structure and proposed ancillary structure locations are shown on **Figure 2**.

Our project understand is based on review of the following documents:

- 90% Design Submission drawings dated January 2022, prepared by Hazen
- Updated Civil drawings dated December 2022, prepared by Hazen
- Updated Structural drawings dated March 2022, prepared by Hazen
- Preliminary Geotechnical Engineering and Environmental Report dated February 2020, prepared by Haley & Aldrich of New York (H&A)
- Topographic Survey dated April 17, 2021, prepared by George J. Mottarella PE, LS, PC.

1.6 REGIONAL GEOLOGY

The geologic stratigraphy at the Site consists of Glacial Till deposits, typically consisting of a mixture of sand, gravel, silt, clay and cobbles/boulders of various textures and clasts. Glacial Till deposits overly decomposed rock and bedrock of the Paleozoic Upper to Middle Ordovician deposits of the Manhattan Formation.

2.0 SUBSURFACE EXPLORATION PROGRAM

GZA's geotechnical exploration program consisted of 28 test borings, infiltration testing, installation of two groundwater observation wells, groundwater monitoring, six test pit excavations, and laboratory testing to evaluate the materials underlying the site. GZA also reviewed data from previous subsurface exploration program performed by H&A at the site.

The exploration locations are shown on **Figure 2**. GZA's boring logs, log key and well installation logs are included in **Appendix B**. Geotechnical laboratory test results are included in **Appendix C**. Permeability testing and groundwater

monitoring results are included in **Appendix D**. Test pit excavation sketches and photo logs are included in **Appendix E**. H&A test boring and test pit logs are included in **Appendix F**.

The test boring locations were staked out by Hazen's subconsultant, George Mottarella. Test pit locations were located in the field by GZA using the Trimble R1 handheld GPS unit based on coordinates provided by Hazen. Exploration methods are discussed below.

2.1 TEST BORINGS

Twenty-eight borings were advanced by Craig Geotechnical Drilling Co., Inc., of Mays Landing, New Jersey under the observation of our field representative between May 13 and June 4, 2021. The borings were advanced using an ATV-mounted CME-750X drill rig with mud rotary drilling techniques and metal casing to stabilize the boreholes. The approximate depths and elevations of the test borings are summarized in **Table 1**.

Soil samples were visually classified in the field in accordance with the Modified Burmister Soil Classification System. Standard Penetration Tests (SPT) were performed during drilling continuously within the top 12 feet of the borings and at five-foot intervals thereafter in general accordance with ASTM D-1586. A 140-pound automatic hammer was used to drive the split-spoon sampler through a distance of 24-inches for each SPT sample advanced with the drill rig. The number of blows required to drive the split-spoon sampler from 6 to 18-inches is known as the N-value, a commonly used indicator of soil density and consistency. The hammer blows and N-values are recorded on the boring logs as well as the Modified Burmister description for each sample.

A groundwater observation well was installed in test borings B-3a(OW) and B-29(OW) to depths of about 27 feet and 25 feet below grade (bgs), respectively. Groundwater depths were measured during the geotechnical exploration program and recorded on the boring logs. The borings without wells were backfilled with soil cuttings and bentonite upon completion.

2.2 SOIL LABORATORY TESTING PROGRAM

Select soil samples were sent to TerraSense, LLC of Totowa, New Jersey to help check our soil descriptions and provide data used in the development of our recommendations. Soil testing included particle-size analysis (ASTM D-6913), water content (ASTM D-2216), unit weight testing (ASTM D-2937), direct shear testing (ASTM D-3080), California Bearing Ratio (ASTM D-1883), and corrosivity testing (Electrical Resistivity, pH, Sulfate, Sulfide, Soluble Chloride, Oxidation/Reduction Potential). Laboratory test results have been summarized and included in this report are listed in **Section 3.0 – Subsurface Conditions**. Laboratory test results are included in **Appendix C** and incorporated in the boring logs and subsurface stratigraphy where applicable.

2.3 IN-SITU FALLING HEAD PERMEABILITY TESTING

In-situ infiltration testing was performed during the subsurface exploration in test borings located within the proposed bioretention cell footprint (B-19, B-20, and B-22) at depths of approximately 8.5 feet (El. 394.5), 7.5 feet (El. 393.5) and 9 feet (El. 390), respectively. The test elevations were provided by Hazen, infiltration tests were performed at or near the groundwater table. The test method consisted of driving 4-inch nominal diameter casing to the required test depth followed by placing approximately 3 inches of coarse sand and washing out the casing with potable water. The casing was filled to the top with water and the soil was pre-soaked for a minimum of 30 minutes. After the pre-soak, the casing was filled to the top with water and the distance from the top of the casing to top of water in the casing was measured at 1,

2, 3, 4, 5, 10, and 15 minutes after the beginning of the test. The test was repeated once at the same depth after pre-soaking for 5 minutes. Permeability test logs are included in **Appendix D.**

2.4 RISING HEAD PERMEABILITY TESTING

GZA performed two field rising head permeability tests within the 2-inch PVC temporary groundwater observation wells located within test borings B-29(OW) and B-3A(OW) on August 4, 2021. A piezometer was installed at the bottom of each well, the test was performed by first pumping the well dry and then collecting water level readings as the water recharged into the PVC until the water level in the PVC has stopped rising (stabilized). Water level reading were collected using a Solinst Barologger 5 piezometer at 1 second intervals as well as with a water level indicator from the top of the casing to the top of ground water level. Rising head permeability testing results are included in **Appendix D.**

2.5 TEST PIT EXCAVATIONS

GZA's subcontractor, Craig Geotechnical Drilling Co., Inc, of Mays Landing, New Jersey, excavated six test pits under the observation of our field representative on August 20, 2021 (TP-1 to TP-6) and November 4, 2021 (TP-7 to TP-13). The test pits were excavated using a small excavator at locations provided by Hazen, as shown on **Figure 2**. Refer to **Table 3** for test pit excavation depths.

A GZA field representative documented the visible features of each exposed test pit. Dimensions were obtained using a handheld tape measure and elevations are based on addition or subtraction of those measurements from the surrounding ground surface elevation. Upon completion, each test pit was backfilled with the excavated materials and tamped. The ground surface was left unrestored. Test pit logs and photographic documentation are included in **Appendix E**.

2.6 PREVIOUS SUBSURFACE EXPLORATIONS

H&A conducted a preliminary subsurface exploration program at the Site in November 2019. The subsurface exploration program included three borings, two test pits and environmental laboratory testing. We reviewed the information from the previous geotechnical engineering report and considered the data during the analyses performed for this project. **Appendix F** includes logs for the test borings and test pits from the 2019 exploration. **Figure 2** indicates the approximate test boring and test pit locations.

2.7 WASTE CHARACTERIZATION SAMPLING

Select waste characterization soil samples were collected to evaluate the potential for beneficial reuse, or off-site disposal during construction. Hazen reports an estimated volume of approximately 38,000 cubic yards of material to be excavated during construction. GZA collected 18 sets of characterization samples over the footprint of the proposed excavation areas. Six sample sets were collected from the upper 0 to 5 foot interval for typical parameters required for acceptance at off-site disposal facilities. The remaining 12 composite sampling sets characterized deeper sampling intervals (5 to 26 feet below ground surface) in order to fulfill the New York State Department of Environmental Conversation (NYSDEC) Solid Waste Management beneficial reuse sampling requirements in accordance with New York State Solid Waste (6 NYCRR Part 360.12). Please refer to the Waste Characterization Report, dated July 9. 2021.

2.8 GROUNDWATER SAMPLING

Three groundwater samples were collected from stick-up monitoring wells that were previously installed and installed as part of this investigation for analysis of groundwater quality at the Site, including handling of dewatering during construction. Samples were compared to the New York State Ambient Water Quality Standards (Division of Water

Technical Operational Guidance Series [TOGS] 1.1.1.). Groundwater purge logs are included in **Appendix G**, and environmental laboratory report and summary result tables are included in **Appendix H**.

3.0 SUBSURFACE CONDITIONS

3.1 GENERALIZED SOIL STRATIGRAPHY

Based on the results of the GZA exploration program and relevant previous subsurface exploration data, GZA developed interpolated profiles on **Figures 3** through **Figure 7**. The subsurface conditions for the Site generally consists of the following, in order of increasing depth:

- SURFACE COVER MATERIALS – Surface cover consisting of 1-inch to 12-inches of topsoil that was encountered at all the test borings and test pits. Test boring B-21 encountered approximately 2 to 3-inches of asphalt.

- SILTY SAND – Silty Sand was encountered in each of the borings except for B-3a(OW) and B-24, to depths ranging between 2 feet and 10 feet. Test boring B-20 terminated in this stratum. The Silty Sand generally consisted of brown, fine to medium grained sand, containing up to 50 percent silt, up to 20 percent gravel, and up to 10 percent clay with trace amounts of roots. The Silty Sand stratum was generally very loose to dense with SPT N-values ranging between 2 and 35 bpf (blows per foot), and average N-value of 13 bpf. The measured moisture content value for a sample from this stratum was 13.4 percent. The approximate depth and elevation to the top of the Silty Sand is provided in **Table 2**.

- GLACIAL TILL – Glacial Till was encountered in each of the borings except for B-20, to depths ranging between 18.5 feet and 43.5 feet. Test borings B-1, B-16, B-17, B-18, B-19, B-23, B-24, B-25, B-27, B-28, B-29(OW) and B-30 terminated in this stratum. Glacial Till consisting of brown, fine to medium grained sand, containing up to 35 percent silt and up to 35 percent gravel, encountered below the Silty Sand stratum. The Glacial Till was generally medium dense to very dense with SPT N-values ranging from 12 to 100 bpf, and average N-value of 37 bpf. Some samples encountered refusal on gravel or other possible obstructions. The measured moisture content values for samples from this stratum varied from 10.4 to 14.4 percent. The approximate depth and elevation to the top of the Glacial Till is provided in **Table 2**.

- DECOMPOSED ROCK – Decomposed Rock, consisting of gray to brown, fine to medium grained sand, containing up to 50 percent silt, and up to 35 percent gravel, was encountered below Glacial Till stratum. Decomposed Rock is identified as dense to very dense material that has retained the parent rock structure. The SPT N-values were generally ranging from 25 to 100 bpf, and average N-value of 79 bpf, with many samples encountering refusal. Sample S-13 in test boring B-8 from 45 feet to 47 feet depth encountered a SPT N-value of 14. The approximate depth and elevation to the top of the Decomposed Rock is provided in **Table 2**.

3.2 TEST PIT OBSERVATIONS

A brief description of our observations at each test pit is summarized below:

- Test Pit TP-1 – TP-1 was excavated to a depth of approximately 12 feet bgs. Soil mottling and staining was observed at a depth of approximately 9 feet to 10 feet bgs and moist soil was encountered at approximately 10 feet bgs. Groundwater was not encountered in the test pit.

- Test Pit TP-2 – TP-2 was excavated to a depth of approximately 13 feet bgs. Soil mottling and staining was observed at a depth of approximately 5 feet below ground surface and a boulder was encountered at a depth of 7 feet. Groundwater was not encountered in the test pit.

- Test Pit TP-3 – TP-3 was excavated to a depth of approximately 13.5 feet bgs. Soil mottling, staining and moist soil was observed at a depth of approximately 5 feet bgs. Groundwater was encountered at a depth of approximately 12 feet bgs in the test pit.

- Test Pit TP-4A – TP-4 was terminated at a depth of approximately 7 feet due to a boulder and was offset approximately 10 feet east. TP-4A was excavated to a depth of approximately 13.5 feet bgs. Groundwater was not encountered in the test pit. Soil mottling and staining was not observed within this test pit.

- Test Pit TP-5 – TP-5 was excavated to a depth of approximately 13 feet bgs. Soil mottling, dark ground soil and moisture in the soil was encountered at a depth of approximately 11 feet bgs. Groundwater was not encountered in the test pit.

- Test Pit TP-6 – TP-6 was excavated to a depth of approximately 8.5 feet bgs. Soil mottling and staining was observed at a depth of approximately 5 feet to 7 feet bgs. Groundwater was encountered at a depth of approximately 7.5 feet bgs.

- Test Pit TP-7 – TP-7 was excavated to a depth of approximately 13 feet bgs. Groundwater was encountered at a depth of approximately 13 feet bgs. Soil mottling and staining was not observed within this test pit.

- Test Pit TP-8 – TP-8 was excavated to a depth of approximately 13 feet bgs. Groundwater was not encountered within the test pit. Soil mottling and staining was not observed within this test pit.

- Test Pit TP-9 – TP-9 was excavated to a depth of approximately 13.5 feet bgs. Groundwater was encountered at a depth of approximately 12.5 feet bgs. Soil mottling and staining was not observed within this test pit.

- Test Pit TP-10 – TP-10 was excavated to a depth of approximately 9 feet bgs. A boulder was encountered at the bottom of the excavation. Groundwater was not encountered within the test pit. Soil mottling and staining was not observed within this test pit.

- Test Pit TP-11 – TP-11 was excavated to a depth of approximately 8 feet bgs. Groundwater was encountered at a depth of approximately 6 feet bgs. Soil mottling and staining was observed at a depth of approximately 4 feet to 5 feet bgs.

- Test Pit TP-12 – TP-12 was excavated to a depth of approximately 14 feet bgs. Groundwater was encountered at a depth of approximately 13 feet bgs. Soil mottling and staining was not observed within this test pit.

- Test Pit TP-13 – TP-13 was excavated to a depth of approximately 11 feet bgs. Groundwater was encountered at a depth of approximately 8 feet bgs. Soil mottling and staining was observed at a depth of approximately 3 feet to 5 feet bgs.

The approximate depths and elevations of soil mottling, moist soil, and groundwater encountered in the test pit excavations are summarized in **Table 3**. Refer to **Appendix E** for soil description within the test pit excavations.

3.3 GROUNDWATER

GZA installed temporary groundwater observation wells in test borings B-3a(OW) and B-29(OW) to depths of approximately 27 feet and 25 feet below grade, respectively. GZA measured the depth to groundwater B-3a(OW), B-29(OW) and B-1(OW) over a four-month long period. The previous borings by H&A and GZA borings indicate groundwater recorded at varying depths. The approximate depth and elevation of groundwater are summarized in **Table 4,** are included on the boring logs in **Appendix B,** and are included in groundwater monitoring charts in **Appendix D**.

GZA installed two Solinst Barologger 5 piezometers in the temporary groundwater observation wells located within test borings B-29(OW) and B-3A(OW) to monitor groundwater levels. The piezometers were installed on August 4, 2021 and collect water level readings at a 30-minute interval until August 10, 2021. The groundwater level readings are incorporated into **Table 4** and included in **Appendix D**.

Changes in groundwater depth will occur due to variations in seasonal influences, stream levels, precipitation amounts, local pumping, surface runoff, heterogeneous subsurface conditions, and other factors different from those existing at the time the observations were made.

3.4 PERMEABILITY TESTING RESULTS

The permeability test results are summarized in **Table 5**. The permeability test logs are included in **Appendix D**. Falling head permeability testing was performed at elevations provided by Hazen, the test elevations where at or below the groundwater table. Rising head permeability testing was performed to determine groundwater recharge rates, summarized in **Table 5**.

3.5 GEOTECHNICAL LABORATORY TESTING RESULTS

Geotechnical laboratory test results of soil samples have been summarized in **Table 6.**

3.6 GEOTECHNICAL DESIGN PARAMENTERS

Data obtained from the borings, in-situ testing, and the soil laboratory testing were used to develop design soil properties and idealized soil profiles used in our analyses. The recommended design soil properties are summarized in **Table 7**. Correlations between SPT and engineering properties provided in FHWA Geotechnical Engineering Circular 5, Evaluation of Soil and Rock Properties (FHWA 2002) were considered where applicable laboratory test results were not available.

4.0 GEOTECHNICAL ENGINEERING RECOMMENDATIONS

The recommendations provided in this report are based on the subsurface conditions observed in the test borings, as well as our understanding of the proposed construction, review of previous subsurface exploration data, and our correspondence with the project team.

4.1 KEY GEOTECHNICAL ISSUES

We have identified the following geotechnical issues that will impact design and construction of the proposed structure at the site:

- Shallow groundwater is subject to seasonal fluctuation possibly due to influence of a stream, associated wetlands, and perched water table running across the top of the glacial till stratum.
- Excavation below the observed groundwater table.
- Permeability testing within limits of proposed bioretention cell yielded slow-draining material within the Glacial Till Stratum.
- Rising head testing within the temporary groundwater observation wells yielded quick groundwater recharge rates likely due to connection to the shallow perched water table unit.
- Very dense Glacial Till may have large boulders which will be difficult to excavate and install SOE.

4.2 GENERAL DISCUSSION

Considering the key geotechnical issues mentioned above and our understanding of the project, we recommend supporting the proposed water filtration plant structure and other ancillary structures including above-ground emergency generators, retaining walls, fuel and soil pads on shallow foundations as discussed below. We have summarized the estimated elevation of suitable bearing soil stratum and recommended bearing capacity for each structure in **Table 10**.

4.2.1 SHALLOW FOUNDATIONS

We recommend supporting the proposed structures on shallow foundations (spread footings or structural mats) designed and constructed per the 2020 New York State Building Code (NYSBC). Additional excavation may be required to reach the recommended bearing stratum and to form a level foundation surface. If unsuitable soils are encountered at the design bearing elevation, these soils should be removed and replaced with new compacted granular fill that meets the gradation and compaction requirements outlined in **Table 8** and **Table 9**, respectively.

Settlement for shallow foundations supported on properly compacted granular fill, glacial till are expected to be less than approximately 1-inch and ½-inch for foundations supported on decomposed rock. Differential settlement between similarly loaded footings is expected to about one half of these values. Isolated footings should bear entirely on soil (compacted granular fill/glacial till) or decomposed rock. We recommend a transition zone be provided for continuous footings where subgrade changes from granular fill or glacial till to decomposed bedrock. The transition zone should be constructed by excavating the decomposed bedrock 12 inches below the bottom of footing at the change in bearing material. Taper this decomposed bedrock excavation to 6 inches below the footing at 10 feet from the subgrade change and backfill with compacted granular fill or crushed stone. Alternatively, provide a vertical construction joint in the foundation and building wall at the location of the subgrade change or provide additional reinforcement in the footing at the change in bearing material to accommodate potential differential settlement.

Subgrades should be observed by the Special Inspector in accordance with the NYSBC prior to installation of footings. For frost protection, all footings must bear at or below a depth of 4 feet below the lowest adjacent exposed ground surface, as stipulated in the NYSBC. We recommend a minimum footing dimension of 3 feet for isolated footings and a minimum width of 2 feet for continuous wall footings for shear considerations. Where bearing elevations between adjacent footings vary, the edges of the footings should be installed at such depth so as to avoid the footing influence area of the adjacent footing. The footing influence area is defined as the area within the planes made by a 45-degree angle (1H:1V) extending outward and downward from each footing bottom edge. This may require footings to be installed at a lower elevation.

The recommended coefficient of friction for sliding resistance between concrete footings and silty sand, glacial till, decomposed rock and structural fill is provided in **Table 10**.

If mat foundations are utilized, they should be designed using the modulus of subgrade reaction values presented in **Table 10**, referenced to a 1-foot by 1-foot plate area. The recommended modulus value is contingent on subgrade preparation being performed as described in the Construction Considerations section of this report.

Structural design will require consideration of uplift forces from hydrostatic pressures (considering a design groundwater elevation presented in **Table 10** and as further discussed in this report), wind loads, and seismic loads. If needed, vertical soil tiedowns can be used to resist uplift forces, designed with a safety of factor of at least 1.5. The tiedowns should be designed for an allowable grout-to-soil bond strength of 30 pounds per square inch (psi) in the Glacial Till stratum and 60 psi in the Decomposed Rock stratum assuming gravity grouting. The tiedowns should be provided with double corrosion protection and proof tested upon installation.

4.3 FLOOR SLAB-ON-GRADE

Floor slabs can be constructed as slabs-on-grade and should be supported on undisturbed natural soil subgrades consisting of the Silty Sand, Glacial Till, Decomposed Rock or upon new compacted granular fill placed over the undisturbed natural soils. Compacted granular fill shall meet the gradation requirements and compaction requirements specified in **Table 8** and **Table 9**, respectively. Floor slabs-on-grade should be designed using a unit modulus of subgrade reaction as provided in **Table 10**, referenced to a 1-foot by 1-foot plate area. The recommended modulus value is contingent on subgrade preparation work being performed as descried in the Construction Considerations section of this report. GZA should be informed if non-typical loading is to be placed on slabs-on-grade. Non-typical loading includes, but is not limited to, heavy point loads and vibratory loads.

To maintain a dry and stable working subgrade during construction, we recommend a minimum 6-inch crushed stone base course or minimum 3- to 4-inch concrete mud mat below the slabs-on-grade. The crushed stone shall meet the gradation requirements specified in **Table 8**. The mud mat is typically an unreinforced cross section using a lean mix with a minimum compressive strength (f'c) of 4,000 psf.

4.4 LATERAL EARTH PRESSURES (BELOW-GRADE WALLS) AND RETAINING WALLS

Below-grade foundation walls with unbalanced loading should be designed to resist lateral earth pressures due to soil weight, groundwater, neighboring foundation loads, construction equipment, and other surcharges. We recommend an equivalent fluid pressure of 60 pounds per cubic foot (pcf) for the design of all permanent (rigid, fixed, at rest pressure) walls and an equivalent fluid pressure of 40 pcf for the design of temporary (flexible, cantilever, active pressures) walls when exposed to soil lateral loads. These values assume the walls will be backfilled with free-draining material and the walls will have sub-drainage so that there are no hydrostatic loads on the back of the wall.

An additional uniform horizontal pressure equal to one-half of the anticipated vertical surcharge load should be used for design of permanent and temporary walls where surcharges are anticipated due to vehicular traffic, adjacent footings, etc.

Design for a factor of safety against overturning of at least 1.5 and a factor of safety against sliding of at least 1.5.

4.5 SEISMIC DESIGN PARAMETERS

Based on criteria set forth in the 2020 NYSBC, and Chapter 20 of ASCE 7-16 and the available boring data, we recommend that Site Class D be used to evaluate the total lateral seismic force on the structure. The recommended seismic soil design criteria are as follows:

- Risk Category = III
- Site Class = C
- Mapped maximum considered earthquake spectral response acceleration for short periods, S_S = 0.286g
- Mapped maximum considered earthquake spectral response acceleration at 1-second period, S_1 = 0.061g
- Short-period site coefficient, F_a = 1.3
- 1-second period site coefficient, F_V = 1.5
- MCE_R spectral response acceleration for short periods, S_{Ms} = 0.372g
- MCE_R spectral response acceleration at 1-second period, S_{M1} = 0.091g
- 5% damped design spectral response acceleration at short periods, S_{DS} = 0.248g
- 5% damped design spectral response acceleration at 1-second period, S_{D1} = 0.061g

Based on average SPT N-value data from the available borings, loose soils in the upper 10 feet, in the Silty Sand stratum (below groundwater), may be susceptible to liquefaction. We performed a site-specific analysis using the methodology set forth by Idriss & Boulanger (2008) considering the SPT N-values, overburden stress, hammer energy, fines content, and anticipated earthquake magnitude 5.7. The results of the site-specific analysis indicate that liquefaction at the site is unlikely and does not need to be considered for the building design.

4.6 GROUNDWATER CONTROL AND WATERPROOFING

Groundwater was observed fluctuating in the observation wells over the course of a four-month period. Water readings in observation well B-29(OW), were recorded at elevations of approximately El. 379 to El. 382. Water readings in observation well B-3a(OW), located within the footprint of the proposed filtration plant structure, were recorded at elevations of approximately El. 396.4 to El. 403.3. Previously installed groundwater observation well B-1(OW), located near the proposed bioretention w/566 storage chambers, was reportedly measured to have a groundwater reading at El. 383.2 on November of 2019 and was measured by GZA at El. 391.5 on June of 2021.

Soil mottling was observed within the test pits which were excavated to document seasonal high groundwater. A summary of observed depth and elevation of soil mottling, groundwater, moist soil within the test pits is provided in **Table 3.** Soil mottling is indictive of possible seasonal high groundwater.

The groundwater level readings recorded at this site are indicative of seasonal fluctuation. The groundwater level readings are incorporated into **Table 4** and were used to develop the recommended design groundwater elevation for each of the proposed structures, as outlined in **Table 10**.

All below grade foundation walls, and cellar slabs designed at or below the design groundwater elevation should be fully waterproofed to reduce water infiltration. The waterproofing manufacturer should perform laboratory testing to confirm the compatibility of the waterproofing material with the foundation soils and submit a certificate of compliance to the Owner. The contractor installing the waterproofing shall be approved by the waterproofing manufacturer. Waterproofing will need to be carefully planned and installed in sections and in conjunction with the SOE and foundation operations.

4.7 FLOOR SLAB SUB-DRAINS

Sub-drainage should be provided below the proposed water filtration plant floor and elevator slabs designed at or above El. 404. Sub-drainage should consist of a crushed stone drainage layer and sub-drains below the floor slabs. Floor slabs should also include waterproofing membrane between the crushed stone drainage layer and the slab concrete. The drainage layer below the floor slabs should consist of at least 6-inches of crushed stone with a layer of geotextile drainage fabric (such as Mirafi 140N or equivalent) placed between the subgrade and the drainage layer.

Sub-drains should flow by gravity to an outlet or to submersible pump pits. A backflow preventer is recommended to resist flooding. Adequate cleanouts should be included in the sub-drainage system design to permit access to the entire system. Generally, cleanouts will be located at upstream ends of laterals and at critical intersections. The sub-drain system should be laid out to provide redundant flow paths where possible.

4.8 CORROSIVITY ANALYSIS

GZA analyzed soil samples collected from borings B-3 and B-25 for corrosivity. **Table 11a** and **Table 11b** summarizes the corrosion potential testing results. Soils tested were not found to be corrosive and thus no additional requirements for construction materials, such as steel and concrete, are necessary. Laboratory test results for corrosivity analyses are included in **Appendix C**.

4.9 PAVEMENT DESIGN

As part of the proposed development, access roads connecting the site to the adjacent roadways will be necessary. The Contractor should prepare pavement subgrades and place compacted granular fill for pavement support as described in the Earthwork and Grading recommendations section of this report. Dense-graded aggregate or Sand-Gravel fill placed as pavement base course should be compacted to at least 95 percent of maximum dry density, as determined by the Modified Proctor Test (ASTM D1557).

We developed the recommended pavement section based on the methodology presented in the New York State Comprehensive Pavement Design Manual and NYS Department of Transportation (NYSDOT) Standard Specifications, considering a conventional pavement design based on traffic volume and the percentage of trucks. We were not provided with traffic data or anticipated vehicle loading information; however, based on understanding of the project, we considered an annual average daily traffic (AADT) of less than 4,000 vehicles and 100 percent truck traffic.

We recommend the following design for the asphalt pavement:

- Asphalt Pavement Surface Course (NYS DOT 12.5 FZ Top Course Hot Mix Asphalt): 1.5 Inches
- Asphalt Pavement Binder Course (NYS DOT 25 F9 Binder Course Hot Mix Asphalt): 2.0 Inches
- Base Course (NYS DOT 25 F9 Binder Course, or equivalent): 3.0 Inches

- Subbase Course (Compacted Aggregate) (NYS DOT Type 1, or equivalent): 12.0 Inches

Final pavement subgrades should be proof rolled under the observation of the Geotechnical Engineer prior to placing subbase or aggregate base course to evaluate their suitability to support the pavement. If soft, wet, or otherwise unsuitable soils are encountered at the pavement subgrade elevations, over-excavation of the soils will be necessary. The area surrounding pavements should be graded to direct surface water away from paved areas.

We recommend that reinforced concrete pavement be used in any dumpster pad, dumpster approach pad areas, and other areas where repeated heavy vehicle traffic may occur. Reinforced concrete pads should be designed based on a modulus of subgrade reaction value (k) of 100 pci.

Perched groundwater may develop at the site and will increase the potential risk for pavement damage. We recommend the use of pavement subdrains to control water. Pavement subdrains should be installed below traffic islands and other heavily irrigated areas next to pavements. Subdrains should be connected to a storm sewer.

5.0 CONSTRUCTION RECOMMENDATIONS

5.1 DEMOLITION

Based on the proposed construction, we anticipate that utilities will be removed from the site to facilitate construction of the new development. Any utilities designated to remain should be protected during demolition and construction activities. Over-excavated volumes should be backfilled with granular fill meeting the gradation and compaction requirements of **Table 8** and **Table 9**, respectively.

5.2 SITE AND SUBGRADE PREPARATION

Surface cover, topsoil, tree stumps, and utilities should be completely removed from subgrades prior to placement of grading fill. Based on the test borings and previous subsurface exploration, approximately 1- to 6-inches of topsoil is present across the Site. Considering the variable nature of the topsoil depth, we recommend a topsoil stripping depth of approximately 12-inches for project planning. The actual depth of topsoil stripping will be dependent on the depths encountered in the field.

Boring and test pit data revealed variable quality soils as part of the Silty Sand stratum at the Site. We recommend removal of the Silty Sand material and other deleterious materials in the area of the proposed water filtration plant structure, prior to beginning new fill placement. Silty Sand stratum may remain for the ancillary structures such as storm water catch basins, equipment pads, site utilities, etc. Fill subgrades should consist of suitable Fill of the Glacial Till stratum, or suitable natural material of the Decomposed Rock stratum.

An evaluation of the suitability of the soils of the Silty Sand stratum will be required if they are encountered at design subgrade elevations and particularly if they are disturbed by construction equipment trafficking on the subgrade. If remediation of these subgrades is required, it may include shallow undercut and replacement with new granular fill or sand-gravel fill meeting the gradation requirements of **Table 8**; scarifying, drying and compacting the surface of the existing fill soils; placement of a geotextile reinforcing layer; or some combination of these alternatives.

Before commencing with fill placement, the exposed fill subgrades should be compacted to a stable and firm consistency with a minimum of four passes of a vibratory walk behind double drum roller, or other large compaction equipment. If

the exposed subgrade is saturated the contractor should use a smooth faced bucket to level subgrade and not compact. Subgrades should be proof-rolled with a loaded dump truck or other heavy, wheeled equipment to evaluate the subgrade suitability. Areas of unstable ground observed during proof-rolling evidenced by pumping, weaving, or rutting, should be scarified, dried and recompacted, or over-excavated until the exposed ground is stable and firm and replaced with new compacted granular fill meeting the gradation requirements of **Table 8**. Compaction methods should be performed as according to **Table 9**.

Subgrades should be kept free of standing water, debris, and ice. Subgrades should be protected from frost and fill should not be placed over frozen soil. If frozen soils are present at design subgrade levels, they should be removed and replaced with new compacted granular fill.

5.3 FILL MATERIAL AND COMPACTION

Fill material should consist of granular fill and/or sand-gravel fill that meets the gradation requirements outlined in Table 7. The fill should be compacted to at least 95 percent of its maximum dry density, as determined by the Modified Proctor Test (ASTM D1557). The recommended maximum loose lift thickness of fill and minimum number of passes of compaction equipment are presented in **Table 9**. We recommend performing at least one gradation and one moisture-density test per each 200 cubic yards of fill imported to the site. Crushed stone, where used below proposed slabs, should be compacted to a firm, stable configuration, and should be wrapped all around in non-woven filter fabric, such as Mirafi 140N.

Any excess soil should be disposed of off-site in accordance with any applicable local, State, and Federal regulations.

Crushed stone should be compacted to an unyielding surface. Subgrades should be protected from frost at all times during construction and fill should not be placed over frozen soil. To mitigate frost heave/settlement risk, we recommend that excavation for foundations extend to or below the anticipated frost zone of 4 feet. Base course material should be able to fully drain by gravity, such that water cannot pond within the base course and freeze.

5.4 RE-USE OF EXISTING MATERIAL

If on-site excavated material meets the requirements of **Table 8**, it may be re-used as granular fill and/or sand-gravel fill material. Based on the results of the laboratory testing, we anticipate that excavated on-site soils can be reused as granular/structural fill provided they are culled of organics, boulders, construction debris and other deleterious materials and can be adequately compacted. Fill should not contain particles greater than 3 inches. We recommended performing at least one gradation and one moisture-density test per each 200 cubic yards of on-site soil to be reused. Successful reuse of the onsite soils will also depend on their moisture contents during excavation.

If excavated material is geotechnically not suitable for on-site reuse, then soil will be transported to an off-site disposal facility meeting the requirements of 6 NYCRR Part 360 (or equivalent out-of-state facility approved by the regulatory agency of that state) with a permit to receive excess excavated material. We anticipate that the analytical results developed during the Waste Characterization study can be used to facilitate selection of a suitable soil disposal facility. However, we note that excavated materials may require additional characterization depending on the acceptance requirements of the selected soil disposal facility permit.

5.5 TEMPORARY GROUNDWATER CONTROL

Excavation for foundations is expected to extend below the groundwater level. Temporary construction dewatering to maintain the groundwater at an elevation to maintain dry, stable working conditions (generally at least 2 feet lower than

the excavation bottom elevation in overburden is recommended). This system must be designed by a specialty subcontractor based on the site conditions, the planned excavation extents, and the data presented in this report. Typically, drilled-in well points along the excavation perimeter can be used to lower the groundwater in the shallow silty sand at this site. However, a well point system will be less effective in the glacial till and decomposed rock.

GZA estimated average hydraulic conductivity (K) values for the soil stratum based on Kozeny-Carmon methods as presented in **Table 7**. Based on the method of construction and the soil conditions at the site, GZA calculated a steady-state pumping for the dewatering as an equivalent well model to estimate extraction of groundwater from an unconfined water table aquifer using the Theim-Dupuit Equation. GZA's estimated groundwater withdrawal for the subsurface material in the footprint of the filtration plant is approximately 75 to 100 gallon per minute (gpm) total dewatering pumping rate. This total pumping rate estimate includes a factor of safety and a volume for the precipitation of a 10-year storm. This pumping estimate does not include the contribution of the perched water table (beyond the factor of safety). The higher range pumping rates (i.e., 100 gpm) are often observed at start-up as the storage is drained from the aquifer until steady-state pumping rates are reached (75 gpm). The preliminary dewatering estimates indicate a radius of influence for the excavation of approximately 30 feet from the edge of the excavation area within the glacial till unconfined, shallow water table.

The shallow water table observed within the silty sand stratum may represent a perched water table condition in the elevated wetland areas and above the glacial till on the slopes. This perched water table will likely respond quickly to precipitation events, and methods should be considered to intercept or cut-off the perched water table before it enters the excavation and to facilitate management of surface water during construction. The groundwater recharge rates in this silty sand stratum (provided in **Table 5)** are likely biased high due to the high recharge capacity within the soil strata relative to the amount water removed during the rising head tests. Typical published K values for silty sand are less than 2.4 in/min (or 288 ft/day).[1]

Based on the groundwater sampling, a treatment system may be required to treat and control the discharge of dewatering effluent. Care will be needed with the dewatering design and implementation to avoid settlement of adjacent roadways and utilities. Excavation below groundwater table in the sandy soils typical of the site without proper dewatering systems in place may lead to excavation instability and collapse. We recommend lowering the groundwater to an elevation 2 feet below excavation subgrade levels.

Temporary groundwater withdrawal permits, and discharge permits will be required from the NYSDEC for dewatering operations, or discharge to the sewer (if available) under a permit to the Publicly Owned Treatment Works (POTW). If the permits require treatment (such as settling tanks and/or filtration of dewatering effluents) based on the water quality results, then monitoring of the groundwater effluent may require additional sampling as part of the permit requirements to verify compliance prior to discharge.

5.6 TEMPORARY SUPPORT OF EXCAVATION (SOE)

Temporary shoring will be required for foundation excavations. Given the proposed excavation of 24 to 28-feet below existing grade, about 20 feet of hydrostatic pressure head is anticipated to be encountered during excavation. It is our understanding that the excavation is not required to be watertight.

Based on the soils encountered in the test pits and test borings, GZA considered sheet piles, secant pile wall and soldier pile and lagging options. Steel sheeting will be very difficult if not impossible to drive into the ground through the dense

[1] Freeze, R. Allan, and John A. Cherry. 1979. Groundwater. Englewood Cliffs, N.J.: Prentice-Hall. p. 29.

soil profile. GZA also reviewed the options of a secant pile wall or diaphragm wall system; however this is not the preferred method as these are typically designed/installed by specially contractors and are not a cost-effective solution, particularly since additional structural steel is required to resist hydrostatic head. A soldier pile and lagging system with adequate bracing and dewatering control is judged to be the most appropriate SOE concept and therefore is a recommended method for temporary support of excavation.

The support of excavation can incorporate a combination of benching and solider pile lagging with internal bracing or tiebacks to provide support all sides of the excavation. Conceptually, the soldier pile lagging system would entail steel "H" or "W" beams installed in pre-drilled holes and backfilled with lean mix concrete, at the designed spacing interval. The soldier beams would be embedded below the bottom of excavation grade to provide sufficient passive resistance or toe. Timber lagging would span each soldier pile and be tightly backpacked with clean sand-gravel. Horizontal joints between the timber lagging would be stuffed tightly with hay to allow for free drainage of groundwater discharged from the cut soil faces, such a system would not have to be designed for hydrostatic pressures. Alternative to "H" or "W" beams placed in predrilled holes, pipe sections can be drilled and used as the soldier beams but will likely require additional levels of tiebacks for lateral bracing due to the reduced moment capacity of a pipe section. The contractor should be prepared to dewater runoff/nuisance water from within the excavation as it is progressed. Pumping inside the excavation should be used to remove groundwater flow and rainfall inside the excavation.

Groundwater control will be required, and the contractor should be prepared to implement a dewatering system to maintain dry stable subgrades within the excavation.

The design of the temporary shoring and/or temporary bracing must be performed by a Professional Engineer, using the following criteria:

- A soil unit weight of at least 130 pounds per cubic foot
- An effective soil friction angle of 34 degrees
- An at-rest lateral earth pressure coefficient (K_o) of 0.5
- Surcharge pressures from stockpiles, construction equipment, etc.

Depending on the final design concept and the degree to which the existing interior structural elements (beams, floors, etc.) are removed, internal bracing may be required to stabilize the structure during construction.

5.7 EXCAVATION

The Contractor should make themselves aware of and become familiar with applicable local, state, and federal safety regulations, including the current Occupational Safety and Health Administration (OSHA) Excavation and Trench Safety Standards. Construction site safety is the sole responsibility of the Contractor, who shall also be solely responsible for the means, methods, and sequencing of construction operations. We are providing this information solely as a service to our client. Under no circumstances should the information provided herein be interpreted to mean that GZA is assuming responsibility for construction site safety or the Contractor's activities, such responsibility is not being implied and shall not be inferred.

The Contractor should be aware that slope height, slope inclination, or excavation depth should in no case exceed those specified in local, state, or federal safety regulations, such as OSHA Health and Safety Standards for Excavations, 29 CFR

Part 1926, or successor regulations. Such regulations are strictly enforced and, if they are not followed, the Owner, Contractor, and/or earthwork and utility subcontractors could be liable for substantial penalties.

A simple slope excavation (1.5 horizontal to 1.0 vertical) may be practical in certain areas at the Site, subject to site constraints associated with local zoning and allowable limits of disturbance. The resulting area of the slope will need to be backfilled after completion of foundations and/or construction. It is recommended that all vehicles and soil piles be kept a minimum lateral distance from the crest of slopes equal to no less than the slope height. Exposed slope faces should also be protected against the elements.

As an alternative to temporary slopes, vertical excavations can be temporarily shored. The Professional Engineer licensed in New York would be responsible for the design of the temporary shoring in accordance with applicable regulatory requirements, but the recommendations of this report will serve as a minimum requirement.

TABLES

Table 1 – Test Boring Summary

Test Boring ID	Test Boring Location	Depth (ft)	Approx. Ground Surface El. in (ft)
B-1	Filtration Plant	60.2	408
B-2		60.2	408
B-3		100.2	407
B-3a(OW)		60.2	407
B-4		60.2	406
B-5		60.3	404
B-6		60.3	403
B-7		60.3	405
B-8		60.2	402
B-9		60.3	402
B-10		Eliminated	
B-11		60.4	403
B-12	Access Roadway	Eliminated	
B-13		60.2	402
B-14		Eliminated	
B-15	Generator Pads	60.2	410
B-16	Access Roadway	22	410
B-17		22	409
B-18		22	406
B-19	Constructed Wetland	22	403
B-20		22	401
B-21		22	401
B-22		22	399
B-23		22	399
B-24	Bioretention w/566 Storage Chambers Beneath	22	399
B-25		22	398
B-26		22	397
B-27	Retaining Wall	22	412
B-28	Additional Borings Outside Proposed Structure Footprint	22	408
B-29(OW)		22	389
B-30		22	394

Table 2 - Subsurface Stratigraphy Summary

Boring ID	Year of Boring	Approx. Ground Surface El. (ft)	Top of Silty Sand			Top of Glacial Till			Top of Decomposed Rock	
			Approx. Depth to Top(ft)	Approx. El. (ft)	Layer Thickness (ft)	Approx. Depth to Top (ft)	Approx. El. (ft)	Layer Thickness (ft)	Approx. Depth (ft)	Approx. El. (ft)
B-1(OW)	2019	401	0.5	400.5	5.0	5.5	395.5	-	-	-
B-2	2019	400	0.3	399.7	4.7	5	395.0	-	-	-
B-3	2019	405	0.5	404.5	3.0	3.5	401.5	-	-	-
B-1	2021	408	0.3	407.7	5.7	6.0	402.0	17.5	23.5	384.5
B-2	2021	408	0.3	407.7	7.7	8.0	400.0	15.5	23.5	384.5
B-3	2021	407	0.3	406.7	9.7	10.0	397.0	13.5	23.5	383.5
B-3a(OW)	2021	407	0.3	406.7	0.0	0.3	406.7	23.2	23.5	383.5
B-4	2021	406	0.3	405.7	7.7	8.0	398.0	15.5	23.5	382.5
B-5	2021	404	0.3	403.7	3.7	4.0	400.0	19.5	23.5	380.5
B-6	2021	403	0.3	402.7	3.7	4.0	399.0	19.5	23.5	379.5
B-7	2021	405	0.3	404.7	3.7	4.0	401.0	29.5	33.5	371.5
B-8	2021	402	0.3	401.7	3.7	4.0	398.0	19.5	23.5	378.5
B-9	2021	402	0.3	401.7	1.7	2.0	400.0	21.5	23.5	378.5
B-11	2021	403	0.3	402.7	3.7	4.0	399.0	34.5	38.5	364.5
B-13	2021	402	0.3	401.7	3.7	4.0	398.0	29.5	33.5	368.5
B-15	2021	410	0.3	409.7	3.7	4.0	406.0	39.5	43.5	366.5
B-16	2021	410	0.3	409.7	8.7	9.0	401.0	-	-	-
B-17	2021	409	0.3	408.7	1.7	2.0	407.0	-	-	-
B-18	2021	406	0.3	405.7	6.7	7.0	399.0	-	-	-
B-19	2021	403	0.3	402.7	1.7	2.0	401.0	-	-	-
B-20	2021	401	0.3	400.7	-	-	-	-	-	-
B-21	2021	401	0.3	400.7	1.7	2.0	399.0	16.5	18.5	382.5
B-22	2021	399	0.3	398.7	3.7	4.0	395.0	14.5	18.5	380.5
B-23	2021	399	0.3	398.7	3.7	4.0	395.0	-	-	-
B-24	2021	399	-	-	-	0.3	398.7	-	-	-
B-25	2021	398	0.3	397.7	3.7	4.0	394.0	-	-	-
B-26	2021	397	0.3	396.7	3.7	4.0	393.0	14.5	18.5	378.5
B-27	2021	412	0.3	411.7	5.7	6.0	406.0	-	-	-
B-28	2021	408	0.3	407.7	3.7	4.0	404.0	-	-	-
B-29(OW)	2021	389	0.3	388.7	3.7	4.0	385.0	-	-	-
B-30	2021	394	0.3	393.7	9.7	10.0	384.0	-	-	-

Table 3 – Test Pit Findings Summary

Test Pit Location	Approx. Ground Surface El. (ft)	Bottom of Excavation		Soil Mottling		Moist Soil		Groundwater	
		Depth (ft)	El. (ft)	Depth (ft)	El. (ft)	Depth (ft)	El. (ft)	Depth (ft)	El. (ft)
TP-1	399.5	12	387.5	9	391	10	390	Deeper than 12	Deeper than 387.5
TP-2	401	13	388	5	396	11	390	Deeper than 13	Deeper than 388
TP-3	401.5	13.5	388	5	396.5	8	394	12	389.5
TP-4A*	403	13.5	389.5	-	-	11	392	Deeper than 13.5	Deeper than 389.5
TP-5	398	13	385	11	387	11	387	Deeper than 13	Deeper than 384
TP-6	387	8.5	378.5	5	382	-	-	7.5	379.5
TP-7	397.5	13	384.5	-	-	8	390	13	384.5
TP-8	398	13	385	-	-	11	387	Deeper than 13'	Deeper than 385
TP-9	401	13.5	387.5	-	-	10	391	12.5	388.5
TP-10	398.5	9	389.5	-	-	-	-	Deeper than 9'	Deeper than 389.5
TP-11	397	8	389	4	393	5	392	6	391
TP-12	399	14	385	-	-	10	389	13	386
TP-13	396	11	385	3	393	3	393	8	388

* Test pit TP-4 was offset due to a boulder at approximately 7 feet below grade.

Table 4 – Groundwater Readings Summary

Test Pit/ Boring ID	Year of Exploration	Approximate Ground Surface El. (ft)	Date Recoded	Groundwater Depth (ft)	Corresponding Groundwater El. (ft)
B-1(OW)	2019	401	11/22/2019	17.8	383.2
			6/16/2021	9.5	391.5
B-2	2019	400	11/21/2019	15.0	385.0
B-3A(OW)	2021	407	5/18/2021	4.3	402.7
			5/19/2021	4.2	402.8
			5/20/2021	4.4	402.6
			5/21/2021	4.5	402.5
			5/24/2021	4.9	402.1
			5/25/2021	5.0	402.0
			5/26/2021	5.0	402.0
			5/27/2021	5.1	401.9
			6/1/2021	5.2	401.8
			6/4/2021	3.7	403.3
			6/16/21	5.0	402.0
			8/4/21	7.3	399.7
			8/10/21	10.6	396.4
B-29(OW)	2021	389	6/3/2021	7.0	382.0
			6/4/2021	8.0	381.0
			6/16/2021	7.6	381.4
			8/4/2021	9.4	379.6
			8/10/2021	9.3	379.7
			8/20/2021	10.0	379.0
TP-3	2021	401.5	8/20/2021	12.0	389.5
TP-6	2021	387	8/20/2021	7.5	379.5
TP-7	2021	397.5	11/4/2021	13	384.5
TP-9	2021	401	11/4/2021	12.5	388.5
TP-11	2021	397	11/4/2021	6	391.0
TP-12	2021	399	11/4/2021	13	386.0
TP-13	2021	396	11/4/2021	8	388.0
B-1	2021	408	5/4/2021	5.0*	403.0
B-2	2021	408	5/14/2021	6.0*	402.0
B-3	2021	407	5/13/2021	6.0*	401.0
B-4	2021	406	5/17/2021	6.0*	400.0
B-5	2021	404	5/19/2021	6.0*	398.0
B-6	2021	403	5/19/2021	5.0*	398.0
B-8	2021	402	5/20/2021	5.0*	397.0
B-9	2021	402	5/20/2021	6.0*	396.0
B-11	2021	403	5/21/2021	6.0*	397.0
B-15	2021	410	5/28/2021	6.0*	404.0
B-17	2021	409	6/1/2021	6.0*	403.0
B-18	2021	406	5/27/2021	7.0*	399.0
B-19	2021	403	6/4/2021	5.0*	398.0
B-20	2021	401	6/3/2021	5.0*	396.0
B-21	2021	401	6/3/2021	5.0*	396.0
B-22	2021	399	5/25/2021	5.0*	394.0
B-23	2021	399	6/3/2021	5.0*	394.0
B-25	2021	398	5/25/2021	9.0*	389.0
B-27	2021	412	5/28/2021	6.0*	406.0

* Depth to groundwater obtained during drilling activities and shall be used for estimation purposes only.

Table 5 – Permeability Testing Summary

Falling Head Test[1]			
Test Boring ID	**Test Depth (ft)**	**Test Elev. in NAVD88 (ft)**	**Average Rate, Kv (in/hr)**
B-19	8.5	394.5	0.003
B-20	7.5	393.5	0.005
B-22	9.0	390.0	0.026
Rising Head Test[2]			
Well ID	**Test ID**	**Average Recharge Rate (in/min)**	
B-3a	Test 1	5.434	
B-29	Test 2	116.988	
B-29	Test 2	104.567	

1. Based on the results of the Falling Head tests, it can be interpreted that the water will preferentially flow horizontally and not penetrate the strata.
2. The results of the rising head test are higher than anticipated. The pumped water may have been from the casing and filter pack, given the high fines content of tested soils, unlikely that a steady state flow condition had time to develop. Therefore, published k values for silty sand which are typically less than 2.4 in/min should be used for dewatering.

Table 6 – Geotechnical Laboratory Test Result Summary

Boring ID	Sample ID	Sample Depth (ft)	Stratum	Identification Test Results			Unit Weight Tests		Direct Shear Tests		CBR at 0.1-inch Penetration
				Water Content (%)	USCS (Group Symbol)	Sieve Minus 200 (%)	Total Unit Weight (pcf)	Dry Unit Weight (pcf)	Peak Shear Strength (ksf)	Pd at Peak Shear Strength (%)	
B-16/17/18	S-1/2/3	0'-5'	Silty Sand	-	-	-	-	-	-	-	50.1
B-20	S-4	8'-10'		13.4	SM	23	-	-	-	-	-
B-2	S-9	25'-27'	Glacial Till	11.4	SM	26	-	-	-	-	-
B-6	S-7	15'-17'		12.5	SM	32	-	-	-	-	-
B-7	S-6	10'-12		11.0	SC	-	142.0	127.9	-	-	-
B-7	S-7	15'-17'		14.8	SC	-	139.4	121.4	1.1	4.1	-
B-11	S-8	20'-22'		12.5	SM	34	-	-			-
B-22	S-5	10'-12'		12.8	SM	33	-	-			-
B-25	S-6	10'-12'		10.4	SM	30	-	-			-
B-26	S-6	10'-12		10.9	SM	-	141.3	127.5	0.8	9.7	-
B-26	S-7	15'-17'		10.4	SC	-	144.6	131.0			-
B-27	S-5	8'-10		9.0	SM	-	127.4	116.9			-
B-27	S-6	10'-12'		14.4	SM	15	-	-			-
B-27	S-7	15'-17'		12.2	SM	-	141.3	126.0	1.1	3.8	-

Table 7 – Geotechnical Soil Design Parameters

Stratum	Typical Uncorrected N-Value Range	Total Unit Weight, g (pcf)	Undrained Shear Strength, Su (psf)	Friction Angle, Ø' (deg)	Hydraulic conductivity, K (ft/day)[1]
Silty Sand	2-35	120	-	32	30
Glacial Till	12-100 (Refusal)	130	1,000	34	0.4
Decomposed Rock	25-100 (Refusal)	135	-	38	0.2

1. Permeability calculations based on laboratory grain-size data and field observations based on Kozeny-Carman methods.

Table 8 – Recommended Use and Gradation Criteria for Fill Materials

Sieve Size	Percent Finer by Weight
Granular Fill	Shall be free from ice and snow, roots, sod, rubbish and other deleterious or organic matter. Granular Fill shall conform to the following gradation requirements:
2/3 of the loose lift thickness	100
No. 10	30 – 95
No. 40	10 – 70
No. 200	*0 – 15 *0 – 8 where used behind walls
NYSDOT Type B-2 material may also be used as Granular Fill.	
Sand-Gravel	Shall consist of durable sand and gravel and shall be free from ice and snow, roots, sod, rubbish and other deleterious or organic matter. Sand-Gravel shall conform to the following gradation requirements:
3 inch	100
½ inch	50 – 85
No. 4	40 – 75
No. 40	10 – 35
No. 200	0 – 8
NYSDOT Type B-3 material may also be used as Sand-Gravel.	
Crushed Stone	Shall consist of durable crushed rock or durable crushed gravel stone and shall be free from ice and snow, roots, sod, rubbish and other deleterious or organic matter or material. Crushed Stone shall conform to the following gradation requirements:
1 inch	100
¾ inch	90 – 100
½ inch	10 – 50
3/8 inch	0 – 20
No. 4	0 – 5
No. 200	0 – 1
NYSDOT Type B-3 material may also be used as Crushed Stone.	
USE OF FILL MATERIAL Granular Fill: Below footings and slab base course, and 3 feet laterally behind walls provided that amount passing Sieve No. 200 is less than 8 percent. Sand-Gravel: Slab base course and 3 feet laterally behind walls Crushed Stone: Drain line backfill and foundation protective layer. Crushed stone should be wrapped in non-woven filter fabric.	

Table 9 – Compaction Methods

Compaction Method	Max. Stone Size*	Maximum Loose Lift Thickness		Minimum Number of Passes	
		Below Structures and Pavement	Less Critical Area	Below Structures and Pavement	Less Critical Area
GRANULAR FILL, SAND-GRAVEL FILL, CRUSHED STONE					
Hand-operated vibratory plate or light roller in confined areas	4"	6"	8"	4	4
Hand-operated vibratory drum rollers weighing at least 1,000# in confined areas	6"	10"	12"	4	4
Light vibratory drum roller Min. weight at drum 3000# Min dynamic force 10,000#	8"	12"	18"	4	4
Medium vibratory drum roller Min. weight at drum 10,000# Min dynamic force 20,000#	8"	18"	24"	6	6
* Indicates not to exceed more than 2/3 the lift thickness					

Table 10 – Bearing Capacity and Design Groundwater Elevation Summary

Proposed Structure	Proposed Invert/Finished Floor El. (ft)	Estimated Bearing Stratum El. at the Structure Location (ft)	Proposed Bearing Stratum	Design Groundwater El. (ft)	Bearing Capacity (tsf)	Modulus of Subgrade Reaction (pci)	Coefficient of Friction*
COMBINED WASTEWATER TANKS (WITHIN FILTRATION PLAN FOOTPRINT)	374.42- 372 (local pit within structure at 369.5)	371.42-369 (local pit within structure at 366.5)	Decomposed Rock	404	8	500	0.6
FILTRATION PLANT	407	401.7 – 409.7	Silty Sand/Structural Fill	404	2	150	0.4
		397 – 406.7	Glacial Till		3	200	0.5
	383	397.5	Decomposed Rock		8	500	0.6
EMERGENCY ELECTRICAL GENERATORS	408	409.7	Silty Sand/Structural Fill	404	2	150	0.4
RETAINING WALL	408	411.7	Silty Sand/Structural Fill	404	2	150	0.4
BIORETENTION CELL	-	-	-	393	-	-	-
* Coefficient of friction between mat foundation (concrete) and bearing stratum							

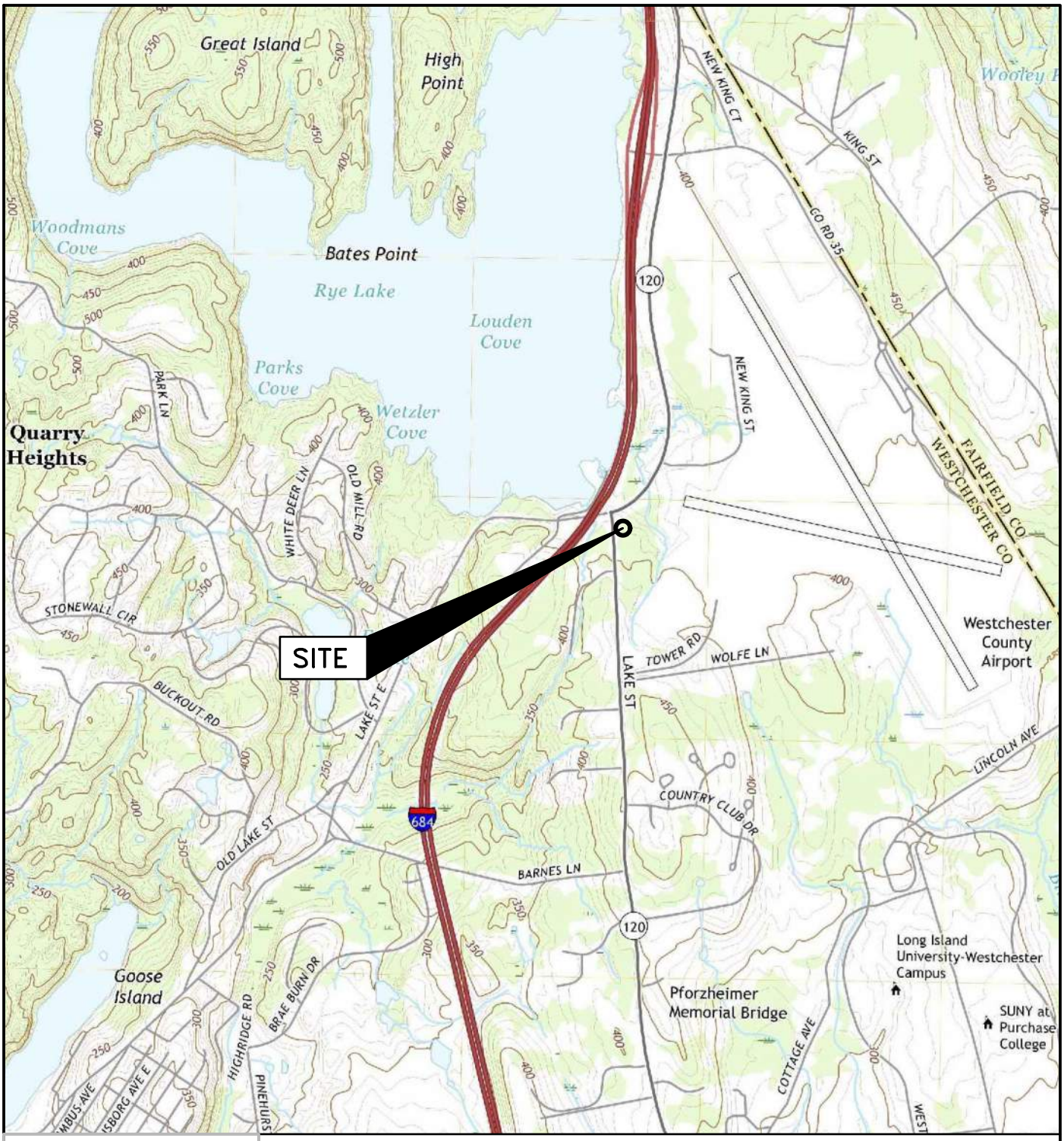
Table 11a – Corrosivity Test Result Summary

Boring ID	Sample ID	Sample Depth (ft)	Stratum	Resistivity Test Results				Chemical Test Results					
				As Received		Minimum		pH		Avg. Redox Potential (mV)	Sulfide Response (visual)	Chloride (ppm)	Sulfate (ppm)
				Water Cont. (%)	Resist. (Ω - cm)	Water Content (%)	Resist. (Ω - cm)	pH	Temp. (°C)				
B-3	S-8& S-9	20'-22'& 25'-27'	Glacial Till	10.2	8.7	16.5	8,100	8.1	21.9	194	trace	<10	41
B-25	S-7& S-8	15'-17'& 20'-22'		11.1	13.3	31.4	10,900	7.7	21.4	172	trace	<10	12

Table 11b – Comparison of Corrosion Testing Results

Parameter	Corrosive Based on Corrosivity Criteria [1]			Corrosive Based on Laboratory Results Compared to Corrosivity Criteria?
	CalTrans	AASHTO	FHWA	
Electrical Resistivity (ohm-cm)	Below 1,000 ohm-cm	Below 2,000 ohm-cm	Below 3,000 ohm-cm	No
pH	Below 5.5	Below 5.5; or Between 5.5 and 8.5 for organic soils	Below 5 and above 10	No
Sulfate (ppm)	Above 2,000 ppm	Above 1,000 ppm	Above 200 ppm	No
Chloride (ppm)	Above 500 ppm	No Criteria	Above 100 ppm	No

FIGURES



NEW YORK



QUADRANGLE LOCATION

SOURCE:

USGS TOPOGRAPHIC MAPS: GLENVILLE, CONNECTICUT, NEW YORK (2021). CONTOUR INTERVAL 10FT., NAVD-1988, ORIGINAL SCALE 1:24,000 (1IN.=2,000FT.).

N W E S

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WESTCHESTER JOINT WATER WORKS
WATER TREATMENT PLANT
WESTCHESTER COUNTY, NY

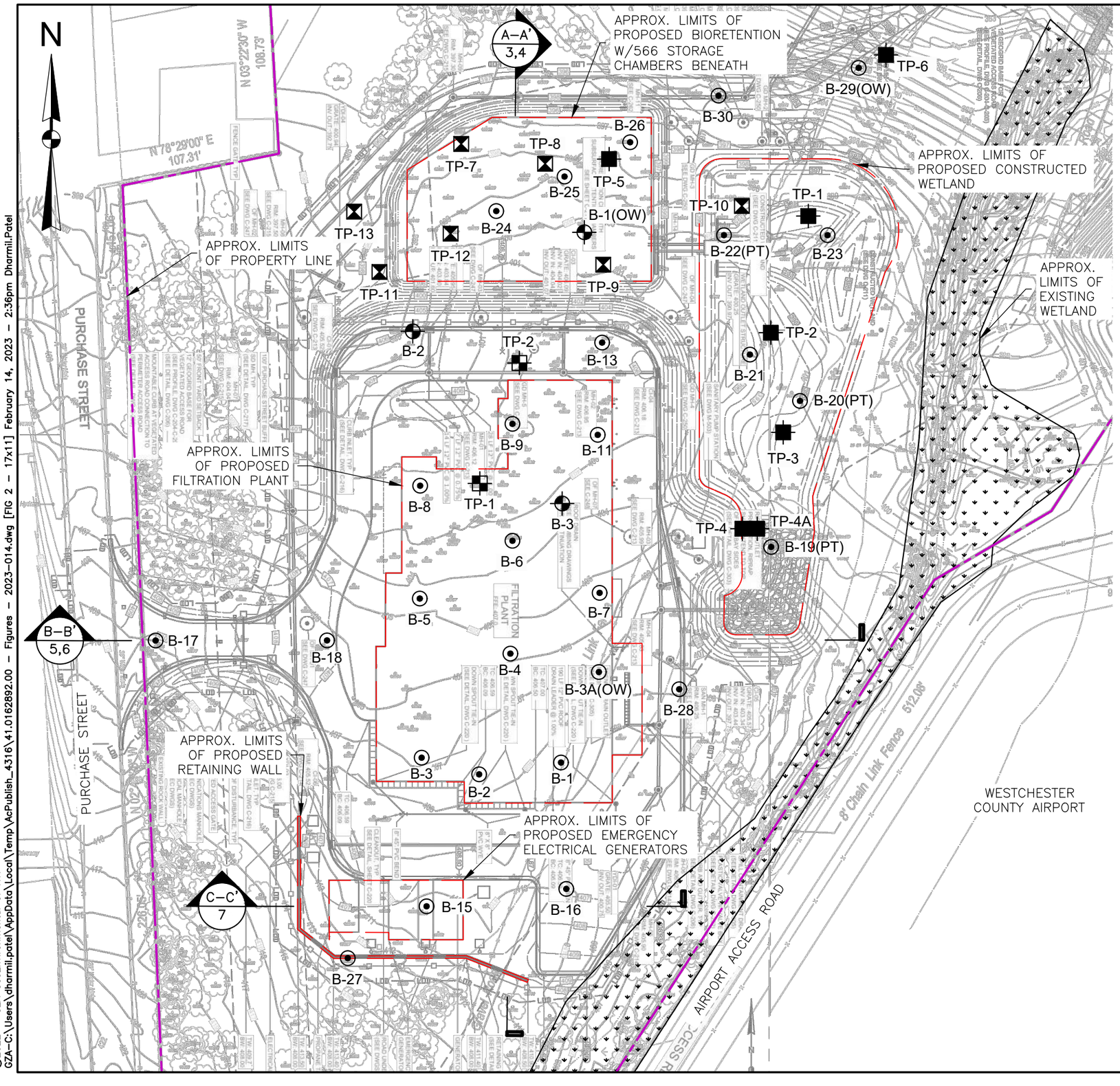
PREPARED BY:
GZA GeoEnvironmental of NY
Engineers and Scientists
www.gza.com

PREPARED FOR:
Hazen

SITE LOCATION MAP

PROJ MGR: DSP	REVIEWED BY: DSP	CHECKED BY: CAW	FIGURE 1
DESIGNED BY: ZSB	DRAWN BY: ZSB	SCALE: 1"=2000'	
DATE: MARCH, 2022	PROJECT NO. 41.0162892.00	REVISION NO. -	SHEET NO. 1 OF 7

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GZA–C:\Users\dharmil.patel\AppData\Local\Temp\AcPublish_4316\41.0162892.00 – Figures – 2023–014.dwg [FIG 1 8.5x11] February 14, 2023 – 2:36pm Dharmil.Patel



GENERAL NOTES

1. BASE MAP DEVELOPED FROM TOPOGRAPHIC SURVEY, PREPARED BY GEORGE J. MOTTARELLA, DATED APRIL 17, 2021 AND FROM DRAWING C–101, C–121, & C–122 TITLED, PREPARED BY, HAZEN & SAWYER, DATED JANUARY, 2023.
2. EXPLORATION LOCATIONS WERE SURVEYED AND MARKED OUT BY HAZEN & SAWYER.
3. THE PURPOSE OF THIS DRAWING IS TO LOCATE, DESCRIBE, AND REPRESENT THE POSITIONS OF EXPLORATIONS AND MONITORING WELLS AND IN RELATION TO THE SUBJECT SITE. THIS DRAWING IS NOT CONSIDERED A LAND SURVEY. THE LOCATIONS SHOWN SHOULD BE CONSIDERED ACCURATE ONLY TO THE DEGREE IMPLIED BY THE METHOD USED.

LEGEND

- APPROXIMATE PROPERTY BOUNDARY
- APPROXIMATE LIMITS OF PROPOSED STRUCTURES
- APPROXIMATE LIMITS OF EXISTING WETLAND
- B-X — APPROXIMATE TEST BORING LOCATION (OW) INDICATES OBSERVATION WELL INSTALLED IN BORING (PT) INDICATES IN–SITU PERMEABILITY TESTING PERFORMED IN BORING
- TP-X — APPROXIMATE TEST PIT LOCATION (AUGUST 24, 2021)
- TP-X — APPROXIMATE TEST PIT LOCATION (NOVEMBER 4, 2021)
- B-X — APPROXIMATE TEST BORING LOCATION PERFORMED BY GENERAL BORINGS, INC. IN 2019.
- TP-X — APPROXIMATE TEST PIT LOCATION PERFORMED BY GENERAL BORINGS, INC. IN 2019.

0 35 70 140
SCALE IN FEET

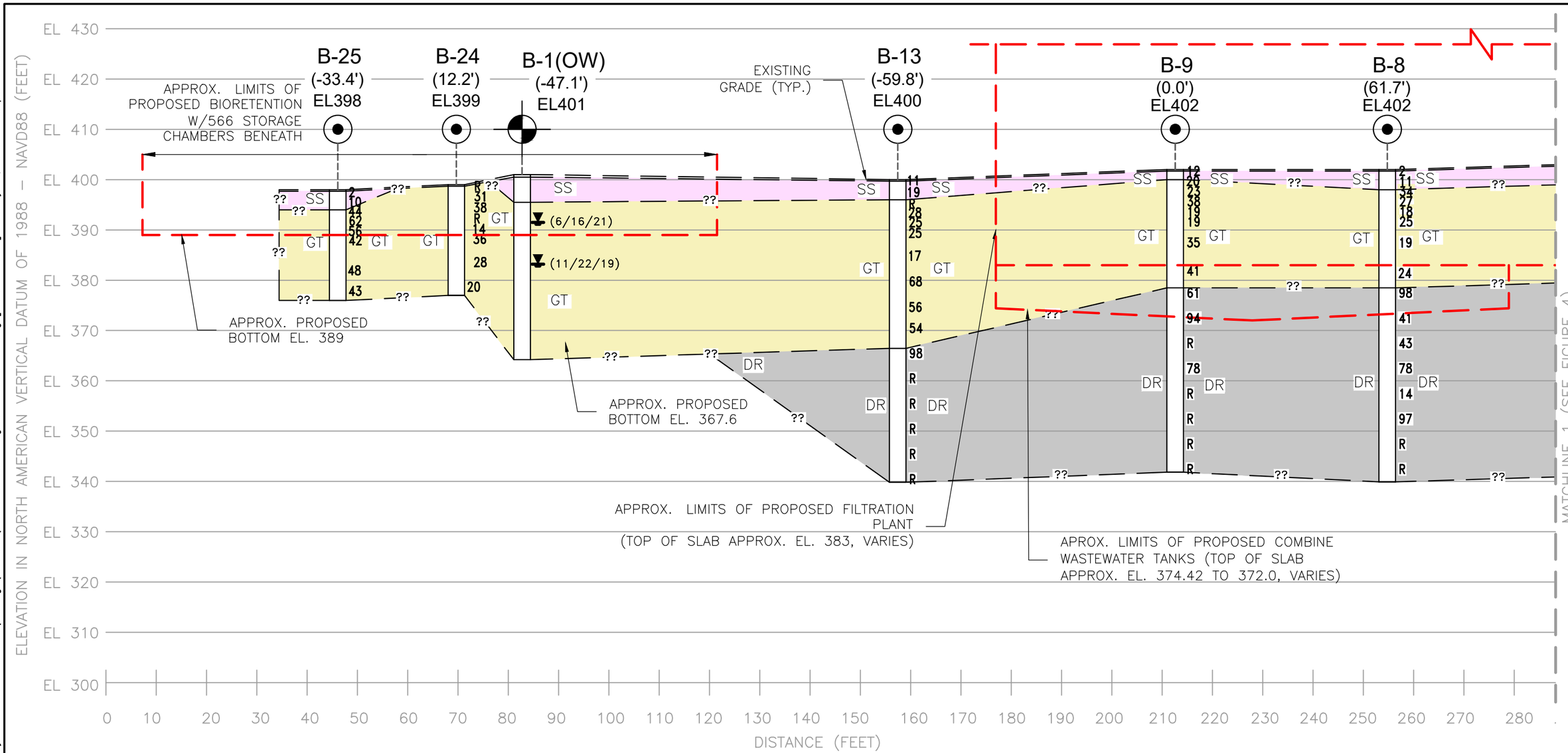
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GZA–C:\Users\dharmil.patel\AppData\Local\Temp\AcPublish_4316\41.0162892.00 – Figures – 2023–014.dwg [FIG 2 – 17x11] February 14, 2023 – 2:36pm Dharmil.Patel

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WESTCHESTER JOINT WATER WORKS
WATER TREATMENT PLANT
WESTCHESTER COUNTY, NY

EXPLORATION LOCATION PLAN

PREPARED BY: GZA GeoEnvironmental of NY Engineers and Scientists www.gza.com		PREPARED FOR: Hazen	
PROJ MGR: DSP	REVIEWED BY: DSP	CHECKED BY: CAW	FIGURE 2
DESIGNED BY: ZSB	DRAWN BY: ZSB	SCALE: AS SHOWN	
DATE: FEBRUARY, 2023	PROJECT NO. 41.0162892.00	REVISION NO. 04	SHEET NO. 2 OF 7



GENERAL NOTES

1. SEE FIGURE 2 FOR BORING LOCATION PLAN.
2. EXISTING GRADES DEVELOPED FROM TOPOGRAPHIC SURVEY, PREPARED BY GEORGE J. MOTTARELLA, DATED APRIL 17, 2021.
3. APPROXIMATE LOCATIONS OF PROPOSED STRUCTURES WERE OBTAINED FROM CIVIL AND ARCHICTECTURAL DRAWINGS PREPARED BY, HAZEN & SAWYER, DATED MARCH 2022.
4. STRATIFICATION LINES ARE BASED ON INTERPOLATIONS BETWEEN WIDELY SPACED EXPLORATION LOCATIONS AND THUS REPRESENT APPROXIMATE BOUNDARIES BETWEEN SOIL TYPES. ACTUAL TRANSITIONS MAY VARY FROM THOSE SHOWN.
5. REFER TO THE BORING LOGS FOR ADDITIONAL INFORMATION.
6. LOCATION & DIRECTION OFFSET FROM SECTION/PROFILE LINE IN FIGURE 2:
   - 6.1 NEGATIVE NUMBER INDICATES EAST OF SECTION
   - 6.2 POSITIVE NUMBER INDICATES WEST OF SECTION

LEGEND

- APPROXIMATE LIMITS OF PROPOSED STRUCTURES (AS NOTED)
- SS — SILTY SAND
- GT — GLACIAL TILL
- DR — DECOMPOSED ROCK
- GROUNDWATER
- ?? — APPROXIMATE LIMITS OF STRATUM (SEE NOTE 4)

B–X
(OFFSET FROM SECTION X–X')
(GROUND SURFACE EL IN FEET)
SPT N–VALUE

0 10 20 40
SCALE IN FEET

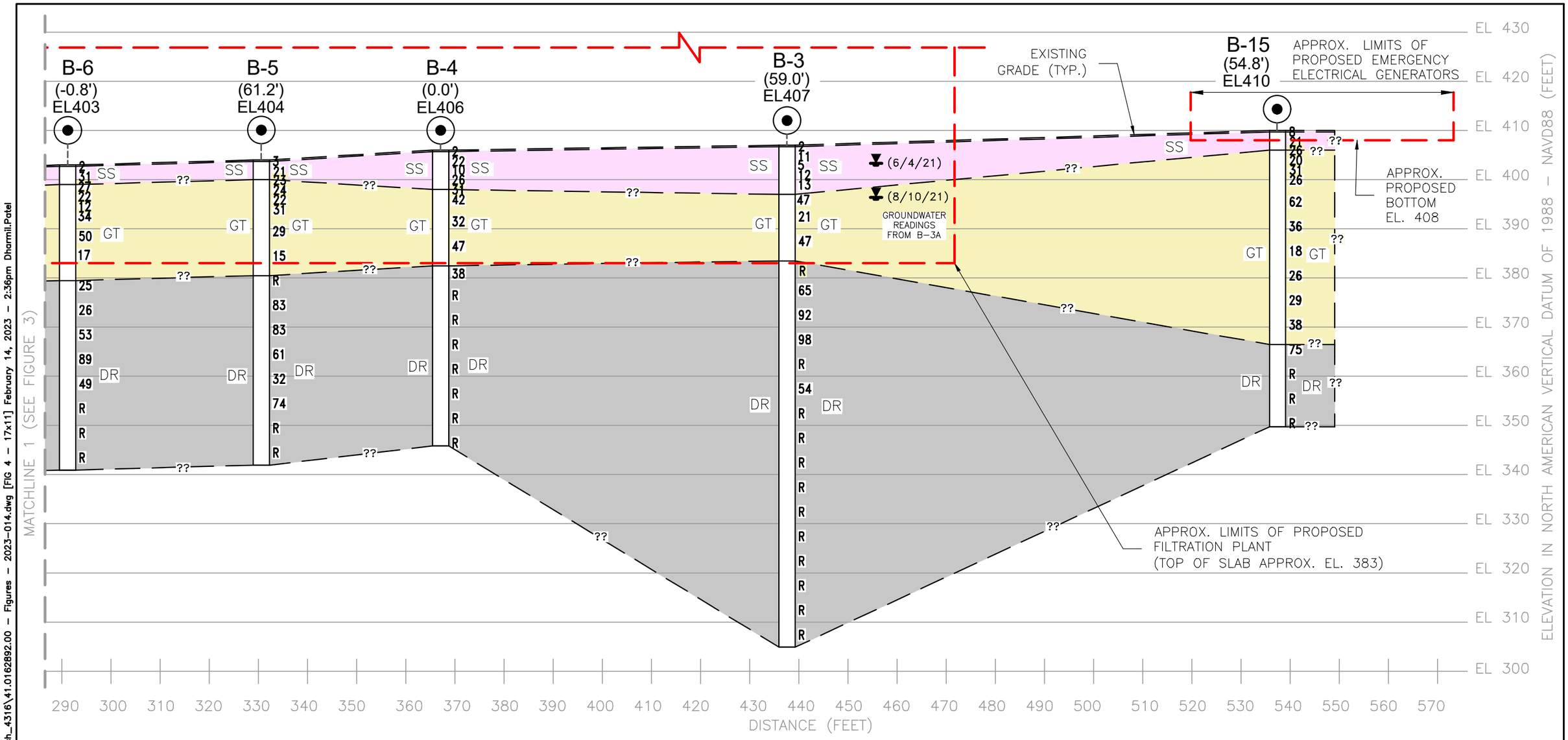
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WESTCHESTER JOINT WATER WORKS
WATER TREATMENT PLANT
WESTCHESTER COUNTY, NY

INTERPOLATED SOIL PROFILE A-A'
(PAGE 1 OF 2)

PREPARED BY:		PREPARED FOR:	
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PROJ MGR: DSP	REVIEWED BY: DSP	CHECKED BY: CAW	FIGURE 3
DESIGNED BY: ZSB	DRAWN BY: ZSB	SCALE: AS SHOWN	
DATE: FEBRUARY, 2023	PROJECT NO. 41.0162892.00	REVISION NO. 04	SHEET NO. 3 OF 7

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GZA–J:\Active 162800 to 162899\162892.00 – WJWW – Rye Lake WFP – Geotech\Drawings\GZA CAD\41.0162892.00 – Figures – 2023-014.dwg [FIG 3 – 17x11] February 14, 2023 – 2:39pm Dharmil.Patel



GENERAL NOTES

1. SEE FIGURE 2 FOR BORING LOCATION PLAN.
2. EXISTING GRADES DEVELOPED FROM TOPOGRAPHIC SURVEY, PREPARED BY GEORGE J. MOTTARELLA, DATED APRIL 17, 2021.
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5. REFER TO THE BORING LOGS FOR ADDITIONAL INFORMATION.
6. LOCATION & DIRECTION OFFSET FROM SECTION/PROFILE LINE IN FIGURE 2:
   - 6.1 NEGATIVE NUMBER INDICATES EAST OF SECTION
   - 6.2 POSITIVE NUMBER INDICATES WEST OF SECTION

LEGEND

- APPROXIMATE LIMITS OF PROPOSED STRUCTURES (AS NOTED)
- SS — SILTY SAND
- GT — GLACIAL TILL
- DR — DECOMPOSED ROCK
- GROUNDWATER
- ?? — APPROXIMATE LIMITS OF STRATUM (SEE NOTE 4)

B-X
(OFFSET FROM SECTION X-X')
(GROUND SURFACE EL IN FEET)
SPT N-VALUE

0 10 20 40
SCALE IN FEET

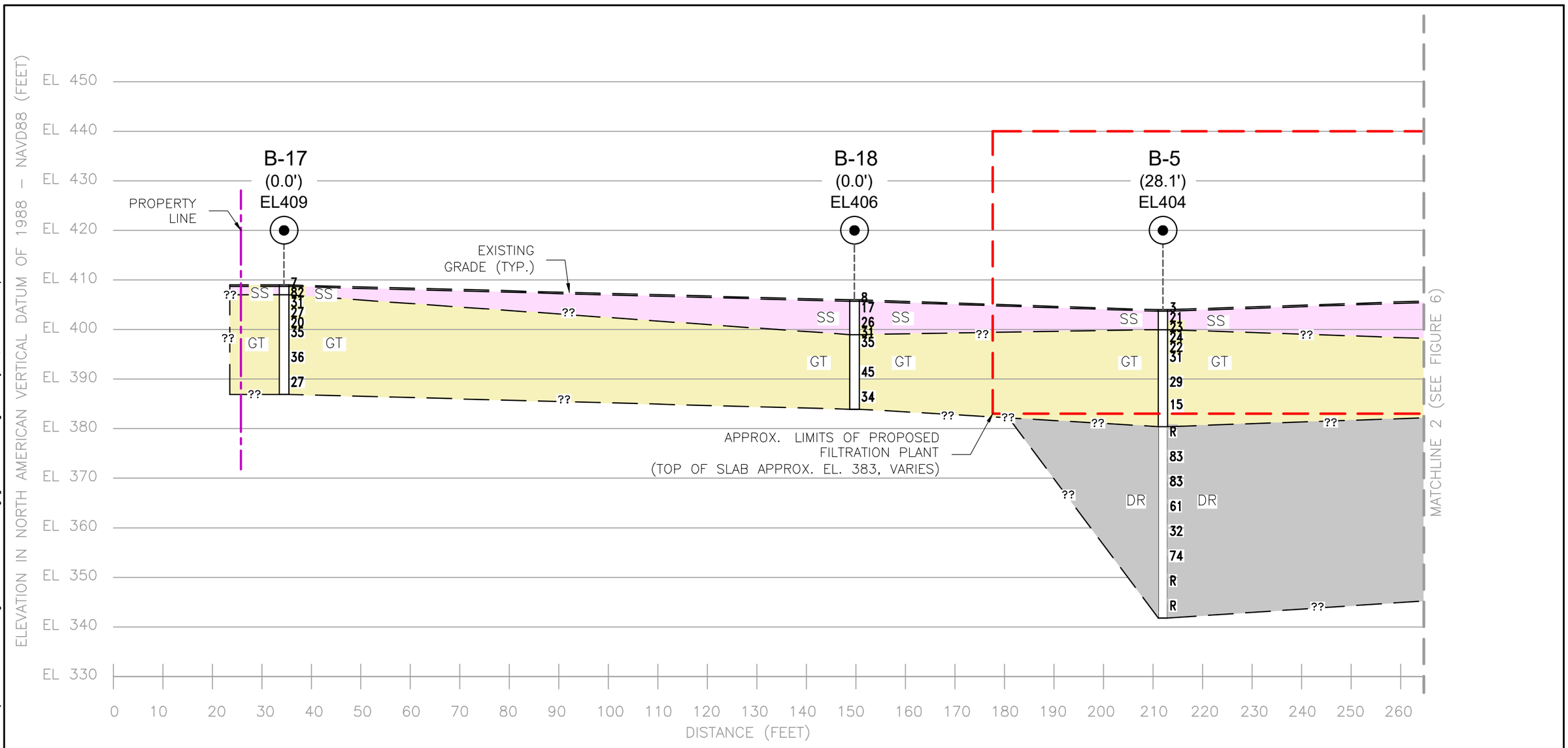
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WESTCHESTER JOINT WATER WORKS
WATER TREATMENT PLANT
WESTCHESTER COUNTY, NY

INTERPOLATED SOIL PROFILE A-A'
(PAGE 2 OF 2)

PREPARED BY: GZA GeoEnvironmental of NY Engineers and Scientists www.gza.com		PREPARED FOR: Hazen	
PROJ MGR: DSP	REVIEWED BY: DSP	CHECKED BY: CAW	FIGURE 4
DESIGNED BY: ZSB	DRAWN BY: ZSB	SCALE: AS SHOWN	
DATE: FEBRUARY, 2023	PROJECT NO. 41.0162892.00	REVISION NO. 04	SHEET NO. 4 OF 7

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GZA-C:\Users\dharmil.patel\AppData\Local\Temp\AcPublish_4316\41.0162892.00 - Figures - 2023-014.dwg [FIG 4 - 17x11] February 14, 2023 - 2:36pm Dharmil.Patel



GENERAL NOTES

1. SEE FIGURE 2 FOR BORING LOCATION PLAN.
2. EXISTING GRADES DEVELOPED FROM TOPOGRAPHIC SURVEY, PREPARED BY GEORGE J. MOTTARELLA, DATED APRIL 17, 2021.
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5. REFER TO THE BORING LOGS FOR ADDITIONAL INFORMATION.
6. LOCATION & DIRECTION OFFSET FROM SECTION/PROFILE LINE IN FIGURE 2:
   - 6.1 NEGATIVE NUMBER INDICATES SOUTH OF SECTION
   - 6.2 POSITIVE NUMBER INDICATES NORTH OF SECTION

LEGEND

- APPROXIMATE LIMITS OF PROPOSED STRUCTURES (AS NOTED)
- SS — SILTY SAND
- GT — GLACIAL TILL
- DR — DECOMPOSED ROCK
- GROUNDWATER
- ?? — APPROXIMATE LIMITS OF STRATUM (SEE NOTE 4)

B–X
(OFFSET FROM SECTION X–X')
(GROUND SURFACE EL IN FEET)
SPT N–VALUE

0 10 20 40
SCALE IN FEET

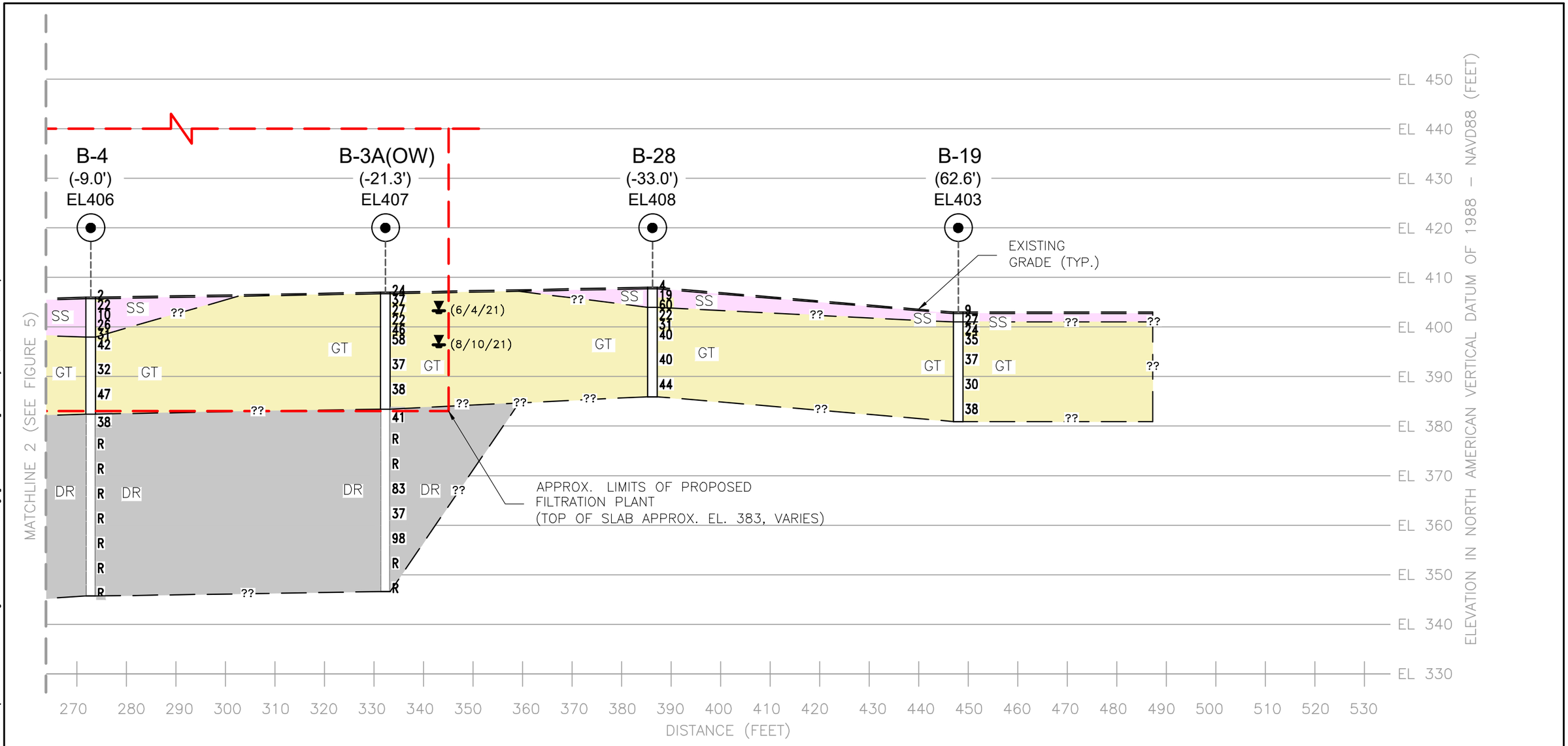
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WESTCHESTER JOINT WATER WORKS
WATER TREATMENT PLANT
WESTCHESTER COUNTY, NY

INTERPOLATED SOIL PROFILE B-B'
(PAGE 1 OF 2)

PREPARED BY:		PREPARED FOR:	
GZA GeoEnvironmental of NY Engineers and Scientists www.gza.com		Hazen	
PROJ MGR: DSP	REVIEWED BY: DSP	CHECKED BY: CAW	FIGURE 5
DESIGNED BY: ZSB	DRAWN BY: ZSB	SCALE: AS SHOWN	
DATE: FEBRUARY, 2023	PROJECT NO. 41.0162892.00	REVISION NO. 04	SHEET NO. 5 OF 7

©2022 – GZA GeoEnvironmental of NY.
GZA–C:\Users\dharmil.patel\AppData\Local\Temp\AcPublish_4316\41.0162892.00 – Figures – 2023-014.dwg [FIG 5 – 17x11] February 14, 2023 – 2:36pm Dharmil.Patel



GENERAL NOTES

1. SEE FIGURE 2 FOR BORING LOCATION PLAN.
2. EXISTING GRADES DEVELOPED FROM TOPOGRAPHIC SURVEY, PREPARED BY GEORGE J. MOTTARELLA, DATED APRIL 17, 2021.
3. APPROXIMATE LOCATIONS OF PROPOSED STRUCTURES WERE OBTAINED FROM CIVIL AND ARCHICTECTURAL DRAWINGS PREPARED BY, HAZEN & SAWYER, DATED MARCH 2022.
4. STRATIFICATION LINES ARE BASED ON INTERPOLATIONS BETWEEN WIDELY SPACED EXPLORATION LOCATIONS AND THUS REPRESENT APPROXIMATE BOUNDARIES BETWEEN SOIL TYPES. ACTUAL TRANSITIONS MAY VARY FROM THOSE SHOWN.
5. REFER TO THE BORING LOGS FOR ADDITIONAL INFORMATION.
6. LOCATION & DIRECTION OFFSET FROM SECTION/PROFILE LINE IN FIGURE 2:
   - 6.1 NEGATIVE NUMBER INDICATES SOUTH OF SECTION
   - 6.2 POSITIVE NUMBER INDICATES NORTH OF SECTION

LEGEND

- APPROXIMATE LIMITS OF PROPOSED STRUCTURES (AS NOTED)
- SS — SILTY SAND
- GT — GLACIAL TILL
- DR — DECOMPOSED ROCK
- GROUNDWATER
- ?? — APPROXIMATE LIMITS OF STRATUM (SEE NOTE 4)
- B–X (OFFSET FROM SECTION X–X') (GROUND SURFACE EL IN FEET)
- SPT N–VALUE

0 10 20 40
SCALE IN FEET

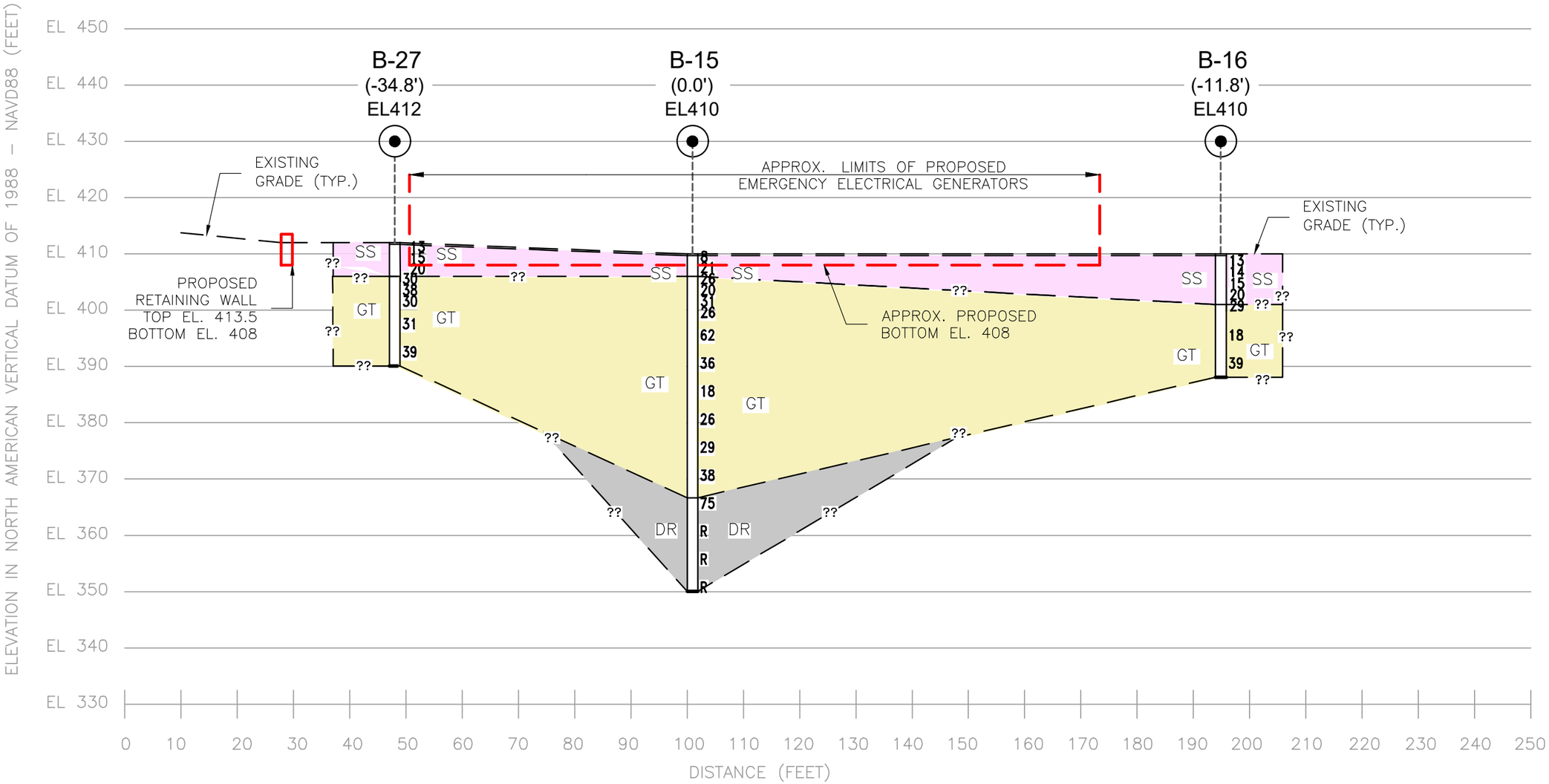
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WESTCHESTER JOINT WATER WORKS
WATER TREATMENT PLANT
WESTCHESTER COUNTY, NY

INTERPOLATED SOIL PROFILE B-B'
(PAGE 2 OF 2)

PREPARED BY: GZA GeoEnvironmental of NY Engineers and Scientists www.gza.com		PREPARED FOR: Hazen	
PROJ MGR: DSP	REVIEWED BY: DSP	CHECKED BY: CAW	FIGURE 6
DESIGNED BY: ZSB	DRAWN BY: ZSB	SCALE: AS SHOWN	
DATE: FEBRUARY, 2023	PROJECT NO. 41.0162892.00	REVISION NO. 04	SHEET NO. 6 OF 7

©2022 - GZA GeoEnvironmental of NY.
GZA-C:\Users\dharmil.patel\AppData\Local\Temp\AcPublish_4316\41.0162892.00 - Figures - 2023-014.dwg [FIG 6 - 17x11] February 14, 2023 - 2:36pm Dharmil.Patel



GENERAL NOTES

1. SEE FIGURE 2 FOR BORING LOCATION PLAN.
2. EXISTING GRADES DEVELOPED FROM TOPOGRAPHIC SURVEY, PREPARED BY GEORGE J. MOTTARELLA, DATED APRIL 17, 2021.
3. APPROXIMATE LOCATIONS OF PROPOSED STRUCTURES WERE OBTAINED FROM CIVIL AND ARCHICTECTURAL DRAWINGS PREPARED BY, HAZEN & SAWYER, DATED MARCH 2022.
4. STRATIFICATION LINES ARE BASED ON INTERPOLATIONS BETWEEN WIDELY SPACED EXPLORATION LOCATIONS AND THUS REPRESENT APPROXIMATE BOUNDARIES BETWEEN SOIL TYPES. ACTUAL TRANSITIONS MAY VARY FROM THOSE SHOWN.
5. REFER TO THE BORING LOGS FOR ADDITIONAL INFORMATION.
6. LOCATION & DIRECTION OFFSET FROM SECTION/PROFILE LINE IN FIGURE 2:
   - 6.1 NEGATIVE NUMBER INDICATES SOUTH OF SECTION
   - 6.2 POSITIVE NUMBER INDICATES NORTH OF SECTION

LEGEND

- APPROXIMATE LIMITS OF PROPOSED STRUCTURES (AS NOTED)
- SS — SILTY SAND
- GT — GLACIAL TILL
- DR — DECOMPOSED ROCK
- GROUNDWATER
- ?? — APPROXIMATE LIMITS OF STRATUM (SEE NOTE 4)

B–X
(OFFSET FROM SECTION X–X')
(GROUND SURFACE EL IN FEET)

SPT N–VALUE

0 10 20 40
SCALE IN FEET

UNLESS SPECIFICALLY STATED BY WRITTEN AGREEMENT, THIS DRAWING IS THE SOLE PROPERTY OF GZA GEOENVIRONMENTAL, INC. (GZA). THE INFORMATION SHOWN ON THE DRAWING IS SOLELY FOR USE BY GZA'S CLIENT OR THE CLIENT'S DESIGNATED REPRESENTATIVE FOR THE SPECIFIC PROJECT AND LOCATION IDENTIFIED ON THE DRAWING. THE DRAWING SHALL NOT BE TRANSFERRED, REUSED, COPIED, OR ALTERED IN ANY MANNER FOR USE AT ANY OTHER LOCATION OR FOR ANY OTHER PURPOSE WITHOUT THE PRIOR WRITTEN CONSENT OF GZA. ANY TRANSFER, REUSE, OR MODIFICATION TO THE DRAWING BY THE CLIENT OR OTHERS, WITHOUT THE PRIOR WRITTEN EXPRESS CONSENT OF GZA, WILL BE AT THE USER'S SOLE RISK AND WITHOUT ANY RISK OR LIABILITY TO GZA.

WESTCHESTER JOINT WATER WORKS
WATER TREATMENT PLANT
WESTCHESTER COUNTY, NY

INTERPOLATED SOIL PROFILE C-C'

PREPARED BY:		PREPARED FOR:	
GZA GeoEnvironmental of NY Engineers and Scientists www.gza.com		Hazen	
PROJ MGR: DSP	REVIEWED BY: DSP	CHECKED BY: CAW	FIGURE 7
DESIGNED BY: ZSB	DRAWN BY: ZSB	SCALE: AS SHOWN	
DATE: FEBRUARY, 2023	PROJECT NO. 41.0162892.00	REVISION NO. 04	SHEET NO. 7 OF 7

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GZA-C:\Users\dharmil.patel\AppData\Local\Temp\AcPublish_4316\41.0162892.00 - Figures - 2023-014.dwg [FIG 7 - 17x11] February 14, 2023 - 2:36pm Dharmil.Patel

APPENDIX A

LIMITATIONS

USE OF REPORT

1. GZA GeoEnvironmental, Inc. (GZA) prepared this report on behalf of, and for the exclusive use of our Client for the stated purpose(s) and location(s) identified in the Proposal for Services and/or Report. Use of this report, in whole or in part, at other locations, or for other purposes, may lead to inappropriate conclusions; and we do not accept any responsibility for the consequences of such use(s). Further, reliance by any party not expressly identified in the contract documents, for any use, without our prior written permission, shall be at that party's sole risk, and without any liability to GZA.

STANDARD OF CARE

2. GZA's findings and conclusions are based on the work conducted as part of the Scope of Services set forth in Proposal for Services and/or Report, and reflect our professional judgment. These findings and conclusions must be considered not as scientific or engineering certainties, but rather as our professional opinions concerning the limited data gathered during the course of our work. If conditions other than those described in this report are found at the subject location(s), or the design has been altered in any way, GZA shall be so notified and afforded the opportunity to revise the report,as appropriate, to reflect the unanticipated changed conditions .

3. GZA's services were performed using the degree of skill and care ordinarily exercised by qualified professionals performing the same type of services, at the same time, under similar conditions, at the same or a similar property. No warranty, expressed or implied, is made.

4. In conducting our work, GZA relied upon certain information made available by public agencies, Client and/or others. GZA did not attempt to independently verify the accuracy or completeness of that information. Inconsistencies in this information which we have noted, if any, are discussed in the Report.

SUBSURFACE CONDITIONS

5. The generalized soil profile(s) provided in our Report are based on widely-spaced subsurface explorations and are intended only to convey trends in subsurface conditions. The boundaries between strata are approximate and idealized, and were based on our assessment of subsurface conditions. The composition of strata, and the transitions between strata, may be more variable and more complex than indicated. For more specific information on soil conditions at a specific location refer to the exploration logs. The nature and extent of variations between these explorations may not become evident until further exploration or construction. If variations or other latent conditions then become evident, it will be necessary to reevaluate the conclusions and recommendations of this report.

6. In preparing this report, GZA relied on certain information provided by the Client, state and local officials, and other parties referenced therein which were made available to GZA at the time of our evaluation. GZA did not attempt to independently verify the accuracy or completeness of all information reviewed or received during the course of this evaluation.

7. Water level readings have been made in test holes (as described in this Report) and monitoring wells at the specified times and under the stated conditions. These data have been reviewed and interpretations have been made in this Report. Fluctuations in the level of the groundwater however occur due to temporal or spatial variations in areal recharge rates, soil heterogeneities, the presence of subsurface utilities, and/or natural or artificially induced perturbations. The water table encountered in the course of the work may differ from that indicated in the Report.

8. GZA's services did not include an assessment of the presence of oil or hazardous materials at the property. Consequently, we did not consider the potential impacts (if any) that contaminants in soil or groundwater may have on construction activities, or the use of structures on the property.

9. Recommendations for foundation drainage, waterproofing, and moisture control address the conventional geotechnical engineering aspects of seepage control. These recommendations may not preclude an environment that allows the infestation of mold or other biological pollutants.

COMPLIANCE WITH CODES AND REGULATIONS

10. We used reasonable care in identifying and interpreting applicable codes and regulations. These codes and regulations are subject to various, and possibly contradictory, interpretations. Compliance with codes and regulations by other parties is beyond our control.

COST ESTIMATES

11. Unless otherwise stated, our cost estimates are only for comparative and general planning purposes. These estimates may involve approximate quantity evaluations. Note that these quantity estimates are not intended to be sufficiently accurate to develop construction bids, or to predict the actual cost of work addressed in this Report. Further, since we have no control over either when the work will take place or the labor and material costs required to plan and execute the anticipated work, our cost estimates were made by relying on our experience, the experience of others, and other sources of readily available information. Actual costs may vary over time and could be significantly more, or less, than stated in the Report.

ADDITIONAL SERVICES

12. GZA recommends that we be retained to provide services during any future: site observations, design, implementation activities, construction and/or property development/redevelopment. This will allow us the opportunity to: i) observe conditions and compliance with our design concepts and opinions; ii) allow for changes in the event that conditions are other than anticipated; iii) provide modifications to our design; and iv) assess the consequences of changes in technologies and/or regulations.

APPENDIX B

BORING LOGS AND GROUNDWATER OBSERVATION WELL INSTALLATION LOGS

LOG KEY

GZA
Geo Environmental, Inc.
Engineers and Scientists

BURMISTER SOIL CLASSIFICATION

COMPONENT	NAME	PROPORTIONAL TERM	PERCENT BY WEIGHT
MAJOR	GRAVEL, SAND, FINES*		>50
Minor	Gravel, Sand, Fines*	and	35 - 50
		some	20-35
		little	10-20
		trace	0-10

*See identification of fines table.

IDENTIFICATION OF FINES

Material	PI	Atterberg Thread Dia.
SILT	0	Cannot Roll
Clayey SILT	1-5	1/4"
SILT & CLAY	5-10	1/8"
CLAY & SILT	10-20	1/16"
Silty CLAY	20-40	1/32"
CLAY	>40	1/64"

GRADATION DESIGNATION	PROPORTION OF COMPONENT
Fine to coarse	All fractions > 10%
Medium to coarse	<10% fine
Fine to medium	<10% coarse
Coarse	<10% fine and medium
Medium	<10% coarse and fine
Fine	<10% coarse and medium

PLASTIC SOILS

Consistency	Blows/Ft. SPT N-Value
Very Soft	< 2
Soft	2 - 4
Medium Stiff	4 - 8
Stiff	8 - 15
Very Stiff	15 - 30
Hard	>30

GRAVEL & SAND

Density	Blows/Ft. SPT N-Value
Very Loose	< 4
Loose	4 - 10
Medium Dense	10 - 30
Dense	30 - 50
Very Dense	> 50

UNIFIED SOIL CLASSIFICATION SYSTEM (USCS) (ASTM D 2487)

MAJOR DIVISIONS			Group Symbols
Coarse Grained Soils More than 50% of material larger than No. 200 sieve.	Gravel More than 50% larger than No. 4 sieve.	Clean Gravels (Little or no fines)	GW GP
		Gravels with Fines (Appreciable amount of fines)	GM GC
	Sand More than 50% smaller than No. 4 sieve.	Clean Sands (Little or no fines)	SW SP
		Sands with Fines (Appreciable amount of fines)	SM SC
Fine Grained Soils More than 50% of material smaller than No. 200 sieve.		Silts and Clays Liquid Limit <50	ML CL
		Silts and CLays Liquid Limit >50	OL MH CH OH
		Highly Organic Soils	Pt

ORGANIC SOIL CLASSIFICATION

Fibrous PEAT (Pt) - Lightweight, spongy, mostly visible organic matter, water squeezes readily from sample. Typically near top of deposit.
Fine Grained PEAT (Pt) - Lightweight, spongy, little visible organic matter, water squeezes readily from sample. Typically below fibrous peat.
Organic Silt (OL) - Typically gray to dark gray, often has strong H2S odor. Typically contains shells or shell fragments. Lightweight. Usually found near coastal regions. May contain wide range of sand fractions.
Organic Clay (OH) - Typically gray to dark gray, high plasticity. Usually found near coastal regions. May contain wide range of sand fractions. Need organic content test for final identification.

ABBREVIATIONS

MR = Mud Rotary
HSA = Hollow Stem Auger
SSA = Solid Stem Auger
SS = Split Spoon Sampler
U = Undisturbed Sample (Shelby Tube)
MC = Modified California Sampler
V = Vibracore
M = Macrocore

USCS = Unified Soil Classification System (ASTM D2487)
NYCBC = New York City Building Code
WOR = Weight of Rods
WOH= Weight of Hammer
SPT = Standard Penetration Test (ASTM D1586)

Tv = Field Vane Shear Test (Torvane) Shear Strength
PP = Pocket Penetrometer Shear Strength
PI = Plasticity Index
Wn = Moisture Content
CO = Consolidation
UC = Unconfined Compression Test
UU = Unconsolidated Undrained (Triaxial) Test
SI = Sieve Analysis
DS = Direct Shear
PID = Photoionization Detector
ppm = Parts Per Million
REC = Recovery
RQD = Rock Quality Designation
▼ = Measured Water Level

N-Value = Cumulative number of uncorrected blows for the middle two six-inch intervals (blows/foot).

TEST BORING LOG

GZA GeoEnvironmental of New York
Engineers and Scientists

Westchester Joint Water Works
Water Treatment Plant
Westchester County, New York

EXPLORATION NO.: B-1
SHEET: 1 of 3
PROJECT NO: 41.0162892.00
REVIEWED BY: D. Patel

Logged By: A. Amador
Drilling Co.: Craig Test Boring Co., Inc.
Foreman: P. Mullins/S. Schultz
Date Start: 5/14/2021 **Finish:** 5/17/2021

Type of Rig: ATV
Rig Model: CME 750X
Drilling Method: Mud Rotary

Boring Location: See Plan
Stationing (ft.): **Offset (ft.):**
Ground Surface Elevation (ft.): 408
Final Boring Depth (ft.): 60.2

H. Datum: -
V. Datum: NAVD 88
Northing:
Easting:

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4/3.5

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

Date	Time	Water Depth	Stab. Time
Not	Measured		

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (per 6 in.)	SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	Stratum Depth (ft.)	Stratum Description	Stratum Elev. (ft.)
		S-1	0.0-2	24	16	1 26 9 9	35	S-1: Top 1": TOPSOIL Bottom 15": Medium dense, brown, fine to medium SAND, some Silt, little Gravel, trace mica.			0.3	TOPSOIL	407.7
		S-2	2.0-4	24	19	5 4 8 10	12	S-2: Stiff, gray-brown SILT, some Sand, trace Gravel.				SILTY SAND	
5		S-3	4.0-6	24	6	13 14 14 16	28	S-3: Medium dense, brown, fine to medium SAND, some Silt, little Gravel, trace mica.			6		402.0
		S-4	6.0-8	24	15	13 15 17 14	32	S-4: Dense, brown, fine to medium SAND, some Silt, little Gravel, trace mica.					
		S-5	8.0-10	24	14	6 10 17 18	27	S-5: Medium dense, brown, fine to medium SAND, some Silt, little Gravel, trace mica.					
10		S-6	10.0-12	24	16	10 14 14 22	28	S-6: Medium dense, brown, fine to medium SAND and SILT, little Gravel, trace mica.					
15		S-7	15.0-17	24	16	11 15 22 25	37	S-7: Dense, brown, fine to medium SAND and SILT, little Gravel, trace mica.				GLACIAL TILL	
20		S-8	20.0-22	24	19	14 18 30 31	48	S-8: Dense, brown, fine to medium SAND and SILT, little Gravel, trace mica.			23.5		384.5
25		S-9	25.0-27	24	17	32 79 60 42	>100	S-9: Very dense, gray, fine to medium SAND and SILT, little Gravel, trace mica.				DECOMPOSED ROCK	
30													

REMARKS

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: B-1

GZA TEMPLATE TEST BORING - GZA 2016_01_26.GDT - 6/21/21 10:20 - J:\GINT PROJECT DATABASES\41.0162800\41.0162892.00.GPJ

TEST BORING LOG

GZA GeoEnvironmental of New York
Engineers and Scientists

Westchester Joint Water Works
Water Treatment Plant
Westchester County, New York

EXPLORATION NO.: B-1
SHEET: 2 of 3
PROJECT NO: 41.0162892.00
REVIEWED BY: D. Patel

Logged By: A. Amador
Drilling Co.: Craig Test Boring Co., Inc.
Foreman: P. Mullins/S. Schultz
Date Start: 5/14/2021 **Finish:** 5/17/2021

Type of Rig: ATV
Rig Model: CME 750X
Drilling Method: Mud Rotary

Boring Location: See Plan
Stationing (ft.): **Offset (ft.):**
Ground Surface Elevation (ft.): 408
Final Boring Depth (ft.): 60.2

H. Datum: -
V. Datum: NAVD 88
Northing:
Easting:

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4/3.5

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

Date	Time	Water Depth	Stab. Time
Not	Measured		

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (per 6 in.)	Sample SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	Stratum Depth (ft.)	Stratum Description	Stratum Elev. (ft.)
		S-10	30.0-32	24	18	23 28 44 74	72	S-10: Very dense, gray, fine to medium SAND and SILT, little Gravel, trace mica.					
35		S-11	35.0-37	15	13	37 70 100/3"	R	S-11: Very dense, gray, fine to medium SAND and SILT, little Gravel, trace quartz fragments.					
40		S-12	40.0-42	14	13	42 70 100/2"	R	S-12: Very dense, gray, fine to medium SAND and SILT, little Gravel, trace mica.					
45		S-13	45.0-47	24	10	27 27 37 44	64	S-13: Very dense, gray, fine to medium SAND and SILT, little Gravel, trace mica.				DECOMPOSED ROCK	
50		S-14	50.0-52	14	11	24 85 100/2"	R	S-14: Hard, gray-brown SILT, some fine Sand, little Gravel, trace mica.					
55		S-15	55.0-57	14	11	37 60 100/2"	R	S-15: Hard, gray-brown SILT, some fine Sand, little Gravel, trace mica.					
60													

REMARKS

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: B-1

GZA TEMPLATE TEST BORING - GZA 2016_01_26.GDT - 6/21/21 10:20 - J:\GINT PROJECT DATABASES\41.0162800\41.0162892.00.GPJ

TEST BORING LOG

GZA GeoEnvironmental of New York
Engineers and Scientists

Westchester Joint Water Works
Water Treatment Plant
Westchester County, New York

EXPLORATION NO.: B-1
SHEET: 3 of 3
PROJECT NO: 41.0162892.00
REVIEWED BY: D. Patel

Logged By: A. Amador
Drilling Co.: Craig Test Boring Co., Inc.
Foreman: P. Mullins/S. Schultz
Date Start: 5/14/2021 **Finish:** 5/17/2021

Type of Rig: ATV
Rig Model: CME 750X
Drilling Method: Mud Rotary

Boring Location: See Plan
Stationing (ft.): **Offset (ft.):**
Ground Surface Elevation (ft.): 408
Final Boring Depth (ft.): 60.2

H. Datum: -
V. Datum: NAVD 88
Northing:
Easting:

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4/3.5

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)			
Date	**Time**	**Water Depth**	**Stab. Time**
Not	Measured		

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (per 6 in.)	SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	Stratum Depth (ft.)	Stratum Description	Stratum Elev. (ft.)
		S-16	60.0-62	2	0	100/2"	R	S-16: No Recovery. End of exploration at 60.2 feet.	1 2 3		60.2		347.8

65
70
75
80
85
90

REMARKS

1 - Decomposed Rock fragments encountered at tip of split spoon.
2 - Photoionization Detector (PID) readings were obtained for all samples. Results PID = 0 ppm throughout.
3 - Borehole was backfilled with soil cuttings and bentonite upon completion.

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: B-1

GZA TEMPLATE TEST BORING - GZA 2016_01_26.GDT - 6/21/21 10:20 - J:\GINT PROJECT DATABASES\41.0162800\41.0162892.00.GPJ

TEST BORING LOG

GZA GeoEnvironmental of New York
Engineers and Scientists

Westchester Joint Water Works
Water Treatment Plant
Westchester County, New York

EXPLORATION NO.: B-2
SHEET: 1 of 3
PROJECT NO: 41.0162892.00
REVIEWED BY: D. Patel

Logged By: A. Amador
Drilling Co.: Craig Test Boring Co., Inc.
Foreman: P. Mullins/S. Schultz
Date Start: 5/14/2021 **Finish:** 5/14/2021

Type of Rig: ATV
Rig Model: CME 750X
Drilling Method: Mud Rotary

Boring Location: See Plan
Stationing (ft.): **Offset (ft.):**
Ground Surface Elevation (ft.): 408
Final Boring Depth (ft.): 60.2

H. Datum: -
V. Datum: NAVD 88
Northing:
Easting:

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4/3.5

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

Date	Time	Water Depth	Stab. Time
Not	Measured		

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (per 6 in.)	Sample SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	Stratum Depth (ft.)	Stratum Description	Stratum Elev. (ft.)
		S-1	0.0-2	24	4	1 2 1 3	3	S-1: Top 1": TOPSOIL Bottom 3": Soft, brown SILT, some Sand, little Gravel, trace roots.			0.3	TOPSOIL	407.7
		S-2	2.0-4	24	12	3 5 8 9	13	S-2: Medium dense, brown, fine to medium SAND, some Silt, little Gravel, trace mica.					
5		S-3	4.0-6	24	13	9 9 9 10	18	S-3: Medium dense, brown, fine to medium SAND, some Silt, little Gravel, trace mica.				SILTY SAND	
		S-4	6.0-8	24	13	9 7 7 8	14	S-4: Medium dense, brown, fine to medium SAND, some Silt, little Gravel, trace mica.					
		S-5	8.0-10	24	14	17 50 23 19	73	S-5: Very dense, brown, fine to medium SAND and SILT, little Gravel, trace mica.			8		400.0
10		S-6	10.0-12	24	0	74 41 19 21	60	S-6: No recovery.	1				
15		S-7	15.0-17	24	15	96 21 23 31	44	S-7: Dense, brown, fine to medium SAND and SILT, little Gravel.				GLACIAL TILL	
20		S-8	20.0-22	24	11	21 26 25 36	51	S-8: Very dense, brown, fine to medium SAND and SILT, little Gravel, trace mica.			23.5		384.5
25		S-9	25.0-27	24	15	14 23 44 40	67	S-9: Very dense, gray-brown, fine to medium SAND, some Silt, little Gravel, trace mica.				DECOMPOSED ROCK	
30													

REMARKS

1 - Gravel encountered at tip of split spoon at sample S-6.

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: B-2

GZA TEMPLATE TEST BORING - GZA 2016_01_26.GDT - 6/21/21 10:21 - J:\GINT PROJECT DATABASES\41.0162800\41.0162892.00.GPJ

TEST BORING LOG

GZA GeoEnvironmental of New York
Engineers and Scientists

Westchester Joint Water Works
Water Treatment Plant
Westchester County, New York

EXPLORATION NO.: B-2
SHEET: 2 of 3
PROJECT NO: 41.0162892.00
REVIEWED BY: D. Patel

Logged By: A. Amador
Drilling Co.: Craig Test Boring Co., Inc.
Foreman: P. Mullins/S. Schultz
Date Start: 5/14/2021 **Finish:** 5/14/2021

Type of Rig: ATV
Rig Model: CME 750X
Drilling Method: Mud Rotary

Boring Location: See Plan
Stationing (ft.): **Offset (ft.):**
Ground Surface Elevation (ft.): 408
Final Boring Depth (ft.): 60.2

H. Datum: -
V. Datum: NAVD 88
Northing:
Easting:

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4/3.5

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

Date	Time	Water Depth	Stab. Time
Not	Measured		

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Pen. (in)	Rec. (in)	Blows (per 6 in.)	SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	Stratum Depth (ft.)	Stratum Description	Stratum Elev. (ft.)
		S-10	30.0-32	24	20	21 36 67 70	>100	S-10: Very dense, gray, fine to medium SAND, some Silt, little Gravel, trace mica.					
35		S-11	35.0-37	17	13	39 51 100/5"	R	S-11: Very dense, gray-brown, fine to medium SAND and SILT, trace mica.					
40		S-12	40.0-42	14	19	34 52 71 70	>100	S-12: Very dense, gray-brown, fine to medium SAND and SILT, little Gravel, trace mica.					
45		S-13	45.0-47	24	20	38 26 32 45	58	S-13: Very dense, gray, fine to medium SAND, some SILT, little Gravel, trace mica.				DECOMPOSED ROCK	
50		S-14	50.0-52	16	15	44 50 100/4"	R	S-14: Very dense, gray-brown, fine to coarse SAND, some Silt, little Gravel.					
55		S-15	55.0-57	17	12	13 22 100/5"	R	S-15: Very dense, brown, fine to medium SAND and SILT, little Gravel, trace mica.					
60													

REMARKS

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: B-2

GZA TEMPLATE TEST BORING - GZA 2016_01_26.GDT - 6/21/21 10:21 - J:\GINT PROJECT DATABASES\41.0162800\41.0162892.00.GPJ

TEST BORING LOG

GZA GeoEnvironmental of New York
Engineers and Scientists

Westchester Joint Water Works
Water Treatment Plant
Westchester County, New York

EXPLORATION NO.: B-2
SHEET: 3 of 3
PROJECT NO: 41.0162892.00
REVIEWED BY: D. Patel

Logged By: A. Amador
Drilling Co.: Craig Test Boring Co., Inc.
Foreman: P. Mullins/S. Schultz
Date Start: 5/14/2021 **Finish:** 5/14/2021

Type of Rig: ATV
Rig Model: CME 750X
Drilling Method: Mud Rotary

Boring Location: See Plan
Stationing (ft.): **Offset (ft.):**
Ground Surface Elevation (ft.): 408
Final Boring Depth (ft.): 60.2

H. Datum: -
V. Datum: NAVD 88
Northing:
Easting:

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4/3.5

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)			
Date	**Time**	**Water Depth**	**Stab. Time**
Not	Measured		

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (per 6 in.)	SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	Stratum Depth (ft.)	Stratum Description	Stratum Elev. (ft.)
		S-16	60.0-62	2	0	100/2"	R	S-16: No Recovery. End of exploration at 60.2 feet.	2, 3, 4		60.2		347.8

65
70
75
80
85
90

REMARKS

2 - Decomposed Rock fragments encountered at tip of split spoon.
3 - Photoionization Detector (PID) readings were obtained for all samples. Results PID = 0 ppm throughout.
4 - Borehole was backfilled with soil cuttings and bentonite upon completion.

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: B-2

GZA TEMPLATE TEST BORING - GZA 2016_01_26.GDT - 6/21/21 10:21 - J:\GINT PROJECT DATABASES\41.0162800\41.0162892.00.GPJ

TEST BORING LOG

GZA GeoEnvironmental of New York
Engineers and Scientists

Westchester Joint Water Works
Water Treatment Plant
Westchester County, New York

EXPLORATION NO.: B-3
SHEET: 1 of 4
PROJECT NO: 41.0162892.00
REVIEWED BY: D. Patel

Logged By: A. Amador
Drilling Co.: Craig Test Boring Co., Inc.
Foreman: P. Mullins/S. Schultz
Date Start: 5/13/2021 **Finish:** 5/14/2021

Type of Rig: ATV
Rig Model: CME 750X
Drilling Method: Mud Rotary

Boring Location: See Plan
Stationing (ft.): **Offset (ft.):**
Ground Surface Elevation (ft.): 407
Final Boring Depth (ft.): 100.2

H. Datum: -
V. Datum: NAVD 88
Northing:
Easting:

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4/3.5

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

Date	Time	Water Depth	Stab. Time
Not	Measured		

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (per 6 in.)	Sample SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	Stratum Depth (ft.)	Stratum Description	Stratum Elev. (ft.)
		S-1	0.0-2	24	16	WH 1 1 3	2	S-1: Top 1": TOPSOIL Bottom 15": Very loose, brown, fine to medium SAND and SILT, little Gravel, trace Clay, trace roots.			0.3	TOPSOIL	406.7
		S-2	2.0-4	24	17	3 3 8 11	11	S-2: Top 10": Soft, gray-brown SILT, little Sand, little Gravel, trace roots. Bottom 7": Loose, brown, fine to medium SAND, some Silt, little Gravel, trace Clay. PP=1.1 TSF.	1				
5		S-3	4.0-6	24	8	1 2 3 3	5	S-3: Loose, brown, fine to medium SAND, little Silt, trace Gravel.				SILTY SAND	
		S-4	6.0-8	24	12	3 6 6 6	12	S-4: Medium dense, gray-brown, fine to medium SAND, some Silt, little Gravel.					
		S-5	8.0-10	24	10	6 6 7 23	13	S-5: Medium dense, brown, fine to medium SAND, some Silt, little Gravel, trace mica.					
10		S-6	10.0-12	24	14	19 24 23 45	47	S-6: Dense, brown, fine to medium SAND, some Silt, little Gravel, trace mica.			10		397.0
15		S-7	15.0-17	24	15	7 9 12 13	21	S-7: Medium dense, brown, fine to medium SAND and SILT, trace Gravel, occasional quartz fragments.				GLACIAL TILL	
20		S-8	20.0-22	24	18	17 20 27 28	47	S-8: Dense, gray-brown, fine to medium SAND, some Silt, little Gravel, trace mica.			23.5		383.5
25		S-9	25.0-27	24	17	27 50 70 62	>100	S-9: Very dense, gray, fine to medium SAND, some Silt, little Gravel, trace mica.				DECOMPOSED ROCK	
30													

REMARKS

1 - PP = Pocket Penetrometer reading in Tons per Square foot (TSF)

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: B-3

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TEST BORING LOG

GZA GeoEnvironmental of New York
Engineers and Scientists

Westchester Joint Water Works
Water Treatment Plant
Westchester County, New York

EXPLORATION NO.: B-3
SHEET: 2 of 4
PROJECT NO: 41.0162892.00
REVIEWED BY: D. Patel

Logged By: A. Amador
Drilling Co.: Craig Test Boring Co., Inc.
Foreman: P. Mullins/S. Schultz
Date Start: 5/13/2021 **Finish:** 5/14/2021

Type of Rig: ATV
Rig Model: CME 750X
Drilling Method: Mud Rotary

Boring Location: See Plan
Stationing (ft.): **Offset (ft.):**
Ground Surface Elevation (ft.): 407
Final Boring Depth (ft.): 100.2

H. Datum: -
V. Datum: NAVD 88
Northing:
Easting:

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4/3.5

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

Date	Time	Water Depth	Stab. Time
Not	Measured		

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (per 6 in.)	Sample SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	Stratum Depth (ft.)	Stratum Description	Stratum Elev. (ft.)
		S-10	30.0-32	24	17	19 31 34 37	65	S-10: Very dense, gray, fine to medium SAND, some Silt, little Gravel, trace mica.					
35		S-11	35.0-37	24	16	27 33 59 37	92	S-11: Very dense, gray, fine to medium SAND, some Silt, little Gravel.					
40		S-12	40.0-42	24	18	41 53 45 71	98	S-12: Very dense, gray, fine to medium SAND, some Silt, little Gravel, trace mica.					
45		S-13	45.0-47	24	15	42 64 54 50	>100	S-13: Very dense, gray, fine to medium SAND, some Silt, little Gravel, trace mica.				DECOMPOSED ROCK	
50		S-14	50.0-52	24	19	17 26 28 28	54	S-14: Very dense, gray, fine to medium SAND, some Silt, little Gravel, trace mica.					
55		S-15	55.0-57	20	15	41 61 81 100/2"	>100	S-15: Hard, brown SILT and fine to medium SAND, little Gravel, trace mica, trace quartz fragments.					
60													

REMARKS

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: B-3

GZA TEMPLATE TEST BORING - GZA 2016_01_26.GDT - 6/21/21 10:21 - J:\GINT PROJECT DATABASES\41.0162800\41.0162892.00.GPJ

TEST BORING LOG

GZA GeoEnvironmental of New York
Engineers and Scientists

Westchester Joint Water Works
Water Treatment Plant
Westchester County, New York

EXPLORATION NO.: B-3
SHEET: 3 of 4
PROJECT NO: 41.0162892.00
REVIEWED BY: D. Patel

Logged By: A. Amador
Drilling Co.: Craig Test Boring Co., Inc.
Foreman: P. Mullins/S. Schultz
Date Start: 5/13/2021 **Finish:** 5/14/2021

Type of Rig: ATV
Rig Model: CME 750X
Drilling Method: Mud Rotary

Boring Location: See Plan
Stationing (ft.): **Offset (ft.):**
Ground Surface Elevation (ft.): 407
Final Boring Depth (ft.): 100.2

H. Datum: -
V. Datum: NAVD 88
Northing:
Easting:

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4/3.5

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

Date	Time	Water Depth	Stab. Time
Not	Measured		

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (per 6 in.)	SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	Stratum Depth (ft.)	Stratum Description	Stratum Elev. (ft.)
		S-16	60.0-62	9	5	40 100/3"	R	S-16: Hard, brown SILT and fine to medium SAND, little Gravel, trace mica, trace quartz fragments.					
65		S-17	65.0-67	4	0	100/4"	R	S-17: No Recovery.	2				
70		S-18	70.0-72	3	0	100/3"	R	S-18: No Recovery.	3				
75		S-19	75.0-77	3	0	100/3"	R	S-19: No Recovery.	4			DECOMPOSED ROCK	
80		S-20	80.0-82	4	0	100/4"	R	S-20: No Recovery.	5				
85		S-21	85.0-87	3	0	100/3"	R	S-21: No Recovery.	6				
90													

REMARKS

2 - Decomposed Rock fragments encountered at tip of split spoon.
3 - Decomposed Rock fragments encountered at tip of split spoon.
4 - Decomposed Rock fragments encountered at tip of split spoon.
5 - Decomposed Rock fragments encountered at tip of split spoon.
6 - Decomposed Rock fragments encountered at tip of split spoon.
7 - Decomposed Rock fragments encountered at tip of split spoon.

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: B-3

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TEST BORING LOG

GZA GeoEnvironmental of New York
Engineers and Scientists

Westchester Joint Water Works
Water Treatment Plant
Westchester County, New York

EXPLORATION NO.: B-3
SHEET: 4 of 4
PROJECT NO: 41.0162892.00
REVIEWED BY: D. Patel

Logged By: A. Amador
Drilling Co.: Craig Test Boring Co., Inc.
Foreman: P. Mullins/S. Schultz
Date Start: 5/13/2021 **Finish:** 5/14/2021

Type of Rig: ATV
Rig Model: CME 750X
Drilling Method: Mud Rotary

Boring Location: See Plan
Stationing (ft.): **Offset (ft.):**
Ground Surface Elevation (ft.): 407
Final Boring Depth (ft.): 100.2

H. Datum: -
V. Datum: NAVD 88
Northing:
Easting:

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4/3.5

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

Date	Time	Water Depth	Stab. Time
Not	Measured		

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (per 6 in.)	SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	Stratum Depth (ft.)	Stratum Description	Stratum Elev. (ft.)
		S-22	90.0-92	3	0	100/3"	R	S-22: No Recovery.	7				
95		S-23	95.0-97	1	0	100/1"	R	S-23: No recovery.	8			DECOMPOSED ROCK	
100		S-24	100.0-102	2	0	100/2"	R	S-24: No Recovery. End of exploration at 100.2 feet.	9 10 11		100.2		306.8
105													
110													
115													
120													

REMARKS

8 - Decomposed Rock fragments encountered at tip of split spoon.
9 - Decomposed Rock fragments encountered at tip of split spoon.
10 - Photoionization Detector (PID) readings were obtained for all samples. Results PID = 0 ppm throughout.
11 - Borehole was backfilled with soil cuttings and bentonite upon completion.

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: B-3

GZA TEMPLATE TEST BORING - GZA 2016_01_26.GDT - 6/21/21 10:21 - J:\GINT PROJECT DATABASES\41.0162800\41.0162892.00.GPJ

TEST BORING LOG

GZA GeoEnvironmental of New York
Engineers and Scientists

Westchester Joint Water Works
Water Treatment Plant
Westchester County, New York

EXPLORATION NO.: B-3a
SHEET: 1 of 3
PROJECT NO: 41.0162892.00
REVIEWED BY: D. Patel

Logged By: A. Amador
Drilling Co.: Craig Test Boring Co., Inc.
Foreman: P. Mullins/S. Schultz
Date Start: 5/17/2021 **Finish:** 5/18/2021

Type of Rig: ATV
Rig Model: CME 750X
Drilling Method: Mud Rotary

Boring Location: See Plan
Stationing (ft.): **Offset (ft.):**
Ground Surface Elevation (ft.): 407
Final Boring Depth (ft.): 60.4

H. Datum: -
V. Datum: NAVD 88
Northing:
Easting:

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4/3.5

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

Date	Time	Water Depth	Stab. Time
5/26/21	7:30	5.0 ft	
5/27/21	7:30	5.1 ft	
6/1/21	8:00	5.2 ft	

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (per 6 in.)	Sample SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	Stratum Depth (ft.)	Stratum Description	Stratum Elev. (ft.)
		S-1	0.0-2	24	5	1 14 10 12	24	S-1: Top 1": TOPSOIL Bottom 4": Medium dense, brown, fine to medium SAND and SILT, trace roots, trace Gravel.			0.3	TOPSOIL	406.7
		S-2	2.0-4	24	5	9 17 20 22	37	S-2: Dense, brown, fine to medium SAND and SILT, little Gravel, trace roots.	1				
5		S-3	4.0-6	24	15	10 13 14 13	27	S-3: Medium dense, brown, fine to medium SAND, some Silt, little Gravel, trace mica.					
		S-4	6.0-8	24	17	9 10 12 14	22	S-4: Medium dense, brown, fine to medium SAND, some Silt, little Gravel, trace mica.					
		S-5	8.0-10	24	14	12 19 27 23	46	S-5: Very dense, brown, fine to medium SAND, some Silt, little Gravel.					
10		S-6	10.0-12	24	16	19 27 31 33	58	S-6: Very dense, brown, fine to medium SAND, some Silt, little Gravel, trace mica.				GLACIAL TILL	
15		S-7	15.0-17	24	12	18 18 19 22	37	S-7: Very dense, brown, fine to medium SAND, some Silt, little Gravel, trace mica.					
20		S-8	20.0-22	24	19	11 17 21 23	38	S-8: Dense, gray-brown, fine to medium SAND, some SILT, little Gravel, trace mica.			23.5		383.5
25		S-9	25.0-27	24	18	14 20 21 21	41	S-9: Dense, gray, fine to medium SAND and SILT, little Gravel, trace mica.				DECOMPOSED ROCK	
30													

REMARKS

1 - Gravel encountered at tip of split spoon at sample S-2.

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: B-3a

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TEST BORING LOG

GZA GeoEnvironmental of New York
Engineers and Scientists

Westchester Joint Water Works
Water Treatment Plant
Westchester County, New York

EXPLORATION NO.: B-3a
SHEET: 2 of 3
PROJECT NO: 41.0162892.00
REVIEWED BY: D. Patel

Logged By: A. Amador
Drilling Co.: Craig Test Boring Co., Inc.
Foreman: P. Mullins/S. Schultz
Date Start: 5/17/2021 **Finish:** 5/18/2021

Type of Rig: ATV
Rig Model: CME 750X
Drilling Method: Mud Rotary

Boring Location: See Plan
Stationing (ft.): **Offset (ft.):**
Ground Surface Elevation (ft.): 407
Final Boring Depth (ft.): 60.4

H. Datum: -
V. Datum: NAVD 88
Northing:
Easting:

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4/3.5

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

Date	Time	Water Depth	Stab. Time
5/26/21	7:30	5.0 ft	
5/27/21	7:30	5.1 ft	
6/1/21	8:00	5.2 ft	

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (per 6 in.)	Sample SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	Stratum Depth (ft.)	Stratum Description	Stratum Elev. (ft.)
		S-10	30.0-32	1	0	100/1"	R	S-10: No recovery.					
35		S-11	35.0-37	19	16	29 43 60 100/1"	>100	S-11: Very dense, gray, fine to medium SAND and SILT, little Gravel, trace mica.					
40		S-12	40.0-42	24	18	40 38 45 59	83	S-12: Very dense, gray, fine to medium SAND and SILT, little Gravel, trace mica.					
45		S-13	45.0-47	24	14	18 16 21 47	37	S-13: Dense, gray-brown, fine to coarse SAND and SILT, little Gravel, trace mica.				DECOMPOSED ROCK	
50		S-14	50.0-52	20	16	24 38 60 100/2"	98	S-14: Very dense, gray-brown, fine to coarse SAND and SILT, little Gravel, trace mica.					
55		S-15	55.0-57	17	12	43 62 100/5"	R	S-15: Hard, brown SILT, some fine Sand, trace mica.					
60													

REMARKS

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: B-3a

GZA TEMPLATE TEST BORING - GZA 2016_01_26.GDT - 6/21/21 10:21 - J:\GINT PROJECT DATABASES\41.0162800\41.0162892.00.GPJ

TEST BORING LOG

GZA GeoEnvironmental of New York
Engineers and Scientists

Westchester Joint Water Works
Water Treatment Plant
Westchester County, New York

EXPLORATION NO.: B-3a
SHEET: 3 of 3
PROJECT NO: 41.0162892.00
REVIEWED BY: D. Patel

Logged By: A. Amador
Drilling Co.: Craig Test Boring Co., Inc.
Foreman: P. Mullins/S. Schultz
Date Start: 5/17/2021 **Finish:** 5/18/2021

Type of Rig: ATV
Rig Model: CME 750X
Drilling Method: Mud Rotary

Boring Location: See Plan
Stationing (ft.): **Offset (ft.):**
Ground Surface Elevation (ft.): 407
Final Boring Depth (ft.): 60.4

H. Datum: -
V. Datum: NAVD 88
Northing:
Easting:

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4/3.5

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

Date	Time	Water Depth	Stab. Time
5/26/21	7:30	5.0 ft	
5/27/21	7:30	5.1 ft	
6/1/21	8:00	5.2 ft	

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (per 6 in.)	SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	Stratum Depth (ft.)	Stratum Description	Stratum Elev. (ft.)
		S-16	60.0-62	5	0	100/5"	R	S-16: No Recovery. End of exploration at 60.4 feet.	2 3 4		60.4		346.6
65													
70													
75													
80													
85													
90													

REMARKS

2 - Decomposed Rock fragments encountered at tip of split spoon.
3 - Photoionization Detector (PID) readings were obtained for all samples. Results PID = 0 ppm throughout.
4 - A 29 foot long PVC well was installed in borehole (See Well Installation Log). Borehole was backfilled with filter sand around PVC annulus area upon completion.

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: B-3a

GZA TEMPLATE TEST BORING - GZA 2016_01_26.GDT - 6/21/21 10:21 - J:\GINT PROJECT DATABASES\41.0162800\41.0162892.00.GPJ

TEST BORING LOG

GZA GeoEnvironmental of New York
Engineers and Scientists

Westchester Joint Water Works
Water Treatment Plant
Westchester County, New York

EXPLORATION NO.: B-4
SHEET: 1 of 3
PROJECT NO: 41.0162892.00
REVIEWED BY: D. Patel

Logged By: A. Amador
Drilling Co.: Craig Test Boring Co., Inc.
Foreman: P. Mullins/S. Schultz
Date Start: 5/17/2021 **Finish:** 5/17/2021

Type of Rig: ATV
Rig Model: CME 750X
Drilling Method: Mud Rotary

Boring Location: See Plan
Stationing (ft.): **Offset (ft.):**
Ground Surface Elevation (ft.): 406
Final Boring Depth (ft.): 60.2

H. Datum: -
V. Datum: NAVD 88
Northing:
Easting:

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4/3.5

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

Date	Time	Water Depth	Stab. Time
Not	Measured		

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (per 6 in.)	Sample SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	Stratum Depth (ft.)	Stratum Description	Stratum Elev. (ft.)
		S-1	0.0-2	24	17	1 1 1 1	2	S-1: Top 1": TOPSOIL Bottom 16": Very loose, brown, fine to medium SAND, some Silt, trace Gravel, trace mica.			0.3	TOPSOIL	405.7
		S-2	2.0-4	24	16	3 9 13 15	22	S-2: Medium dense, brown, fine to medium SAND, some Silt, little Gravel.					
5		S-3	4.0-6	24	12	4 5 5 4	10	S-3: Loose, brown, fine to medium SAND, some Silt, little Gravel, trace mica.				SILTY SAND	
		S-4	6.0-8	24	10	7 9 17 26	26	S-4: Medium dense, brown, fine to medium SAND, some Silt, little Gravel, trace mica.					
		S-5	8.0-10	24	17	10 13 18 22	31	S-5: Dense, brown, fine to medium SAND, some Silt, little Gravel, trace mica.			8		398.0
10		S-6	10.0-12	24	16	22 20 22 25	42	S-6: Dense, brown, fine to medium SAND, some Silt, little Gravel, trace mica.					
15		S-7	15.0-17	24	23	9 15 17 22	32	S-7: Dense, brown, fine to medium SAND, some Silt, little Gravel, trace mica.				GLACIAL TILL	
20		S-8	20.0-22	24	21	10 15 32 26	47	S-8: Dense, brown, fine to medium SAND, some Silt, little Gravel, trace mica.			23.5		382.5
25		S-9	25.0-27	24	14	32 5 33 50	38	S-9: Very dense, gray-brown, fine to medium SAND, some Silt, little Gravel, trace mica.				DECOMPOSED ROCK	
30													

REMARKS

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: B-4

GZA TEMPLATE TEST BORING - GZA 2016_01_26.GDT - 6/21/21 10:21 - J:\GINT PROJECT DATABASES\41.0162800\41.0162892.00.GPJ

TEST BORING LOG

GZA GeoEnvironmental of New York
Engineers and Scientists

Westchester Joint Water Works
Water Treatment Plant
Westchester County, New York

EXPLORATION NO.: B-4
SHEET: 2 of 3
PROJECT NO: 41.0162892.00
REVIEWED BY: D. Patel

Logged By: A. Amador
Drilling Co.: Craig Test Boring Co., Inc.
Foreman: P. Mullins/S. Schultz
Date Start: 5/17/2021 **Finish:** 5/17/2021

Type of Rig: ATV
Rig Model: CME 750X
Drilling Method: Mud Rotary

Boring Location: See Plan
Stationing (ft.): **Offset (ft.):**
Ground Surface Elevation (ft.): 406
Final Boring Depth (ft.): 60.2

H. Datum: -
V. Datum: NAVD 88
Northing:
Easting:

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4/3.5

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

Date	Time	Water Depth	Stab. Time
Not	Measured		

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (per 6 in.)	Sample SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	Stratum Depth (ft.)	Stratum Description	Stratum Elev. (ft.)
		S-10	30.0-32	1	1	100/1"	R	S-10: No Recovery.	1				
35		S-11	35.0-37	20	16	36 45 68 100/2"	>100	S-11: Very dense, gray-brown, fine to medium SAND, some Silt, little Gravel, trace mica.					
40		S-12	40.0-42	8	8	50 100/2"	R	S-12: Very dense, gray-brown, fine to medium SAND, some Silt, little Gravel, trace mica.					
45		S-13	45.0-47	24	15	23 58 76 100/2"	>100	S-13: Very dense, gray-brown, fine to medium SAND, some Silt, little Gravel, trace mica.				DECOMPOSED ROCK	
50		S-14	50.0-52	7	7	65 100/1"	R	S-14: Hard, gray-brown SILT, trace Sand, trace Gravel, trace mica.					
55		S-15	55.0-57	5	3	100/5"	R	S-15: Hard, gray-brown SILT, trace Sand, trace Gravel, trace mica.					
60													

REMARKS

1 - Hard drilling from approximately 29-31 feet in depth.

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: B-4

GZA TEMPLATE TEST BORING - GZA 2016_01_26.GDT - 6/21/21 10:21 - J:\GINT PROJECT DATABASES\41.0162800\41.0162892.00.GPJ

TEST BORING LOG

GZA GeoEnvironmental of New York
Engineers and Scientists

Westchester Joint Water Works
Water Treatment Plant
Westchester County, New York

EXPLORATION NO.: B-4
SHEET: 3 of 3
PROJECT NO: 41.0162892.00
REVIEWED BY: D. Patel

Logged By: A. Amador
Drilling Co.: Craig Test Boring Co., Inc.
Foreman: P. Mullins/S. Schultz
Date Start: 5/17/2021 **Finish:** 5/17/2021

Type of Rig: ATV
Rig Model: CME 750X
Drilling Method: Mud Rotary

Boring Location: See Plan
Stationing (ft.): **Offset (ft.):**
Ground Surface Elevation (ft.): 406
Final Boring Depth (ft.): 60.2

H. Datum: -
V. Datum: NAVD 88
Northing:
Easting:

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4/3.5

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)			
Date	**Time**	**Water Depth**	**Stab. Time**
Not	Measured		

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (per 6 in.)	SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	Stratum Depth (ft.)	Stratum Description	Stratum Elev. (ft.)
		S-16	60.0-62	2	0	100/2"	R	S-16: No Recovery. End of exploration at 60.2 feet.	2, 3, 4		60.2		345.8

65
70
75
80
85
90

REMARKS

2 - Decomposed Rock fragments encountered at tip of split spoon.
3 - Photoionization Detector (PID) readings were obtained for all samples. Results PID = 0 ppm throughout.
4 - Borehole was backfilled with soil cuttings and bentonite upon completion.

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: B-4

GZA TEMPLATE TEST BORING - GZA 2016_01_26.GDT - 6/21/21 10:21 - J:\GINT PROJECT DATABASES\41.0162800\41.0162892.00.GPJ

TEST BORING LOG

GZA GeoEnvironmental of New York
Engineers and Scientists

Westchester Joint Water Works
Water Treatment Plant
Westchester County, New York

EXPLORATION NO.: B-5
SHEET: 1 of 3
PROJECT NO: 41.0162892.00
REVIEWED BY: D. Patel

Logged By: A. Amador
Drilling Co.: Craig Test Boring Co., Inc.
Foreman: P. Mullins/S. Schultz
Date Start: 5/19/2021 **Finish:** 5/20/2021

Type of Rig: ATV
Rig Model: CME 750X
Drilling Method: Mud Rotary

Boring Location: See Plan
Stationing (ft.): **Offset (ft.):**
Ground Surface Elevation (ft.): 404
Final Boring Depth (ft.): 60.3

H. Datum: -
V. Datum: NAVD 88
Northing:
Easting:

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4/3.5

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

Date	Time	Water Depth	Stab. Time
Not	Measured		

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (per 6 in.)	Sample SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	Stratum Depth (ft.)	Stratum Description	Stratum Elev. (ft.)
		S-1	0.0-2	24	13	1 1 2 4	3	S-1: Top 1": TOPSOIL Bottom 12": Very loose, brown, fine to medium SAND, some Silt, little Gravel, trace roots.			0.3	TOPSOIL	403.7
		S-2	2.0-4	24	21	8 9 12 16	21	S-2: Medium dense, brown, fine to medium SAND, some Silt, trace Clay.			4	SILTY SAND	400.0
5		S-3	4.0-6	24	14	7 12 11 14	23	S-3: Medium dense, brown, fine to medium SAND, some Silt, little Gravel, trace mica.					
		S-4	6.0-8	24	13	18 13 11 11	24	S-4: Medium dense, brown, fine to medium SAND, some Silt, little Gravel, trace mica.					
		S-5	8.0-10	24	9	9 10 12 9	22	S-5: Medium dense, brown, fine to medium SAND, some Silt, little Gravel, trace mica.					
10		S-6	10.0-12	24	16	14 16 15 17	31	S-6: Dense, brown, medium tobine SAND, some Silt, little Gravel, trace mica.				GLACIAL TILL	
15		S-7	15.0-17	24	15	13 12 17 16	29	S-7: Medium dense, brown, fine to medium SAND, some Silt, little Gravel, trace mica.					
20		S-8	20.0-22	24	16	4 5 10 11	15	S-8: Medium dense, brown, fine to medium SAND, some Silt, little Gravel, trace mica.					
											23.5		380.5
25		S-9	25.0-27	13	7	19 30 100/1"	R	S-9: Very dense, gray-brown, fine to medium SAND and SILT, little Gravel, trace mica.				DECOMPOSED ROCK	
30													

REMARKS

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: B-5

GZA TEMPLATE TEST BORING - GZA 2016_01_26.GDT - 6/21/21 10:21 - J:\GINT PROJECT DATABASES\41.0162800\41.0162892.00.GPJ

TEST BORING LOG

GZA GeoEnvironmental of New York
Engineers and Scientists

Westchester Joint Water Works
Water Treatment Plant
Westchester County, New York

EXPLORATION NO.: B-5
SHEET: 2 of 3
PROJECT NO: 41.0162892.00
REVIEWED BY: D. Patel

Logged By: A. Amador
Drilling Co.: Craig Test Boring Co., Inc.
Foreman: P. Mullins/S. Schultz
Date Start: 5/19/2021 **Finish:** 5/20/2021

Type of Rig: ATV
Rig Model: CME 750X
Drilling Method: Mud Rotary

Boring Location: See Plan
Stationing (ft.): **Offset (ft.):**
Ground Surface Elevation (ft.): 404
Final Boring Depth (ft.): 60.3

H. Datum: -
V. Datum: NAVD 88
Northing:
Easting:

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4/3.5

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

Date	Time	Water Depth	Stab. Time
Not	Measured		

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Pen. (in)	Rec. (in)	Blows (per 6 in.)	SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	Stratum Depth (ft.)	Stratum Description	Stratum Elev. (ft.)
		S-10	30.0-32	24	17	27 36 47 59	83	S-10: Very dense, gray-brown, fine to medium SAND and SILT, little Gravel, trace mica.					
35		S-11	35.0-37	24	19	31 46 37 29	83	S-11: Very dense, gray-brown, fine to medium SAND and SILT, little Gravel, trace mica.					
40		S-12	40.0-42	24	15	31 30 31 28	61	S-12: Very dense, gray, fine to medium SAND, some Silt, little Gravel, trace mica.					
45		S-13	45.0-47	24	16	21 17 15 19	32	S-13: Dense, gray-brown, fine to medium SAND, some Silt, trace mica.				DECOMPOSED ROCK	
50		S-14	50.0-52	24	18	24 34 40 62	74	S-14: Hard, gray-brown SILT, some Sand, little Gravel, trace mica.					
55		S-15	55.0-57	5	4	100/5"	R	S-15: Hard, gray-brown SILT, some Sand, trace mica.					
60													

REMARKS

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: B-5

GZA TEMPLATE TEST BORING - GZA 2016_01_26.GDT - 6/21/21 10:21 - J:\GINT PROJECT DATABASES\41.0162800\41.0162892.00.GPJ

TEST BORING LOG

GZA GeoEnvironmental of New York
Engineers and Scientists

Westchester Joint Water Works
Water Treatment Plant
Westchester County, New York

EXPLORATION NO.: B-5
SHEET: 3 of 3
PROJECT NO: 41.0162892.00
REVIEWED BY: D. Patel

Logged By: A. Amador
Drilling Co.: Craig Test Boring Co., Inc.
Foreman: P. Mullins/S. Schultz
Date Start: 5/19/2021 **Finish:** 5/20/2021

Type of Rig: ATV
Rig Model: CME 750X
Drilling Method: Mud Rotary

Boring Location: See Plan
Stationing (ft.): **Offset (ft.):**
Ground Surface Elevation (ft.): 404
Final Boring Depth (ft.): 60.3

H. Datum: -
V. Datum: NAVD 88
Northing:
Easting:

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4/3.5

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

Date	Time	Water Depth	Stab. Time
Not	Measured		

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (per 6 in.)	SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	Stratum Depth (ft.)	Stratum Description	Stratum Elev. (ft.)
		S-16	60.0-62	3	0	100/3"	R	S-16: No Recovery. End of exploration at 60.3 feet.	1 2 3		60.3		343.7
65													
70													
75													
80													
85													
90													

REMARKS

1 - Decomposed Rock fragments encountered at tip of split spoon.
2 - Photoionization Detector (PID) readings were obtained for all samples. Results PID = 0 ppm throughout.
3 - Borehole was backfilled with soil cuttings and bentonite upon completion.

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: B-5

GZA TEMPLATE TEST BORING - GZA 2016_01_26.GDT - 6/21/21 10:21 - J:\GINT PROJECT DATABASES\41.0162800\41.0162892.00.GPJ

TEST BORING LOG

GZA GeoEnvironmental of New York
Engineers and Scientists

Westchester Joint Water Works
Water Treatment Plant
Westchester County, New York

EXPLORATION NO.: B-6
SHEET: 1 of 3
PROJECT NO: 41.0162892.00
REVIEWED BY: D. Patel

Logged By: A. Amador
Drilling Co.: Craig Test Boring Co., Inc.
Foreman: P. Mullins/S. Schultz
Date Start: 5/19/2021 **Finish:** 5/19/2021

Type of Rig: ATV
Rig Model: CME 750X
Drilling Method: Mud Rotary

Boring Location: See Plan
Stationing (ft.): **Offset (ft.):**
Ground Surface Elevation (ft.): 403
Final Boring Depth (ft.): 60.3

H. Datum: -
V. Datum: NAVD 88
Northing:
Easting:

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4/3.5

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

Date	Time	Water Depth	Stab. Time
Not	Measured		

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (per 6 in.)	Sample SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	Stratum Depth (ft.)	Stratum Description	Stratum Elev. (ft.)
		S-1	0.0-2	24	15	1 1 1 7	2	S-1: Top 1": TOPSOIL Bottom 14": Very loose, gray-brown, fine to medium SAND, some Silt, little Gravel, trace roots, trace clay.			0.3	TOPSOIL	402.7
		S-2	2.0-4	24	22	12 15 16 16	31	S-2: Dense, brown, fine to medium SAND, some Silt, little Gravel, trace mica.				SILTY SAND	
5		S-3	4.0-6	24	14	9 12 15 17	27	S-3: Medium dense, brown, fine to medium SAND, some Silt, little Gravel, trace mica.			4		399.0
		S-4	6.0-8	24	17	10 11 11 12	22	S-4: Medium dense, brown, fine to medium SAND and SILT, little Gravel, trace mica.					
		S-5	8.0-10	24	16	3 6 6 6	12	S-5: Medium dense, brown, fine to medium SAND and SILT, little Gravel, trace mica.					
10		S-6	10.0-12	24	11	20 17 17 20	34	S-6: Dense, brown, fine to medium SAND, some Silt, trace mica, trace Gravel.				GLACIAL TILL	
15		S-7	15.0-17	24	16	14 15 35 25	50	S-7: Very dense, brown, fine to medium SAND, some Silt, little Gravel, trace mica.					
20		S-8	20.0-22	24	10	12 8 9 6	17	S-8: Medium dense, brown, fine to medium SAND, some Silt, little Gravel, trace mica.			23.5		379.5
25		S-9	25.0-27	24	14	9 8 17 21	25	S-9: Medium dense, gray-brown, fine to medium SAND and SILT, little Gravel, trace mica.				DECOMPOSED ROCK	
30													

REMARKS

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: B-6

GZA TEMPLATE TEST BORING - GZA 2016_01_26.GDT - 6/21/21 10:21 - J:\GINT PROJECT DATABASES\41.0162800\41.0162892.00.GPJ

TEST BORING LOG

GZA GeoEnvironmental of New York
Engineers and Scientists

Westchester Joint Water Works
Water Treatment Plant
Westchester County, New York

EXPLORATION NO.: B-6
SHEET: 2 of 3
PROJECT NO: 41.0162892.00
REVIEWED BY: D. Patel

Logged By: A. Amador
Drilling Co.: Craig Test Boring Co., Inc.
Foreman: P. Mullins/S. Schultz
Date Start: 5/19/2021 **Finish:** 5/19/2021

Type of Rig: ATV
Rig Model: CME 750X
Drilling Method: Mud Rotary

Boring Location: See Plan
Stationing (ft.): **Offset (ft.):**
Ground Surface Elevation (ft.): 403
Final Boring Depth (ft.): 60.3

H. Datum: -
V. Datum: NAVD 88
Northing:
Easting:

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4/3.5

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

Date	Time	Water Depth	Stab. Time
Not	Measured		

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (per 6 in.)	Sample SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	Stratum Depth (ft.)	Stratum Description	Stratum Elev. (ft.)
		S-10	30.0-32	24	15	11 12 14 15	26	S-10: Medium dense, gray, fine to medium SAND, some SILT, little Gravel, trace mica.					
35		S-11	35.0-37	24	14	22 27 26 25	53	S-11: Very dense, gray, fine to medium SAND and SILT, little Gravel, trace mica.					
40		S-12	40.0-42	24	15	18 41 48 39	89	S-12: Very dense, gray, fine to medium SAND and SILT, little Gravel, trace mica.					
45		S-13	45.0-47	24	15	9 16 33 42	49	S-13: Dense, gray-brown, fine to medium SAND and SILT, little Gravel, trace mica.				DECOMPOSED ROCK	
50		S-14	50.0-52	24	13	40 60 80 100/2"	>100	S-14: Hard, gray-brown SILT, some Sand, trace mica.					
55		S-15	55.0-57	10	8	29 100/4"	R	S-15: Hard, gray-brown SILT, some Sand, trace mica.					
60													

REMARKS

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: B-6

GZA TEMPLATE TEST BORING - GZA 2016_01_26.GDT - 6/21/21 10:21 - J:\GINT PROJECT DATABASES\41.0162800\41.0162892.00.GPJ

TEST BORING LOG

GZA GeoEnvironmental of New York
Engineers and Scientists

Westchester Joint Water Works
Water Treatment Plant
Westchester County, New York

EXPLORATION NO.: B-6
SHEET: 3 of 3
PROJECT NO: 41.0162892.00
REVIEWED BY: D. Patel

Logged By: A. Amador
Drilling Co.: Craig Test Boring Co., Inc.
Foreman: P. Mullins/S. Schultz
Date Start: 5/19/2021 **Finish:** 5/19/2021

Type of Rig: ATV
Rig Model: CME 750X
Drilling Method: Mud Rotary

Boring Location: See Plan
Stationing (ft.): **Offset (ft.):**
Ground Surface Elevation (ft.): 403
Final Boring Depth (ft.): 60.3

H. Datum: -
V. Datum: NAVD 88
Northing:
Easting:

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4/3.5

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

Date	Time	Water Depth	Stab. Time
Not	Measured		

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (per 6 in.)	SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	Stratum Depth (ft.)	Stratum Description	Stratum Elev. (ft.)
		S-16	60.0-62	3	0	100/3"	R	S-16: No Recovery. End of exploration at 60.3 feet.	1 2 3		60.3		342.7

65
70
75
80
85
90

REMARKS

1 - Decomposed Rock fragments encountered at tip of split spoon.
2 - Photoionization Detector (PID) readings were obtained for all samples. Results PID = 0 ppm throughout.
3 - Borehole was backfilled with soil cuttings and bentonite upon completion.

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: B-6

GZA TEMPLATE TEST BORING - GZA 2016_01_26.GDT - 6/21/21 10:21 - J:\GINT PROJECT DATABASES\41.0162800\41.0162892.00.GPJ

TEST BORING LOG

GZA GeoEnvironmental of New York
Engineers and Scientists

Westchester Joint Water Works
Water Treatment Plant
Westchester County, New York

EXPLORATION NO.: B-7
SHEET: 1 of 3
PROJECT NO: 41.0162892.00
REVIEWED BY: D. Patel

Logged By: A. Amador
Drilling Co.: Craig Test Boring Co., Inc.
Foreman: P. Mullins/S. Schultz
Date Start: 5/18/2021 **Finish:** 5/18/2021

Type of Rig: ATV
Rig Model: CME 750X
Drilling Method: Mud Rotary

Boring Location: See Plan
Stationing (ft.): **Offset (ft.):**
Ground Surface Elevation (ft.): 405
Final Boring Depth (ft.): 60.3

H. Datum: -
V. Datum: NAVD 88
Northing:
Easting:

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4/3.5

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

Date	Time	Water Depth	Stab. Time
Not	Measured		

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (per 6 in.)	Sample SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	Stratum Depth (ft.)	Stratum Description	Stratum Elev. (ft.)
		S-1	0.0-2	24	16	1 1 5 9	6	S-1: Top 1" TOPSOIL Bottom 15": Loose, brown, fine to medium SAND and SILT, little Gravel, trace roots.			0.3	TOPSOIL	404.7
		S-2	2.0-4	24	17	6 6 8 11	14	S-2: Medium dense, brown, fine to medium SAND and SILT, little Gravel, trace Clay.			4	SILTY SAND	401.0
5		S-3	4.0-6	8	5	33 100/2"	R	S-3: Very dense, brown, fine to medium SAND and SILT, little Gravel, trace Clay.	1				
		S-4	6.0-8	24	12	9 22 26 27	48	S-4: Dense, brown, fine to medium SAND and SILT, little Gravel, trace mica.					
		S-5	8.0-10	24	14	9 12 12 18	24	S-5: Medium dense, brown, fine to medium SAND and SILT, little Gravel, trace mica.					
10		S-6	10.0-12	20	14	16 20 21 100/2"	41	S-6: Dense, brown, fine to medium SAND and SILT, little Gravel, trace mica.					
15		S-7	15.0-17	24	19	16 18 22 35	40	S-7: Dense, brown, fine to medium SAND and SILT, little Gravel, trace mica.				GLACIAL TILL	
20		S-8	20.0-22	24	20	13 16 19 29	35	S-8: Dense, gray-brown, fine to medium SAND and SILT, little Gravel, trace mica.					
25		S-9	25.0-27	13	10	16 18 100/1"	R	S-9: Very dense, gray-brown, fine to medium SAND, little SILT, trace mica.					
30													

REMARKS

1 - Hard drilling from approximately 5-6 feet in depth.

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: B-7

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TEST BORING LOG

GZA GeoEnvironmental of New York
Engineers and Scientists

Westchester Joint Water Works
Water Treatment Plant
Westchester County, New York

EXPLORATION NO.: B-7
SHEET: 2 of 3
PROJECT NO: 41.0162892.00
REVIEWED BY: D. Patel

Logged By: A. Amador
Drilling Co.: Craig Test Boring Co., Inc.
Foreman: P. Mullins/S. Schultz
Date Start: 5/18/2021 **Finish:** 5/18/2021

Type of Rig: ATV
Rig Model: CME 750X
Drilling Method: Mud Rotary

Boring Location: See Plan
Stationing (ft.): **Offset (ft.):**
Ground Surface Elevation (ft.): 405
Final Boring Depth (ft.): 60.3

H. Datum: -
V. Datum: NAVD 88
Northing:
Easting:

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4/3.5

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

Date	Time	Water Depth	Stab. Time
Not	Measured		

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (per 6 in.)	Sample SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	Stratum Depth (ft.)	Stratum Description	Stratum Elev. (ft.)
		S-10	30.0-32	24	19	8 8 11 23	19	S-10: Medium dense, gray-brown, fine to medium SAND, little Silt, trace mica.				GLACIAL TILL	
											33.5		371.5
35		S-11	35.0-37	13	12	40 77 100/1"	R	S-11: Very dense, gray, fine to medium SAND, some Gravel, trace mica.					
40		S-12	40.0-42	24	19	42 61 66 67	>100	S-12: Very dense, gray, fine to medium SAND, some Gravel, trace mica.					
45		S-13	45.0-47	24	17	23 40 44 35	84	S-13: Very dense, gray-brown, fine to medium SAND and SILT, little Gravel, trace mica.				DECOMPOSED ROCK	
50		S-14	50.0-52	3	0	100/3"	R	S-14: No Recovery.	2				
55		S-15	55.0-57	4	0	100/4"	R	S-15: No Recovery.	3				
60													

REMARKS

2 - Decomposed Rock fragments encountered at tip of split spoon.
3 - Decomposed Rock fragments encountered at tip of split spoon.

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: B-7

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TEST BORING LOG

GZA GeoEnvironmental of New York
Engineers and Scientists

Westchester Joint Water Works
Water Treatment Plant
Westchester County, New York

EXPLORATION NO.: B-7
SHEET: 3 of 3
PROJECT NO: 41.0162892.00
REVIEWED BY: D. Patel

Logged By: A. Amador
Drilling Co.: Craig Test Boring Co., Inc.
Foreman: P. Mullins/S. Schultz
Date Start: 5/18/2021 **Finish:** 5/18/2021

Type of Rig: ATV
Rig Model: CME 750X
Drilling Method: Mud Rotary

Boring Location: See Plan
Stationing (ft.): **Offset (ft.):**
Ground Surface Elevation (ft.): 405
Final Boring Depth (ft.): 60.3

H. Datum: -
V. Datum: NAVD 88
Northing:
Easting:

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4/3.5

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

Date	Time	Water Depth	Stab. Time
Not	Measured		

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (per 6 in.)	SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	Stratum Depth (ft.)	Stratum Description	Stratum Elev. (ft.)
		S-16	60.0-62	3	0	100/3"	R	S-16: No Recovery. End of exploration at 60.3 feet.	4 5 6		60.3		344.7
65													
70													
75													
80													
85													
90													

REMARKS

4 - Decomposed Rock fragments encountered at tip of split spoon.
5 - Photoionization Detector (PID) readings were obtained for all samples. Results PID = 0 ppm throughout.
6 - Borehole was backfilled with soil cuttings and bentonite upon completion.

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: B-7

GZA TEMPLATE TEST BORING - GZA 2016_01_26.GDT - 6/21/21 10:21 - J:\GINT PROJECT DATABASES\41.0162800\41.0162892.00.GPJ

TEST BORING LOG

GZA GeoEnvironmental of New York
Engineers and Scientists

Westchester Joint Water Works
Water Treatment Plant
Westchester County, New York

EXPLORATION NO.: B-8
SHEET: 1 of 3
PROJECT NO: 41.0162892.00
REVIEWED BY: D. Patel

Logged By: A. Amador
Drilling Co.: Craig Test Boring Co., Inc.
Foreman: P. Mullins/S. Schultz
Date Start: 5/20/2021 **Finish:** 5/20/2021

Type of Rig: ATV
Rig Model: CME 750X
Drilling Method: Mud Rotary

Boring Location: See Plan
Stationing (ft.): **Offset (ft.):**
Ground Surface Elevation (ft.): 402
Final Boring Depth (ft.): 60.2

H. Datum: -
V. Datum: NAVD 88
Northing:
Easting:

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4/3.5

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

Date	Time	Water Depth	Stab. Time
Not	Measured		

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (per 6 in.)	Sample SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	Stratum Depth (ft.)	Stratum Description	Stratum Elev. (ft.)
		S-1	0.0-2	24	11	1 1 1 1	2	S-1: Top 1": TOPSOIL Bottom10": Very loose, dark brown, fine to medium SAND, some Silt, little Gravel, trace roots.			0.3	TOPSOIL	401.7
		S-2	2.0-4	24	14	2 4 7 5	11	S-2: Medium dense, brown, fine to medium SAND and SILT, little Gravel, trace mica.				SILTY SAND	
		S-3	4.0-6	24	18	5 15 19 15	34	S-3: Top 6": Medium stiff, gray SILT, little Clay, trace Sand, trace Gravel. Bottom 12" Dense, brown, fine to medium SAND and SILT, little Gravel, trace mica.			4		398.0
5		S-4	6.0-8	24	11	9 14 13 15	27	S-4: Medium dense, brown, fine to medium SAND, some Silt, little Gravel, trace mica.					
		S-5	8.0-10	24	13	8 9 9 11	18	S-5: Medium dense, brown, fine to medium SAND, some Silt, little Gravel, trace mica.					
10		S-6	10.0-12	24	14	10 12 13 12	25	S-6: Medium dense, brown, fine to medium SAND, some Silt, little Gravel, trace mica.				GLACIAL TILL	
15		S-7	15.0-17	24	13	3 4 15 16	19	S-7: Medium dense, brown, fine to medium SAND, some Silt, little Gravel, trace mica.					
20		S-8	20.0-22	24	14	7 11 13 18	24	S-8: Medium dense, gray-brown, fine to medium SAND, some Silt, little Gravel, trace mica.			23.5		378.5
25		S-9	25.0-27	24	13	11 46 52 37	98	S-9: Hard, gray-brown SILT, some SAND, little Gravel, trace mica.				DECOMPOSED ROCK	
30													

REMARKS

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: B-8

GZA TEMPLATE TEST BORING - GZA 2016_01_26.GDT - 6/21/21 10:21 - J:\GINT PROJECT DATABASES\41.0162800\41.0162892.00.GPJ

TEST BORING LOG

GZA GeoEnvironmental of New York
Engineers and Scientists

Westchester Joint Water Works
Water Treatment Plant
Westchester County, New York

EXPLORATION NO.: B-8
SHEET: 2 of 3
PROJECT NO: 41.0162892.00
REVIEWED BY: D. Patel

Logged By: A. Amador
Drilling Co.: Craig Test Boring Co., Inc.
Foreman: P. Mullins/S. Schultz
Date Start: 5/20/2021 **Finish:** 5/20/2021

Type of Rig: ATV
Rig Model: CME 750X
Drilling Method: Mud Rotary

Boring Location: See Plan
Stationing (ft.): **Offset (ft.):**
Ground Surface Elevation (ft.): 402
Final Boring Depth (ft.): 60.2

H. Datum: -
V. Datum: NAVD 88
Northing:
Easting:

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4/3.5

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

Date	Time	Water Depth	Stab. Time
Not	Measured		

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (per 6 in.)	Sample SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	Stratum Depth (ft.)	Stratum Description	Stratum Elev. (ft.)
		S-10	30.0-32	24	14	7 15 26 30	41	S-10: Dense, gray-brown, fine to coarse SAND, some Silt, trace mica.					
35		S-11	35.0-37	24	10	6 19 24 34	43	S-11: Dense, gray-brown, fine to medium SAND and SILT, little Gravel, trace mica.					
40		S-12	40.0-42	24	10	11 27 51 62	78	S-12: Very dense, gray-brown, fine to coarse SAND and SILT, little Gravel, trace mica.					
45		S-13	45.0-47	24	12	8 7 7 15	14	S-13: Medium dense, gray-brown, fine to medium SAND, some Silt, little Gravel, trace mica.				DECOMPOSED ROCK	
50		S-14	50.0-52	24	17	25 37 60 62	97	S-14: Hard, gray SILT, little Gravel, trace Sand, trace mica.					
55		S-15	55.0-57	13	11	37 60 100/1"	R	S-15: Hard, gray SILT, little Gravel, little Sand, trace mica.					
60													

REMARKS

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: B-8

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TEST BORING LOG

GZA GeoEnvironmental of New York
Engineers and Scientists

Westchester Joint Water Works
Water Treatment Plant
Westchester County, New York

EXPLORATION NO.: B-8
SHEET: 3 of 3
PROJECT NO: 41.0162892.00
REVIEWED BY: D. Patel

Logged By: A. Amador
Drilling Co.: Craig Test Boring Co., Inc.
Foreman: P. Mullins/S. Schultz
Date Start: 5/20/2021 **Finish:** 5/20/2021

Type of Rig: ATV
Rig Model: CME 750X
Drilling Method: Mud Rotary

Boring Location: See Plan
Stationing (ft.): **Offset (ft.):**
Ground Surface Elevation (ft.): 402
Final Boring Depth (ft.): 60.2

H. Datum: -
V. Datum: NAVD 88
Northing:
Easting:

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4/3.5

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)			
Date	**Time**	**Water Depth**	**Stab. Time**
Not	Measured		

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (per 6 in.)	SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	Stratum Depth (ft.)	Stratum Description	Stratum Elev. (ft.)
		S-16	60.0-62	2	0	100/2"	R	S-16: No Recovery. End of exploration at 60.2 feet.	1 2 3		60.2		341.8

65
70
75
80
85
90

REMARKS

1 - Decomposed Rock fragments encountered at tip of split spoon.
2 - Photoionization Detector (PID) readings were obtained for all samples. Results PID = 0 ppm throughout.
3 - Borehole was backfilled with soil cuttings and bentonite upon completion.

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: B-8

GZA TEMPLATE TEST BORING - GZA 2016_01_26.GDT - 6/21/21 10:21 - J:\GINT PROJECT DATABASES\41.0162800\41.0162892.00.GPJ

TEST BORING LOG

GZA GeoEnvironmental of New York
Engineers and Scientists

Westchester Joint Water Works
Water Treatment Plant
Westchester County, New York

EXPLORATION NO.: B-9
SHEET: 1 of 3
PROJECT NO: 41.0162892.00
REVIEWED BY: D. Patel

Logged By: A. Amador
Drilling Co.: Craig Test Boring Co., Inc.
Foreman: P. Mullins/S. Schultz
Date Start: 5/20/2021 **Finish:** 5/20/2021

Type of Rig: ATV
Rig Model: CME 750X
Drilling Method: Mud Rotary

Boring Location: See Plan
Stationing (ft.): **Offset (ft.):**
Ground Surface Elevation (ft.): 402
Final Boring Depth (ft.): 60.3

H. Datum: -
V. Datum: NAVD 88
Northing:
Easting:

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4/3.5

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

Date	Time	Water Depth	Stab. Time
Not	Measured		

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (per 6 in.)	Sample SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	Stratum Depth (ft.)	Stratum Description	Stratum Elev. (ft.)
		S-1	0.0-2	24	10	1 2 10 10	12	S-1: Top 1": TOPSOIL Bottom 9": Medium dense, brown, fine to medium SAND and SILT, little Gravel, trace roots.			0.3	TOPSOIL	401.7
		S-2	2.0-4	24	19	11 9 11 14	20	S-2: Medium dense, brown, fine to medium SAND and SILT, little Gravel, trace mica.			2	SILTY SAND	400.0
5		S-3	4.0-6	24	15	8 9 14 21	23	S-3: Medium dense, brown, fine to medium SAND and SILT, little Gravel, trace mica.					
		S-4	6.0-8	24	11	18 17 21 24	38	S-4: Dense, brown, fine to medium SAND and SILT, little Gravel, trace mica.					
		S-5	8.0-10	24	17	6 8 11 10	19	S-5: Medium dense, brown, fine to medium SAND and SILT, little Gravel, trace mica.					
10		S-6	10.0-12	24	14	8 11 8 9	19	S-6: Medium dense, brown, fine to medium SAND and SILT, little Gravel, trace mica.				GLACIAL TILL	
15		S-7	15.0-17	24	17	8 15 20 15	35	S-7: Dense, brown, fine to medium SAND, some Silt, little Gravel, trace mica.					
20		S-8	20.0-22	24	17	12 20 21 27	41	S-8: Dense, brown, fine to medium SAND, some Silt, little Gravel, trace mica.			23.5		378.5
25		S-9	25.0-27	24	18	28 30 31 43	61	S-9: Very dense, gray, fine to medium SAND and SILT, little Gravel, trace mica.				DECOMPOSED ROCK	
30													

REMARKS

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: B-9

GZA TEMPLATE TEST BORING - GZA 2016_01_26.GDT - 6/21/21 10:21 - J:\GINT PROJECT DATABASES\41.0162800\41.0162892.00.GPJ

TEST BORING LOG

GZA GeoEnvironmental of New York
Engineers and Scientists

Westchester Joint Water Works
Water Treatment Plant
Westchester County, New York

EXPLORATION NO.: B-9
SHEET: 2 of 3
PROJECT NO: 41.0162892.00
REVIEWED BY: D. Patel

Logged By: A. Amador
Drilling Co.: Craig Test Boring Co., Inc.
Foreman: P. Mullins/S. Schultz
Date Start: 5/20/2021 **Finish:** 5/20/2021

Type of Rig: ATV
Rig Model: CME 750X
Drilling Method: Mud Rotary

Boring Location: See Plan
Stationing (ft.): **Offset (ft.):**
Ground Surface Elevation (ft.): 402
Final Boring Depth (ft.): 60.3

H. Datum: -
V. Datum: NAVD 88
Northing:
Easting:

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4/3.5

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)			
Date	**Time**	**Water Depth**	**Stab. Time**
Not	Measured		

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (per 6 in.)	Sample SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	Stratum Depth (ft.)	Stratum Description	Stratum Elev. (ft.)
		S-10	30.0-32	23	18	29 38 56 100/5"	94	S-10: Very dense, gray, fine to medium SAND and SILT, little Gravel, trace mica.					
35		S-11	35.0-37	14	15	21 62 100/2"	R	S-11: Very dense, gray, fine to medium SAND and SILT, little Gravel, trace mica.					
40		S-12	40.0-42	24	15	41 39 39 46	78	S-12: Very dense, gray, fine to medium SAND and SILT, little Gravel, trace mica.					
45		S-13	45.0-47	17	11	33 57 100/5"	R	S-13: Hard, gray SILT, little Gravel, little Sand, trace Gravel, trace mica.				DECOMPOSED ROCK	
50		S-14	50.0-52	3	0	100/3"	R	S-14: No Recovery.	1				
55		S-15	55.0-57	2	0	100/2"	R	S-15: No Recovery.	2				
60													

REMARKS

1 - Decomposed Rock fragments encountered at tip of split spoon.
2 - Decomposed Rock fragments encountered at tip of split spoon.

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: B-9

GZA TEMPLATE TEST BORING - GZA 2016_01_26.GDT - 6/21/21 10:21 - J:\GINT PROJECT DATABASES\41.0162800\41.0162892.00.GPJ

TEST BORING LOG

GZA GeoEnvironmental of New York
Engineers and Scientists

Westchester Joint Water Works
Water Treatment Plant
Westchester County, New York

EXPLORATION NO.: B-9
SHEET: 3 of 3
PROJECT NO: 41.0162892.00
REVIEWED BY: D. Patel

Logged By: A. Amador
Drilling Co.: Craig Test Boring Co., Inc.
Foreman: P. Mullins/S. Schultz
Date Start: 5/20/2021 **Finish:** 5/20/2021

Type of Rig: ATV
Rig Model: CME 750X
Drilling Method: Mud Rotary

Boring Location: See Plan
Stationing (ft.): **Offset (ft.):**
Ground Surface Elevation (ft.): 402
Final Boring Depth (ft.): 60.3

H. Datum: -
V. Datum: NAVD 88
Northing:
Easting:

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4/3.5

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)			
Date	**Time**	**Water Depth**	**Stab. Time**
Not	Measured		

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (per 6 in.)	SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	Stratum Depth (ft.)	Stratum Description	Stratum Elev. (ft.)
		S-16	60.0-62	3	0	100/3"	R	S-16: No Recovery. End of exploration at 60.3 feet.	3 4 5		60.3		341.7

65
70
75
80
85
90

REMARKS

3 - Decomposed Rock fragments encountered at tip of split spoon.
4 - Photoionization Detector (PID) readings were obtained for all samples. Results PID = 0 ppm throughout.
5 - Borehole was backfilled with soil cuttings and bentonite upon completion.

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: B-9

GZA TEMPLATE TEST BORING - GZA 2016_01_26.GDT - 6/21/21 10:21 - J:\GINT PROJECT DATABASES\41.0162800\41.0162892.00.GPJ

TEST BORING LOG

GZA GeoEnvironmental of New York
Engineers and Scientists

Westchester Joint Water Works
Water Treatment Plant
Westchester County, New York

EXPLORATION NO.: B-11
SHEET: 1 of 3
PROJECT NO: 41.0162892.00
REVIEWED BY: D. Patel

Logged By: A. Amador
Drilling Co.: Craig Test Boring Co., Inc.
Foreman: P. Mullins/S. Schultz
Date Start: 5/21/2021 **Finish:** 5/21/2021

Type of Rig: ATV
Rig Model: CME 750X
Drilling Method: Mud Rotary

Boring Location: See Plan
Stationing (ft.): **Offset (ft.):**
Ground Surface Elevation (ft.): 403
Final Boring Depth (ft.): 60.4

H. Datum: -
V. Datum: NAVD 88
Northing:
Easting:

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4/3.5

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

Date	Time	Water Depth	Stab. Time
Not	Measured		

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (per 6 in.)	Sample SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	Stratum Depth (ft.)	Stratum Description	Stratum Elev. (ft.)
		S-1	0.0-2	24	10	2 3 3 4	6	S-1: Top 1": TOPSOIL Bottom 9": Loose, brown, fine to medium SAND and SILT, little Gravel, trace roots.			0.3	TOPSOIL	402.7
		S-2	2.0-4	24	16	4 7 10 11	17	S-2: Medium dense, brown, fine to medium SAND and SILT, little Gravel, trace Clay.			4	SILTY SAND	399.0
5		S-3	4.0-6	24	15	9 12 16 31	28	S-3: Medium dense, brown, fine to medium SAND and SILT, little Gravel, trace mica.					
		S-4	6.0-8	24	15	29 26 22 21	48	S-4: Dense, brown, fine to medium SAND and SILT, little Gravel, trace mica.					
		S-5	8.0-10	24	17	3 11 16 42	27	S-5: Medium dense, brown, fine to medium SAND and SILT, little Gravel, trace mica.					
10		S-6	10.0-12	24	16	31 30 18 26	48	S-6: Dense, brown, fine to medium SAND and SILT, little Gravel, trace mica.					
15		S-7	15.0-17	24	13	14 14 13 19	27	S-7: Medium dense, brown, fine to medium SAND and SILT, little Gravel, trace mica.				GLACIAL TILL	
20		S-8	20.0-22	24	15	11 17 22 20	39	S-8: Dense, dark brown, fine to medium SAND, some Silt, trace Gravel, trace mica.					
25		S-9	25.0-27	24	17	12 17 29 25	46	S-9: Dense, brown, fine to medium SAND and SILT, little Gravel, trace mica.					
30													

REMARKS

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: B-11

GZA TEMPLATE TEST BORING - GZA 2016_01_26.GDT - 6/21/21 10:20 - J:\GINT PROJECT DATABASES\41.0162800\41.0162892.00.GPJ

TEST BORING LOG

GZA GeoEnvironmental of New York
Engineers and Scientists

Westchester Joint Water Works
Water Treatment Plant
Westchester County, New York

EXPLORATION NO.: B-11
SHEET: 2 of 3
PROJECT NO: 41.0162892.00
REVIEWED BY: D. Patel

Logged By: A. Amador
Drilling Co.: Craig Test Boring Co., Inc.
Foreman: P. Mullins/S. Schultz
Date Start: 5/21/2021 **Finish:** 5/21/2021

Type of Rig: ATV
Rig Model: CME 750X
Drilling Method: Mud Rotary

Boring Location: See Plan
Stationing (ft.): **Offset (ft.):**
Ground Surface Elevation (ft.): 403
Final Boring Depth (ft.): 60.4

H. Datum: -
V. Datum: NAVD 88
Northing:
Easting:

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4/3.5

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

Date	Time	Water Depth	Stab. Time
Not	Measured		

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (per 6 in.)	Sample SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	Stratum Depth (ft.)	Stratum Description	Stratum Elev. (ft.)
		S-10	30.0-32	24	16	14 17 26 27	43	S-10: Dense, brown, fine to medium SAND and SILT, little Gravel, trace mica.					
35		S-11	35.0-37	14	14	24 26 26 21	52	S-11: Very dense, gray-brown, fine to medium SAND and SILT, little Gravel, trace Clay, trace mica.				GLACIAL TILL	
											38.5		364.5
40		S-12	40.0-42	24	18	29 38 47 72	85	S-12: Very dense, gray-brown, fine to medium SAND and SILT, little Gravel, trace mica.					
45		S-13	45.0-47	17	15	15 27 65 100/1"	92	S-13: Hard, gray-brown SILT, little Sand, trace mica.					
50		S-14	50.0-52	3	0	100/3"	R	S-14: No Recovery.	1			DECOMPOSED ROCK	
55		S-15	55.0-57	2	0	100/2"	R	S-15: No Recovery.	2				
60													

REMARKS

1 - Decomposed Rock fragments encountered at tip of split spoon.
2 - Decomposed Rock fragments encountered at tip of split spoon.

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: B-11

GZA TEMPLATE TEST BORING - GZA 2016_01_26.GDT - 6/21/21 10:20 - J:\GINT PROJECT DATABASES\41.0162800\41.0162892.00.GPJ

TEST BORING LOG

GZA GeoEnvironmental of New York
Engineers and Scientists

Westchester Joint Water Works
Water Treatment Plant
Westchester County, New York

EXPLORATION NO.: B-11
SHEET: 3 of 3
PROJECT NO: 41.0162892.00
REVIEWED BY: D. Patel

Logged By: A. Amador
Drilling Co.: Craig Test Boring Co., Inc.
Foreman: P. Mullins/S. Schultz
Date Start: 5/21/2021 **Finish:** 5/21/2021

Type of Rig: ATV
Rig Model: CME 750X
Drilling Method: Mud Rotary

Boring Location: See Plan
Stationing (ft.): **Offset (ft.):**
Ground Surface Elevation (ft.): 403
Final Boring Depth (ft.): 60.4

H. Datum: -
V. Datum: NAVD 88
Northing:
Easting:

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4/3.5

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

Date	Time	Water Depth	Stab. Time
Not	Measured		

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (per 6 in.)	SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	Stratum Depth (ft.)	Stratum Description	Stratum Elev. (ft.)
		S-16	60.0-62	5	0	100/5"	R	S-16: No Recovery. End of exploration at 60.4 feet.	3 4 5		60.4		342.6
65													
70													
75													
80													
85													
90													

REMARKS

3 - Decomposed Rock fragments encountered at tip of split spoon.
4 - Photoionization Detector (PID) readings were obtained for all samples. Results PID = 0 ppm throughout.
5 - Borehole was backfilled with soil cuttings and bentonite upon completion.

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: B-11

GZA TEMPLATE TEST BORING - GZA 2016_01_26.GDT - 6/21/21 10:20 - J:\GINT PROJECT DATABASES\41.0162800\41.0162892.00.GPJ

TEST BORING LOG

GZA GeoEnvironmental of New York
Engineers and Scientists

Westchester Joint Water Works
Water Treatment Plant
Westchester County, New York

EXPLORATION NO.: B-13
SHEET: 1 of 3
PROJECT NO: 41.0162892.00
REVIEWED BY: D. Patel

Logged By: A. Amador
Drilling Co.: Craig Test Boring Co., Inc.
Foreman: P. Mullins/S. Schultz
Date Start: 5/24/2021 **Finish:** 5/24/2021

Type of Rig: ATV
Rig Model: CME 750X
Drilling Method: Mud Rotary

Boring Location: See Plan
Stationing (ft.): **Offset (ft.):**
Ground Surface Elevation (ft.): 402
Final Boring Depth (ft.): 60.2

H. Datum: -
V. Datum: NAVD 88
Northing:
Easting:

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4/3.5

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

Date	Time	Water Depth	Stab. Time
Not	Measured		

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (per 6 in.)	SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	Stratum Depth (ft.)	Stratum Description	Stratum Elev. (ft.)
		S-1	0.0-2	24	12	1 4 7 8	11	S-1: Top 1": TOPSOIL Bottom 11": Medium dense, brown, fine to medium SAND, some Gravel, some Silt, frequent roots.			0.3	TOPSOIL	401.7
		S-2	2.0-4	24	11	6 7 12 25	19	S-2: Medium dense, brown, fine to medium SAND, some Gravel, some Silt, frequent roots.			4	SILTY SAND	398.0
5		S-3	4.0-6	1	0	100/1"	R	S-3: No recovery.	1				
		S-4	6.0-8	24	17	10 14 14 13	28	S-4: Medium dense, brown, fine to medium SAND and SILT, little Gravel, trace mica.					
		S-5	8.0-10	24	11	11 13 12 11	25	S-5: Medium dense, brown, fine to medium SAND and SILT, little Gravel.					
10		S-6	10.0-12	24	10	12 11 14 12	25	S-6: Medium dense, brown, fine to medium SAND and SILT, little Gravel, trace mica.					
15		S-7	15.0-17	24	16	6 8 9 8	17	S-7: Medium dense, brown, fine to medium SAND and SILT, little Gravel, trace mica.				GLACIAL TILL	
20		S-8	20.0-22	19	12	7 19 49 100/1"	68	S-8: Very dense, fine to medium SAND and SILT, little Gravel, trace mica.					
25		S-9	25.0-27	24	16	19 22 34 35	56	S-9: Very dense, gray-brown, fine to medium SAND and SILT, little Gravel, trace mica.					
30													

REMARKS

1 - Possible boulder encountered from approximately 4.0-4.7 feet depth.

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: B-13

GZA TEMPLATE TEST BORING - GZA 2016_01_26.GDT - 6/21/21 10:20 - J:\GINT PROJECT DATABASES\41.0162800\41.0162892.00.GPJ

TEST BORING LOG

GZA GeoEnvironmental of New York
Engineers and Scientists

Westchester Joint Water Works
Water Treatment Plant
Westchester County, New York

EXPLORATION NO.: B-13
SHEET: 2 of 3
PROJECT NO: 41.0162892.00
REVIEWED BY: D. Patel

Logged By: A. Amador
Drilling Co.: Craig Test Boring Co., Inc.
Foreman: P. Mullins/S. Schultz
Date Start: 5/24/2021 **Finish:** 5/24/2021

Type of Rig: ATV
Rig Model: CME 750X
Drilling Method: Mud Rotary

Boring Location: See Plan
Stationing (ft.): **Offset (ft.):**
Ground Surface Elevation (ft.): 402
Final Boring Depth (ft.): 60.2

H. Datum: -
V. Datum: NAVD 88
Northing:
Easting:

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4/3.5

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

Date	Time	Water Depth	Stab. Time
Not	Measured		

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (per 6 in.)	SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	Stratum Depth (ft.)	Stratum Description	Stratum Elev. (ft.)
		S-10	30.0-32	24	17	23 28 26 46	54	S-10: Very dense, gray-brown, fine to medium SAND and SILT, little Gravel, trace mica.				GLACIAL TILL	
											33.5		368.5
35		S-11	35.0-37	24	15	23 41 57 49	98	S-11: Very dense, gray-brown, fine to medium SAND and SILT, little Gravel, trace mica.					
40		S-12	40.0-42	16	15	50 70 100/4"	R	S-12: Very dense, gray-brown, fine to medium SAND and SILT, little Gravel, trace mica.					
45		S-13	45.0-47	10	9	71 100/4"	R	S-13: Very dense, gray-brown, fine to medium SAND and SILT, little Gravel, trace mica.				DECOMPOSED ROCK	
50		S-14	50.0-52	11	8	37 100/5"	R	S-14: Hard, gray-brown SILT, little Sand, trace mica, trace quartz fragments.					
55		S-15	55.0-57	8	7	58 100/2"	R	S-15: Hard, gray-brown SILT, little Sand, trace mica, trace quartz fragments.					
60													

REMARKS

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: B-13

GZA TEMPLATE TEST BORING - GZA 2016_01_26.GDT - 6/21/21 10:20 - J:\GINT PROJECT DATABASES\41.0162800\41.0162892.00.GPJ

TEST BORING LOG

GZA GeoEnvironmental of New York
Engineers and Scientists

Westchester Joint Water Works
Water Treatment Plant
Westchester County, New York

EXPLORATION NO.: B-13
SHEET: 3 of 3
PROJECT NO: 41.0162892.00
REVIEWED BY: D. Patel

Logged By: A. Amador
Drilling Co.: Craig Test Boring Co., Inc.
Foreman: P. Mullins/S. Schultz
Date Start: 5/24/2021 **Finish:** 5/24/2021

Type of Rig: ATV
Rig Model: CME 750X
Drilling Method: Mud Rotary

Boring Location: See Plan
Stationing (ft.): **Offset (ft.):**
Ground Surface Elevation (ft.): 402
Final Boring Depth (ft.): 60.2

H. Datum: -
V. Datum: NAVD 88
Northing:
Easting:

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4/3.5

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

Date	Time	Water Depth	Stab. Time
Not	Measured		

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (per 6 in.)	SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	Stratum Depth (ft.)	Stratum Description	Stratum Elev. (ft.)
		S-16	60.0-62	2	0	100/2"	R	S-16: No Recovery. End of exploration at 60.2 feet.	2, 3, 4		60.2		341.8
65													
70													
75													
80													
85													
90													

REMARKS

2 - Decomposed Rock fragments encountered at tip of split spoon.
3 - Photoionization Detector (PID) readings were obtained for all samples. Results PID = 0 ppm throughout.
4 - Borehole was backfilled with soil cuttings and bentonite upon completion.

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: B-13

GZA TEMPLATE TEST BORING - GZA 2016_01_26.GDT - 6/21/21 10:20 - J:\GINT PROJECT DATABASES\41.0162800\41.0162892.00.GPJ

TEST BORING LOG

GZA GeoEnvironmental of New York
Engineers and Scientists

Westchester Joint Water Works
Water Treatment Plant
Westchester County, New York

EXPLORATION NO.: B-15
SHEET: 1 of 3
PROJECT NO: 41.0162892.00
REVIEWED BY: D. Patel

Logged By: A. Amador
Drilling Co.: Craig Test Boring Co., Inc.
Foreman: Dave Cooke/S. Schultz
Date Start: 5/28/2021 **Finish:** 5/28/2021

Type of Rig: ATV
Rig Model: CME 750X
Drilling Method: Mud Rotary

Boring Location: See Plan
Stationing (ft.): **Offset (ft.):**
Ground Surface Elevation (ft.): 410
Final Boring Depth (ft.): 60.2

H. Datum: -
V. Datum: NAVD 88
Northing:
Easting:

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4/3.5

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

Date	Time	Water Depth	Stab. Time
Not	Measured		

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (per 6 in.)	Sample SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	Stratum Depth (ft.)	Stratum Description	Stratum Elev. (ft.)
		S-1	0.0-2	24	4	2 3 5 6	8	S-1: Top 1": TOPSOIL Bottom 3": Loose, brown, fine to medium SAND, some SILT, little Gravel, frequent roots.			0.3	TOPSOIL	409.7
		S-2	2.0-4	24	19	7 9 12 21	21	S-2: Medium dense, brown, fine to medium SAND, some SILT, little Gravel, trace Clay.	1		4	SILTY SAND	406.0
5		S-3	4.0-6	24	22	14 15 11 17	26	S-3: Medium dense, brown, fine to medium SAND, some SILT, little Gravel, trace mica.					
		S-4	6.0-8	24	17	4 10 10 8	20	S-4: Medium dense, brown, fine to medium SAND, some SILT, little Gravel, trace mica.					
		S-5	8.0-10	24	14	10 15 16 22	31	S-5: Dense, brown, fine to medium SAND and SILT, little Gravel, trace mica.					
10		S-6	10.0-12	24	18	10 14 12 12	26	S-6: Medium dense, brown, fine to medium SAND and SILT, little Gravel, trace mica.					
15		S-7	15.0-17	24	17	27 36 26 18	62	S-7: Dense, brown, fine to medium SAND and SILT, little Gravel, trace mica.				GLACIAL TILL	
20		S-8	20.0-22	24	17	11 15 21 27	36	S-8: Dense, gray-brown, fine to medium SAND and SILT, little Gravel, trace mica.					
25		S-9	25.0-27	24	16	7 10 8 10	18	S-9: Medium dense, gray-brown, fine to medium SAND and SILT, little Gravel, trace mica.					
30													

REMARKS

1 - Tree root encountered at tip of split spoon sampler at S-2.

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: B-15

GZA TEMPLATE TEST BORING - GZA 2016_01_26.GDT - 6/21/21 10:20 - J:\GINT PROJECT DATABASES\41.0162800\41.0162892.00.GPJ

TEST BORING LOG

GZA GeoEnvironmental of New York
Engineers and Scientists

Westchester Joint Water Works
Water Treatment Plant
Westchester County, New York

EXPLORATION NO.: B-15
SHEET: 2 of 3
PROJECT NO: 41.0162892.00
REVIEWED BY: D. Patel

Logged By: A. Amador
Drilling Co.: Craig Test Boring Co., Inc.
Foreman: Dave Cooke/S. Schultz
Date Start: 5/28/2021 **Finish:** 5/28/2021

Type of Rig: ATV
Rig Model: CME 750X
Drilling Method: Mud Rotary

Boring Location: See Plan
Stationing (ft.): **Offset (ft.):**
Ground Surface Elevation (ft.): 410
Final Boring Depth (ft.): 60.2

H. Datum: -
V. Datum: NAVD 88
Northing:
Easting:

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4/3.5

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

Date	Time	Water Depth	Stab. Time
Not	Measured		

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (per 6 in.)	Sample SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	Stratum Depth (ft.)	Stratum Description	Stratum Elev. (ft.)
		S-10	30.0-32	24	14	11 12 14 16	26	S-10: Medium dense, gray-brown, fine to medium SAND and SILT, little Gravel, trace mica.					
35		S-11	35.0-37	24	15	13 15 14 17	29	S-11: Medium dense, gray-brown, fine to medium SAND and SILT, little Gravel, trace mica.				GLACIAL TILL	
40		S-12	40.0-42	24	10	12 16 22 16	38	S-12: Dense, gray-brown, fine to medium SAND and SILT, little Gravel, trace mica.			43.5		366.5
45		S-13	45.0-47	24	17	15 23 52 60	75	S-13: Very dense, gray-brown, fine to medium SAND, some Gravel, trace mica.					
50		S-14	50.0-52	3	0	100/3"	R	S-14: No Recovery.	2			DECOMPOSED ROCK	
55		S-15	55.0-57	2	0	100/2"	R	S-15: No Recovery.	3				
60													

REMARKS

2 - Decomposed Rock fragments encountered at tip of split spoon.
3 - Decomposed Rock fragments encountered at tip of split spoon.

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: B-15

GZA TEMPLATE TEST BORING - GZA 2016_01_26.GDT - 6/21/21 10:21 - J:\GINT PROJECT DATABASES\41.0162800\41.0162892.00.GPJ

TEST BORING LOG

GZA GeoEnvironmental of New York
Engineers and Scientists

Westchester Joint Water Works
Water Treatment Plant
Westchester County, New York

EXPLORATION NO.: B-15
SHEET: 3 of 3
PROJECT NO: 41.0162892.00
REVIEWED BY: D. Patel

Logged By: A. Amador
Drilling Co.: Craig Test Boring Co., Inc.
Foreman: Dave Cooke/S. Schultz
Date Start: 5/28/2021 **Finish:** 5/28/2021

Type of Rig: ATV
Rig Model: CME 750X
Drilling Method: Mud Rotary

Boring Location: See Plan
Stationing (ft.): **Offset (ft.):**
Ground Surface Elevation (ft.): 410
Final Boring Depth (ft.): 60.2

H. Datum: -
V. Datum: NAVD 88
Northing:
Easting:

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4/3.5

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)			
Date	**Time**	**Water Depth**	**Stab. Time**
Not	Measured		

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (per 6 in.)	SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	Stratum Depth (ft.)	Stratum Description	Stratum Elev. (ft.)
		S-16	60.0-62	2	0	100/2"	R	S-16: No Recovery. End of exploration at 60.2 feet.	4 5 6		60.2		349.8

65
70
75
80
85
90

REMARKS

4 - Decomposed Rock fragments encountered at tip of split spoon.
5 - Photoionization Detector (PID) readings were obtained for all samples. Results PID = 0 ppm throughout.
6 - Borehole was backfilled with soil cuttings and bentonite upon completion.

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: B-15

GZA TEMPLATE TEST BORING - GZA 2016_01_26.GDT - 6/21/21 10:21 - J:\GINT PROJECT DATABASES\41.0162800\41.0162892.00.GPJ

TEST BORING LOG

GZA GeoEnvironmental of New York
Engineers and Scientists

Westchester Joint Water Works
Water Treatment Plant
Westchester County, New York

EXPLORATION NO.: B-16
SHEET: 1 of 1
PROJECT NO: 41.0162892.00
REVIEWED BY: D. Patel

Logged By: A. Amador
Drilling Co.: Craig Test Boring Co., Inc.
Foreman: P. Mullins/S. Schultz
Date Start: 6/4/2021 **Finish:** 6/4/2021

Type of Rig: ATV
Rig Model: CME 750X
Drilling Method: Mud Rotary

Boring Location: See Plan
Stationing (ft.): **Offset (ft.):**
Ground Surface Elevation (ft.): 410
Final Boring Depth (ft.): 22

H. Datum: -
V. Datum: NAVD 88
Northing:
Easting:

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4/3.5

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

Date	Time	Water Depth	Stab. Time
Not	Measured		

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (per 6 in.)	Sample SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	Stratum Depth (ft.)	Stratum Description	Stratum Elev. (ft.)
		S-1	0.0-2	24	4	1 9 4 6	13	S-1: Top 1": TOPSOIL Bottom 3": Medium dense, dark-brown SILT, occasional roots.			0.3	TOPSOIL	409.7
		S-2	2.0-4	24	22	5 5 9 13	14	S-2: Medium dense, brown, fine to medium SAND and SILT, little Gravel, trace mica.					
5		S-3	5.0-7	24	15	8 7 8 12	15	S-3: Medium dense, brown, fine to medium SAND and SILT, little Gravel, trace mica.				SILTY SAND	
		S-4	7.0-9	24	13	7 9 11 14	20	S-4: Medium dense, brown, fine to medium SAND and SILT, little Gravel, trace mica.					
10		S-5	9.0-11	24	4	10 13 16 12	29	S-5: Medium dense, brown, fine to medium SAND and SILT, trace Gravel.			9		401.0
15		S-6	15.0-17	24	16	9 8 10 16	18	S-6: Medium dense, gray-brown fine to medium SAND and SILT, little Gravel, trace mica.				GLACIAL TILL	
20		S-7	20.0-22	24	16	10 13 26 24	39	S-7: Dense gray-brown, fine to medium SAND and SILT, trace mica.	1		22		388.0
								End of exploration at 22 feet.	2				
25													
30													

REMARKS

1 - Photoionization Detector (PID) readings were obtained for all samples. Results PID = 0 ppm throughout.
2 - Borehole was backfilled with soil cuttings and bentonite upon completion.

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: B-16

GZA TEMPLATE TEST BORING - GZA 2016_01_26.GDT - 6/21/21 10:21 - J:\GINT PROJECT DATABASES\41.0162800\41.0162892.00.GPJ

TEST BORING LOG

GZA GeoEnvironmental of New York
Engineers and Scientists

Westchester Joint Water Works
Water Treatment Plant
Westchester County, New York

EXPLORATION NO.: B-17
SHEET: 1 of 1
PROJECT NO: 41.0162892.00
REVIEWED BY: D. Patel

Logged By: A. Amador
Drilling Co.: Craig Test Boring Co., Inc.
Foreman: P. Mullins/S. Schultz
Date Start: 6/1/2021 **Finish:** 6/1/2021

Type of Rig: ATV
Rig Model: CME 750X
Drilling Method: Mud Rotary

Boring Location: See Plan
Stationing (ft.): **Offset (ft.):**
Ground Surface Elevation (ft.): 409
Final Boring Depth (ft.): 22

H. Datum: -
V. Datum: NAVD 88
Northing:
Easting:

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4/3.5

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

Date	Time	Water Depth	Stab. Time
Not	Measured		

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Pen. (in)	Rec. (in)	Blows (per 6 in.)	SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	Stratum Depth (ft.)	Stratum Description	Stratum Elev. (ft.)
		S-1	0.0-2	24	14	4 3 4 6	7	S-1: Top 1": TOPSOIL Bottom 13": Loose, brown, fine to medium SAND, some Silt, little Gravel, trace roots.			0.3	TOPSOIL	408.7
											2	SILTY SAND	407.0
		S-2	2.0-4	24	8	9 31 51 27	82	S-2: Very dense, brown, fine to medium SAND, some Silt, little Gravel.	1				
5		S-3	4.0-6	24	12	8 13 18 21	31	S-3: Dense, brown, fine to medium SAND, some Silt, little Gravel, trace mica.					
		S-4	6.0-8	24	17	18 13 14 14	27	S-4: Medium dense, brown, fine to medium SAND and SILT, little Gravel, trace mica.					
		S-5	8.0-10	24	16	8 11 9 14	20	S-5: Medium dense, brown, fine to medium SAND and SILT, little Gravel, trace mica.					
10		S-6	10.0-12	24	15	13 16 19 20	35	S-6: Dense, brown, fine to medium SAND and SILT, little Gravel, trace mica.				GLACIAL TILL	
15		S-7	15.0-17	24	17	29 17 19 21	36	S-7: Dense, brown, fine to medium SAND and SILT, little Gravel, trace mica.					
20		S-8	20.0-22	24	16	9 11 16 16	27	S-8: Medium dense, gray-brown, fine to medium SAND and SILT, little Gravel, trace mica.	2		22		387.0
								End of exploration at 22 feet.	3				
25													
30													

REMARKS

1 - Gravel encountered at tip of split spoon at sample S-2.
2 - Photoionization Detector (PID) readings were obtained for all samples. Results PID = 0 ppm throughout.
3 - Borehole was backfilled with soil cuttings and bentonite upon completion.

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: B-17

GZA TEMPLATE TEST BORING - GZA 2016_01_26.GDT - 6/21/21 10:21 - J:\GINT PROJECT DATABASES\41.0162800\41.0162892.00.GPJ

TEST BORING LOG

GZA GeoEnvironmental of New York
Engineers and Scientists

Westchester Joint Water Works
Water Treatment Plant
Westchester County, New York

EXPLORATION NO.: B-18
SHEET: 1 of 1
PROJECT NO: 41.0162892.00
REVIEWED BY: D. Patel

Logged By: A. Amador
Drilling Co.: Craig Test Boring Co., Inc.
Foreman: Dave Cooke/S. Schultz
Date Start: 5/27/2021 **Finish:** 5/27/2021

Type of Rig: ATV
Rig Model: CME 750X
Drilling Method: Mud Rotary

Boring Location: See Plan
Stationing (ft.): **Offset (ft.):**
Ground Surface Elevation (ft.): 406
Final Boring Depth (ft.): 22

H. Datum: -
V. Datum: NAVD 88
Northing:
Easting:

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4/3.5

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

Date	Time	Water Depth	Stab. Time
Not	Measured		

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (per 6 in.)	Sample SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	Stratum Depth (ft.)	Stratum Description	Stratum Elev. (ft.)
		S-1	0.0-2	24	19	3 5 3 5	8	S-1: Top 1": TOPSOIL Bottom 18": Loose, gray-brown, fine to medium SAND, some Silt, little Gravel, trace Clay, occasional roots.			0.3	TOPSOIL	405.7
		S-2	2.0-4	24	20	5 9 8 11	17	S-2: Medium dense, brown, fine to medium SAND, some Silt, little Gravel, trace Clay.				SILTY SAND	
5		S-3	5.0-7	24	18	4 13 13 14	26	S-3: Medium dense, brown, fine to medium SAND and SILT, little Gravel, trace mica.			7		399.0
		S-4	7.0-9	24	24	15 16 15 20	31	S-4: Dense, brown, fine to medium SAND and SILT, little Gravel, trace mica.					
10		S-5	9.0-11	24	16	11 18 17 20	35	S-5: Dense, brown, fine to medium SAND and SILT, little Gravel, trace mica.				GLACIAL TILL	
15		S-6	15.0-17	24	19	10 29 16 23	45	S-6: Dense, brown, fine to medium SAND and SILT, little Gravel, trace mica.					
20		S-7	20.0-22	24	17	10 15 19 25	34	S-7: Dense, gray-brown, fine to medium SAND and SILT, little Gravel, trace mica.	1		22		384.0
								End of exploration at 22 feet.	2				
25													
30													

REMARKS

1 - Photoionization Detector (PID) readings were obtained for all samples. Results PID = 0 ppm throughout.
2 - Borehole was backfilled with soil cuttings and bentonite upon completion.

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: B-18

GZA TEMPLATE TEST BORING - GZA 2016_01_26.GDT - 6/21/21 10:21 - J:\GINT PROJECT DATABASES\41.0162800\41.0162892.00.GPJ

TEST BORING LOG

GZA GeoEnvironmental of New York
Engineers and Scientists

Westchester Joint Water Works
Water Treatment Plant
Westchester County, New York

EXPLORATION NO.: B-19
SHEET: 1 of 1
PROJECT NO: 41.0162892.00
REVIEWED BY: D. Patel

Logged By: A. Amador
Drilling Co.: Craig Test Boring Co., Inc.
Foreman: P. Mullins/S. Schultz
Date Start: 6/4/2021 **Finish:** 6/4/2021

Type of Rig: ATV
Rig Model: CME 750X
Drilling Method: Mud Rotary

Boring Location: See Plan
Stationing (ft.): **Offset (ft.):**
Ground Surface Elevation (ft.): 403
Final Boring Depth (ft.): 22

H. Datum: -
V. Datum: NAVD 88
Northing:
Easting:

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4/3.5

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

Date	Time	Water Depth	Stab. Time
Not	Measured		

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (per 6 in.)	Sample SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	Stratum Depth (ft.)	Stratum Description	Stratum Elev. (ft.)
		S-1	0.0-2	24	20	1 2 7 8	9	S-1: Top 1": TOPSOIL Bottom 19": Loose, brown, fine to medium SAND, some Silt, little Gravel.			0.3	TOPSOIL	402.7
											2	SILTY SAND	401.0
		S-2	2.0-4	24	21	11 13 14 17	27	S-2: Medium dense, brown, fine to medium SAND and SILT, little Gravel.					
5		S-3	4.0-6	24	16	8 9 15 17	24	S-3: Medium dense, brown, fine to medium SAND and SILT, little Gravel, trace mica.					
		S-4	6.0-8	24	15	10 17 18 24	35	S-4: Dense, brown, fine to coarse SAND and SILT, little Gravel, trace mica.	1				
10		S-5	10.0-12	24	20	14 19 18 18	37	S-5: Dense, brown, fine to coarse SAND and SILT, little Gravel, trace mica.				GLACIAL TILL	
15		S-6	15.0-17	24	20	9 14 16 35	30	S-6: Medium dense, gray-brown, fine to medium SAND and SILT, little Gravel, trace mica.					
20		S-7	20.0-22	24	22	11 17 21 25	38	S-7: Dense, gray-brown fine to medium SAND and SILT, little Gravel, trace mica.	2		22		381.0
								End of exploration at 22 feet.	3				
25													
30													

REMARKS

1 - Percolation test performed at approximately 8.5 feet. See Percolation Test log for more details.
2 - Photoionization Detector (PID) readings were obtained for all samples. Results PID = 0 ppm throughout.
3 - Borehole was backfilled with soil cuttings and bentonite upon completion.

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: B-19

GZA TEMPLATE TEST BORING - GZA 2016_01_26.GDT - 6/21/21 10:21 - J:\GINT PROJECT DATABASES\41.0162800\41.0162892.00.GPJ

TEST BORING LOG

GZA GeoEnvironmental of New York
Engineers and Scientists

Westchester Joint Water Works
Water Treatment Plant
Westchester County, New York

EXPLORATION NO.: B-20
SHEET: 1 of 1
PROJECT NO: 41.0162892.00
REVIEWED BY: D. Patel

Logged By: A. Amador
Drilling Co.: Craig Test Boring Co., Inc.
Foreman: P. Mullins/S. Schultz
Date Start: 6/3/2021 **Finish:** 6/3/2021

Type of Rig: ATV
Rig Model: CME 750X
Drilling Method: Mud Rotary

Boring Location: See Plan
Stationing (ft.): **Offset (ft.):**
Ground Surface Elevation (ft.): 401
Final Boring Depth (ft.): 22

H. Datum: -
V. Datum: NAVD 88
Northing:
Easting:

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4/3.5

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)			
Date	**Time**	**Water Depth**	**Stab. Time**
Not	Measured		

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (per 6 in.)	Sample SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	Stratum Depth (ft.)	Stratum Description	Stratum Elev. (ft.)
		S-1	0.0-2	24	13	1 2 5 5	7	S-1: Top 1": TOPSOIL Bottom 12": Loose, brown, fine to medium SAND and SILT, little Gravel.			0.3	TOPSOIL	400.7
		S-2	2.0-4	24	18	5 9 10 12	19	S-2: Medium dense, brown, fine to medium SAND and SILT, little Gravel.					
5		S-3	4.0-6	24	17	10 11 15 14	26	S-3: Medium dense, brown, fine to medium SAND and SILT, little Gravel, trace mica.					
		S-4	8.0-10	24	17	6 11 13 16	24	S-4: Medium dense, brown, fine to medium SAND, some Silt, trace Gravel, trace mica.	1				
10		S-5	10.0-12	24	14	6 8 13 17	21	S-5: Medium dense, brown, fine to medium SAND, some Silt, trace Gravel, trace mica.				SILTY SAND	
15		S-6	15.0-17	24	15	12 14 16 15	30	S-6: Medium dense, brown, fine to coarse SAND and SILT, little Gravel, trace mica.					
20		S-7	20.0-22	24	12	9 8 14 20	22	S-7: Medium dense, gray-brown, fine to medium SAND and SILT, little Gravel, trace mica.	2		22		379.0
								End of exploration at 22 feet.	3				
25													
30													

REMARKS

1 - Percolation test performed at approximately 7.5 feet depth. See Percolation Test log for more details.
2 - Photoionization Detector (PID) readings were obtained for all samples. Results PID = 0 ppm throughout.
3 - Borehole was backfilled with soil cuttings and bentonite upon completion.

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: B-20

GZA TEMPLATE TEST BORING - GZA 2016_01_26.GDT - 6/21/21 10:21 - J:\GINT PROJECT DATABASES\41.0162800\41.0162892.00.GPJ

TEST BORING LOG

GZA GeoEnvironmental of New York
Engineers and Scientists

Westchester Joint Water Works
Water Treatment Plant
Westchester County, New York

EXPLORATION NO.: B-21
SHEET: 1 of 1
PROJECT NO: 41.0162892.00
REVIEWED BY: D. Patel

Logged By: A. Amador
Drilling Co.: Craig Test Boring Co., Inc.
Foreman: P. Mullins/S. Schultz
Date Start: 6/3/2021 **Finish:** 6/3/2021

Type of Rig: ATV
Rig Model: CME 750X
Drilling Method: Mud Rotary

Boring Location: See Plan
Stationing (ft.): **Offset (ft.):**
Ground Surface Elevation (ft.): 401
Final Boring Depth (ft.): 22

H. Datum: -
V. Datum: NAVD 88
Northing:
Easting:

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4/3.5

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

Date	Time	Water Depth	Stab. Time
Not	Measured		

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (per 6 in.)	Sample SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	Stratum Depth (ft.)	Stratum Description	Stratum Elev. (ft.)
		S-1	0.0-2	24	9	3 5 3 6	8	S-1: Top 2": ASPHALT Bottom 8": Loose, brown, fine to medium SAND and SILT, little Gravel, trace Asphalt fragments.			0.3	ASPHALT	400.7
		S-2	2.0-4	24	16	8 15 20 27	35	S-2: Dense, brown, fine to medium SAND and SILT, little Gravel, trace Asphalt fragments.			2	SILTY SAND	399.0
5		S-3	4.0-6	24	15	13 20 24 23	44	S-3: Dense, brown, fine to coarse SAND, some Silt, little Gravel, trace mica.					
		S-4	6.0-8	24	15	16 22 19 20	41	S-4: Dense, brown, fine to coarse SAND, some Silt, little Gravel, trace mica.					
		S-5	8.0-10	24	7	9 13 25 19	38	S-5: Dense, brown, fine to coarse SAND, some Gravel, some Silt, trace mica.					
10		S-6	10.0-12	24	14	20 24 21 28	45	S-6: Dense, brown, fine to coarse SAND, some Gravel, some Silt, trace mica.				GLACIAL TILL	
15		S-7	15.0-17	24	13	9 10 13 26	23	S-7: Medium dense, brown, fine to medium SAND, some Silt, little Gravel, trace mica.			18.5		382.5
20		S-8	20.0-22	24	14	9 60 17 40	77	S-8: Very dense, gray-brown, fine to medium SAND, some Gravel, some Silt, trace mica.	1			DECOMPOSED ROCK	
								End of exploration at 22 feet.	2		22		379.0
25													
30													

REMARKS

1 - Photoionization Detector (PID) readings were obtained for all samples. Results PID = 0 ppm throughout.
2 - Borehole was backfilled with soil cuttings and bentonite upon completion.

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: B-21

GZA TEMPLATE TEST BORING - GZA 2016_01_26.GDT - 6/21/21 10:21 - J:\GINT PROJECT DATABASES\41.0162800\41.0162892.00.GPJ

TEST BORING LOG

GZA GeoEnvironmental of New York
Engineers and Scientists

Westchester Joint Water Works
Water Treatment Plant
Westchester County, New York

EXPLORATION NO.: B-22
SHEET: 1 of 1
PROJECT NO: 41.0162892.00
REVIEWED BY: D. Patel

Logged By: A. Amador
Drilling Co.: Craig Test Boring Co., Inc.
Foreman: Dave Cooke/S. Schultz
Date Start: 5/25/2021 **Finish:** 5/25/2021

Type of Rig: ATV
Rig Model: CME 750X
Drilling Method: Mud Rotary

Boring Location: See Plan
Stationing (ft.): **Offset (ft.):**
Ground Surface Elevation (ft.): 399
Final Boring Depth (ft.): 22

H. Datum: -
V. Datum: NAVD 88
Northing:
Easting:

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4/3.5

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

Date	Time	Water Depth	Stab. Time
Not	Measured		

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (per 6 in.)	Sample SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	Stratum Depth (ft.)	Stratum Description	Stratum Elev. (ft.)
		S-1	0.0-2	24	10	1 3 4 4	7	S-1: Top 1": TOPSOIL Bottom 9": Loose, brown, fine to medium SAND and SILT, little Gravel, occasional roots.			0.3	TOPSOIL	398.7
		S-2	2.0-4	24	12	2 4 5 9	9	S-2: Loose, brown, fine to medium SAND and SILT, little Gravel, trace Clay, trace mica.			4	SILTY SAND	395.0
5		S-3	4.0-6	24	15	17 16 12 16	28	S-3: Medium dense, brown, fine to medium SAND and SILT, little Gravel, trace mica.					
		S-4	6.0-8	24	18	22 56 35 20	91	S-4: Very dense, brown, fine to medium SAND and SILT, little Gravel, trace mica.	1				
10		S-5	10.0-12	24	14	20 17 12 15	29	S-5: Medium dense, brown, fine to medium SAND, some Silt, trace Gravel, trace mica.				GLACIAL TILL	
15		S-6	15.0-17	24	13	15 16 20 25	36	S-6: Dense, brown, fine to medium SAND, some Silt, trace Gravel, trace mica.			18.5		380.5
20		S-7	20.0-22	24	17	18 33 32 62	65	S-7: Very dense, gray-brown, fine to medium SAND and SILT, little Gravel, trace mica.	2			DECOMPOSED ROCK	
								End of exploration at 22 feet.	3		22		377.0
25													
30													

REMARKS

1 - Percolation test performed at approximately 9 feet depth. See Percolation Test logs for more details.
2 - Photoionization Detector (PID) readings were obtained for all samples. Results PID = 0 ppm throughout.
3 - Borehole was backfilled with soil cuttings and bentonite upon completion.

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: B-22

GZA TEMPLATE TEST BORING - GZA 2016_01_26.GDT - 6/21/21 10:21 - J:\GINT PROJECT DATABASES\41.0162800\41.0162892.00.GPJ

TEST BORING LOG

GZA GeoEnvironmental of New York
Engineers and Scientists

Westchester Joint Water Works
Water Treatment Plant
Westchester County, New York

EXPLORATION NO.: B-23
SHEET: 1 of 1
PROJECT NO: 41.0162892.00
REVIEWED BY: D. Patel

Logged By: A. Amador
Drilling Co.: Craig Test Boring Co., Inc.
Foreman: P. Mullins/S. Schultz
Date Start: 6/3/2021 **Finish:** 6/3/2021

Type of Rig: ATV
Rig Model: CME 750X
Drilling Method: Mud Rotary

Boring Location: See Plan
Stationing (ft.): **Offset (ft.):**
Ground Surface Elevation (ft.): 399
Final Boring Depth (ft.): 22

H. Datum: -
V. Datum: NAVD 88
Northing:
Easting:

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4/3.5

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

Date	Time	Water Depth	Stab. Time
Not	Measured		

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (per 6 in.)	Sample SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	Stratum Depth (ft.)	Stratum Description	Stratum Elev. (ft.)
		S-1	0.0-2	24	4	1 1 2 2	3	S-1: Top 1": TOPSOIL Bottom 3": Very loose, brown, fine to medium SAND, some Silt, little Gravel, trace roots.	1		0.3	TOPSOIL	398.7
		S-2	2.0-4	24	16	2 2 6 11	8	S-2: Loose, brown, fine to medium SAND and SILT, little Gravel, trace mica.			4	SILTY SAND	395.0
5		S-3	4.0-6	24	15	13 17 14 21	31	S-3: Dense, brown, fine to coarse SAND, some Gravel, some Silt, trace mica.					
		S-4	6.0-8	24	11	21 40 31 29	71	S-4: Very dense, brown, fine to coarse SAND, some Gravel, some Silt, trace mica.					
		S-5	8.0-10	24	14	11 14 23 31	37	S-5: Dense, brown, fine to medium SAND and SILT, little Gravel, trace mica.					
10		S-6	10.0-12	24	13	11 83 44 21	>100	S-6: Very dense, brown, fine to coarse SAND, some Gravel, some Silt, trace mica.	2			GLACIAL TILL	
15		S-7	15.0-17	24	12	7 10 16 24	26	S-7: Medium dense, gray-brown, fine to medium SAND and SILT, little Gravel, trace mica.					
20		S-8	20.0-22	24	15	15 19 29 35	48	S-8: Dense, gray-brown, fine to medium SAND and SILT, little Gravel, trace mica.	3		22		377.0
								End of exploration at 22 feet.	4				
25													
30													

REMARKS

1 - Gravel fragment encountered at tip of split spoon at sample S-1
2 - Hard drilling from approximately 6-12 feet in depth.
3 - Photoionization Detector (PID) readings were obtained for all samples. Results PID = 0 ppm throughout.
4 - Borehole was backfilled with soil cuttings and bentonite upon completion.

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: B-23

GZA TEMPLATE TEST BORING - GZA 2016_01_26.GDT - 6/21/21 10:21 - J:\GINT PROJECT DATABASES\41.0162800\41.0162892.00.GPJ

TEST BORING LOG

GZA GeoEnvironmental of New York
Engineers and Scientists

Westchester Joint Water Works
Water Treatment Plant
Westchester County, New York

EXPLORATION NO.: B-24
SHEET: 1 of 1
PROJECT NO: 41.0162892.00
REVIEWED BY: D. Patel

Logged By: A. Amador
Drilling Co.: Craig Test Boring Co., Inc.
Foreman: Dave Cooke/S. Schultz
Date Start: 5/25/2021 **Finish:** 5/26/2021

Type of Rig: ATV
Rig Model: CME 750X
Drilling Method: Mud Rotary

Boring Location: See Plan
Stationing (ft.): **Offset (ft.):**
Ground Surface Elevation (ft.): 399
Final Boring Depth (ft.): 22

H. Datum: -
V. Datum: NAVD 88
Northing:
Easting:

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4/3.5

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)			
Date	**Time**	**Water Depth**	**Stab. Time**
Not	Measured		

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (per 6 in.)	Sample SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	Stratum Depth (ft.)	Stratum Description	Stratum Elev. (ft.)
		S-1	0.0-2	24	15	10 77 81 69	>100	S-1: Top 1": TOPSOIL Bottom 14": Very dense, brown, fine to coarse Gravel, little sand, trace roots.			0.3	TOPSOIL	398.7
		S-2	2.0-4	24	7	14 15 16 17	31	S-2: Dense, brown, fine to medium SAND, some Silt, little Gravel.					
5		S-3	4.0-6	24	17	19 22 16 17	38	S-3: Dense, brown, fine to medium SAND, some Silt, little Gravel, trace mica.					
		S-4	6.0-8	5	5	100/5"	R	S-4: Very dense, brown, fine to medium SAND, some Gravel, some Silt, trace mica.					
		S-5	8.0-10	24	16	6 5 9 11	14	S-5: Medium dense, brown, fine to medium SAND and SILT, little Gravel, trace mica.					
10		S-6	10.0-12	24	10	12 14 22 49	36	S-6: Dense, brown, fine to medium SAND and SILT, little Gravel, trace mica.				GLACIAL TILL	
15		S-7	15.0-17	24	0	10 13 15 22	28	S-7: No recovery.	1				
20		S-8	20.0-22	24	16	6 8 12 12	20	S-8: Medium dense, brown, fine to medium SAND and SILT, little Gravel, trace mica.	2		22		377.0
								End of exploration at 22 feet.	3				
25													
30													

REMARKS

1 - Gravel encountered at tip of split spoon at sample S-7.
2 - Photoionization Detector (PID) readings were obtained for all samples. Results PID = 0 ppm throughout.
3 - Borehole was backfilled with soil cuttings and bentonite upon completion.

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: B-24

GZA TEMPLATE TEST BORING - GZA 2016_01_26.GDT - 6/21/21 10:21 - J:\GINT PROJECT DATABASES\41.0162800\41.0162892.00.GPJ

TEST BORING LOG

GZA GeoEnvironmental of New York
Engineers and Scientists

Westchester Joint Water Works
Water Treatment Plant
Westchester County, New York

EXPLORATION NO.: B-25
SHEET: 1 of 1
PROJECT NO: 41.0162892.00
REVIEWED BY: D. Patel

Logged By: A. Amador
Drilling Co.: Craig Test Boring Co., Inc.
Foreman: Dave Cooke/S. Schultz
Date Start: 5/25/2021 **Finish:** 5/25/2021

Type of Rig: ATV
Rig Model: CME 750X
Drilling Method: Mud Rotary

Boring Location: See Plan
Stationing (ft.): **Offset (ft.):**
Ground Surface Elevation (ft.): 398
Final Boring Depth (ft.): 22

H. Datum: -
V. Datum: NAVD 88
Northing:
Easting:

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4/3.5

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

Date	Time	Water Depth	Stab. Time
Not	Measured		

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (per 6 in.)	Sample SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	Stratum Depth (ft.)	Stratum Description	Stratum Elev. (ft.)
		S-1	0.0-2	24	6	1 1 1 1	2	S-1: Top 1": TOPSOIL Bottom 5": Very loose, brown, fine to medium SAND, some Silt, trace Gravel, occasional roots.			0.3	TOPSOIL	397.7
		S-2	2.0-4	24	15	3 3 7 14	10	S-2: Loose, brown, fine to medium SAND and SILT, little Gravel, trace Clay.			4	SILTY SAND	394.0
5		S-3	4.0-6	24	18	15 20 24 25	44	S-3: Dense, brown, fine to medium SAND and SILT, little Gravel, trace mica.					
		S-4	6.0-8	24	15	15 36 26 25	62	S-4: Very dense, brown, fine to medium SAND and SILT, little Gravel, trace mica.					
		S-5	8.0-10	24	14	26 30 26 24	56	S-5: Very dense, brown, fine to medium SAND, some Silt, little Gravel, trace mica.					
10		S-6	10.0-12	24	17	12 22 20 24	42	S-6: Dense, brown, fine to medium SAND, some Silt, little Gravel, trace mica.				GLACIAL TILL	
15		S-7	15.0-17	24	22	11 20 28 30	48	S-7: Dense, gray-brown, fine to medium SAND and SILT, little Gravel, trace mica.					
20		S-8	20.0-22	24	20	12 21 22 32	43	S-8: Dense, gray-brown, fine to medium SAND and SILT, little Gravel, trace mica.	1		22		376.0
								End of exploration at 22 feet.	2				
25													
30													

REMARKS

1 - Photoionization Detector (PID) readings were obtained for all samples. Results PID = 0 ppm throughout.
2 - Borehole was backfilled with soil cuttings and bentonite upon completion.

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: B-25

GZA TEMPLATE TEST BORING - GZA 2016_01_26.GDT - 6/21/21 10:21 - J:\GINT PROJECT DATABASES\41.0162800\41.0162892.00.GPJ

TEST BORING LOG

GZA GeoEnvironmental of New York
Engineers and Scientists

Westchester Joint Water Works
Water Treatment Plant
Westchester County, New York

EXPLORATION NO.: B-26
SHEET: 1 of 1
PROJECT NO: 41.0162892.00
REVIEWED BY: D. Patel

Logged By: A. Amador
Drilling Co.: Craig Test Boring Co., Inc.
Foreman: Dave Cooke/S. Schultz
Date Start: 5/25/2021 **Finish:** 5/25/2021

Type of Rig: ATV
Rig Model: CME 750X
Drilling Method: Mud Rotary

Boring Location: See Plan
Stationing (ft.): **Offset (ft.):**
Ground Surface Elevation (ft.): 397
Final Boring Depth (ft.): 22

H. Datum: -
V. Datum: NAVD 88
Northing:
Easting:

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4/3.5

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

Date	Time	Water Depth	Stab. Time
Not	Measured		

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (per 6 in.)	Sample SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	Stratum Depth (ft.)	Stratum Description	Stratum Elev. (ft.)
		S-1	0.0-2	24	14	1 1 1 3	2	S-1: Top 1": TOPSOIL Bottom 13": Very loose, brown, fine to medium SAND, some Silt, little Gravel, occasional roots.			0.3	TOPSOIL	396.7
		S-2	2.0-4	24	15	6 8 10 12	18	S-2: Medium dense, brown, fine to medium SAND, some Silt, little Gravel, trace mica.				SILTY SAND	
5		S-3	4.0-6	24	15	11 32 20 25	52	S-3: Very dense, brown, fine to medium SAND, some Silt, little Gravel, trace mica.			4		393.0
		S-4	6.0-8	11	8	21 100/5"	R	S-4: Very dense, brown, fine to medium SAND, some Silt, little Gravel, trace mica.	1				
		S-5	8.0-10	24	6	41 27 50 30	77	S-5: Very dense, brown, fine to medium SAND and SILT, little Gravel.					
10		S-6	10.0-12	24	10	21 40 37 29	77	S-6: Very dense, brown, fine to medium SAND and SILT, little Gravel, trace mica.				GLACIAL TILL	
15		S-7	15.0-17	24	13	11 21 19 20	40	S-7: Dense, brown, fine to medium SAND and SILT, little Gravel, trace mica.					
											18.5		378.5
20		S-8	20.0-22	24	15	19 25 45 64	70	S-8: Top 9": Dense, brown, fine to medium SAND and SILT, little Gravel, trace mica. Bottom 6": Hard, gray SILT, little Gravel, trace Sand, trace mica.	2			DECOMPOSED ROCK	
								End of exploration at 22 feet.	3		22		375.0
25													
30													

REMARKS

1 - Possible Cobbles/Boulders at approximately 7 feet below ground surface.
2 - Photoionization Detector (PID) readings were obtained for all samples. Results PID = 0 ppm throughout.
3 - Borehole was backfilled with soil cuttings and bentonite upon completion.

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: B-26

GZA TEMPLATE TEST BORING - GZA 2016_01_26.GDT - 6/21/21 10:21 - J:\GINT PROJECT DATABASES\41.0162800\41.0162892.00.GPJ

TEST BORING LOG

GZA GeoEnvironmental of New York
Engineers and Scientists

Westchester Joint Water Works
Water Treatment Plant
Westchester County, New York

EXPLORATION NO.: B-27
SHEET: 1 of 1
PROJECT NO: 41.0162892.00
REVIEWED BY: D. Patel

Logged By: A. Amador
Drilling Co.: Craig Test Boring Co., Inc.
Foreman: Dave Cooke/S. Schultz
Date Start: 5/28/2021 **Finish:** 5/28/2021

Type of Rig: ATV
Rig Model: CME 750X
Drilling Method: Mud Rotary

Boring Location: See Plan
Stationing (ft.): **Offset (ft.):**
Ground Surface Elevation (ft.): 412
Final Boring Depth (ft.): 22

H. Datum: -
V. Datum: NAVD 88
Northing:
Easting:

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4/3.5

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

Date	Time	Water Depth	Stab. Time
Not	Measured		

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (per 6 in.)	Sample SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	Stratum Depth (ft.)	Stratum Description	Stratum Elev. (ft.)
		S-1	0.0-2	24	11	1 8 5 3	13	S-1: Top 1": TOPSOIL Bottom 10": Medium dense, brown, fine to medium SAND and SILT, little Gravel, occasional roots.			0.3	TOPSOIL	411.7
		S-2	2.0-4	24	19	5 7 8 10	15	S-2: Medium dense, brown, fine to medium SAND and SILT, little Gravel, trace Clay, trace mica.				SILTY SAND	
5		S-3	4.0-6	24	18	7 9 11 13	20	S-3: Medium dense, brown, fine to medium SAND and SILT, little Gravel, trace mica.			6		406.0
		S-4	6.0-8	24	16	12 14 16 19	30	S-4: Medium dense, brown, fine to medium SAND and SILT, little Gravel, trace mica.					
		S-5	8.0-10	24	16	9 18 20 34	38	S-5: Dense, brown, fine to medium SAND and SILT, little Gravel, trace mica.					
10		S-6	10.0-12	24	14	9 17 13 12	30	S-6: Medium dense, brown, fine to coarse SAND, little Gravel, little Silt, trace mica.				GLACIAL TILL	
15		S-7	15.0-17	24	19	17 12 19 29	31	S-7: Dense, brown, fine to medium SAND and SILT, little Gravel, trace mica.					
20		S-8	20.0-22	24	4	12 18 21 26	39	S-8: Dense, brown, fine to medium SAND and SILT, little Gravel, trace mica.	1 2		22		390.0
								End of exploration at 22 feet.	3				
25													
30													

REMARKS

1 - Gravel encountered at tip of split spoon at sample S-8.
2 - Photoionization Detector (PID) readings were obtained for all samples. Results PID = 0 ppm throughout.
3 - Borehole was backfilled with soil cuttings and bentonite upon completion.

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: B-27

GZA TEMPLATE TEST BORING - GZA 2016_01_26.GDT - 6/21/21 10:21 - J:\GINT PROJECT DATABASES\41.0162800\41.0162892.00.GPJ

TEST BORING LOG

GZA GeoEnvironmental of New York
Engineers and Scientists

Westchester Joint Water Works
Water Treatment Plant
Westchester County, New York

EXPLORATION NO.: B-28
SHEET: 1 of 1
PROJECT NO: 41.0162892.00
REVIEWED BY: D. Patel

Logged By: A. Amador
Drilling Co.: Craig Test Boring Co., Inc.
Foreman: P. Mullins/S. Schultz
Date Start: 6/4/2021 **Finish:** 6/4/2021

Type of Rig: ATV
Rig Model: CME 750X
Drilling Method: Mud Rotary

Boring Location: See Plan
Stationing (ft.): **Offset (ft.):**
Ground Surface Elevation (ft.): 408
Final Boring Depth (ft.): 22

H. Datum: -
V. Datum: NAVD 88
Northing:
Easting:

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4/3.5

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

Date	Time	Water Depth	Stab. Time
Not	Measured		

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (per 6 in.)	Sample SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	Stratum Depth (ft.)	Stratum Description	Stratum Elev. (ft.)
		S-1	0.0-2	24	12	1 1 3 4	4	S-1: Top 1": TOPSOIL Bottom 11": Very loose, brown, fine to medium SAND and SILT, little Gravel, trace roots.			0.3	TOPSOIL	407.7
		S-2	2.0-4	24	22	4 5 14 15	19	S-2: Medium dense, brown, fine to medium SAND and SILT, little Gravel, trace mica.			4	SILTY SAND	404.0
5		S-3	4.0-6	24	2	26 31 29 24	60	S-3: Very dense, brown, fine to medium SAND, some Gravel, some Silt.	1				
		S-4	6.0-8	24	13	20 13 9 22	22	S-4: Medium dense, brown fine to medium SAND and SILT, little Gravel, trace mica.					
		S-5	8.0-10	24	15	15 15 16 23	31	S-5: Dense brown fine to medium SAND and SILT, little Gravel, trace mica.					
10		S-6	10.0-12	24	17	24 20 20 21	40	S-6: Dense brown fine to medium SAND and SILT, little Gravel, trace mica.				GLACIAL TILL	
15		S-7	15.0-17	24	21	15 19 21 25	40	S-7: Dense brown fine to medium SAND and SILT, little Gravel, trace mica.					
20		S-8	20.0-22	24	20	12 18 26 27	44	S-8: Dense brown fine to medium SAND and SILT, little Gravel, trace mica.	2		22		386.0
								End of exploration at 22 feet.	3				
25													
30													

REMARKS

1 - Gravel encountered at tip of split spoon at sample S-3.
2 - Photoionization Detector (PID) readings were obtained for all samples. Results PID = 0 ppm throughout.
3 - Borehole was backfilled with soil cuttings and bentonite upon completion.

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: B-28

GZA TEMPLATE TEST BORING - GZA 2016_01_26.GDT - 6/21/21 10:21 - J:\GINT PROJECT DATABASES\41.0162800\41.0162892.00.GPJ

TEST BORING LOG

GZA GeoEnvironmental of New York
Engineers and Scientists

Westchester Joint Water Works
Water Treatment Plant
Westchester County, New York

EXPLORATION NO.: B-29
SHEET: 1 of 1
PROJECT NO: 41.0162892.00
REVIEWED BY: D. Patel

Logged By: A. Amador
Drilling Co.: Craig Test Boring Co., Inc.
Foreman: P. Mullins/S. Schultz
Date Start: 6/2/2021 **Finish:** 6/2/2021

Type of Rig: ATV
Rig Model: CME 750X
Drilling Method: Mud Rotary

Boring Location: See Plan
Stationing (ft.): **Offset (ft.):**
Ground Surface Elevation (ft.): 389
Final Boring Depth (ft.): 22

H. Datum: -
V. Datum: NAVD 88
Northing:
Easting:

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4/3.5

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

Date	Time	Water Depth	Stab. Time
6/3/21	10:00	7.0 ft	
6/4/21	10:00	8.0 ft	

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Blows (per 6 in.)	SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	Stratum Depth (ft.)	Stratum Description	Stratum Elev. (ft.)
		S-1	0.0-2	24	13	1 1 1 2	2	S-1: Top 1": TOPSOIL Bottom 12": Very loose, brown, fine to medium SAND, some Silt, little Gravel.			0.3	TOPSOIL	388.7
		S-2	2.0-4	24	12	2 2 2 4	4	S-2: Very loose, brown, fine to medium SAND, some Silt, little Gravel.			4	SILTY SAND	385.0
5		S-3	4.0-6	24	6	3 55 20 18	75	S-3: Very dense, brown, fine to medium SAND, some Silt, little Gravel, trace mica.					
		S-4	6.0-8	24	9	18 12 16 24	28	S-4: Medium dense, brown, fine to medium SAND and SILT, little Gravel, trace mica.					
		S-5	8.0-10	24	10	32 28 15 15	43	S-5: Dense, gray-brown, fine to coarse SAND, some Gravel, some Silt.					
10		S-6	10.0-12	24	13	6 13 10 5	23	S-6: Medium Dense, brown, fine to medium SAND and SILT, little Gravel, trace mica.	1			GLACIAL TILL	
15		S-7	15.0-17	24	17	19 20 27 20	47	S-7: Dense, gray, fine to medium SAND and SILT, little Gravel, trace mica.					
20		S-8	20.0-22	24	17	20 27 28 28	55	S-8: Very Dense, gray, fine to medium SAND and SILT, little Gravel, trace mica.	2		22		367.0
								End of exploration at 22 feet.	3				
25													
30													

REMARKS

1 - Hard drilling from approximately 4-10 feet in depth.
2 - Photoionization Detector (PID) readings were obtained for all samples. Results PID = 0 ppm throughout.
3 - Borehole was drilled ahead to 25 feet below ground surface. A 28 foot long PVC well was installed in borehole (See Well Installation Log). Borehole was backfilled with filter sand around PVC annulus area upon completion.

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: B-29

GZA TEMPLATE TEST BORING - GZA 2016_01_26.GDT - 6/21/21 10:21 - J:\GINT PROJECT DATABASES\41.0162800\41.0162892.00.GPJ

TEST BORING LOG

GZA GeoEnvironmental of New York
Engineers and Scientists

Westchester Joint Water Works
Water Treatment Plant
Westchester County, New York

EXPLORATION NO.: B-30
SHEET: 1 of 1
PROJECT NO: 41.0162892.00
REVIEWED BY: D. Patel

Logged By: A. Amador
Drilling Co.: Craig Test Boring Co., Inc.
Foreman: Dave Cooke/S. Schultz
Date Start: 6/1/2021 **Finish:** 6/1/2021

Type of Rig: ATV
Rig Model: CME 750X
Drilling Method: Mud Rotary

Boring Location: See Plan
Stationing (ft.): **Offset (ft.):**
Ground Surface Elevation (ft.): 394
Final Boring Depth (ft.): 22

H. Datum: -
V. Datum: NAVD 88
Northing:
Easting:

Hammer Type: Automatic Hammer
Hammer Weight (lb.): 140
Hammer Fall (in.): 30
Auger or Casing O.D./I.D Dia (in.): 4/3.5

Sampler Type: SS
Sampler O.D. (in.): 2.0
Sampler Length (in.): 24
Rock Core Size: N/A

Groundwater Depth (ft.)

Date	Time	Water Depth	Stab. Time
Not	Measured		

Depth (ft)	Casing Blows/ Core Rate	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (per 6 in.)	Sample SPT Value	Sample Description and Identification (Modified Burmister Procedure)	Remark	Field Test Data	Stratum Depth (ft.)	Stratum Description	Stratum Elev. (ft.)
		S-1	0.0-2	24	7	1 2 3 6	5	S-1: Top 1": TOPSOIL Bottom 6": Loose, brown, fine to medium SAND and SILT, little Gravel, trace roots.			0.3	TOPSOIL	393.7
		S-2	2.0-4	24	13	1 1 3 9	4	S-2: Very loose, brown, fine to medium SAND, some Silt, little Gravel.					
5		S-3	4.0-6	24	10	2 2 3 5	5	S-3: Loose, brown, fine to coarse SAND, some Silt, little Gravel, trace mica.				SILTY SAND	
		S-4	6.0-8	24	14	4 5 7 11	12	S-4: Medium dense, brown, fine to medium SAND and SILT, trace Gravel.					
		S-5	8.0-10	24	10	2 2 3 23	5	S-5: Loose, brown, fine to coarse SAND, some Silt, little Gravel, trace mica.					
10		S-6	10.0-12	24	7	8 20 40 36	60	S-6: Very dense, brown, fine to coarse SAND, some Silt, little Gravel, trace mica.	1		10		384.0
15		S-7	15.0-17	24	14	13 17 18 22	35	S-7: Dense, brown, fine to medium SAND and SILT, little Gravel, trace mica.				GLACIAL TILL	
20		S-8	20.0-22	24	10	14 13 18 20	31	S-8: Dense, brown, fine to medium SAND and SILT, little Gravel, trace mica.	2		22		372.0
								End of exploration at 22 feet.	3				
25													
30													

REMARKS

1 - Gravel encountered at tip of spoon at sample S-7.
2 - Photoionization Detector (PID) readings were obtained for all samples. Results PID = 0 ppm throughout.
3 - Borehole was backfilled with soil cuttings and bentonite upon completion.

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: B-30

GZA TEMPLATE TEST BORING - GZA 2016_01_26.GDT - 6/21/21 10:21 - J:\GINT PROJECT DATABASES\41.0162800\41.0162892.00.GPJ

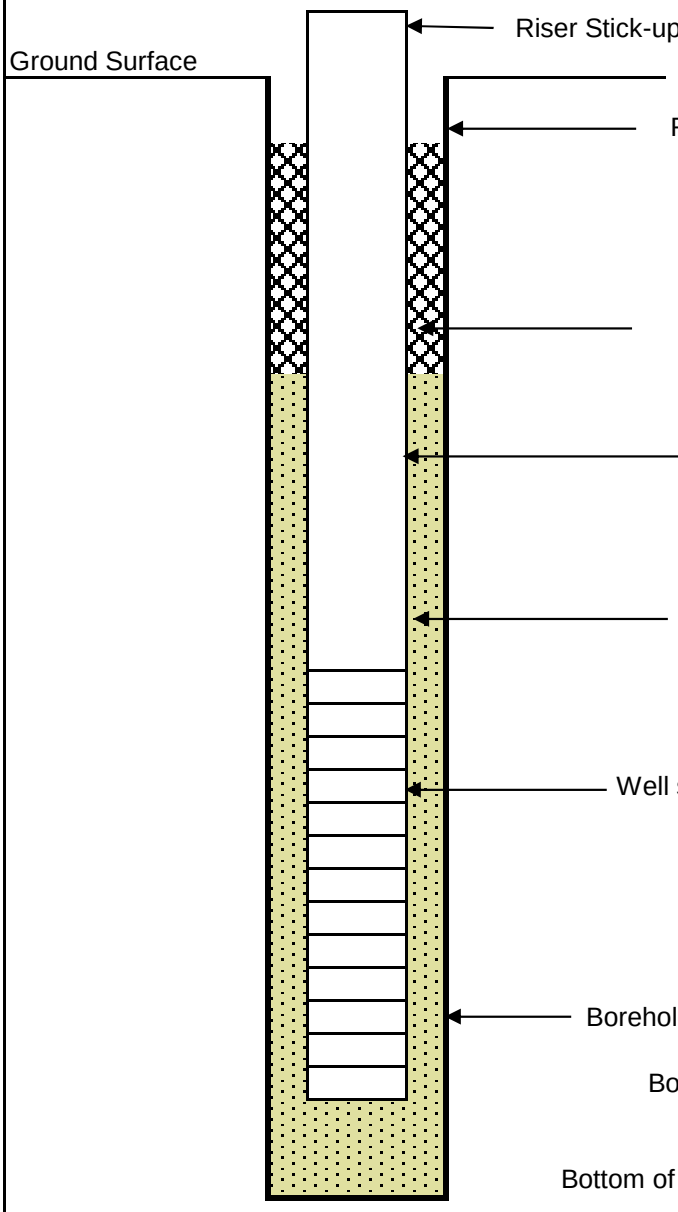
TEMPORARY GROUNDWATER OBSERVATION WELL INSTALLATION LOG

GZA GEOENVIRONMENTAL OF NEW YORK 104 WEST 29TH STREET, 10TH FLOOR NEW YORK, NEW YORK 10001 GEOTECHNICAL CONSULTANTS	**Proj. Name:** Westchester Joint Water Works Proposed Filtration Plant **Location:** Westchester County, New York	WELL NO. B-3a(OW) SHEET 1 of 1 GZA PROJECT NO. 41.0162892.00 PROJECT LOCATION See Plan

CONTRACTOR	Craig Testing Co., Inc.	BORING LOCATION	B-3a
		GROUND SURFACE EL. (FT)	407
FOREMAN	Paul Mullins	DATUM	NAVD 88
GZA ENG.	A. Amador	DATE INSALLTED	5/18/2021

WATER LEVELS

DATE	TIME	DEPTH (FT)
5/26/2021	730 AM	5
5/27/2021	730 AM	5.1
6/1/2021	800 AM	5.2
6/4/2021	1100 AM	3.7



Riser Stick-up from Ground Surface 3.0 ft.

Round Well Protector, Steel Cap

Bentonite Seal from 0 ft. to 2 ft.

Riser Pipe from -3.0 ft. to 17.0 ft.

Filter pack 2 ft. to 27 ft.

Sand Size #2 Filter Sand

Well screen from 17.0 ft. to 27.0 ft.

Diameter 2 inches
Slot size 0.001 inches
Type 2" PVC

Borehole diameter 4 inches

Bottom Cap at 27.0 ft.

Bottom of Borehole at 60.4 ft.

(NOT TO SCALE)

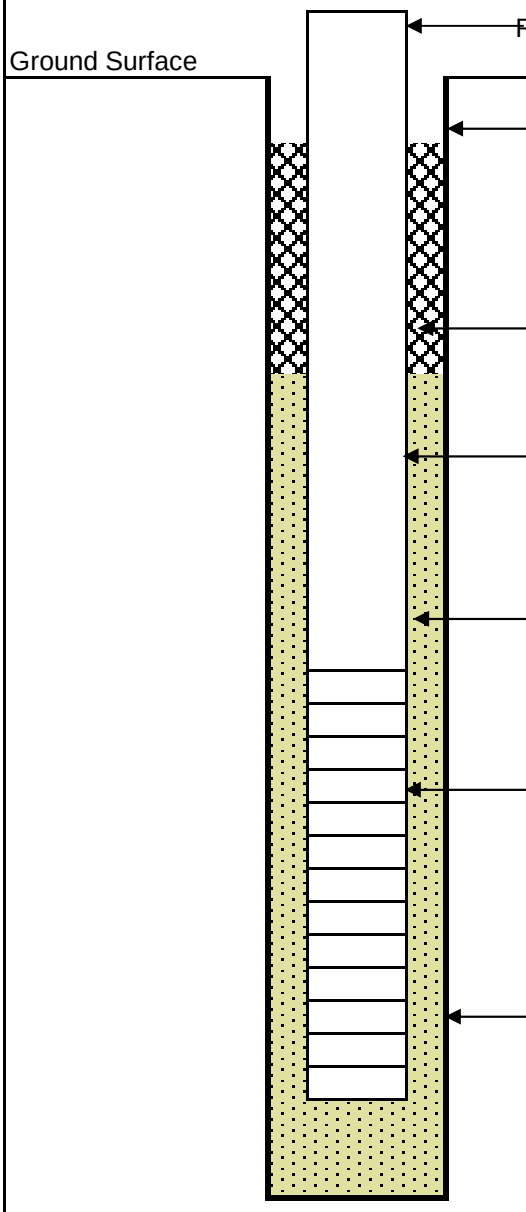
TEMPORARY GROUNDWATER OBSERVATION WELL INSTALLATION LOG

GZA GEOENVIRONMENTAL OF NEW YORK 104 WEST 29TH STREET, 10TH FLOOR NEW YORK, NEW YORK 10001 GEOTECHNICAL CONSULTANTS	**Proj. Name:** Westchester Joint Water Works Proposed Filtration Plant **Location:** Westchester County, New York	WELL NO. B-29(OW) SHEET 1 of 1 GZA PROJECT NO. 41.0162892.00 PROJECT LOCATION See Plan

CONTRACTOR	Craig Testing Co., Inc.	BORING LOCATION	B-29
		GROUND SURFACE EL. (FT)	389
FOREMAN	Paul Mullins	DATUM	NAVD 88
GZA ENG.	A. Amador	DATE INSALLTED	6/2/2021

WATER LEVELS

DATE	TIME	DEPTH (FT)
6/3/2021	1000 AM	7
6/4/2021	800 AM	8



Riser Stick-up from Ground Surface 3.0 ft.

Ground Surface

Round Well Protector, Steel Cap

Bentonite Seal from 0 ft. to 4 ft.

Riser Pipe from -3.0 ft. to 15.0 ft.

Filter pack 4 ft. to 25 ft.

Sand Size #2 Filter Sand

Well screen from 15.0 ft. to 25.0 ft.

Diameter 2 inches
Slot size 0.001 inches
Type 2" PVC

Borehole diameter 4 inches

Bottom Cap at 25.0 ft.

Bottom of Borehole at 25 ft.

(NOT TO SCALE)

GZA Geoenvironmental of NY

Well No. **B-29(OW)**

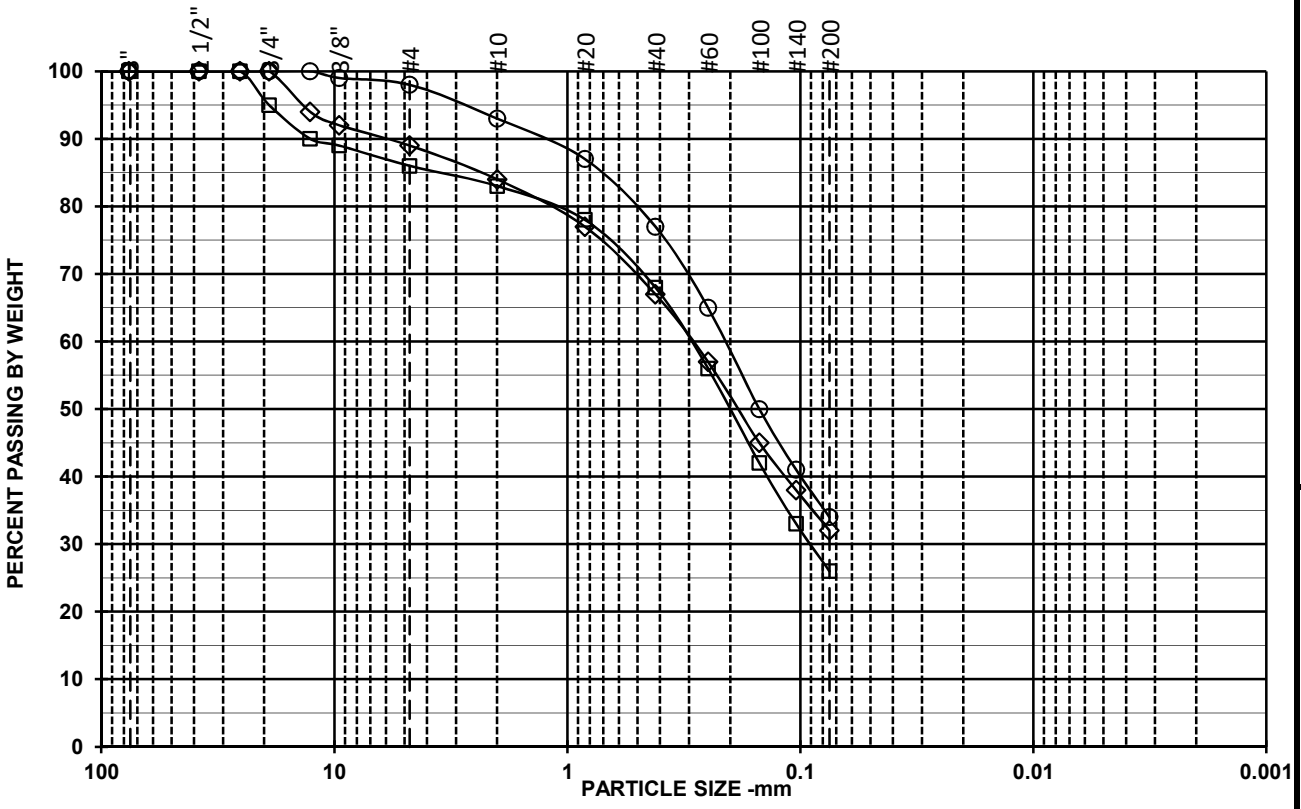
APPENDIX C

GEOTECHNICAL LABORATORY TEST RESULTS

GZA #41.0162892.00
Westchester Joint Water Works Water Treatment Plant
LABORATORY TESTING DATA SUMMARY

BORING NO.	SAMPLE NO.	DEPTH (ft)	IDENTIFICATION TESTS			REMARKS
			WATER CONTENT (%)	USCS SYMB. (1)	SIEVE MINUS NO. 200 (%)	
B-2	S-9	25-27	11.4	SM	26	
B-6	S-7	15-17	12.5	SM	32	
B-11	S-8	20-22	12.5	SM	34	
B-20	S-4	8-10	13.4	SM	23	
B-22	S-5	10-12	12.8	SM	33	
B-25	S-6	10-12	10.4	SM	30	
B-27	S-6	10-12	14.4	SM	15	

Note: (1) USCS symbol based on visual observation and Sieve reported.



Open Symbols: Sieve analysis by ASTM D6913
Filled symbols: Hydrometer analysis by ASTM D7928 corrected for complete sample

SYMBOL	w (%)	LL	PL	PI	USCS	AASHTO	USCS DESCRIPTION AND REMARKS	DATE
□	11.4				SM		Grayish brown, Silty sand, Insufficient sample size	06/14/21
◇	12.5				SM		Brown, Silty sand, Insufficient sample size	06/14/21
○	12.5				SM		Dark brown, Silty sand	06/14/21

GZA #41.0162892.00

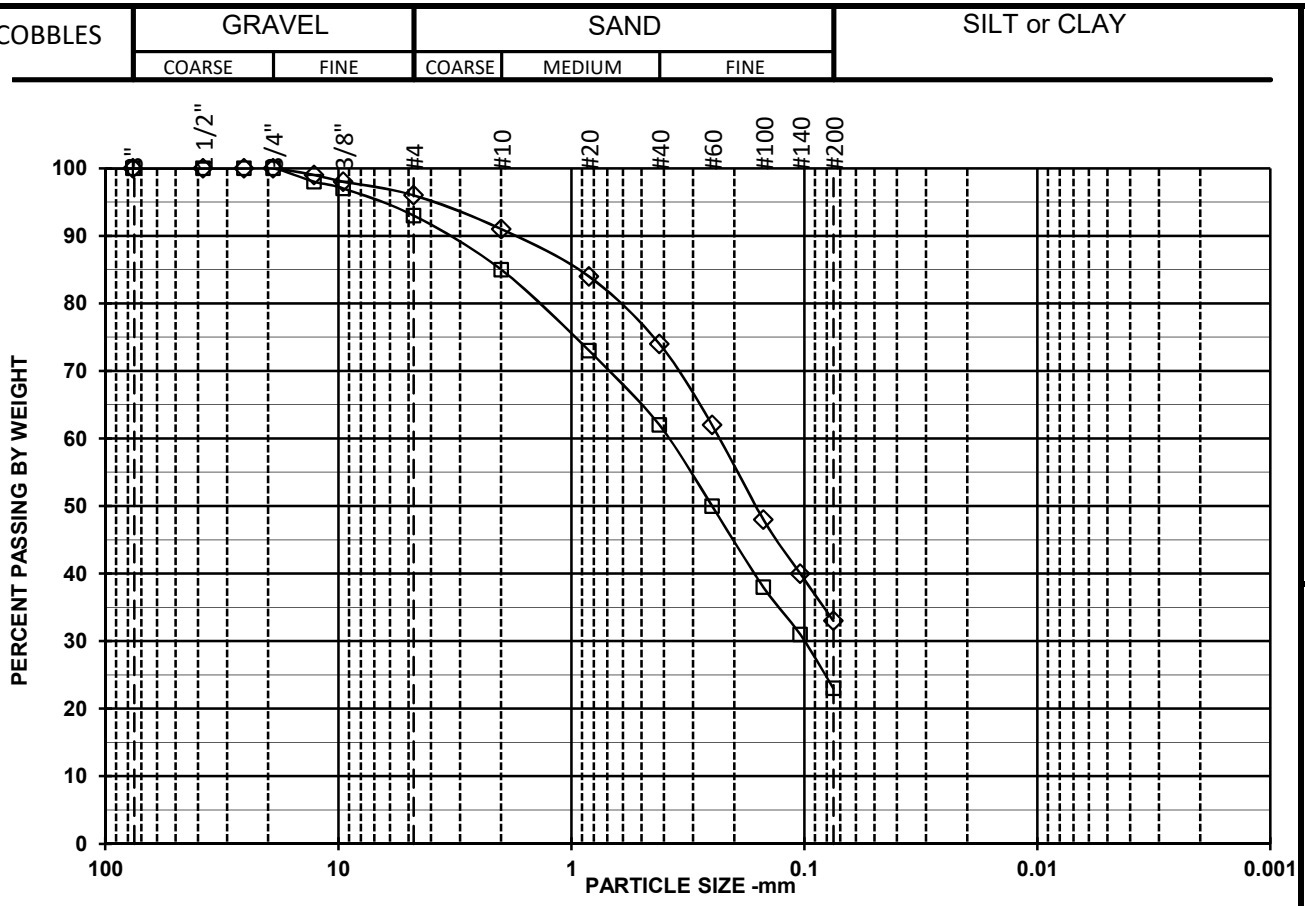
TerraSense, LLC #7930-21016

Westchester Joint Water Works Water Treatment Plant

Symbol	□	◇	○
Boring	B-2	B-6	B-11
Sample	S-9	S-7	S-8
Depth	25-27	15-17	20-22
% +3"	0	0	0
% Gravel	14	11	2
% SAND	60	57	64
%C SAND	3	5	5
%M SAND	15	17	16
%F SAND	42	35	43
% FINES	26	32	34
D_{100} (mm)	25.4	19.1	12.7
D_{60} (mm)	0.296	0.291	0.21
D_{30} (mm)	0.09		
D_{10} (mm)			
Cc			
Cu			

Sieve Size/ID #	Percent Finer Data		
6"	100	100	100
4"	100	100	100
3"	100	100	100
1 1/2"	100	100	100
1"	100	100	100
3/4"	95	100	100
1/2"	90	94	100
3/8"	89	92	99
#4	86	89	98
#10	83	84	93
#20	78	77	87
#40	68	67	77
#60	56	57	65
#100	42	45	50
#140	33	38	41
#200	26	32	34
5μ m			
2μ m			
1μ m			

PARTICLE SIZE DISTRIBUTION
ASTM D6913 & ASTM D7928



Open Symbols: Sieve analysis by ASTM D6913
Filled symbols: Hydrometer analysis by ASTM D7928 corrected for complete sample

SYMBOL	w (%)	LL	PL	PI	USCS	AASHTO	USCS DESCRIPTION AND REMARKS	DATE
□	13.4				SM		Dark brown, Silty sand, Insufficient sample size	06/14/21
◇	12.8				SM		Brown, Silty sand, Insufficient sample size	06/14/21
○								

Symbol	□	◇	○
Boring	B-20	B-22	
Sample	S-4	S-5	
Depth	8-10	10-12	
% +3"	0	0	
% Gravel	7	4	
% SAND	70	63	
%C SAND	8	5	
%M SAND	23	17	
%F SAND	39	41	
% FINES	23	33	
D_{100} (mm)	19.1	19.1	
D_{60} (mm)	0.384	0.232	
D_{30} (mm)	0.1		
D_{10} (mm)			
Cc			
Cu			

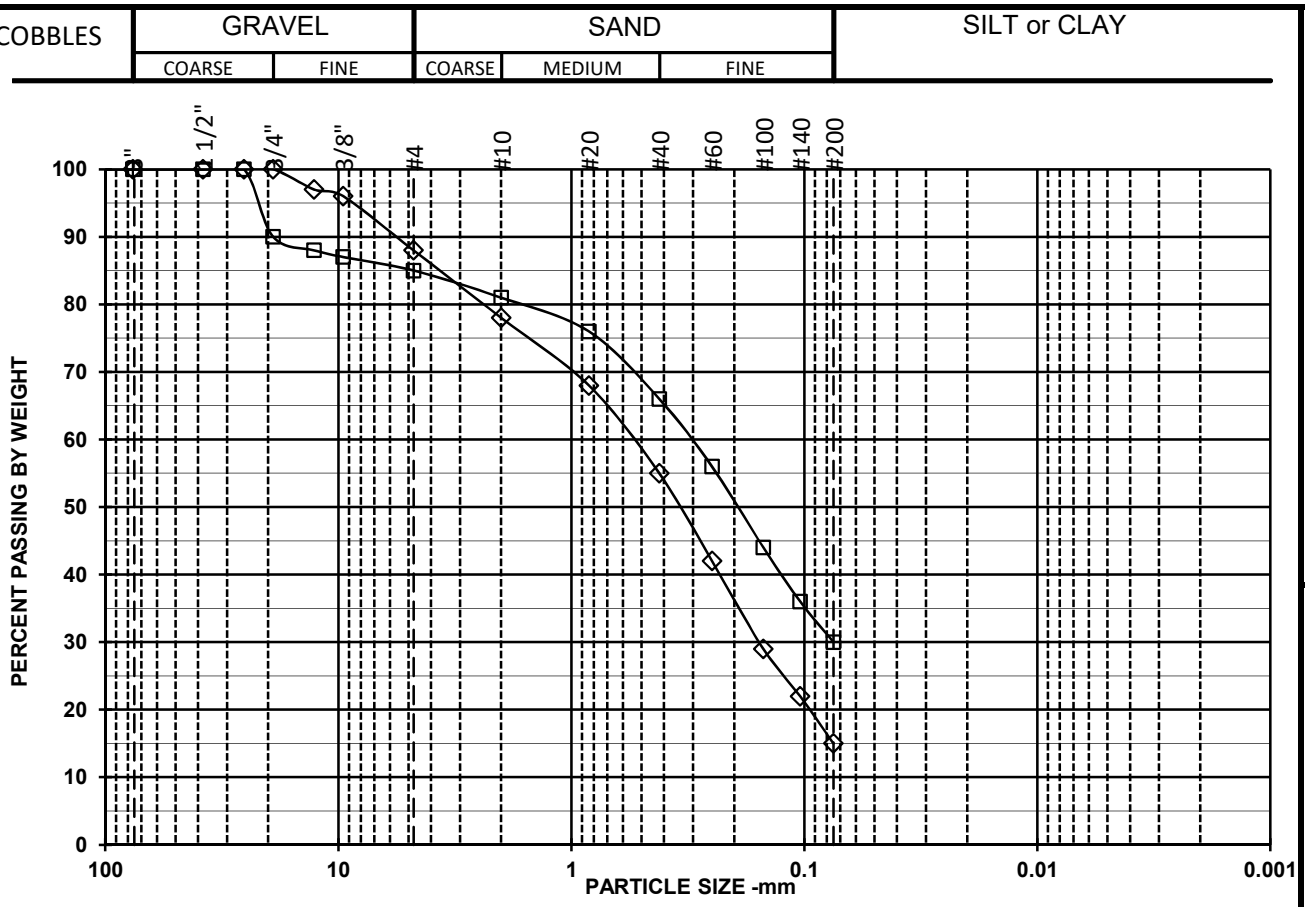
Sieve Size/ID #	Percent Finer Data		
6"	100	100	
4"	100	100	
3"	100	100	
1 1/2"	100	100	
1"	100	100	
3/4"	100	100	
1/2"	98	99	
3/8"	97	98	
#4	93	96	
#10	85	91	
#20	73	84	
#40	62	74	
#60	50	62	
#100	38	48	
#140	31	40	
#200	23	33	
5μ m			
2μ m			
1μ m			

GZA #41.0162892.00

TerraSense, LLC #7930-21016

Westchester Joint Water Works Water Treatment Plant

PARTICLE SIZE DISTRIBUTION
ASTM D6913 & ASTM D7928



Open Symbols: Sieve analysis by ASTM D6913
Filled symbols: Hydrometer analysis by ASTM D7928 corrected for complete sample

SYMBOL	w (%)	LL	PL	PI	USCS	AASHTO	USCS DESCRIPTION AND REMARKS	DATE
□	10.4				SM		Brown, Silty sand with gravel, Insufficient sample size	06/14/21
◇	14.4				SM		Brown, Silty sand, Insufficient sample size	06/14/21
○								

Symbol	□	◇	○
Boring	B-25	B-27	
Sample	S-6	S-6	
Depth	10-12	10-12	
% +3"	0	0	
% Gravel	15	12	
% SAND	55	73	
%C SAND	4	10	
%M SAND	15	23	
%F SAND	36	40	
% FINES	30	15	
D_{100} (mm)	25.4	19.1	
D_{60} (mm)	0.307	0.548	
D_{30} (mm)	0.075	0.16	
D_{10} (mm)			
Cc			
Cu			

Sieve Size/ID #	Percent Finer Data		
6"	100	100	
4"	100	100	
3"	100	100	
1 1/2"	100	100	
1"	100	100	
3/4"	90	100	
1/2"	88	97	
3/8"	87	96	
#4	85	88	
#10	81	78	
#20	76	68	
#40	66	55	
#60	56	42	
#100	44	29	
#140	36	22	
#200	30	15	
5μ m			
2μ m			
1μ m			

GZA #41.0162892.00

TerraSense, LLC #7930-21016

Westchester Joint Water Works Water Treatment Plant

PARTICLE SIZE DISTRIBUTION
ASTM D6913 & ASTM D7928

TerraSense, LLC
Geotesting Laboratory

07/092021
TerraSense Project Number: 7930-21016-2

Dharmil Patel
Project Manager
GZA
104 West 29th Street, Floor 10
New York, NY 10001

Dear Mr. Patel:

Re: Laboratory Test Results for Westchester Joint Water Works Water Treatment Plant

The purpose of this letter is to present the results of the laboratory tests performed on the samples delivered to the TerraSense laboratory on 06/07/21. Testing was performed based on the assignment dated 06/03/21 by S. Benyaminov.

Test Results

Test results are reported on the accompanying test pages.

Test Comments

Testing was performed in general accordance to the ASTM or other methods as listed on the test pages. Deviations from the test standards are noted on these pages.

Limitations

Our professional services for this project have been performed in accordance with generally accepted engineering practices; no other warranty, expressed or implied, is made.

Sample Disposition

If we do not receive other instructions from you within thirty days, this material will be disposed of.

If you have any questions concerning the test results reported in this letter, please call us.

Sincerely,
TerraSense, LLC.

Rosella Thomas
Managing Member

Enclosure:

GZA #41.0162892.00
Westchester Joint water Works Water Treatment Plant
LABORATORY TESTING DATA SUMMARY

BORING NO.	SAMPLE NO.	DEPTH	IDENTIFICATION TESTS							COMPACTION			CBR			REMARKS
			WATER CONTENT (%)	USCS SYMB. (1)	TOTAL UNIT WEIGHT (pcf)	DRY UNIT WEIGHT (pcf)	Type Test	PEAK SHEAR STRENGTH (ksf)	Pd @ PEAK STRESS (%)	ASTM STD.	OPT. WATER CONTENT (%)	MAX . DRY UNIT WGT. (pcf)	PREPARATION WATER CONTENT (%)	PREPARATION DRY UNIT WGT. (pcf)	CBR @ 0.1-inch (-)	
B-16 to B-18	S-1 to S-3	0-5								D1557C	11.0	124.5	9.3	121.9	50.1	
B-3	S-8 & S-9	20-22 25-27												See corrosion summary		
B-7	S-6	10-12	11.0	SC	142.0	127.9										
B-7	S-7	15-17	14.8*	SC	139.4*	121.4*	DS@1.10	1.1	4.1					* As compacted. See DS2300		
B-25	S-7 & S-8	15-17 20-22												See corrosion summary		
B-26	S-6	10-12	10.9*	SM	141.3*	127.5*	DS@1.49	0.8	9.7					* As compacted. See DS2298		
B-26	S-7	15-17	10.4	SC	144.6	131.0										
B-27	S-5	8-10	9.0	SM	127.4	116.9										
B-27	S-7	15-17	12.2*	SM	141.3*	126.0*	DS@1.49	1.1	3.8					* As compacted. See DS2299		

Note: (1) USCS symbol based on visual observation.

GZA #41.0162892.00
Westchester Joint water Works Water Treatment Plant
Summary of Corrosion Testing

SAMPLE ID			RESISTIVITY TESTS					CHEMICAL TESTS									REMARKS
Boring No.	Sample No. *	Depth (ft)	Test Method	As-Received		@ Minimum Resistivity		pH ASTM G51		Awwa Appendix A					Leachable Chloride (1) ASTM D4327 (ppm)	Leachable Sulfate (1) ASTM D4327 (ppm)	
				Water Content (%)	Resistivity (kΩ - cm)	Water Content (%)	Resistivity (kΩ - cm)	pH (pH units)	Temperature (°C)	Redox Potential R1 (mV)	R2 (mV)	R3 (mV)	Average (mV)	Sulfide Response (visual)			
B-3	S-8 & S-9	20-22 25-27	ASTM G57	10.2	8.7	16.5	8.1	8.1	21.9	201	196	185	194	trace	<10	41	
B-25	S-7 & S-8	15-17 20-22	ASTM G57	11.1	13.3	31.4	10.9	7.7	21.4	173	182	161	172	trace	<10	12	

* Tests performed on sample fraction finer than #8 sieve

KEY: (1) Test results provided by Luvak.

TerraSense, LLC
45H Commerce Way
Totowa, NJ 07512
(973) 812-1818

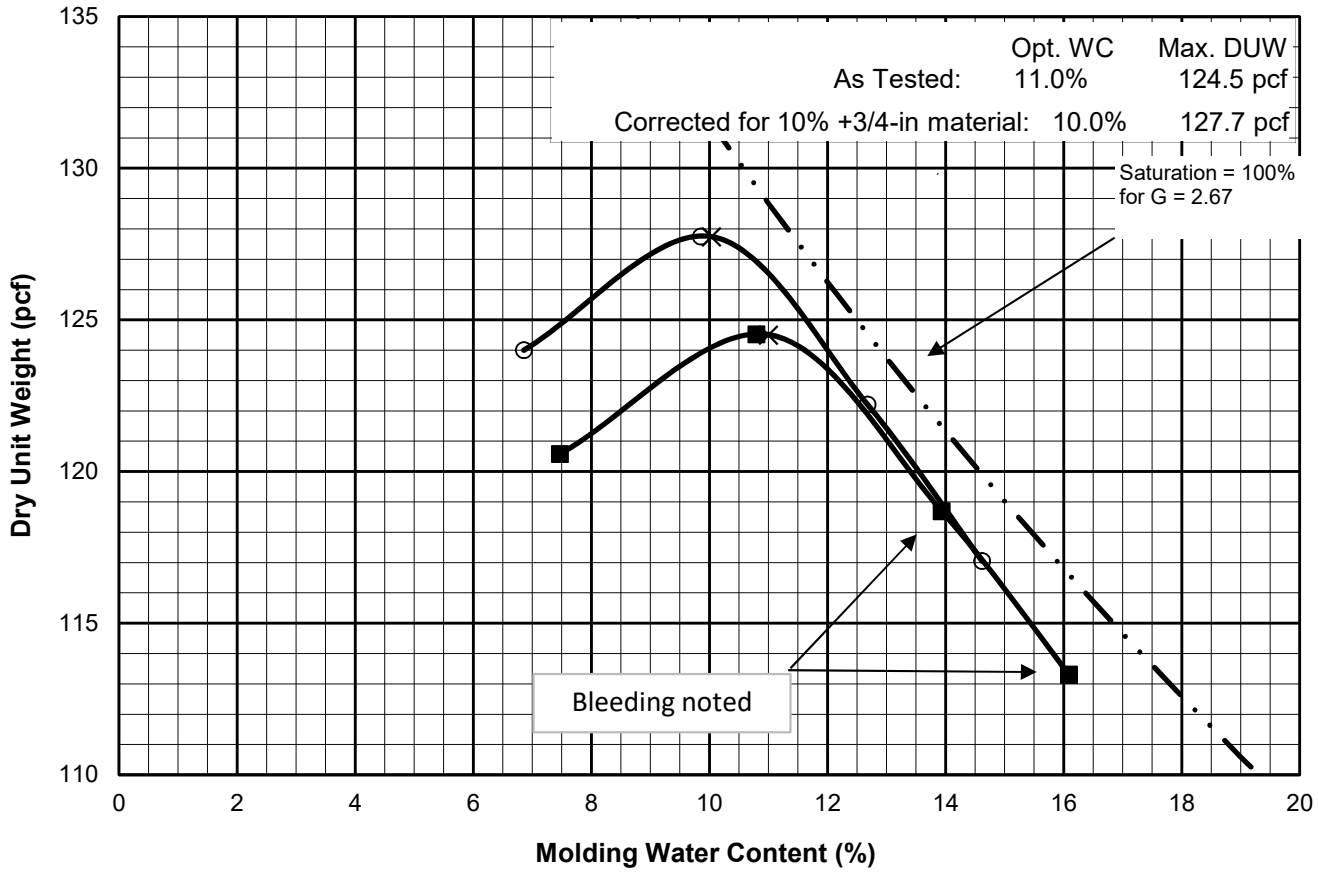
Prepared by: MT
Reviewed by: RT
Date: 7/9/2021

Project No. 7930-21016
File: Corrosion16-2.xlsx

COMPACTION CURVE

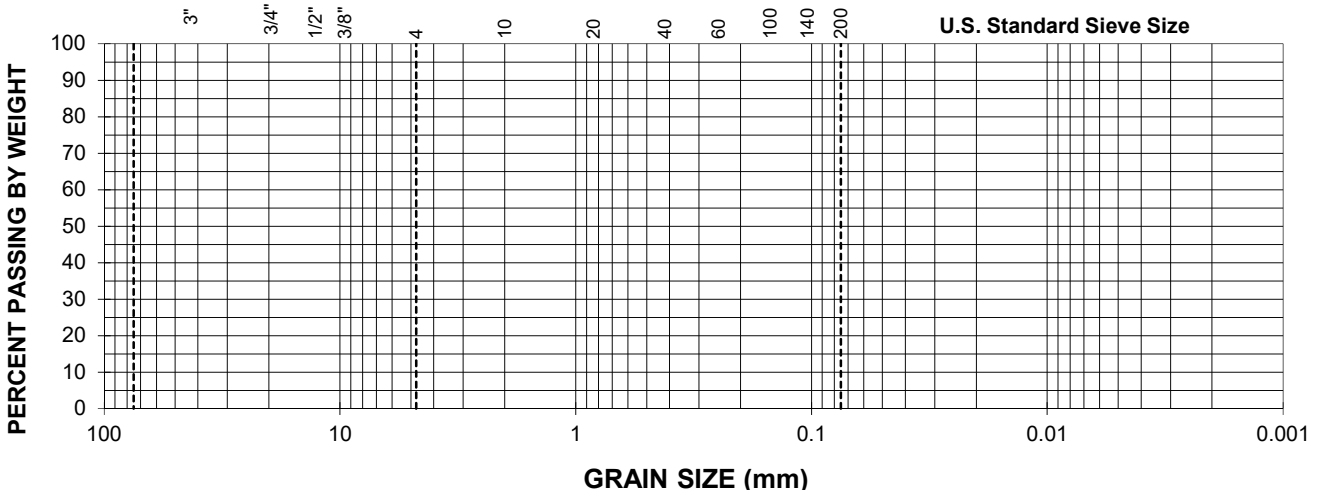
Test Method: ASTM D1557 Compaction Procedure: **C** Specimen Preparation Method: **Moist**
Type of Rammer: **Mechanical** Rammer Face: **Sectional**

NOTATION: ○ Representative of entire sample ■ Compaction Test specimen X Selected Optimum Point



PARTICLE-SIZE DISTRIBUTION CURVE

COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	



Description and/or Classification	LL	PL	PI	% Fines	Specific Gravity
SM, brown, Silty sand with gravel					2.67 (Assumed)

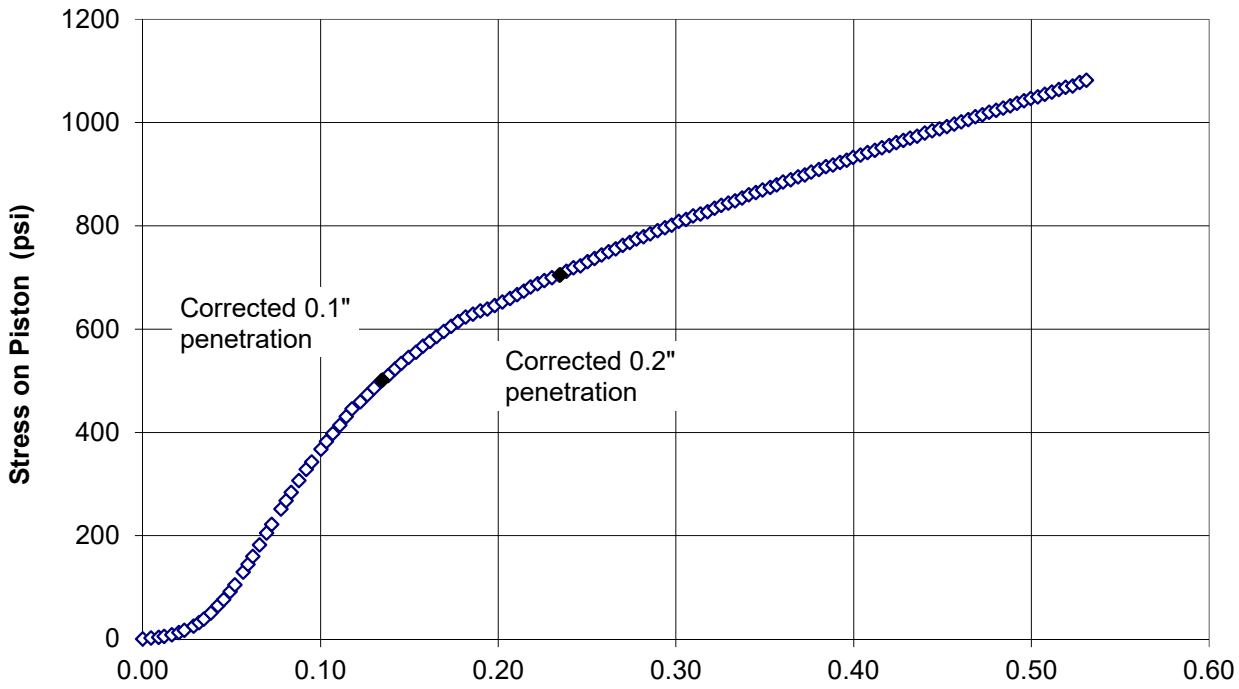
Westchester Joint water Works Water Treatment Plant

ID B-16 to B-18
Sample S-1 to S-3 Depth 0-5 ft

GZA Project No. 41.0162892.00

TerraSense, LLC Project No. 7930-21016

COMPACTION AND INDEX PROPERTY DATA



TEST SUMMARY

	Bearing Ratio at 0.1"	Bearing Ratio at 0.2"	Surcharge Used lbs	Penetration Rate inch/min
Specimen Soaked	50.1	47.0	10	0.05

SAMPLE INFORMATION

Boring: B-16 to B-18
Sample: S-I to S-3
Depth: 0-5 ft

Compaction water content = 9.3 %
Compaction dry density =121.9 pcf

SPECIMEN INFORMATION

Height: 4.6 inch
Diameter: 6.0 inch
Volume: 0.0748 ft³

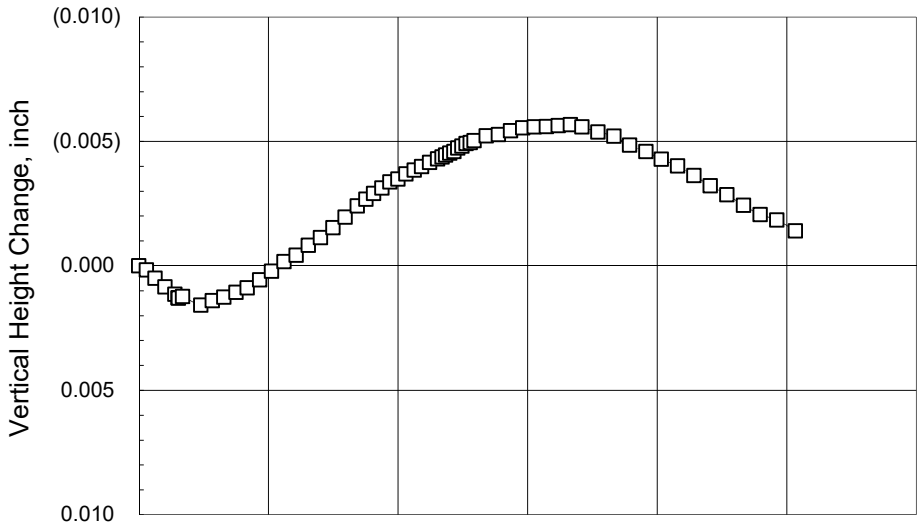
Final water content = 15.4 %
Final dry density =121.4 pcf

Sample swelled 0.4% after soaking for 4 days

Remarks: Specimen compacted at 95% of Modified effort maximum dry density, ~ optimum water content

Tested by: RT Test Date: Jun 15, 2021 Checked By: GET

tchester Joint water Works Water Treatment F	CALIFORNIA BEARING RATIO TEST ASTM D1883	
GZA	Project No. 41.0162892.00	
TerraSense, LLC	Project No. 7930-21016	July 2021



SAMPLE INFORMATION

Boring: B-7 Sample: S-7

Type: Laboratory recompacted "dense"@ rec'd MC

SPECIMEN INFORMATION (Initial)

Description: SC, Brown, Clayey sand.

Height: 1.13 inch Diameter: 2.50 inch Area: 4.91 in²

Water Content: 14.8 % Dry Unit Weight: 121.4 pcf

TEST SUMMARY

Vertical Consolidation Stress: 1.49 ksf

Water Content: 16.7 % Dry Unit Weight: 123.4 pcf

Deformation Rate: 0.00289 inch/min.

Peak Shear Strength: 1.11 ksf @ 0.10 inch deformation

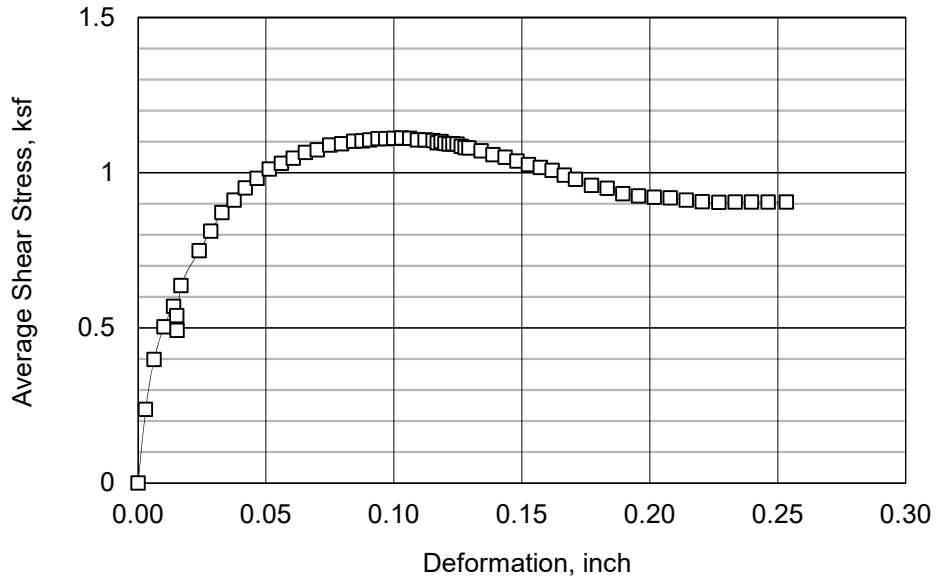
Peak Effective Friction Angle: 36.6°, cohesion = 0.0 ksf

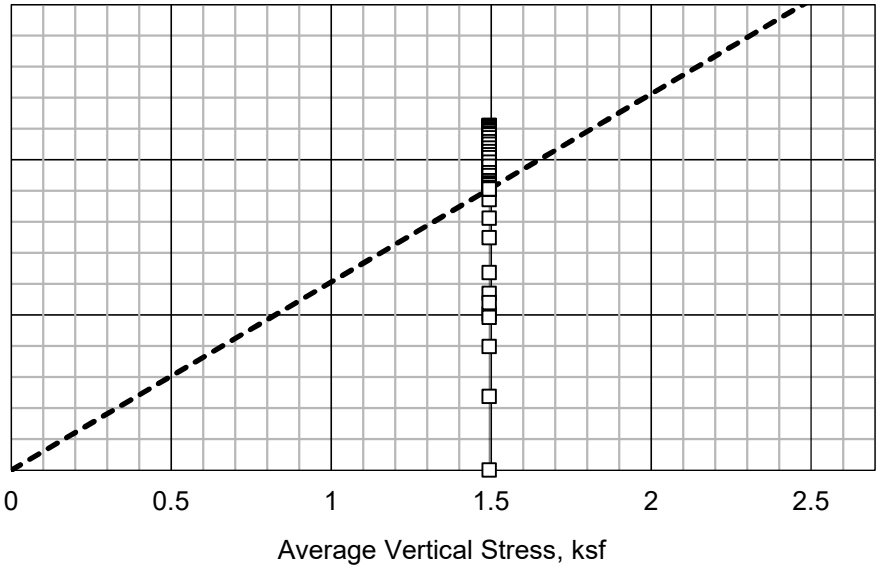
Final Shear Strength: 0.91 ksf @ 0.25 inch deformation

Final Effective Friction Angle: 31.2° (Shown)

REMARKS:

-#4 sieve fraction tested





	GZA 41.0162892.00	Westchester Joint Water Works Water Treatment Plant	**DRAINED DIRECT SHEAR** **TEST SUMMARY**
Prepared by: DM Checked by: GET	**TerraSense, LLC**	7930-21016	Boring: B-7 Sample: S-7 Depth: 15-17 ft.

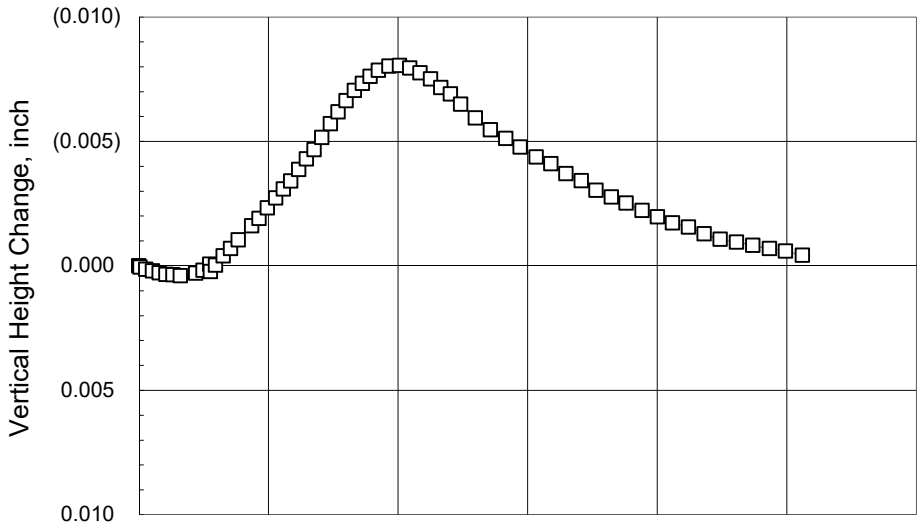
DRAINED DIRECT SHEAR TEST SERIES

Boring No / Sample/ Specimen	Stage No	w_o / w_c (%)	γ_{to} / γ_{tc} (estimated) (pcf)	γ_{do} / γ_{dc} (pcf)	$\sigma'_{v,c}$ (ksf) / $\varepsilon_{v,c}$ (%)	ε_a rate (inch/min.) / t_c (days)	at Peak Shear Stress at High Deformation ΔL (inch)	τ_h (ksf)	ε_v (%)	Φ' for c'=0	Remarks
B-7	Stage 9	14.8	139.4	121.4	1.5	0.0029	0.10	1.11	-0.33	36.6	
S-7/1		16.7	144.0	123.4	1.7	0.04	0.25	0.91	-0.12	31.2	

Description of Material Tested and Remarks
SC, Brown, Clayey sand.

Strength Envelope Summary			
Test Series	Failure Criterion	Φ' (degree)	c' (ksf)
1	1	36.6	
	2	31.2	
Failure Criterion		1. Peak shear stress 2. High deformation	

	GZA 41.0162892.00	Westchester Joint Water Works Water Treatment Plant	**DRAINED DIRECT SHEAR** **STRENGTH ENVELOPE SUMMARY**	Figure
Prepared by: DM Checked by: GET	**TerraSense, LLC**	7930-21016	Boring: B-7 Sample: S-7 Depth: 15-17 ft.	7/9/21



SAMPLE INFORMATION

Boring: B-26 Sample: S-6

Type: Laboratory recompacted "dense"@ rec'd MC

SPECIMEN INFORMATION (Initial)

Description: SM, Brown, Silty sand

Height: 1.11 inch Diameter: 2.50 inch Area: 4.91 in²

Water Content: 10.9 % Dry Unit Weight: 127.5 pcf

TEST SUMMARY

Vertical Consolidation Stress: 1.10 ksf

Water Content: 13.6 % Dry Unit Weight: 129.5 pcf

Deformation Rate: 0.00048 inch/min.

Peak Shear Strength: 0.83 ksf @ 0.24 inch deformation

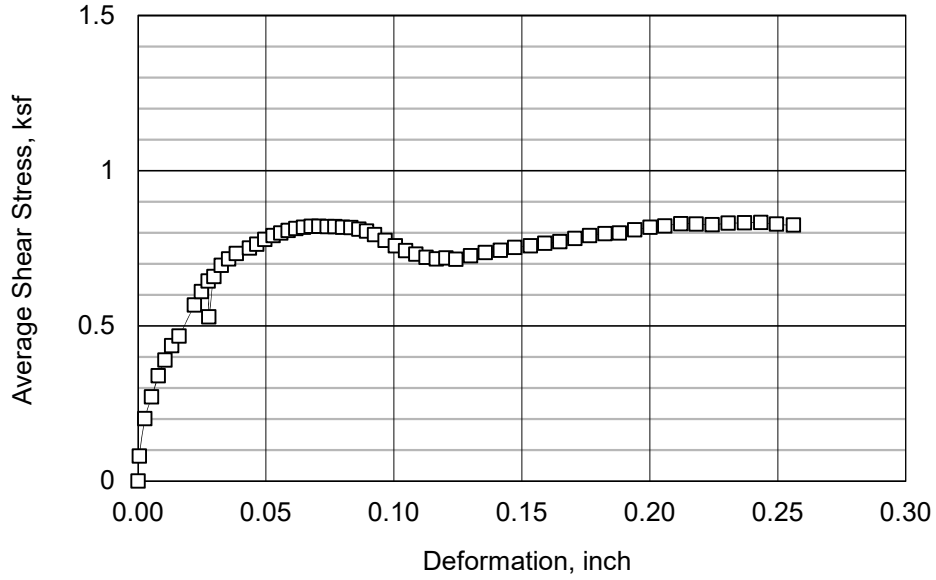
Peak Effective Friction Angle: 37.1°, cohesion = 0.0 ksf

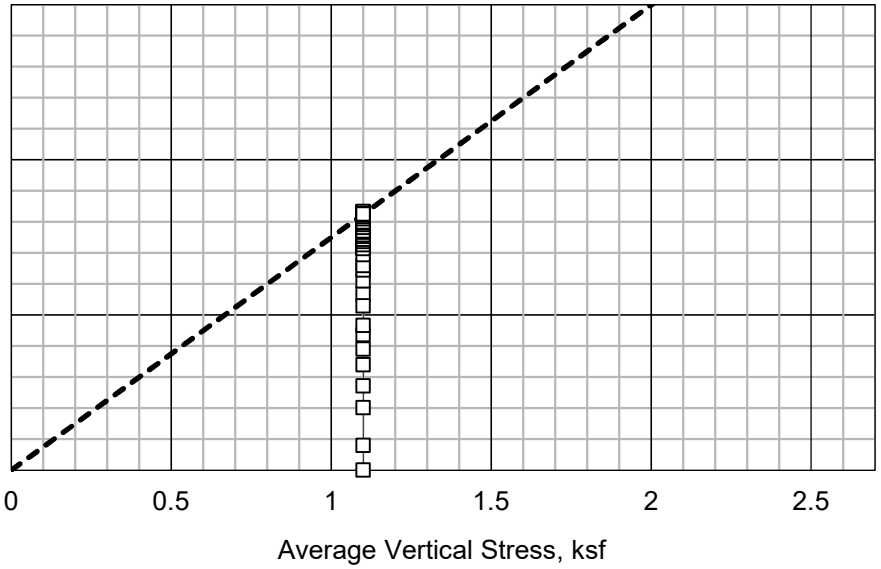
Final Shear Strength: 0.82 ksf @ 0.26 inch deformation

Final Effective Friction Angle: 36.9° (Shown)

REMARKS:

-#4 sieve fraction tested





	GZA 41.0162892.00	Westchester Joint Water Works Water Treatment Plant	**DRAINED DIRECT SHEAR** **TEST SUMMARY**
Prepared by: DM Checked by: GET	**TerraSense, LLC**	7930-21016	Boring: B-26 Sample: S-6 Depth: 10-12 ft.

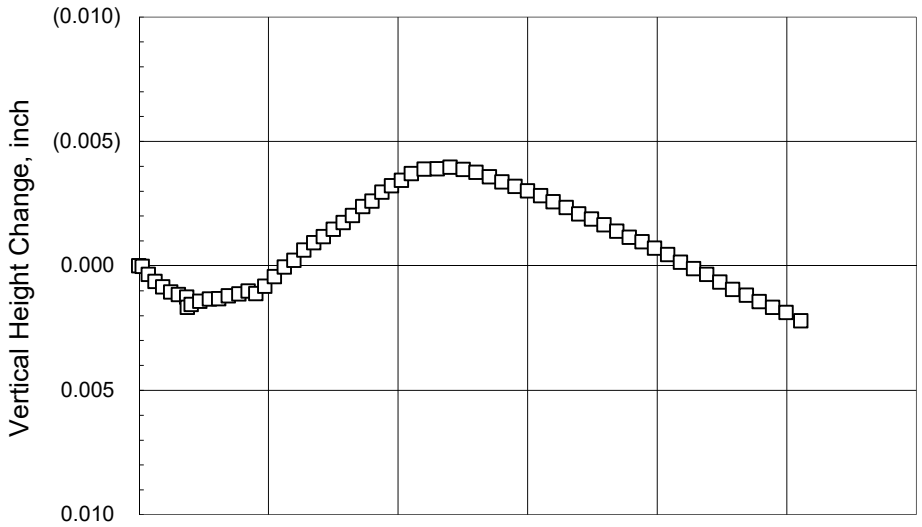
DRAINED DIRECT SHEAR TEST SERIES

Boring No / Sample / Specimen	Stage No	w_o / w_c (%)	γ_{to} / γ_{tc} (estimated) (pcf)	γ_{do} / γ_{dc} (pcf)	$\sigma'_{v,c}$ (ksf) / $\varepsilon_{v,c}$ (%)	ε_a rate (inch/min.) / t_c (days)	at Peak Shear Stress at High Deformation ΔL (inch)	τ_h (ksf)	ε_v (%)	Φ' for c'=0	Remarks
B-26	Stage 9	10.9	141.3	127.5	1.1	0.0005	0.24	0.83	-0.06	37.1	
S-6/1		13.6	147.2	129.5	1.6	0.01	0.26	0.82	-0.04	36.9	

Description of Material Tested and Remarks
SM, Brown, Silty sand

Strength Envelope Summary			
Test Series	Failure Criterion	Φ' (degree)	c' (ksf)
1	1	37.1	
	2	36.9	
Failure Criterion		1. Peak shear stress 2. High deformation	

Prepared by: DM Checked by: GET	GZA 41.0162892.00 **TerraSense, LLC**	Westchester Joint Water Works Water Treatment Plant 7930-21016	**DRAINED DIRECT SHEAR** **STRENGTH ENVELOPE SUMMARY** Boring: B-26 Sample: S-6 Depth: 10-12 ft.	Figure 7/9/21



SAMPLE INFORMATION

Boring: B-27 Sample: S-7

Type: Laboratory recompacted "dense"@ rec'd MC

SPECIMEN INFORMATION (Initial)

Description: SM, Brown, Silty sand

Height: 1.11 inch Diameter: 2.50 inch Area: 4.91 in²

Water Content: 12.2 % Dry Unit Weight: 126.0 pcf

TEST SUMMARY

Vertical Consolidation Stress: 1.49 ksf

Water Content: 13.0 % Dry Unit Weight: 128.1 pcf

Deformation Rate: 0.00115 inch/min.

Peak Shear Strength: 1.11 ksf @ 0.09 inch deformation

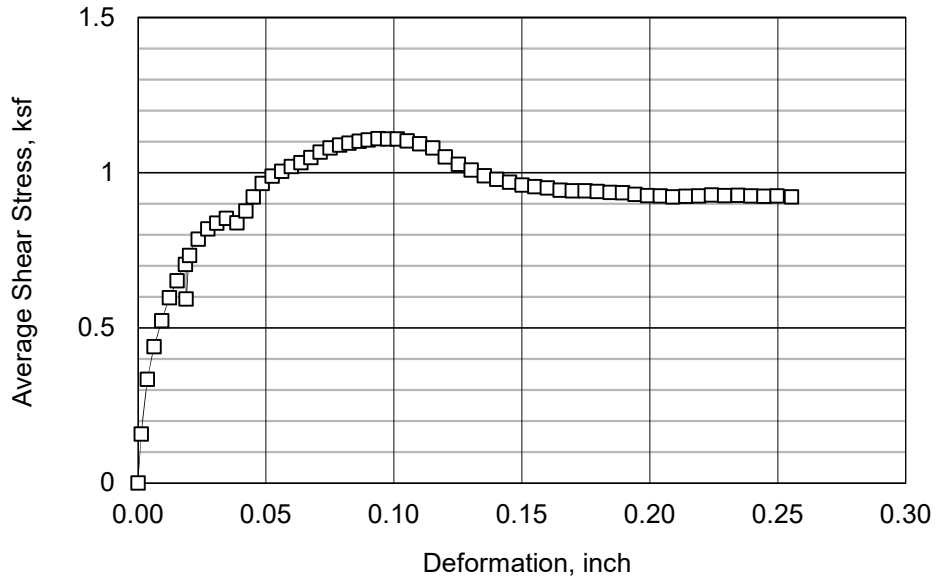
Peak Effective Friction Angle: 36.6°, cohesion = 0.0 ksf

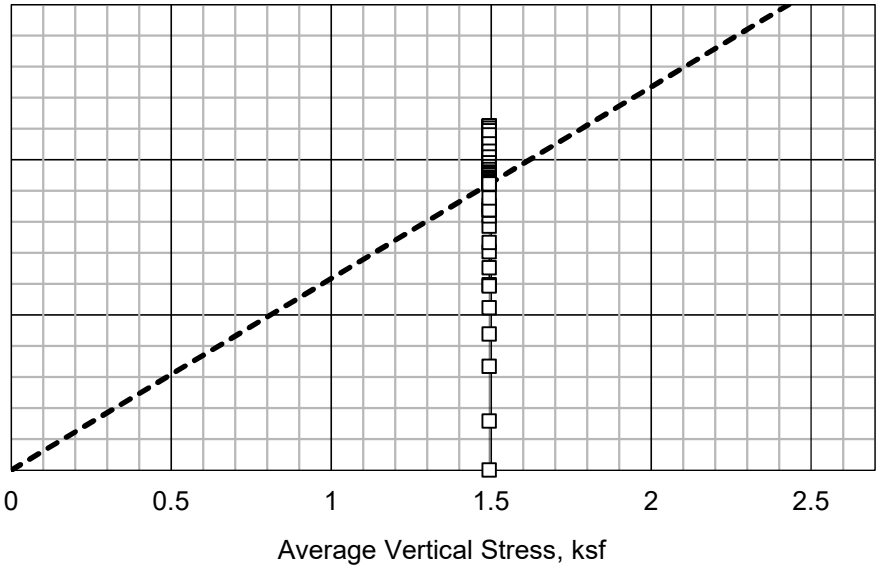
Final Shear Strength: 0.92 ksf @ 0.26 inch deformation

Final Effective Friction Angle: 31.7° (Shown)

REMARKS:

-#4 sieve fraction tested





	GZA 41.0162892.00	Westchester Joint Water Works Water Treatment Plant	**DRAINED DIRECT SHEAR** **TEST SUMMARY**
Prepared by: DM Checked by: GET	**TerraSense, LLC**	7930-21016	Boring: B-27 Sample: S-7 Depth: 15-17 ft.

DRAINED DIRECT SHEAR TEST SERIES

Boring No / Sample/ Specimen	Stage No	w_o / w_c (%)	γ_{to} / γ_{tc} (estimated) (pcf)	γ_{do} / γ_{dc} (pcf)	$\sigma'_{v,c}$ (ksf) / $\varepsilon_{v,c}$ (%)	ε_a rate (inch/min.) / t_c (days)	at Peak Shear Stress at High Deformation ΔL (inch)	τ_h (ksf)	ε_v (%)	Φ' for c'=0	Remarks
B-27	Stage 9	12.2	141.3	126.	1.5	0.0011	0.09	1.11	-0.27	36.6	
S-7/1		13.0	144.7	128.1	1.6	0.00	0.26	0.92	0.20	31.7	

Description of Material Tested and Remarks
SM, Brown, Silty sand

Strength Envelope Summary			
Test Series	Failure Criterion	Φ' (degree)	c' (ksf)
1	1	36.6	
	2	31.7	
Failure Criterion		1. Peak shear stress 2. High deformation	

	GZA 41.0162892.00	Westchester Joint Water Works Water Treatment Plant	**DRAINED DIRECT SHEAR** **STRENGTH ENVELOPE SUMMARY**	Figure
Prepared by: DM Checked by: GET	**TerraSense, LLC**	7930-21016	Boring: B-27 Sample: S-7 Depth: 15-17 ft.	7/9/21

APPENDIX D

PERMEABILITY TESTING AND GROUNDWATER MONITORING RESULTS

Permeability Test Log

GZA GeoEnvironmental of NY
104 West 29th Street, 10th Floor
New York, NY 10001

PT ID No. PT-19
Sheet 1 of 1

Prepared for:
Hazen and Sawyer

Project: Westchester Joint Water Works Water Treatment Plant
Location/Borough: Westchester County, NY

INSPECTOR: A. Amador
CONTRACTOR: CRAIG TESTING
DRILLER: Paul Muliins
HELPER: Steve Schultz
Start Date: 06/04/2021
Start Time: 0830
Weather: Cloudy, Low 70s F

Test Depth: 8.5 ft
Test El. (NAVD88): 394.5 ft
Rig Type: CME 750 X
Drill Bit Type: Roller-bit
Casing Inside Diameter: 4 in.
Casing Length: 126 in.
Weight of Hammer for Casing: 140 lbs.
Type of Hammer: Automatic

ASTM D-6391-06
PERMEABILITY COEFFICIENT (Km) FORMULA:

General Formula:

$$K_m = \pi \times \frac{\left[D\left\{Ln\left(\frac{h_1}{h_2}\right)\right\}\right]}{11 \times (t_2 - t_1)}$$

Formula for 4" I.D. casing (in/hr):

$$K_m = 1.142 \times \frac{\left[Ln\left(\frac{h_1}{h_2}\right)\right]}{(t_2 - t_1)}$$

PT-20 @ 8.5 ft

TEST 1

FIELD DATA		CALCULATED DATA				
Time (min)	Depth (in)	h_1 (in)	h_2 (in)	Ln (h1/h2)	(t2-t1)	*Kv (in/hr)
1	0.0000	126.0000	126.0000	0.0000	0.0167	0.0000
2	0.0000	126.0000	126.0000	0.0000	0.0167	0.0000
3	0.0000	126.0000	126.0000	0.0000	0.0167	0.0000
4	0.0313	126.0000	125.9688	0.0002	0.0167	0.0170
5	0.0313	125.9688	125.9688	0.0000	0.0167	0.0000
10	0.0625	125.9688	125.9375	0.0002	0.0833	0.0034
15	0.0938	125.9375	125.9063	0.0002	0.0833	0.0034

TEST 2

FIELD DATA		CALCULATED DATA				
Time (min)	Depth (in)	h_1 (in)	h_2 (in)	Ln (h1/h2)	(t2-t1)	*Kv (in/hr)
1	0.0000	126.0000	126.0000	0.0000	0.0167	0.0000
2	0.0000	126.0000	126.0000	0.0000	0.0167	0.0000
3	0.0000	126.0000	126.0000	0.0000	0.0167	0.0000
4	0.0000	126.0000	126.0000	0.0000	0.0167	0.0000
5	0.0313	126.0000	125.9688	0.0002	0.0167	0.0170
10	0.0625	125.9688	125.9375	0.0002	0.0833	0.0034
15	0.0938	125.9375	125.9063	0.0002	0.0833	0.0034

TEST 1 FINAL RESULTS

Time Weighted Average Kv= 0.0034 in/hr
Permeability Coefficient

TEST 2 FINAL RESULTS

Time Weighted Average Kv= 0.0034 in/hr
Permeability Coefficient

AVERAGE PT

Time Weighted Average Kv= 0.003 in/hr
Permeability Coefficient

Inspector's Remarks:
Soil sampling continued at 10 feet after percolation test was completed. See B-19 boring log.

DEFINITIONS OF VARIABLES

*Kv= Vertical permeability
I.D.= Internal diameter of casing in the same units elected for Kv
Ln= Natural Logarithmic
t1= Time at the start of the test in the same units selected for Kv
t2= Time at the end of the test in the units selected for Kv
h1= Height of the water above the bottom of the casing at the start of the same units selected for Kv
h2= Height of the water above the bottom of the casing at the end of the test in

Permeability Test Log

GZA GeoEnvironmental of NY 104 West 29th Street, 10th Floor New York, NY 10001		PT ID No. PT-20 Sheet 1 of 1
Prepared for: Hazen and Sawyer		Project: Westchester Joint Water Works Water Treatment Plant Location/Borough: Westchester County, NY
INSPECTOR: A. Amador CONTRACTOR: CRAIG TESTING	DRILLER: Paul Muliins HELPER: Steve Schultz	Start Date: 06/03/2021 Start Time: 1155
		Weather: Cloudy, High 60s F
Test Depth: 7.5 ft Test El. (NAVD88): 393.5 ft Rig Type: CME 750 X	Drill Bit Type: Roller-bit Casing Inside Diameter: 4 in. Casing Length: 102 in.	Weight of Hammer for Casing: 140 lbs. Type of Hammer: Automatic

ASTM D-6391-06
PERMEABILITY COEFFICIENT (Km) FORMULA:

General Formula:

$$K_m = \pi \times \frac{\left[D\left\{Ln\left(\frac{h_1}{h_2}\right)\right\}\right]}{11 \times (t_2 - t_1)}$$

Formula for 4" I.D. casing in/hr):

$$K_m = 1.142 \times \frac{\left[Ln\left(\frac{h_1}{h_2}\right)\right]}{(t_2 - t_1)}$$

PT-20 @ 7.5 ft

TEST 1

FIELD DATA		CALCULATED DATA				
Time (min)	Depth (in)	h_1 (in)	h_2 (in)	Ln (h1/h2)	(t2-t1)	*Kv (in/hr)
1	0.0000	102.0000	102.0000	0.0000	0.0167	0.0000
2	0.0313	102.0000	101.9688	0.0003	0.0167	0.0210
3	0.0313	101.9688	101.9688	0.0000	0.0167	0.0000
4	0.0625	101.9688	101.9375	0.0003	0.0167	0.0210
5	0.0625	101.9375	101.9375	0.0000	0.0167	0.0000
10	0.0938	101.9375	101.9063	0.0003	0.0833	0.0042
15	0.1250	101.9063	101.8750	0.0003	0.0833	0.0042

TEST 2

FIELD DATA		CALCULATED DATA				
Time (min)	Depth (in)	h_1 (in)	h_2 (in)	Ln (h1/h2)	(t2-t1)	*Kv (in/hr)
1	0.0000	102.0000	102.0000	0.0000	0.0167	0.0000
2	0.0000	102.0000	102.0000	0.0000	0.0167	0.0000
3	0.0000	102.0000	102.0000	0.0000	0.0167	0.0000
4	0.0313	102.0000	101.9688	0.0003	0.0167	0.0210
5	0.0313	101.9688	101.9688	0.0000	0.0167	0.0000
10	0.0625	101.9688	101.9375	0.0003	0.0833	0.0042
15	0.0938	101.9375	101.9063	0.0003	0.0833	0.0042

TEST 1 FINAL RESULTS

Time Weighted Average Kv= 0.0056 in/hr
Permeability Coefficient

TEST 2 FINAL RESULTS

Time Weighted Average Kv= 0.0042 in/hr
Permeability Coefficient

AVERAGE PT

Time Weighted Average Kv= 0.005 in/hr
Permeability Coefficient

Inspector's Remarks:
Soil sampling continued at 8 feet after percolation test was completed. See B-20 boring log.

DEFINITIONS OF VARIABLES

*Kv= Vertical permeability
I.D.= Internal diameter of casing in the same units elected for Kv
Ln= Natural Logarithmic
t1= Time at the start of the test in the same units selected for Kv
t2= Time at the end of the test in the units selected for Kv
h1= Height of the water above the bottom of the casing at the start of the same units selected for Kv
h2= Height of the water above the bottom of the casing at the end of the test in

Permeability Test Log

GZA GeoEnvironmental of NY 104 West 29th Street, 10th Floor New York, NY 10001		PT ID No. PT-22 Sheet 1 of 1
Prepared for: Hazen and Sawyer		Project: Westchester Joint Water Works Water Treatment Plant Location/Borough: Westchester County, NY
INSPECTOR: A. Amador CONTRACTOR: CRAIG TESTING	DRILLER: Dave Cooke HELPER: Steve Schultz	Start Date: 05/25/2021 Start Time: 0900
		Weather: Cloudy, 60s F
Test Depth: 9 ft Test El. (NAVD88): 390 ft Rig Type: CME 750 X	Drill Bit Type: Roller-bit Casing Inside Diameter: 4 in. Casing Length: 126 in.	Weight of Hammer for Casing: 140 lbs. Type of Hammer: Automatic

ASTM D-6391-06
PERMEABILITY COEFFICIENT (Km) FORMULA:

General Formula:

$$K_m = \pi \times \frac{\left[D\left\{Ln\left(\frac{h_1}{h_2}\right)\right\}\right]}{11 \times (t_2 - t_1)}$$

Formula for 4" I.D. casing in/hr):

$$K_m = 1.142 \times \frac{\left[Ln\left(\frac{h_1}{h_2}\right)\right]}{(t_2 - t_1)}$$

PT-22 @ 9 ft

TEST 1

FIELD DATA		CALCULATED DATA				
Time (min)	Depth (in)	h_1 (in)	h_2 (in)	Ln (h1/h2)	(t2-t1)	*Kv (in/hr)
1	0.0313	126.0000	125.9688	0.0002	0.0167	0.0170
2	0.0625	125.9688	125.9375	0.0002	0.0167	0.0170
3	0.1250	125.9375	125.8750	0.0005	0.0167	0.0340
4	0.1875	125.8750	125.8125	0.0005	0.0167	0.0340
5	0.2188	125.8125	125.7813	0.0002	0.0167	0.0170
10	0.5000	125.7813	125.5000	0.0022	0.0833	0.0307
15	0.7188	125.5000	125.2813	0.0017	0.0833	0.0239

TEST 2

FIELD DATA		CALCULATED DATA				
Time (min)	Depth (in)	h_1 (in)	h_2 (in)	Ln (h1/h2)	(t2-t1)	*Kv (in/hr)
1	0.0000	126.0000	126.0000	0.0000	0.0167	0.0000
2	0.0313	126.0000	125.9688	0.0002	0.0167	0.0170
3	0.0625	125.9688	125.9375	0.0002	0.0167	0.0170
4	0.1250	125.9375	125.8750	0.0005	0.0167	0.0340
5	0.1875	125.8750	125.8125	0.0005	0.0167	0.0340
10	0.4375	125.8125	125.5625	0.0020	0.0833	0.0273
15	0.6875	125.5625	125.3125	0.0020	0.0833	0.0273

TEST 1 FINAL RESULTS			TEST 2 FINAL RESULTS		
Time Weighted Average Permeability Coefficient	Kv=	0.02613 in/hr	Time Weighted Average Permeability Coefficient	Kv=	0.02499 in/hr

AVERAGE PT		
Time Weighted Average Permeability Coefficient	Kv=	0.026 in/hr

Inspector's Remarks:
Soil sampling continued at 10 feet after percolation test was completed. See B-22 boring log.

DEFINITIONS OF VARIABLES

*Kv= Vertical permeability
I.D.= Internal diameter of casing in the same units elected for Kv
Ln= Natural Logarithmic
t1= Time at the start of the test in the same units selected for Kv
t2= Time at the end of the test in the units selected for Kv
h1= Height of the water above the bottom of the casing at the start of the same units selected for Kv
h2= Height of the water above the bottom of the casing at the end of the test in

GZA GeoEnvironmental of NY

Rising Head Test - Boring B-3a(OW)

Project No.	41.0162892.00	Top of Pipe Elevation (NAVD 88) (ft)	410.0
Project Name	WJWW Rye Lake	Bottom of Well Depth (ft)	29.8
Test Location	B-3a(OW)	Bottom of Well Elev. (NAVD 88) (ft)	380.2
Piezometer Type	Solinst Barologger	Depth to Instrument (ft)	27.9
Piezometer Serial No.	2137768	Elev. of Instrument (NAVD 88) (ft)	382.1
Date of Test	4-Aug-21	Specific Weight of Water at 55 degrees (pcf)	62.36
Performed By	S.B/N.B	Specific Weight of Mercury (psi)	0.491
Sampling Rate	1 Reading/Second	Barometric Pressure (inHg)	30.14
		Barometric Pressure (psi)	14.80

Manual Groundwater Readings

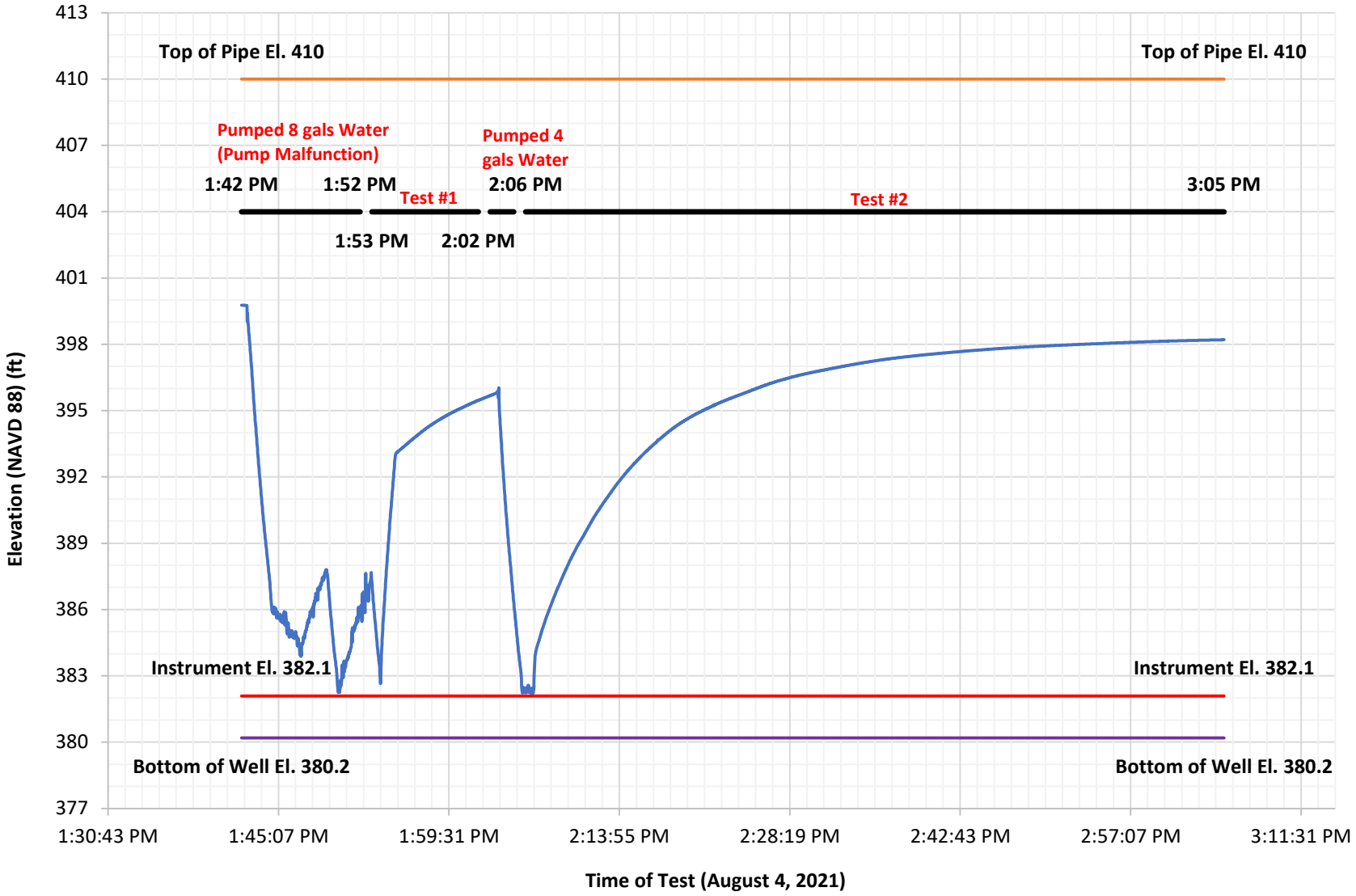
Date	Time	Depth (ft)	Elev.	Remark
8/4/2021	1:42 PM	10.3	399.7	Pump 8 gals (10 mins)
8/4/2021	2:02 PM	14.3	395.7	Pump Malfunction - Cancel Test
8/4/2021	2:05 PM	27.0	383.0	Pump 4 gals (4 mins)
8/4/2021	3:06 PM	11.9	398.1	Test Complete

Time	Level (psi)	Temp. (F)	Water Head (Feet)	Depth to Top of GW (Feet)	GW Elev. NAVD 88 (ft)	Recharge Rate (ft/min)	Remarks
1:42:00 PM	22.4518	54.393	17.6722	10.2278	399.7722	-	Start Pump Test 1
2:02:59 PM	20.6764	52.958	13.5725	14.3275	395.6725	-	Pump Malfunction - Cancel Test 1
2:05:59 PM	14.9451	52.518	0.3380	27.5620	382.4380	-	Complete Pumping Test 2
2:07:00 PM	15.7834	52.217	2.2737	25.6263	384.3737	1.936	Start Depth Test 2
2:08:00 PM	16.4892	52.057	3.9036	23.9964	386.0036	1.630	
2:09:00 PM	17.0617	51.971	5.2256	22.6744	387.3256	1.322	
2:10:00 PM	17.5625	51.923	6.3820	21.5180	388.4820	1.156	
2:11:00 PM	17.9759	51.903	7.3366	20.5634	389.4366	0.955	
2:12:00 PM	18.376	51.884	8.2605	19.6395	390.3605	0.924	
2:13:00 PM	18.7149	51.872	9.0431	18.8569	391.1431	0.783	
2:14:00 PM	19.0287	51.863	9.7677	18.1323	391.8677	0.725	
2:15:00 PM	19.3031	51.858	10.4013	17.4987	392.5013	0.634	
2:16:00 PM	19.5452	51.851	10.9604	16.9396	393.0604	0.559	
2:17:00 PM	19.7588	51.852	11.4536	16.4464	393.5536	0.493	
2:18:00 PM	19.9562	51.865	11.9095	15.9905	394.0095	0.456	
2:19:00 PM	20.1262	51.884	12.3020	15.5980	394.4020	0.393	
2:20:00 PM	20.267	51.899	12.6272	15.2728	394.7272	0.325	
2:21:00 PM	20.3886	51.917	12.9080	14.9920	395.0080	0.281	
2:22:00 PM	20.4965	51.935	13.1571	14.7429	395.2571	0.249	
2:23:00 PM	20.5969	51.95	13.3890	14.5110	395.4890	0.232	
2:24:00 PM	20.6854	51.969	13.5933	14.3067	395.6933	0.204	
2:25:00 PM	20.7741	51.986	13.7981	14.1019	395.8981	0.205	
2:26:00 PM	20.863	52.005	14.0034	13.8966	396.1034	0.205	
2:27:00 PM	20.9411	52.025	14.1838	13.7162	396.2838	0.180	
2:28:00 PM	21.0089	52.044	14.3403	13.5597	396.4403	0.157	
2:29:00 PM	21.0708	52.069	14.4833	13.4167	396.5833	0.143	
2:30:00 PM	21.1235	52.095	14.6050	13.2950	396.7050	0.122	
2:31:00 PM	21.1704	52.128	14.7133	13.1867	396.8133	0.108	
2:32:00 PM	21.2164	52.169	14.8195	13.0805	396.9195	0.106	
2:33:00 PM	21.2604	52.21	14.9211	12.9789	397.0211	0.102	
2:34:00 PM	21.3019	52.251	15.0169	12.8831	397.1169	0.096	
2:35:00 PM	21.3407	52.298	15.1065	12.7935	397.2065	0.090	
2:36:00 PM	21.3763	52.344	15.1887	12.7113	397.2887	0.082	
2:46:00 PM	21.5998	52.694	15.7048	12.1952	397.8048	0.052	
2:56:00 PM	21.712	53.019	15.9639	11.9361	398.0639	0.026	
3:05:00 PM	21.7726	53.553	16.1038	11.7962	398.2038	0.016	

Proj. No.: 41.0162892.00
Project Name: WJWW Rye Lake

Date: August 5, 2021
Date of Test: August 4, 2021

Rising Head Test - Boring B-3a(OW)



GZA GeoEnvironmental of NY

Rising Head Test - Boring B-29(OW)

Project No.	41.0162892.00	Top of Pipe Elevation (NAVD 88) (ft)	392.2
Project Name	WJWW Rye Lake	Bottom of Well Depth (ft)	29.6
Test Location	B-29(OW)	Bottom of Well Elev. (NAVD 88) (ft)	362.5666667
Piezometer Type	Solinst Barologger	Depth to Instrument (ft)	29.1
Piezometer Serial No.	2137331	Elev. of Instrument (NAVD 88) (ft)	363.0666667
Date of Test	4-Aug-21	Specific Weight of Water at 50 degrees (pcf)	62.408
Performed By	S.B/N.B	Specific Weight of Mercury (psi)	0.491
Sampling Rate	1 Reading/Second	Barometric Pressure (inHg)	30.14
		Barometric Pressure (psi)	14.80

Manual Groundwater Readings

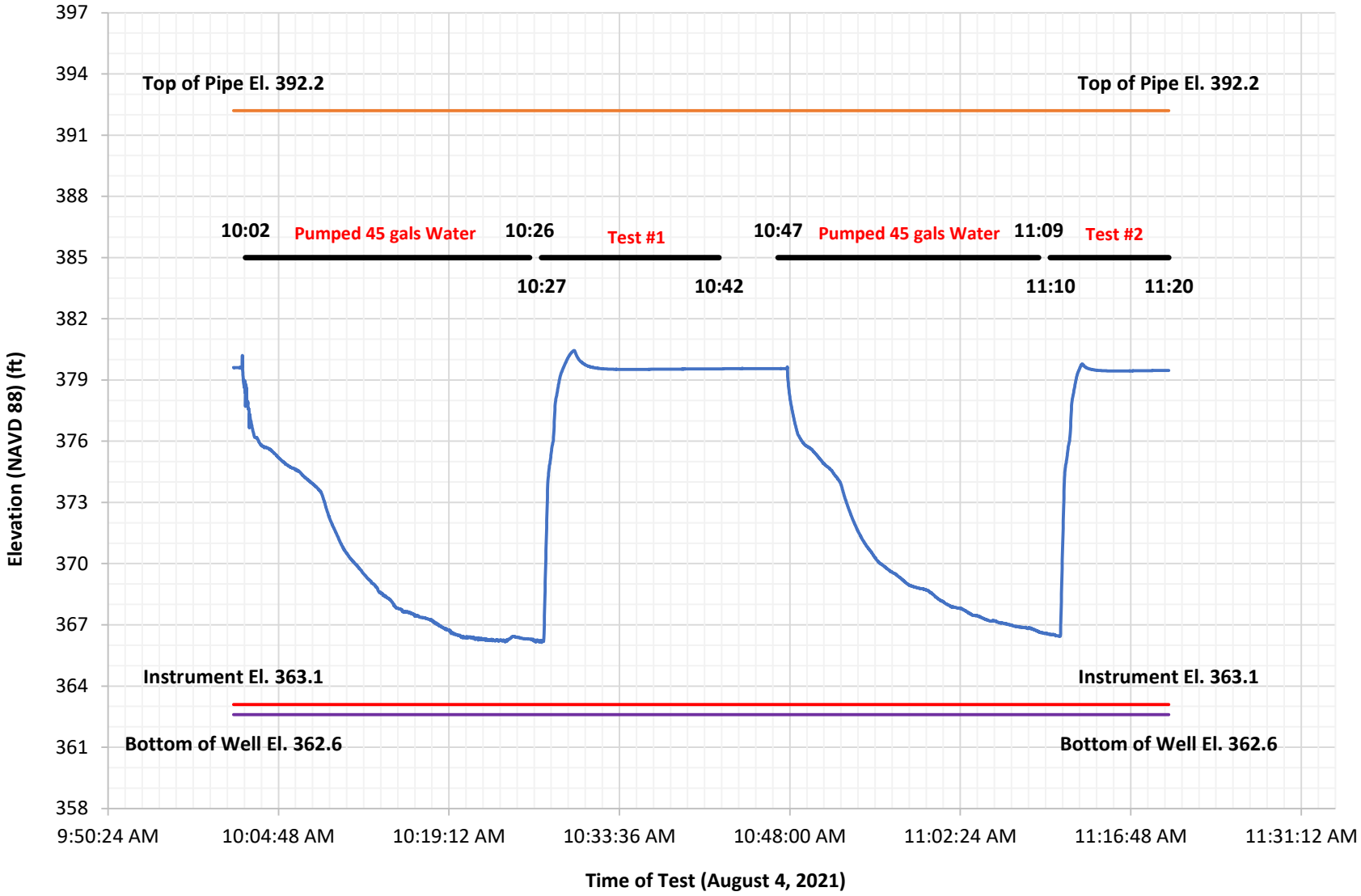
Date	Time	Depth (ft)	Elev.	Remark
8/4/2021	10:01 AM	12.6	379.6	Pump 45 gals (25 mins)
8/4/2021	10:26 AM	26.1	366.1	Begin Test 1
8/4/2021	10:47 AM	12.5	379.7	Pump 45 gals (21 mins)
8/4/2021	10:20 AM	12.6	379.6	Test 2 Complete

Time	Level	Temp.	Water Head	Depth to Top of GW	GW Elev.	Recharge Rate	Remarks
	(psi)	(F)	(Feet)	(Feet)	NAVD 88 (ft)	(ft/min)	
10:01:00 AM	21.7435	50.7670	16.0243	12.6000	379.5667	-	Start Pump Test 1
10:26:00 AM	15.9791	50.6890	2.7236	25.9007	366.2659	-	End Pump Test 1
10:27:00 AM	15.9555	50.6920	2.6691	25.9552	366.2115	-0.054	Start Test 1
10:28:00 AM	20.1804	50.6920	12.4176	16.2067	375.9600	9.749	
10:29:00 AM	21.8207	50.6940	16.2024	12.4219	379.7448	3.785	
10:30:00 AM	21.9912	50.7060	16.5959	12.0284	380.1382	0.393	
10:31:00 AM	21.7737	50.7370	16.0940	12.5303	379.6364	-0.502	
10:36:00 AM	21.7103	50.7620	15.9477	12.6766	379.4901	-0.029	
10:41:00 AM	21.719	50.7370	15.9678	12.6565	379.5102	0.004	
10:46:00 AM	21.7251	50.7230	15.9819	12.6424	379.5242	0.003	End Test 1
10:47:00 AM	21.726	50.7200	15.9839	12.6404	379.5263	-	Start Pump Test 2
11:09:00 AM	16.1411	50.6870	3.0974	25.5269	366.6397	-	End Pump Test 2
11:10:45 AM	16.0397	50.6870	2.8634	25.7609	366.4058	-0.234	Start Test Test 2
11:11:00 AM	17.4789	50.6930	6.1842	22.4401	369.7266	0.221	
11:12:00 AM	21.2554	50.6950	14.8981	13.7262	378.4404	8.714	
11:13:00 AM	21.7506	50.6950	16.0407	12.5836	379.5831	1.143	
11:14:00 AM	21.6884	50.7070	15.8972	12.7271	379.4395	-0.144	
11:15:00 AM	21.6766	50.7170	15.8700	12.7543	379.4123	-0.027	
11:16:00 AM	21.6753	50.7240	15.8670	12.7573	379.4093	-0.003	
11:17:00 AM	21.6776	50.7240	15.8723	12.7520	379.4146	0.005	
11:18:00 AM	21.681	50.7240	15.8801	12.7442	379.4225	0.008	
11:19:00 AM	21.6841	50.7230	15.8873	12.7370	379.4296	0.007	
11:20:00 AM	21.6868	50.7200	15.8935	12.7308	379.4359	0.006	End Test 2

Proj. No.: 41.0162892.00
Project Name: WJWW Rye Lake

Date: August 5, 2021
Date of Test: August 4, 2021

Rising Head Test - Boring B-29(OW)



Manual Groundwater Level Reading Summary

Project No.	41.0162892.00
Project Name	WJWW Rye Lake
Piezometer Type	Solinst Barologger
Date Collected	May 18 - August 20, 2021
Reading Type	Manual

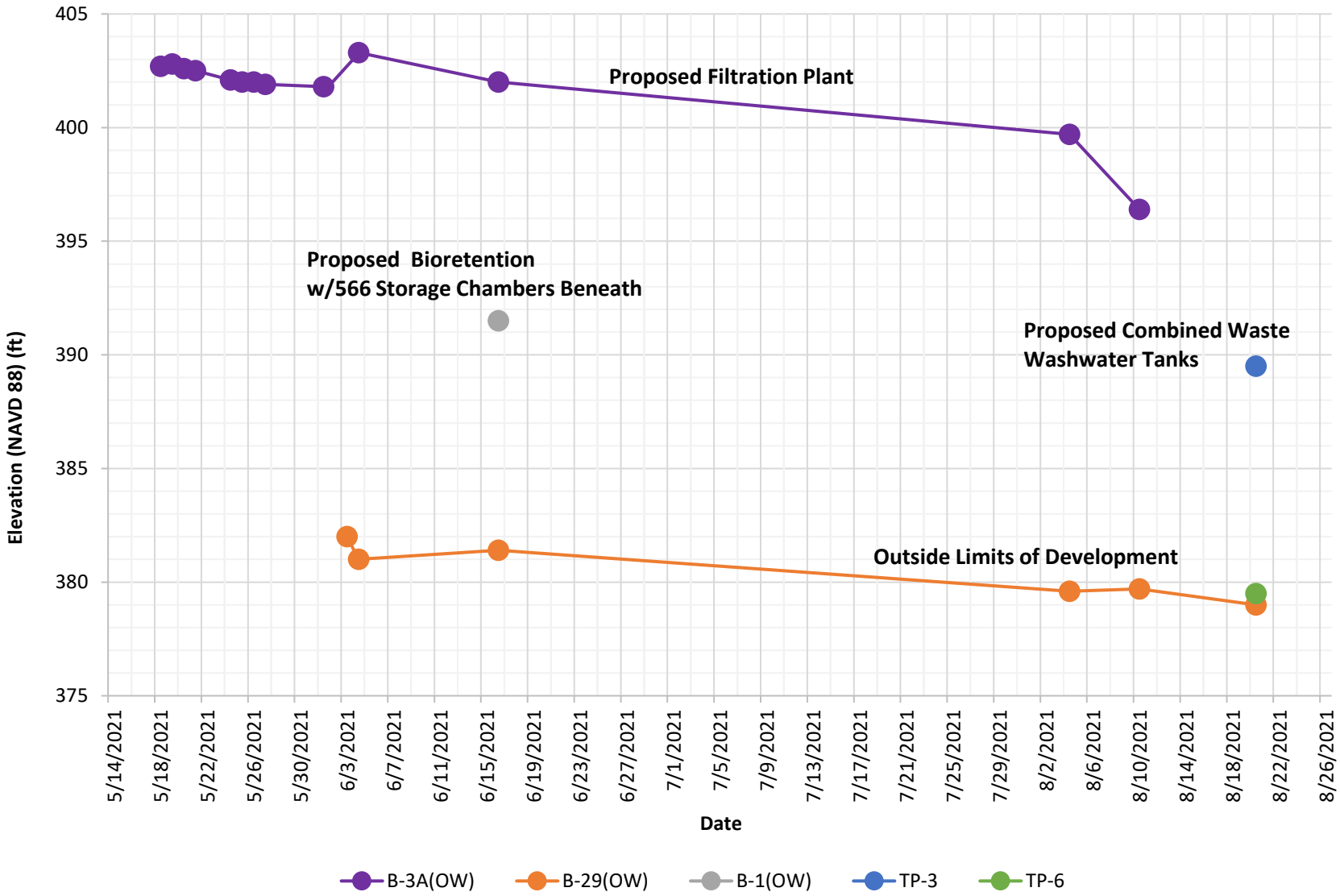
Test Pit/ Boring ID	Year of Exploration	Approximate Ground Surface Elevation (ft)	Date Recoded	Groundwater Depth	Corresponding Groundwater Elevation (NAVD 88)
				(ft)	(ft)
B-1(OW)	2019	401	11/22/2019	17.8	383.2
			6/16/2021	9.5	391.5
B-2	2019	400	11/21/2019	15	385
B-3A(OW)	2021	407	5/18/2021	4.3	402.7
			5/19/2021	4.2	402.8
			5/20/2021	4.4	402.6
			5/21/2021	4.5	402.5
			5/24/2021	4.9	402.1
			5/25/2021	5	402
			5/26/2021	5	402
			5/27/2021	5.1	401.9
			6/1/2021	5.2	401.8
			6/4/2021	3.7	403.3
			6/16/2021	5	402
			8/4/2021	7.3	399.7
			8/10/2021	10.6	396.4
B-29(OW)	2021	389	6/3/2021	7	382
			6/4/2021	8	381
			6/16/2021	7.6	381.4
			8/4/2021	9.4	379.6
			8/10/2021	9.3	379.7
			8/20/2021	10	379
TP-3	2021	401.5	8/20/2021	12	389.5
TP-6	2021	387	8/20/2021	7.5	379.5
B-1	2021	408	5/4/2021	5.0*	403
B-2	2021	408	5/14/2021	6.0*	402
B-3	2021	407	5/13/2021	6.0*	401
B-4	2021	406	5/17/2021	6.0*	400
B-5	2021	404	5/19/2021	6.0*	398
B-6	2021	403	5/19/2021	5.0*	398
B-8	2021	402	5/20/2021	5.0*	397
B-9	2021	402	5/20/2021	6.0*	396
B-11	2021	403	5/21/2021	6.0*	397
B-15	2021	410	5/28/2021	6.0*	404
B-17	2021	409	6/1/2021	6.0*	403
B-18	2021	406	5/27/2021	7.0*	399
B-19	2021	403	6/4/2021	5.0*	398
B-20	2021	401	6/3/2021	5.0*	396
B-21	2021	401	6/3/2021	5.0*	396
B-22	2021	399	5/25/2021	5.0*	394
B-23	2021	399	6/3/2021	5.0*	394
B-25	2021	398	5/25/2021	9.0*	389
B-27	2021	412	5/28/2021	6.0*	406

* Depth to groundwater obtained during drilling activities and shall be used for estimation purposes only.

Proj. No.: 41.0162892.00
Project Name: WJWW Rye Lake

Recording Dates: May 18 to August 20, 2021

Manual Water Level Readings (May 18 - August 20, 2021)



GZA GeoEnvironmental of NY

Groundwater Level Reading Summary

Project No.	41.0162892.00	Top of Pipe Elevation (NAVD 88) (ft)	410.0
Project Name	WJWW Rye Lake	Bottom of Well Depth (ft)	29.8
Test Location	B-3a(OW)	Bottom of Well Elev. (NAVD 88) (ft)	380.2
Piezometer Type	Solinst Barologger	Depth to Instrument (ft)	27.9
Piezometer Serial No.	2137768	Elev. of Instrument (NAVD 88) (ft)	382.1
Date Collected	August 4 - 10, 2021	Specific Weight of Water at 55 degrees (pcf)	62.36
Installed By	S.B	Specific Weight of Mercury (psi)	0.491
Sampling Rate	1 Reading/30 Minutes	Barometric Pressure (inHg)	30.14
		Barometric Pressure (psi)	14.80

Manual Groundwater Readings

Date	Time	Depth (ft)	Elev.	Remark
8/4/2021	3:05 PM	11.9	398.1	Start Recording - Pump Well Dry
8/10/2021	11:30 AM	13.6	396.4	End Recording

Date	Time	Level (psi)	Temperature (F)	Water Head (Feet)	Depth to Top of GW (Feet)	Groundwater Elevation NAVD 88
8/4/2021	4:20:00 PM	21.601	53.0700	15.7076	12.1924	397.8076
8/4/2021	4:50:00 PM	21.6769	54.2590	15.8829	12.0171	397.9829
8/4/2021	5:20:00 PM	21.6951	54.4590	15.9249	11.9751	398.0249
8/4/2021	5:50:00 PM	21.6989	54.5190	15.9337	11.9663	398.0337
8/4/2021	6:20:00 PM	21.7018	54.5340	15.9404	11.9596	398.0404
8/4/2021	6:50:00 PM	21.703	54.5500	15.9431	11.9569	398.0431
8/4/2021	7:20:00 PM	21.7057	54.5490	15.9494	11.9506	398.0494
8/4/2021	7:50:00 PM	21.707	54.5410	15.9524	11.9476	398.0524
8/4/2021	8:20:00 PM	21.7078	54.5400	15.9542	11.9458	398.0542
8/4/2021	8:50:00 PM	21.7088	54.5300	15.9565	11.9435	398.0565
8/4/2021	9:20:00 PM	21.7121	54.5280	15.9641	11.9359	398.0641
8/4/2021	9:50:00 PM	21.7136	54.5280	15.9676	11.9324	398.0676
8/4/2021	10:20:00 PM	21.7147	54.5060	15.9701	11.9299	398.0701
8/4/2021	10:50:00 PM	21.7166	54.5040	15.9745	11.9255	398.0745
8/4/2021	11:20:00 PM	21.718	54.5000	15.9778	11.9222	398.0778
8/4/2021	11:50:00 PM	21.7211	54.4930	15.9849	11.9151	398.0849
8/5/2021	12:20:00 AM	21.722	54.4950	15.9870	11.9130	398.0870
8/5/2021	12:50:00 AM	21.7219	54.4910	15.9868	11.9132	398.0868
8/5/2021	1:20:00 AM	21.7268	54.4840	15.9981	11.9019	398.0981
8/5/2021	1:50:00 AM	21.7272	54.4810	15.9990	11.9010	398.0990
8/5/2021	2:20:00 AM	21.7272	54.4610	15.9990	11.9010	398.0990
8/5/2021	2:50:00 AM	21.7257	54.4540	15.9955	11.9045	398.0955
8/5/2021	3:20:00 AM	21.7305	54.4420	16.0066	11.8934	398.1066
8/5/2021	3:50:00 AM	21.7386	54.4630	16.0253	11.8747	398.1253
8/5/2021	4:20:00 AM	21.7363	54.4570	16.0200	11.8800	398.1200
8/5/2021	4:50:00 AM	21.7342	54.4590	16.0152	11.8848	398.1152
8/5/2021	5:20:00 AM	21.7288	54.4490	16.0027	11.8973	398.1027
8/5/2021	5:50:00 AM	21.7203	54.4480	15.9831	11.9169	398.0831
8/5/2021	6:20:00 AM	21.7033	54.4300	15.9438	11.9562	398.0438
8/5/2021	6:50:00 AM	21.7003	54.4180	15.9369	11.9631	398.0369
8/5/2021	7:20:00 AM	21.6919	54.4270	15.9175	11.9825	398.0175
8/5/2021	7:50:00 AM	21.6785	54.4120	15.8866	12.0134	397.9866
8/5/2021	8:20:00 AM	21.6682	54.4000	15.8628	12.0372	397.9628
8/5/2021	8:50:00 AM	21.6607	54.4010	15.8454	12.0546	397.9454
8/5/2021	9:20:00 AM	21.6505	54.3980	15.8219	12.0781	397.9219
8/5/2021	9:50:00 AM	21.6336	54.3790	15.7829	12.1171	397.8829
8/5/2021	10:20:00 AM	21.6239	54.3700	15.7605	12.1395	397.8605
8/5/2021	10:50:00 AM	21.6115	54.3650	15.7318	12.1682	397.8318
8/5/2021	11:20:00 AM	21.5993	54.3630	15.7037	12.1963	397.8037
8/5/2021	11:50:00 AM	21.5864	54.3550	15.6739	12.2261	397.7739
8/5/2021	12:20:00 PM	21.5732	54.3500	15.6434	12.2566	397.7434

Groundwater Level Reading Summary

Project No.	41.0162892.00	Top of Pipe Elevation (NAVD 88) (ft)	410.0
Project Name	WJWW Rye Lake	Bottom of Well Depth (ft)	29.8
Test Location	B-3a(OW)	Bottom of Well Elev. (NAVD 88) (ft)	380.2
Piezometer Type	Solinst Barologger	Depth to Instrument (ft)	27.9
Piezometer Serial No.	2137768	Elev. of Instrument (NAVD 88) (ft)	382.1
Date Collected	August 4 - 10, 2021	Specific Weight of Water at 55 degrees (pcf)	62.36
Installed By	S.B	Specific Weight of Mercury (psi)	0.491
Sampling Rate	1 Reading/30 Minutes	Barometric Pressure (inHg)	30.14
		Barometric Pressure (psi)	14.80

Manual Groundwater Readings

Date	Time	Depth (ft)	Elev.	Remark
8/4/2021	3:05 PM	11.9	398.1	Start Recording - Pump Well Dry
8/10/2021	11:30 AM	13.6	396.4	End Recording

Date	Time	Level (psi)	Temperature (F)	Water Head (Feet)	Depth to Top of GW (Feet)	Groundwater Elevation NAVD 88
8/5/2021	12:50:00 PM	21.56	54.3340	15.6129	12.2871	397.7129
8/5/2021	1:20:00 PM	21.5448	54.3450	15.5778	12.3222	397.6778
8/5/2021	1:50:00 PM	21.5296	54.3310	15.5427	12.3573	397.6427
8/5/2021	2:20:00 PM	21.5184	54.3280	15.5169	12.3831	397.6169
8/5/2021	2:50:00 PM	21.5062	54.3080	15.4887	12.4113	397.5887
8/5/2021	3:20:00 PM	21.4951	54.2980	15.4631	12.4369	397.5631
8/5/2021	3:50:00 PM	21.4862	54.3020	15.4425	12.4575	397.5425
8/5/2021	4:20:00 PM	21.4985	54.3000	15.4709	12.4291	397.5709
8/5/2021	4:50:00 PM	21.4953	54.3150	15.4635	12.4365	397.5635
8/5/2021	5:20:00 PM	21.4939	54.3100	15.4603	12.4397	397.5603
8/5/2021	5:50:00 PM	21.4896	54.3060	15.4504	12.4496	397.5504
8/5/2021	6:20:00 PM	21.4892	54.2980	15.4494	12.4506	397.5494
8/5/2021	6:50:00 PM	21.4917	54.2830	15.4552	12.4448	397.5552
8/5/2021	7:20:00 PM	21.4953	54.2740	15.4635	12.4365	397.5635
8/5/2021	7:50:00 PM	21.5047	54.2590	15.4852	12.4148	397.5852
8/5/2021	8:20:00 PM	21.5087	54.2620	15.4945	12.4055	397.5945
8/5/2021	8:50:00 PM	21.5128	54.2570	15.5039	12.3961	397.6039
8/5/2021	9:20:00 PM	21.5189	54.2350	15.5180	12.3820	397.6180
8/5/2021	9:50:00 PM	21.5232	54.2360	15.5279	12.3721	397.6279
8/5/2021	10:20:00 PM	21.5265	54.2200	15.5356	12.3644	397.6356
8/5/2021	10:50:00 PM	21.5295	54.2150	15.5425	12.3575	397.6425
8/5/2021	11:20:00 PM	21.5326	54.2000	15.5496	12.3504	397.6496
8/5/2021	11:50:00 PM	21.5346	54.1990	15.5543	12.3457	397.6543
8/6/2021	12:20:00 AM	21.5395	54.1780	15.5656	12.3344	397.6656
8/6/2021	12:50:00 AM	21.5421	54.1700	15.5716	12.3284	397.6716
8/6/2021	1:20:00 AM	21.5456	54.1690	15.5797	12.3203	397.6797
8/6/2021	1:50:00 AM	21.5489	54.1510	15.5873	12.3127	397.6873
8/6/2021	2:20:00 AM	21.5554	54.1360	15.6023	12.2977	397.7023
8/6/2021	2:50:00 AM	21.5635	54.1370	15.6210	12.2790	397.7210
8/6/2021	3:20:00 AM	21.5678	54.1340	15.6309	12.2691	397.7309
8/6/2021	3:50:00 AM	21.571	54.1220	15.6383	12.2617	397.7383
8/6/2021	4:20:00 AM	21.5699	54.1090	15.6358	12.2642	397.7358
8/6/2021	4:50:00 AM	21.568	54.1050	15.6314	12.2686	397.7314
8/6/2021	5:20:00 AM	21.5651	54.0900	15.6247	12.2753	397.7247
8/6/2021	5:50:00 AM	21.5623	54.0990	15.6182	12.2818	397.7182
8/6/2021	6:20:00 AM	21.5581	54.0880	15.6085	12.2915	397.7085
8/6/2021	6:50:00 AM	21.549	54.0840	15.5875	12.3125	397.6875
8/6/2021	7:20:00 AM	21.5426	54.0780	15.5727	12.3273	397.6727
8/6/2021	7:50:00 AM	21.5314	54.0720	15.5469	12.3531	397.6469
8/6/2021	8:20:00 AM	21.5217	54.0680	15.5245	12.3755	397.6245
8/6/2021	8:50:00 AM	21.5117	54.0530	15.5014	12.3986	397.6014

Groundwater Level Reading Summary

Project No.	41.0162892.00	Top of Pipe Elevation (NAVD 88) (ft)	410.0
Project Name	WJWW Rye Lake	Bottom of Well Depth (ft)	29.8
Test Location	B-3a(OW)	Bottom of Well Elev. (NAVD 88) (ft)	380.2
Piezometer Type	Solinst Barologger	Depth to Instrument (ft)	27.9
Piezometer Serial No.	2137768	Elev. of Instrument (NAVD 88) (ft)	382.1
Date Collected	August 4 - 10, 2021	Specific Weight of Water at 55 degrees (pcf)	62.36
Installed By	S.B	Specific Weight of Mercury (psi)	0.491
Sampling Rate	1 Reading/30 Minutes	Barometric Pressure (inHg)	30.14
		Barometric Pressure (psi)	14.80

Manual Groundwater Readings

Date	Time	Depth (ft)	Elev.	Remark
8/4/2021	3:05 PM	11.9	398.1	Start Recording - Pump Well Dry
8/10/2021	11:30 AM	13.6	396.4	End Recording

Date	Time	Level (psi)	Temperature (F)	Water Head (Feet)	Depth to Top of GW (Feet)	Groundwater Elevation NAVD 88
8/6/2021	9:20:00 AM	21.4974	54.0380	15.4684	12.4316	397.5684
8/6/2021	9:50:00 AM	21.4878	54.0490	15.4462	12.4538	397.5462
8/6/2021	10:20:00 AM	21.4774	54.0400	15.4222	12.4778	397.5222
8/6/2021	10:50:00 AM	21.4674	54.0270	15.3991	12.5009	397.4991
8/6/2021	11:20:00 AM	21.4565	54.0270	15.3739	12.5261	397.4739
8/6/2021	11:50:00 AM	21.4446	54.0090	15.3464	12.5536	397.4464
8/6/2021	12:20:00 PM	21.4317	54.0210	15.3166	12.5834	397.4166
8/6/2021	12:50:00 PM	21.4192	54.0170	15.2878	12.6122	397.3878
8/6/2021	1:20:00 PM	21.4071	54.0140	15.2598	12.6402	397.3598
8/6/2021	1:50:00 PM	21.3948	54.0060	15.2314	12.6686	397.3314
8/6/2021	2:20:00 PM	21.3788	54.0010	15.1945	12.7055	397.2945
8/6/2021	2:50:00 PM	21.3654	53.9920	15.1636	12.7364	397.2636
8/6/2021	3:20:00 PM	21.3551	53.9900	15.1398	12.7602	397.2398
8/6/2021	3:50:00 PM	21.3489	53.9890	15.1254	12.7746	397.2254
8/6/2021	4:20:00 PM	21.345	53.9850	15.1164	12.7836	397.2164
8/6/2021	4:50:00 PM	21.3404	53.9880	15.1058	12.7942	397.2058
8/6/2021	5:20:00 PM	21.3386	53.9760	15.1017	12.7983	397.2017
8/6/2021	5:50:00 PM	21.3378	53.9570	15.0998	12.8002	397.1998
8/6/2021	6:20:00 PM	21.3356	53.9520	15.0947	12.8053	397.1947
8/6/2021	6:50:00 PM	21.3406	53.9390	15.1063	12.7937	397.2063
8/6/2021	7:20:00 PM	21.3448	53.9440	15.1160	12.7840	397.2160
8/6/2021	7:50:00 PM	21.3463	53.9250	15.1194	12.7806	397.2194
8/6/2021	8:20:00 PM	21.3482	53.9290	15.1238	12.7762	397.2238
8/6/2021	8:50:00 PM	21.3529	53.9150	15.1347	12.7653	397.2347
8/6/2021	9:20:00 PM	21.358	53.9140	15.1465	12.7535	397.2465
8/6/2021	9:50:00 PM	21.362	53.8980	15.1557	12.7443	397.2557
8/6/2021	10:20:00 PM	21.3655	53.8860	15.1638	12.7362	397.2638
8/6/2021	10:50:00 PM	21.3669	53.8850	15.1670	12.7330	397.2670
8/6/2021	11:20:00 PM	21.3717	53.8740	15.1781	12.7219	397.2781
8/6/2021	11:50:00 PM	21.3758	53.8660	15.1876	12.7124	397.2876
8/7/2021	12:20:00 AM	21.3806	53.8630	15.1987	12.7013	397.2987
8/7/2021	12:50:00 AM	21.3845	53.8590	15.2077	12.6923	397.3077
8/7/2021	1:20:00 AM	21.3877	53.8350	15.2150	12.6850	397.3150
8/7/2021	1:50:00 AM	21.3894	53.8250	15.2190	12.6810	397.3190
8/7/2021	2:20:00 AM	21.3919	53.8250	15.2247	12.6753	397.3247
8/7/2021	2:50:00 AM	21.397	53.8140	15.2365	12.6635	397.3365
8/7/2021	3:20:00 AM	21.4019	53.8080	15.2478	12.6522	397.3478
8/7/2021	3:50:00 AM	21.4054	53.8070	15.2559	12.6441	397.3559
8/7/2021	4:20:00 AM	21.4051	53.8090	15.2552	12.6448	397.3552
8/7/2021	4:50:00 AM	21.4033	53.8140	15.2511	12.6489	397.3511
8/7/2021	5:20:00 AM	21.4009	53.8080	15.2455	12.6545	397.3455

Groundwater Level Reading Summary

Project No.	41.0162892.00	Top of Pipe Elevation (NAVD 88) (ft)	410.0
Project Name	WJWW Rye Lake	Bottom of Well Depth (ft)	29.8
Test Location	B-3a(OW)	Bottom of Well Elev. (NAVD 88) (ft)	380.2
Piezometer Type	Solinst Barologger	Depth to Instrument (ft)	27.9
Piezometer Serial No.	2137768	Elev. of Instrument (NAVD 88) (ft)	382.1
Date Collected	August 4 - 10, 2021	Specific Weight of Water at 55 degrees (pcf)	62.36
Installed By	S.B	Specific Weight of Mercury (psi)	0.491
Sampling Rate	1 Reading/30 Minutes	Barometric Pressure (inHg)	30.14
		Barometric Pressure (psi)	14.80

Manual Groundwater Readings

Date	Time	Depth (ft)	Elev.	Remark
8/4/2021	3:05 PM	11.9	398.1	Start Recording - Pump Well Dry
8/10/2021	11:30 AM	13.6	396.4	End Recording

Date	Time	Level (psi)	Temperature (F)	Water Head (Feet)	Depth to Top of GW (Feet)	Groundwater Elevation NAVD 88
8/7/2021	5:50:00 AM	21.3962	53.7940	15.2347	12.6653	397.3347
8/7/2021	6:20:00 AM	21.3909	53.7890	15.2224	12.6776	397.3224
8/7/2021	6:50:00 AM	21.3844	53.7920	15.2074	12.6926	397.3074
8/7/2021	7:20:00 AM	21.3735	53.7860	15.1823	12.7177	397.2823
8/7/2021	7:50:00 AM	21.3654	53.7820	15.1636	12.7364	397.2636
8/7/2021	8:20:00 AM	21.3557	53.7750	15.1412	12.7588	397.2412
8/7/2021	8:50:00 AM	21.3417	53.7650	15.1088	12.7912	397.2088
8/7/2021	9:20:00 AM	21.3311	53.7580	15.0843	12.8157	397.1843
8/7/2021	9:50:00 AM	21.3167	53.7580	15.0511	12.8489	397.1511
8/7/2021	10:20:00 AM	21.3056	53.7540	15.0255	12.8745	397.1255
8/7/2021	10:50:00 AM	21.2946	53.7510	15.0001	12.8999	397.1001
8/7/2021	11:20:00 AM	21.283	53.7470	14.9733	12.9267	397.0733
8/7/2021	11:50:00 AM	21.2698	53.7440	14.9428	12.9572	397.0428
8/7/2021	12:20:00 PM	21.2564	53.7410	14.9119	12.9881	397.0119
8/7/2021	12:50:00 PM	21.242	53.7290	14.8786	13.0214	396.9786
8/7/2021	1:20:00 PM	21.2305	53.7240	14.8520	13.0480	396.9520
8/7/2021	1:50:00 PM	21.2165	53.7200	14.8197	13.0803	396.9197
8/7/2021	2:20:00 PM	21.2015	53.7190	14.7851	13.1149	396.8851
8/7/2021	2:50:00 PM	21.1886	53.7090	14.7553	13.1447	396.8553
8/7/2021	3:20:00 PM	21.1761	53.7040	14.7264	13.1736	396.8264
8/7/2021	3:50:00 PM	21.1687	53.7010	14.7093	13.1907	396.8093
8/7/2021	4:20:00 PM	21.1616	53.6960	14.6929	13.2071	396.7929
8/7/2021	4:50:00 PM	21.1571	53.6750	14.6826	13.2174	396.7826
8/7/2021	5:20:00 PM	21.1597	53.6780	14.6886	13.2114	396.7886
8/7/2021	5:50:00 PM	21.1597	53.6840	14.6886	13.2114	396.7886
8/7/2021	6:20:00 PM	21.1603	53.6660	14.6899	13.2101	396.7899
8/7/2021	6:50:00 PM	21.1656	53.6620	14.7022	13.1978	396.8022
8/7/2021	7:20:00 PM	21.1672	53.6480	14.7059	13.1941	396.8059
8/7/2021	7:50:00 PM	21.1677	53.6370	14.7070	13.1930	396.8070
8/7/2021	8:20:00 PM	21.1719	53.6310	14.7167	13.1833	396.8167
8/7/2021	8:50:00 PM	21.1775	53.6200	14.7297	13.1703	396.8297
8/7/2021	9:20:00 PM	21.1826	53.6210	14.7414	13.1586	396.8414
8/7/2021	9:50:00 PM	21.1866	53.5980	14.7507	13.1493	396.8507
8/7/2021	10:20:00 PM	21.1911	53.5920	14.7611	13.1389	396.8611
8/7/2021	10:50:00 PM	21.1944	53.5930	14.7687	13.1313	396.8687
8/7/2021	11:20:00 PM	21.1987	53.5730	14.7786	13.1214	396.8786
8/7/2021	11:50:00 PM	21.2029	53.5690	14.7883	13.1117	396.8883
8/8/2021	12:20:00 AM	21.2075	53.5650	14.7989	13.1011	396.8989
8/8/2021	12:50:00 AM	21.2107	53.5570	14.8063	13.0937	396.9063
8/8/2021	1:20:00 AM	21.2159	53.5470	14.8183	13.0817	396.9183
8/8/2021	1:50:00 AM	21.2191	53.5430	14.8257	13.0743	396.9257

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Groundwater Level Reading Summary

Project No.	41.0162892.00	Top of Pipe Elevation (NAVD 88) (ft)	410.0
Project Name	WJWW Rye Lake	Bottom of Well Depth (ft)	29.8
Test Location	B-3a(OW)	Bottom of Well Elev. (NAVD 88) (ft)	380.2
Piezometer Type	Solinst Barologger	Depth to Instrument (ft)	27.9
Piezometer Serial No.	2137768	Elev. of Instrument (NAVD 88) (ft)	382.1
Date Collected	August 4 - 10, 2021	Specific Weight of Water at 55 degrees (pcf)	62.36
Installed By	S.B	Specific Weight of Mercury (psi)	0.491
Sampling Rate	1 Reading/30 Minutes	Barometric Pressure (inHg)	30.14
		Barometric Pressure (psi)	14.80

Manual Groundwater Readings

Date	Time	Depth (ft)	Elev.	Remark
8/4/2021	3:05 PM	11.9	398.1	Start Recording - Pump Well Dry
8/10/2021	11:30 AM	13.6	396.4	End Recording

Date	Time	Level (psi)	Temperature (F)	Water Head (Feet)	Depth to Top of GW (Feet)	Groundwater Elevation NAVD 88
8/8/2021	2:20:00 AM	21.2241	53.5380	14.8373	13.0627	396.9373
8/8/2021	2:50:00 AM	21.2275	53.5320	14.8451	13.0549	396.9451
8/8/2021	3:20:00 AM	21.2312	53.5150	14.8537	13.0463	396.9537
8/8/2021	3:50:00 AM	21.2388	53.5120	14.8712	13.0288	396.9712
8/8/2021	4:20:00 AM	21.2459	53.4990	14.8876	13.0124	396.9876
8/8/2021	4:50:00 AM	21.2531	53.4850	14.9042	12.9958	397.0042
8/8/2021	5:20:00 AM	21.2556	53.4780	14.9100	12.9900	397.0100
8/8/2021	5:50:00 AM	21.255	53.4840	14.9086	12.9914	397.0086
8/8/2021	6:20:00 AM	21.2598	53.4610	14.9197	12.9803	397.0197
8/8/2021	6:50:00 AM	21.2641	53.4660	14.9296	12.9704	397.0296
8/8/2021	7:20:00 AM	21.2617	53.4580	14.9241	12.9759	397.0241
8/8/2021	7:50:00 AM	21.2614	53.4500	14.9234	12.9766	397.0234
8/8/2021	8:20:00 AM	21.2678	53.4480	14.9382	12.9618	397.0382
8/8/2021	8:50:00 AM	21.2632	53.4460	14.9276	12.9724	397.0276
8/8/2021	9:20:00 AM	21.2692	53.4390	14.9414	12.9586	397.0414
8/8/2021	9:50:00 AM	21.2701	53.4280	14.9435	12.9565	397.0435
8/8/2021	10:20:00 AM	21.2737	53.4150	14.9518	12.9482	397.0518
8/8/2021	10:50:00 AM	21.2756	53.4070	14.9562	12.9438	397.0562
8/8/2021	11:20:00 AM	21.2784	53.4030	14.9627	12.9373	397.0627
8/8/2021	11:50:00 AM	21.2779	53.3970	14.9615	12.9385	397.0615
8/8/2021	12:20:00 PM	21.2779	53.3970	14.9615	12.9385	397.0615
8/8/2021	12:50:00 PM	21.278	53.3800	14.9617	12.9383	397.0617
8/8/2021	1:20:00 PM	21.2786	53.3680	14.9631	12.9369	397.0631
8/8/2021	1:50:00 PM	21.2835	53.3680	14.9744	12.9256	397.0744
8/8/2021	2:20:00 PM	21.2832	53.3640	14.9737	12.9263	397.0737
8/8/2021	2:50:00 PM	21.2827	53.3580	14.9726	12.9274	397.0726
8/8/2021	3:20:00 PM	21.2845	53.3520	14.9767	12.9233	397.0767
8/8/2021	3:50:00 PM	21.2865	53.3500	14.9814	12.9186	397.0814
8/8/2021	4:20:00 PM	21.2871	53.3410	14.9827	12.9173	397.0827
8/8/2021	4:50:00 PM	21.2904	53.3360	14.9904	12.9096	397.0904
8/8/2021	5:20:00 PM	21.2924	53.3320	14.9950	12.9050	397.0950
8/8/2021	5:50:00 PM	21.2968	53.3310	15.0051	12.8949	397.1051
8/8/2021	6:20:00 PM	21.2963	53.3160	15.0040	12.8960	397.1040
8/8/2021	6:50:00 PM	21.2973	53.3150	15.0063	12.8937	397.1063
8/8/2021	7:20:00 PM	21.2974	53.3150	15.0065	12.8935	397.1065
8/8/2021	7:50:00 PM	21.2985	53.3010	15.0091	12.8909	397.1091
8/8/2021	8:20:00 PM	21.2974	53.2980	15.0065	12.8935	397.1065
8/8/2021	8:50:00 PM	21.2983	53.2950	15.0086	12.8914	397.1086
8/8/2021	9:20:00 PM	21.2977	53.2880	15.0072	12.8928	397.1072
8/8/2021	9:50:00 PM	21.297	53.2920	15.0056	12.8944	397.1056
8/8/2021	10:20:00 PM	21.2924	53.2830	14.9950	12.9050	397.0950

Groundwater Level Reading Summary

Project No.	41.0162892.00	Top of Pipe Elevation (NAVD 88) (ft)	410.0
Project Name	WJWW Rye Lake	Bottom of Well Depth (ft)	29.8
Test Location	B-3a(OW)	Bottom of Well Elev. (NAVD 88) (ft)	380.2
Piezometer Type	Solinst Barologger	Depth to Instrument (ft)	27.9
Piezometer Serial No.	2137768	Elev. of Instrument (NAVD 88) (ft)	382.1
Date Collected	August 4 - 10, 2021	Specific Weight of Water at 55 degrees (pcf)	62.36
Installed By	S.B	Specific Weight of Mercury (psi)	0.491
Sampling Rate	1 Reading/30 Minutes	Barometric Pressure (inHg)	30.14
		Barometric Pressure (psi)	14.80

Manual Groundwater Readings

Date	Time	Depth (ft)	Elev.	Remark
8/4/2021	3:05 PM	11.9	398.1	Start Recording - Pump Well Dry
8/10/2021	11:30 AM	13.6	396.4	End Recording

Date	Time	Level (psi)	Temperature (F)	Water Head (Feet)	Depth to Top of GW (Feet)	Groundwater Elevation NAVD 88
8/8/2021	10:50:00 PM	21.2892	53.2710	14.9876	12.9124	397.0876
8/8/2021	11:20:00 PM	21.2871	53.2710	14.9827	12.9173	397.0827
8/8/2021	11:50:00 PM	21.2875	53.2650	14.9837	12.9163	397.0837
8/9/2021	12:20:00 AM	21.2904	53.2550	14.9904	12.9096	397.0904
8/9/2021	12:50:00 AM	21.2906	53.2540	14.9908	12.9092	397.0908
8/9/2021	1:20:00 AM	21.2899	53.2500	14.9892	12.9108	397.0892
8/9/2021	1:50:00 AM	21.288	53.2560	14.9848	12.9152	397.0848
8/9/2021	2:20:00 AM	21.2879	53.2380	14.9846	12.9154	397.0846
8/9/2021	2:50:00 AM	21.2902	53.2230	14.9899	12.9101	397.0899
8/9/2021	3:20:00 AM	21.2886	53.2270	14.9862	12.9138	397.0862
8/9/2021	3:50:00 AM	21.2897	53.2210	14.9887	12.9113	397.0887
8/9/2021	4:20:00 AM	21.2891	53.2150	14.9874	12.9126	397.0874
8/9/2021	4:50:00 AM	21.2858	53.2150	14.9797	12.9203	397.0797
8/9/2021	5:20:00 AM	21.2792	53.2060	14.9645	12.9355	397.0645
8/9/2021	5:50:00 AM	21.2779	53.2060	14.9615	12.9385	397.0615
8/9/2021	6:20:00 AM	21.2694	53.1940	14.9419	12.9581	397.0419
8/9/2021	6:50:00 AM	21.2605	53.1930	14.9213	12.9787	397.0213
8/9/2021	7:20:00 AM	21.25	53.1990	14.8971	13.0029	396.9971
8/9/2021	7:50:00 AM	21.2404	53.1880	14.8749	13.0251	396.9749
8/9/2021	8:20:00 AM	21.2285	53.1820	14.8474	13.0526	396.9474
8/9/2021	8:50:00 AM	21.2144	53.1830	14.8149	13.0851	396.9149
8/9/2021	9:20:00 AM	21.2012	53.1830	14.7844	13.1156	396.8844
8/9/2021	9:50:00 AM	21.1895	53.1710	14.7574	13.1426	396.8574
8/9/2021	10:20:00 AM	21.1799	53.1600	14.7352	13.1648	396.8352
8/9/2021	10:50:00 AM	21.1689	53.1620	14.7098	13.1902	396.8098
8/9/2021	11:20:00 AM	21.1555	53.1720	14.6789	13.2211	396.7789
8/9/2021	11:50:00 AM	21.1396	53.1620	14.6421	13.2579	396.7421
8/9/2021	12:20:00 PM	21.1259	53.1610	14.6105	13.2895	396.7105
8/9/2021	12:50:00 PM	21.11	53.1510	14.5738	13.3262	396.6738
8/9/2021	1:20:00 PM	21.0961	53.1530	14.5417	13.3583	396.6417
8/9/2021	1:50:00 PM	21.0806	53.1480	14.5059	13.3941	396.6059
8/9/2021	2:20:00 PM	21.0657	53.1470	14.4715	13.4285	396.5715
8/9/2021	2:50:00 PM	21.0528	53.1410	14.4417	13.4583	396.5417
8/9/2021	3:20:00 PM	21.0422	53.1400	14.4172	13.4828	396.5172
8/9/2021	3:50:00 PM	21.0351	53.1360	14.4008	13.4992	396.5008
8/9/2021	4:20:00 PM	21.0313	53.1300	14.3921	13.5079	396.4921
8/9/2021	4:50:00 PM	21.029	53.1180	14.3867	13.5133	396.4867
8/9/2021	5:20:00 PM	21.0286	53.1130	14.3858	13.5142	396.4858
8/9/2021	5:50:00 PM	21.0297	53.1150	14.3884	13.5116	396.4884
8/9/2021	6:20:00 PM	21.031	53.1030	14.3914	13.5086	396.4914
8/9/2021	6:50:00 PM	21.0332	53.0880	14.3964	13.5036	396.4964

GZA GeoEnvironmental of NY

Groundwater Level Reading Summary

Project No.	41.0162892.00	Top of Pipe Elevation (NAVD 88) (ft)	410.0
Project Name	WJWW Rye Lake	Bottom of Well Depth (ft)	29.8
Test Location	B-3a(OW)	Bottom of Well Elev. (NAVD 88) (ft)	380.2
Piezometer Type	Solinst Barologger	Depth to Instrument (ft)	27.9
Piezometer Serial No.	2137768	Elev. of Instrument (NAVD 88) (ft)	382.1
Date Collected	August 4 - 10, 2021	Specific Weight of Water at 55 degrees (pcf)	62.36
Installed By	S.B	Specific Weight of Mercury (psi)	0.491
Sampling Rate	1 Reading/30 Minutes	Barometric Pressure (inHg)	30.14
		Barometric Pressure (psi)	14.80

Manual Groundwater Readings

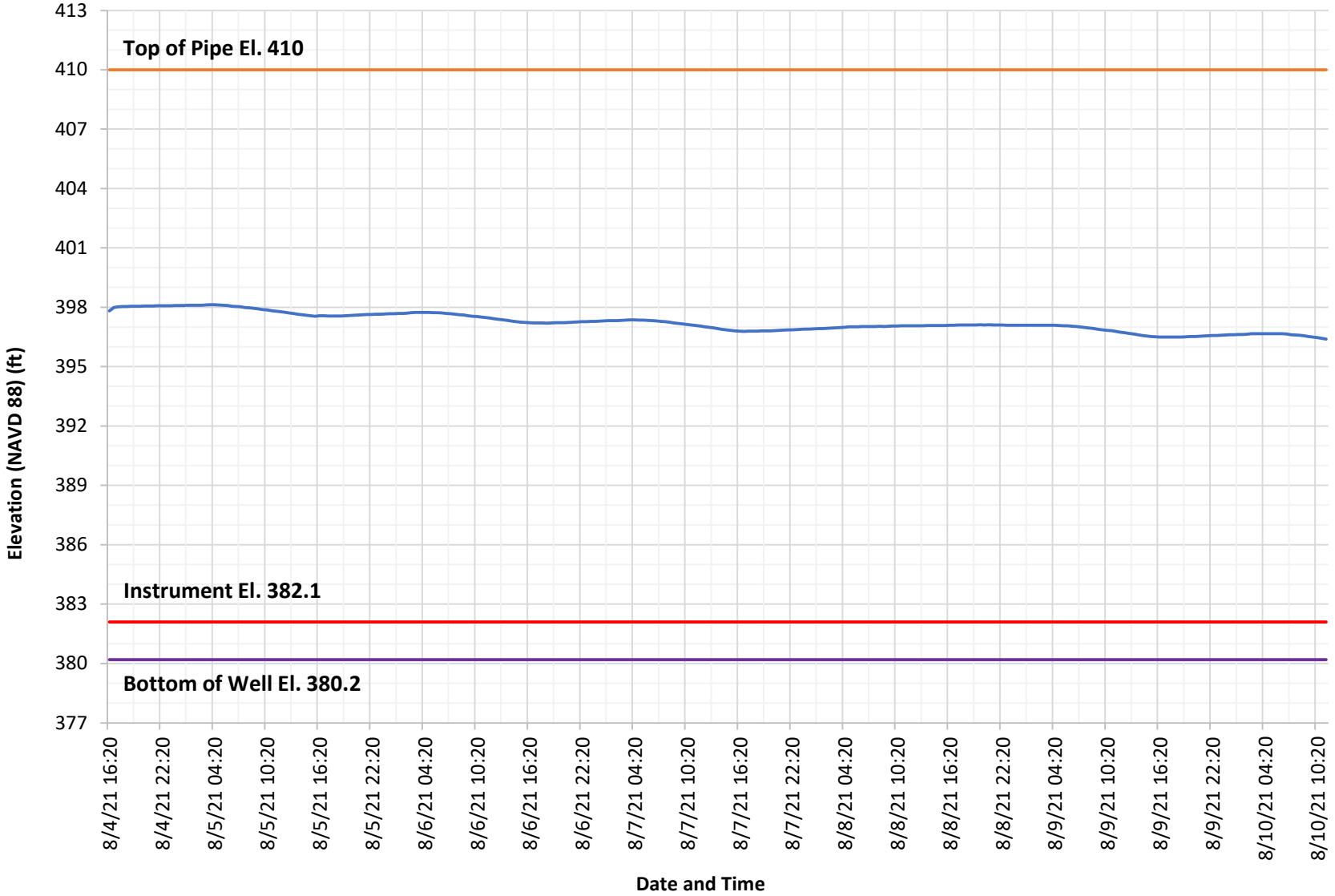
Date	Time	Depth (ft)	Elev.	Remark
8/4/2021	3:05 PM	11.9	398.1	Start Recording - Pump Well Dry
8/10/2021	11:30 AM	13.6	396.4	End Recording

Date	Time	Level (psi)	Temperature (F)	Water Head (Feet)	Depth to Top of GW (Feet)	Groundwater Elevation NAVD 88
8/9/2021	7:20:00 PM	21.037	53.0820	14.4052	13.4948	396.5052
8/9/2021	7:50:00 PM	21.0402	53.0640	14.4126	13.4874	396.5126
8/9/2021	8:20:00 PM	21.0436	53.0600	14.4205	13.4795	396.5205
8/9/2021	8:50:00 PM	21.0469	53.0630	14.4281	13.4719	396.5281
8/9/2021	9:20:00 PM	21.0564	53.0480	14.4500	13.4500	396.5500
8/9/2021	9:50:00 PM	21.0616	53.0390	14.4620	13.4380	396.5620
8/9/2021	10:20:00 PM	21.0631	53.0290	14.4655	13.4345	396.5655
8/9/2021	10:50:00 PM	21.0671	53.0300	14.4747	13.4253	396.5747
8/9/2021	11:20:00 PM	21.0722	53.0180	14.4865	13.4135	396.5865
8/9/2021	11:50:00 PM	21.0781	53.0140	14.5001	13.3999	396.6001
8/10/2021	12:20:00 AM	21.0813	53.0080	14.5075	13.3925	396.6075
8/10/2021	12:50:00 AM	21.0832	52.9980	14.5119	13.3881	396.6119
8/10/2021	1:20:00 AM	21.0869	52.9900	14.5204	13.3796	396.6204
8/10/2021	1:50:00 AM	21.0869	52.9850	14.5204	13.3796	396.6204
8/10/2021	2:20:00 AM	21.0947	52.9690	14.5385	13.3615	396.6385
8/10/2021	2:50:00 AM	21.1024	52.9730	14.5562	13.3438	396.6562
8/10/2021	3:20:00 AM	21.1041	52.9660	14.5602	13.3398	396.6602
8/10/2021	3:50:00 AM	21.1063	52.9590	14.5652	13.3348	396.6652
8/10/2021	4:20:00 AM	21.107	52.9580	14.5669	13.3331	396.6669
8/10/2021	4:50:00 AM	21.1061	52.9590	14.5648	13.3352	396.6648
8/10/2021	5:20:00 AM	21.107	52.9460	14.5669	13.3331	396.6669
8/10/2021	5:50:00 AM	21.103	52.9480	14.5576	13.3424	396.6576
8/10/2021	6:20:00 AM	21.1032	52.9370	14.5581	13.3419	396.6581
8/10/2021	6:50:00 AM	21.096	52.9300	14.5415	13.3585	396.6415
8/10/2021	7:20:00 AM	21.0835	52.9300	14.5126	13.3874	396.6126
8/10/2021	7:50:00 AM	21.0761	52.9350	14.4955	13.4045	396.5955
8/10/2021	8:20:00 AM	21.0682	52.9280	14.4773	13.4227	396.5773
8/10/2021	8:50:00 AM	21.0573	52.9340	14.4521	13.4479	396.5521
8/10/2021	9:20:00 AM	21.0434	52.9230	14.4200	13.4800	396.5200
8/10/2021	9:50:00 AM	21.0295	52.9280	14.3879	13.5121	396.4879
8/10/2021	10:20:00 AM	21.018	52.9190	14.3613	13.5387	396.4613
8/10/2021	10:50:00 AM	21.0045	52.9210	14.3302	13.5698	396.4302
8/10/2021	11:20:00 AM	20.9897	52.9220	14.2960	13.6040	396.3960

Proj. No.: 41.0162892.00
Project Name: WJWW Rye Lake

Recording Dates: August 4-10, 2021

Piezometer Water Level Readings - Boring B-3a(OW)



GZA GeoEnvironmental of NY

Groundwater Level Reading Summary

Project No.	41.0162892.00	Top of Pipe Elevation (NAVD 88) (ft)	392.2
Project Name	WJWW Rye Lake	Bottom of Well Depth (ft)	29.6
Test Location	B-29(OW)	Bottom of Well Elev. (NAVD 88) (ft)	362.6
Piezometer Type	Solinst Barologger	Depth to Instrument (ft)	29.1
Piezometer Serial No.	2137331	Elev. of Instrument (NAVD 88) (ft)	363.1
Date Collected	August 4 - 10, 2021	Specific Weight of Water at 50 degrees (pcf)	62.408
Installed By	S.B	Specific Weight of Mercury (psi)	0.491
Sampling Rate	1 Reading/30 Minutes	Barometric Pressure (inHg)	30.14
		Barometric Pressure (psi)	14.80

Manual Groundwater Readings

Date	Time	Depth (ft)	Elev.	Remark
8/4/2021	11:20 AM	12.6	379.6	Start Recording
8/10/2021	10:58 AM	12.5	379.7	End Recording

Date	Time	Level (psi)	Temperature (F)	Water Head (Feet)	Depth to Top of GW (Feet)	Groundwater Elevation NAVD 88
8/4/2021	11:45:00 AM	21.6031	51.6510	15.7004	12.6000	379.6000
8/4/2021	12:15:00 PM	21.6178	50.9010	15.7343	12.5661	379.6339
8/4/2021	12:45:00 PM	21.6256	50.7720	15.7523	12.5481	379.6519
8/4/2021	1:15:00 PM	21.6309	50.7120	15.7645	12.5359	379.6641
8/4/2021	1:45:00 PM	21.6391	50.6890	15.7834	12.5170	379.6830
8/4/2021	2:15:00 PM	21.6413	50.6760	15.7885	12.5119	379.6881
8/4/2021	2:45:00 PM	21.6418	50.6680	15.7897	12.5107	379.6893
8/4/2021	3:15:00 PM	21.6414	50.6680	15.7887	12.5117	379.6883
8/4/2021	3:45:00 PM	21.6385	50.6700	15.7820	12.5184	379.6816
8/4/2021	4:15:00 PM	21.6355	50.6630	15.7751	12.5253	379.6747
8/4/2021	4:45:00 PM	21.6378	50.6610	15.7804	12.5200	379.6800
8/4/2021	5:15:00 PM	21.6381	50.6640	15.7811	12.5193	379.6807
8/4/2021	5:45:00 PM	21.6363	50.6670	15.7770	12.5234	379.6766
8/4/2021	6:15:00 PM	21.6386	50.6670	15.7823	12.5181	379.6819
8/4/2021	6:45:00 PM	21.6419	50.6670	15.7899	12.5105	379.6895
8/4/2021	7:15:00 PM	21.642	50.6630	15.7901	12.5103	379.6897
8/4/2021	7:45:00 PM	21.6454	50.6650	15.7980	12.5024	379.6976
8/4/2021	8:15:00 PM	21.6447	50.6650	15.7963	12.5041	379.6959
8/4/2021	8:45:00 PM	21.6468	50.6660	15.8012	12.4992	379.7008
8/4/2021	9:15:00 PM	21.6467	50.6640	15.8010	12.4994	379.7006
8/4/2021	9:45:00 PM	21.65	50.6650	15.8086	12.4918	379.7082
8/4/2021	10:15:00 PM	21.6505	50.6660	15.8097	12.4907	379.7093
8/4/2021	10:45:00 PM	21.649	50.6630	15.8063	12.4941	379.7059
8/4/2021	11:15:00 PM	21.6447	50.6660	15.7963	12.5041	379.6959
8/4/2021	11:45:00 PM	21.6451	50.6640	15.7973	12.5031	379.6969
8/5/2021	12:15:00 AM	21.6427	50.6600	15.7917	12.5087	379.6913
8/5/2021	12:45:00 AM	21.639	50.6640	15.7832	12.5172	379.6828
8/5/2021	1:15:00 AM	21.6407	50.6650	15.7871	12.5133	379.6867
8/5/2021	1:45:00 AM	21.6403	50.6640	15.7862	12.5142	379.6858
8/5/2021	2:15:00 AM	21.6392	50.6620	15.7837	12.5167	379.6833
8/5/2021	2:45:00 AM	21.6354	50.6640	15.7749	12.5255	379.6745
8/5/2021	3:15:00 AM	21.6313	50.6640	15.7654	12.5350	379.6650
8/5/2021	3:45:00 AM	21.6275	50.6620	15.7567	12.5437	379.6563
8/5/2021	4:15:00 AM	21.625	50.6630	15.7509	12.5495	379.6505
8/5/2021	4:45:00 AM	21.6245	50.6650	15.7497	12.5507	379.6493
8/5/2021	5:15:00 AM	21.626	50.6660	15.7532	12.5472	379.6528
8/5/2021	5:45:00 AM	21.6274	50.6630	15.7564	12.5440	379.6560
8/5/2021	6:15:00 AM	21.6298	50.6660	15.7620	12.5384	379.6616
8/5/2021	6:45:00 AM	21.6265	50.6660	15.7543	12.5461	379.6539
8/5/2021	7:15:00 AM	21.6283	50.6650	15.7585	12.5419	379.6581
8/5/2021	7:45:00 AM	21.6245	50.6660	15.7497	12.5507	379.6493

Groundwater Level Reading Summary

Project No.	41.0162892.00	Top of Pipe Elevation (NAVD 88) (ft)	392.2
Project Name	WJWW Rye Lake	Bottom of Well Depth (ft)	29.6
Test Location	B-29(OW)	Bottom of Well Elev. (NAVD 88) (ft)	362.6
Piezometer Type	Solinst Barologger	Depth to Instrument (ft)	29.1
Piezometer Serial No.	2137331	Elev. of Instrument (NAVD 88) (ft)	363.1
Date Collected	August 4 - 10, 2021	Specific Weight of Water at 50 degrees (pcf)	62.408
Installed By	S.B	Specific Weight of Mercury (psi)	0.491
Sampling Rate	1 Reading/30 Minutes	Barometric Pressure (inHg)	30.14
		Barometric Pressure (psi)	14.80

Manual Groundwater Readings

Date	Time	Depth (ft)	Elev.	Remark
8/4/2021	11:20 AM	12.6	379.6	Start Recording
8/10/2021	10:58 AM	12.5	379.7	End Recording

Date	Time	Level (psi)	Temperature (F)	Water Head (Feet)	Depth to Top of GW (Feet)	Groundwater Elevation NAVD 88
8/5/2021	8:15:00 AM	21.6239	50.6660	15.7484	12.5520	379.6480
8/5/2021	8:45:00 AM	21.627	50.6640	15.7555	12.5449	379.6551
8/5/2021	9:15:00 AM	21.6306	50.6670	15.7638	12.5366	379.6634
8/5/2021	9:45:00 AM	21.6334	50.6640	15.7703	12.5301	379.6699
8/5/2021	10:15:00 AM	21.6324	50.6650	15.7680	12.5324	379.6676
8/5/2021	10:45:00 AM	21.6329	50.6650	15.7691	12.5313	379.6687
8/5/2021	11:15:00 AM	21.6305	50.6640	15.7636	12.5368	379.6632
8/5/2021	11:45:00 AM	21.6311	50.6690	15.7650	12.5354	379.6646
8/5/2021	12:15:00 PM	21.6282	50.6650	15.7583	12.5421	379.6579
8/5/2021	12:45:00 PM	21.6258	50.6680	15.7527	12.5477	379.6523
8/5/2021	1:15:00 PM	21.6216	50.6700	15.7430	12.5574	379.6426
8/5/2021	1:45:00 PM	21.6193	50.6770	15.7377	12.5627	379.6373
8/5/2021	2:15:00 PM	21.6191	50.6670	15.7373	12.5631	379.6369
8/5/2021	2:45:00 PM	21.6163	50.6660	15.7308	12.5696	379.6304
8/5/2021	3:15:00 PM	21.6145	50.6690	15.7267	12.5737	379.6263
8/5/2021	3:45:00 PM	21.611	50.6640	15.7186	12.5818	379.6182
8/5/2021	4:15:00 PM	21.6102	50.6700	15.7167	12.5837	379.6163
8/5/2021	4:45:00 PM	21.6104	50.6680	15.7172	12.5832	379.6168
8/5/2021	5:15:00 PM	21.6094	50.6700	15.7149	12.5855	379.6145
8/5/2021	5:45:00 PM	21.6062	50.6670	15.7075	12.5929	379.6071
8/5/2021	6:15:00 PM	21.6048	50.6690	15.7043	12.5961	379.6039
8/5/2021	6:45:00 PM	21.6093	50.6740	15.7147	12.5857	379.6143
8/5/2021	7:15:00 PM	21.6117	50.6710	15.7202	12.5802	379.6198
8/5/2021	7:45:00 PM	21.6174	50.6710	15.7334	12.5670	379.6330
8/5/2021	8:15:00 PM	21.62	50.6720	15.7394	12.5610	379.6390
8/5/2021	8:45:00 PM	21.6221	50.6730	15.7442	12.5562	379.6438
8/5/2021	9:15:00 PM	21.6288	50.6730	15.7597	12.5407	379.6593
8/5/2021	9:45:00 PM	21.6319	50.6680	15.7668	12.5336	379.6664
8/5/2021	10:15:00 PM	21.6324	50.6730	15.7680	12.5324	379.6676
8/5/2021	10:45:00 PM	21.6339	50.6720	15.7714	12.5290	379.6710
8/5/2021	11:15:00 PM	21.6331	50.6730	15.7696	12.5308	379.6692
8/5/2021	11:45:00 PM	21.635	50.6740	15.7740	12.5264	379.6736
8/6/2021	12:15:00 AM	21.6367	50.6730	15.7779	12.5225	379.6775
8/6/2021	12:45:00 AM	21.6376	50.6740	15.7800	12.5204	379.6796
8/6/2021	1:15:00 AM	21.6377	50.6760	15.7802	12.5202	379.6798
8/6/2021	1:45:00 AM	21.6377	50.6750	15.7802	12.5202	379.6798
8/6/2021	2:15:00 AM	21.638	50.6770	15.7809	12.5195	379.6805
8/6/2021	2:45:00 AM	21.638	50.6720	15.7809	12.5195	379.6805
8/6/2021	3:15:00 AM	21.6382	50.6750	15.7813	12.5191	379.6809
8/6/2021	3:45:00 AM	21.6403	50.6760	15.7862	12.5142	379.6858
8/6/2021	4:15:00 AM	21.641	50.6730	15.7878	12.5126	379.6874

GZA GeoEnvironmental of NY

Groundwater Level Reading Summary

Project No.	41.0162892.00	Top of Pipe Elevation (NAVD 88) (ft)	392.2
Project Name	WJWW Rye Lake	Bottom of Well Depth (ft)	29.6
Test Location	B-29(OW)	Bottom of Well Elev. (NAVD 88) (ft)	362.6
Piezometer Type	Solinst Barologger	Depth to Instrument (ft)	29.1
Piezometer Serial No.	2137331	Elev. of Instrument (NAVD 88) (ft)	363.1
Date Collected	August 4 - 10, 2021	Specific Weight of Water at 50 degrees (pcf)	62.408
Installed By	S.B	Specific Weight of Mercury (psi)	0.491
Sampling Rate	1 Reading/30 Minutes	Barometric Pressure (inHg)	30.14
		Barometric Pressure (psi)	14.80

Manual Groundwater Readings

Date	Time	Depth (ft)	Elev.	Remark
8/4/2021	11:20 AM	12.6	379.6	Start Recording
8/10/2021	10:58 AM	12.5	379.7	End Recording

Date	Time	Level (psi)	Temperature (F)	Water Head (Feet)	Depth to Top of GW (Feet)	Groundwater Elevation NAVD 88
8/6/2021	4:45:00 AM	21.6421	50.6750	15.7903	12.5101	379.6899
8/6/2021	5:15:00 AM	21.643	50.6730	15.7924	12.5080	379.6920
8/6/2021	5:45:00 AM	21.6447	50.6750	15.7963	12.5041	379.6959
8/6/2021	6:15:00 AM	21.6471	50.6750	15.8019	12.4985	379.7015
8/6/2021	6:45:00 AM	21.6485	50.6760	15.8051	12.4953	379.7047
8/6/2021	7:15:00 AM	21.65	50.6780	15.8086	12.4918	379.7082
8/6/2021	7:45:00 AM	21.6515	50.6770	15.8120	12.4884	379.7116
8/6/2021	8:15:00 AM	21.6526	50.6780	15.8146	12.4858	379.7142
8/6/2021	8:45:00 AM	21.6521	50.6800	15.8134	12.4870	379.7130
8/6/2021	9:15:00 AM	21.6521	50.6790	15.8134	12.4870	379.7130
8/6/2021	9:45:00 AM	21.6519	50.6790	15.8130	12.4874	379.7126
8/6/2021	10:15:00 AM	21.6546	50.6800	15.8192	12.4812	379.7188
8/6/2021	10:45:00 AM	21.655	50.6800	15.8201	12.4803	379.7197
8/6/2021	11:15:00 AM	21.6539	50.6790	15.8176	12.4828	379.7172
8/6/2021	11:45:00 AM	21.651	50.6820	15.8109	12.4895	379.7105
8/6/2021	12:15:00 PM	21.6478	50.6800	15.8035	12.4969	379.7031
8/6/2021	12:45:00 PM	21.6437	50.6830	15.7940	12.5064	379.6936
8/6/2021	1:15:00 PM	21.6411	50.6810	15.7880	12.5124	379.6876
8/6/2021	1:45:00 PM	21.6394	50.6820	15.7841	12.5163	379.6837
8/6/2021	2:15:00 PM	21.6339	50.6830	15.7714	12.5290	379.6710
8/6/2021	2:45:00 PM	21.6295	50.6830	15.7613	12.5391	379.6609
8/6/2021	3:15:00 PM	21.6258	50.6840	15.7527	12.5477	379.6523
8/6/2021	3:45:00 PM	21.6212	50.6830	15.7421	12.5583	379.6417
8/6/2021	4:15:00 PM	21.6189	50.6830	15.7368	12.5636	379.6364
8/6/2021	4:45:00 PM	21.6161	50.6830	15.7304	12.5700	379.6300
8/6/2021	5:15:00 PM	21.6162	50.6840	15.7306	12.5698	379.6302
8/6/2021	5:45:00 PM	21.6147	50.6840	15.7271	12.5733	379.6267
8/6/2021	6:15:00 PM	21.6132	50.6870	15.7237	12.5767	379.6233
8/6/2021	6:45:00 PM	21.6136	50.6850	15.7246	12.5758	379.6242
8/6/2021	7:15:00 PM	21.6121	50.6820	15.7211	12.5793	379.6207
8/6/2021	7:45:00 PM	21.6123	50.6840	15.7216	12.5788	379.6212
8/6/2021	8:15:00 PM	21.6117	50.6850	15.7202	12.5802	379.6198
8/6/2021	8:45:00 PM	21.6118	50.6850	15.7204	12.5800	379.6200
8/6/2021	9:15:00 PM	21.6144	50.6870	15.7264	12.5740	379.6260
8/6/2021	9:45:00 PM	21.6163	50.6860	15.7308	12.5696	379.6304
8/6/2021	10:15:00 PM	21.6164	50.6840	15.7310	12.5694	379.6306
8/6/2021	10:45:00 PM	21.6146	50.6840	15.7269	12.5735	379.6265
8/6/2021	11:15:00 PM	21.6127	50.6870	15.7225	12.5779	379.6221
8/6/2021	11:45:00 PM	21.6152	50.6910	15.7283	12.5721	379.6279
8/7/2021	12:15:00 AM	21.6152	50.6870	15.7283	12.5721	379.6279
8/7/2021	12:45:00 AM	21.6148	50.6840	15.7274	12.5730	379.6270

Groundwater Level Reading Summary

Project No.	41.0162892.00	Top of Pipe Elevation (NAVD 88) (ft)	392.2
Project Name	WJWW Rye Lake	Bottom of Well Depth (ft)	29.6
Test Location	B-29(OW)	Bottom of Well Elev. (NAVD 88) (ft)	362.6
Piezometer Type	Solinst Barologger	Depth to Instrument (ft)	29.1
Piezometer Serial No.	2137331	Elev. of Instrument (NAVD 88) (ft)	363.1
Date Collected	August 4 - 10, 2021	Specific Weight of Water at 50 degrees (pcf)	62.408
Installed By	S.B	Specific Weight of Mercury (psi)	0.491
Sampling Rate	1 Reading/30 Minutes	Barometric Pressure (inHg)	30.14
		Barometric Pressure (psi)	14.80

Manual Groundwater Readings

Date	Time	Depth (ft)	Elev.	Remark
8/4/2021	11:20 AM	12.6	379.6	Start Recording
8/10/2021	10:58 AM	12.5	379.7	End Recording

Date	Time	Level (psi)	Temperature (F)	Water Head (Feet)	Depth to Top of GW (Feet)	Groundwater Elevation NAVD 88
8/7/2021	1:15:00 AM	21.6134	50.6870	15.7241	12.5763	379.6237
8/7/2021	1:45:00 AM	21.6123	50.6880	15.7216	12.5788	379.6212
8/7/2021	2:15:00 AM	21.6089	50.6870	15.7137	12.5867	379.6133
8/7/2021	2:45:00 AM	21.6071	50.6870	15.7096	12.5908	379.6092
8/7/2021	3:15:00 AM	21.6051	50.6890	15.7050	12.5954	379.6046
8/7/2021	3:45:00 AM	21.6028	50.6900	15.6997	12.6007	379.5993
8/7/2021	4:15:00 AM	21.6018	50.6860	15.6974	12.6030	379.5970
8/7/2021	4:45:00 AM	21.6011	50.6900	15.6957	12.6047	379.5953
8/7/2021	5:15:00 AM	21.6004	50.6910	15.6941	12.6063	379.5937
8/7/2021	5:45:00 AM	21.5995	50.6890	15.6920	12.6084	379.5916
8/7/2021	6:15:00 AM	21.6016	50.6900	15.6969	12.6035	379.5965
8/7/2021	6:45:00 AM	21.6016	50.6900	15.6969	12.6035	379.5965
8/7/2021	7:15:00 AM	21.6013	50.6900	15.6962	12.6042	379.5958
8/7/2021	7:45:00 AM	21.6018	50.6890	15.6974	12.6030	379.5970
8/7/2021	8:15:00 AM	21.6046	50.6900	15.7038	12.5966	379.6034
8/7/2021	8:45:00 AM	21.6026	50.6910	15.6992	12.6012	379.5988
8/7/2021	9:15:00 AM	21.6014	50.6960	15.6964	12.6040	379.5960
8/7/2021	9:45:00 AM	21.6001	50.6940	15.6934	12.6070	379.5930
8/7/2021	10:15:00 AM	21.5979	50.6940	15.6884	12.6120	379.5880
8/7/2021	10:45:00 AM	21.5978	50.6950	15.6881	12.6123	379.5877
8/7/2021	11:15:00 AM	21.5955	50.6980	15.6828	12.6176	379.5824
8/7/2021	11:45:00 AM	21.5931	50.6950	15.6773	12.6231	379.5769
8/7/2021	12:15:00 PM	21.5909	50.6920	15.6722	12.6282	379.5718
8/7/2021	12:45:00 PM	21.5893	50.6960	15.6685	12.6319	379.5681
8/7/2021	1:15:00 PM	21.5862	50.6940	15.6614	12.6390	379.5610
8/7/2021	1:45:00 PM	21.5837	50.6980	15.6556	12.6448	379.5552
8/7/2021	2:15:00 PM	21.5789	50.6930	15.6445	12.6559	379.5441
8/7/2021	2:45:00 PM	21.5752	50.6960	15.6360	12.6644	379.5356
8/7/2021	3:15:00 PM	21.5721	50.6990	15.6288	12.6716	379.5284
8/7/2021	3:45:00 PM	21.5698	50.6980	15.6235	12.6769	379.5231
8/7/2021	4:15:00 PM	21.5663	50.6980	15.6154	12.6850	379.5150
8/7/2021	4:45:00 PM	21.5614	50.6990	15.6041	12.6963	379.5037
8/7/2021	5:15:00 PM	21.5604	50.6990	15.6018	12.6986	379.5014
8/7/2021	5:45:00 PM	21.5602	50.6970	15.6014	12.6990	379.5010
8/7/2021	6:15:00 PM	21.5593	50.6940	15.5993	12.7011	379.4989
8/7/2021	6:45:00 PM	21.5606	50.6990	15.6023	12.6981	379.5019
8/7/2021	7:15:00 PM	21.5643	50.6990	15.6108	12.6896	379.5104
8/7/2021	7:45:00 PM	21.561	50.7010	15.6032	12.6972	379.5028
8/7/2021	8:15:00 PM	21.5625	50.7010	15.6067	12.6937	379.5063
8/7/2021	8:45:00 PM	21.5653	50.6970	15.6131	12.6873	379.5127
8/7/2021	9:15:00 PM	21.5669	50.6980	15.6168	12.6836	379.5164

Groundwater Level Reading Summary

Project No.	41.0162892.00	Top of Pipe Elevation (NAVD 88) (ft)	392.2
Project Name	WJWW Rye Lake	Bottom of Well Depth (ft)	29.6
Test Location	B-29(OW)	Bottom of Well Elev. (NAVD 88) (ft)	362.6
Piezometer Type	Solinst Barologger	Depth to Instrument (ft)	29.1
Piezometer Serial No.	2137331	Elev. of Instrument (NAVD 88) (ft)	363.1
Date Collected	August 4 - 10, 2021	Specific Weight of Water at 50 degrees (pcf)	62.408
Installed By	S.B	Specific Weight of Mercury (psi)	0.491
Sampling Rate	1 Reading/30 Minutes	Barometric Pressure (inHg)	30.14
		Barometric Pressure (psi)	14.80

Manual Groundwater Readings

Date	Time	Depth (ft)	Elev.	Remark
8/4/2021	11:20 AM	12.6	379.6	Start Recording
8/10/2021	10:58 AM	12.5	379.7	End Recording

Date	Time	Level (psi)	Temperature (F)	Water Head (Feet)	Depth to Top of GW (Feet)	Groundwater Elevation NAVD 88
8/7/2021	9:45:00 PM	21.5683	50.7050	15.6201	12.6803	379.5197
8/7/2021	10:15:00 PM	21.5683	50.7010	15.6201	12.6803	379.5197
8/7/2021	10:45:00 PM	21.5681	50.6990	15.6196	12.6808	379.5192
8/7/2021	11:15:00 PM	21.5693	50.6990	15.6224	12.6780	379.5220
8/7/2021	11:45:00 PM	21.5702	50.7040	15.6244	12.6760	379.5240
8/8/2021	12:15:00 AM	21.5695	50.7020	15.6228	12.6776	379.5224
8/8/2021	12:45:00 AM	21.5681	50.7020	15.6196	12.6808	379.5192
8/8/2021	1:15:00 AM	21.5656	50.7010	15.6138	12.6866	379.5134
8/8/2021	1:45:00 AM	21.5635	50.6990	15.6090	12.6914	379.5086
8/8/2021	2:15:00 AM	21.5634	50.7010	15.6088	12.6916	379.5084
8/8/2021	2:45:00 AM	21.5638	50.7030	15.6097	12.6907	379.5093
8/8/2021	3:15:00 AM	21.5634	50.7030	15.6088	12.6916	379.5084
8/8/2021	3:45:00 AM	21.5691	50.7060	15.6219	12.6785	379.5215
8/8/2021	4:15:00 AM	21.5757	50.7030	15.6371	12.6633	379.5367
8/8/2021	4:45:00 AM	21.5786	50.7010	15.6438	12.6566	379.5434
8/8/2021	5:15:00 AM	21.5778	50.7040	15.6420	12.6584	379.5416
8/8/2021	5:45:00 AM	21.5779	50.7030	15.6422	12.6582	379.5418
8/8/2021	6:15:00 AM	21.5787	50.7010	15.6441	12.6563	379.5437
8/8/2021	6:45:00 AM	21.5801	50.6990	15.6473	12.6531	379.5469
8/8/2021	7:15:00 AM	21.5765	50.7020	15.6390	12.6614	379.5386
8/8/2021	7:45:00 AM	21.5725	50.7030	15.6298	12.6706	379.5294
8/8/2021	8:15:00 AM	21.5755	50.7030	15.6367	12.6637	379.5363
8/8/2021	8:45:00 AM	21.5751	50.7060	15.6357	12.6647	379.5353
8/8/2021	9:15:00 AM	21.5781	50.7060	15.6427	12.6577	379.5423
8/8/2021	9:45:00 AM	21.5801	50.7040	15.6473	12.6531	379.5469
8/8/2021	10:15:00 AM	21.585	50.7070	15.6586	12.6418	379.5582
8/8/2021	10:45:00 AM	21.5872	50.7060	15.6637	12.6367	379.5633
8/8/2021	11:15:00 AM	21.5919	50.7080	15.6745	12.6259	379.5741
8/8/2021	11:45:00 AM	21.5933	50.7030	15.6777	12.6227	379.5773
8/8/2021	12:15:00 PM	21.5904	50.7050	15.6711	12.6293	379.5707
8/8/2021	12:45:00 PM	21.5882	50.7070	15.6660	12.6344	379.5656
8/8/2021	1:15:00 PM	21.5884	50.7070	15.6664	12.6340	379.5660
8/8/2021	1:45:00 PM	21.5904	50.7060	15.6711	12.6293	379.5707
8/8/2021	2:15:00 PM	21.59	50.7100	15.6701	12.6303	379.5697
8/8/2021	2:45:00 PM	21.5856	50.7110	15.6600	12.6404	379.5596
8/8/2021	3:15:00 PM	21.5848	50.7090	15.6581	12.6423	379.5577
8/8/2021	3:45:00 PM	21.5841	50.7080	15.6565	12.6439	379.5561
8/8/2021	4:15:00 PM	21.5824	50.7110	15.6526	12.6478	379.5522
8/8/2021	4:45:00 PM	21.5827	50.7110	15.6533	12.6471	379.5529
8/8/2021	5:15:00 PM	21.5844	50.7070	15.6572	12.6432	379.5568
8/8/2021	5:45:00 PM	21.5883	50.7140	15.6662	12.6342	379.5658

Groundwater Level Reading Summary

Project No.	41.0162892.00	Top of Pipe Elevation (NAVD 88) (ft)	392.2
Project Name	WJWW Rye Lake	Bottom of Well Depth (ft)	29.6
Test Location	B-29(OW)	Bottom of Well Elev. (NAVD 88) (ft)	362.6
Piezometer Type	Solinst Barologger	Depth to Instrument (ft)	29.1
Piezometer Serial No.	2137331	Elev. of Instrument (NAVD 88) (ft)	363.1
Date Collected	August 4 - 10, 2021	Specific Weight of Water at 50 degrees (pcf)	62.408
Installed By	S.B	Specific Weight of Mercury (psi)	0.491
Sampling Rate	1 Reading/30 Minutes	Barometric Pressure (inHg)	30.14
		Barometric Pressure (psi)	14.80

Manual Groundwater Readings

Date	Time	Depth (ft)	Elev.	Remark
8/4/2021	11:20 AM	12.6	379.6	Start Recording
8/10/2021	10:58 AM	12.5	379.7	End Recording

Date	Time	Level (psi)	Temperature (F)	Water Head (Feet)	Depth to Top of GW (Feet)	Groundwater Elevation NAVD 88
8/8/2021	6:15:00 PM	21.5897	50.7110	15.6694	12.6310	379.5690
8/8/2021	6:45:00 PM	21.5877	50.7120	15.6648	12.6356	379.5644
8/8/2021	7:15:00 PM	21.5873	50.7120	15.6639	12.6365	379.5635
8/8/2021	7:45:00 PM	21.5894	50.7110	15.6687	12.6317	379.5683
8/8/2021	8:15:00 PM	21.5883	50.7100	15.6662	12.6342	379.5658
8/8/2021	8:45:00 PM	21.5885	50.7130	15.6667	12.6337	379.5663
8/8/2021	9:15:00 PM	21.5875	50.7140	15.6644	12.6360	379.5640
8/8/2021	9:45:00 PM	21.5884	50.7160	15.6664	12.6340	379.5660
8/8/2021	10:15:00 PM	21.586	50.7120	15.6609	12.6395	379.5605
8/8/2021	10:45:00 PM	21.5822	50.7150	15.6521	12.6483	379.5517
8/8/2021	11:15:00 PM	21.5784	50.7180	15.6434	12.6570	379.5430
8/8/2021	11:45:00 PM	21.5818	50.7180	15.6512	12.6492	379.5508
8/9/2021	12:15:00 AM	21.5843	50.7160	15.6570	12.6434	379.5566
8/9/2021	12:45:00 AM	21.5867	50.7170	15.6625	12.6379	379.5621
8/9/2021	1:15:00 AM	21.5855	50.7140	15.6597	12.6407	379.5593
8/9/2021	1:45:00 AM	21.5855	50.7170	15.6597	12.6407	379.5593
8/9/2021	2:15:00 AM	21.5838	50.7150	15.6558	12.6446	379.5554
8/9/2021	2:45:00 AM	21.5822	50.7160	15.6521	12.6483	379.5517
8/9/2021	3:15:00 AM	21.5804	50.7170	15.6480	12.6524	379.5476
8/9/2021	3:45:00 AM	21.5808	50.7200	15.6489	12.6515	379.5485
8/9/2021	4:15:00 AM	21.5833	50.7180	15.6547	12.6457	379.5543
8/9/2021	4:45:00 AM	21.586	50.7160	15.6609	12.6395	379.5605
8/9/2021	5:15:00 AM	21.5873	50.7180	15.6639	12.6365	379.5635
8/9/2021	5:45:00 AM	21.5918	50.7170	15.6743	12.6261	379.5739
8/9/2021	6:15:00 AM	21.5935	50.7170	15.6782	12.6222	379.5778
8/9/2021	6:45:00 AM	21.5952	50.7220	15.6821	12.6183	379.5817
8/9/2021	7:15:00 AM	21.5949	50.7170	15.6814	12.6190	379.5810
8/9/2021	7:45:00 AM	21.5987	50.7200	15.6902	12.6102	379.5898
8/9/2021	8:15:00 AM	21.5992	50.7190	15.6914	12.6090	379.5910
8/9/2021	8:45:00 AM	21.6018	50.7220	15.6974	12.6030	379.5970
8/9/2021	9:15:00 AM	21.6004	50.7190	15.6941	12.6063	379.5937
8/9/2021	9:45:00 AM	21.6011	50.7190	15.6957	12.6047	379.5953
8/9/2021	10:15:00 AM	21.6056	50.7210	15.7061	12.5943	379.6057
8/9/2021	10:45:00 AM	21.6096	50.7220	15.7154	12.5850	379.6150
8/9/2021	11:15:00 AM	21.6114	50.7210	15.7195	12.5809	379.6191
8/9/2021	11:45:00 AM	21.61	50.7240	15.7163	12.5841	379.6159
8/9/2021	12:15:00 PM	21.6097	50.7210	15.7156	12.5848	379.6152
8/9/2021	12:45:00 PM	21.6069	50.7200	15.7091	12.5913	379.6087
8/9/2021	1:15:00 PM	21.6033	50.7220	15.7008	12.5996	379.6004
8/9/2021	1:45:00 PM	21.5999	50.7230	15.6930	12.6074	379.5926
8/9/2021	2:15:00 PM	21.5979	50.7250	15.6884	12.6120	379.5880

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Groundwater Level Reading Summary

Project No.	41.0162892.00	Top of Pipe Elevation (NAVD 88) (ft)	392.2
Project Name	WJWW Rye Lake	Bottom of Well Depth (ft)	29.6
Test Location	B-29(OW)	Bottom of Well Elev. (NAVD 88) (ft)	362.6
Piezometer Type	Solinst Barologger	Depth to Instrument (ft)	29.1
Piezometer Serial No.	2137331	Elev. of Instrument (NAVD 88) (ft)	363.1
Date Collected	August 4 - 10, 2021	Specific Weight of Water at 50 degrees (pcf)	62.408
Installed By	S.B	Specific Weight of Mercury (psi)	0.491
Sampling Rate	1 Reading/30 Minutes	Barometric Pressure (inHg)	30.14
		Barometric Pressure (psi)	14.80

Manual Groundwater Readings

Date	Time	Depth (ft)	Elev.	Remark
8/4/2021	11:20 AM	12.6	379.6	Start Recording
8/10/2021	10:58 AM	12.5	379.7	End Recording

Date	Time	Level (psi)	Temperature (F)	Water Head (Feet)	Depth to Top of GW (Feet)	Groundwater Elevation NAVD 88
8/9/2021	2:45:00 PM	21.5961	50.7240	15.6842	12.6162	379.5838
8/9/2021	3:15:00 PM	21.5921	50.7240	15.6750	12.6254	379.5746
8/9/2021	3:45:00 PM	21.5913	50.7240	15.6731	12.6273	379.5727
8/9/2021	4:15:00 PM	21.5913	50.7230	15.6731	12.6273	379.5727
8/9/2021	4:45:00 PM	21.5895	50.7240	15.6690	12.6314	379.5686
8/9/2021	5:15:00 PM	21.5922	50.7270	15.6752	12.6252	379.5748
8/9/2021	5:45:00 PM	21.5926	50.7290	15.6761	12.6243	379.5757
8/9/2021	6:15:00 PM	21.5916	50.7250	15.6738	12.6266	379.5734
8/9/2021	6:45:00 PM	21.5937	50.7240	15.6787	12.6217	379.5783
8/9/2021	7:15:00 PM	21.5953	50.7270	15.6824	12.6180	379.5820
8/9/2021	7:45:00 PM	21.5952	50.7270	15.6821	12.6183	379.5817
8/9/2021	8:15:00 PM	21.5971	50.7260	15.6865	12.6139	379.5861
8/9/2021	8:45:00 PM	21.5958	50.7270	15.6835	12.6169	379.5831
8/9/2021	9:15:00 PM	21.602	50.7280	15.6978	12.6026	379.5974
8/9/2021	9:45:00 PM	21.607	50.7270	15.7094	12.5910	379.6090
8/9/2021	10:15:00 PM	21.6048	50.7310	15.7043	12.5961	379.6039
8/9/2021	10:45:00 PM	21.6054	50.7240	15.7057	12.5947	379.6053
8/9/2021	11:15:00 PM	21.6062	50.7280	15.7075	12.5929	379.6071
8/9/2021	11:45:00 PM	21.6136	50.7280	15.7246	12.5758	379.6242
8/10/2021	12:15:00 AM	21.6133	50.7310	15.7239	12.5765	379.6235
8/10/2021	12:45:00 AM	21.6093	50.7310	15.7147	12.5857	379.6143
8/10/2021	1:15:00 AM	21.609	50.7300	15.7140	12.5864	379.6136
8/10/2021	1:45:00 AM	21.6062	50.7310	15.7075	12.5929	379.6071
8/10/2021	2:15:00 AM	21.6058	50.7300	15.7066	12.5938	379.6062
8/10/2021	2:45:00 AM	21.6073	50.7320	15.7100	12.5904	379.6096
8/10/2021	3:15:00 AM	21.6035	50.7330	15.7013	12.5991	379.6009
8/10/2021	3:45:00 AM	21.6021	50.7300	15.6980	12.6024	379.5976
8/10/2021	4:15:00 AM	21.6016	50.7320	15.6969	12.6035	379.5965
8/10/2021	4:45:00 AM	21.6028	50.7330	15.6997	12.6007	379.5993
8/10/2021	5:15:00 AM	21.6017	50.7310	15.6971	12.6033	379.5967
8/10/2021	5:45:00 AM	21.603	50.7330	15.7001	12.6003	379.5997
8/10/2021	6:15:00 AM	21.6094	50.7340	15.7149	12.5855	379.6145
8/10/2021	6:45:00 AM	21.6126	50.7320	15.7223	12.5781	379.6219
8/10/2021	7:15:00 AM	21.6074	50.7340	15.7103	12.5901	379.6099
8/10/2021	7:45:00 AM	21.6052	50.7350	15.7052	12.5952	379.6048
8/10/2021	8:15:00 AM	21.6058	50.737	15.7066	12.5938	379.6062
8/10/2021	8:45:00 AM	21.6088	50.736	15.7135	12.5869	379.6131
8/10/2021	9:15:00 AM	21.6038	50.734	15.7020	12.5984	379.6016
8/10/2021	9:45:00 AM	21.6	50.737	15.6932	12.6072	379.5928
8/10/2021	10:15:00 AM	21.5998	50.738	15.6927	12.6077	379.5923
8/10/2021	10:45:00 AM	21.5979	50.735	15.6884	12.6120	379.5880

Proj. No.: 41.0162892.00
Project Name: WJWW Rye Lake

Recording Dates: August 4-10, 2021

Piezometer Water Level Readings - Boring B-29(OW)



APPENDIX E

TEST PIT LOGS AND PHOTOGRAPHIC DOCUMENTATION

GZA GeoEnvironmental, Inc.
Engineers and Scientists

JOB 41.0162892.00
SHEET NO. 01 OF 11
CALCULATED BY KDP DATE 8/20/21
CHECKED BY _____ DATE _____
SCALE N.T.S

TP-1

- Craig cleared wooded area & GZA marked out the test pit (TP).
- TP-1 excavated down to approx. 12Ft bgs.
- Spot motling encountered at approx. 9'Ft to 10ft bgs.
- Soil at approximately 10 ft bgs encountered to be slightly moist.
- GW not encountered within test pit.

Soil description :-

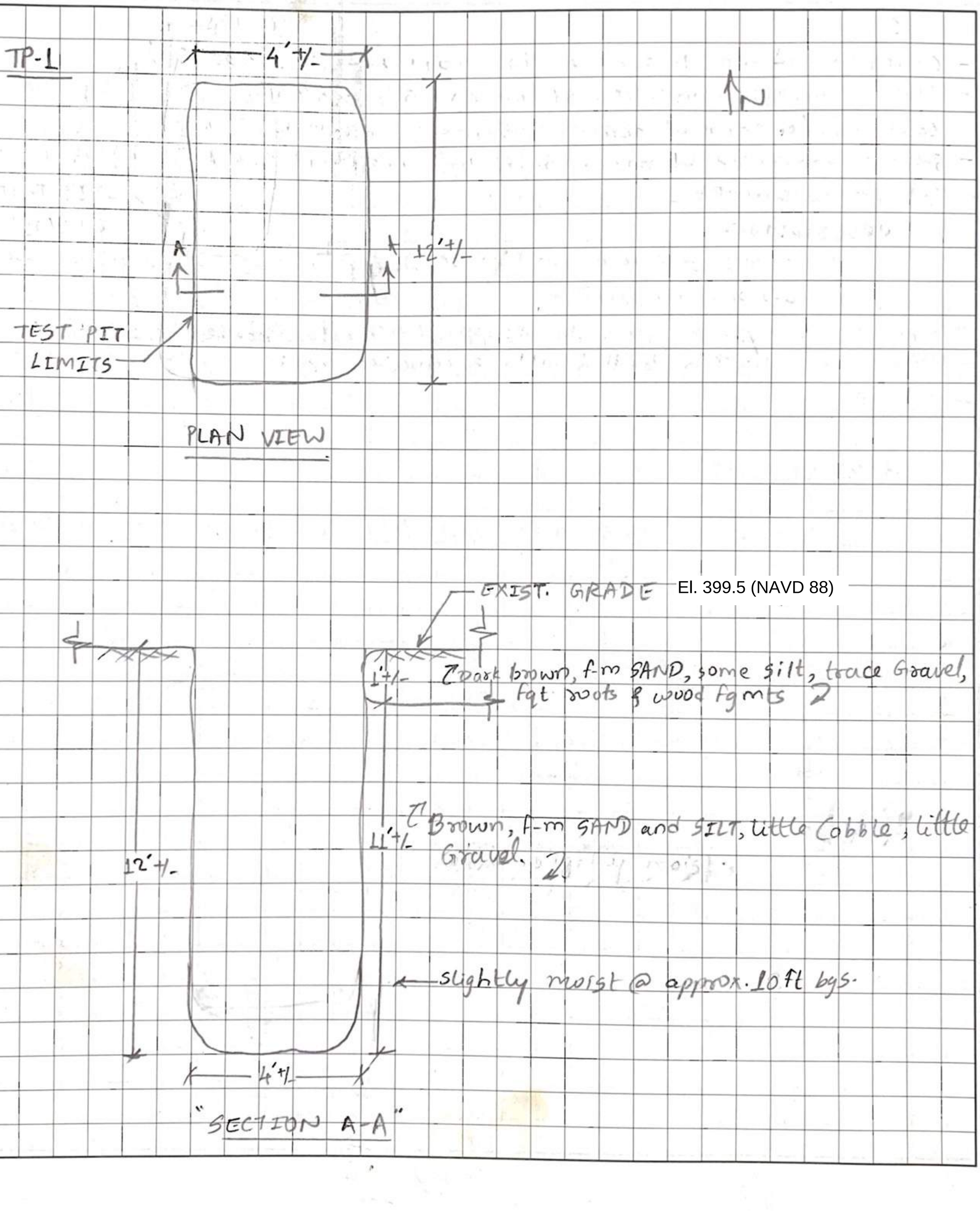
* 0' to 1' : Top soil: D. Brown, f-m SAND, some Silt, trace Gravel, frq. roots & wood fgmts, dry.
* 1' to 12': SILTY SAND: Brown, f-m SAND and SILT, little Cobble, little Gravel. (soil @ approx. 10ft bgs slightly moist).

- Upon completion, TP backfilled with excavated spoils flushed to ground surface.

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SHEET NO. 02 OF 11
CALCULATED BY KDP DATE 8/20/21
CHECKED BY _____ DATE _____
SCALE N.T.S

TP-1



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JOB 41.0162892.
SHEET NO. 03 OF 11
CALCULATED BY KDP DATE 8/20/21
CHECKED BY _____ DATE _____
SCALE N.T.S

TP-2.
- Craig cleared wooded area & GZA layout the test pit (TP) location.
- TP excavated down to 13 ft bgs
- Spot mottling encountered at approx. 5ft bgs
- Boulder encountered at approx. 7ft bgs
- GW not encountered within test pit.
- Soil description:-
- * 0' to 1' → TOPSOIL :- D. Brown, f-m SAND, some Silt, trace Gravel, frq. roots & wood fgmts.
  * 1' to 11' → SILTY SAND :- Brown, f-m SAND and SILT, little Cobble, little Gravel, trace boulder, trace mica, dry.
    (Spot mottling indications at approximately 5-ft bgs).
  * 11' to 13' → SILTY SAND :- Dark brown, f-m SAND and SILT, little Gravel, trace cobble, moist.

* upon completion, TP backfilled with excavated spoils flushed to ground surface.

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JOB 41.0162892.00

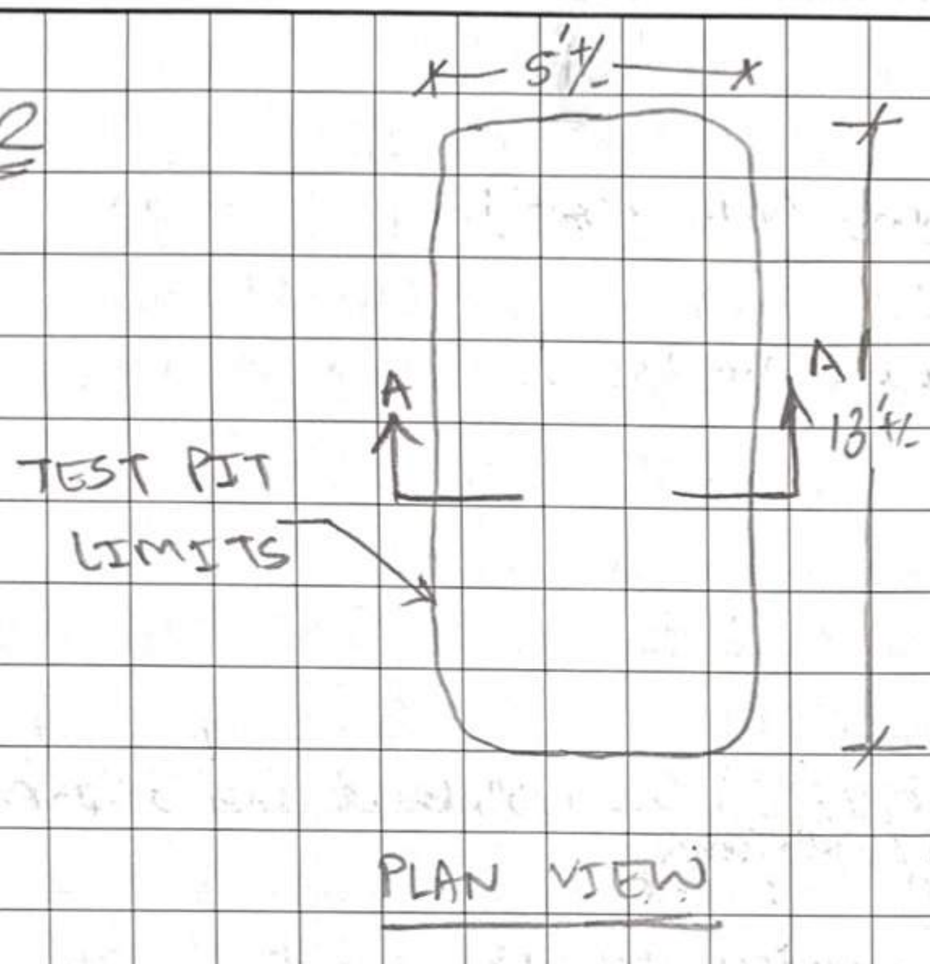
SHEET NO. 04 OF 11

CALCULATED BY KDP DATE 8/20/21

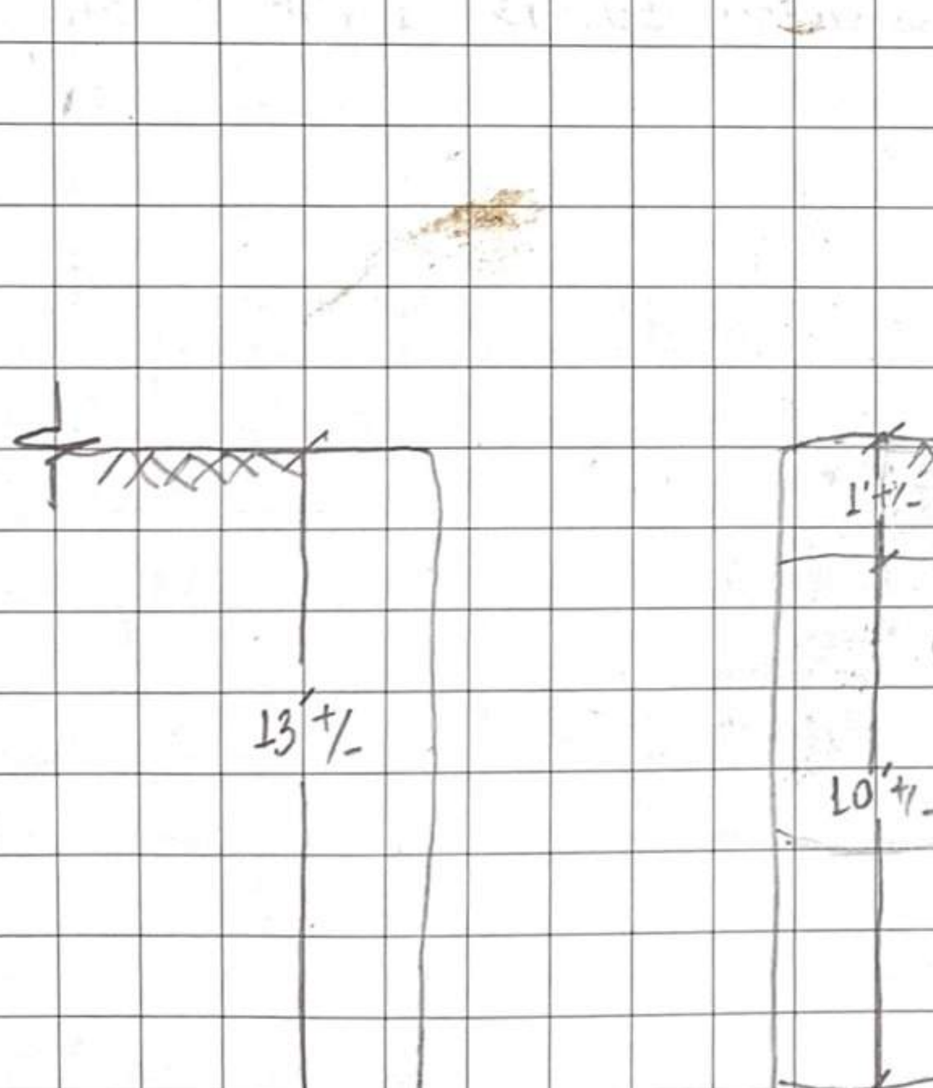
CHECKED BY _____ DATE _____

SCALE N.T.S

TP-2



PLAN VIEW



"SECTION A-A"

Exist. Grade. El. 401 (NAVD 88)

1'+/- A. Brown, f-M SAND, some, Silt, trace Gravel, frequent root fgmts

Brown, f-M SAND and SILT, little Cobble, little Gravel, trace boulder, dry.

10'+/-

C. Dark Brown, f-M SAND and SILT, little Gravel, trace cobble, moist

24'+/-

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SHEET NO. 05 OF 11
CALCULATED BY KDP DATE 8/20/21
CHECKED BY _____ DATE _____
SCALE N.T.S.

"TP-4" NOTES:

- Craig cleared wooded area to access test pit (TP) location.
- GZA & Hazen located TP using hand held GPS device.
- Craig started excavating for TP-4.
- TP terminated after encountering refusal (likely boulder) at approx. 7ft bgs.
- TP offset approx. 10ft towards East side.
- TP-4 excavated down to approx. 13.5 ft bgs
- Soil description:

0'-1' : TOPSOIL → Dark brown, f-m SAND, some silt, trace Gravel, frequent roots & woods fgmts.

1'-11' : SILTY SAND → Light brown-brown, f-m SAND and SILT, little Cobble, little Gravel, trace Boulder, trace mica, dry

11'-13.5': SILTY SAND → Dark brown, f-m SAND, some silt, little Gravel, trace Cobble, significantly moist.

- GW was not encountered within test pit.
- Upon completion, TP was backfilled using excavated spoils flushed to ground surface.

"TP-3" NOTES

- Craig cleared the wooded area near proposed test pit (TP) location.
- GZA & Hazen located TP location using hand held GPS device.
- TP-3 excavated down to approx. 13.5ft bgs
- Spot mottling and staining encountered at approx. 5ft bgs.
- Moist soil encountered at approx. 8ft bgs
- Soil description:

0'-1': TOPSOIL → Dark brown, f-m SAND, some Silt, trace Gravel, fgt roots & wood fgmt.

1'-5': SILTY SAND → Brown, f-m SAND and SILT, little Cobble, Little Gravel, dry.

5'-13.5': SILTY SAND → Dark brown, f-m SAND and SILT, little Gravel, moist.

- GW encountered at approx. 12 ft bgs
- Upon completion, TP backfilled using excavated spoils flushed to ground surface.

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JOB 41.0162892.00

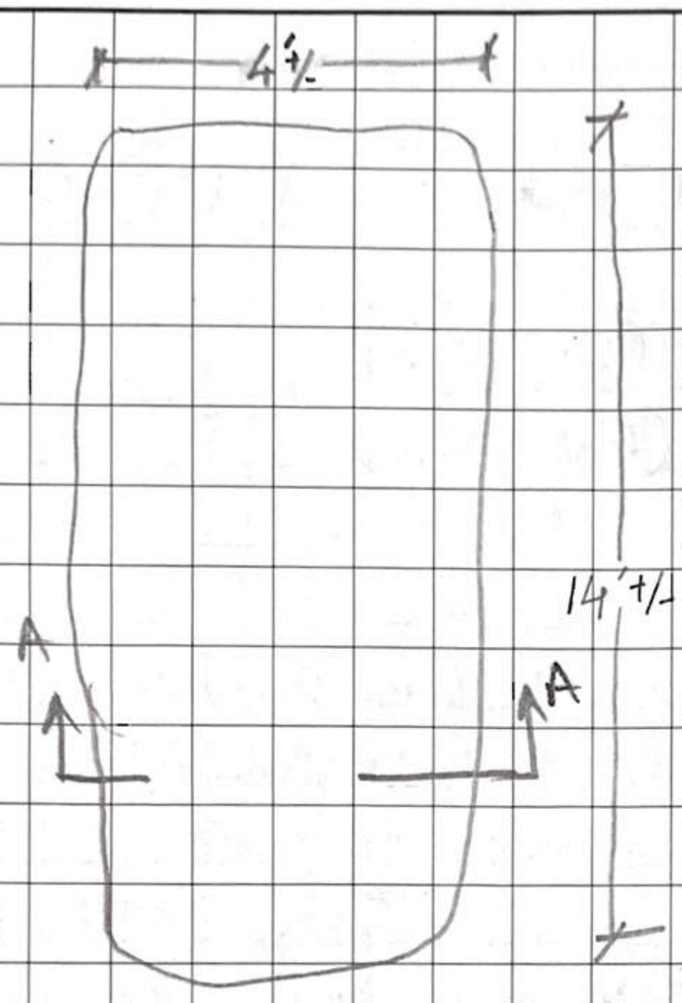
SHEET NO. 06 OF 11

CALCULATED BY KDP DATE 8/20/21

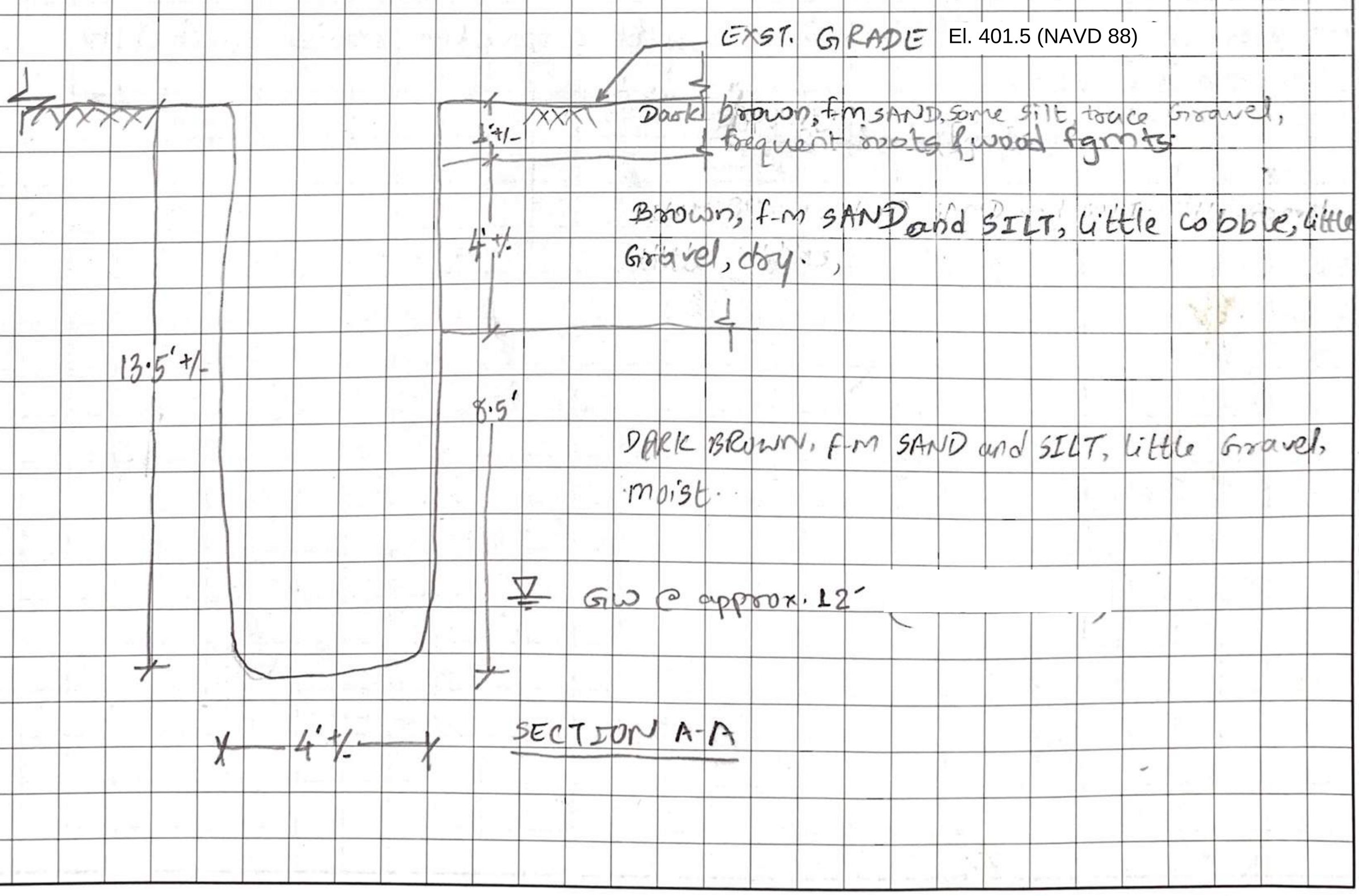
CHECKED BY _____ DATE _____

SCALE N.T.S

TP-3



PLAN VIEW

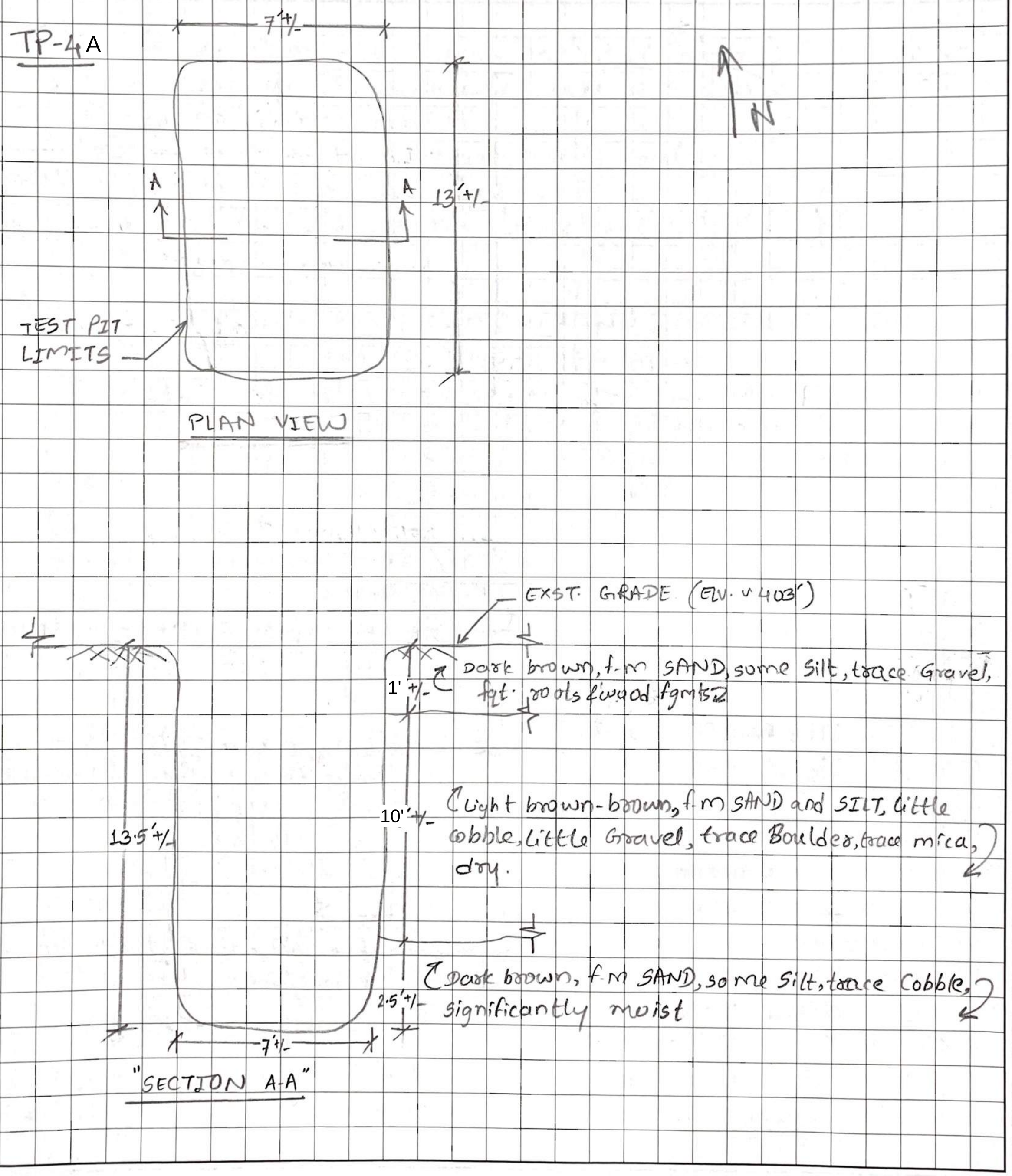


SECTION A-A

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JOB 41.0162892.00
SHEET NO. 07 OF 11
CALCULATED BY KDP DATE 8/20/21
CHECKED BY _____ DATE _____
SCALE N.T.S

TP-4A



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JOB 41.0162892.00
SHEET NO. 03 OF 11
CALCULATED BY KDP DATE 8/20/21
CHECKED BY _____ DATE _____
SCALE N.T.S

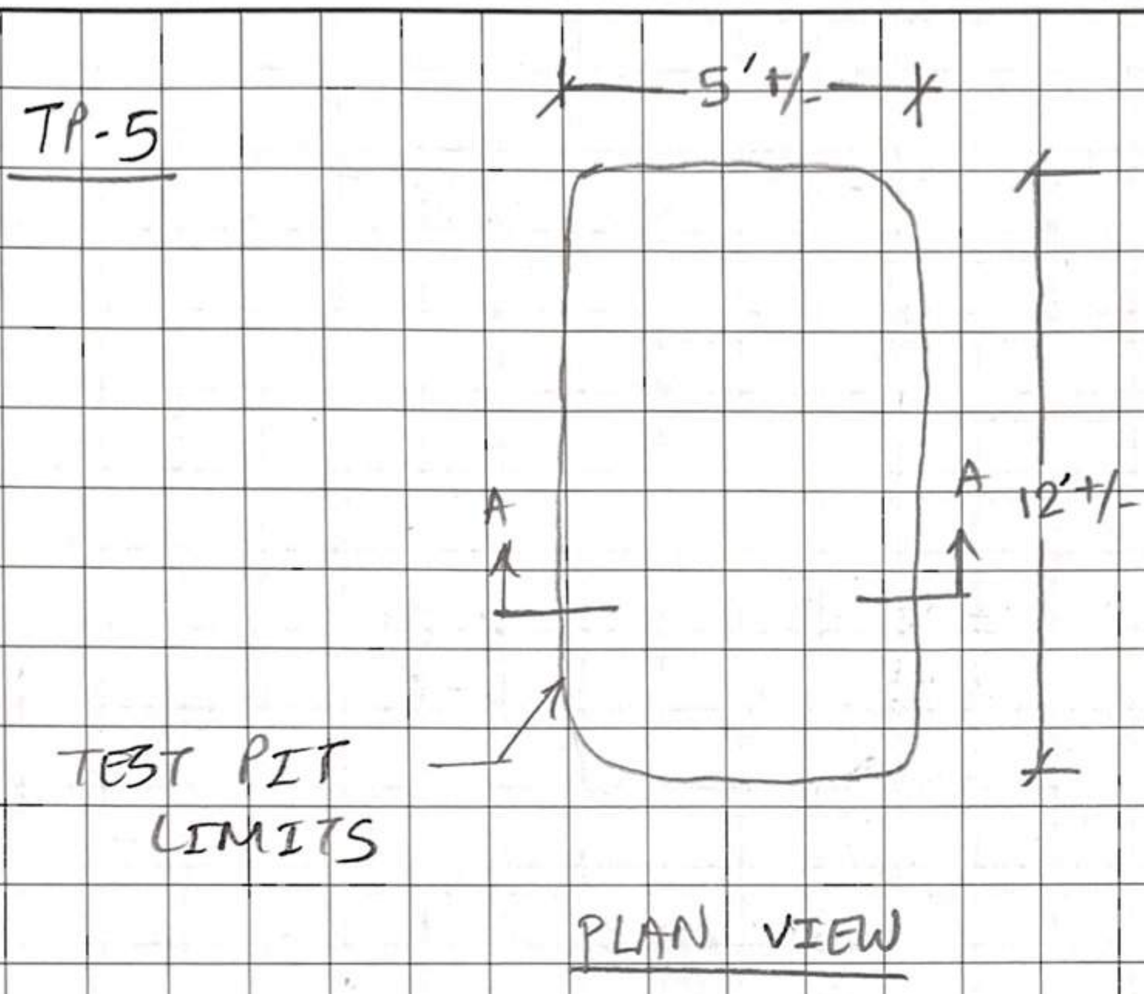
TP-5

- TP-5 excavated in vicinity of B-25 & B-26, down to 14ft bgs.
- Boulder encountered at approx. 9ft bgs.
- Spot melting encountered at approx. 11ft bgs.
- GW not encountered within test pit.
- Soil description
  - 0' to 0.5': TOPSOIL: D. Brown, f-m SAND, some Silt, fqt. root fgmts.
  - 0.5' to 11': SILTY SAND: Brown, f-m SAND and SILT, little Gravel, little cobble, trace Boulder, dry.
  - 11' to 14': SILTY SAND: D. BROWN, f-m SAND and SILT, some Gravel, little cobble, slightly moist.
- Upon completion, test pit backfilled with excavated spoils flush to exist. ground surface.

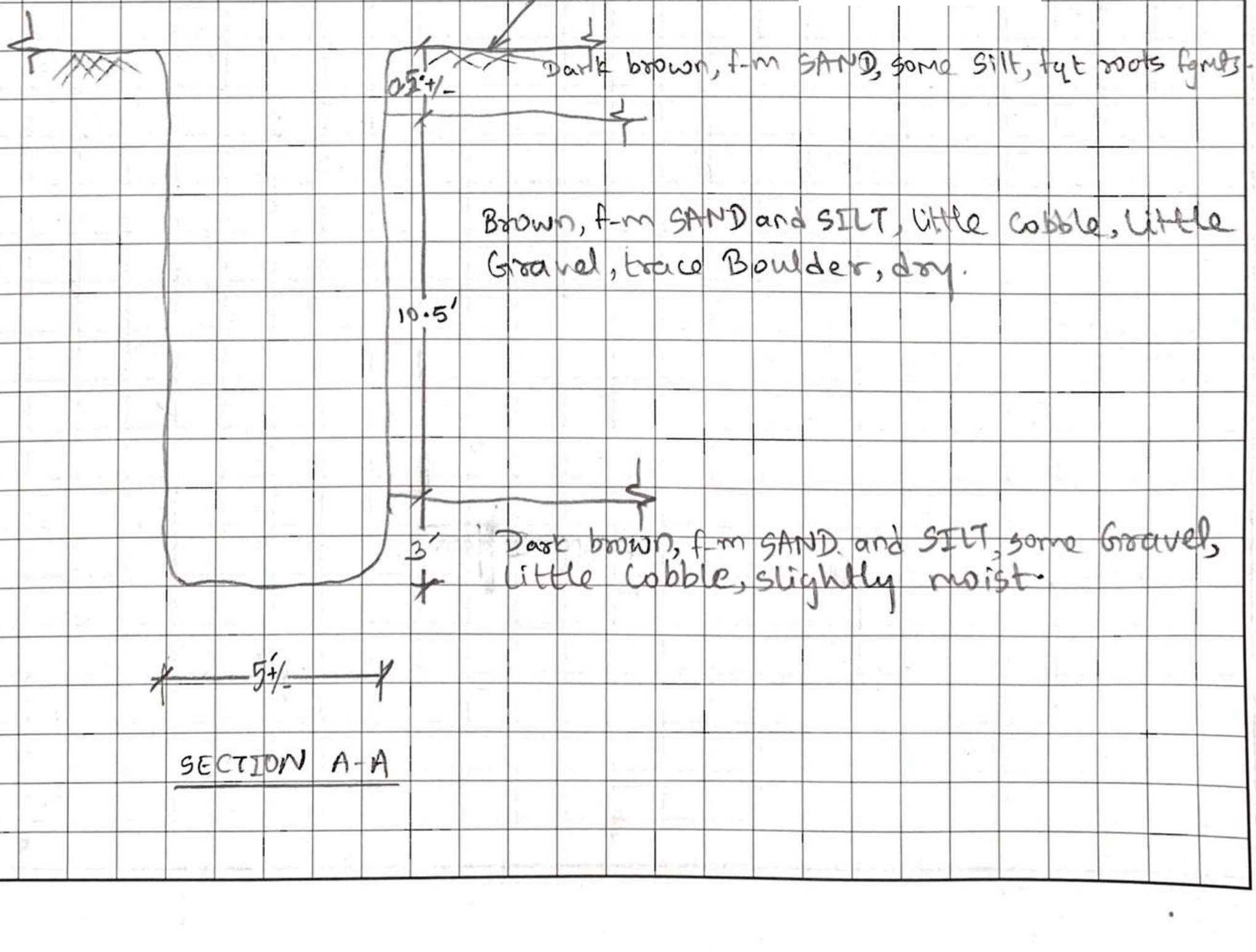
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JOB 41.0162892.00
SHEET NO. 09 OF 11
CALCULATED BY KDP DATE 8/20/21
CHECKED BY _____ DATE _____
SCALE N.T.S

TP-5



PLAN VIEW



SECTION A-A

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JOB 41.0162892.00
SHEET NO. 10 OF 11
CALCULATED BY KDP DATE 8/20/21
CHECKED BY _____ DATE _____
SCALE N.T.S

TP-6

- Craig excavated TP-6 down to 8.5ft bgs
- Motling layer encountered at approx. 5ft to 7ft bgs.
- GW encountered at approx. 7.5ft bgs
- TP was terminated at approx. 8.5ft bgs. due to GW intruded within TP.
- Soil description:
  0'-1': TOPSOIL → Dark brown, f-m SAND, some silt, trace Gravel, fqt roots/wood fgmts.
  1'-8.5': Brown, f-m SAND and SILT, little cobble, little gravel.
- Soil Motling layer encountered at approx. 5ft to 7ft bgs.
- Upon completion, TP backfilled with excavated spoils flushed to ground surface.

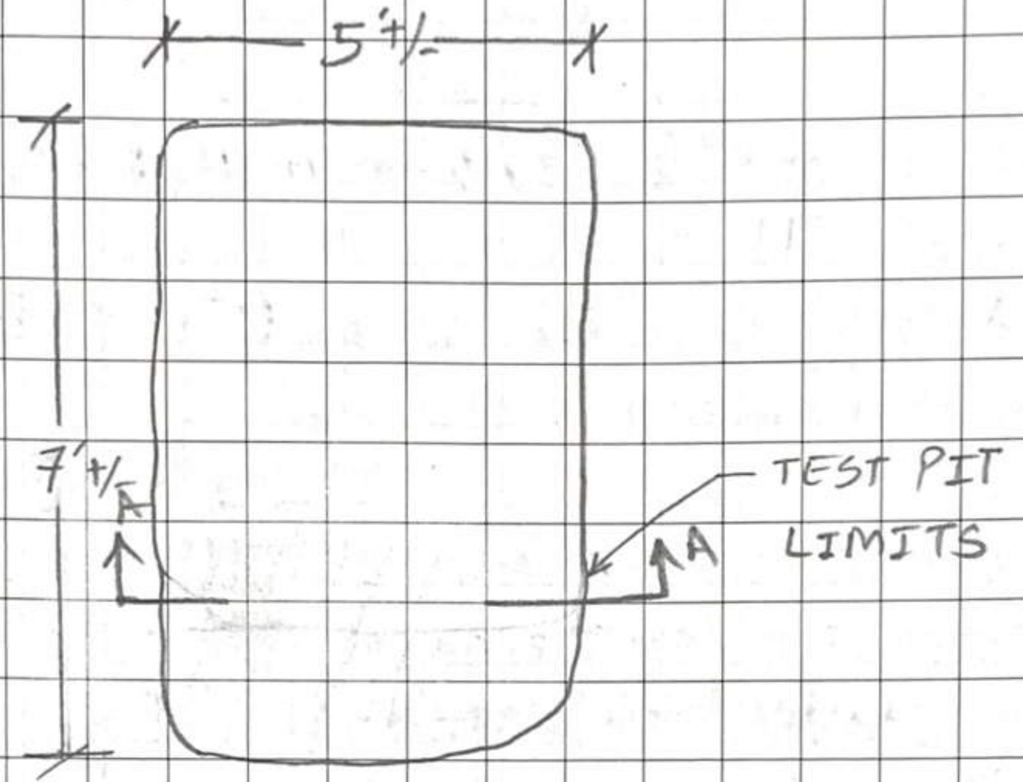
- GW at boring B-29:-

GW level = 13.5' from top of steel casing. (Casing stick up: 3.5')

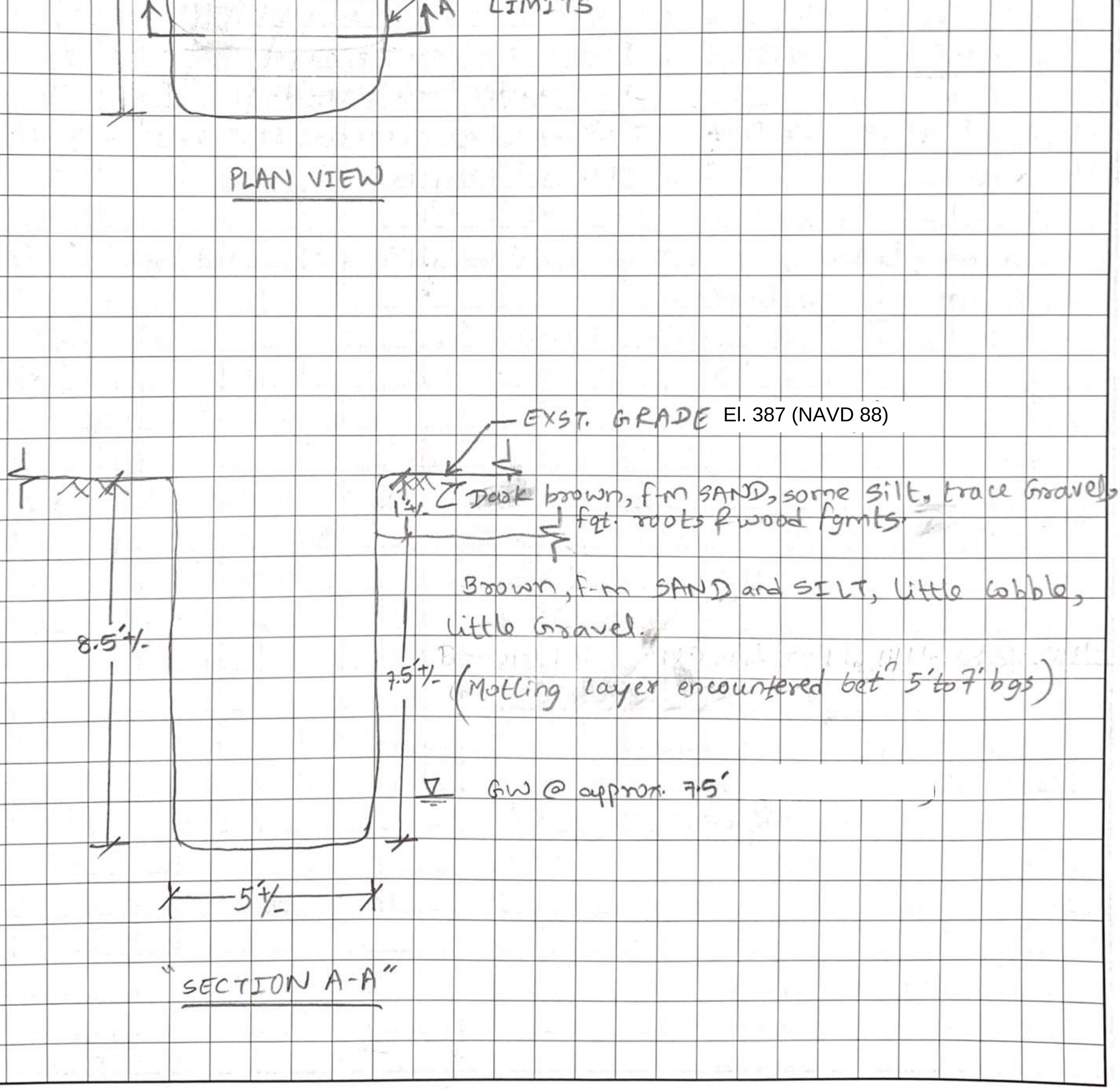
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JOB 41.0162892.00
SHEET NO. 11 OF 11
CALCULATED BY KDP DATE 8/20/21
CHECKED BY _____ DATE _____
SCALE N.T.S

TP-6



PLAN VIEW

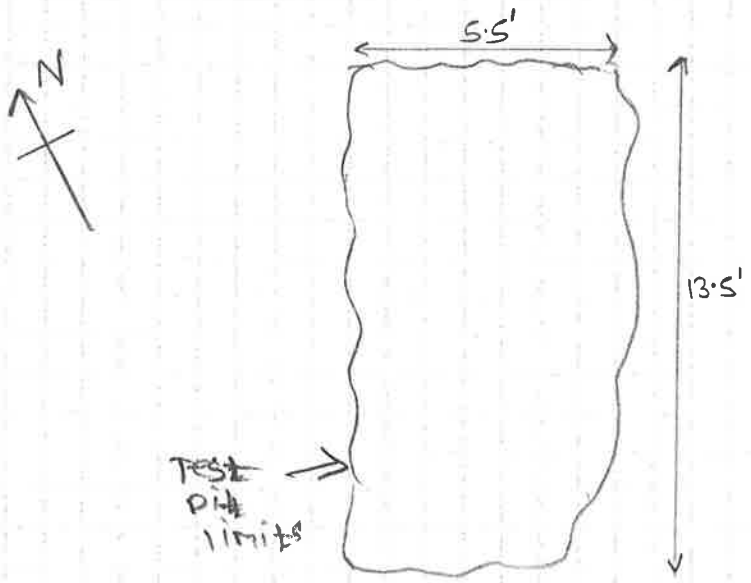


"SECTION A-A"

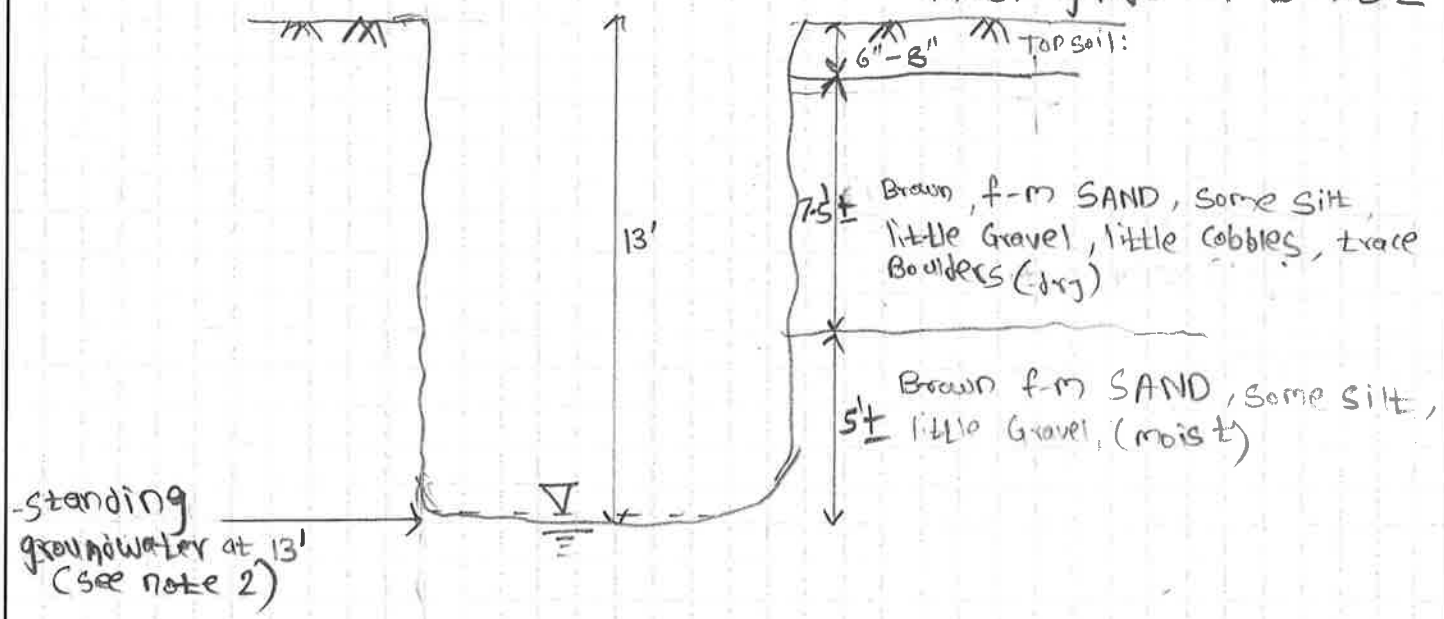
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JOB 41.0162892.00
SHEET NO. _____ OF _____
CALCULATED BY TSS DATE 11/4/21
CHECKED BY _____ DATE _____
SCALE N.T.S.

TP-7



PLAN VIEW

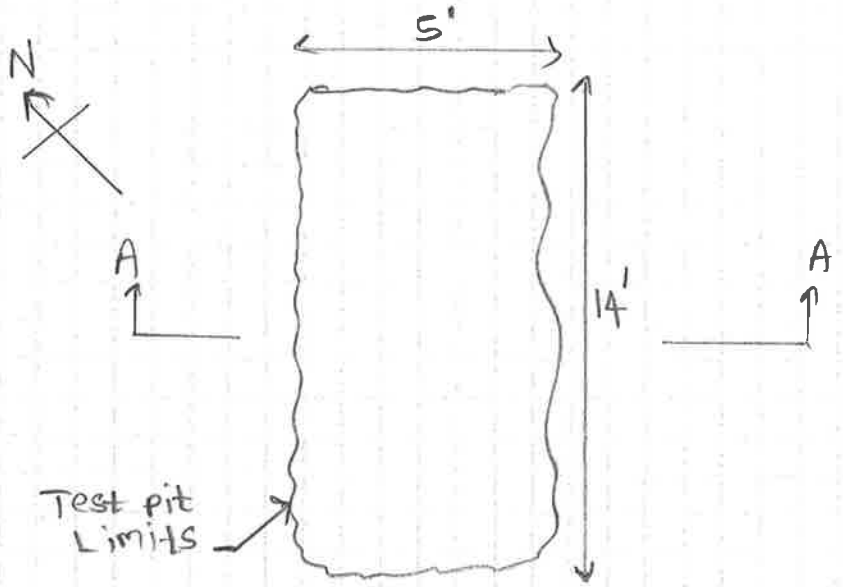


1. Mottling layer not observed
2. Groundwater observed 2 hrs after the test pit was excavated.

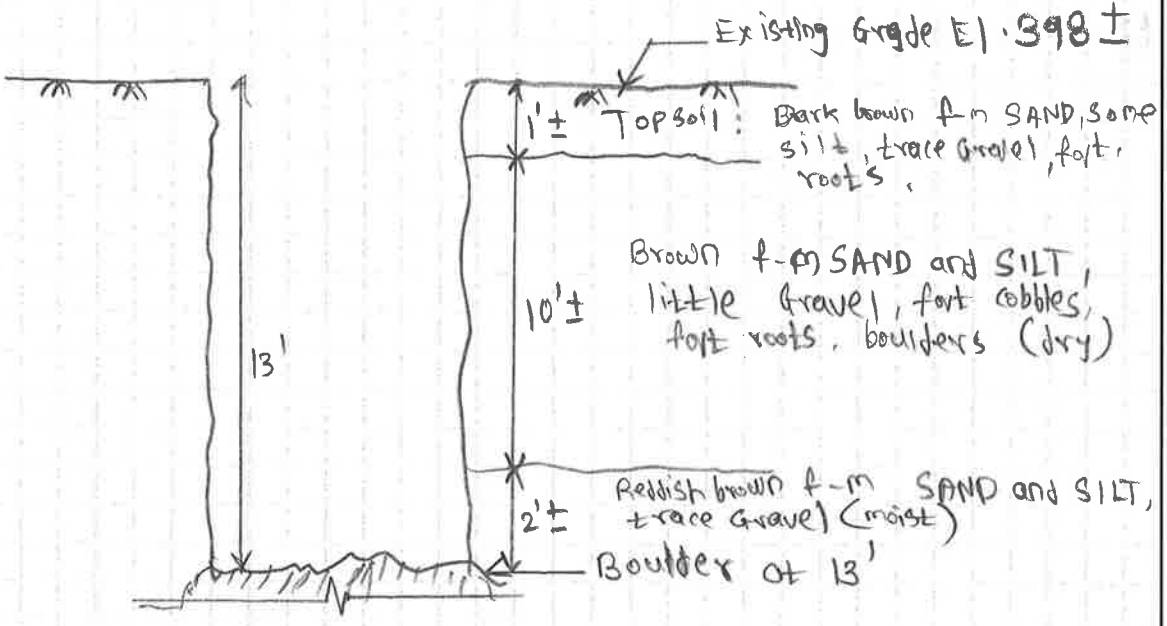
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JOB 41.0162892.00
SHEET NO. _____ OF _____
CALCULATED BY TSS DATE 11/4/21
CHECKED BY _____ DATE _____
SCALE N.T.S.

TP-8



PLAN VIEW



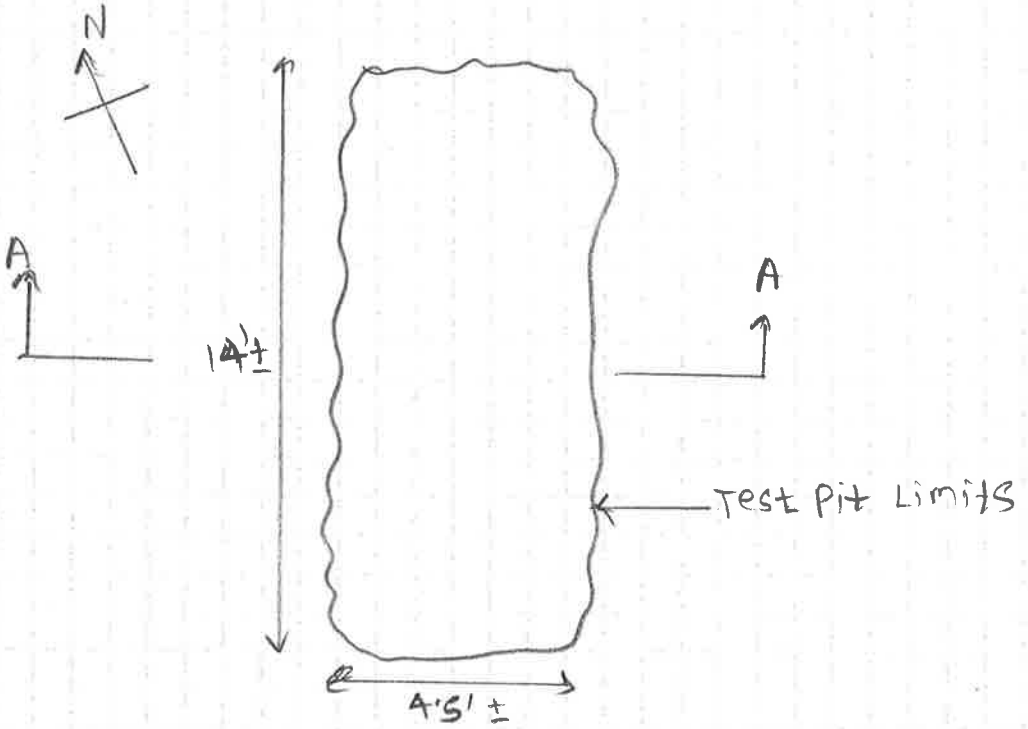
SECTION A-A

Note:
1. No soil mottling layer observed
2. No Groundwater observed

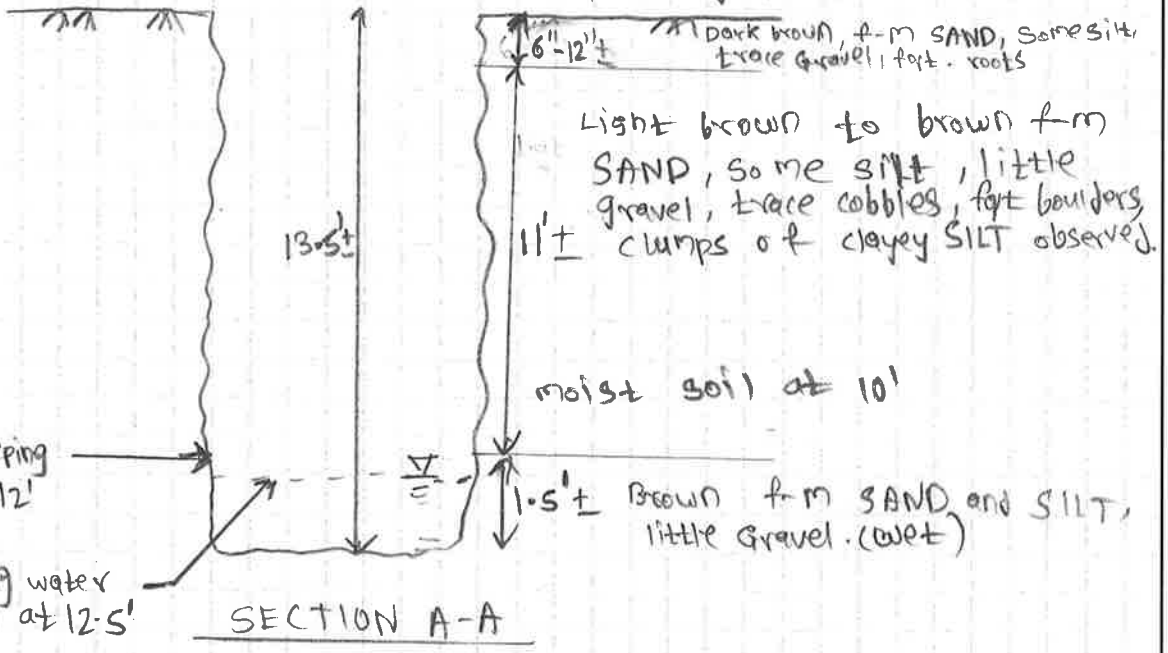
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JOB 41.0162892.00
SHEET NO. _____ OF _____
CALCULATED BY TSS DATE 11/4/24
CHECKED BY _____ DATE _____
SCALE N.T.S.

TP-9



PLAN VIEW



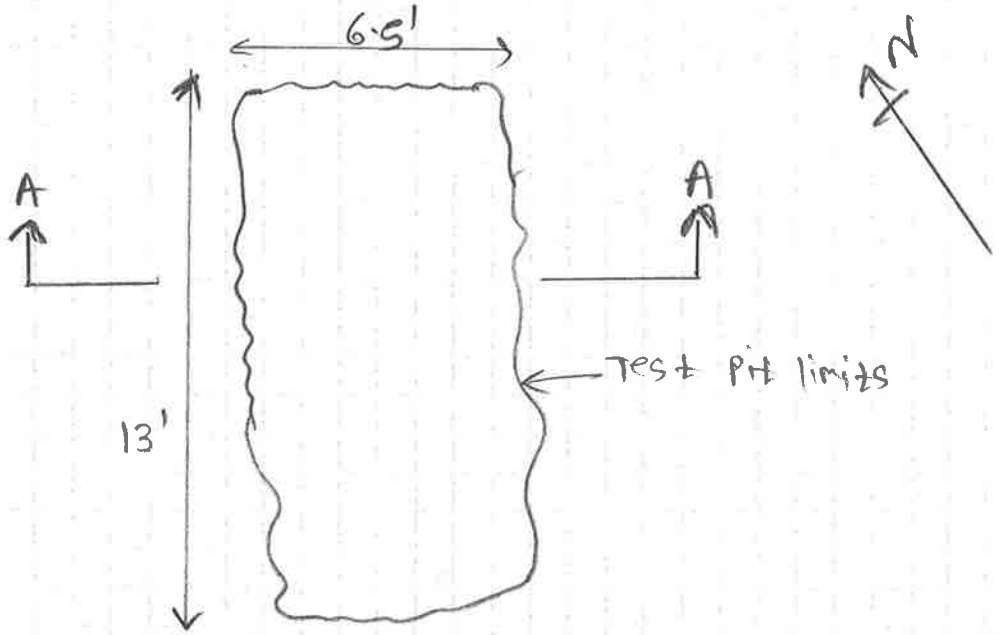
SECTION A-A

Notes:
1. No soil mottling layer observed.

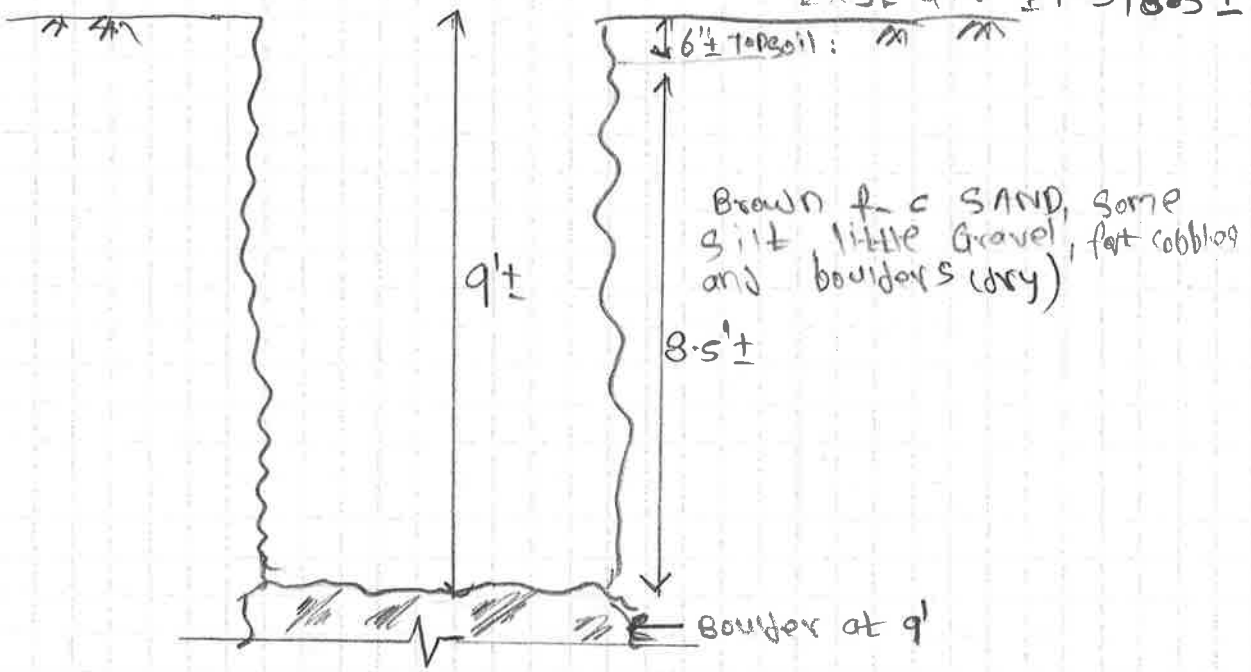
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JOB 41.0162892.00
SHEET NO. _____ OF _____
CALCULATED BY TSS DATE 11/2/21
CHECKED BY _____ DATE _____
SCALE N.T.S.

TP-10



PLAN VIEW



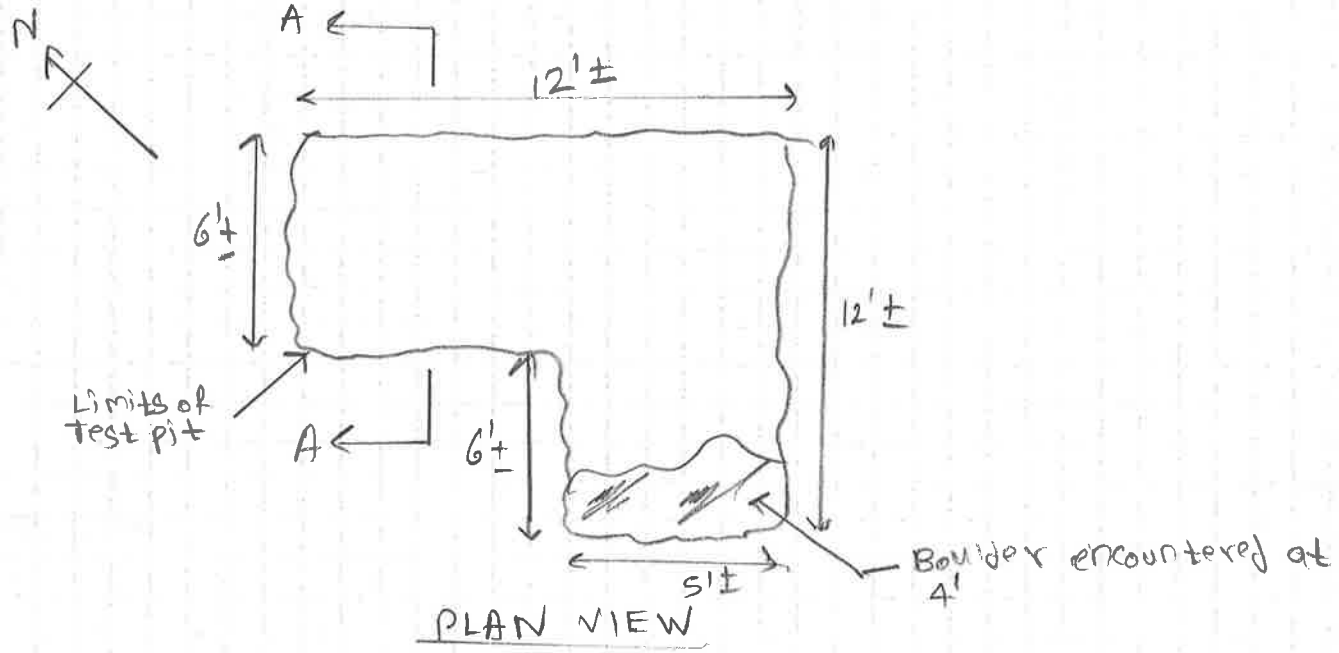
SECTION A-A

Note:
1. No mottling layer observed
2. No Groundwater observed.

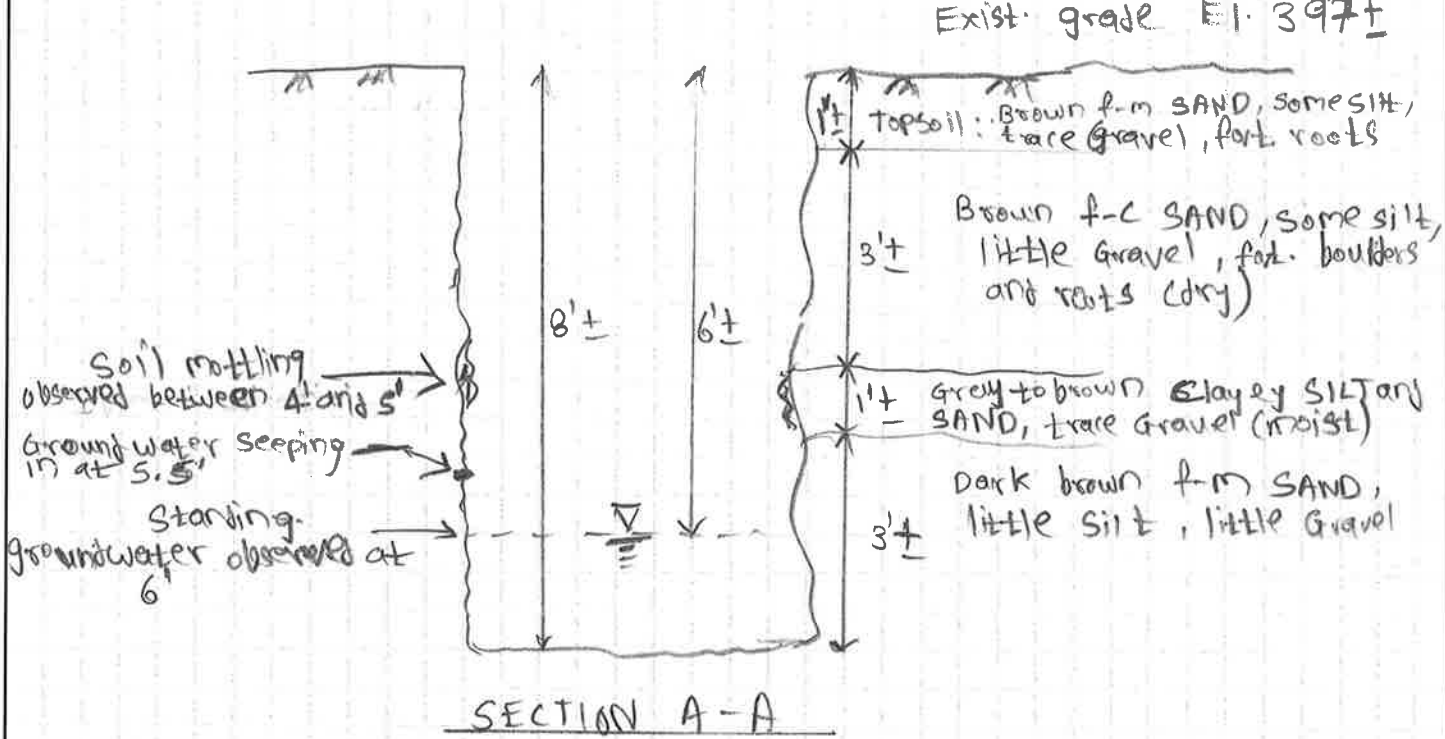
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JOB 41.0162892.00
SHEET NO. _____ OF _____
CALCULATED BY TSS DATE 11/4/21
CHECKED BY _____ DATE _____
SCALE _____

TP-11



PLAN VIEW



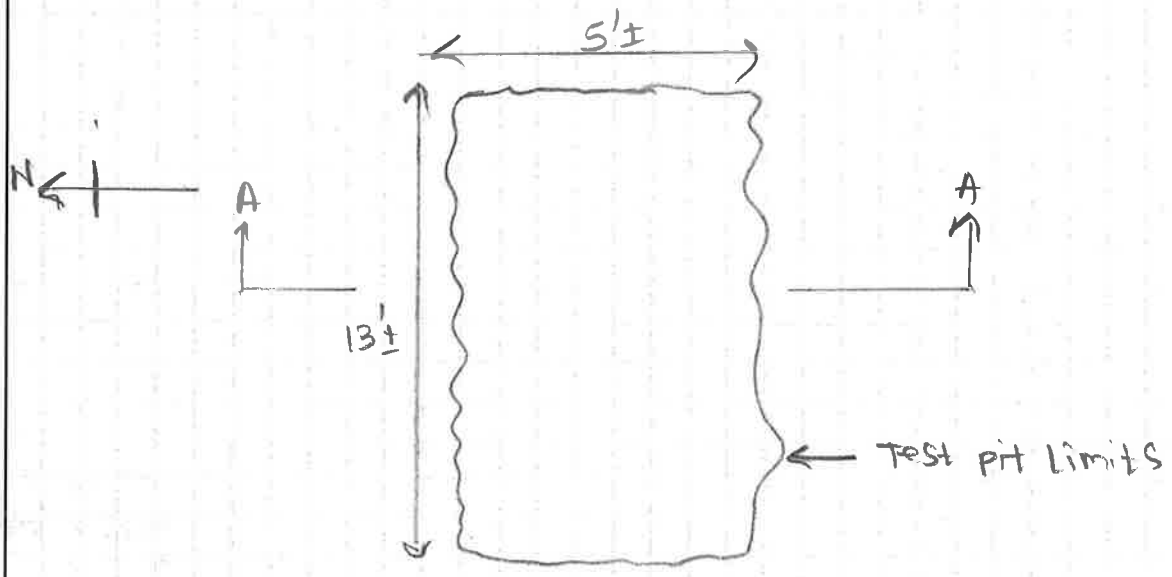
SECTION A-A

Note:
1. Soil mottling layer observed between 4' and 5'

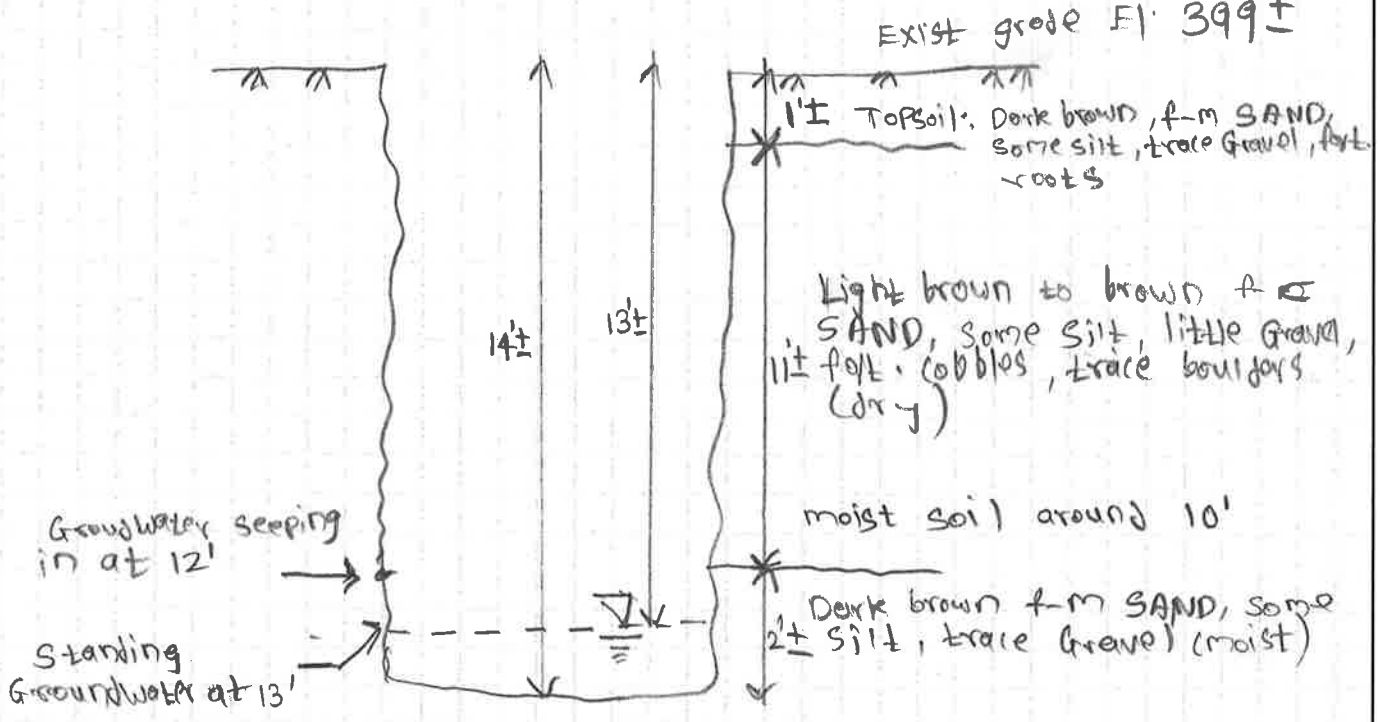
GZA
GeoEnvironmental, Inc.
Engineers and Scientists

JOB _____
SHEET NO. _____ OF _____
CALCULATED BY _____ DATE _____
CHECKED BY _____ DATE _____
SCALE _____

TP-12



PLAN VIEW

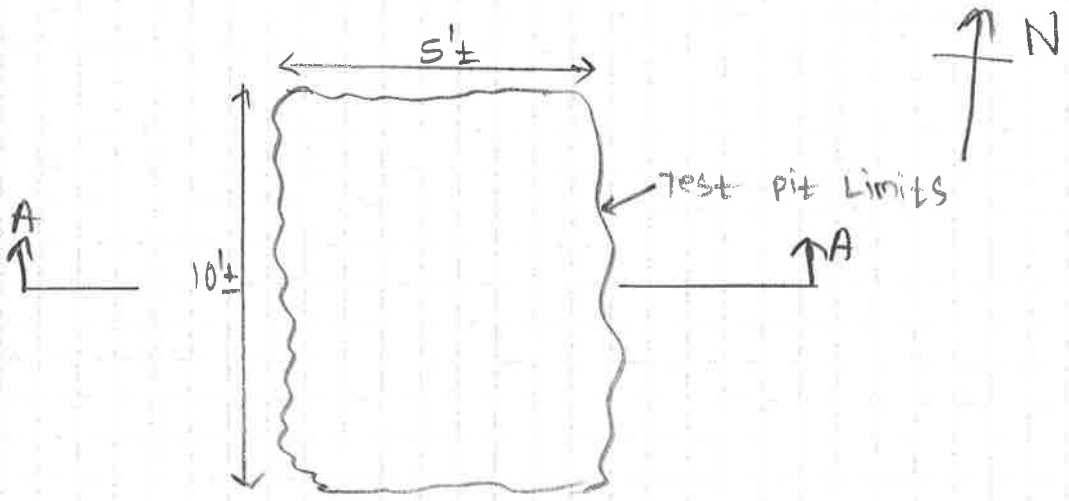


Note:
1. No soil motting layer observed.

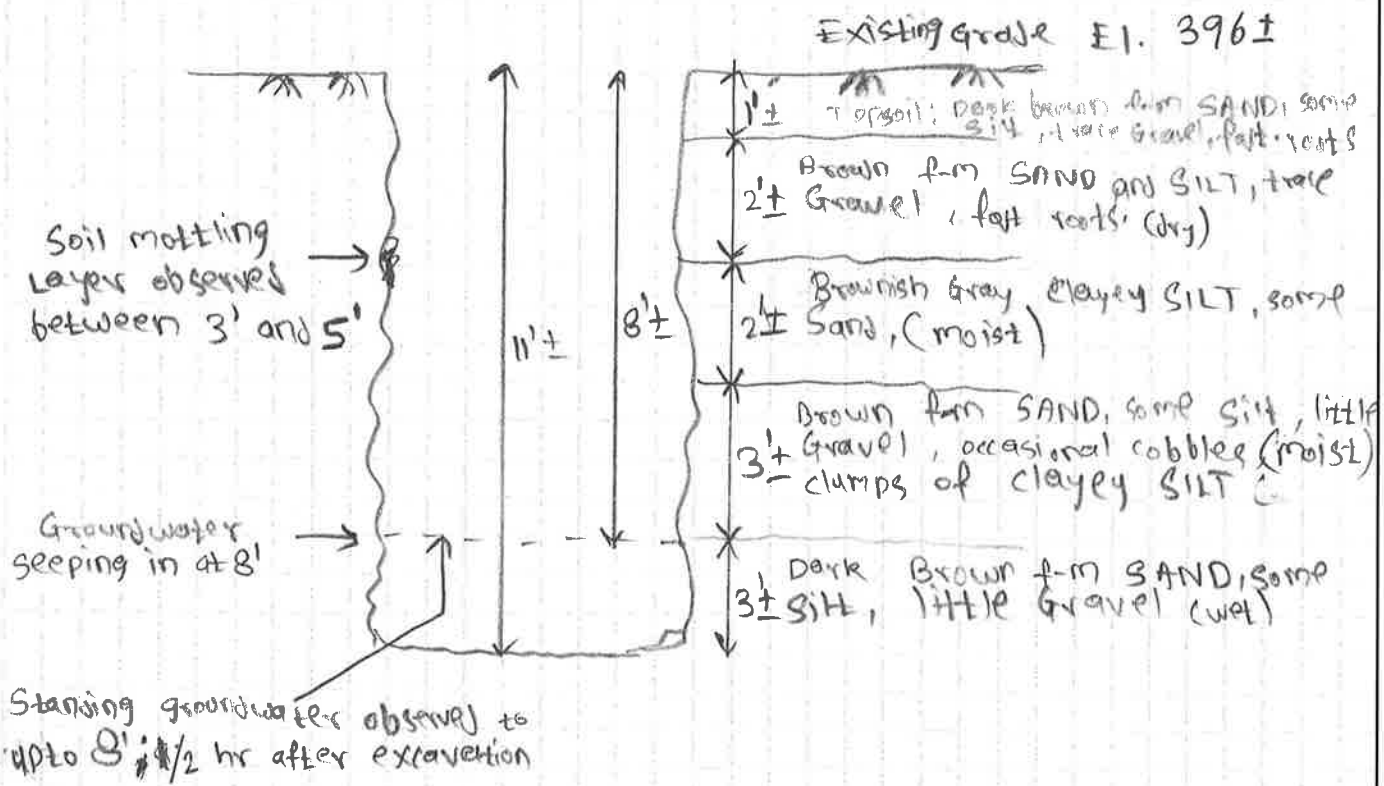
GZA
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JOB A1·0162892-00
SHEET NO. _____ OF _____
CALCULATED BY TSS DATE 11/4/21
CHECKED BY _____ DATE _____
SCALE N.T.S.

TP-13



PLAN VIEW



SECTION A-A

Note:
1. Soil mottling layer observed between 3' and 5'
2.

Test Pit Photographic Log

Client Name: Hazen and Sawyer	**Site Location:** Westchester Joint Water Works (WJWW) Rye Lake Water Filtration Plant West Harrison, New York	**Project No.** 41.0162892.00

Photo No.	**Date:**
1	8/20/21

Direction Photo Taken:
Looking Down

Description:
General view of TP-1 advanced to total depth of 12 feet.

Groundwater was not encountered in TP-1.



Photo No.	**Date:**
2	8/20/21

Direction Photo Taken:
Looking Down

Description:
Side view of TP-1.

Soil mottling observed at approximately 9 feet depth and moist soil noted at approximately 10 feet depth.



Test Pit Photographic Log

Client Name: Hazen and Sawyer	**Site Location:** Westchester Joint Water Works (WJWW) Rye Lake Water Filtration Plant West Harrison, New York	**Project No.** 41.0162892.00

Photo No.	**Date:**
3	8/20/21

Direction Photo Taken:
Looking Down

Description:
General view of TP-2 advanced to total depth of 13 feet.

Groundwater was not encountered in TP-2.



Photo No.	**Date:**
4	8/20/21

Direction Photo Taken:
Looking Down

Description:
Side view of TP-2.

Soil mottling observed at approximately 5 feet depth and moist soil noted at approximately 11 feet depth.



Test Pit Photographic Log

Client Name: Hazen and Sawyer	**Site Location:** Westchester Joint Water Works (WJWW) Rye Lake Water Filtration Plant West Harrison, New York	**Project No.** 41.0162892.00

Photo No.	**Date:**
5	8/20/21

Direction Photo Taken:
Looking Down

Description:
General view of TP-3 advanced to total depth of 13.5 feet.

Groundwater was encountered in TP-3 at approximately 12 feet depth.

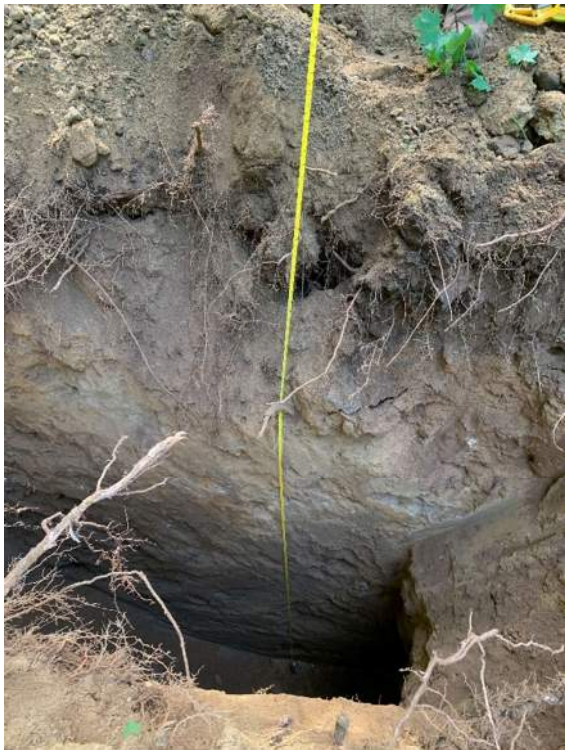


Photo No.	**Date:**
6	8/20/21

Direction Photo Taken:
Looking Down

Description:
Side view of TP-3.

Soil mottling observed at approximately 5 feet depth and moist soil noted at approximately 8 feet depth.



Test Pit Photographic Log

Client Name: Hazen and Sawyer	**Site Location:** Westchester Joint Water Works (WJWW) Rye Lake Water Filtration Plant West Harrison, New York	**Project No.** 41.0162892.00

Photo No.	**Date:**
7	8/20/21

Direction Photo Taken:
Looking Down

Description:
General view of TP-4A advanced to total depth of 14 feet.

Groundwater was not encountered in TP-4A.



Photo No.	**Date:**
8	8/20/21

Direction Photo Taken:
Looking Down

Description:
Side view of TP-4A.

Moist soil noted at approximately 11 feet depth.



Test Pit Photographic Log

Client Name: Hazen and Sawyer	**Site Location:** Westchester Joint Water Works (WJWW) Rye Lake Water Filtration Plant West Harrison, New York	**Project No.** 41.0162892.00

Photo No.	**Date:**
9	8/20/21

Direction Photo Taken:
Looking Down

Description:
General view of TP-5 advanced to total depth of 13 feet.

Groundwater was not encountered in TP-5.



Photo No.	**Date:**
10	8/20/21

Direction Photo Taken:
Looking Down

Description:
Side view of TP-5.

Soil mottling observed at approximately 11 feet depth and moist soil noted at approximately 11 feet depth.



Test Pit Photographic Log

Client Name: Hazen and Sawyer	**Site Location:** Westchester Joint Water Works (WJWW) Rye Lake Water Filtration Plant West Harrison, New York	**Project No.** 41.0162892.00

Photo No.	**Date:**
11	8/20/21

Direction Photo Taken:
Looking Down

Description:
General view of TP-6 advanced to total depth of 8.5 feet.

Groundwater was encountered in TP-6 at approximately 7.5 feet depth.



Photo No.	**Date:**
12	8/20/21

Direction Photo Taken:
Looking Down

Description:
Side view of TP-6.

Soil mottling observed at approximately 5 feet depth.



Test Pit Photographic Log

Client Name: Hazen and Sawyer	**Site Location:** Westchester Joint Water Works (WJWW) Rye Lake Water Filtration Plant West Harrison, New York	**Project No.** 41.0162892.00

Photo No.	**Date:**
1	11/4/21

Direction Photo Taken:
Looking Down

Description:
General view of TP-7 advanced to total depth of 13 feet.

Groundwater was encountered in TP-3 at approximately 13 feet depth.



Photo No.	**Date:**
2	11/4/21

Direction Photo Taken:
Looking Down

Description:
Side view of TP-7.

Soil mottling not observed in TP-7.



Test Pit Photographic Log

Client Name: Hazen and Sawyer	**Site Location:** Westchester Joint Water Works (WJWW) Rye Lake Water Filtration Plant West Harrison, New York	**Project No.** 41.0162892.00

Photo No.	**Date:**
3	11/4/21

Direction Photo Taken:
Looking Down

Description:
General view of TP-8 advanced to total depth of 13 feet.

Groundwater was not encountered in TP-8.



Photo No.	**Date:**
4	11/4/21

Direction Photo Taken:
Looking Down

Description:
Side view of TP-8.

Soil mottling not observed in TP-8 and moist soil noted at approximately 11 feet depth.

Boulder encountered at approximately 13 feet



Test Pit Photographic Log

Client Name: Hazen and Sawyer	**Site Location:** Westchester Joint Water Works (WJWW) Rye Lake Water Filtration Plant West Harrison, New York	**Project No.** 41.0162892.00

Photo No.	**Date:**
5	11/4/21

Direction Photo Taken:
Looking Down

Description:
General view of TP-9 advanced to total depth of 13.5 feet.

Groundwater was encountered in TP-9 at approximately 12.5 feet depth.



Photo No.	**Date:**
6	11/4/21

Direction Photo Taken:
Looking Down

Description:
Side view of TP-9.

Soil mottling not observed in TP-9.



Test Pit Photographic Log

Client Name: Hazen and Sawyer	**Site Location:** Westchester Joint Water Works (WJWW) Rye Lake Water Filtration Plant West Harrison, New York	**Project No.** 41.0162892.00

Photo No.	**Date:**
7	11/4/21

Direction Photo Taken:
Looking Down

Description:
General view of TP-10 advanced to total depth of 9 feet.

Groundwater was not encountered in TP-10.



Photo No.	**Date:**
8	11/4/21

Direction Photo Taken:
Looking Down

Description:
Side view of TP-10.

Soil mottling not observed in TP-10. Boulder encountered at approximately 9 feet



Test Pit Photographic Log

Client Name: Hazen and Sawyer	**Site Location:** Westchester Joint Water Works (WJWW) Rye Lake Water Filtration Plant West Harrison, New York	**Project No.** 41.0162892.00

Photo No.	**Date:**
9	11/4/21

Direction Photo Taken:
Looking Down

Description:
General view of TP-11 advanced to total depth of 8 feet.

Groundwater was encountered in TP-11 at approximately 6 feet depth.



Photo No.	**Date:**
10	11/4/21

Direction Photo Taken:
Looking Down

Description:
Side view of TP-11.

Soil mottling observed at approximately 4 feet depth.



Test Pit Photographic Log

Client Name: Hazen and Sawyer	**Site Location:** Westchester Joint Water Works (WJWW) Rye Lake Water Filtration Plant West Harrison, New York	**Project No.** 41.0162892.00

Photo No.	**Date:**
11	11/4/21

Direction Photo Taken:
Looking Down

Description:
General view of TP-12 advanced to total depth of 14 feet.

Groundwater was encountered in TP-12 at approximately 13 feet depth.



Photo No.	**Date:**
12	11/4/21

Direction Photo Taken:
Looking Down

Description:
Side view of TP-12.

Soil mottling not observed in TP-10.



Test Pit Photographic Log

Client Name: Hazen and Sawyer	**Site Location:** Westchester Joint Water Works (WJWW) Rye Lake Water Filtration Plant West Harrison, New York	**Project No.** 41.0162892.00

Photo No.	**Date:**
13	11/4/21

Direction Photo Taken:
Looking Down

Description:
General view of TP-13 advanced to total depth of 11 feet.

Groundwater was encountered in TP-13 at approximately 8 feet depth.



Photo No.	**Date:**
14	11/4/21

Direction Photo Taken:
Looking Down

Description:
Side view of TP-13.

Soil mottling observed at approximately 3 feet depth.



APPENDIX F

2019 HISTORIC BORING AND TEST PIT LOGS

HALEY ALDRICH

TEST BORING REPORT

Boring No. B1(OW)

Project	WJWW Filtration Plant, Purchase, New York
Client	Hazen & Sawyer
Contractor	General Borings, Inc.

File No. 133870-002
Sheet No. 1 of 2
Start November 21, 2019
Finish November 22, 2019
Driller J. Casson
H&A Rep. S. Brousseau
Elevation 401.0 (est.)
Datum NAVD88
Location See Plan
N 41.06471
W 73.71797

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	HSA	S	--	Rig Make & Model: Diedrich D50
Inside Diameter (in.)	3.25	1 3/8	--	Bit Type: Cutting Head
Hammer Weight (lb)	--	140	-	Drill Mud: None
Hammer Fall (in.)	--	30	-	Casing: Spun
				Hoist/Hammer: Winch Automatic Hammer
				PID Make & Model: MiniRAE 3000 10.6 eV

Depth (ft)	Sampler Blows per 6 in.	Sample No. & Rec. (in.)	Sample Depth (ft)	Well Diagram	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size†, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0	1 3 4 4	S1 20	0.0 2.0		400.5 0.5		-TOPSOIL-										
						SM	Loose yellow brown silty SAND, no structure, organic odor, moist, with few organics	0	0	0	30	45	25				
	3 7 9 8	S2 17	2.0 4.0				Similar to S1, except medium dense -SUBSOIL-										
5	7 16 15 18	S3 17	5.0 7.0		395.5 5.5	SP-SM	Similar to S2 Dense yellow-brown poorly-graded SAND with silt, no structure, no odor, dry	0	0	10	50	30	10				
10	12 15 16 16	S4 15	10.0 12.0			SP-SM	Similar to S3 -GLACIAL TILL-										
15	19 27 29 32	S5 0	15.0 17.0				No Recovery. Gravel fragment lodged in spoon tip.										
20																	

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft) to: Bottom of Casing	Bottom of Hole	Water
11/22/19	1015	0	30	30.3	30
12/17/2019	1030	600	35	35	17.8

Sample ID
O - Open End Rod
T - Thin Wall Tube
U - Undisturbed Sample
S - Split Spoon Sample

Well Diagram
Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary
Overburden (ft) 36.8
Rock Cored (ft) 0.0
Samples 9S

Boring No. B1(OW)

Field Tests: **Dilatancy**: R - Rapid S - Slow N - None
Toughness: L - Low M - Medium H - High
Plasticity: N - Nonplastic L - Low M - Medium H - High
Dry Strength: N - None L - Low M - Medium H - High V - Very High

†**Note: Maximum particle size (mps) is determined by direct observation within the limitations of sampler size.**

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

H&A-TEST BORING-09 HA-LIB09-BOS-HAR.GLB HA-TB+CORE+WELL-07-1.GDT F:\133870\002\GINT\133870-002 HAI TB LOGS.GPJ Feb 24, 20

TEST BORING REPORT

HALEY ALDRICH

Boring No. B1(OW)

File No. 133870-002

Sheet No. 2 of 2

Depth (ft)	Sampler Blows per 6 in.	Sample No. & Rec. (in.)	Sample Depth (ft)	Well Diagram	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size†, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
20	26 34 26 35	S6 0	20.0 22.0				No Recovery. Gravel fragment lodged in spoon tip. -GLACIAL TILL-										
25	37 61 50/4"	S7 1	25.0 26.3				Cobble fragments, poor recovery										
30	100/4"	S8 0	30.0 30.3				No Recovery. Spoon wet.										
35	30 32 37 50/3"	S9 17	35.0 36.8		364.2 36.8	SM	Very dense gray brown silty SAND with gravel, no structure, no odor, wet	10	5	10	40	20	15				
							BOTTOM OF EXPLORATION 36.8 FT Note: Observation well installed in completed borehole. Refer to well construction log for details.										

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

Boring No. B1(OW)

H&A-TEST BORING-09 HA-LIB09-BOS-HAR.GLB HA-TB+CORE+WELL-07-1.GDT F:\133870\002\GINT\133870-002 HAI TB LOGS.GPJ Feb 24, 20

GROUNDWATER OBSERVATION WELL INSTALLATION REPORT

HALEY ALDRICH

Well No. B1(OW)
Boring No. B1(OW)

Project WJWW Filtration Plant
Location Purchase, New York
Client Hazen & Sawyer
Contractor General Borings, Inc.
Driller J. Casson

Initial Water Level (depth bgs) 30.0 ft

Well Diagram
- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

File No. 133870-002
Date Installed 22 Nov 2019
H&A Rep. S. Brousseau
Location N 41.06471 W 73.71797

Ground El. 401.0 (est.)
Datum NAVD88

SOIL/ROCK CONDITIONS	DEPTH (ft.)	GRAPHIC	WELL DETAILS	DEPTH (ft.)	ELEVATION (ft.)
				0.0	401.0
	0.5			1.0	400.0
SUBSOIL					
	5.5				
GLACIAL TILL				21.0	380.0
				23.0	378.0
				25.0	376.0
				35.0	366.0
	36.8			36.8	364.2

WELL CONSTRUCTION DETAILS

Type of protective cover: Padlock
Depth of Guard Pipe below ground surface: NA
Depth of top of riser below ground surface: ft
Type of protective casing: Guard Pipe
- Length: 5.0 ft
- Inside diameter: 4.0 in.
- Depth of bottom of Guard Pipe: -

Type of riser pipe: Schedule 40 PVC
- Inside diameter of riser pipe: 2.0 in.
- Depth of bottom of riser pipe: 25.0 ft

Type of Seals	Top of Seal (ft)	Thickness (ft)
Concrete	0.0	1.0
Bentonite	21.0	2.0
	-	-

Diameter of borehole: 7.0 in.
Depth to top of well screen: 25.0 ft
- Type of screen: Machine slotted Sch 40 PVC
- Screen gauge or size of openings: 0.010 in.
- Diameter of screen: 2.0 in.
- Type of Backfill around Screen: Filter Sand
- Depth to bottom of well screen: 35.0 ft

Bottom of silt trap: 35.3 ft
Depth of bottom of borehole: 36.8 ft

COMMENTS:

HA-LIB09-BOS-HAR.GLB GW INSTALLATION REPORT-07-1 F:\133870\002\GINT\133870-002 HAI TB LOGS.GPJ Feb 24, 20

TEST BORING REPORT

Boring No. B2

Project	WJWW Filtration Plant, Purchase, New York
Client	Hazen & Sawyer
Contractor	General Borings, Inc.

File No. 133870-002
Sheet No. 1 of 2
Start November 21, 2019
Finish November 21, 2019
Driller J. Casson
H&A Rep. S. Brousseau
Elevation 400.0 (est.)
Datum NAVD88
Location See Plan
N 41.06453
W 73.71839

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	HSA	S	--	Rig Make & Model: Diedrich D50
Inside Diameter (in.)	3.25	1 3/8	--	Bit Type: Cutting Head
Hammer Weight (lb)	--	140	-	Drill Mud: None
Hammer Fall (in.)	--	30	-	Casing: Spun
				Hoist/Hammer: Winch Automatic Hammer
				PID Make & Model: MiniRAE 3000 10.6 eV

Depth (ft)	Sampler Blows per 6 in.	Sample No. & Rec. (in.)	Sample Depth (ft)	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size†, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0	2 3 3 4	S1 20	0.0 2.0	399.7 0.3	SM	-TOPSOIL- Loose yellow brown silty SAND, no structure, organic odor, moist, with few organics	0	0	0	30	45	25				
	4 6 8 9	S2 9	2.0 4.0			Similar to S1, except medium dense -SUBSOIL-										
5	17 28 23 15	S3 13	5.0 7.0	395.0 5.0	SM	Very dense brown silty SAND, no structure, no odor, dry	0	5	10	40	25	20				
10	27 42 33 50/5"	S4 10	10.0 11.9			Similar to S3 -GLACIAL TILL-										
15	10 22 22 15	S5 2	15.0 17.0			Similar to S4, except dense, wet										
20																

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft) to: Bottom of Casing	Bottom of Hole	Water
11/21/19	1430	0	15	17	15

Sample ID
O - Open End Rod
T - Thin Wall Tube
U - Undisturbed Sample
S - Split Spoon Sample

Well Diagram
Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary
Overburden (ft) 26.9
Rock Cored (ft)
Samples 7S

Boring No. B2

Field Tests: **Dilatancy**: R - Rapid S - Slow N - None
Toughness: L - Low M - Medium H - High
Plasticity: N - Nonplastic L - Low M - Medium H - High
Dry Strength: N - None L - Low M - Medium H - High V - Very High

†**Note: Maximum particle size (mps) is determined by direct observation within the limitations of sampler size.**

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

H&A-TEST BORING-09 HA-LIB09-BOS-HAR.GLB HA-TB+CORE+WELL-07-1.GDT F:\133870\002\GINT\133870-002 HAI TB LOGS.GPJ Feb 24, 20

HALEY ALDRICH

TEST BORING REPORT

Boring No. B2

File No. 133870-002

Sheet No. 2 of 2

Depth (ft)	Sampler Blows per 6 in.	Sample No. & Rec. (in.)	Sample Depth (ft)	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size†, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
20	22 45 50/5"	S6 12	20.0 21.4			Similar to S5, except very dense										
						-GLACIAL TILL-										
25	30 34 47 50/5"	S7 19	25.0 26.9			Similar to S6										
				373.1 26.9		BOTTOM OF EXPLORATION 26.9 FT Note: Borehole backfilled with cuttings upon completion.										

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

Boring No. B2

H&A-TEST BORING-09 HA-LIB09-BOS-HAR.GLB HA-TB+CORE+WELL-07-1.GDT F:\133870\002\GINT\133870-002 HAI TB LOGS.GPJ Feb 24, 20

TEST BORING REPORT

Boring No. B3

Project	WJWW Filtration Plant, Purchase, New York
Client	Hazen & Sawyer
Contractor	General Borings, Inc.

File No. 133870-002
Sheet No. 1 of 2
Start November 21, 2019
Finish November 21, 2019
Driller J. Casson
H&A Rep. S. Brousseau
Elevation 405.0 (est.)
Datum NAVD88
Location See Plan
N 41.06421
W 73.71803

	Casing	Sampler	Barrel	Drilling Equipment and Procedures
Type	HSA	S	--	Rig Make & Model: Diedrich D50
Inside Diameter (in.)	3.25	1 3/8	--	Bit Type: Cutting Head
Hammer Weight (lb)	--	140	-	Drill Mud: None
Hammer Fall (in.)	--	30	-	Casing: Spun
				Hoist/Hammer: Winch Automatic Hammer
				PID Make & Model: MiniRAE 3000 10.6 eV

Depth (ft)	Sampler Blows per 6 in.	Sample No. & Rec. (in.)	Sample Depth (ft)	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size†, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
0	2 2 1 3	S1 18	0.0 2.0	404.5 0.5	SM	Very loose yellow-brown silty SAND, no structure, no odor, moist, with few roots	0	0	5	30	40	25				
	7 12 13 15	S2 21	2.0 4.0			Similar to S1 -SUBSOIL-										
				401.5 3.5	SM	Medium dense brown silty SAND, no structure, no odor, moist	0	5	5	40	35	15				
5	7 11 11 12	S3 16	5.0 7.0		SM	Medium dense brown silty SAND, no structure, no odor, moist	0	5	5	40	35	15				
10	31 25 50/2"	S4 6	10.0 11.2			Similar to S3, except very dense -GLACIAL TILL-										
15	14 18 20 60	S5 19	15.0 17.0		SM	Dense brown silty SAND, well bonded, no odor, dry	0	5	5	40	35	15				
				387.5												
		C1 8	17.5 18.6	17.5 386.4 18.6		Note: HSA refusal at 17.5 ft. Core through boulder 17.5 to 18.6 ft.										
20																

Water Level Data

Date	Time	Elapsed Time (hr.)	Depth (ft) to: Bottom of Casing	Bottom of Hole	Water
		Not Encountered			

Sample ID
O - Open End Rod
T - Thin Wall Tube
U - Undisturbed Sample
S - Split Spoon Sample

Well Diagram
Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

Summary
Overburden (ft) 45.0
Rock Cored (ft)
Samples 10S, 1C

Boring No. B3

Field Tests: **Dilatancy**: R - Rapid S - Slow N - None
Toughness: L - Low M - Medium H - High
Plasticity: N - Nonplastic L - Low M - Medium H - High
Dry Strength: N - None L - Low M - Medium H - High V - Very High

†**Note: Maximum particle size (mps) is determined by direct observation within the limitations of sampler size.**

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

H&A-TEST BORING-09 HA-LIB09-BOS-HAR.GLB HA-TB+CORE+WELL-07-1.GDT F:\133870\002\GINT\133870-002.HAI TB LOGS.GPJ Feb 24, 20

HALEY ALDRICH

TEST BORING REPORT

Boring No. B3
File No. 133870-002
Sheet No. 2 of 2

Depth (ft)	Sampler Blows per 6 in.	Sample No. & Rec. (in.)	Sample Depth (ft)	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (Density/consistency, color, GROUP NAME, max. particle size†, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Test Dilatancy	Field Test Toughness	Field Test Plasticity	Field Test Strength
20	12 12 20 32	S6 19	20.0 22.0			Similar to S5, except moist										
25	22 23 36 46	S7 16	25.0 27.0			Similar to S6, except very dense										
30	43 55 43 54	S8 18	30.0 32.0		SM	Very dense brown silty SAND, well bonded, no odor, dry	5	5	5	40	30	15				
35	39 56 50/4"	S9 14	35.0 36.3			Similar to S8, except moist										
40	100/6"	S10 4	40.0 40.5			Similar to S9 -GLACIAL TILL- Note: Advanced auger to 45 ft. Drill action difficult. Rock not encountered. Intermittent cobbles and boulders encountered throughout boring.										
45				360.0 45.0		BOTTOM OF EXPLORATION 45.0 FT Note: Borehole backfilled with cuttings upon completion.										

NOTE: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

Boring No. B3

H&A-TEST BORING-09 HA-LIB09-BOS-HAR.GLB HA-TB+CORE+WELL-07-1.GDT F:\133870\002\GINT\133870-002 HAI TB LOGS.GPJ Feb 24, 20

HALEY ALDRICH

TEST PIT LOG

Test Pit No. TP1

Project	WJWW Filtration Plant	**File No.**	133870-002
Location	Purchase, New York	**H&A Rep**	S. Brousseau
Client	Hazen & Sawyer	**Date**	20 November 2019
Contractor	General Borings, Inc.	**Weather**	Overcast 30-40°F
Equipment Used	Ford 655A Rubber-Tired Backhoe		

Ground El.: 403.5 (est.) **El. Datum:** NAVD88 **Location:** N 41.06425 W 73.71823 **Groundwater depths/entry rates (in./min.):**

Depth (ft)	Sample ID	Stratum Change Elev./ Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (color, natural grain size and artificial component percentage estimates, maximum particle size, manual test properties, structure, odors, moisture, other descriptions and observations GEOLOGIC INTERPRETATION)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Tests Dilatancy	Toughness	Plasticity	Strength
0				-TOPSOIL-										
1		402.5 1.0	SM	Yellow-brown silty SAND, no structure, no odor, moist, trace organics -SUBSOIL-	5	5	5	20	45	25				
2														
3		400.5 3.0	SM	Gray brown silty SAND with gravel, no structure, no odor, moist -GLACIAL TILL-	10	5	10	35	25	15				
4		399.5 4.0		BOTTOM OF EXPLORATION 4.0 FT Note: Test pit backfilled with excavated material upon completion.										

Obstructions:

Remarks:

Field Tests

Dilatancy R - Rapid S - Slow N - None
Toughness L - Low M - Medium H - High
Plasticity N - Nonplastic L - Low M - Medium H - High
Dry Strength N - None L - Low M - Medium H - High V - Very High

Standing Water in Completed Pit

at depth ft
measured after hours elapsed

Boulders

Diameter (in.)	Number	Approx. Vol. (cu.ft)
12 to 24		=
over 24		=

Test Pit Dimensions (ft)

Pit Length x Width (ft) 10 x 2.5
Pit Depth (ft) 4.0

NOTE: Soil identification based on visual-manual methods of the USCS system as practiced by Haley & Aldrich, Inc.

HA TESTPIT-07-1 HA-LIB09-BOS-HAR.GLB HA-TP07-1.GDT F:\133870\0002\GINT\133870-002 HAI TB LOGS.GPJ Feb 24, 20

HALEY ALDRICH

TEST PIT LOG

Test Pit No. TP2

Project	WJWW Filtration Plant	**File No.**	133870-002
Location	Purchase, New York	**H&A Rep**	S. Brousseau
Client	Hazen & Sawyer	**Date**	20 November 2019
Contractor	General Borings, Inc.	**Weather**	Overcast 30-40°F
Equipment Used	Ford 655A Rubber-Tired Backhoe		

Ground El.: 402.5 (est.) **El. Datum:** NAVD88 **Location:** N 41.06447 W 73.71813 **Groundwater depths/entry rates (in./min.):**

Depth (ft)	Sample ID	Stratum Change Elev./ Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (color, natural grain size and artificial component percentage estimates, maximum particle size, manual test properties, structure, odors, moisture, other descriptions and observations GEOLOGIC INTERPRETATION)	Gravel % Coarse	Gravel % Fine	Sand % Coarse	Sand % Medium	Sand % Fine	% Fines	Field Tests Dilatancy	Toughness	Plasticity	Strength
0				-TOPSOIL-										
1		401.5 1.0	SM	Yellow-brown silty SAND with gravel, no structure, no odor, dry, trace organics -SUBSOIL-	5	10	15	30	20	20				
2														
3		399.5 3.0		BOTTOM OF EXPLORATION 3.0 FT Note: Test pit backfilled with excavated material upon completion.										

Obstructions:

Remarks:

Field Tests

Dilatancy R - Rapid S - Slow N - None
Toughness L - Low M - Medium H - High
Plasticity N - Nonplastic L - Low M - Medium H - High
Dry Strength N - None L - Low M - Medium H - High V - Very High

Standing Water in Completed Pit

at depth ft
measured after hours elapsed

Boulders

Diameter (in.)	Number	Approx. Vol. (cu.ft)
12 to 24		=
over 24		=

Test Pit Dimensions (ft)

Pit Length x Width (ft) 8 x 2.5
Pit Depth (ft) 3.0

NOTE: Soil identification based on visual-manual methods of the USCS system as practiced by Haley & Aldrich, Inc.

HA TESTPIT-07-1 HA-LIB09-BOS-HAR.GLB HA-TP07-1.GDT F:\133870\0002\GINT\133870-002 HAI TB LOGS.GPJ Feb 24, 20

APPENDIX G

GROUNDWATER PURGE LOGS

WELL PURGE DATA SHEET

WELL ID: EW-01

CLIENT: Hazen and Sawyer
SITE: Rye Lake Water Filtration Plant
WEATHER: 70s Sunny

PROJECT NO: 41.0162892.00
DATE: 6/16/2021
SAMPLER(S): M. Del Balzo, G. Mena

COLUMN OF WATER IN WELL:
T = Depth to Bottom (ft) - Static Water Level (ft)
= 34.6 - 11.54
Water Column (T) = 23.06 (ft)

GALLONS OF WATER PER WELL VOLUME:
Well Volume = Water Column (T) (ft) x Multiplier
= 23.06 x 0.163
Well Volume (V) = 3.7588 (Gallons)

well diameter	multiplier
1	0.041
1.5	0.092
2	0.163
4	0.653
6	1.469

TOTAL VOLUME PURGED:
Design = 3.76 (gallons)
Actual = 2.25 [1] (gallons)

PURGE RATE: 250 (mL / min)
PURGE METHOD: Peristaltic Pump

SCREENED INTERVAL: 25 - 35 feet bgs

WATER QUALITY:

Time	Elapsed Time (Mins)	Purged Volume (gal)	Depth to Water (ft)	pH (SU)	Specific Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/l)	Temp (^{0}C)	ORP	Notes
13:30	0	-	-	-	-	-	-	-	-	
13:35	5	0.50	13.35	6.99	0.141	214.0	6.15	12.68	306	
13:40	10	0.75	14.60	6.38	0.137	170.0	5.62	11.44	223	
13:45	15	1.00	14.77	6.40	0.132	70.0	5.16	12.14	368	
13:50	20	1.25	15.30	6.57	0.141	21.3	5.34	11.47	346	
13:55	25	1.50	15.66	6.47	0.149	20.3	4.68	11.60	400	
14:00	30	1.75	16.80	6.52	0.150	21.3	4.61	11.36	410	
14:05	35	2.00	16.95	6.54	0.157	19.1	4.36	11.37	420	
14:10	40	2.25	16.98	6.53	0.159	21.2	4.25	11.44	426	stabilized parameters

UNITS:
gal. - gallons
ft. - feet
SU - standard units
ORP - Oxygen Reduction Potential
mS/cm - millisiemens per centimeter
NTU -nephelometric turbidity units
mg/l -milligrams per liter
^{0}C - degrees Celsius
bgs - below ground surface
NA - not applicable

NOTES AND OBSERVATIONS:

1. Purged volume was estimated.

WELL PURGE DATA SHEET

WELL ID: MW-3A

CLIENT: Hazen and Sawyer
SITE: Rye Lake Water Filtration Plant
WEATHER: 70s Sunny

PROJECT NO: 41.0162892.00
DATE: 6/16/2021
SAMPLER(S): M. Del Balzo, G. Mena

COLUMN OF WATER IN WELL:
T = Depth to Bottom (ft) - Static Water Level (ft)
= 26.75 - 5.02
Water Column (T) = 21.73 (ft)

GALLONS OF WATER PER WELL VOLUME:
Well Volume = Water Column (T) (ft) x Multiplier
= 21.73 x 0.163
Well Volume (V) = 3.542 (Gallons)

TOTAL VOLUME PURGED:
Design = 10.63 (gallons)
Actual = 2.00 [1] (gallons)

well diameter	multiplier
1	0.041
1.5	0.092
2	0.163
4	0.653
6	1.469

PURGE RATE: 250 (mL / min)
PURGE METHOD: Peristaltic Pump
SCREENED INTERVAL: Approximately 17 to 27 ft bgs

WATER QUALITY:

Time	Elapsed Time (Mins)	Purged Volume (gal)	Depth to Water (ft)	pH (SU)	Specific Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/l)	Temp (^{0}C)	ORP	Notes
12:25	0	-	-	-	-	-	-	-	-	
12:30	5	0.50	5.07	7.71	0.066	1.6	6.18	14.87	337	
12:35	10	0.75	5.15	6.46	0.111	0.5	5.30	12.61	398	
12:40	15	1.00	5.17	6.33	0.110	0.5	5.55	12.44	432	
12:45	20	1.25	5.17	6.25	0.110	0.5	5.70	12.60	454	
12:50	25	1.50	5.17	6.32	0.110	0.5	6.01	12.69	459	
12:55	30	1.75	5.17	6.32	0.105	0.5	5.88	12.71	465	
13:00	35	2.00	5.17	6.33	0.103	0.5	5.85	12.75	469	stabilized parameters

UNITS:
gal. - gallons
ft. - feet
SU - standard units
ORP - Oxygen Reduction Potential
mS/cm - millisiemens per centimeter
NTU -nephelometric turbidity units
mg/l -milligrams per liter
^{0}C - degrees Celsius
bgs - below ground surface
NA - not applicable

NOTES AND OBSERVATIONS:

1. Purged volume was estimated.

WELL PURGE DATA SHEET

WELL ID: MW-29

CLIENT: Hazen and Sawyer
SITE: Rye Lake Water Filtration Plant
WEATHER: 70s Sunny

PROJECT NO: 41.0162892.00
DATE: 6/16/2021
SAMPLER(S): M. Del Balzo, G. Mena

COLUMN OF WATER IN WELL:
T = Depth to Bottom (ft) - Static Water Level (ft)
= 24.7 - 9.8
Water Column (T) = 14.9 (ft)

GALLONS OF WATER PER WELL VOLUME:
Well Volume = Water Column (T) (ft) x Multiplier
= 14.9 x 0.163
Well Volume (V) = 2.4287 (Gallons)

well diameter	multiplier
1	0.041
1.5	0.092
2	0.163
4	0.653
6	1.469

TOTAL VOLUME PURGED:
Design = 7.29 (gallons)
Actual = 2.25 [1] (gallons)

PURGE RATE: 250 (mL / min)
PURGE METHOD: Peristaltic Pump

SCREENED INTERVAL: approximately 15 to 25 ft bgs

WATER QUALITY:

Time	Elapsed Time (Mins)	Purged Volume (gal)	Depth to Water (ft)	pH (SU)	Specific Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/l)	Temp (^{0}C)	ORP	Notes
10:05	0	-	-	-	-	-	-	-	-	
10:10	5	0.50	10.07	8.00	0.267	9.6	5.17	12.10	232	
10:15	10	0.75	10.07	7.33	0.235	7.9	5.29	14.37	267	
10:20	15	1.00	10.07	7.08	0.227	5.3	4.74	12.59	308	
10:25	20	1.25	10.07	7.03	0.227	2.2	4.73	12.65	338	
10:30	25	1.50	10.07	7.04	0.218	0.8	4.49	11.98	358	
10:35	30	1.75	10.07	6.96	0.21	0.5	4.37	11.27	379	
10:40	35	2.00	10.07	6.96	0.209	0.5	4.33	11.22	394	
10:45	40	2.25	10.07	6.96	0.21	0.5	4.28	11.50	400	stabilized parameters

UNITS:
gal. - gallons
ft. - feet
SU - standard units
ORP - Oxygen Reduction Potential
mS/cm - millisiemens per centimeter
NTU -nephelometric turbidity units
mg/l -milligrams per liter
^{0}C - degrees Celsius
bgs - below ground surface
NA - not applicable

NOTES AND OBSERVATIONS:

1. Purged volume was estimated.

APPENDIX H

ENVIRONMENTAL LABORATORY RESULTS AND TABLES

ANALYTICAL REPORT

Lab Number:	L2132604
Client:	GZA GeoEnvironmental, Inc. 104 West 29th Street, 10th Floor New York, NY 10001
ATTN:	Matthew Del Balzo
Phone:	(212) 594-8140
Project Name:	RYE LAKE WFP
Project Number:	41.0162892.01
Report Date:	06/25/21

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Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com

Project Name: RYE LAKE WFP
Project Number: 41.0162892.01

Lab Number: L2132604
Report Date: 06/25/21

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2132604-01	MW-29	WATER	Not Specified	06/16/21 10:50	06/16/21
L2132604-02	MW-3A	WATER	Not Specified	06/16/21 13:00	06/16/21
L2132604-03	EW-01	WATER	Not Specified	06/16/21 14:15	06/16/21

Project Name:	RYE LAKE WFP	**Lab Number:**	L2132604
Project Number:	41.0162892.01	**Report Date:**	06/25/21

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Alpha Project Manager and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name:	RYE LAKE WFP	**Lab Number:**	L2132604
Project Number:	41.0162892.01	**Report Date:**	06/25/21

Case Narrative (continued)

Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Tiffani Morrissey - Tiffani Morrissey

Title: Technical Director/Representative Date: 06/25/21

ORGANICS

VOLATILES

Project Name: RYE LAKE WFP
Project Number: 41.0162892.01
Lab Number: L2132604
Report Date: 06/25/21

SAMPLE RESULTS

Lab ID: L2132604-01
Client ID: MW-29
Sample Location: Not Specified

Date Collected: 06/16/21 10:50
Date Received: 06/16/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8260C
Analytical Date: 06/22/21 12:22
Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methylene chloride	ND		ug/l	2.5	0.70	1
1,1-Dichloroethane	ND		ug/l	2.5	0.70	1
Chloroform	ND		ug/l	2.5	0.70	1
Carbon tetrachloride	ND		ug/l	0.50	0.13	1
1,2-Dichloropropane	ND		ug/l	1.0	0.14	1
Dibromochloromethane	ND		ug/l	0.50	0.15	1
1,1,2-Trichloroethane	ND		ug/l	1.5	0.50	1
Tetrachloroethene	ND		ug/l	0.50	0.18	1
Chlorobenzene	ND		ug/l	2.5	0.70	1
Trichlorofluoromethane	ND		ug/l	2.5	0.70	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
1,1,1-Trichloroethane	ND		ug/l	2.5	0.70	1
Bromodichloromethane	ND		ug/l	0.50	0.19	1
trans-1,3-Dichloropropene	ND		ug/l	0.50	0.16	1
cis-1,3-Dichloropropene	ND		ug/l	0.50	0.14	1
1,3-Dichloropropene, Total	ND		ug/l	0.50	0.14	1
1,1-Dichloropropene	ND		ug/l	2.5	0.70	1
Bromoform	ND		ug/l	2.0	0.65	1
1,1,2,2-Tetrachloroethane	ND		ug/l	0.50	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
Toluene	ND		ug/l	2.5	0.70	1
Ethylbenzene	ND		ug/l	2.5	0.70	1
Chloromethane	ND		ug/l	2.5	0.70	1
Bromomethane	ND		ug/l	2.5	0.70	1
Vinyl chloride	ND		ug/l	1.0	0.07	1
Chloroethane	ND		ug/l	2.5	0.70	1
1,1-Dichloroethene	ND		ug/l	0.50	0.17	1
trans-1,2-Dichloroethene	ND		ug/l	2.5	0.70	1

Project Name: RYE LAKE WFP **Lab Number:** L2132604

Project Number: 41.0162892.01 **Report Date:** 06/25/21

SAMPLE RESULTS

Lab ID: L2132604-01 Date Collected: 06/16/21 10:50
Client ID: MW-29 Date Received: 06/16/21
Sample Location: Not Specified Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Trichloroethene	ND		ug/l	0.50	0.18	1
1,2-Dichlorobenzene	ND		ug/l	2.5	0.70	1
1,3-Dichlorobenzene	ND		ug/l	2.5	0.70	1
1,4-Dichlorobenzene	ND		ug/l	2.5	0.70	1
Methyl tert butyl ether	ND		ug/l	2.5	0.70	1
p/m-Xylene	ND		ug/l	2.5	0.70	1
o-Xylene	ND		ug/l	2.5	0.70	1
Xylenes, Total	ND		ug/l	2.5	0.70	1
cis-1,2-Dichloroethene	ND		ug/l	2.5	0.70	1
1,2-Dichloroethene, Total	ND		ug/l	2.5	0.70	1
Dibromomethane	ND		ug/l	5.0	1.0	1
1,2,3-Trichloropropane	ND		ug/l	2.5	0.70	1
Acrylonitrile	ND		ug/l	5.0	1.5	1
Styrene	ND		ug/l	2.5	0.70	1
Dichlorodifluoromethane	ND		ug/l	5.0	1.0	1
Acetone	ND		ug/l	5.0	1.5	1
Carbon disulfide	ND		ug/l	5.0	1.0	1
2-Butanone	ND		ug/l	5.0	1.9	1
Vinyl acetate	ND		ug/l	5.0	1.0	1
4-Methyl-2-pentanone	ND		ug/l	5.0	1.0	1
2-Hexanone	ND		ug/l	5.0	1.0	1
Bromochloromethane	ND		ug/l	2.5	0.70	1
2,2-Dichloropropane	ND		ug/l	2.5	0.70	1
1,2-Dibromoethane	ND		ug/l	2.0	0.65	1
1,3-Dichloropropane	ND		ug/l	2.5	0.70	1
1,1,1,2-Tetrachloroethane	ND		ug/l	2.5	0.70	1
Bromobenzene	ND		ug/l	2.5	0.70	1
n-Butylbenzene	ND		ug/l	2.5	0.70	1
sec-Butylbenzene	ND		ug/l	2.5	0.70	1
tert-Butylbenzene	ND		ug/l	2.5	0.70	1
o-Chlorotoluene	ND		ug/l	2.5	0.70	1
p-Chlorotoluene	ND		ug/l	2.5	0.70	1
1,2-Dibromo-3-chloropropane	ND		ug/l	2.5	0.70	1
Hexachlorobutadiene	ND		ug/l	2.5	0.70	1
Isopropylbenzene	ND		ug/l	2.5	0.70	1
p-Isopropyltoluene	ND		ug/l	2.5	0.70	1
Naphthalene	ND		ug/l	2.5	0.70	1

Project Name: RYE LAKE WFP
Lab Number: L2132604
Project Number: 41.0162892.01
Report Date: 06/25/21

SAMPLE RESULTS

Lab ID: L2132604-01
Client ID: MW-29
Sample Location: Not Specified
Date Collected: 06/16/21 10:50
Date Received: 06/16/21
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
n-Propylbenzene	ND		ug/l	2.5	0.70	1
1,2,3-Trichlorobenzene	ND		ug/l	2.5	0.70	1
1,2,4-Trichlorobenzene	ND		ug/l	2.5	0.70	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.70	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.70	1
1,4-Dioxane	ND		ug/l	250	61.	1
p-Diethylbenzene	ND		ug/l	2.0	0.70	1
p-Ethyltoluene	ND		ug/l	2.0	0.70	1
1,2,4,5-Tetramethylbenzene	ND		ug/l	2.0	0.54	1
Ethyl ether	ND		ug/l	2.5	0.70	1
trans-1,4-Dichloro-2-butene	ND		ug/l	2.5	0.70	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	122		70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	101		70-130
Dibromofluoromethane	106		70-130

Project Name: RYE LAKE WFP
Project Number: 41.0162892.01
Lab Number: L2132604
Report Date: 06/25/21

SAMPLE RESULTS

Lab ID: L2132604-02
Client ID: MW-3A
Sample Location: Not Specified

Date Collected: 06/16/21 13:00
Date Received: 06/16/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8260C
Analytical Date: 06/22/21 12:49
Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methylene chloride	ND		ug/l	2.5	0.70	1
1,1-Dichloroethane	ND		ug/l	2.5	0.70	1
Chloroform	ND		ug/l	2.5	0.70	1
Carbon tetrachloride	ND		ug/l	0.50	0.13	1
1,2-Dichloropropane	ND		ug/l	1.0	0.14	1
Dibromochloromethane	ND		ug/l	0.50	0.15	1
1,1,2-Trichloroethane	ND		ug/l	1.5	0.50	1
Tetrachloroethene	ND		ug/l	0.50	0.18	1
Chlorobenzene	ND		ug/l	2.5	0.70	1
Trichlorofluoromethane	ND		ug/l	2.5	0.70	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
1,1,1-Trichloroethane	ND		ug/l	2.5	0.70	1
Bromodichloromethane	ND		ug/l	0.50	0.19	1
trans-1,3-Dichloropropene	ND		ug/l	0.50	0.16	1
cis-1,3-Dichloropropene	ND		ug/l	0.50	0.14	1
1,3-Dichloropropene, Total	ND		ug/l	0.50	0.14	1
1,1-Dichloropropene	ND		ug/l	2.5	0.70	1
Bromoform	ND		ug/l	2.0	0.65	1
1,1,2,2-Tetrachloroethane	ND		ug/l	0.50	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
Toluene	ND		ug/l	2.5	0.70	1
Ethylbenzene	ND		ug/l	2.5	0.70	1
Chloromethane	ND		ug/l	2.5	0.70	1
Bromomethane	ND		ug/l	2.5	0.70	1
Vinyl chloride	ND		ug/l	1.0	0.07	1
Chloroethane	ND		ug/l	2.5	0.70	1
1,1-Dichloroethene	ND		ug/l	0.50	0.17	1
trans-1,2-Dichloroethene	ND		ug/l	2.5	0.70	1

Project Name: RYE LAKE WFP **Lab Number:** L2132604

Project Number: 41.0162892.01 **Report Date:** 06/25/21

SAMPLE RESULTS

Lab ID: L2132604-02 Date Collected: 06/16/21 13:00

Client ID: MW-3A Date Received: 06/16/21

Sample Location: Not Specified Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Trichloroethene	ND		ug/l	0.50	0.18	1
1,2-Dichlorobenzene	ND		ug/l	2.5	0.70	1
1,3-Dichlorobenzene	ND		ug/l	2.5	0.70	1
1,4-Dichlorobenzene	ND		ug/l	2.5	0.70	1
Methyl tert butyl ether	ND		ug/l	2.5	0.70	1
p/m-Xylene	ND		ug/l	2.5	0.70	1
o-Xylene	ND		ug/l	2.5	0.70	1
Xylenes, Total	ND		ug/l	2.5	0.70	1
cis-1,2-Dichloroethene	ND		ug/l	2.5	0.70	1
1,2-Dichloroethene, Total	ND		ug/l	2.5	0.70	1
Dibromomethane	ND		ug/l	5.0	1.0	1
1,2,3-Trichloropropane	ND		ug/l	2.5	0.70	1
Acrylonitrile	ND		ug/l	5.0	1.5	1
Styrene	ND		ug/l	2.5	0.70	1
Dichlorodifluoromethane	ND		ug/l	5.0	1.0	1
Acetone	ND		ug/l	5.0	1.5	1
Carbon disulfide	ND		ug/l	5.0	1.0	1
2-Butanone	ND		ug/l	5.0	1.9	1
Vinyl acetate	ND		ug/l	5.0	1.0	1
4-Methyl-2-pentanone	ND		ug/l	5.0	1.0	1
2-Hexanone	ND		ug/l	5.0	1.0	1
Bromochloromethane	ND		ug/l	2.5	0.70	1
2,2-Dichloropropane	ND		ug/l	2.5	0.70	1
1,2-Dibromoethane	ND		ug/l	2.0	0.65	1
1,3-Dichloropropane	ND		ug/l	2.5	0.70	1
1,1,1,2-Tetrachloroethane	ND		ug/l	2.5	0.70	1
Bromobenzene	ND		ug/l	2.5	0.70	1
n-Butylbenzene	ND		ug/l	2.5	0.70	1
sec-Butylbenzene	ND		ug/l	2.5	0.70	1
tert-Butylbenzene	ND		ug/l	2.5	0.70	1
o-Chlorotoluene	ND		ug/l	2.5	0.70	1
p-Chlorotoluene	ND		ug/l	2.5	0.70	1
1,2-Dibromo-3-chloropropane	ND		ug/l	2.5	0.70	1
Hexachlorobutadiene	ND		ug/l	2.5	0.70	1
Isopropylbenzene	ND		ug/l	2.5	0.70	1
p-Isopropyltoluene	ND		ug/l	2.5	0.70	1
Naphthalene	ND		ug/l	2.5	0.70	1

Project Name: RYE LAKE WFP
Lab Number: L2132604
Project Number: 41.0162892.01
Report Date: 06/25/21

SAMPLE RESULTS

Lab ID: L2132604-02
Client ID: MW-3A
Sample Location: Not Specified
Date Collected: 06/16/21 13:00
Date Received: 06/16/21
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
n-Propylbenzene	ND		ug/l	2.5	0.70	1
1,2,3-Trichlorobenzene	ND		ug/l	2.5	0.70	1
1,2,4-Trichlorobenzene	ND		ug/l	2.5	0.70	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.70	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.70	1
1,4-Dioxane	ND		ug/l	250	61.	1
p-Diethylbenzene	ND		ug/l	2.0	0.70	1
p-Ethyltoluene	ND		ug/l	2.0	0.70	1
1,2,4,5-Tetramethylbenzene	ND		ug/l	2.0	0.54	1
Ethyl ether	ND		ug/l	2.5	0.70	1
trans-1,4-Dichloro-2-butene	ND		ug/l	2.5	0.70	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	129		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	101		70-130
Dibromofluoromethane	114		70-130

Project Name: RYE LAKE WFP
Project Number: 41.0162892.01
Lab Number: L2132604
Report Date: 06/25/21

SAMPLE RESULTS

Lab ID: L2132604-03
Client ID: EW-01
Sample Location: Not Specified

Date Collected: 06/16/21 14:15
Date Received: 06/16/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8260C
Analytical Date: 06/22/21 13:16
Analyst: LAC

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methylene chloride	ND		ug/l	2.5	0.70	1
1,1-Dichloroethane	ND		ug/l	2.5	0.70	1
Chloroform	ND		ug/l	2.5	0.70	1
Carbon tetrachloride	ND		ug/l	0.50	0.13	1
1,2-Dichloropropane	ND		ug/l	1.0	0.14	1
Dibromochloromethane	ND		ug/l	0.50	0.15	1
1,1,2-Trichloroethane	ND		ug/l	1.5	0.50	1
Tetrachloroethene	ND		ug/l	0.50	0.18	1
Chlorobenzene	ND		ug/l	2.5	0.70	1
Trichlorofluoromethane	ND		ug/l	2.5	0.70	1
1,2-Dichloroethane	ND		ug/l	0.50	0.13	1
1,1,1-Trichloroethane	ND		ug/l	2.5	0.70	1
Bromodichloromethane	ND		ug/l	0.50	0.19	1
trans-1,3-Dichloropropene	ND		ug/l	0.50	0.16	1
cis-1,3-Dichloropropene	ND		ug/l	0.50	0.14	1
1,3-Dichloropropene, Total	ND		ug/l	0.50	0.14	1
1,1-Dichloropropene	ND		ug/l	2.5	0.70	1
Bromoform	ND		ug/l	2.0	0.65	1
1,1,2,2-Tetrachloroethane	ND		ug/l	0.50	0.17	1
Benzene	ND		ug/l	0.50	0.16	1
Toluene	ND		ug/l	2.5	0.70	1
Ethylbenzene	ND		ug/l	2.5	0.70	1
Chloromethane	ND		ug/l	2.5	0.70	1
Bromomethane	ND		ug/l	2.5	0.70	1
Vinyl chloride	ND		ug/l	1.0	0.07	1
Chloroethane	ND		ug/l	2.5	0.70	1
1,1-Dichloroethene	ND		ug/l	0.50	0.17	1
trans-1,2-Dichloroethene	ND		ug/l	2.5	0.70	1

Project Name: RYE LAKE WFP **Lab Number:** L2132604

Project Number: 41.0162892.01 **Report Date:** 06/25/21

SAMPLE RESULTS

Lab ID: L2132604-03 Date Collected: 06/16/21 14:15

Client ID: EW-01 Date Received: 06/16/21

Sample Location: Not Specified Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Trichloroethene	ND		ug/l	0.50	0.18	1
1,2-Dichlorobenzene	ND		ug/l	2.5	0.70	1
1,3-Dichlorobenzene	ND		ug/l	2.5	0.70	1
1,4-Dichlorobenzene	ND		ug/l	2.5	0.70	1
Methyl tert butyl ether	ND		ug/l	2.5	0.70	1
p/m-Xylene	ND		ug/l	2.5	0.70	1
o-Xylene	ND		ug/l	2.5	0.70	1
Xylenes, Total	ND		ug/l	2.5	0.70	1
cis-1,2-Dichloroethene	ND		ug/l	2.5	0.70	1
1,2-Dichloroethene, Total	ND		ug/l	2.5	0.70	1
Dibromomethane	ND		ug/l	5.0	1.0	1
1,2,3-Trichloropropane	ND		ug/l	2.5	0.70	1
Acrylonitrile	ND		ug/l	5.0	1.5	1
Styrene	ND		ug/l	2.5	0.70	1
Dichlorodifluoromethane	ND		ug/l	5.0	1.0	1
Acetone	ND		ug/l	5.0	1.5	1
Carbon disulfide	ND		ug/l	5.0	1.0	1
2-Butanone	ND		ug/l	5.0	1.9	1
Vinyl acetate	ND		ug/l	5.0	1.0	1
4-Methyl-2-pentanone	ND		ug/l	5.0	1.0	1
2-Hexanone	ND		ug/l	5.0	1.0	1
Bromochloromethane	ND		ug/l	2.5	0.70	1
2,2-Dichloropropane	ND		ug/l	2.5	0.70	1
1,2-Dibromoethane	ND		ug/l	2.0	0.65	1
1,3-Dichloropropane	ND		ug/l	2.5	0.70	1
1,1,1,2-Tetrachloroethane	ND		ug/l	2.5	0.70	1
Bromobenzene	ND		ug/l	2.5	0.70	1
n-Butylbenzene	ND		ug/l	2.5	0.70	1
sec-Butylbenzene	ND		ug/l	2.5	0.70	1
tert-Butylbenzene	ND		ug/l	2.5	0.70	1
o-Chlorotoluene	ND		ug/l	2.5	0.70	1
p-Chlorotoluene	ND		ug/l	2.5	0.70	1
1,2-Dibromo-3-chloropropane	ND		ug/l	2.5	0.70	1
Hexachlorobutadiene	ND		ug/l	2.5	0.70	1
Isopropylbenzene	ND		ug/l	2.5	0.70	1
p-Isopropyltoluene	ND		ug/l	2.5	0.70	1
Naphthalene	ND		ug/l	2.5	0.70	1

Project Name: RYE LAKE WFP
Project Number: 41.0162892.01
Lab Number: L2132604
Report Date: 06/25/21

SAMPLE RESULTS

Lab ID: L2132604-03
Client ID: EW-01
Sample Location: Not Specified
Date Collected: 06/16/21 14:15
Date Received: 06/16/21
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
n-Propylbenzene	ND		ug/l	2.5	0.70	1
1,2,3-Trichlorobenzene	ND		ug/l	2.5	0.70	1
1,2,4-Trichlorobenzene	ND		ug/l	2.5	0.70	1
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.70	1
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.70	1
1,4-Dioxane	ND		ug/l	250	61.	1
p-Diethylbenzene	ND		ug/l	2.0	0.70	1
p-Ethyltoluene	ND		ug/l	2.0	0.70	1
1,2,4,5-Tetramethylbenzene	ND		ug/l	2.0	0.54	1
Ethyl ether	ND		ug/l	2.5	0.70	1
trans-1,4-Dichloro-2-butene	ND		ug/l	2.5	0.70	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	126		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	102		70-130
Dibromofluoromethane	110		70-130

Project Name: RYE LAKE WFP
Project Number: 41.0162892.01
Lab Number: L2132604
Report Date: 06/25/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 06/22/21 10:06
Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01-03 Batch: WG1515508-5					
Methylene chloride	ND		ug/l	2.5	0.70
1,1-Dichloroethane	ND		ug/l	2.5	0.70
Chloroform	ND		ug/l	2.5	0.70
Carbon tetrachloride	ND		ug/l	0.50	0.13
1,2-Dichloropropane	ND		ug/l	1.0	0.14
Dibromochloromethane	ND		ug/l	0.50	0.15
1,1,2-Trichloroethane	ND		ug/l	1.5	0.50
Tetrachloroethene	ND		ug/l	0.50	0.18
Chlorobenzene	ND		ug/l	2.5	0.70
Trichlorofluoromethane	ND		ug/l	2.5	0.70
1,2-Dichloroethane	ND		ug/l	0.50	0.13
1,1,1-Trichloroethane	ND		ug/l	2.5	0.70
Bromodichloromethane	ND		ug/l	0.50	0.19
trans-1,3-Dichloropropene	ND		ug/l	0.50	0.16
cis-1,3-Dichloropropene	ND		ug/l	0.50	0.14
1,3-Dichloropropene, Total	ND		ug/l	0.50	0.14
1,1-Dichloropropene	ND		ug/l	2.5	0.70
Bromoform	ND		ug/l	2.0	0.65
1,1,2,2-Tetrachloroethane	ND		ug/l	0.50	0.17
Benzene	ND		ug/l	0.50	0.16
Toluene	ND		ug/l	2.5	0.70
Ethylbenzene	ND		ug/l	2.5	0.70
Chloromethane	ND		ug/l	2.5	0.70
Bromomethane	ND		ug/l	2.5	0.70
Vinyl chloride	ND		ug/l	1.0	0.07
Chloroethane	ND		ug/l	2.5	0.70
1,1-Dichloroethene	ND		ug/l	0.50	0.17
trans-1,2-Dichloroethene	ND		ug/l	2.5	0.70
Trichloroethene	ND		ug/l	0.50	0.18

Project Name: RYE LAKE WFP
Project Number: 41.0162892.01
Lab Number: L2132604
Report Date: 06/25/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 06/22/21 10:06
Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01-03 Batch: WG1515508-5					
1,2-Dichlorobenzene	ND		ug/l	2.5	0.70
1,3-Dichlorobenzene	ND		ug/l	2.5	0.70
1,4-Dichlorobenzene	ND		ug/l	2.5	0.70
Methyl tert butyl ether	ND		ug/l	2.5	0.70
p/m-Xylene	ND		ug/l	2.5	0.70
o-Xylene	ND		ug/l	2.5	0.70
Xylenes, Total	ND		ug/l	2.5	0.70
cis-1,2-Dichloroethene	ND		ug/l	2.5	0.70
1,2-Dichloroethene, Total	ND		ug/l	2.5	0.70
Dibromomethane	ND		ug/l	5.0	1.0
1,2,3-Trichloropropane	ND		ug/l	2.5	0.70
Acrylonitrile	ND		ug/l	5.0	1.5
Styrene	ND		ug/l	2.5	0.70
Dichlorodifluoromethane	ND		ug/l	5.0	1.0
Acetone	ND		ug/l	5.0	1.5
Carbon disulfide	ND		ug/l	5.0	1.0
2-Butanone	ND		ug/l	5.0	1.9
Vinyl acetate	ND		ug/l	5.0	1.0
4-Methyl-2-pentanone	ND		ug/l	5.0	1.0
2-Hexanone	ND		ug/l	5.0	1.0
Bromochloromethane	ND		ug/l	2.5	0.70
2,2-Dichloropropane	ND		ug/l	2.5	0.70
1,2-Dibromoethane	ND		ug/l	2.0	0.65
1,3-Dichloropropane	ND		ug/l	2.5	0.70
1,1,1,2-Tetrachloroethane	ND		ug/l	2.5	0.70
Bromobenzene	ND		ug/l	2.5	0.70
n-Butylbenzene	ND		ug/l	2.5	0.70
sec-Butylbenzene	ND		ug/l	2.5	0.70
tert-Butylbenzene	ND		ug/l	2.5	0.70

Project Name: RYE LAKE WFP
Project Number: 41.0162892.01
Lab Number: L2132604
Report Date: 06/25/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 06/22/21 10:06
Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01-03 Batch: WG1515508-5					
o-Chlorotoluene	ND		ug/l	2.5	0.70
p-Chlorotoluene	ND		ug/l	2.5	0.70
1,2-Dibromo-3-chloropropane	ND		ug/l	2.5	0.70
Hexachlorobutadiene	ND		ug/l	2.5	0.70
Isopropylbenzene	ND		ug/l	2.5	0.70
p-Isopropyltoluene	ND		ug/l	2.5	0.70
Naphthalene	ND		ug/l	2.5	0.70
n-Propylbenzene	ND		ug/l	2.5	0.70
1,2,3-Trichlorobenzene	ND		ug/l	2.5	0.70
1,2,4-Trichlorobenzene	ND		ug/l	2.5	0.70
1,3,5-Trimethylbenzene	ND		ug/l	2.5	0.70
1,2,4-Trimethylbenzene	ND		ug/l	2.5	0.70
1,4-Dioxane	ND		ug/l	250	61.
p-Diethylbenzene	ND		ug/l	2.0	0.70
p-Ethyltoluene	ND		ug/l	2.0	0.70
1,2,4,5-Tetramethylbenzene	ND		ug/l	2.0	0.54
Ethyl ether	ND		ug/l	2.5	0.70
trans-1,4-Dichloro-2-butene	ND		ug/l	2.5	0.70

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	118		70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	101		70-130
Dibromofluoromethane	107		70-130

Lab Control Sample Analysis
Batch Quality Control

Project Name: RYE LAKE WFP
Project Number: 41.0162892.01

Lab Number: L2132604
Report Date: 06/25/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-03 Batch: WG1515508-3 WG1515508-4								
Methylene chloride	100		110		70-130	10		20
1,1-Dichloroethane	100		110		70-130	10		20
Chloroform	110		120		70-130	9		20
Carbon tetrachloride	100		120		63-132	18		20
1,2-Dichloropropane	94		100		70-130	6		20
Dibromochloromethane	100		120		63-130	18		20
1,1,2-Trichloroethane	99		110		70-130	11		20
Tetrachloroethene	120		120		70-130	0		20
Chlorobenzene	100		110		75-130	10		20
Trichlorofluoromethane	120		130		62-150	8		20
1,2-Dichloroethane	110		120		70-130	9		20
1,1,1-Trichloroethane	110		120		67-130	9		20
Bromodichloromethane	100		120		67-130	18		20
trans-1,3-Dichloropropene	88		100		70-130	13		20
cis-1,3-Dichloropropene	93		100		70-130	7		20
1,1-Dichloropropene	100		110		70-130	10		20
Bromoform	100		110		54-136	10		20
1,1,2,2-Tetrachloroethane	100		110		67-130	10		20
Benzene	99		110		70-130	11		20
Toluene	100		110		70-130	10		20
Ethylbenzene	100		110		70-130	10		20
Chloromethane	85		85		64-130	0		20
Bromomethane	79		95		39-139	18		20

Lab Control Sample Analysis
Batch Quality Control

Project Name: RYE LAKE WFP
Project Number: 41.0162892.01

Lab Number: L2132604
Report Date: 06/25/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-03 Batch: WG1515508-3 WG1515508-4								
Vinyl chloride	97		100		55-140	3		20
Chloroethane	97		98		55-138	1		20
1,1-Dichloroethene	100		110		61-145	10		20
trans-1,2-Dichloroethene	100		110		70-130	10		20
Trichloroethene	100		100		70-130	0		20
1,2-Dichlorobenzene	100		110		70-130	10		20
1,3-Dichlorobenzene	110		110		70-130	0		20
1,4-Dichlorobenzene	110		110		70-130	0		20
Methyl tert butyl ether	77		100		63-130	**26**	Q	20
p/m-Xylene	100		110		70-130	10		20
o-Xylene	100		110		70-130	10		20
cis-1,2-Dichloroethene	100		110		70-130	10		20
Dibromomethane	100		120		70-130	18		20
1,2,3-Trichloropropane	93		100		64-130	7		20
Acrylonitrile	96		95		70-130	1		20
Styrene	105		115		70-130	9		20
Dichlorodifluoromethane	100		110		36-147	10		20
Acetone	**150**	Q	110		58-148	**31**	Q	20
Carbon disulfide	100		110		51-130	10		20
2-Butanone	77		89		63-138	14		20
Vinyl acetate	97		120		70-130	**21**	Q	20
4-Methyl-2-pentanone	94		96		59-130	2		20
2-Hexanone	86		92		57-130	7		20

Lab Control Sample Analysis
Batch Quality Control

Project Name: RYE LAKE WFP
Project Number: 41.0162892.01

Lab Number: L2132604
Report Date: 06/25/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-03 Batch: WG1515508-3 WG1515508-4								
Bromochloromethane	110		120		70-130	9		20
2,2-Dichloropropane	**61**	Q	110		63-133	**57**	Q	20
1,2-Dibromoethane	100		110		70-130	10		20
1,3-Dichloropropane	100		110		70-130	10		20
1,1,1,2-Tetrachloroethane	110		110		64-130	0		20
Bromobenzene	110		110		70-130	0		20
n-Butylbenzene	100		100		53-136	0		20
sec-Butylbenzene	100		110		70-130	10		20
tert-Butylbenzene	100		110		70-130	10		20
o-Chlorotoluene	100		110		70-130	10		20
p-Chlorotoluene	100		110		70-130	10		20
1,2-Dibromo-3-chloropropane	99		110		41-144	11		20
Hexachlorobutadiene	130		**140**	Q	63-130	7		20
Isopropylbenzene	98		100		70-130	2		20
p-Isopropyltoluene	100		110		70-130	10		20
Naphthalene	86		99		70-130	14		20
n-Propylbenzene	99		100		69-130	1		20
1,2,3-Trichlorobenzene	100		110		70-130	10		20
1,2,4-Trichlorobenzene	110		120		70-130	9		20
1,3,5-Trimethylbenzene	100		110		64-130	10		20
1,2,4-Trimethylbenzene	100		110		70-130	10		20
1,4-Dioxane	100		112		56-162	11		20
p-Diethylbenzene	99		110		70-130	11		20

Lab Control Sample Analysis
Batch Quality Control

Project Name: RYE LAKE WFP
Project Number: 41.0162892.01

Lab Number: L2132604
Report Date: 06/25/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-03 Batch: WG1515508-3 WG1515508-4								
p-Ethyltoluene	100		100		70-130	0		20
1,2,4,5-Tetramethylbenzene	100		110		70-130	10		20
Ethyl ether	88		100		59-134	13		20
trans-1,4-Dichloro-2-butene	**49**	Q	**67**	Q	70-130	**31**	Q	20

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	119		120		70-130
Toluene-d8	106		106		70-130
4-Bromofluorobenzene	105		101		70-130
Dibromofluoromethane	109		107		70-130

SEMIVOLATILES

Project Name: RYE LAKE WFP
Project Number: 41.0162892.01
Lab Number: L2132604
Report Date: 06/25/21

SAMPLE RESULTS

Lab ID: L2132604-01
Client ID: MW-29
Sample Location: Not Specified

Date Collected: 06/16/21 10:50
Date Received: 06/16/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8270D
Analytical Date: 06/22/21 19:23
Analyst: JG

Extraction Method: EPA 3510C
Extraction Date: 06/22/21 00:50

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
1,2,4-Trichlorobenzene	ND		ug/l	5.0	0.50	1
Bis(2-chloroethyl)ether	ND		ug/l	2.0	0.50	1
1,2-Dichlorobenzene	ND		ug/l	2.0	0.45	1
1,3-Dichlorobenzene	ND		ug/l	2.0	0.40	1
1,4-Dichlorobenzene	ND		ug/l	2.0	0.43	1
3,3'-Dichlorobenzidine	ND		ug/l	5.0	1.6	1
2,4-Dinitrotoluene	ND		ug/l	5.0	1.2	1
2,6-Dinitrotoluene	ND		ug/l	5.0	0.93	1
4-Chlorophenyl phenyl ether	ND		ug/l	2.0	0.49	1
4-Bromophenyl phenyl ether	ND		ug/l	2.0	0.38	1
Bis(2-chloroisopropyl)ether	ND		ug/l	2.0	0.53	1
Bis(2-chloroethoxy)methane	ND		ug/l	5.0	0.50	1
Hexachlorocyclopentadiene	ND		ug/l	20	0.69	1
Isophorone	ND		ug/l	5.0	1.2	1
Nitrobenzene	ND		ug/l	2.0	0.77	1
NDPA/DPA	ND		ug/l	2.0	0.42	1
n-Nitrosodi-n-propylamine	ND		ug/l	5.0	0.64	1
Bis(2-ethylhexyl)phthalate	ND		ug/l	3.0	1.5	1
Butyl benzyl phthalate	ND		ug/l	5.0	1.2	1
Di-n-butylphthalate	ND		ug/l	5.0	0.39	1
Di-n-octylphthalate	ND		ug/l	5.0	1.3	1
Diethyl phthalate	ND		ug/l	5.0	0.38	1
Dimethyl phthalate	ND		ug/l	5.0	1.8	1
Biphenyl	ND		ug/l	2.0	0.46	1
4-Chloroaniline	ND		ug/l	5.0	1.1	1
2-Nitroaniline	ND		ug/l	5.0	0.50	1
3-Nitroaniline	ND		ug/l	5.0	0.81	1
4-Nitroaniline	ND		ug/l	5.0	0.80	1

Project Name: RYE LAKE WFP
Project Number: 41.0162892.01
Lab Number: L2132604
Report Date: 06/25/21

SAMPLE RESULTS

Lab ID: L2132604-01
Client ID: MW-29
Sample Location: Not Specified
Date Collected: 06/16/21 10:50
Date Received: 06/16/21
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Dibenzofuran	ND		ug/l	2.0	0.50	1
1,2,4,5-Tetrachlorobenzene	ND		ug/l	10	0.44	1
Acetophenone	ND		ug/l	5.0	0.53	1
2,4,6-Trichlorophenol	ND		ug/l	5.0	0.61	1
p-Chloro-m-cresol	ND		ug/l	2.0	0.35	1
2-Chlorophenol	ND		ug/l	2.0	0.48	1
2,4-Dichlorophenol	ND		ug/l	5.0	0.41	1
2,4-Dimethylphenol	ND		ug/l	5.0	1.8	1
2-Nitrophenol	ND		ug/l	10	0.85	1
4-Nitrophenol	ND		ug/l	10	0.67	1
2,4-Dinitrophenol	ND		ug/l	20	6.6	1
4,6-Dinitro-o-cresol	ND		ug/l	10	1.8	1
Phenol	ND		ug/l	5.0	0.57	1
2-Methylphenol	ND		ug/l	5.0	0.49	1
3-Methylphenol/4-Methylphenol	ND		ug/l	5.0	0.48	1
2,4,5-Trichlorophenol	ND		ug/l	5.0	0.77	1
Benzoic Acid	ND		ug/l	50	2.6	1
Benzyl Alcohol	ND		ug/l	2.0	0.59	1
Carbazole	ND		ug/l	2.0	0.49	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	56		21-120
Phenol-d6	50		10-120
Nitrobenzene-d5	73		23-120
2-Fluorobiphenyl	58		15-120
2,4,6-Tribromophenol	57		10-120
4-Terphenyl-d14	64		41-149

Project Name: RYE LAKE WFP
Project Number: 41.0162892.01

Lab Number: L2132604
Report Date: 06/25/21

SAMPLE RESULTS

Lab ID: L2132604-01
Client ID: MW-29
Sample Location: Not Specified

Date Collected: 06/16/21 10:50
Date Received: 06/16/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8270D-SIM
Analytical Date: 06/24/21 12:54
Analyst: RP

Extraction Method: EPA 3510C
Extraction Date: 06/22/21 00:52

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Acenaphthene	0.03	J	ug/l	0.10	0.01	1
2-Chloronaphthalene	ND		ug/l	0.20	0.02	1
Fluoranthene	0.12		ug/l	0.10	0.02	1
Hexachlorobutadiene	ND		ug/l	0.50	0.05	1
Naphthalene	0.26		ug/l	0.10	0.05	1
Benzo(a)anthracene	0.05	J	ug/l	0.10	0.02	1
Benzo(a)pyrene	0.05	J	ug/l	0.10	0.02	1
Benzo(b)fluoranthene	0.06	J	ug/l	0.10	0.01	1
Benzo(k)fluoranthene	0.03	J	ug/l	0.10	0.01	1
Chrysene	0.04	J	ug/l	0.10	0.01	1
Acenaphthylene	0.03	J	ug/l	0.10	0.01	1
Anthracene	0.05	J	ug/l	0.10	0.01	1
Benzo(ghi)perylene	0.07	J	ug/l	0.10	0.01	1
Fluorene	0.05	J	ug/l	0.10	0.01	1
Phenanthrene	0.17		ug/l	0.10	0.02	1
Dibenzo(a,h)anthracene	0.02	J	ug/l	0.10	0.01	1
Indeno(1,2,3-cd)pyrene	0.07	J	ug/l	0.10	0.01	1
Pyrene	0.08	J	ug/l	0.10	0.02	1
2-Methylnaphthalene	0.04	J	ug/l	0.10	0.02	1
Pentachlorophenol	ND		ug/l	0.80	0.01	1
Hexachlorobenzene	ND		ug/l	0.80	0.01	1
Hexachloroethane	ND		ug/l	0.80	0.06	1

Project Name: RYE LAKE WFP
Lab Number: L2132604
Project Number: 41.0162892.01
Report Date: 06/25/21

SAMPLE RESULTS

Lab ID: L2132604-01
Client ID: MW-29
Sample Location: Not Specified
Date Collected: 06/16/21 10:50
Date Received: 06/16/21
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	60		21-120
Phenol-d6	48		10-120
Nitrobenzene-d5	73		23-120
2-Fluorobiphenyl	75		15-120
2,4,6-Tribromophenol	107		10-120
4-Terphenyl-d14	81		41-149

Project Name: RYE LAKE WFP
Project Number: 41.0162892.01

Lab Number: L2132604
Report Date: 06/25/21

SAMPLE RESULTS

Lab ID: L2132604-02
Client ID: MW-3A
Sample Location: Not Specified

Date Collected: 06/16/21 13:00
Date Received: 06/16/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8270D
Analytical Date: 06/22/21 19:48
Analyst: JG

Extraction Method: EPA 3510C
Extraction Date: 06/22/21 00:50

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
1,2,4-Trichlorobenzene	ND		ug/l	5.0	0.50	1
Bis(2-chloroethyl)ether	ND		ug/l	2.0	0.50	1
1,2-Dichlorobenzene	ND		ug/l	2.0	0.45	1
1,3-Dichlorobenzene	ND		ug/l	2.0	0.40	1
1,4-Dichlorobenzene	ND		ug/l	2.0	0.43	1
3,3'-Dichlorobenzidine	ND		ug/l	5.0	1.6	1
2,4-Dinitrotoluene	ND		ug/l	5.0	1.2	1
2,6-Dinitrotoluene	ND		ug/l	5.0	0.93	1
4-Chlorophenyl phenyl ether	ND		ug/l	2.0	0.49	1
4-Bromophenyl phenyl ether	ND		ug/l	2.0	0.38	1
Bis(2-chloroisopropyl)ether	ND		ug/l	2.0	0.53	1
Bis(2-chloroethoxy)methane	ND		ug/l	5.0	0.50	1
Hexachlorocyclopentadiene	ND		ug/l	20	0.69	1
Isophorone	ND		ug/l	5.0	1.2	1
Nitrobenzene	ND		ug/l	2.0	0.77	1
NDPA/DPA	ND		ug/l	2.0	0.42	1
n-Nitrosodi-n-propylamine	ND		ug/l	5.0	0.64	1
Bis(2-ethylhexyl)phthalate	ND		ug/l	3.0	1.5	1
Butyl benzyl phthalate	ND		ug/l	5.0	1.2	1
Di-n-butylphthalate	ND		ug/l	5.0	0.39	1
Di-n-octylphthalate	ND		ug/l	5.0	1.3	1
Diethyl phthalate	0.48	J	ug/l	5.0	0.38	1
Dimethyl phthalate	ND		ug/l	5.0	1.8	1
Biphenyl	ND		ug/l	2.0	0.46	1
4-Chloroaniline	ND		ug/l	5.0	1.1	1
2-Nitroaniline	ND		ug/l	5.0	0.50	1
3-Nitroaniline	ND		ug/l	5.0	0.81	1
4-Nitroaniline	ND		ug/l	5.0	0.80	1

Project Name: RYE LAKE WFP
Project Number: 41.0162892.01
Lab Number: L2132604
Report Date: 06/25/21

SAMPLE RESULTS

Lab ID: L2132604-02
Client ID: MW-3A
Sample Location: Not Specified
Date Collected: 06/16/21 13:00
Date Received: 06/16/21
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Dibenzofuran	ND		ug/l	2.0	0.50	1
1,2,4,5-Tetrachlorobenzene	ND		ug/l	10	0.44	1
Acetophenone	ND		ug/l	5.0	0.53	1
2,4,6-Trichlorophenol	ND		ug/l	5.0	0.61	1
p-Chloro-m-cresol	ND		ug/l	2.0	0.35	1
2-Chlorophenol	ND		ug/l	2.0	0.48	1
2,4-Dichlorophenol	ND		ug/l	5.0	0.41	1
2,4-Dimethylphenol	ND		ug/l	5.0	1.8	1
2-Nitrophenol	ND		ug/l	10	0.85	1
4-Nitrophenol	ND		ug/l	10	0.67	1
2,4-Dinitrophenol	ND		ug/l	20	6.6	1
4,6-Dinitro-o-cresol	ND		ug/l	10	1.8	1
Phenol	ND		ug/l	5.0	0.57	1
2-Methylphenol	ND		ug/l	5.0	0.49	1
3-Methylphenol/4-Methylphenol	ND		ug/l	5.0	0.48	1
2,4,5-Trichlorophenol	ND		ug/l	5.0	0.77	1
Benzoic Acid	ND		ug/l	50	2.6	1
Benzyl Alcohol	ND		ug/l	2.0	0.59	1
Carbazole	ND		ug/l	2.0	0.49	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	70		21-120
Phenol-d6	60		10-120
Nitrobenzene-d5	89		23-120
2-Fluorobiphenyl	67		15-120
2,4,6-Tribromophenol	61		10-120
4-Terphenyl-d14	69		41-149

Project Name: RYE LAKE WFP
Project Number: 41.0162892.01
Lab Number: L2132604
Report Date: 06/25/21

SAMPLE RESULTS

Lab ID: L2132604-02
Client ID: MW-3A
Sample Location: Not Specified

Date Collected: 06/16/21 13:00
Date Received: 06/16/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8270D-SIM
Analytical Date: 06/22/21 20:26
Analyst: JJW

Extraction Method: EPA 3510C
Extraction Date: 06/22/21 00:52

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Acenaphthene	ND		ug/l	0.10	0.01	1
2-Chloronaphthalene	ND		ug/l	0.20	0.02	1
Fluoranthene	ND		ug/l	0.10	0.02	1
Hexachlorobutadiene	ND		ug/l	0.50	0.05	1
Naphthalene	ND		ug/l	0.10	0.05	1
Benzo(a)anthracene	ND		ug/l	0.10	0.02	1
Benzo(a)pyrene	ND		ug/l	0.10	0.02	1
Benzo(b)fluoranthene	ND		ug/l	0.10	0.01	1
Benzo(k)fluoranthene	ND		ug/l	0.10	0.01	1
Chrysene	ND		ug/l	0.10	0.01	1
Acenaphthylene	ND		ug/l	0.10	0.01	1
Anthracene	ND		ug/l	0.10	0.01	1
Benzo(ghi)perylene	ND		ug/l	0.10	0.01	1
Fluorene	ND		ug/l	0.10	0.01	1
Phenanthrene	ND		ug/l	0.10	0.02	1
Dibenzo(a,h)anthracene	ND		ug/l	0.10	0.01	1
Indeno(1,2,3-cd)pyrene	ND		ug/l	0.10	0.01	1
Pyrene	ND		ug/l	0.10	0.02	1
2-Methylnaphthalene	ND		ug/l	0.10	0.02	1
Pentachlorophenol	ND		ug/l	0.80	0.01	1
Hexachlorobenzene	ND		ug/l	0.80	0.01	1
Hexachloroethane	ND		ug/l	0.80	0.06	1

Project Name: RYE LAKE WFP
Lab Number: L2132604
Project Number: 41.0162892.01
Report Date: 06/25/21

SAMPLE RESULTS

Lab ID: L2132604-02
Client ID: MW-3A
Sample Location: Not Specified
Date Collected: 06/16/21 13:00
Date Received: 06/16/21
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	67		21-120
Phenol-d6	62		10-120
Nitrobenzene-d5	76		23-120
2-Fluorobiphenyl	73		15-120
2,4,6-Tribromophenol	112		10-120
4-Terphenyl-d14	78		41-149

Project Name: RYE LAKE WFP
Project Number: 41.0162892.01
Lab Number: L2132604
Report Date: 06/25/21

SAMPLE RESULTS

Lab ID: L2132604-03
Client ID: EW-01
Sample Location: Not Specified

Date Collected: 06/16/21 14:15
Date Received: 06/16/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8270D
Analytical Date: 06/22/21 20:14
Analyst: JG

Extraction Method: EPA 3510C
Extraction Date: 06/22/21 00:50

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
1,2,4-Trichlorobenzene	ND		ug/l	5.0	0.50	1
Bis(2-chloroethyl)ether	ND		ug/l	2.0	0.50	1
1,2-Dichlorobenzene	ND		ug/l	2.0	0.45	1
1,3-Dichlorobenzene	ND		ug/l	2.0	0.40	1
1,4-Dichlorobenzene	ND		ug/l	2.0	0.43	1
3,3'-Dichlorobenzidine	ND		ug/l	5.0	1.6	1
2,4-Dinitrotoluene	ND		ug/l	5.0	1.2	1
2,6-Dinitrotoluene	ND		ug/l	5.0	0.93	1
4-Chlorophenyl phenyl ether	ND		ug/l	2.0	0.49	1
4-Bromophenyl phenyl ether	ND		ug/l	2.0	0.38	1
Bis(2-chloroisopropyl)ether	ND		ug/l	2.0	0.53	1
Bis(2-chloroethoxy)methane	ND		ug/l	5.0	0.50	1
Hexachlorocyclopentadiene	ND		ug/l	20	0.69	1
Isophorone	ND		ug/l	5.0	1.2	1
Nitrobenzene	ND		ug/l	2.0	0.77	1
NDPA/DPA	ND		ug/l	2.0	0.42	1
n-Nitrosodi-n-propylamine	ND		ug/l	5.0	0.64	1
Bis(2-ethylhexyl)phthalate	ND		ug/l	3.0	1.5	1
Butyl benzyl phthalate	ND		ug/l	5.0	1.2	1
Di-n-butylphthalate	ND		ug/l	5.0	0.39	1
Di-n-octylphthalate	ND		ug/l	5.0	1.3	1
Diethyl phthalate	ND		ug/l	5.0	0.38	1
Dimethyl phthalate	ND		ug/l	5.0	1.8	1
Biphenyl	ND		ug/l	2.0	0.46	1
4-Chloroaniline	ND		ug/l	5.0	1.1	1
2-Nitroaniline	ND		ug/l	5.0	0.50	1
3-Nitroaniline	ND		ug/l	5.0	0.81	1
4-Nitroaniline	ND		ug/l	5.0	0.80	1

Project Name: RYE LAKE WFP **Lab Number:** L2132604

Project Number: 41.0162892.01 **Report Date:** 06/25/21

SAMPLE RESULTS

Lab ID: L2132604-03 Date Collected: 06/16/21 14:15

Client ID: EW-01 Date Received: 06/16/21

Sample Location: Not Specified Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Dibenzofuran	ND		ug/l	2.0	0.50	1
1,2,4,5-Tetrachlorobenzene	ND		ug/l	10	0.44	1
Acetophenone	ND		ug/l	5.0	0.53	1
2,4,6-Trichlorophenol	ND		ug/l	5.0	0.61	1
p-Chloro-m-cresol	ND		ug/l	2.0	0.35	1
2-Chlorophenol	ND		ug/l	2.0	0.48	1
2,4-Dichlorophenol	ND		ug/l	5.0	0.41	1
2,4-Dimethylphenol	ND		ug/l	5.0	1.8	1
2-Nitrophenol	ND		ug/l	10	0.85	1
4-Nitrophenol	ND		ug/l	10	0.67	1
2,4-Dinitrophenol	ND		ug/l	20	6.6	1
4,6-Dinitro-o-cresol	ND		ug/l	10	1.8	1
Phenol	ND		ug/l	5.0	0.57	1
2-Methylphenol	ND		ug/l	5.0	0.49	1
3-Methylphenol/4-Methylphenol	ND		ug/l	5.0	0.48	1
2,4,5-Trichlorophenol	ND		ug/l	5.0	0.77	1
Benzoic Acid	ND		ug/l	50	2.6	1
Benzyl Alcohol	ND		ug/l	2.0	0.59	1
Carbazole	ND		ug/l	2.0	0.49	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	68		21-120
Phenol-d6	60		10-120
Nitrobenzene-d5	81		23-120
2-Fluorobiphenyl	62		15-120
2,4,6-Tribromophenol	54		10-120
4-Terphenyl-d14	67		41-149

Project Name: RYE LAKE WFP
Project Number: 41.0162892.01

Lab Number: L2132604
Report Date: 06/25/21

SAMPLE RESULTS

Lab ID: L2132604-03
Client ID: EW-01
Sample Location: Not Specified

Date Collected: 06/16/21 14:15
Date Received: 06/16/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8270D-SIM
Analytical Date: 06/22/21 20:45
Analyst: JJW

Extraction Method: EPA 3510C
Extraction Date: 06/22/21 00:52

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Acenaphthene	ND		ug/l	0.10	0.01	1
2-Chloronaphthalene	ND		ug/l	0.20	0.02	1
Fluoranthene	ND		ug/l	0.10	0.02	1
Hexachlorobutadiene	ND		ug/l	0.50	0.05	1
Naphthalene	ND		ug/l	0.10	0.05	1
Benzo(a)anthracene	ND		ug/l	0.10	0.02	1
Benzo(a)pyrene	ND		ug/l	0.10	0.02	1
Benzo(b)fluoranthene	ND		ug/l	0.10	0.01	1
Benzo(k)fluoranthene	ND		ug/l	0.10	0.01	1
Chrysene	ND		ug/l	0.10	0.01	1
Acenaphthylene	ND		ug/l	0.10	0.01	1
Anthracene	ND		ug/l	0.10	0.01	1
Benzo(ghi)perylene	ND		ug/l	0.10	0.01	1
Fluorene	ND		ug/l	0.10	0.01	1
Phenanthrene	ND		ug/l	0.10	0.02	1
Dibenzo(a,h)anthracene	ND		ug/l	0.10	0.01	1
Indeno(1,2,3-cd)pyrene	ND		ug/l	0.10	0.01	1
Pyrene	ND		ug/l	0.10	0.02	1
2-Methylnaphthalene	ND		ug/l	0.10	0.02	1
Pentachlorophenol	ND		ug/l	0.80	0.01	1
Hexachlorobenzene	ND		ug/l	0.80	0.01	1
Hexachloroethane	ND		ug/l	0.80	0.06	1

Project Name: RYE LAKE WFP
Lab Number: L2132604
Project Number: 41.0162892.01
Report Date: 06/25/21

SAMPLE RESULTS

Lab ID: L2132604-03
Client ID: EW-01
Sample Location: Not Specified

Date Collected: 06/16/21 14:15
Date Received: 06/16/21
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	71		21-120
Phenol-d6	62		10-120
Nitrobenzene-d5	82		23-120
2-Fluorobiphenyl	77		15-120
2,4,6-Tribromophenol	100		10-120
4-Terphenyl-d14	86		41-149

Project Name: RYE LAKE WFP
Project Number: 41.0162892.01

Lab Number: L2132604
Report Date: 06/25/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 06/22/21 12:06
Analyst: JG

Extraction Method: EPA 3510C
Extraction Date: 06/21/21 13:44

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 01-03 Batch: WG1514908-1					
Acenaphthene	ND		ug/l	2.0	0.44
1,2,4-Trichlorobenzene	ND		ug/l	5.0	0.50
Hexachlorobenzene	ND		ug/l	2.0	0.46
Bis(2-chloroethyl)ether	ND		ug/l	2.0	0.50
2-Chloronaphthalene	ND		ug/l	2.0	0.44
1,2-Dichlorobenzene	ND		ug/l	2.0	0.45
1,3-Dichlorobenzene	ND		ug/l	2.0	0.40
1,4-Dichlorobenzene	ND		ug/l	2.0	0.43
3,3'-Dichlorobenzidine	ND		ug/l	5.0	1.6
2,4-Dinitrotoluene	ND		ug/l	5.0	1.2
2,6-Dinitrotoluene	ND		ug/l	5.0	0.93
Fluoranthene	ND		ug/l	2.0	0.26
4-Chlorophenyl phenyl ether	ND		ug/l	2.0	0.49
4-Bromophenyl phenyl ether	ND		ug/l	2.0	0.38
Bis(2-chloroisopropyl)ether	ND		ug/l	2.0	0.53
Bis(2-chloroethoxy)methane	ND		ug/l	5.0	0.50
Hexachlorobutadiene	ND		ug/l	2.0	0.66
Hexachlorocyclopentadiene	ND		ug/l	20	0.69
Hexachloroethane	ND		ug/l	2.0	0.58
Isophorone	ND		ug/l	5.0	1.2
Naphthalene	ND		ug/l	2.0	0.46
Nitrobenzene	ND		ug/l	2.0	0.77
NDPA/DPA	ND		ug/l	2.0	0.42
n-Nitrosodi-n-propylamine	ND		ug/l	5.0	0.64
Bis(2-ethylhexyl)phthalate	ND		ug/l	3.0	1.5
Butyl benzyl phthalate	ND		ug/l	5.0	1.2
Di-n-butylphthalate	ND		ug/l	5.0	0.39
Di-n-octylphthalate	ND		ug/l	5.0	1.3
Diethyl phthalate	ND		ug/l	5.0	0.38

Project Name: RYE LAKE WFP
Project Number: 41.0162892.01

Lab Number: L2132604
Report Date: 06/25/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 06/22/21 12:06
Analyst: JG

Extraction Method: EPA 3510C
Extraction Date: 06/21/21 13:44

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 01-03 Batch: WG1514908-1					
Dimethyl phthalate	ND		ug/l	5.0	1.8
Benzo(a)anthracene	ND		ug/l	2.0	0.32
Benzo(a)pyrene	ND		ug/l	2.0	0.41
Benzo(b)fluoranthene	ND		ug/l	2.0	0.35
Benzo(k)fluoranthene	ND		ug/l	2.0	0.37
Chrysene	ND		ug/l	2.0	0.34
Acenaphthylene	ND		ug/l	2.0	0.46
Anthracene	ND		ug/l	2.0	0.33
Benzo(ghi)perylene	ND		ug/l	2.0	0.30
Fluorene	ND		ug/l	2.0	0.41
Phenanthrene	ND		ug/l	2.0	0.33
Dibenzo(a,h)anthracene	ND		ug/l	2.0	0.32
Indeno(1,2,3-cd)pyrene	ND		ug/l	2.0	0.40
Pyrene	ND		ug/l	2.0	0.28
Biphenyl	ND		ug/l	2.0	0.46
4-Chloroaniline	ND		ug/l	5.0	1.1
2-Nitroaniline	ND		ug/l	5.0	0.50
3-Nitroaniline	ND		ug/l	5.0	0.81
4-Nitroaniline	ND		ug/l	5.0	0.80
Dibenzofuran	ND		ug/l	2.0	0.50
2-Methylnaphthalene	ND		ug/l	2.0	0.45
1,2,4,5-Tetrachlorobenzene	ND		ug/l	10	0.44
Acetophenone	ND		ug/l	5.0	0.53
2,4,6-Trichlorophenol	ND		ug/l	5.0	0.61
p-Chloro-m-cresol	ND		ug/l	2.0	0.35
2-Chlorophenol	ND		ug/l	2.0	0.48
2,4-Dichlorophenol	ND		ug/l	5.0	0.41
2,4-Dimethylphenol	ND		ug/l	5.0	1.8
2-Nitrophenol	ND		ug/l	10	0.85

Project Name: RYE LAKE WFP
Project Number: 41.0162892.01
Lab Number: L2132604
Report Date: 06/25/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 06/22/21 12:06
Analyst: JG

Extraction Method: EPA 3510C
Extraction Date: 06/21/21 13:44

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 01-03 Batch: WG1514908-1					
4-Nitrophenol	ND		ug/l	10	0.67
2,4-Dinitrophenol	ND		ug/l	20	6.6
4,6-Dinitro-o-cresol	ND		ug/l	10	1.8
Pentachlorophenol	ND		ug/l	10	1.8
Phenol	ND		ug/l	5.0	0.57
2-Methylphenol	ND		ug/l	5.0	0.49
3-Methylphenol/4-Methylphenol	ND		ug/l	5.0	0.48
2,4,5-Trichlorophenol	ND		ug/l	5.0	0.77
Benzoic Acid	ND		ug/l	50	2.6
Benzyl Alcohol	ND		ug/l	2.0	0.59
Carbazole	ND		ug/l	2.0	0.49

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	77		21-120
Phenol-d6	68		10-120
Nitrobenzene-d5	100		23-120
2-Fluorobiphenyl	83		15-120
2,4,6-Tribromophenol	83		10-120
4-Terphenyl-d14	93		41-149

Project Name: RYE LAKE WFP
Project Number: 41.0162892.01
Lab Number: L2132604
Report Date: 06/25/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D-SIM
Analytical Date: 06/22/21 19:06
Analyst: DV

Extraction Method: EPA 3510C
Extraction Date: 06/21/21 13:54

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 01-03 Batch: WG1514912-1					
Acenaphthene	ND		ug/l	0.10	0.01
2-Chloronaphthalene	ND		ug/l	0.20	0.02
Fluoranthene	ND		ug/l	0.10	0.02
Hexachlorobutadiene	ND		ug/l	0.50	0.05
Naphthalene	ND		ug/l	0.10	0.05
Benzo(a)anthracene	ND		ug/l	0.10	0.02
Benzo(a)pyrene	ND		ug/l	0.10	0.02
Benzo(b)fluoranthene	ND		ug/l	0.10	0.01
Benzo(k)fluoranthene	ND		ug/l	0.10	0.01
Chrysene	ND		ug/l	0.10	0.01
Acenaphthylene	ND		ug/l	0.10	0.01
Anthracene	ND		ug/l	0.10	0.01
Benzo(ghi)perylene	ND		ug/l	0.10	0.01
Fluorene	ND		ug/l	0.10	0.01
Phenanthrene	ND		ug/l	0.10	0.02
Dibenzo(a,h)anthracene	ND		ug/l	0.10	0.01
Indeno(1,2,3-cd)pyrene	ND		ug/l	0.10	0.01
Pyrene	ND		ug/l	0.10	0.02
2-Methylnaphthalene	ND		ug/l	0.10	0.02
Pentachlorophenol	ND		ug/l	0.80	0.01
Hexachlorobenzene	ND		ug/l	0.80	0.01
Hexachloroethane	ND		ug/l	0.80	0.06

Project Name: RYE LAKE WFP
Project Number: 41.0162892.01
Lab Number: L2132604
Report Date: 06/25/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D-SIM
Analytical Date: 06/22/21 19:06
Analyst: DV

Extraction Method: EPA 3510C
Extraction Date: 06/21/21 13:54

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 01-03 Batch: WG1514912-1					

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	61		21-120
Phenol-d6	50		10-120
Nitrobenzene-d5	70		23-120
2-Fluorobiphenyl	69		15-120
2,4,6-Tribromophenol	106		10-120
4-Terphenyl-d14	84		41-149

Lab Control Sample Analysis
Batch Quality Control

Project Name: RYE LAKE WFP
Project Number: 41.0162892.01

Lab Number: L2132604
Report Date: 06/25/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-03 Batch: WG1514908-2 WG1514908-3								
Acenaphthene	69		66		37-111	4		30
1,2,4-Trichlorobenzene	67		63		39-98	6		30
Hexachlorobenzene	72		72		40-140	0		30
Bis(2-chloroethyl)ether	76		74		40-140	3		30
2-Chloronaphthalene	66		66		40-140	0		30
1,2-Dichlorobenzene	62		59		40-140	5		30
1,3-Dichlorobenzene	63		56		40-140	12		30
1,4-Dichlorobenzene	65		59		36-97	10		30
3,3'-Dichlorobenzidine	58		59		40-140	2		30
2,4-Dinitrotoluene	79		85		48-143	7		30
2,6-Dinitrotoluene	79		81		40-140	3		30
Fluoranthene	74		73		40-140	1		30
4-Chlorophenyl phenyl ether	76		76		40-140	0		30
4-Bromophenyl phenyl ether	76		75		40-140	1		30
Bis(2-chloroisopropyl)ether	97		93		40-140	4		30
Bis(2-chloroethoxy)methane	77		73		40-140	5		30
Hexachlorobutadiene	68		64		40-140	6		30
Hexachlorocyclopentadiene	63		64		40-140	2		30
Hexachloroethane	70		72		40-140	3		30
Isophorone	70		66		40-140	6		30
Naphthalene	63		65		40-140	3		30
Nitrobenzene	83		82		40-140	1		30
NDPA/DPA	72		71		40-140	1		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: RYE LAKE WFP
Project Number: 41.0162892.01

Lab Number: L2132604
Report Date: 06/25/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-03 Batch: WG1514908-2 WG1514908-3								
n-Nitrosodi-n-propylamine	81		83		29-132	2		30
Bis(2-ethylhexyl)phthalate	85		78		40-140	9		30
Butyl benzyl phthalate	81		79		40-140	3		30
Di-n-butylphthalate	74		74		40-140	0		30
Di-n-octylphthalate	75		70		40-140	7		30
Diethyl phthalate	78		75		40-140	4		30
Dimethyl phthalate	70		70		40-140	0		30
Benzo(a)anthracene	72		71		40-140	1		30
Benzo(a)pyrene	71		70		40-140	1		30
Benzo(b)fluoranthene	73		68		40-140	7		30
Benzo(k)fluoranthene	71		70		40-140	1		30
Chrysene	74		73		40-140	1		30
Acenaphthylene	65		64		45-123	2		30
Anthracene	68		71		40-140	4		30
Benzo(ghi)perylene	70		66		40-140	6		30
Fluorene	72		71		40-140	1		30
Phenanthrene	68		70		40-140	3		30
Dibenzo(a,h)anthracene	72		70		40-140	3		30
Indeno(1,2,3-cd)pyrene	63		63		40-140	0		30
Pyrene	74		74		26-127	0		30
Biphenyl	68		66		40-140	3		30
4-Chloroaniline	82		84		40-140	2		30
2-Nitroaniline	80		78		52-143	3		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: RYE LAKE WFP
Project Number: 41.0162892.01

Lab Number: L2132604
Report Date: 06/25/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-03 Batch: WG1514908-2 WG1514908-3								
3-Nitroaniline	75		74		25-145	1		30
4-Nitroaniline	78		79		51-143	1		30
Dibenzofuran	69		70		40-140	1		30
2-Methylnaphthalene	65		64		40-140	2		30
1,2,4,5-Tetrachlorobenzene	72		69		2-134	4		30
Acetophenone	64		67		39-129	5		30
2,4,6-Trichlorophenol	75		77		30-130	3		30
p-Chloro-m-cresol	83		85		23-97	2		30
2-Chlorophenol	72		71		27-123	1		30
2,4-Dichlorophenol	73		75		30-130	3		30
2,4-Dimethylphenol	70		69		30-130	1		30
2-Nitrophenol	85		83		30-130	2		30
4-Nitrophenol	**92**	Q	**92**	Q	10-80	0		30
2,4-Dinitrophenol	100		100		20-130	0		30
4,6-Dinitro-o-cresol	97		98		20-164	1		30
Pentachlorophenol	89		92		9-103	3		30
Phenol	62		58		12-110	7		30
2-Methylphenol	72		73		30-130	1		30
3-Methylphenol/4-Methylphenol	72		72		30-130	0		30
2,4,5-Trichlorophenol	79		77		30-130	3		30
Benzoic Acid	68		66		10-164	3		30
Benzyl Alcohol	80		76		26-116	5		30
Carbazole	72		73		55-144	1		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: RYE LAKE WFP
Project Number: 41.0162892.01

Lab Number: L2132604
Report Date: 06/25/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-03 Batch: WG1514908-2 WG1514908-3								

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	66		64		21-120
Phenol-d6	61		62		10-120
Nitrobenzene-d5	78		79		23-120
2-Fluorobiphenyl	66		65		15-120
2,4,6-Tribromophenol	73		76		10-120
4-Terphenyl-d14	77		75		41-149

Lab Control Sample Analysis
Batch Quality Control

Project Name: RYE LAKE WFP
Project Number: 41.0162892.01

Lab Number: L2132604
Report Date: 06/25/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 01-03 Batch: WG1514912-2 WG1514912-3								
Acenaphthene	98		65		40-140	40		40
2-Chloronaphthalene	96		63		40-140	**42**	Q	40
Fluoranthene	106		72		40-140	38		40
Hexachlorobutadiene	86		56		40-140	**42**	Q	40
Naphthalene	91		60		40-140	**41**	Q	40
Benzo(a)anthracene	100		66		40-140	**41**	Q	40
Benzo(a)pyrene	105		71		40-140	39		40
Benzo(b)fluoranthene	113		71		40-140	**46**	Q	40
Benzo(k)fluoranthene	106		76		40-140	33		40
Chrysene	103		71		40-140	37		40
Acenaphthylene	96		63		40-140	**42**	Q	40
Anthracene	104		69		40-140	40		40
Benzo(ghi)perylene	101		69		40-140	38		40
Fluorene	106		70		40-140	**41**	Q	40
Phenanthrene	99		67		40-140	39		40
Dibenzo(a,h)anthracene	108		73		40-140	39		40
Indeno(1,2,3-cd)pyrene	103		70		40-140	38		40
Pyrene	104		70		40-140	39		40
2-Methylnaphthalene	95		63		40-140	**41**	Q	40
Pentachlorophenol	**157**	Q	105		40-140	40		40
Hexachlorobenzene	99		66		40-140	40		40
Hexachloroethane	88		58		40-140	**41**	Q	40

Lab Control Sample Analysis
Batch Quality Control

Project Name: RYE LAKE WFP
Project Number: 41.0162892.01

Lab Number: L2132604
Report Date: 06/25/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 01-03 Batch: WG1514912-2 WG1514912-3								

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	82		54		21-120
Phenol-d6	70		45		10-120
Nitrobenzene-d5	94		61		23-120
2-Fluorobiphenyl	91		61		15-120
2,4,6-Tribromophenol	**163**	Q	110		10-120
4-Terphenyl-d14	110		74		41-149

PCBS

Project Name: RYE LAKE WFP
Project Number: 41.0162892.01
Lab Number: L2132604
Report Date: 06/25/21

SAMPLE RESULTS

Lab ID: L2132604-01
Client ID: MW-29
Sample Location: Not Specified

Date Collected: 06/16/21 10:50
Date Received: 06/16/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8082A
Analytical Date: 06/24/21 10:19
Analyst: JM

Extraction Method: EPA 3510C
Extraction Date: 06/23/21 19:10
Cleanup Method: EPA 3665A
Cleanup Date: 06/24/21
Cleanup Method: EPA 3660B
Cleanup Date: 06/24/21

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Polychlorinated Biphenyls by GC - Westborough Lab							
Aroclor 1016	ND		ug/l	0.071	0.061	1	A
Aroclor 1221	ND		ug/l	0.071	0.061	1	A
Aroclor 1232	ND		ug/l	0.071	0.061	1	A
Aroclor 1242	ND		ug/l	0.071	0.061	1	A
Aroclor 1248	ND		ug/l	0.071	0.061	1	A
Aroclor 1254	ND		ug/l	0.071	0.061	1	B
Aroclor 1260	ND		ug/l	0.071	0.061	1	A
Aroclor 1262	ND		ug/l	0.071	0.061	1	A
Aroclor 1268	ND		ug/l	0.071	0.061	1	A
PCBs, Total	ND		ug/l	0.071	0.061	1	B

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	60		30-150	A
Decachlorobiphenyl	65		30-150	A
2,4,5,6-Tetrachloro-m-xylene	67		30-150	B
Decachlorobiphenyl	72		30-150	B

Project Name: RYE LAKE WFP
Project Number: 41.0162892.01
Lab Number: L2132604
Report Date: 06/25/21

SAMPLE RESULTS

Lab ID: L2132604-02
Client ID: MW-3A
Sample Location: Not Specified

Date Collected: 06/16/21 13:00
Date Received: 06/16/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8082A
Analytical Date: 06/24/21 10:26
Analyst: JM

Extraction Method: EPA 3510C
Extraction Date: 06/23/21 19:10
Cleanup Method: EPA 3665A
Cleanup Date: 06/24/21
Cleanup Method: EPA 3660B
Cleanup Date: 06/24/21

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Polychlorinated Biphenyls by GC - Westborough Lab							
Aroclor 1016	ND		ug/l	0.071	0.061	1	A
Aroclor 1221	ND		ug/l	0.071	0.061	1	A
Aroclor 1232	ND		ug/l	0.071	0.061	1	A
Aroclor 1242	ND		ug/l	0.071	0.061	1	A
Aroclor 1248	ND		ug/l	0.071	0.061	1	A
Aroclor 1254	ND		ug/l	0.071	0.061	1	B
Aroclor 1260	ND		ug/l	0.071	0.061	1	A
Aroclor 1262	ND		ug/l	0.071	0.061	1	A
Aroclor 1268	ND		ug/l	0.071	0.061	1	A
PCBs, Total	ND		ug/l	0.071	0.061	1	B

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	59		30-150	A
Decachlorobiphenyl	58		30-150	A
2,4,5,6-Tetrachloro-m-xylene	65		30-150	B
Decachlorobiphenyl	65		30-150	B

Project Name: RYE LAKE WFP
Project Number: 41.0162892.01
Lab Number: L2132604
Report Date: 06/25/21

SAMPLE RESULTS

Lab ID: L2132604-03
Client ID: EW-01
Sample Location: Not Specified

Date Collected: 06/16/21 14:15
Date Received: 06/16/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8082A
Analytical Date: 06/24/21 10:34
Analyst: JM

Extraction Method: EPA 3510C
Extraction Date: 06/23/21 19:10
Cleanup Method: EPA 3665A
Cleanup Date: 06/24/21
Cleanup Method: EPA 3660B
Cleanup Date: 06/24/21

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Polychlorinated Biphenyls by GC - Westborough Lab							
Aroclor 1016	ND		ug/l	0.071	0.061	1	A
Aroclor 1221	ND		ug/l	0.071	0.061	1	A
Aroclor 1232	ND		ug/l	0.071	0.061	1	A
Aroclor 1242	ND		ug/l	0.071	0.061	1	A
Aroclor 1248	ND		ug/l	0.071	0.061	1	A
Aroclor 1254	ND		ug/l	0.071	0.061	1	B
Aroclor 1260	ND		ug/l	0.071	0.061	1	A
Aroclor 1262	ND		ug/l	0.071	0.061	1	A
Aroclor 1268	ND		ug/l	0.071	0.061	1	A
PCBs, Total	ND		ug/l	0.071	0.061	1	B

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	60		30-150	A
Decachlorobiphenyl	52		30-150	A
2,4,5,6-Tetrachloro-m-xylene	65		30-150	B
Decachlorobiphenyl	61		30-150	B

Project Name: RYE LAKE WFP
Project Number: 41.0162892.01
Lab Number: L2132604
Report Date: 06/25/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8082A
Analytical Date: 06/24/21 09:55
Analyst: JM

Extraction Method: EPA 3510C
Extraction Date: 06/23/21 19:10
Cleanup Method: EPA 3665A
Cleanup Date: 06/24/21
Cleanup Method: EPA 3660B
Cleanup Date: 06/24/21

Parameter	Result	Qualifier	Units	RL	MDL	Column
Polychlorinated Biphenyls by GC - Westborough Lab for sample(s): 01-03 Batch: WG1516231-1						
Aroclor 1016	ND		ug/l	0.071	0.061	A
Aroclor 1221	ND		ug/l	0.071	0.061	A
Aroclor 1232	ND		ug/l	0.071	0.061	A
Aroclor 1242	ND		ug/l	0.071	0.061	A
Aroclor 1248	ND		ug/l	0.071	0.061	A
Aroclor 1254	ND		ug/l	0.071	0.061	A
Aroclor 1260	ND		ug/l	0.071	0.061	A
Aroclor 1262	ND		ug/l	0.071	0.061	A
Aroclor 1268	ND		ug/l	0.071	0.061	A
PCBs, Total	ND		ug/l	0.071	0.061	A

Surrogate	%Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	66		30-150	A
Decachlorobiphenyl	68		30-150	A
2,4,5,6-Tetrachloro-m-xylene	72		30-150	B
Decachlorobiphenyl	75		30-150	B

Lab Control Sample Analysis
Batch Quality Control

Project Name: RYE LAKE WFP
Project Number: 41.0162892.01

Lab Number: L2132604
Report Date: 06/25/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
Polychlorinated Biphenyls by GC - Westborough Lab Associated sample(s): 01-03 Batch: WG1516231-2 WG1516231-3									
Aroclor 1016	49		51		40-140	4		50	A
Aroclor 1260	49		50		40-140	2		50	A

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	55		57		30-150	A
Decachlorobiphenyl	56		59		30-150	A
2,4,5,6-Tetrachloro-m-xylene	60		61		30-150	B
Decachlorobiphenyl	64		63		30-150	B

PESTICIDES

Project Name: RYE LAKE WFP
Project Number: 41.0162892.01
Lab Number: L2132604
Report Date: 06/25/21

SAMPLE RESULTS

Lab ID: L2132604-01
Client ID: MW-29
Sample Location: Not Specified

Date Collected: 06/16/21 10:50
Date Received: 06/16/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8081B
Analytical Date: 06/24/21 12:54
Analyst: AR

Extraction Method: EPA 3510C
Extraction Date: 06/23/21 08:29

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Organochlorine Pesticides by GC - Westborough Lab							
Delta-BHC	ND		ug/l	0.014	0.003	1	A
Lindane	ND		ug/l	0.014	0.003	1	A
Alpha-BHC	ND		ug/l	0.014	0.003	1	A
Beta-BHC	ND		ug/l	0.014	0.004	1	A
Heptachlor	ND		ug/l	0.014	0.002	1	A
Aldrin	ND		ug/l	0.014	0.002	1	A
Heptachlor epoxide	ND		ug/l	0.014	0.003	1	A
Endrin	ND		ug/l	0.029	0.003	1	A
Endrin aldehyde	ND		ug/l	0.029	0.006	1	A
Endrin ketone	ND		ug/l	0.029	0.003	1	A
Dieldrin	ND		ug/l	0.029	0.003	1	A
4,4'-DDE	ND		ug/l	0.029	0.003	1	A
4,4'-DDD	ND		ug/l	0.029	0.003	1	A
4,4'-DDT	ND		ug/l	0.029	0.003	1	A
Endosulfan I	ND		ug/l	0.014	0.002	1	A
Endosulfan II	ND		ug/l	0.029	0.004	1	A
Endosulfan sulfate	ND		ug/l	0.029	0.003	1	A
Methoxychlor	ND		ug/l	0.143	0.005	1	A
Toxaphene	ND		ug/l	0.143	0.045	1	A
cis-Chlordane	ND		ug/l	0.014	0.005	1	A
trans-Chlordane	ND		ug/l	0.014	0.004	1	A
Chlordane	ND		ug/l	0.143	0.033	1	A

Project Name: RYE LAKE WFP **Lab Number:** L2132604

Project Number: 41.0162892.01 **Report Date:** 06/25/21

SAMPLE RESULTS

Lab ID: L2132604-01 Date Collected: 06/16/21 10:50

Client ID: MW-29 Date Received: 06/16/21

Sample Location: Not Specified Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Organochlorine Pesticides by GC - Westborough Lab							

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	40		30-150	A
Decachlorobiphenyl	54		30-150	A
2,4,5,6-Tetrachloro-m-xylene	36		30-150	B
Decachlorobiphenyl	40		30-150	B

Project Name: RYE LAKE WFP
Project Number: 41.0162892.01

Lab Number: L2132604
Report Date: 06/25/21

SAMPLE RESULTS

Lab ID: L2132604-01
Client ID: MW-29
Sample Location: Not Specified

Date Collected: 06/16/21 10:50
Date Received: 06/16/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8151A
Analytical Date: 06/19/21 13:14
Analyst: AR

Extraction Method: EPA 8151A
Extraction Date: 06/18/21 00:52

Methylation Date: 06/18/21 21:55

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Chlorinated Herbicides by GC - Westborough Lab							
2,4-D	ND		ug/l	10.0	0.498	1	A
2,4,5-T	ND		ug/l	2.00	0.531	1	A
2,4,5-TP (Silvex)	ND		ug/l	2.00	0.539	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DCAA	98		30-150	A
DCAA	98		30-150	B

Project Name: RYE LAKE WFP
Project Number: 41.0162892.01
Lab Number: L2132604
Report Date: 06/25/21

SAMPLE RESULTS

Lab ID: L2132604-02
Client ID: MW-3A
Sample Location: Not Specified

Date Collected: 06/16/21 13:00
Date Received: 06/16/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8081B
Analytical Date: 06/24/21 13:05
Analyst: AR

Extraction Method: EPA 3510C
Extraction Date: 06/23/21 08:29

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Organochlorine Pesticides by GC - Westborough Lab							
Delta-BHC	ND		ug/l	0.014	0.003	1	A
Lindane	ND		ug/l	0.014	0.003	1	A
Alpha-BHC	ND		ug/l	0.014	0.003	1	A
Beta-BHC	ND		ug/l	0.014	0.004	1	A
Heptachlor	ND		ug/l	0.014	0.002	1	A
Aldrin	ND		ug/l	0.014	0.002	1	A
Heptachlor epoxide	ND		ug/l	0.014	0.003	1	A
Endrin	ND		ug/l	0.029	0.003	1	A
Endrin aldehyde	ND		ug/l	0.029	0.006	1	A
Endrin ketone	ND		ug/l	0.029	0.003	1	A
Dieldrin	ND		ug/l	0.029	0.003	1	A
4,4'-DDE	ND		ug/l	0.029	0.003	1	A
4,4'-DDD	ND		ug/l	0.029	0.003	1	A
4,4'-DDT	ND		ug/l	0.029	0.003	1	A
Endosulfan I	ND		ug/l	0.014	0.002	1	A
Endosulfan II	ND		ug/l	0.029	0.004	1	A
Endosulfan sulfate	ND		ug/l	0.029	0.003	1	A
Methoxychlor	ND		ug/l	0.143	0.005	1	A
Toxaphene	ND		ug/l	0.143	0.045	1	A
cis-Chlordane	ND		ug/l	0.014	0.005	1	A
trans-Chlordane	ND		ug/l	0.014	0.004	1	A
Chlordane	ND		ug/l	0.143	0.033	1	A

Project Name: RYE LAKE WFP **Lab Number:** L2132604

Project Number: 41.0162892.01 **Report Date:** 06/25/21

SAMPLE RESULTS

Lab ID: L2132604-02 Date Collected: 06/16/21 13:00

Client ID: MW-3A Date Received: 06/16/21

Sample Location: Not Specified Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Organochlorine Pesticides by GC - Westborough Lab							

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	49		30-150	A
Decachlorobiphenyl	62		30-150	A
2,4,5,6-Tetrachloro-m-xylene	45		30-150	B
Decachlorobiphenyl	49		30-150	B

Project Name: RYE LAKE WFP
Project Number: 41.0162892.01

Lab Number: L2132604
Report Date: 06/25/21

SAMPLE RESULTS

Lab ID: L2132604-02
Client ID: MW-3A
Sample Location: Not Specified

Date Collected: 06/16/21 13:00
Date Received: 06/16/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8151A
Analytical Date: 06/19/21 13:32
Analyst: AR

Extraction Method: EPA 8151A
Extraction Date: 06/18/21 00:52

Methylation Date: 06/18/21 21:55

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Chlorinated Herbicides by GC - Westborough Lab							
2,4-D	ND		ug/l	10.0	0.498	1	A
2,4,5-T	ND		ug/l	2.00	0.531	1	A
2,4,5-TP (Silvex)	ND		ug/l	2.00	0.539	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DCAA	92		30-150	A
DCAA	91		30-150	B

Project Name: RYE LAKE WFP
Project Number: 41.0162892.01
Lab Number: L2132604
Report Date: 06/25/21

SAMPLE RESULTS

Lab ID: L2132604-03
Client ID: EW-01
Sample Location: Not Specified

Date Collected: 06/16/21 14:15
Date Received: 06/16/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8081B
Analytical Date: 06/24/21 13:16
Analyst: AR

Extraction Method: EPA 3510C
Extraction Date: 06/23/21 08:29

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Organochlorine Pesticides by GC - Westborough Lab							
Delta-BHC	ND		ug/l	0.014	0.003	1	A
Lindane	ND		ug/l	0.014	0.003	1	A
Alpha-BHC	ND		ug/l	0.014	0.003	1	A
Beta-BHC	ND		ug/l	0.014	0.004	1	A
Heptachlor	ND		ug/l	0.014	0.002	1	A
Aldrin	ND		ug/l	0.014	0.002	1	A
Heptachlor epoxide	ND		ug/l	0.014	0.003	1	A
Endrin	ND		ug/l	0.029	0.003	1	A
Endrin aldehyde	ND		ug/l	0.029	0.006	1	A
Endrin ketone	ND		ug/l	0.029	0.003	1	A
Dieldrin	ND		ug/l	0.029	0.003	1	A
4,4'-DDE	ND		ug/l	0.029	0.003	1	A
4,4'-DDD	ND		ug/l	0.029	0.003	1	A
4,4'-DDT	ND		ug/l	0.029	0.003	1	A
Endosulfan I	ND		ug/l	0.014	0.002	1	A
Endosulfan II	ND		ug/l	0.029	0.004	1	A
Endosulfan sulfate	ND		ug/l	0.029	0.003	1	A
Methoxychlor	ND		ug/l	0.143	0.005	1	A
Toxaphene	ND		ug/l	0.143	0.045	1	A
cis-Chlordane	ND		ug/l	0.014	0.005	1	A
trans-Chlordane	ND		ug/l	0.014	0.004	1	A
Chlordane	ND		ug/l	0.143	0.033	1	A

Project Name: RYE LAKE WFP
Lab Number: L2132604
Project Number: 41.0162892.01
Report Date: 06/25/21

SAMPLE RESULTS

Lab ID: L2132604-03
Client ID: EW-01
Sample Location: Not Specified

Date Collected: 06/16/21 14:15
Date Received: 06/16/21
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Organochlorine Pesticides by GC - Westborough Lab							

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	42		30-150	A
Decachlorobiphenyl	43		30-150	A
2,4,5,6-Tetrachloro-m-xylene	39		30-150	B
Decachlorobiphenyl	34		30-150	B

Project Name: RYE LAKE WFP
Project Number: 41.0162892.01

Lab Number: L2132604
Report Date: 06/25/21

SAMPLE RESULTS

Lab ID: L2132604-03
Client ID: EW-01
Sample Location: Not Specified

Date Collected: 06/16/21 14:15
Date Received: 06/16/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water
Analytical Method: 1,8151A
Analytical Date: 06/19/21 13:51
Analyst: AR

Extraction Method: EPA 8151A
Extraction Date: 06/18/21 00:52

Methylation Date: 06/18/21 21:55

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Column
Chlorinated Herbicides by GC - Westborough Lab							
2,4-D	ND		ug/l	10.0	0.498	1	A
2,4,5-T	ND		ug/l	2.00	0.531	1	A
2,4,5-TP (Silvex)	ND		ug/l	2.00	0.539	1	A

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DCAA	97		30-150	A
DCAA	93		30-150	B

Project Name: RYE LAKE WFP
Project Number: 41.0162892.01
Lab Number: L2132604
Report Date: 06/25/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8151A
Analytical Date: 06/19/21 11:24
Analyst: AR

Extraction Method: EPA 8151A
Extraction Date: 06/17/21 10:16

Methylation Date: 06/18/21 21:55

Parameter	Result	Qualifier	Units	RL	MDL	Column
Chlorinated Herbicides by GC - Westborough Lab for sample(s): 01-03 Batch: WG1513385-1						
2,4-D	ND		ug/l	10.0	0.498	A
2,4,5-T	ND		ug/l	2.00	0.531	A
2,4,5-TP (Silvex)	ND		ug/l	2.00	0.539	A

Surrogate	%Recovery	Qualifier	Acceptance Criteria	Column
DCAA	95		30-150	A
DCAA	90		30-150	B

Project Name: RYE LAKE WFP
Project Number: 41.0162892.01
Lab Number: L2132604
Report Date: 06/25/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8081B
Analytical Date: 06/24/21 12:21
Analyst: AR

Extraction Method: EPA 3510C
Extraction Date: 06/23/21 08:29

Parameter	Result	Qualifier	Units	RL	MDL	Column
Organochlorine Pesticides by GC - Westborough Lab for sample(s): 01-03 Batch: WG1515832-1						
Delta-BHC	ND		ug/l	0.014	0.003	A
Lindane	ND		ug/l	0.014	0.003	A
Alpha-BHC	ND		ug/l	0.014	0.003	A
Beta-BHC	ND		ug/l	0.014	0.004	A
Heptachlor	ND		ug/l	0.014	0.002	A
Aldrin	ND		ug/l	0.014	0.002	A
Heptachlor epoxide	ND		ug/l	0.014	0.003	A
Endrin	ND		ug/l	0.029	0.003	A
Endrin aldehyde	ND		ug/l	0.029	0.006	A
Endrin ketone	ND		ug/l	0.029	0.003	A
Dieldrin	ND		ug/l	0.029	0.003	A
4,4'-DDE	ND		ug/l	0.029	0.003	A
4,4'-DDD	ND		ug/l	0.029	0.003	A
4,4'-DDT	ND		ug/l	0.029	0.003	A
Endosulfan I	ND		ug/l	0.014	0.002	A
Endosulfan II	ND		ug/l	0.029	0.004	A
Endosulfan sulfate	ND		ug/l	0.029	0.003	A
Methoxychlor	ND		ug/l	0.143	0.005	A
Toxaphene	ND		ug/l	0.143	0.045	A
cis-Chlordane	ND		ug/l	0.014	0.005	A
trans-Chlordane	ND		ug/l	0.014	0.004	A
Chlordane	ND		ug/l	0.143	0.033	A

Project Name: RYE LAKE WFP
Project Number: 41.0162892.01
Lab Number: L2132604
Report Date: 06/25/21

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8081B
Analytical Date: 06/24/21 12:21
Analyst: AR

Extraction Method: EPA 3510C
Extraction Date: 06/23/21 08:29

Parameter	Result	Qualifier	Units	RL	MDL	Column
Organochlorine Pesticides by GC - Westborough Lab for sample(s): 01-03 Batch: WG1515832-1						

Surrogate	%Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	47		30-150	A
Decachlorobiphenyl	64		30-150	A
2,4,5,6-Tetrachloro-m-xylene	45		30-150	B
Decachlorobiphenyl	52		30-150	B

Lab Control Sample Analysis

Batch Quality Control

Project Name: RYE LAKE WFP

Project Number: 41.0162892.01

Lab Number: L2132604

Report Date: 06/25/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
Chlorinated Herbicides by GC - Westborough Lab Associated sample(s): 01-03 Batch: WG1513385-2 WG1513385-3									
2,4-D	90		94		30-150	4		25	A
2,4,5-T	86		89		30-150	3		25	A
2,4,5-TP (Silvex)	84		87		30-150	4		25	A

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria	Column
DCAA	95		98		30-150	A
DCAA	96		99		30-150	B

Lab Control Sample Analysis
Batch Quality Control

Project Name: RYE LAKE WFP
Project Number: 41.0162892.01

Lab Number: L2132604
Report Date: 06/25/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
Organochlorine Pesticides by GC - Westborough Lab Associated sample(s): 01-03 Batch: WG1515832-2 WG1515832-3									
Delta-BHC	36		39		30-150	7		20	A
Lindane	50		52		30-150	4		20	A
Alpha-BHC	38		45		30-150	17		20	A
Beta-BHC	41		45		30-150	9		20	A
Heptachlor	41		48		30-150	16		20	A
Aldrin	37		45		30-150	20		20	A
Heptachlor epoxide	39		46		30-150	17		20	A
Endrin	40		46		30-150	15		20	A
Endrin aldehyde	38		40		30-150	4		20	A
Endrin ketone	45		50		30-150	11		20	A
Dieldrin	41		50		30-150	19		20	A
4,4'-DDE	38		47		30-150	20		20	A
4,4'-DDD	40		47		30-150	16		20	A
4,4'-DDT	44		51		30-150	14		20	A
Endosulfan I	38		45		30-150	15		20	A
Endosulfan II	42		48		30-150	13		20	A
Endosulfan sulfate	40		44		30-150	10		20	A
Methoxychlor	49		55		30-150	13		20	A
cis-Chlordane	36		43		30-150	16		20	A
trans-Chlordane	41		49		30-150	18		20	A

Lab Control Sample Analysis

Batch Quality Control

Project Name: RYE LAKE WFP

Project Number: 41.0162892.01

Lab Number: L2132604

Report Date: 06/25/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Organochlorine Pesticides by GC - Westborough Lab Associated sample(s): 01-03 Batch: WG1515832-2 WG1515832-3								

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	42		43		30-150	A
Decachlorobiphenyl	54		55		30-150	A
2,4,5,6-Tetrachloro-m-xylene	39		41		30-150	B
Decachlorobiphenyl	42		44		30-150	B

METALS

Project Name: RYE LAKE WFP
Project Number: 41.0162892.01
Lab Number: L2132604
Report Date: 06/25/21

SAMPLE RESULTS

Lab ID: L2132604-01
Client ID: MW-29
Sample Location: Not Specified
Sample Depth:
Matrix: Water

Date Collected: 06/16/21 10:50
Date Received: 06/16/21
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Aluminum, Total	0.133		mg/l	0.0100	0.00327	1	06/21/21 15:42	06/23/21 21:03	EPA 3005A	1,6020B	CD
Antimony, Total	ND		mg/l	0.00400	0.00042	1	06/21/21 15:42	06/23/21 21:03	EPA 3005A	1,6020B	CD
Arsenic, Total	ND		mg/l	0.00050	0.00016	1	06/21/21 15:42	06/23/21 21:03	EPA 3005A	1,6020B	CD
Barium, Total	0.04901		mg/l	0.00050	0.00017	1	06/21/21 15:42	06/23/21 21:03	EPA 3005A	1,6020B	CD
Beryllium, Total	ND		mg/l	0.00050	0.00010	1	06/21/21 15:42	06/23/21 21:03	EPA 3005A	1,6020B	CD
Cadmium, Total	ND		mg/l	0.00020	0.00005	1	06/21/21 15:42	06/23/21 21:03	EPA 3005A	1,6020B	CD
Calcium, Total	31.6		mg/l	0.100	0.0394	1	06/21/21 15:42	06/23/21 21:03	EPA 3005A	1,6020B	CD
Chromium, Total	0.00085	J	mg/l	0.00100	0.00017	1	06/21/21 15:42	06/23/21 21:03	EPA 3005A	1,6020B	CD
Cobalt, Total	0.00058		mg/l	0.00050	0.00016	1	06/21/21 15:42	06/23/21 21:03	EPA 3005A	1,6020B	CD
Copper, Total	0.00074	J	mg/l	0.00100	0.00038	1	06/21/21 15:42	06/23/21 21:03	EPA 3005A	1,6020B	CD
Iron, Total	0.267		mg/l	0.0500	0.0191	1	06/21/21 15:42	06/23/21 21:03	EPA 3005A	1,6020B	CD
Lead, Total	ND		mg/l	0.00100	0.00034	1	06/21/21 15:42	06/23/21 21:03	EPA 3005A	1,6020B	CD
Magnesium, Total	12.4		mg/l	0.0700	0.0242	1	06/21/21 15:42	06/23/21 21:03	EPA 3005A	1,6020B	CD
Manganese, Total	0.08365		mg/l	0.00100	0.00044	1	06/21/21 15:42	06/23/21 21:03	EPA 3005A	1,6020B	CD
Mercury, Total	ND		mg/l	0.00020	0.00009	1	06/21/21 15:46	06/24/21 15:02	EPA 7470A	1,7470A	OU
Nickel, Total	0.00151	J	mg/l	0.00200	0.00055	1	06/21/21 15:42	06/23/21 21:03	EPA 3005A	1,6020B	CD
Potassium, Total	2.80		mg/l	0.100	0.0309	1	06/21/21 15:42	06/23/21 21:03	EPA 3005A	1,6020B	CD
Selenium, Total	ND		mg/l	0.00500	0.00173	1	06/21/21 15:42	06/23/21 21:03	EPA 3005A	1,6020B	CD
Silver, Total	ND		mg/l	0.00040	0.00016	1	06/21/21 15:42	06/23/21 21:03	EPA 3005A	1,6020B	CD
Sodium, Total	8.75		mg/l	0.100	0.0293	1	06/21/21 15:42	06/23/21 21:03	EPA 3005A	1,6020B	CD
Thallium, Total	ND		mg/l	0.00100	0.00014	1	06/21/21 15:42	06/23/21 21:03	EPA 3005A	1,6020B	CD
Vanadium, Total	ND		mg/l	0.00500	0.00157	1	06/21/21 15:42	06/23/21 21:03	EPA 3005A	1,6020B	CD
Zinc, Total	0.00417	J	mg/l	0.01000	0.00341	1	06/21/21 15:42	06/23/21 21:03	EPA 3005A	1,6020B	CD

Project Name: RYE LAKE WFP
Project Number: 41.0162892.01
Lab Number: L2132604
Report Date: 06/25/21

SAMPLE RESULTS

Lab ID: L2132604-02
Client ID: MW-3A
Sample Location: Not Specified
Date Collected: 06/16/21 13:00
Date Received: 06/16/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Aluminum, Total	0.0381		mg/l	0.0100	0.00327	1	06/21/21 15:42	06/23/21 21:08	EPA 3005A	1,6020B	CD
Antimony, Total	ND		mg/l	0.00400	0.00042	1	06/21/21 15:42	06/23/21 21:08	EPA 3005A	1,6020B	CD
Arsenic, Total	ND		mg/l	0.00050	0.00016	1	06/21/21 15:42	06/23/21 21:08	EPA 3005A	1,6020B	CD
Barium, Total	0.02402		mg/l	0.00050	0.00017	1	06/21/21 15:42	06/23/21 21:08	EPA 3005A	1,6020B	CD
Beryllium, Total	ND		mg/l	0.00050	0.00010	1	06/21/21 15:42	06/23/21 21:08	EPA 3005A	1,6020B	CD
Cadmium, Total	ND		mg/l	0.00020	0.00005	1	06/21/21 15:42	06/23/21 21:08	EPA 3005A	1,6020B	CD
Calcium, Total	13.9		mg/l	0.100	0.0394	1	06/21/21 15:42	06/23/21 21:08	EPA 3005A	1,6020B	CD
Chromium, Total	0.00026	J	mg/l	0.00100	0.00017	1	06/21/21 15:42	06/23/21 21:08	EPA 3005A	1,6020B	CD
Cobalt, Total	ND		mg/l	0.00050	0.00016	1	06/21/21 15:42	06/23/21 21:08	EPA 3005A	1,6020B	CD
Copper, Total	0.00091	J	mg/l	0.00100	0.00038	1	06/21/21 15:42	06/23/21 21:08	EPA 3005A	1,6020B	CD
Iron, Total	0.0682		mg/l	0.0500	0.0191	1	06/21/21 15:42	06/23/21 21:08	EPA 3005A	1,6020B	CD
Lead, Total	ND		mg/l	0.00100	0.00034	1	06/21/21 15:42	06/23/21 21:08	EPA 3005A	1,6020B	CD
Magnesium, Total	5.48		mg/l	0.0700	0.0242	1	06/21/21 15:42	06/23/21 21:08	EPA 3005A	1,6020B	CD
Manganese, Total	0.00970		mg/l	0.00100	0.00044	1	06/21/21 15:42	06/23/21 21:08	EPA 3005A	1,6020B	CD
Mercury, Total	ND		mg/l	0.00020	0.00009	1	06/21/21 15:46	06/24/21 15:05	EPA 7470A	1,7470A	OU
Nickel, Total	ND		mg/l	0.00200	0.00055	1	06/21/21 15:42	06/23/21 21:08	EPA 3005A	1,6020B	CD
Potassium, Total	0.940		mg/l	0.100	0.0309	1	06/21/21 15:42	06/23/21 21:08	EPA 3005A	1,6020B	CD
Selenium, Total	ND		mg/l	0.00500	0.00173	1	06/21/21 15:42	06/23/21 21:08	EPA 3005A	1,6020B	CD
Silver, Total	ND		mg/l	0.00040	0.00016	1	06/21/21 15:42	06/23/21 21:08	EPA 3005A	1,6020B	CD
Sodium, Total	4.03		mg/l	0.100	0.0293	1	06/21/21 15:42	06/23/21 21:08	EPA 3005A	1,6020B	CD
Thallium, Total	ND		mg/l	0.00100	0.00014	1	06/21/21 15:42	06/23/21 21:08	EPA 3005A	1,6020B	CD
Vanadium, Total	ND		mg/l	0.00500	0.00157	1	06/21/21 15:42	06/23/21 21:08	EPA 3005A	1,6020B	CD
Zinc, Total	ND		mg/l	0.01000	0.00341	1	06/21/21 15:42	06/23/21 21:08	EPA 3005A	1,6020B	CD

Project Name: RYE LAKE WFP
Project Number: 41.0162892.01
Lab Number: L2132604
Report Date: 06/25/21

SAMPLE RESULTS

Lab ID: L2132604-03
Client ID: EW-01
Sample Location: Not Specified
Date Collected: 06/16/21 14:15
Date Received: 06/16/21
Field Prep: Not Specified

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Aluminum, Total	81.8		mg/l	0.0100	0.00327	1	06/21/21 15:42	06/23/21 21:13	EPA 3005A	1,6020B	CD
Antimony, Total	ND		mg/l	0.00400	0.00042	1	06/21/21 15:42	06/23/21 21:13	EPA 3005A	1,6020B	CD
Arsenic, Total	0.00681		mg/l	0.00050	0.00016	1	06/21/21 15:42	06/23/21 21:13	EPA 3005A	1,6020B	CD
Barium, Total	1.782		mg/l	0.00050	0.00017	1	06/21/21 15:42	06/23/21 21:13	EPA 3005A	1,6020B	CD
Beryllium, Total	0.00159		mg/l	0.00050	0.00010	1	06/21/21 15:42	06/23/21 21:13	EPA 3005A	1,6020B	CD
Cadmium, Total	0.00101		mg/l	0.00020	0.00005	1	06/21/21 15:42	06/23/21 21:13	EPA 3005A	1,6020B	CD
Calcium, Total	70.5		mg/l	0.100	0.0394	1	06/21/21 15:42	06/23/21 21:13	EPA 3005A	1,6020B	CD
Chromium, Total	0.2850		mg/l	0.00100	0.00017	1	06/21/21 15:42	06/23/21 21:13	EPA 3005A	1,6020B	CD
Cobalt, Total	0.08033		mg/l	0.00050	0.00016	1	06/21/21 15:42	06/23/21 21:13	EPA 3005A	1,6020B	CD
Copper, Total	0.2302		mg/l	0.00100	0.00038	1	06/21/21 15:42	06/23/21 21:13	EPA 3005A	1,6020B	CD
Iron, Total	164.		mg/l	0.0500	0.0191	1	06/21/21 15:42	06/23/21 21:13	EPA 3005A	1,6020B	CD
Lead, Total	0.03786		mg/l	0.00100	0.00034	1	06/21/21 15:42	06/23/21 21:13	EPA 3005A	1,6020B	CD
Magnesium, Total	63.3		mg/l	0.0700	0.0242	1	06/21/21 15:42	06/23/21 21:13	EPA 3005A	1,6020B	CD
Manganese, Total	4.120		mg/l	0.00100	0.00044	1	06/21/21 15:42	06/23/21 21:13	EPA 3005A	1,6020B	CD
Mercury, Total	ND		mg/l	0.00020	0.00009	1	06/21/21 15:46	06/24/21 15:09	EPA 7470A	1,7470A	OU
Nickel, Total	0.1773		mg/l	0.00200	0.00055	1	06/21/21 15:42	06/23/21 21:13	EPA 3005A	1,6020B	CD
Potassium, Total	40.4		mg/l	0.100	0.0309	1	06/21/21 15:42	06/23/21 21:13	EPA 3005A	1,6020B	CD
Selenium, Total	0.0107		mg/l	0.00500	0.00173	1	06/21/21 15:42	06/23/21 21:13	EPA 3005A	1,6020B	CD
Silver, Total	0.00033	J	mg/l	0.00040	0.00016	1	06/21/21 15:42	06/23/21 21:13	EPA 3005A	1,6020B	CD
Sodium, Total	10.8		mg/l	0.100	0.0293	1	06/21/21 15:42	06/23/21 21:13	EPA 3005A	1,6020B	CD
Thallium, Total	0.00181		mg/l	0.00100	0.00014	1	06/21/21 15:42	06/23/21 21:13	EPA 3005A	1,6020B	CD
Vanadium, Total	0.2344		mg/l	0.00500	0.00157	1	06/21/21 15:42	06/23/21 21:13	EPA 3005A	1,6020B	CD
Zinc, Total	0.3568		mg/l	0.01000	0.00341	1	06/21/21 15:42	06/23/21 21:13	EPA 3005A	1,6020B	CD

Project Name: RYE LAKE WFP
Project Number: 41.0162892.01
Lab Number: L2132604
Report Date: 06/25/21

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01-03 Batch: WG1514761-1										
Aluminum, Total	ND		mg/l	0.0100	0.00327	1	06/21/21 15:42	06/23/21 18:16	1,6020B	CD
Antimony, Total	ND		mg/l	0.00400	0.00042	1	06/21/21 15:42	06/23/21 18:16	1,6020B	CD
Arsenic, Total	ND		mg/l	0.00050	0.00016	1	06/21/21 15:42	06/23/21 18:16	1,6020B	CD
Barium, Total	ND		mg/l	0.00050	0.00017	1	06/21/21 15:42	06/23/21 18:16	1,6020B	CD
Beryllium, Total	ND		mg/l	0.00050	0.00010	1	06/21/21 15:42	06/23/21 18:16	1,6020B	CD
Cadmium, Total	ND		mg/l	0.00020	0.00005	1	06/21/21 15:42	06/23/21 18:16	1,6020B	CD
Calcium, Total	ND		mg/l	0.100	0.0394	1	06/21/21 15:42	06/23/21 18:16	1,6020B	CD
Chromium, Total	ND		mg/l	0.00100	0.00017	1	06/21/21 15:42	06/23/21 18:16	1,6020B	CD
Cobalt, Total	ND		mg/l	0.00050	0.00016	1	06/21/21 15:42	06/23/21 18:16	1,6020B	CD
Copper, Total	ND		mg/l	0.00100	0.00038	1	06/21/21 15:42	06/23/21 18:16	1,6020B	CD
Iron, Total	ND		mg/l	0.0500	0.0191	1	06/21/21 15:42	06/23/21 18:16	1,6020B	CD
Lead, Total	ND		mg/l	0.00100	0.00034	1	06/21/21 15:42	06/23/21 18:16	1,6020B	CD
Magnesium, Total	ND		mg/l	0.0700	0.0242	1	06/21/21 15:42	06/23/21 18:16	1,6020B	CD
Manganese, Total	0.00628	J	mg/l	0.00700	0.00044	1	06/21/21 15:42	06/23/21 18:16	1,6020B	CD
Nickel, Total	ND		mg/l	0.00200	0.00055	1	06/21/21 15:42	06/23/21 18:16	1,6020B	CD
Potassium, Total	ND		mg/l	0.100	0.0309	1	06/21/21 15:42	06/23/21 18:16	1,6020B	CD
Selenium, Total	ND		mg/l	0.00500	0.00173	1	06/21/21 15:42	06/23/21 18:16	1,6020B	CD
Silver, Total	ND		mg/l	0.00040	0.00016	1	06/21/21 15:42	06/23/21 18:16	1,6020B	CD
Sodium, Total	ND		mg/l	0.100	0.0293	1	06/21/21 15:42	06/23/21 18:16	1,6020B	CD
Thallium, Total	0.00023	J	mg/l	0.00100	0.00014	1	06/21/21 15:42	06/23/21 18:16	1,6020B	CD
Vanadium, Total	ND		mg/l	0.00500	0.00157	1	06/21/21 15:42	06/23/21 18:16	1,6020B	CD
Zinc, Total	ND		mg/l	0.01000	0.00341	1	06/21/21 15:42	06/23/21 18:16	1,6020B	CD

Prep Information

Digestion Method: EPA 3005A

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01-03 Batch: WG1514766-1										
Mercury, Total	ND		mg/l	0.00020	0.00009	1	06/21/21 15:46	06/24/21 14:24	1,7470A	OU

Project Name: RYE LAKE WFP
Project Number: 41.0162892.01
Lab Number: L2132604
Report Date: 06/25/21

Method Blank Analysis
Batch Quality Control

Prep Information

Digestion Method: EPA 7470A

Lab Control Sample Analysis

Batch Quality Control

Project Name: RYE LAKE WFP

Project Number: 41.0162892.01

Lab Number: L2132604

Report Date: 06/25/21

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-03 Batch: WG1514761-2								
Aluminum, Total	96		-		80-120	-		
Antimony, Total	86		-		80-120	-		
Arsenic, Total	94		-		80-120	-		
Barium, Total	98		-		80-120	-		
Beryllium, Total	100		-		80-120	-		
Cadmium, Total	108		-		80-120	-		
Calcium, Total	92		-		80-120	-		
Chromium, Total	92		-		80-120	-		
Cobalt, Total	94		-		80-120	-		
Copper, Total	96		-		80-120	-		
Iron, Total	92		-		80-120	-		
Lead, Total	111		-		80-120	-		
Magnesium, Total	98		-		80-120	-		
Manganese, Total	92		-		80-120	-		
Nickel, Total	92		-		80-120	-		
Potassium, Total	97		-		80-120	-		
Selenium, Total	92		-		80-120	-		
Silver, Total	99		-		80-120	-		
Sodium, Total	98		-		80-120	-		
Thallium, Total	106		-		80-120	-		
Vanadium, Total	91		-		80-120	-		

Lab Control Sample Analysis

Batch Quality Control

Project Name: RYE LAKE WFP

Project Number: 41.0162892.01

Lab Number: L2132604

Report Date: 06/25/21

Parameter	LCS %Recovery	LCSD %Recovery	%Recovery Limits	RPD	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-03 Batch: WG1514761-2					
Zinc, Total	97	-	80-120	-	
Total Metals - Mansfield Lab Associated sample(s): 01-03 Batch: WG1514766-2					
Mercury, Total	100	-	80-120	-	

Matrix Spike Analysis
Batch Quality Control

Project Name: RYE LAKE WFP
Project Number: 41.0162892.01

Lab Number: L2132604
Report Date: 06/25/21

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-03 QC Batch ID: WG1514761-3 QC Sample: L2132198-11 Client ID: MS Sample												
Aluminum, Total	0.0168	2	1.96	97		-	-		75-125	-		20
Antimony, Total	ND	0.5	0.4347	87		-	-		75-125	-		20
Arsenic, Total	ND	0.12	0.1117	93		-	-		75-125	-		20
Barium, Total	0.00134	2	1.965	98		-	-		75-125	-		20
Beryllium, Total	ND	0.05	0.04951	99		-	-		75-125	-		20
Cadmium, Total	ND	0.051	0.05624	110		-	-		75-125	-		20
Calcium, Total	0.0657J	10	9.67	97		-	-		75-125	-		20
Chromium, Total	ND	0.2	0.1911	96		-	-		75-125	-		20
Cobalt, Total	0.00030J	0.5	0.4741	95		-	-		75-125	-		20
Copper, Total	ND	0.25	0.2364	94		-	-		75-125	-		20
Iron, Total	ND	1	0.985	98		-	-		75-125	-		20
Lead, Total	ND	0.51	0.5397	106		-	-		75-125	-		20
Magnesium, Total	ND	10	9.97	100		-	-		75-125	-		20
Manganese, Total	0.00057J	0.5	0.4739	95		-	-		75-125	-		20
Nickel, Total	ND	0.5	0.4571	91		-	-		75-125	-		20
Potassium, Total	ND	10	9.91	99		-	-		75-125	-		20
Selenium, Total	ND	0.12	0.114	95		-	-		75-125	-		20
Silver, Total	ND	0.05	0.04901	98		-	-		75-125	-		20
Sodium, Total	0.226	10	10.2	100		-	-		75-125	-		20
Thallium, Total	ND	0.12	0.1291	108		-	-		75-125	-		20
Vanadium, Total	ND	0.5	0.4514	90		-	-		75-125	-		20

Matrix Spike Analysis
Batch Quality Control

Project Name: RYE LAKE WFP
Project Number: 41.0162892.01

Lab Number: L2132604
Report Date: 06/25/21

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Found	MSD %Recovery	Recovery Limits	RPD	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-03 QC Batch ID: WG1514761-3 QC Sample: L2132198-11 Client ID: MS Sample									
Zinc, Total	ND	0.5	0.4978	100	-	-	75-125	-	20
Total Metals - Mansfield Lab Associated sample(s): 01-03 QC Batch ID: WG1514766-3 QC Sample: L2132424-14 Client ID: MS Sample									
Mercury, Total	ND	0.005	0.00494	99	-	-	75-125	-	20

Lab Duplicate Analysis
Batch Quality Control

Project Name: RYE LAKE WFP
Project Number: 41.0162892.01

Lab Number: L2132604
Report Date: 06/25/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-03 QC Batch ID: WG1514761-4 QC Sample: L2132198-11 Client ID: DUP Sample						
Aluminum, Total	0.0168	ND	mg/l	NC		20
Antimony, Total	ND	ND	mg/l	NC		20
Arsenic, Total	ND	ND	mg/l	NC		20
Barium, Total	0.00134	0.00049J	mg/l	NC		20
Beryllium, Total	ND	ND	mg/l	NC		20
Cadmium, Total	ND	ND	mg/l	NC		20
Calcium, Total	0.0657J	0.0547J	mg/l	NC		20
Chromium, Total	ND	ND	mg/l	NC		20
Cobalt, Total	0.00030J	ND	mg/l	NC		20
Copper, Total	ND	ND	mg/l	NC		20
Iron, Total	ND	ND	mg/l	NC		20
Lead, Total	ND	ND	mg/l	NC		20
Magnesium, Total	ND	ND	mg/l	NC		20
Manganese, Total	0.00057J	0.00550	mg/l	NC		20
Nickel, Total	ND	ND	mg/l	NC		20
Potassium, Total	ND	ND	mg/l	NC		20
Selenium, Total	ND	ND	mg/l	NC		20
Silver, Total	ND	ND	mg/l	NC		20
Sodium, Total	0.226	0.226	mg/l	0		20

Lab Duplicate Analysis
Batch Quality Control

Project Name: RYE LAKE WFP
Project Number: 41.0162892.01

Lab Number: L2132604
Report Date: 06/25/21

Parameter	Native Sample	Duplicate Sample	Units	RPD	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01-03 QC Batch ID: WG1514761-4 QC Sample: L2132198-11 Client ID: DUP Sample					
Thallium, Total	ND	0.00027J	mg/l	NC	20
Vanadium, Total	ND	ND	mg/l	NC	20
Zinc, Total	ND	ND	mg/l	NC	20
Total Metals - Mansfield Lab Associated sample(s): 01-03 QC Batch ID: WG1514766-4 QC Sample: L2132424-14 Client ID: DUP Sample					
Mercury, Total	ND	ND	mg/l	NC	20

Project Name: RYE LAKE WFP
Project Number: 41.0162892.01

Lab Number: L2132604
Report Date: 06/25/21

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent
B	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2132604-01A	Vial HCl preserved	A	NA		2.8	Y	Absent		NYTCL-8260(14)
L2132604-01B	Vial HCl preserved	A	NA		2.8	Y	Absent		NYTCL-8260(14)
L2132604-01C	Vial HCl preserved	A	NA		2.8	Y	Absent		NYTCL-8260(14)
L2132604-01D	Amber 120ml unpreserved	A	7	7	2.8	Y	Absent		NYTCL-8081(7)
L2132604-01E	Amber 120ml unpreserved	A	7	7	2.8	Y	Absent		NYTCL-8081(7)
L2132604-01F	Amber 120ml unpreserved	A	7	7	2.8	Y	Absent		NYTCL-8082-LVI(365)
L2132604-01G	Amber 120ml unpreserved	A	7	7	2.8	Y	Absent		NYTCL-8082-LVI(365)
L2132604-01I	Plastic 250ml HNO3 preserved	A	<2	<2	2.8	Y	Absent		SE-6020T(180),BA-6020T(180),FE-6020T(180),TL-6020T(180),CR-6020T(180),K-6020T(180),NI-6020T(180),CA-6020T(180),CU-6020T(180),ZN-6020T(180),NA-6020T(180),PB-6020T(180),BE-6020T(180),MN-6020T(180),SB-6020T(180),AS-6020T(180),V-6020T(180),MG-6020T(180),AG-6020T(180),CD-6020T(180),AL-6020T(180),HG-T(28),CO-6020T(180)
L2132604-01J	Amber 250ml unpreserved	A	7	7	2.8	Y	Absent		NYTCL-8270-SIM-LVI(7),NYTCL-8270-LVI(7)
L2132604-01K	Amber 250ml unpreserved	A	7	7	2.8	Y	Absent		NYTCL-8270-SIM-LVI(7),NYTCL-8270-LVI(7)
L2132604-01L	Amber 1000ml unpreserved	A	7	7	2.8	Y	Absent		HERB-APA(7)
L2132604-01M	Amber 1000ml unpreserved	A	7	7	2.8	Y	Absent		HERB-APA(7)
L2132604-02A	Vial HCl preserved	B	NA		3.3	Y	Absent		NYTCL-8260(14)
L2132604-02B	Vial HCl preserved	B	NA		3.3	Y	Absent		NYTCL-8260(14)
L2132604-02C	Vial HCl preserved	B	NA		3.3	Y	Absent		NYTCL-8260(14)
L2132604-02D	Amber 120ml unpreserved	B	7	7	3.3	Y	Absent		NYTCL-8081(7)
L2132604-02E	Amber 120ml unpreserved	B	7	7	3.3	Y	Absent		NYTCL-8081(7)
L2132604-02F	Amber 120ml unpreserved	B	7	7	3.3	Y	Absent		NYTCL-8082-LVI(365)

*Values in parentheses indicate holding time in days

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2132604-02G	Amber 120ml unpreserved	B	7	7	3.3	Y	Absent		NYTCL-8082-LVI(365)
L2132604-02I	Plastic 250ml HNO3 preserved	B	<2	<2	3.3	Y	Absent		TL-6020T(180),BA-6020T(180),FE-6020T(180),SE-6020T(180),K-6020T(180),CA-6020T(180),CR-6020T(180),NI-6020T(180),NA-6020T(180),CU-6020T(180),ZN-6020T(180),PB-6020T(180),BE-6020T(180),MN-6020T(180),V-6020T(180),SB-6020T(180),AS-6020T(180),HG-T(28),AL-6020T(180),MG-6020T(180),CD-6020T(180),AG-6020T(180),CO-6020T(180)
L2132604-02J	Amber 250ml unpreserved	B	7	7	3.3	Y	Absent		NYTCL-8270-SIM-LVI(7),NYTCL-8270-LVI(7)
L2132604-02K	Amber 250ml unpreserved	B	7	7	3.3	Y	Absent		NYTCL-8270-SIM-LVI(7),NYTCL-8270-LVI(7)
L2132604-02L	Amber 1000ml unpreserved	B	7	7	3.3	Y	Absent		HERB-APA(7)
L2132604-02M	Amber 1000ml unpreserved	B	7	7	3.3	Y	Absent		HERB-APA(7)
L2132604-03A	Vial HCl preserved	B	NA		3.3	Y	Absent		NYTCL-8260(14)
L2132604-03B	Vial HCl preserved	B	NA		3.3	Y	Absent		NYTCL-8260(14)
L2132604-03C	Vial HCl preserved	B	NA		3.3	Y	Absent		NYTCL-8260(14)
L2132604-03D	Amber 120ml unpreserved	B	7	7	3.3	Y	Absent		NYTCL-8081(7)
L2132604-03E	Amber 120ml unpreserved	B	7	7	3.3	Y	Absent		NYTCL-8081(7)
L2132604-03F	Amber 120ml unpreserved	B	7	7	3.3	Y	Absent		NYTCL-8082-LVI(365)
L2132604-03G	Amber 120ml unpreserved	B	7	7	3.3	Y	Absent		NYTCL-8082-LVI(365)
L2132604-03I	Plastic 250ml HNO3 preserved	B	<2	<2	3.3	Y	Absent		BA-6020T(180),FE-6020T(180),SE-6020T(180),TL-6020T(180),CA-6020T(180),CR-6020T(180),NI-6020T(180),K-6020T(180),ZN-6020T(180),CU-6020T(180),NA-6020T(180),PB-6020T(180),BE-6020T(180),MN-6020T(180),AS-6020T(180),V-6020T(180),SB-6020T(180),AL-6020T(180),MG-6020T(180),CD-6020T(180),AG-6020T(180),HG-T(28),CO-6020T(180)
L2132604-03J	Amber 250ml unpreserved	B	7	7	3.3	Y	Absent		NYTCL-8270-SIM-LVI(7),NYTCL-8270-LVI(7)
L2132604-03K	Amber 250ml unpreserved	B	7	7	3.3	Y	Absent		NYTCL-8270-SIM-LVI(7),NYTCL-8270-LVI(7)
L2132604-03L	Amber 1000ml unpreserved	B	7	7	3.3	Y	Absent		HERB-APA(7)
L2132604-03M	Amber 1000ml unpreserved	B	7	7	3.3	Y	Absent		HERB-APA(7)

*Values in parentheses indicate holding time in days

Project Name:	RYE LAKE WFP	**Lab Number:**	L2132604
Project Number:	41.0162892.01	**Report Date:**	06/25/21

GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: DU Report with 'J' Qualifiers

Project Name:	RYE LAKE WFP	**Lab Number:**	L2132604
Project Number:	41.0162892.01	**Report Date:**	06/25/21

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA,this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

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

F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

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

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

ND - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

Report Format: DU Report with 'J' Qualifiers

Project Name:	RYE LAKE WFP	**Lab Number:**	L2132604
Project Number:	41.0162892.01	**Report Date:**	06/25/21

Data Qualifiers

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

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

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

Project Name: RYE LAKE WFP
Project Number: 41.0162892.01
Lab Number: L2132604
Report Date: 06/25/21

REFERENCES

1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - VI, 2018.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene, Naphthalene
EPA 625/625.1: alpha-Terpineol
EPA 8260C/8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D/8270E: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603, SM9222D.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522, EPA 537.1.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

NEW YORK CHAIN OF CUSTODY

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TEL: 508-898-9220
FAX: 508-898-9193

Mansfield, MA 02048
320 Forbes Blvd
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FAX: 508-822-3288

Service Centers
Mahwah, NJ 07430: 35 Whitney Rd, Suite 5
Albany, NY 12205: 14 Walker Way
Tonawanda, NY 14150: 275 Cooper Ave, Suite 105

Page 1 of 1

Date Rec'd in Lab: 6/16/21

ALPHA Job #: L2132607

Client Information
Client: GZA GeoEnvironmental
Address: 104 West 29th St. New York, NY
Phone: (212) 594-8140
Fax:
Email: Matthew.DelBalzo@gza.com

Project Information
Project Name: Rye Lake WFP
Project Location:
Project #: 41.0162892.01
(Use Project name as Project #) ☐
Project Manager: Matt Del Balzo
ALPHAQuote #:

Turn-Around Time
Standard ☒ Due Date:
Rush (only if pre approved) ☐ # of Days:

These samples have been previously analyzed by Alpha ☐

Other project specific requirements/comments:

Please specify Metals or TAL.

Deliverables
☐ ASP-A ☐ ASP-B
☐ EQuIS (1 File) ☐ EQuIS (4 File)
☐ Other

Regulatory Requirement
☒ NY TOGS ☐ NY Part 375
☒ AWQ Standards ☐ NY CP-51
☐ NY Restricted Use ☐ Other
☐ NY Unrestricted Use
☐ NYC Sewer Discharge

Billing Information
☐ Same as Client Info
PO #

Disposal Site Information
Please identify below location of applicable disposal facilities.
Disposal Facility:
☐ NJ ☐ NY
☐ Other:

ANALYSIS

Sample Filtration
☐ Done
☐ Lab to do
Preservation
☐ Lab to do
(Please Specify below)

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	VOCs	SVOCs	TAL Metals	TCL Pest/Herb	TCL PCBs				Sample Specific Comments	Total Bottle
L2132607-01	MW-2A	6/16/21	10:50	GW	MD	X	X	X	X	X					
-02	MW-3A	6/16/21	13:00	GW	MD	X	X	X	X	X					
-03	EW-01	6/16/21	14:15	GW	MD	X	X	X	X	X					

Container Type
Preservative

Preservative Code:
A = None
B = HCl
C = HNO_3
D = H_2SO_4
E = NaOH
F = MeOH
G = $NaHSO_4$
H = $Na_2S_2O_3$
K/E = Zn Ac/NaOH
O = Other

Container Code
P = Plastic
A = Amber Glass
V = Vial
G = Glass
B = Bacteria Cup
C = Cube
O = Other
E = Encore
D = BOD Bottle

Westboro: Certification No: MA935
Mansfield: Certification No: MA015

Relinquished By:	Date/Time	Received By:	Date/Time
Matt Del Balzo GZA	6/16/21 14:43		6/16/21 1443
	6/16/21 1650	Paul Mangella	6/16/21 1700
Paul Mangella	6/16/21 2223		6/16/21 2223

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. BY EXECUTING THIS COC, THE CLIENT HAS READ AND AGREES TO BE BOUND BY ALPHA'S TERMS & CONDITIONS. (See reverse side.)

Form No: 01-25 HC (rev. 30-Sept-2013)

Appendix H1 - Volatile Organic Compounds in Groundwater
Geotechnical Engineering Report
Rye Lake Water Plant
Harrison, New York

LOCATION	NYSDEC TOGS 1.1.1 AWQS	MW-29		MW-3A		EW-01	
SAMPLING DATE		6/16/2021		6/16/2021		6/16/2021	
LAB SAMPLE ID		L2132604-01		L2132604-02		L2132604-03	
SAMPLE TYPE		Water		Water		Water	
		Results	Qual	Results	Qual	Results	Qual
Volatile Organic Compounds (VOC) by 8260C (ug/L)							
1,1,1,2-Tetrachloroethane	5	2.5	U	2.5	U	2.5	U
1,1,1-Trichloroethane	5	2.5	U	2.5	U	2.5	U
1,1,2,2-Tetrachloroethane	5	0.5	U	0.5	U	0.5	U
1,1,2-Trichloroethane	1	1.5	U	1.5	U	1.5	U
1,1-Dichloroethane	5	2.5	U	2.5	U	2.5	U
1,1-Dichloroethene	5	0.5	U	0.5	U	0.5	U
1,1-Dichloropropene	5	2.5	U	2.5	U	2.5	U
1,2,3-Trichlorobenzene	5	2.5	U	2.5	U	2.5	U
1,2,3-Trichloropropane	0.04	2.5	U	2.5	U	2.5	U
1,2,4,5-Tetramethylbenzene	5	2	U	2	U	2	U
1,2,4-Trichlorobenzene	5	2.5	U	2.5	U	2.5	U
1,2,4-Trimethylbenzene	5	2.5	U	2.5	U	2.5	U
1,2-Dibromo-3-chloropropane	0.04	2.5	U	2.5	U	2.5	U
1,2-Dibromoethane	0.0006	2	U	2	U	2	U
1,2-Dichlorobenzene	3	2.5	U	2.5	U	2.5	U
1,2-Dichloroethane	0.6	0.5	U	0.5	U	0.5	U
1,2-Dichloroethene, Total	--	2.5	U	2.5	U	2.5	U
1,2-Dichloropropane	1	1	U	1	U	1	U
1,3,5-Trimethylbenzene	5	2.5	U	2.5	U	2.5	U
1,3-Dichlorobenzene	3	2.5	U	2.5	U	2.5	U
1,3-Dichloropropane	5	2.5	U	2.5	U	2.5	U
1,3-Dichloropropene, Total	--	0.5	U	0.5	U	0.5	U
1,4-Dichlorobenzene	3	2.5	U	2.5	U	2.5	U
1,4-Dioxane	--	250	U	250	U	250	U
2,2-Dichloropropane	5	2.5	U	2.5	U	2.5	U
2-Butanone	50	5	U	5	U	5	U
2-Hexanone	50	5	U	5	U	5	U
4-Methyl-2-pentanone	--	5	U	5	U	5	U
Acetone	50	5	U	5	U	5	U
Acrylonitrile	5	5	U	5	U	5	U
Benzene	1	0.5	U	0.5	U	0.5	U
Bromobenzene	5	2.5	U	2.5	U	2.5	U
Bromochloromethane	5	2.5	U	2.5	U	2.5	U
Bromodichloromethane	50	0.5	U	0.5	U	0.5	U
Bromoform	50	2	U	2	U	2	U
Bromomethane	5	2.5	U	2.5	U	2.5	U
Carbon disulfide	60	5	U	5	U	5	U
Carbon tetrachloride	5	0.5	U	0.5	U	0.5	U
Chlorobenzene	5	2.5	U	2.5	U	2.5	U
Chloroethane	5	2.5	U	2.5	U	2.5	U
Chloroform	7	2.5	U	2.5	U	2.5	U
Chloromethane	--	2.5	U	2.5	U	2.5	U
cis-1,2-Dichloroethene	5	2.5	U	2.5	U	2.5	U
cis-1,3-Dichloropropene	0.4	0.5	U	0.5	U	0.5	U
Dibromochloromethane	50	0.5	U	0.5	U	0.5	U
Dibromomethane	5	5	U	5	U	5	U
Dichlorodifluoromethane	5	5	U	5	U	5	U
Ethyl ether	--	2.5	U	2.5	U	2.5	U
Ethylbenzene	5	2.5	U	2.5	U	2.5	U
Hexachlorobutadiene	0.5	2.5	U	2.5	U	2.5	U
Isopropylbenzene	5	2.5	U	2.5	U	2.5	U
Methyl tert butyl ether	10	2.5	U	2.5	U	2.5	U
Methylene chloride	5	2.5	U	2.5	U	2.5	U
Naphthalene	10	2.5	U	2.5	U	2.5	U
n-Butylbenzene	5	2.5	U	2.5	U	2.5	U
n-Propylbenzene	5	2.5	U	2.5	U	2.5	U
o-Chlorotoluene	5	2.5	U	2.5	U	2.5	U
o-Xylene	5	2.5	U	2.5	U	2.5	U
p/m-Xylene	5	2.5	U	2.5	U	2.5	U
p-Chlorotoluene	5	2.5	U	2.5	U	2.5	U
p-Diethylbenzene	--	2	U	2	U	2	U
p-Ethyltoluene	--	2	U	2	U	2	U
p-Isopropyltoluene	5	2.5	U	2.5	U	2.5	U
sec-Butylbenzene	5	2.5	U	2.5	U	2.5	U
Styrene	5	2.5	U	2.5	U	2.5	U
tert-Butylbenzene	5	2.5	U	2.5	U	2.5	U
Tetrachloroethene	5	0.5	U	0.5	U	0.5	U
Toluene	5	2.5	U	2.5	U	2.5	U
trans-1,2-Dichloroethene	5	2.5	U	2.5	U	2.5	U
trans-1,3-Dichloropropene	0.4	0.5	U	0.5	U	0.5	U
trans-1,4-Dichloro-2-butene	5	2.5	U	2.5	U	2.5	U
Trichloroethene	5	0.5	U	0.5	U	0.5	U
Trichlorofluoromethane	5	2.5	U	2.5	U	2.5	U
Vinyl acetate	--	5	U	5	U	5	U
Vinyl chloride	2	1	U	1	U	1	U
Xylenes, Total	--	2.5	U	2.5	U	2.5	U

Table Notes:

	The reporting limit exceeds the New York State Department of Environmental Conservation Technical Organzational Guidance Series 1.1.1 Ambient Water Quality Standards and Guidance Values.
J	Estimate Value. The analyte concentration is below the
U	Not detected at the reported detection limit for the sample
--	No Guidance Value
ug/L	Results are reported in microgram per liter

LOCATION	NYSDEC TOGS 1.1.1 AWQS	MW-29		MW-3A		EW-01	
SAMPLING DATE		6/16/2021		6/16/2021		6/16/2021	
LAB SAMPLE ID		L2132604-01		L2132604-02		L2132604-03	
SAMPLE TYPE		Water		Water		Water	
		Results	Qual	Results	Qual	Results	Qual
Semi-Volatile Organic Compounds by GC							
1,2,4,5-Tetrachlorobenzene	5	10	U	10	U	10	U
1,2,4-Trichlorobenzene	5	5	U	5	U	5	U
1,2-Dichlorobenzene	3	2	U	2	U	2	U
1,3-Dichlorobenzene	3	2	U	2	U	2	U
1,4-Dichlorobenzene	3	2	U	2	U	2	U
2,4,5-Trichlorophenol	--	5	U	5	U	5	U
2,4,6-Trichlorophenol	--	5	U	5	U	5	U
2,4-Dichlorophenol	1	5	U	5	U	5	U
2,4-Dimethylphenol	50	5	U	5	U	5	U
2,4-Dinitrophenol	10	20	U	20	U	20	U
2,4-Dinitrotoluene	5	5	U	5	U	5	U
2,6-Dinitrotoluene	5	5	U	5	U	5	U
2-Chloronaphthalene	10	0.2	U	0.2	U	0.2	U
2-Chlorophenol	--	2	U	2	U	2	U
2-Methylnaphthalene	--	0.04	J	0.1	U	0.1	U
2-Methylphenol	--	5	U	5	U	5	U
2-Nitroaniline	5	5	U	5	U	5	U
2-Nitrophenol	--	10	U	10	U	10	U
3,3'-Dichlorobenzidine	5	5	U	5	U	5	U
3-Methylphenol/4-Methylphenol	--	5	U	5	U	5	U
3-Nitroaniline	5	5	U	5	U	5	U
4,6-Dinitro-o-cresol	--	10	U	10	U	10	U
4-Bromophenyl phenyl ether	--	2	U	2	U	2	U
4-Chloroaniline	5	5	U	5	U	5	U
4-Chlorophenyl phenyl ether	--	2	U	2	U	2	U
4-Nitroaniline	5	5	U	5	U	5	U
4-Nitrophenol	--	10	U	10	U	10	U
Acenaphthene	20	0.03	J	0.1	U	0.1	U
Acenaphthylene	--	0.03	J	0.1	U	0.1	U
Acetophenone	--	5	U	5	U	5	U
Anthracene	50	0.05	J	0.1	U	0.1	U
Benzo(a)anthracene	0.002	0.05	J	0.1	U	0.1	U
Benzo(a)pyrene	0	0.05	J	0.1	U	0.1	U
Benzo(b)fluoranthene	0.002	0.06	J	0.1	U	0.1	U
Benzo(ghi)perylene	--	0.07	J	0.1	U	0.1	U
Benzo(k)fluoranthene	0.002	0.03	J	0.1	U	0.1	U
Benzoic Acid	--	50	U	50	U	50	U
Benzyl Alcohol	--	2	U	2	U	2	U
Biphenyl	--	2	U	2	U	2	U
Bis(2-chloroethoxy)methane	5	5	U	5	U	5	U
Bis(2-chloroethyl)ether	1	2	U	2	U	2	U
Bis(2-chloroisopropyl)ether	5	2	U	2	U	2	U
Bis(2-ethylhexyl)phthalate	5	3	U	3	U	3	U
Butyl benzyl phthalate	50	5	U	5	U	5	U
Carbazole	--	2	U	2	U	2	U
Chrysene	0.002	0.04	J	0.1	U	0.1	U
Dibenzo(a,h)anthracene	--	0.02	J	0.1	U	0.1	U
Dibenzofuran	--	2	U	2	U	2	U
Diethyl phthalate	50	5	U	0.48	J	5	U
Dimethyl phthalate	50	5	U	5	U	5	U
Di-n-butylphthalate	50	5	U	5	U	5	U
Di-n-octylphthalate	50	5	U	5	U	5	U
Fluoranthene	50	0.12		0.1	U	0.1	U
Fluorene	50	0.05	J	0.1	U	0.1	U
Hexachlorobenzene	0.04	0.8	U	0.8	U	0.8	U
Hexachlorobutadiene	0.5	0.5	U	0.5	U	0.5	U
Hexachlorocyclopentadiene	5	20	U	20	U	20	U
Hexachloroethane	5	0.8	U	0.8	U	0.8	U
Indeno(1,2,3-cd)pyrene	0.002	0.07	J	0.1	U	0.1	U
Isophorone	50	5	U	5	U	5	U
Naphthalene	10	0.26		0.1	U	0.1	U
NDPA/DPA	50	2	U	2	U	2	U
Nitrobenzene	0.4	2	U	2	U	2	U
n-Nitrosodi-n-propylamine	--	5	U	5	U	5	U
p-Chloro-m-cresol	--	2	U	2	U	2	U
Pentachlorophenol	1	0.8	U	0.8	U	0.8	U
Phenanthrene	50	0.17		0.1	U	0.1	U
Phenol	1	5	U	5	U	5	U
Pyrene	50	0.08	J	0.1	U	0.1	U

Table Notes:

	The reporting limit exceeds the New York State Department of Environmental Conservation Technical Organzational Guidance Series 1.1.1 Ambient Water Quality Standards and Guidance Values.
	The detected value exceeds the New York State Department of Environmental Conservation Technical Organizational Guidance Series 1.1.1 Ambient Water Quality Standards and Guidance Values.
J	Estimate Value. The analyte concentration is below the quantitative limit (RL), but above the method detection limit
U	Not detected at the reported detection limit for the sample
--	No Guidance Value
ug/L	Results are reported in microgram per liter

Appendix H3 - Metals in Groundwater
Geotechnical Engineering Report
Rye Lake Water Plant
Harrison, New York

LOCATION	NYSDEC TOGS 1.1.1 AWQS	MW-29		MW-3A		EW-01	
SAMPLING DATE		6/16/2021		6/16/2021		6/16/2021	
LAB SAMPLE ID		L2132604-01		L2132604-02		L2132604-03	
SAMPLE TYPE		Water		Water		Water	
		Results	Qual	Results	Qual	Results	Qual
Total Metals							
Aluminum, Total	--	133		38.1		81800	
Antimony, Total	3	4	U	4	U	4	U
Arsenic, Total	25	0.5	U	0.5	U	6.81	
Barium, Total	1000	49.01		24.02		1782	
Beryllium, Total	3	0.5	U	0.5	U	1.59	
Cadmium, Total	5	0.2	U	0.2	U	1.01	
Calcium, Total	--	31600		13900		70500	
Chromium, Total	50	0.85	J	0.26	J	285	
Cobalt, Total	--	0.58		0.5	U	80.33	
Copper, Total	200	0.74	J	0.91	J	230.2	
Iron, Total	300	267		68.2		164000	
Lead, Total	25	1	U	1	U	37.86	
Magnesium, Total	35000	12400		5480		63300	
Manganese, Total	300	83.65		9.7		4120	
Mercury, Total	0.7	0.2	U	0.2	U	0.2	U
Nickel, Total	100	1.51	J	2	U	177.3	
Potassium, Total	--	2800		940		40400	
Selenium, Total	10	5	U	5	U	10.7	
Silver, Total	50	0.4	U	0.4	U	0.33	J
Sodium, Total	20000	8750		4030		10800	
Thallium, Total	0.5	1	U	1	U	1.81	
Vanadium, Total	--	5	U	5	U	234.4	
Zinc, Total	2000	4.17	J	10	U	356.8	

Table Notes:

	The reporting limit exceeds the New York State Department of Environmental Conservation Technical Organzational Guidance Series 1.1.1 Ambient Water Quality Standards and Guidance Values.
	The detected value exceeds the New York State Department of Environmental Conservation Technical Organzational Guidance Series 1.1.1 Ambient Water Quality Standards and Guidance Values.
J	Estimate Value. The analyte concentration is below the
U	Not detected at the reported detection limit for the sample
--	No Guidance Value
ug/L	Results are reported in microgram per liter



GZA GeoEnvironmental of New York

APPENDIX C

SUPPLEMENTAL REMEDIAL INVESTIGATION WORK PLAN

Known for excellence.
Built on trust.



Supplemental Remedial Investigation Work Plan
Rye Lake Water Filtration Plant

BCP Site No. C360174
Westchester County Airport

July 2025
File No. 41.0162892.01



PREPARED FOR

WESTCHESTER
JOINT WATER WORKS
Filtration

1625 Mamaroneck Avenue
Mamaroneck, NY 10543

PREPARED BY:
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ATTACHMENTS

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ATTACHMENT B HISTORICAL SAMPLE LOCATIONS AND DATA TABLES
ATTACHMENT C MONITORING WELL CONSTRUCTION LOGS

CERTIFICATION

I, Stephen Kline, certify that I am currently a Qualified Environmental Professional as defined in 6 New York Codes, Rules, and Regulations (NYCRR) Part 375 and that this Supplemental Remedial Investigation Work Plan (SRIWP) was prepared in accordance with all applicable statutes and regulations and substantial conformance with New York State Department of Environmental Conservation (NYSDEC) Division of Environmental Remediation (DER)-10 Technical Guidance for Site Investigation and Remediation.



Stephen Kline, QEP, NYSPE

1.0 INTRODUCTION

The following Supplemental Remedial Investigation Work Plan (SRIWP) was prepared by GZA Geoenvironmental of New York (GZA) on behalf of Hazen and Sawyer (Hazen) for construction of Westchester Joint Water Works' (WJWW) Rye Lake Water Filtration Plant (WFP). The SRIWP was developed to comply with the Brownfield Cleanup Program (BCP) requirements for the Participant, the County of Westchester. It pertains to the interim remedial measures (IRM) necessary for the property located at the proposed Rye Lake Water Filtration Plant (WFP), to be built on a This construction is to be completed on a 13.48-acre portion of block and lot 0971.-8 (IRM Site) along the southwestern boundary of the 693-acre Westchester County Airport BCP Site No. C360174. This SRIWP is based upon the guidelines set forth in Section 3 of the New York State Department of Environmental Conservation's (NYSDEC) Brownfield Cleanup Program Guide dated May 2004 and NYSDEC's DER-10 Technical Guidance for Site Investigations and Remediations. The proposed scope of work discussed in this SRIWP will be conducted in accordance with the Quality Assurance Project Plan, the Health & Safety Plan, and the Community Air Monitoring Plan found as appendices to the IRM Work Plan.

The IRM Site is currently enrolled in the NYSDEC BCP as BCP Site No. C360174. Previous investigations concerning Westchester County Airport were conducted outside of the area of interest identified for this SRIWP due to the historical usage areas on the Airport property. For the purposes of developing this SRIWP, based on the previous investigations conducted at the Airport, the primary contaminants of concern are per- and polyfluoroalkyl substances (PFAS) in soil and groundwater.

2.0 PHYSICAL SITE CHARACTERISTICS

2.1 SITE DESCRIPTION

The IRM Site is located on a 13.48-acre parcel in the southwest corner of the 693-acre Westchester County Airport property. The IRM Site consists of wooded and undeveloped areas and is bounded by Tower Road to the south, Westchester County Airport to the east, Purchase Street to the west, and wooded area to the north. The IRM Site is located within 1,000 feet of Rye Lake to the west. A stream that drains north into Rye Lake is located east of the IRM Site along a fence that separates the IRM Site from Westchester County (White Plains) Airport. Existing ground surface at the IRM Site ranges from approximately El. 414 to El. 396, generally sloping down from south to north and east to west. A United States Geological Survey (USGS) topographic map showing the location of the IRM Site is provided as **Figure 1**.

2.2 SITE HISTORY

Westchester County Airport was initially constructed by the U.S. Army Corps of Engineers in 1942 on land owned by the County of Westchester and leased to the United States government "for the duration" of World War II for use by the U.S. Army Air Force. Before the end of the war, the U.S. government surrendered its lease and in February 1945 the Westchester County Airport opened as a public Airport. However, the Army Air Force never completely abandoned its presence at the Airport. In 1947, following the creation of the United States Air Force and the NYANG, the NYANG leased the northeast section of the Airport from Westchester County.

The NYANG subsequently constructed air-support facilities on the leasehold and continuously occupied its leasehold until 1983 when the unit moved to Stewart Air Force Base. As part of its operations, the NYANG performed aircraft rescue and firefighting (ARFF) operations on a regular basis. These firefighting exercises and training activities were performed at a "Burn Pit" that was located near the NYANG's former hanger on County property adjacent to the NYANG's leasehold. The NYANG conducted these exercises from as early as 1968 until 1983 when the NYANG left the

Airport. The NYANG, as part of its firefighting exercises, used AFFF, which historically contained concentrations of PFAS. Only recently has there been a reduction in the use of PFAS chemicals in AFFF. The duration of AFFF use at the NYANG Burn Pit and the fact that the NYANG Burn Pit was unlined likely resulted in PFAS impacting the groundwater at the BCP Site. The PFAS source location is supported by the fact that the highest PFAS concentrations are identified at the former Burn Pit location.

According to Airport operations personnel, following the departure of the NYANG in 1983, the County continued airport fire-fighting training through the 1990s at the Burn Pit (north airport area) before fire-training exercises were moved in the late 1990s to the southeastern corner of the property, inside South Airport Loop Road. Based on information provided by Airport operations, the training activities used water, not AFFF, post-NYANG operations. A concrete containment burn pit was designed with propane burners inside the containment area to allow for a safe environmental training area.

After 1983, Westchester County Airport stored firefighting equipment and AFFF at the main Airport Terminal. In the late 1990s, storage of AFFF was moved to the Airport Block House where it is stored in five-gallon containers. In an effort to move to more environmentally friendly AFFF, the Airport discontinued the use of foams containing PFOA and PFOS. However, the Airport still uses AFFF that contain other PFAS chemicals in accordance with FAA requirements. In addition to the County's storage of AFFF, as described above, the Airport is aware of 10 tenants that store Class B foams at the Airport in varying sized pressurized containment devices.

2.3 PREVIOUS INVESTIGATIONS

2.3.1 Airport Previous Investigations

In the late 1990s, because historical firefighting and training activities used inflammables such as aviation fuel as the accelerant, concerns were raised regarding the potential environmental impacts to soil and groundwater in and around the former New York Air National Guard (NYANG) Burn Pit areas. In or about October 1999, the Airports environmental consultant, First Environment, conducted a detailed site reconnaissance of the Airport Property that included a site visit and a review of historic aerial photographs of the Airport. The reconnaissance identified the location of a former NYANG Burn Pit west of Building 10 and its boundaries. ARFF training activities consisted of the repeated burning and extinguishing of aviation fuel. According to the County, the training activities were conducted by the Air National Guard. ARFF training activities reported to have been conducted in this area are identified in aerial photographs, and these activities were suspected to have impacted soil and groundwater. ARFF training activities at the NYANG Burn Pit area of the Site were permanently discontinued prior to earlier investigation and remediation that occurred in 1999.

On December 22, 1999, the initial investigation of the NYANG Burn Pit Area was conducted including the investigation of the soil, sediments, surface water and groundwater near the Pit. Laboratory analyses of soil and groundwater samples collected in this area identified impacts above NYSDEC regulatory levels for VOCs and SVOCs. PFAS were neither recognized nor identified as environmental contaminants of concern at that time.

In early 2000, 39 study areas were identified as possible contaminant sources at the Airport and investigated to determine their potential impact, if any, on environmental media. The Site for the proposed Rye Lake WFP is not included as one of the 39 areas that was identified. The investigations included a review of available documentation; interviews with Airport personnel and NYANG personnel in Latham, New York; as well as intrusive investigations consisting of soil and/or groundwater sampling. In 2001, after preliminary investigations, it was determined that no pervasive groundwater plume or groundwater pollution threat to Rye Lake and the surrounding environment.

The Airport conducted a voluntary groundwater monitoring program from 2001 to 2011 from the monitoring well network installed during the investigations. None of these wells were installed on the Site for the proposed WFP construction. In 2017 the NYSDOH sampled raw water intakes and finished water outlets in the area near the Airport and identified multiple locations with PFAS concentrations exceeding the combined action level of 70 parts per trillion PFOA and PFOS. As a result, monitoring wells on the Airport property were sampled for PFAS the same year. Eight wells across the Airport property were found to contain PFAS and the voluntary groundwater monitoring program was restarted in 2018.

The Airport BCP Site began site characterization activities February 2020 with a higher focus on areas around Rye Lake Drainage Area where the Airport's surface water and groundwater enter the lake. The Site characterization activities were completed in 2021, and additional investigations were conducted on the Airport's northern parcel along New King Street and offsite near this area. The Airport is currently completing a Remedial Investigation to fill in data gaps and define the nature and extent of the PFAS in shallow and deep groundwater on and off the property (see investigation area on the RI Figure 18 included as **Attachment A)**. This area of the Airport was also investigated associated with the Hanger E investigations.

The site characterization investigations completed by the Airport and its environmental contractor, First Environmental, included soil, sediment, groundwater, surface water, and soil vapor investigations. These investigations were conducted across the Airport in areas of concern based on former activities, such as burn pits, aircraft rescue and firefighting operations, and use of aqueous film forming foam (AFFF). Primary contaminants of concern identified for the Airport include perfluorooctane sulfaonate (PFOS) and perfluorooctanoic acid (PFOA). Based on the Remedial Investigations conducted to date, the Hanger E contaminants of potential concern include volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), and 1.4-Dioxane, in addition to PFAS.

2.3.2 Water Filtration Plant Previous Investigations

Three previous investigations were completed on the property identified for the WFP construction:

1. Preliminary Geotechnical Engineering and Environmental Report, Haley & Aldrich of New York (H&A), February 2020.
2. Waste Characterization Report, GZA, July 2021.
3. Geotechnical Engineering Report, GZA, February 2023.

The area designated for WFP construction has not been included in these previous investigations under the BCP program as it was not an area of concern identified from the Airport's historical activities. Limited investigations in support of the planning for WFP construction have been completed, including a waste characterization investigation and geotechnical investigation. Excerpts from these three previous investigations are included in **Attachment B**.

During these investigations, two soil samples were collected by H&A from a test pit between one and three feet below grade; six composite soil samples were collected by GZA for waste characterization from the top five feet in six borings; 12 composite soil samples were collected by GZA for beneficial reuse sampling from up to 25 feet below grade in 12 borings; 30 discrete VOC soil samples were collected by GZA from between one and 25 feet below grade in 15 borings; three groundwater samples were collected by GZA from three observation wells installed to 35 feet, 27 feet, and 25 feet below grade, and one groundwater sample was collected by H&A from the 35 foot observation well. GZA's soil samples were analyzed for VOCs, SVOCs, metals, TCLP metals, Polychlorinated Biphenyls (PCBs), herbicides, pesticides, Resource Conservation and Recovery Act (RCRA) Characteristics (reactivity, ignitability, and corrosivity). H&A's soil samples were analyzed for the same parameters with the addition of diesel- and gasoline-

range organic compounds. GZA's groundwater samples were analyzed for VOCs, SVOCs, total metals, pesticides, herbicides, and PCBs. H&A's groundwater sample was analyzed for VOCs, SVOCs, and PFAS.

All soil samples were either non-detect or below Unrestricted Use Soil Cleanup Objectives (SCOs) for VOCs, SVOCs, metals, PCBs, herbicides, pesticides, and diesel- and gasoline range organic compounds. Soil samples were also below their respective hazardous limits for RCRA characteristics and TCLP metals. Groundwater samples were compared to NYSDEC Technical Operational Guidance Series (TOGS) 1.1.1 - Ambient Water Quality Standards & Guidance Values and Groundwater Effluent Limitations. Groundwater samples were either not detected or below applicable TOGS standards for VOCs, herbicides, pesticides, PCBs, and PFAS. One groundwater sample collected from the northern side of the proposed WFP construction footprint was found to have TOGS exceedances for multiple metals including aluminum, barium, chromium, copper, iron, lead, magnesium, manganese, nickel, selenium, and thallium. One groundwater sample collected from the northeastern edge of the Site outside of the proposed WFP footprint was found to have several SVOC exceedances above TOGS standards, including benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, and indeno(1,2,3-cd)pyrene.

GZA performed the waste characterization investigation in May and June 2021 to characterize soils within the excavation footprint for preparations of offsite disposal of excavated soils. GZA collected 18 soils samples in total with six samples from the top five feet of soil and the remaining 12 samples collected from between 5 and 23 feet below grade. Shallow samples included grab samples analyzed for volatile organic compounds (VOCs) and composite samples analyzed for semi-volatile organic compounds (SVOCs), target analyte list (TAL) metals, toxicity characteristic leaching procedure (TCLP) metals, PCBs, pesticides, herbicides, ignitibility, corrosivity, and reactivity. Deeper samples included grab samples analyzed for VOCs and composite samples analyzed for SVOCs, TAL Metals, PCBs, and pesticides.

GZA performed a geotechnical investigation for the site from May to August of 2021 to prepare engineering recommendations for the proposed WFP construction. The majority of the sampling completed during this investigation were specific to geotechnical parameters, however three groundwater monitoring wells were also sampled. The three wells were between 25 and 35 feet in depth with the bottom 10 feet of each as the screened interval. Each well was purged and sampled for analysis of VOCs, SVOCs, TAL metals, Pesticides, Herbicides, and PCBs. No dissolved metals analysis was performed on the groundwater samples.

2.3.3 Summary of Historical Environmental Findings:

1. Depth to groundwater is seasonally influenced at the Site and has been observed as shallow as 3.7 feet (ft) below ground surface (bgs) and as deep as 17.8 ft bgs. The shallow groundwater table is likely a perched unit located above the dense glacial till at the Site.

2. On-site groundwater flow is generally north.

3. Bedrock was not encountered during the investigation.

4. Soils encountered throughout the site consisted generally of brown fine grained sandy fill mixed with wood, gravel and/or brick fragments (consistent with historic fill material) from grade surface to a depth of approximately 4 ft bgs. Soil below 4 feet did have silty clay to the terminal drilling depth (10-15 ft bgs).

5. The known contaminants of concern for the Airport are PFOA and PFOS in groundwater, surface water, sediment, and soil. Additional investigations within the Site are necessary to better define contamination specific to the WFP construction area.

6. Two soil samples were collected by H&A from a test pit between one and three feet below grade; six composite soil samples were collected by GZA for waste characterization from the top five feet in six borings; 12 composite soil samples were collected by GZA for beneficial reuse sampling from up to 25 feet below grade in 12 borings; and 30 discrete VOC soil samples were collected by GZA from between one and 25 feet below grade in 15 borings. All soil sample results were reported as either not detected or below Unrestricted Use SCOs for VOCs, SVOCs, metals, PCBs, herbicides, pesticides, and diesel- and gasoline range organic compounds.

7. Three groundwater samples were collected from three observation wells installed by GZA to 35 feet, 27 feet, and 25 feet below grade. One groundwater sample was collected by H&A from the 35-foot observation well. One groundwater sample collected from the northern side of the proposed WFP construction footprint was found to have TOGS exceedances for multiple metals including aluminum, barium, chromium, copper, iron, lead, magnesium, manganese, nickel, selenium, and thallium. One groundwater sample collected from the northeastern edge of the Site outside of the proposed WFP footprint was found to have several SVOC exceedances above TOGS standards, including benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, and indeno(1,2,3-cd)pyrene.

8. As shown in **Attachment A**, the WFP parcel is adjacent to the Airport's Southwestern Corner Area identified for additional sampling during the Remedial Investigation as outlined by the RIWP dated March 2024 prepared by First Environment.

2.4 SURROUNDING LAND USE

The Site is located adjacent to the Westchester County Airport along its eastern and southern boundaries. A Quaker Friends Meeting is adjacent to the north of the Site and Purchase Street is adjacent to the west with residential dwellings across. The Airport was originally constructed in 1942 and utilized by the United States military during World War II. The Airport was utilized as a commercial and military airport up until 1983 when military operations were transitioned to Stewart Air Force Base.

2.5 HYDROGEOLOGIC SETTING

The Site is relatively flat and has no natural or artificial surface water bodies or impoundments. Groundwater was observed fluctuating in the observation wells over the course of a four-month period. The groundwater level readings recorded at this site are indicative of seasonal fluctuation. Groundwater level readings were as shallow as 3.7 ft bgs observed in June and as deep as 17.8 ft bgs observed in November.

2.6 PROPOSED REDEVELOPMENT/PROJECT DESCRIPTION

WJWW is planning to construct a new 30-million gallons per day (MGD) WFP. Water is currently pumped from Rye Lake (north of the Site) through a water transmission main along Purchase Street (west of the Site) to water tanks about 800 feet south of Tower Road (south of the Site). The construction would redirect the water from Rye Lake to the new WFP through a new water main that will enter the Site from Purchase Street. A copy of the proposed construction plans is included in the **IRM Work Plan Appendix A,** and the Site is depicted on **Figure 2**.

During the IRM, the proposed construction area will be investigated prior to construction for verification of potential presence of contaminants of concern (COCs) associated with the Airport property. The construction will include the remedial excavation up to 35 ft bgs within the proposed WFP building footprint, up to 15 ft bgs within the footprint of stormwater management improvements, and up to five ft bgs within the remaining areas of the limits of disturbance for the construction.

3.0 SUPPLEMENTAL REMEDIAL INVESTIGATION

3.1 OBJECTIVES

The objectives of the investigation phase of this project are to:

1. Determine the nature and extent of soil, soil vapor, groundwater, sediment, and surface water quality at the IRM Site; and,
2. Obtain the necessary information needed to implement the IRM for the IRM Site.

The proposed Supplemental RI sampling program is summarized in **Table 1**, and proposed sampling locations are depicted on **Figure 3**.

3.2 UTILITY CLEARANCE

GZA will retain a contractor to conduct a geophysical survey across the entire Site to scan the shallow subsurface for the presence of anomalies (e.g., underground storage tanks and associated piping, utilities, and foundation slabs). The geophysical survey will include one or more of the following techniques to assist in detecting subsurface anomalies: Ground Penetrating Radar (GPR), electromagnetic surveys and/or subsurface utility surveys. Anomalies detected by the geophysical survey will be marked with spray paint and/or flags. GZA personnel will be onsite to observe and document the survey. A written geophysical survey report and figure will be appended to the Remedial Investigation Report.

Additionally, a mark-out of underground utility lines will be performed prior to the start of fieldwork by calling the New York One-Call Center. A utility mark-out verification reference number for the Site will be obtained and a record of the utilities will be kept (e.g., Con Ed, Cablevision, etc.).

3.3 SOIL SAMPLING

As summarized in **Table 1**, GZA will conduct soil sampling at seven locations, including four dedicated soil borings for the SRI (B-31, B-33, B-35 and B-35), two contingent monitoring well boring locations (B-33 and B-36), and one dedicated soil boring identified in the Updated Remedial Investigation Work Plan, dated March 2024 and prepared by First Environment (B-37). Soil borings will be advanced to the water table interface to further characterize the soil to the groundwater interface. Utilizing the Geoprobe drilling system, continuous soil samples will be collected and screened from each boring..

A GZA representative will oversee all soil boring activities; log (characterize) the shallow fill lithology; and screen the subsurface soil samples with a photoionization detector (PID). Organoleptic conditions will be noted for all samples.

At least one soil sample will be collected from each boring based on field evidence of contamination based on visual, olfactory, and PID screening results, or from the interval just above the water table interface if there are no obvious impacts, for the following full suite analysis:

- VOCs by EPA Method 8260
- SVOCs by EPA Method 8270
- TAL Metals by EPA Method 6010C / 7471B
- Pesticides by EPA Method 8081
- PCBs by EPA Method 8082A
- 1,4-Dioxane by EPA Method 8270

Soil samples will be collected from each boring, at approximately 0-2 inches bgs, 2-12 inches bgs, and 12-36 inches bgs for PFAS laboratory analysis by EPA Method 1633. In addition, one contingent PFAS sample will be collected just above the water table for potential analysis pending results of the top two (2) feet. PFAS soil sampling and analysis will be conducted in accordance with the NYSDEC April 2023 Guidance for Sampling, Analysis, and Assessment of Per- and Polyfluoroalkyl Substances (PFAS). Soil analysis via synthetic precipitation leaching procedure (SPLP) is contingent if an exceedance of 70 parts per trillion (ppt) is found for individual or total PFAS concentrations.

As summarized in **Table 1**, three (3) co-located sediment and surface water samples will be collected, two (2) in the wetland between the construction area and Westchester County Airport (SED-01/SW-01 and SED-02/SW-02) and one (1) at the stream heading off the property (SED-03/SW-03). Due to the seasonal variability, surface water samples will be collected if water is present during the RI. All analyses will be reported using NYSDEC ASP Category B deliverables from an ELAP-certified laboratory. The two samples from the wetland will be analyzed for 1,4-Dioxane by EPA Method 8270 and PFAS by EPA Method 1633. The one sample from the stream will be analyzed for full suite analysis.

All on-site sampling equipment will be decontaminated between each use in the following manner: laboratory grade detergent and freshwater wash using scrub brush, followed by two freshwater rinses and a final air dry. Gloves worn for sample handling will be discarded between sample collections. Each sample will be placed in sterilized laboratory supplied containers. The sampled earth material will be settled and capped to ensure that little or no headspace is present within the sample. Sample containers will then be placed on ice until delivered to the laboratory. All samples will be uniquely identified, and all information associated with the samples will be recorded utilizing standard chain-of-custody sampling protocols.

Following the completion of each boring, the boreholes will be backfilled with drill cuttings if no evidence of free product, non-aqueous phase liquid (NAPL) (if any), or grossly contaminated soil were identified during the advancement of the boring. If free product, NAPL, or grossly contaminated soi is identified, soil cuttings will be containerized in 55-gallong drums and disposed of off-site in accordance with DER-10, see Section 3.6 (below) for additional details. Boring logs will be generated for each borehole.

During this round of sampling, the following samples will be collected for QA/QC purposes in accordance with the attached Quality Assurance Project Plan (QAPP) (see **IRM Appendix E**):

- 1 trip blank – per day
- 1 field blank/20 samples
- 1 duplicate sample/20 samples
- 1 matrix spike and 1 matrix spike duplicate/20 samples

The soil laboratory data will be reviewed by a qualified Data Validator and a Data Usability Summary Report (DUSR) will be prepared. The laboratory analytical results of the samples will be compared to NYSDEC Part 375 standards and guidance values. Soil boring installation logs will be generated and will be included as an Appendix in the Supplemental Remedial Investigation Report. The logs will contain any local condition(s) that occurred during the sampling that may influence interpretation of the results (i.e., weather).

3.4 SOIL VAPOR POINT INSTALLATION AND SAMPLIING

Three (3) soil vapor samples will be installed via a Geoprobe™ direct push technology throughout the Site in accordance with the NYSDOH “Guidance for Evaluating Soil Vapor Intrusion in the State of New York” dated October 2006.

A stainless-steel screen connected to ¼-inch poly-tubing tubing will be advanced to two-feet above the groundwater interface, approximately 4 feet below surface grade and capped with a sample fitting to allow for the collection of soil gas. The annular space around the stainless-steel screen will be packed with coarse sand to one foot above the screen, creating a sampling zone of one foot six inches. A three (3) foot bentonite seal will then be emplaced above the sampling zone. The remainder of the borehole will be backfilled with clean fill.

One (1) soil gas sample will be collected from each soil vapor point at least 24-hours after installation in accordance with NYSDOH's "Guidance for Evaluating Soil Vapor Intrusion in the State of New York" dated October 2006. Concurrently one outdoor air sample will be collected.

Prior to sampling, one-to-three volumes of soil gas will be purged from the soil vapor point using a calibrated air sampling pump. A bucket will be placed over the sample assembly and helium gas will be used to enrich the atmosphere around the sample location in combination with real-time air monitoring (for helium) to verify that ambient air was not infiltrating the sampling assembly during purging and sampling.

Once confirmed that ambient air is not being drawn into the assembly, the soil vapor will be screened for the presence of VOCs using a PID. After field screening is completed, the tubing will be connected to the SUMMA canister and a soil vapor sample will be collected. The SUMMA canister regulators for soil vapor, indoor air and outdoor air samples will be set to restrict the sample collection to not exceed 0.2 liters per minute over an eight-hour time period. The canister will be submitted to a NYSDOH-certified laboratory for analysis of VOCs via EPA method TO-15 under chain-of-custody documentation.

During this round of sampling, the following samples will be collected for QA/QC purposes in accordance with the attached Quality Assurance Project Plan (QAPP) (see **IRM Appendix E**):

- 1 duplicate sample

Sampling activities a sample log sheet will be complete for each sample summarizing the following:

- sample identification;
- date and time of sample collection;
- sampling depth/height;
- identity of samplers;
- sampling methods and devices;
- purge volumes;
- volume of soil vapor extracted;
- if canisters were used, the vacuum before and after samples collected;
- apparent moisture content (dry, moist, saturated, etc.) of the sampling zone, and
- chain of custody protocols and records used to track samples from sampling point to analysis.

Soil vapor point installation logs will be generated and will be included as an Appendix in the Supplemental Remedial Investigation Report (RIR). The logs will contain any local condition(s) that occurred during the sampling that may influence interpretation of the results (i.e., weather).

The soil vapor laboratory data will be reviewed by a qualified data validator and a DUSR will be prepared in accordance with the QAPP.

3.5 GROUNDWATER MONITORING WELLS

3.3.1 Groundwater Monitoring Well Installation

A total of three (3) permanent groundwater monitoring wells were installed through the Site during previous investigations. Each well is 2-inch diameter monitoring well that was installed into the shallow groundwater and constructed with a 10-foot long 0.010-inch slotted well screen followed by a riser and stick up well construction. Two of the wells are constructed within 4-inch boreholes (MW-3A and MW-29) and set with filter sand from the bottom of the boring to within two or four feet from ground surface with the remaining void space filled with a bentonite seal. The third well (MW-01) is constructed within a 7-inch borehole and set with filter sand to two feet above the screen interval, followed by a two-foot bentonite seal and the remaining void space filled with concrete to the ground surface. Well construction logs are provided in **Attachment C**.

Two of the previously installed monitoring wells (MW-3A and MW-29) were not constructed to the NYSDEC's specifications and utilized boreholes smaller than recommended for permanent well installation. Therefore, as requested by NYSDEC, GZA will not sample those wells and will install two additional permanent monitoring wells for sampling during the SRI (designated as WJMW-01 and WJMW-02). Existing wells are set within the groundwater table, and the two new wells will be set with screen intervals between four to 14 feet to sample the shallow perched groundwater at the site. New monitoring wells will be constructed of 2-inch diameter PVC with a 10-foot long 0.01-inch slotted well screen set in filter sand to two feet above the screen interval.

The monitoring wells will be developed prior to sampling by surging/bailing, using a centrifugal pump and dedicated polyethylene tubing, or by Waterra positive displacement pumps and dedicated polyethylene tubing, or other methods at the discretion of the Field Manager/Site Supervisor. The development water will be contained in a tank on site or in drums. Wells will be developed until turbidity is less than 50 Nephelometric Turbidity Units (NTUs) for three (3) successive reading and until water quality indicators stabilized within 10% for pH, temperature, and specific conductivity for three successive readings, or until at least three well volumes are purged. All monitoring well development will be overseen by a field geologist and the duration, method of development, and approximate volume of water removed will be recorded in the field book.

3.3.2 Well Survey

The monitoring wells will be surveyed. The elevations of the top of the well casings will be surveyed by a licensed surveyor to the nearest 0.01 of a foot. The depth to water will be measured and a water table elevation contour map will be prepared. The water table contour map will also include the horizontal direction of groundwater flow.

3.3.3 Groundwater Monitoring Well Sampling

Groundwater samples will be collected from the installed groundwater monitoring wells. All monitoring wells will be sampling in accordance with EPA's Low-Flow (minimal drawdown) Groundwater Sampling procedures.

The following materials, as required, shall be available during groundwater sampling:

- Sample pump (peristaltic)
- Sample tubing
- Power source (i.e., generator, battery)
- Appropriate health and safety equipment as specified in the HASP
- Dedicated or disposable bailers
- New disposable polypropylene rope

- Buckets to measure purge water
- Water-level interface probe
- Conductivity/temperature meter
- pH meter
- Turbidity meter
- Appropriate water sample containers
- Appropriate blanks (trip blank supplied by the laboratory)
- Appropriate transport containers (coolers) with ice and appropriate labeling, packing, and shipping materials
- Groundwater sampling logs
- Chain of Custody forms
- Indelible ink pens
- Site map with well locations

Prior to sampling, groundwater elevations will be measured at each monitoring well and the presence of NAPL (if any) within the well will be evaluated. Depth to water and depth to bottom measurements of each well will be collected using a sonic interface probe and recorded on the sampling log sheet.

After groundwater elevations are measured and NAPLs are determined not to be present, groundwater will be purged from the wells. If NAPLs are determined present, then a groundwater sample will not be collected, rather a representative NAPL sample may be collected (if required) using a peristaltic pump or other method determined by the Field Manager/Site Supervisor.

Tubing (for peristaltic pumps) will be lowered slowly into the well to a depth corresponding to the center of the saturated screen section of the well. Purging rates will not exceed 500 milliliters per minute. During well purging, monitor the field indicator parameters (turbidity, temperature, specific conductance, pH, dissolved oxygen [DO], and oxidation-reduction potential [ORP]) every three to five minutes (or as appropriate). The well is considered stabilized and ready for sample collection when the indicator parameters have stabilized (readings with 10% of prior reading for pH, conductivity, turbidity and DO and 10 +/- mV for ORP) for three consecutive readings. Readings will be recorded utilizing a Horiba multimeter with flow through cell or equivalent.

Groundwater samples will be collected directly from the decontaminated tubing into laboratory-issued bottle ware. The vials will be filled completely and checked to ensure that no air bubbles are present. Samples will be packaged in laboratory-issued sample contained by GZA personnel and stored on ice pending same day or overnight shipment to a New York State ELAP and Contract Laboratory Protocol (CLP)-Accredited laboratory subcontracted by GZA. All samples will be uniquely identified, and all information associated with the samples will be recorded utilizing standard chain-of custody protocols. Sample containers will then be placed on ice until delivered to the laboratory.

Groundwater samples from each well will be analyzed for VOCs, SVOCs, 1,4-Dioxane, and PFAS and will be conducted in accordance with the NYSDEC April 2023 Guidance for Sampling, Analysis, and Assessment of PFAS. All analysis will be reported using NYSDEC ASP Category B deliverables.

During this round of sampling, the following samples will be collected for QA/QC purposes in accordance with the attached QAPP:

- 1 trip blank
- 1 field blank
- 1 duplicate sample
- 1 matrix spike and 1 matrix spike duplicate

The groundwater laboratory data will be reviewed by a qualified Data Validator and a DUSR will be prepared. The laboratory analytical results of the samples will be compared to NYSDEC TOGS groundwater standards and guidance values. Monitoring well installation logs will be generated and will be included as an Appendix in the Construction Completion Report (CCR). The logs will contain any local condition(s) that occurred during the sampling that may influence interpretation of the results (i.e., weather). Additionally, logs will include parameters recorded during low flow sampling, depth to water, depth to bottom, monitoring well screen information, and construction details. All purge water will be drummed and sampled for proper off-site disposal.

3.6 SURFACE WATER AND SEDIMENT SAMPLING

Three (3) surface water and three (3) sediment samples will be collected from collocated sample locations in the wetland and stream along the eastern boundary of the property. Two (2) surface water and sediment samples (SED-01/SW-01 and SED-02/SW-02) will be collected from locations from within the wetland area located between the construction area and the airport. One (1) surface water and sediment sample (SED-03/SW-03) will be collected from the portion of the stream at the northern property boundary where it leaves the Site. Based on historical observations from previous investigations, the stream on the Site is seasonally influenced due to a shallow clay confining layer in the subsurface soils of the Site. If surface water is not present during the mobilization for the SRI, surface water samples will not be collected and sediment samples will be collected from within the area identified as the steam bed.

Surface water samples will be collected directly from the stream utilizing the laboratory-supplied sample bottles. Caution will be taken to ensure the stream bed is not disturbed during the sample collection to avoid unnatural loading of sediments into the surface water being collected. Sediment samples will be collected from the zero to six inch interval utilizing a stainless steel hand auger.

The two surface water and sediment samples collected between the construction area and the airport (SED-01/SW-01 and SED-02/SW-02) will be analyzed for PFAS by EPA Method 1633 and 1,4-Dioxane by EPA Method 8270. The one surface water and sediment sampled collected where the stream leaves the Site (SED-03/SW-03) will be analyzed for the following suite of parameters:

- VOCs by EPA Method 8260
- SVOCs by EPA Method 8270
- TAL Metals by EPA Method 6010C / 7471B
- Pesticides by EPA Method 8081
- PCBs by EPA Method 8082A
- 1,4-Dioxane by EPA Method 8270

During this round of sampling, the following samples will be collected for QA/QC purposes in accordance with the attached Quality Assurance Project Plan (QAPP) (see **IRM Appendix E**):

- 1 trip blank – per day
- 1 field blank/20 samples
- 1 duplicate sample/20 samples
- 1 matrix spike and 1 matrix spike duplicate/20 samples

The surface water and sediment laboratory data will be reviewed by a qualified Data Validator and a DUSR will be prepared. The laboratory analytical results of the surface water samples will be compared to NYSDEC TOGS surface water standards and guidance values for sources of drinking water. The laboratory analytical results of the sediment samples will be compared to NYSDEC Part 375 standards and guidance value.

3.7 INVESTIGATION DERIVED WASTE DISPOSAL

Investigation Derived Waste (IDW) generated from remedial investigation activities including soil boring installation, soil vapor point installation, monitoring well installation, and subsequent sampling will be handled in accordance with DER-10 Section 3.3(e).

IDW needing to be managed on-site will be containerized in properly labeled DOT approved 55-gallon drums for future off-site disposal at a permitted facility. All boreholes which require drill cuttings disposal would ultimately be backfilled with drill cuttings and cement grout. Disposable sampling equipment including spoons, gloves, bags, paper towels, etc. that came in contact with environmental media will be double bagged and disposed as municipal trash dumpster as non-hazardous trash.

3.8 EQUIPMENT DECONTAMINATION

An equipment decontamination area will be set up in a location close to, but segregated from, the work area. This decontamination area will be set up on top of a minimum 6-mil polyethylene liner (or equivalent quality plastic sheeting) and will include the following equipment: decontaminating cleaners and solutions, deionized water, sprayers, washing tubs, brushes and clean disposable latex and neoprene gloves. Gloves worn for sample handling will be discarded between sample collections.

All down-hole drilling equipment will be decontaminated between each use, e.g., augers, samplers, rods, and plugs, etc. All re-usable sampling equipment, including bowls, trowels, and split-spoon samplers, etc. will be decontaminated with a three-step washing process that consists of a tap water rinse, an Alconox® and tap water wash, followed by a distilled water rinse. After each rinsing process the equipment will be allowed to air dry. The submersible pump used for groundwater sample collection will be decontaminated between sample collection by passing the detergent and water mixture through the pump, followed by two freshwater rinses.

3.9 SAMPLING QA/QC PROTOCOL

Field notes including observations of soil conditions, pertinent observations, diagrams (if appropriate) will be maintained, and appropriate photographs will be taken. A record of each sample, including any pertinent observations about the sample, will be kept in a field notebook and/or appropriate logs and copies will be included in the CCR.

3.10 AIR MONITORING

Air monitoring will be conducted for site workers and the community (Community Air Monitoring Program). Air monitoring results will be recorded in the field book during the investigation activities.

3.10.1 Worker Air Monitoring

Air monitoring of the breathing zone will be performed periodically during drilling and sampling activities to document health and safety protection for the work team. VOCs will be monitored with a PID in accordance with the CHASP. If air monitoring during intrusive operations identifies the presence of VOCs, the field engineer will follow the guidelines outlined in the CHASP regarding action levels, permissible exposure, engineering controls, and personal protective equipment. If the VOC action level is exceeded, work will cease, and the work location will be evacuated. Monitoring will continue until the levels drop to permissible limits, at which point work will resume with continued monitoring. If airborne concentrations above action levels persist, field activities will be halted, and the work relocated to another area. If dust emissions are observed, work will stop and dust suppression measures (i.e., water spray) will be implemented.

3.10.2 Community Air Monitoring Plan

In addition to air monitoring in the worker breathing zone, community air monitoring will be performed in compliance with the NYSDOH Generic Community Air Monitoring Plan (CAMP) during all intrusive work for the duration of the investigation. The CAMP is included as **Appendix I to the IRM Work Plan**. The CAMP will consist of continuous monitoring for VOCs and dust emissions during ground intrusive activities (i.e., soil boring and monitoring well installation). Concentrations of VOCs and dust emissions will be measured at both the upwind (one) and downwind (one) CAMP stations before the start of the RI to establish background concentrations. During the RI, VOCs and dust emissions will be measured at the start of each workday, and at one-minute intervals throughout the day at the downwind perimeter of the work zone, which will be established at points on the site where the general public or site employees may be present. VOC Monitoring will be conducted with a PID equipped with a 10.6 eV lamp. VOC community air monitoring requirements will be conducted until it is determined that the site is not a source of organic vapors. Dust emissions will be monitored using real-time monitoring equipment capable of measuring particulate matter less than 10 micrometers in size (PM10) and capable of averaging a period of 15 minutes (or less) for comparison to the airborne particulate action level (e.g., DustTrak). If dust emissions are observed, work will stop, and dust suppression measures will be used. The results will be presented in the daily reports (see DER-10 for details).

3.11 HEALTH & SAFETY

A site-specific Construction Health and Safety Plan (CHASP) has been prepared for the field portion of the IRM, including the SRIWP. The CHASP will cover all activities in the investigation area as well as emergency procedures and available emergency services in proximity to the Site. All proposed work discussed in the SRIWP will be conducted in accordance with the CHASP. The CHASP is included as **Appendix D of the IRM Work Plan**.

3.12 QUALITATIVE HUMAN HEALTH EXPOSURE ASSESSMENT

A Qualitative Human Health Exposure Assessment will be conducted in accordance with Appendix 3B of the NYSDEC DER-10, Technical Guidance for Site Investigation and Remediation. The assessment will be submitted in the IRM Work Plan.

3.13 FISH AND WILDLIFE RESOURCE IMPACT ANALYSIS

A Fish and Wildlife Resource Impact Study is not required for this site according to DER-10 Section 3.10.

4.0 REPORTING

4.1 DAILY REPORTS

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

- An update of progress made during the reporting day
- References to alpha-numeric map for site activities
- A summary of any and all complaints with relevant details (names, phone numbers)
- A summary of CAMP findings, including exceedances
- An explanation of notable site conditions.

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

Daily Reports will include a description of daily activities keyed to an alpha-numeric map for the site that identifies work areas. These reports will include a summary of CAMP results, odor and dust problems and corrective actions, and all complaints received from the public. The NYSDEC-assigned project number will appear on all reports.

4.2 MONTHLY REPORTS

Monthly reports will be submitted to NYSDEC and NYSDOH Project Managers by the 10th of each month and will include:

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

4.3 REMEDIAL INVESTIGATION REPORTING

Upon completion of the field activities, a Supplemental RIR will be prepared for the WFP Site to document the findings of the investigations performed at the Site and the proposed IRM. The Supplemental RIR will be consistent with the specifications presented in the DER-10 document and will include:

- An executive summary;
- A site description and history;
- Summary information regarding previous investigations and remedial work performed at the Site;
- Descriptions of field activities performed;
- A summary of pertinent field observations, field measurements, and laboratory analytical data summarized in tabular format - analytical results will be compared to appropriate NYSDEC guidance and standards;
- Plan view and cross-section figures presenting laboratory analytical data and field observations of surface and subsurface soil and groundwater impacts. A minimum of two profiles will be developed, one perpendicular to and one parallel with groundwater flow direction at the Site;
- A qualitative human health risk assessment which assesses the sources of impact, on and off-site human and ecological receptors, and exposure pathways;
- A data usability review and DUSRs for the laboratory data collected during the RI;
- An integration of field observations and measurements with laboratory analytical data to evaluate the nature and extent of impacts and to develop a site conceptual model of potential contaminant migration;
- A set of conclusions for the investigation; and
- Recommendations.

Data collected during the RI will be submitted in the Department's Environmental Information Management System (EIMS) format for Electronic Data Delivery (EDD).

Detailed information regarding the remedial investigation (e.g., general description of the construction activities, waste disposal documentation, backfill documentation, photographic documentation, etc.) will be analyzed for the contingency remedial activities to be incorporated into the IRM. At the conclusion of the IRM, a CCR will be prepared following receipt of all data, the DUSRs (if data requiring 3rd party review are generated), and all final disposal documentation. The CCR will be submitted within approximately 30 days after the completion of IRM activities.

TABLES

Table 1 - Supplemental Remedial Investigation Sample Summary
Rye Lake Water Filtration Plant
Westchester County, New York
BCP Site No. C360174

Sample Matrix	Sample ID	Sample Location	Depth	Rationale	Sample Analyses
Soil	B-31	Northern portion of the IRM Site adjacent to existing MW-29	Soil with evidence of contamination, or from the interval just above the water table interface if there are no obvious impacts.	To assess the soil quality at the site	VOCs by EPA Method 8260 SVOCs by EPA Method 8270 TAL Metals by EPA Method 6010C/7471B Pesticides by EPA Method 8081 PCBs by EPA Method 8082A 1,4-Dioxane by EPA Method 8270 PFAS by EPA Method 1633 (contingent)
			0-2 inches, 2-12 inches, 12-24 inches bgs, and one contingent above water table interface		PFAS by EPA Method 1633
Soil	B-32	Central portion of the proposed northern bioretention footprint	Soil with evidence of contamination, or from the interval just above the water table interface if there are no obvious impacts.	To assess the soil quality at the site	VOCs by EPA Method 8260 SVOCs by EPA Method 8270 TAL Metals by EPA Method 6010C/7471B Pesticides by EPA Method 8081 PCBs by EPA Method 8082A 1,4-Dioxane by EPA Method 8270 PFAS by EPA Method 1633 (contingent)
			0-2 inches, 2-12 inches, 12-24 inches bgs, and one contingent above water table interface		PFAS by EPA Method 1633
Soil	B-33	Central portion of the proposed eastern bioretention footprint	Soil with evidence of contamination, or from the interval just above the water table interface if there are no obvious impacts.	To assess the soil quality at the site	VOCs by EPA Method 8260 SVOCs by EPA Method 8270 TAL Metals by EPA Method 6010C/7471B Pesticides by EPA Method 8081 PCBs by EPA Method 8082A 1,4-Dioxane by EPA Method 8270 PFAS by EPA Method 1633 (contingent)
			0-2 inches, 2-12 inches, 12-24 inches bgs, and one contingent above water table interface		PFAS by EPA Method 1633

Table 1 - Supplemental Remedial Investigation Sample Summary
Rye Lake Water Filtration Plant
Westchester County, New York
BCP Site No. C360174

Sample Matrix	Sample ID	Sample Location	Depth	Rationale	Sample Analyses
Soil	B-34	Northern portion of the proposed building footprint for the filtration plant	Soil with evidence of contamination, or from the interval just above the water table interface if there are no obvious impacts.	To assess the soil quality at the site	VOCs by EPA Method 8260 SVOCs by EPA Method 8270 TAL Metals by EPA Method 6010C/7471B Pesticides by EPA Method 8081 PCBs by EPA Method 8082A 1,4-Dioxane by EPA Method 8270 PFAS by EPA Method 1633 (contingent)
			0-2 inches, 2-12 inches, 12-24 inches bgs, and one contingent above water table interface		PFAS by EPA Method 1633
Soil	B-35	Southern portion of the proposed building footprint for the filtration plant	Soil with evidence of contamination, or from the interval just above the water table interface if there are no obvious impacts.	To assess the soil quality at the site	VOCs by EPA Method 8260 SVOCs by EPA Method 8270 TAL Metals by EPA Method 6010C/7471B Pesticides by EPA Method 8081 PCBs by EPA Method 8082A 1,4-Dioxane by EPA Method 8270 PFAS by EPA Method 1633 (contingent)
			0-2 inches, 2-12 inches, 12-24 inches bgs, and one contingent above water table interface		PFAS by EPA Method 1633
Soil	B-36	Central portion of the proposed generator pad footprint	Soil with evidence of contamination, or from the interval just above the water table interface if there are no obvious impacts.	To assess the soil quality at the site	VOCs by EPA Method 8260 SVOCs by EPA Method 8270 TAL Metals by EPA Method 6010C/7471B Pesticides by EPA Method 8081 PCBs by EPA Method 8082A 1,4-Dioxane by EPA Method 8270 PFAS by EPA Method 1633 (contingent)
			0-2 inches, 2-12 inches, 12-24 inches bgs, and one contingent above water table interface		PFAS by EPA Method 1633

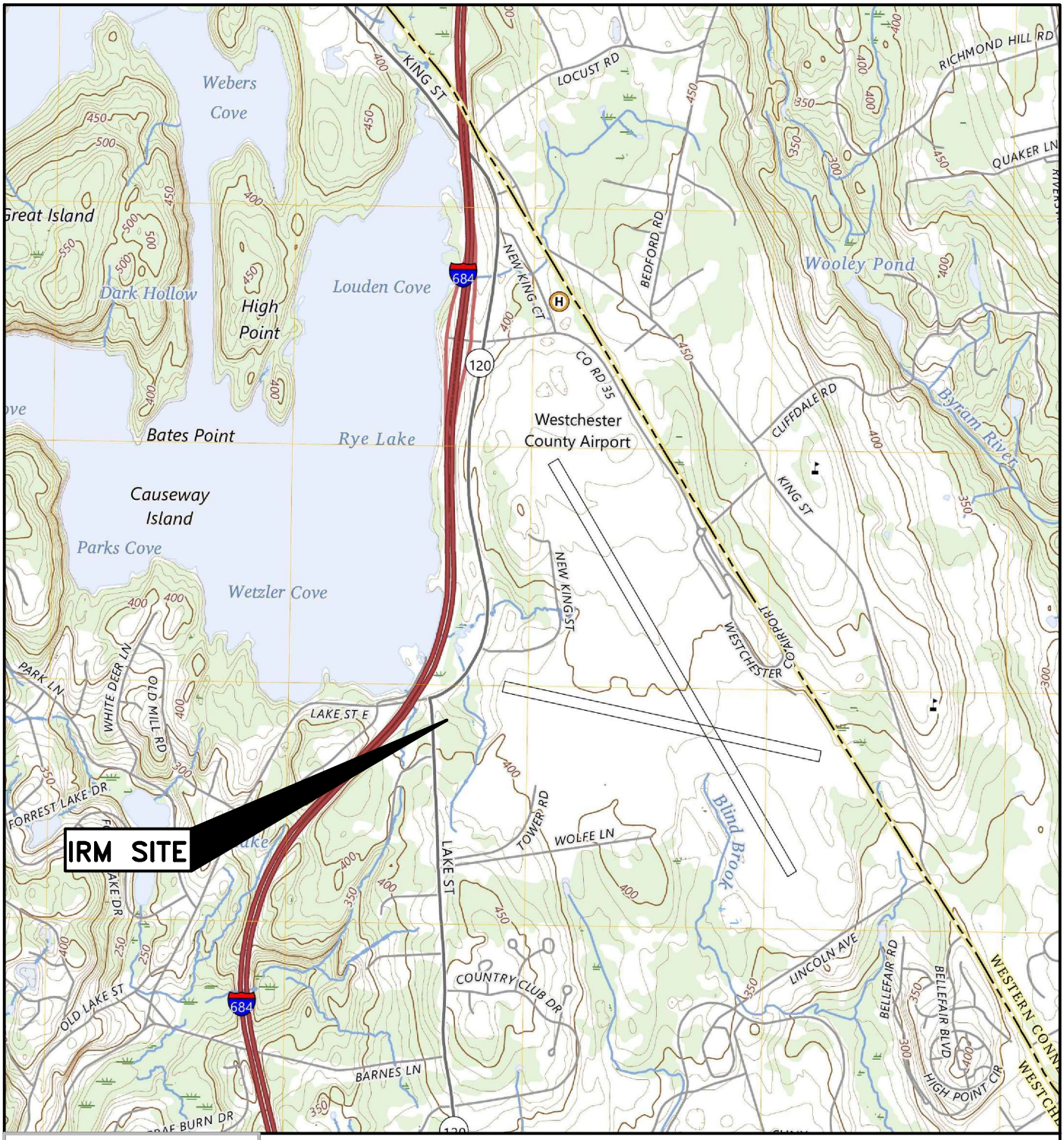
Table 1 - Supplemental Remedial Investigation Sample Summary
Rye Lake Water Filtration Plant
Westchester County, New York
BCP Site No. C360174

Sample Matrix	Sample ID	Sample Location	Depth	Rationale	Sample Analyses
Soil	B-37	Southern portion of the Site footprint within the boundary of the RI's Southwestern Corner Area	Soil with evidence of contamination, or from the interval just above the water table interface if there are no obvious impacts.	To assess the soil quality at the site	VOCs by EPA Method 8260 SVOCs by EPA Method 8270 TAL Metals by EPA Method 6010C/7471B Pesticides by EPA Method 8081 PCBs by EPA Method 8082A 1,4-Dioxane by EPA Method 8270 PFAS by EPA Method 1633 (contingent)
			0-2 inches, 2-12 inches, 12-24 inches bgs, and one contingent above water table interface		PFAS by EPA Method 1633
Sediment	SED-01	Between construction and airport in the wetland area	0-6 inches	To assess the sediment quality at the site	1,4-Dioxane by EPA Method 8270 PFAS by EPA Method 1633
Sediment	SED-01	Between construction and airport in the wetland area	0-6 inches	To assess the sediment quality at the site	1,4-Dioxane by EPA Method 8270 PFAS by EPA Method 1633
Sediment	SED-03	At the stream heading off property	0-6 inches	To assess the sediment quality leaving the site	VOCs by EPA Method 8260 SVOCs by EPA Method 8270 TAL Metals by EPA Method 6010C/7471B Pesticides by EPA Method 8081 PFAS by EPA Method 1633 PCBs by EPA Method 8082A 1,4-Dioxane by EPA Method 8270
Surface water (if present)	SW-01	Between construction and airport in the wetland area	N/A	To assess the surface water quality co-located with SED-01	1,4-Dioxane by EPA Method 8270 PFAS by EPA Method 1633
Surface water (if present)	SW-02	Between construction and airport in the wetland area	N/A	To assess the surface water quality co-located with SED-02	1,4-Dioxane by EPA Method 8270 PFAS by EPA Method 1633
Surface water (if present)	SW-03	At the stream heading off property	N/A	To assess the surface water quality leaving the site co-located with SED-03	VOCs by EPA Method 8260 SVOCs by EPA Method 8270 TAL Metals by EPA Method 6010C/7471B Pesticides by EPA Method 8081 PFAS by EPA Method 1633 PCBs by EPA Method 8082A 1,4-Dioxane by EPA Method 8270

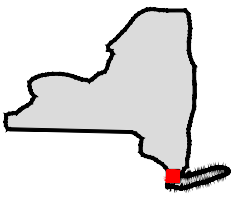
Table 1 - Supplemental Remedial Investigation Sample Summary
Rye Lake Water Filtration Plant
Westchester County, New York
BCP Site No. C360174

Sample Matrix	Sample ID	Sample Location	Depth	Rationale	Sample Analyses
GW	MW-01	Central portion of the proposed eastern bioretention footprint	25 - 35 ft bgs	To assess the groundwater quality at the site	VOCs by EPA Method 8260 SVOCs by EPA Method 8270 1,4-Dioxane by EPA Method 8270 PFAS by EPA Method 1633
GW	MW-3A	Southern portion of the proposed building footprint for the filtration plant	17 - 27 ft bgs	To assess the groundwater quality at the site	VOCs by EPA Method 8260 SVOCs by EPA Method 8270 1,4-Dioxane by EPA Method 8270 PFAS by EPA Method 1633
GW	MW-29	Northern portion of the proposed limits of disturbance for the IRM	15 - 25 ft bgs	To assess the groundwater quality at the site	VOCs by EPA Method 8260 SVOCs by EPA Method 8270 1,4-Dioxane by EPA Method 8270 PFAS by EPA Method 1633
GW	WJMW-01	Central portion of the proposed eastern bioretention footprint	Screen sections will straddle the water table interface, as determined in the field	Contingent Well to assess the groundwater quality upgradient of IRM Area	VOCs by EPA Method 8260 SVOCs by EPA Method 8270 1,4-Dioxane by EPA Method 8270 PFAS by EPA Method 1633
GW	WJMW-02	Central portion of the proposed generator pad footprint	Screen sections will straddle the water table interface, as determined in the field	Contingent Well to assess the groundwater quality upgradient of IRM Area	VOCs by EPA Method 8260 SVOCs by EPA Method 8270 1,4-Dioxane by EPA Method 8270 PFAS by EPA Method 1633
Soil vapor	SV-01	Central portion of the proposed eastern bioretention footprint	4 ft bgs	To assess the soil vapor quality at the site	VOCs by EPA TO-15
Soil vapor	SV-02	Southern portion of the proposed building footprint for the filtration plant	4 ft bgs	To assess the soil vapor quality at the site	VOCs by EPA TO-15
Soil vapor	SV-03	Central portion of the proposed generator pad footprint	4 ft bgs	To assess the soil vapor quality at the site	VOCs by EPA TO-15

FIGURES



NEW YORK



QUADRANGLE LOCATION

SOURCE:

USGS TOPOGRAPHIC MAPS: GLENVILLE, CT (2024). CONTOUR INTERVAL 10FT., NAVD-1988, ORIGINAL SCALE 1:24,000 (1IN.=2,000FT.).

N W E S

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WESTCHESTER JOIN WATER WORKS
WATER FILTRATION PLANT

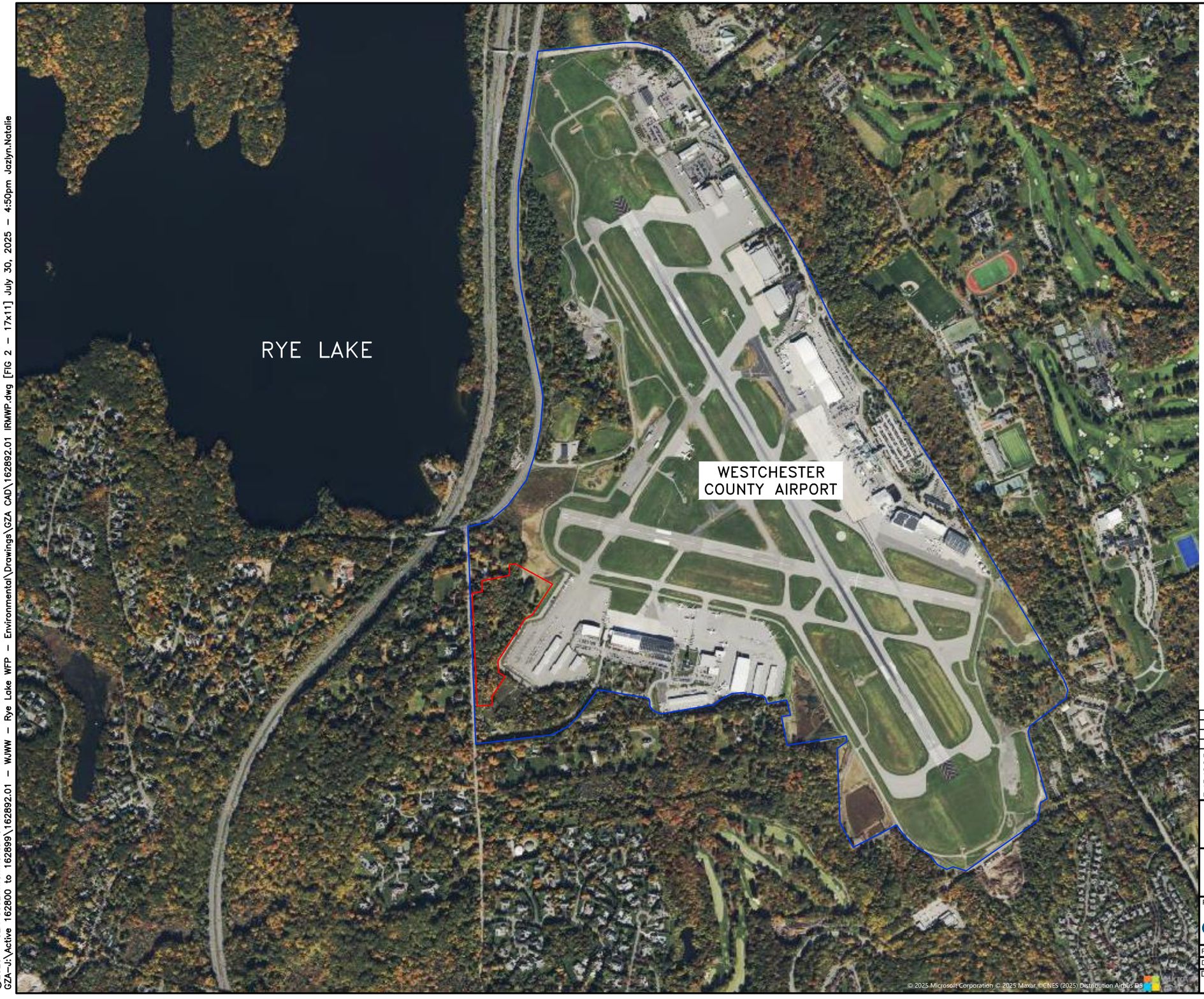
PREPARED BY:
GZA GeoEnvironmental of NY
Engineers and Scientists
www.gza.com

PREPARED FOR:
WESTCHESTER JOINT WATER WORKS

SITE LOCATION MAP

PROJ MGR: ZL	REVIEWED BY: ZL	CHECKED BY: SK	FIGURE 1
DESIGNED BY: SG	DRAWN BY: SG	SCALE: 1"=2000'	
DATE: JULY 2025	PROJECT NO. 41.0162892.01	REVISION NO. -	SHEET NO.

© 2025 – GZA GeoEnvironmental of NY.
GZA–J:\Active 162800 to 162899\162892.01 – WJWW – Rye Lake WFP – Environmental\Drawings\GZA CAD\162892.01 IRMWP.dwg [FIG 1 8.5x11] July 30, 2025 – 4:47pm Jazlyn.Natalie



GENERAL NOTES

1. AERIAL IMAGERY DEVELOPED FROM © 2025 MICROSOFT CORPORATION © 2025 MAXAR © CNES (2025) DISTRIBUTION AIRBUS DS.

LEGEND

- APPROXIMATE IRM SITE BOUNDARY
- APPROXIMATE BROWNFIELD CLEANUP PROGRAM SITE C360174 BOUNDARY

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SCALE IN FEET

NO.	ISSUE/DESCRIPTION	BY	DATE

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WESTCHESTER JOINT WATER WORKS
WATER FILTRATION PLANT

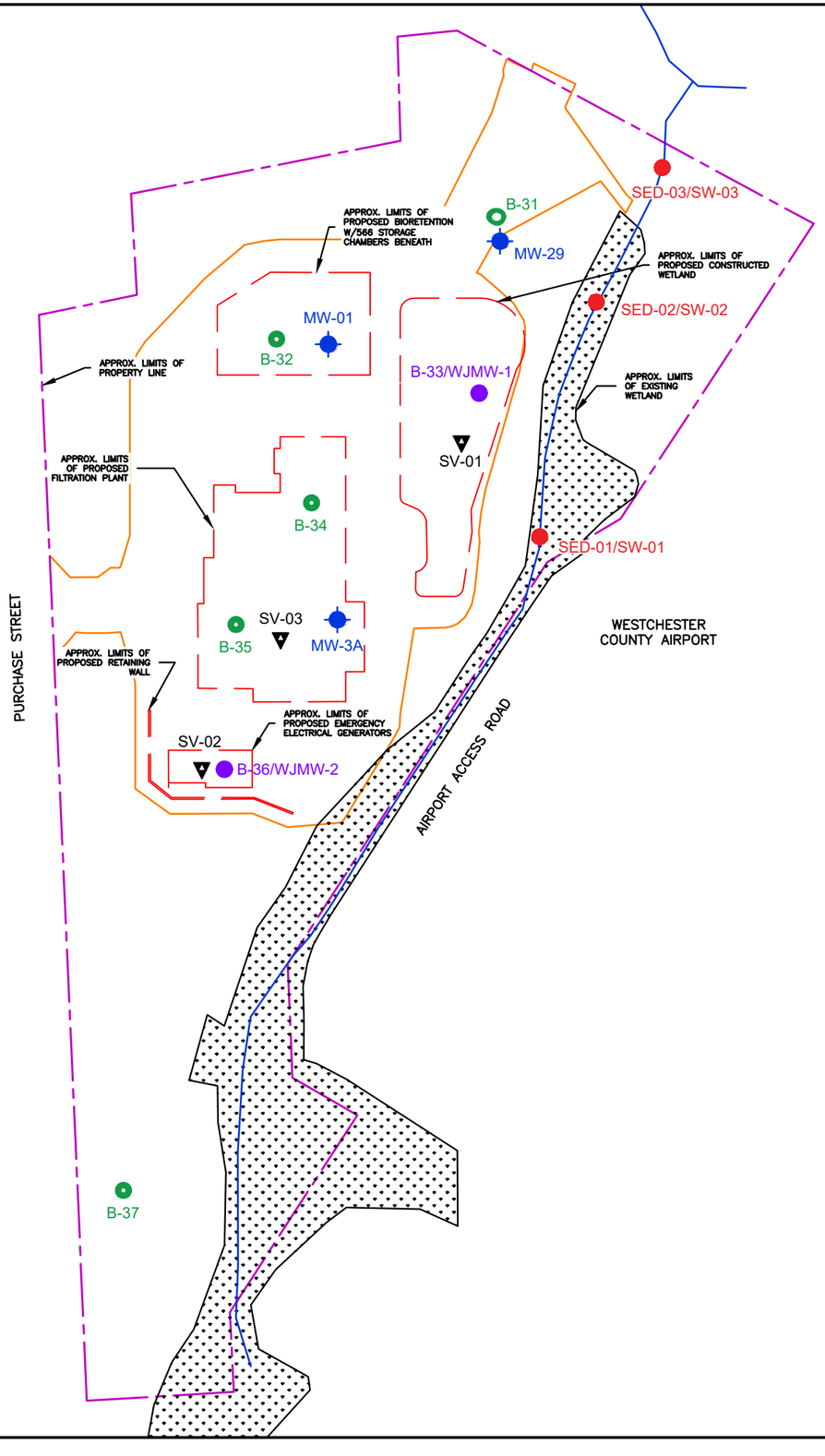
AERIAL MAP

PREPARED BY:
GZA GeoEnvironmental of NY
Engineers and Scientists
www.gza.com

PREPARED FOR:
WESTCHESTER JOINT WATER WORKS

PROJ MGR: ZL	REVIEWED BY: ZL	CHECKED BY: SK	FIGURE 2
DESIGNED BY: SG	DRAWN BY: SG	SCALE: 1" = 1000'	
DATE: JULY 2025	PROJECT NO. 41.0162892.01	REVISION NO.	SHEET NO.

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G:\Active 162800 to 162899\162892.01 – WJWW – Rye Lake WFP – Environmental\Drawings\GZA CAD\162892.01 IRMWP.dwg [FIG 2 – 17x11] July 30, 2025 – 4:50pm Jazlyn.Natalie



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GENERAL NOTES

1. BASE MAP DEVELOPED FROM TOPOGRAPHIC SURVEY, PREPARED BY GEORGE J. MOTTARELLA, DATED APRIL 17, 2021 AND FROM DRAWING C–101, C–121, & C–122 TITLED, PREPARED BY, HAZEN & SAWYER, DATED JANUARY, 2023.

LEGEND

- APPROXIMATE IRM SITE BOUNDARY
- APPROXIMATE LIMITS OF PROPOSED STRUCTURES
- APPROXIMATE INTERMITTENT STREAM BED
- APPROXIMATE LIMITS OF EXISTING WETLAND
- APPROXIMATE LIMITS OF DISTURBANCE
- B-31 — PROPOSED SOIL BORING LOCATION
- MW-01 — EXISTING MONITORING WELL LOCATION (TO BE SAMPLED)
- B-33/WJMW-1 — PROPOSED SOIL BORING AND CONTINGENCY GROUNDWATER SAMPLING LOCATION
- SED-01/SW-01 — PROPOSED SEDIMENT AND SURFACE WATER SAMPLING LOCATION
- SV-01 — PROPOSED SOIL VAPOR SAMPLE LOCATION

0 75 150 300

SCALE IN FEET

NO.	ISSUE/DESCRIPTION	BY	DATE

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WESTCHESTER JOINT WATER WORKS
WATER FILTRATION PLANT

SUPPLEMENTAL RI SAMPLE LOCATION PLAN

PREPARED BY: GZA GeoEnvironmental of NY Engineers and Scientists www.gza.com		PREPARED FOR: WESTCHESTER JOINT WATER WORKS	
PROJ MGR: ZL	REVIEWED BY: ZL	CHECKED BY: SK	FIGURE 3
DESIGNED BY: SG	DRAWN BY: SG	SCALE: 1" = 150'	
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ATTACHMENT A – REMEDIAL INVESTIGATION WORK PLAN EXCERPTS

Updated Remedial Investigation Workplan

Westchester County Airport

White Plains, New York

Site No. C360174

March 2024

Prepared for:	**Westchester County** **240 Airport Road** **White Plains, New York 10601**
Prepared by:	**First Environment, Inc.** **10 Park Place, Building 1A,** **Suite 504** **Butler, NJ 07405**

Table 2 – Summary Table - Sample Location & Laboratory Analysis

Sample Area	Soil	Sediment	Ground Water	Surface Water	Wells	Media & Laboratory Analysis	Sample Description	Rationale
Former NYANG Area	4		1		1	Soil VOCs, SVOCs, Groundwater VOCs, SVOCs, PFAS	Four soil borings will be drilled to bedrock. One sample will be collected at each soil boring from soil exhibiting the highest PID levels or if no elevated PID levels encountered the sample will be collected six inches above the water table for VOCs and SVOCs. One Bedrock monitoring well will be installed south of FMW-23.	Assess the presence of potential VOC source near FMW-23 due to presence of cis-1,2 DCE above the AWQS. One bedrock well is proposed to delineate the extent groundwater impacts at this location.
Catch Basin Area North of NYANG Burn Pit	6					Soil PFAS	Collect soil at two soil sample locations for PFAS analysis in the open catch area. Surface soil samples will be collected from 0-6 inches. Contingent samples will be collected from 6-12 inches and 12-36 inches.*	Investigate the potential PFAS accumulation in the catch basin that may have migrated from the former NYANG Burn Pit.
FMW-14 Area	1		1		1	Soil & Groundwater VOCs, SVOCs	One boring will be drilled to bedrock immediately downgradient of FMW-14. One soil sample will be collected from the soil exhibiting the highest PID levels or if no elevated PID levels are encountered the sample will be collected from six inches above the water table for VOCs & SVOCs. One temp well will be installed and sampled for VOC and SVOCs	Chlorobenzene was identified in groundwater above AWQS at FMW-14 and therefore the purpose of the well is to analyze for VOCs and SVOCs.

TABLE 2
Summary Table
Sample Location, Media, and Laboratory Analyses

Sample Area	Soil	Sediment	Ground Water	Surface Water	Wells	Media & Laboratory Analysis	Sample Description	Rationale
North Parcel (NKS 2 and NKS 3	18					Soil PFAS	A ring of three soil borings will be installed around previous soil sample locations NKS 2 and NKS 3. Sample locations will be stepped out 25 feet to the north, southeast and southwest directions. Surface soil samples will be collected from 0-6 inches. Contingent samples will be collected from 6-12 inches and 12-36 inches*	PFAS levels exceeded soil guidance further delineation requested by the NYSDEC
West Side near Rye Lake (off-site)	15	6	10	2	10	Soil, Sediment, Surface water, Groundwater PFAS	Five soil sample locations are distributed off-site at the proposed five well installation locations. Surface samples from 0-6 inches will be collected for laboratory analysis. Contingent samples will be collected from 6-12 inches and 12-36 inches* Locations will include shallow & deep monitoring well couplet installation used for groundwater sample collection. Two sediment surface water locations (6 vertical samples) have been chosen to collect samples at tributaries near E-10. Sediment samples will be collected from 0-6 inches.	Assess the presence and concentration of PFAS in environmental media to define the nature and extent of PFAS as well as the vertical flow hydraulic gradient at well couplets.

TABLE 2
Summary Table
Sample Location, Media, and Laboratory Analyses

Sample Area	Soil	Sediment	Ground Water	Surface Water	Wells	Media & Laboratory Analysis	Sample Description	Rationale
							Contingent samples will be collected from 6-12 and 12-24 inches.*	
West Side SW-2/OF-4 Area	1	18	2	2	2	Soil, Sediment PFAS Groundwater PFAS, 1,4 Dioxane Surface water Arsenic & 1,4 Dioxane Floc Arsenic	Six sediment sample locations have been selected and three vertical sediment samples will be collected at each location along tributary that converges to E-11 to determine if the PFAS in the tributaries has impacted the sediment. Sediment samples will be collected from 0-6 inches. Contingent samples will be collected from 6-12 and 12-24 inches.* At the well location 2 samples distributed off-site at the proposed one well installation location. Surface samples from 0-6 inches will be collected for laboratory analysis. Contingent samples will be collected from 6-12 inches and 12-36 inches*	Samples are intended to assess the nature and extent of PFAS present in the sediment of tributaries leaving the Airport and extending down gradient to Rye Lake, including groundwater assessment for PFAS and further assessment for the presence of arsenic and 1,4 dioxane in surface water.

TABLE 2
Summary Table
Sample Location, Media, and Laboratory Analyses

Sample Area	Soil	Sediment	Ground Water	Surface Water	Wells	Media & Laboratory Analysis	Sample Description	Rationale
							Two surface water samples will also be collected and analyzed for arsenic and 1,4 dioxane (one sample collected at OF-4 and one collected at E-11) in order to expand upon previous detections in the area. One Floc sample at SW-2 will be collected and analyzed for arsenic, in order to try to confirm a previous detection. A well couplet will be installed behind the county equipment yard on the west side of Route 120 in order to determine any impact from the tributaries or to groundwater from upgradient areas. Surface samples from 0-6 inches will be collected for laboratory analysis. Contingent samples will be collected from 6-12 inches and 12-36 inches*	
Hanger E (on-site) OF-4 Area	15	6	5	2	5	<u>Soil</u> PFAS <u>Sediment</u> PFAS, 1,4 Dioxane	Five surface soil samples from 0-6 inches will be collected for PFAS laboratory analysis. Contingent samples will be collected from 6-12 inches and 12-36 inches* .	Samples intended to delineate PFAS impact from AFFF release and solvent release in Hangar E. Sediment and surface water samples will be collected to assess the presence and concentration of PFAS in the lake

TABLE 2
Summary Table
Sample Location, Media, and Laboratory Analyses

Sample Area	Soil	Sediment	Ground Water	Surface Water	Wells	Media & Laboratory Analysis	Sample Description	Rationale
						Groundwater PFAS,VOCs, and SVOCs, 1,4 Dioxane	Two sediment and surface water locations will be selected from the "S" shaped lake directly to the south of Hangar E for PFAS. Sediment sample intervals will be collected from 0-6, and contingent samples from 6-12, and 12-24 inches.* Four monitoring wells and one bedrock installation will be drilled for groundwater sampling, including sampling at MW-1 and MW-4, Monitoring wells will be sampled and analyzed for VOCs and SVOCs.	and streams. The wells are intended to delineate PFAS, VOCs, and SVOCs in groundwater around and under Hangar E.
Southwestern Corner of Airport (on-site)	18		3		3	Soil PFAS Groundwater PFAS	Install three monitoring wells used for groundwater sampling and additionally install three soil borings. Collect surface soil samples from 0-6 inches at each location for laboratory analysis. Contingent samples will be collected from 6-12 and 12-36 inches	PFAS identified in FMW-3 will be further evaluated with the installation of additional monitoring wells. Soil and groundwater samples to be collected to further characterize PFAS and AFFF source assessment. Monitoring wells will also permit a better understanding of groundwater flow and PFAS concentrations in the area.
Southern End of Airport – Active Fire	12	6	4	2	4	Soil, Surface water, Sediment PFAS	At four location surface soil samples from 0-6 inches will be collected for laboratory analysis. Contingent samples will be	PFAS detections in soil and elevated levels in groundwater at MW-58D indicate a separate PFAS source. Soil and groundwater samples are

TABLE 2
Summary Table
Sample Location, Media, and Laboratory Analyses

Sample Area	Soil	Sediment	Ground Water	Surface Water	Wells	Media & Laboratory Analysis	Sample Description	Rationale
Training Area						Groundwater VOCs, and SVOCs, PFAS, 1,4 Dioxane	collected from 6-12 inches and 12-36 inches.* At three locations overburden monitoring wells will be installed at 40 to 50 feet bgs deep; water table and one bedrock well installation used for groundwater sampling. One bedrock monitoring well will be installed to determine vertical extent of PFAS impact. Two surface water and sediment sample locations have been selected. Sediment sample intervals will be collected from 0-6 inches, and contingent samples from 6-12, and 12-24 inches.* Sample locations are from the southeasternmost tributary near MW-58D. Monitoring wells will be sampled and analyzed for PFAS, VOCs and SVOCs. It should be noted that the sediment and surface water locations have been selected using the USGS river overlay. The existence of the tributary has not been confirmed in the field. Should it prove to be either	intended to delineate PFAS and gain a better understanding of the AFFF source as well as groundwater flow in the area. Surface water and sediment samples will be collected to assess the presence of PFAS in the surface water and sediment in the area. Groundwater will be analyzed for VOCs and SVOCs in addition to PFAS to assess their presence.

TABLE 2
Summary Table
Sample Location, Media, and Laboratory Analyses

Sample Area	Soil	Sediment	Ground Water	Surface Water	Wells	Media & Laboratory Analysis	Sample Description	Rationale
							ephemeral or nonexistent, surface water sampling will occur during a runoff event, and sediment sampling will occur where runoff is depositing material.	
OF-10 Area Building 11 (on-site)	27	6	1	2	1	Soil, Sediment, Surface Water PFAS Groundwater VOCs, SVOCs, & PFAS	Nine soil borings, one monitoring well, and two surface water and sediment sample locations have been selected. Surface soil samples from 0-6 inches will be collected for laboratory analysis. Contingent samples will be collected from 6 to 12 inches and 12-36 inches *. One shallow monitoring well will be installed and used for groundwater sampling. Two surface and sediment sample locations have been chosen near OF-10, downstream of previously collected samples. Sediment sample intervals will be collected from 0-6, and contingent samples from 6-12, and 12-24 inches*	To further define environmental media impacted with PFAS and further assess this area as a potential separate PFAS source area and assess for potential VOCs, SVOCs and PFAS in groundwater.

TABLE 2
Summary Table
Sample Location, Media, and Laboratory Analyses

Sample Area	Soil	Sediment	Ground Water	Surface Water	Wells	Media & Laboratory Analysis	Sample Description	Rationale
Basins A & B		6				Sediment Metals & PFAS	Collect one sediment sample for each basin and analyze the sediment samples for TAL metals as well as PFAS. Sediment sample intervals will be collected from 0-6 inches, and contingent samples from 6-12, and 12-24 inches.*	Assess the presence of metals and PFAS.
Totals	117	48	27	10	27			

Sample locations are identified in Figure 18.

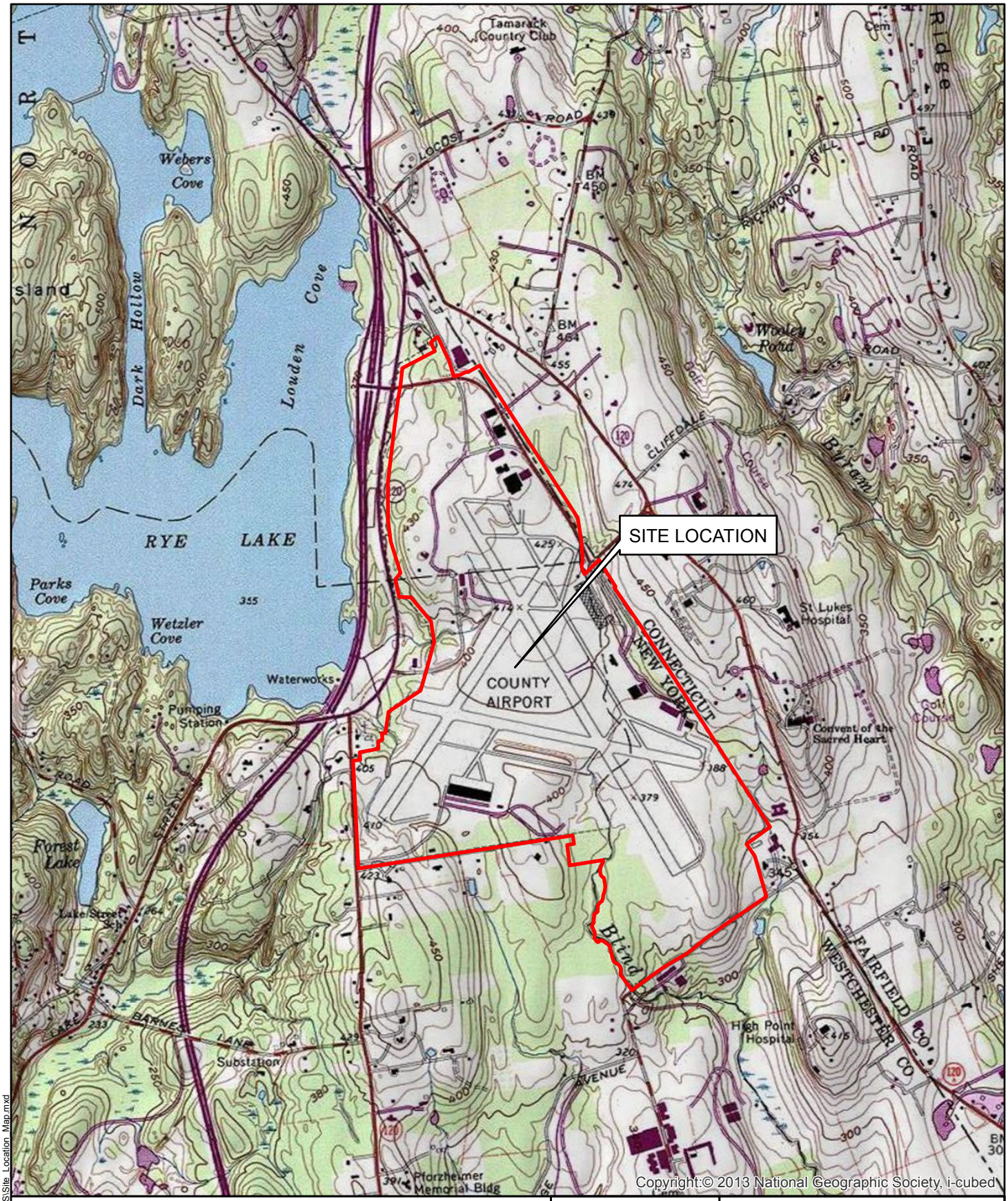
*If surface soil and sediment samples exceed the NYSDEC soil guidance for protection of groundwater values for PFOS at 1.0 ppb or PFOA at 0.8 ppb contingent vertical soil samples collected will be analyzed for PFOS and PFOA to assess potential impact to groundwater and vertically delineate the extent of PFOS and PFOA. At a minimum 50% of the soil samples contingency samples will be analyzed regardless if PFOS or PFOA exceed soil projection of groundwater guidance values.

Soil will be continuously screened with PID. First Environment will screen soil with a PID at each location. If soil is identified by the PID to show a deflection signifying VOCs, a sample will be collected at that interval for VOC and SVOC analysis.

The exact number and location of samples for laboratory analysis maybe subject to change based on field conditions and sampling equipment operation.

Final sample locations maybe determined in the field in consultation with the NYSDEC representative.

Figure 1 – Site Topographic Location Map



0 500 1,000 2,000 Feet

1 inch = 2,000 feet

N

United States Geological Survey, Glenville NY Topographic Quadrangle, 1967, Photorevised 1981

FIRST ENVIRONMENT

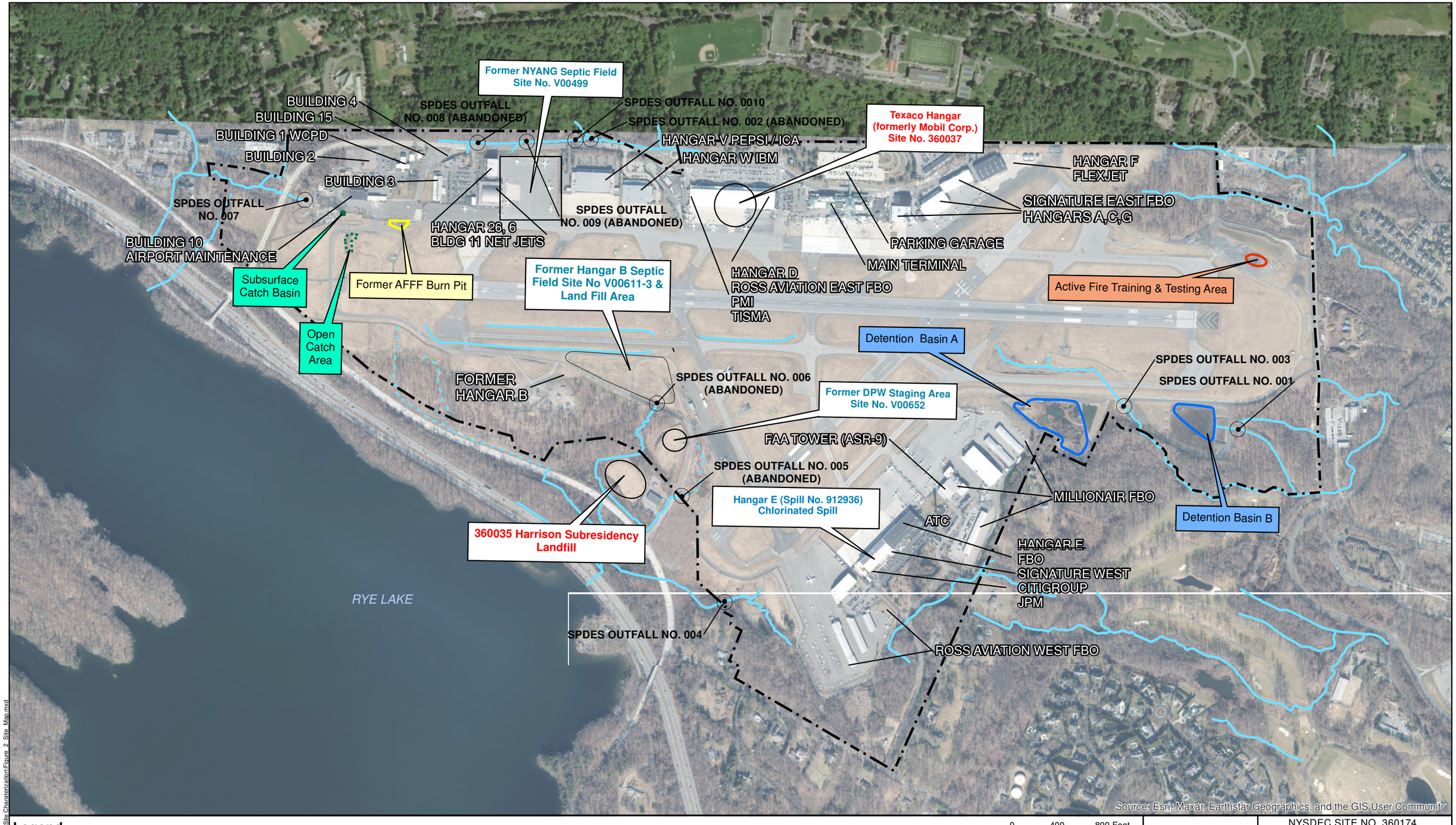
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FIGURE 1
SITE TOPOGRAPHIC LOCATION MAP

Revised	Drawn	Checked	Approved	Date
	LS	DDL	SG	2/19/2021

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Figure 2 – Site Map



Legend

- Stream
- Ephemeral Stream
- Outfall Location
- Detention Basin
- Subsurface Catch Basin
- Open Catch
- Active Fire Training & Testing
- Former AFFF Burn
- Property Boundary

SPDES - State Pollutant Discharge Elimination System

Blue Text = Inactive-Closed or Closure Requested
Red Text = Open

0 400 800 Feet
1 inch = 800 feet

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FIGURE 2
SITE MAP

Revised	Drawn	Checked	Approved	Date
	LS	DL	SG	3/20/2023

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Figure 3 – Surface Water Drainage Map



Legend

Source: TRC Engineers, Inc. Existing (2019) Conditions Drainage Area Map. Nov. 2010.

- Outfall Location
- SPDES - State Pollutant Discharge Elimination System
- Subsurface Catch Basin
- Open Catch Area
- Detention Basin
- Active Fire Training & Testing Area
- Former AFFF Burn Pit
- Property Boundary
- Stream
- Ephemeral Stream

0 175 350 700 Feet

1 inch = 700 feet

N

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FIGURE 3
SURFACE WATER DRAINAGE MAP

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Figure 4 – Storm Sewer Distribution & Surface Water Flow

SPDES OUTFALL NO. 008 (ABANDONED)

SPDES OUTFALL NO. 009 (ABANDONED)

SPDES OUTFALL NO. 0010

SPDES OUTFALL NO. 002 (ABANDONED)

ACTIVE FIRE TRAINING & TESTING ARE

SPDES OUTFALL NO. 007

SUBSURFACE CATCH BASIN

FORMER AFFF BURN PIT

OPEN CATCH AREA

FORMER HANGAR B SEPTIC FIELD (V00611)

SPDES OUTFALL NO. 006 (ABANDONED)

SPDES OUTFALL NO. 003

Blind Brook

SPDES OUTFALL NO. 005 (ABANDONED)

DETENTION BASIN B

DETENTION BASIN B

FAA TOWER (ASR-9)

SPDES OUTFALL NO. 004

Storm Drains and Sewers Westchester County Airport

Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

Legend

- Storm Drains
- Catch Basins - Ward Carpenter
- SPDES Outfalls
- County Sewer Manholes
- Surface Stormwater Flow
- Culverts
- Blind Brook Culvert
- Sewerlines - First Env
- Sewerlines - Ward Carpenter
- County Sewer Trunk Lines

Legend

- Outfall Location
- Subsurface Catch Basin
- Open Catch Area
- Active Fire Training & Testing Area
- Detention Basin
- Former AFFF Burn Pit
- Property Boundary
- Stream
- Ephemeral Stream

SPDES - State Pollutant Discharge Elimination System

Source: TRC Engineers, Inc. Existing (2019) Conditions Drainage Area Map. Nov. 2010.

0 175 350 700 Feet

1 inch = 734 feet

N

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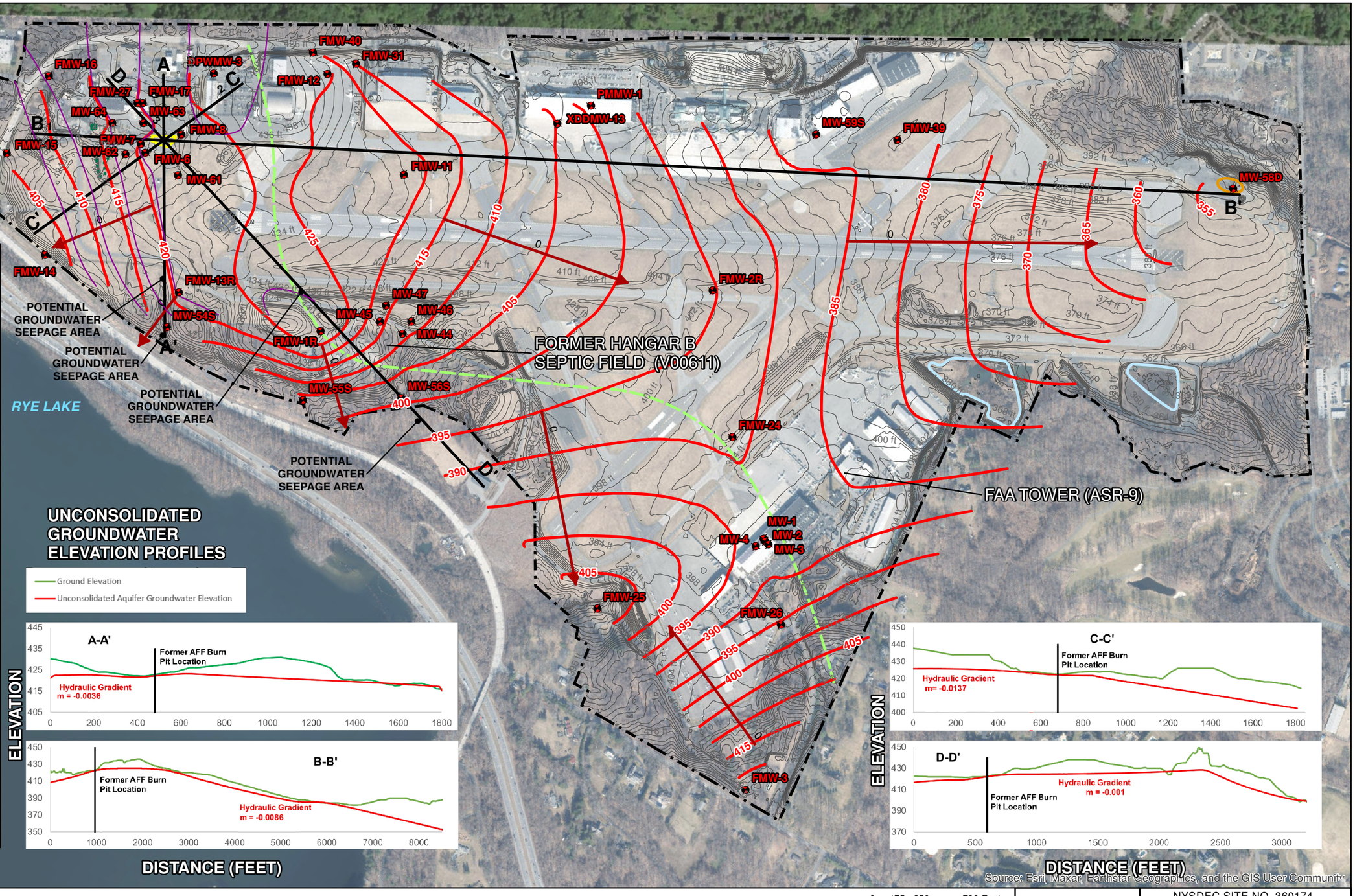
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FIGURE 3
STORM SEWER DISTRIBUTION & SURFACE WATER FLOW

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Figure 5 – Unconsolidated Groundwater Contour Map January 28, 2021

UNCONSOLIDATED WATER-BEARING ZONE	
1/28/21 GROUNDWATER ELEVATION	
WELL ID	**ELEVATION (FT)**
DPWMW-3	427.39
FMW-1R	431.22
FMW-2R	395.37
FMW-3	423.03
FMW-6	421.59
FMW-7	420.27
FMW-8	423.33
FMW-11	423.39
FMW-12	425.82
FMW-13R	420.96
FMW-14	401.38
FMW-15	405.80
FMW-16	411.05
FMW-17	421.06
FMW-24	391.51
FMW-25	369.96
FMW-26	395.35
FMW-27	419.77
FMW-31	414.78
FMW-39	383.93
FMW-40	420.97
MW-44	411.33
MW-45	415.81
MW-46	411.99
MW-47	415.61
PMMW-1	398.41
XDDMW-13	404.67
MW-64	415.27
MW-62	418.26
MW-61	424.63
MW-54S	417.41
MW-55S	403.14
MW-56S	400.58
MW-63	418.25
MW-59S	381.15
MW-58D	351.90
MW-1	385.81
MW-2	386.11
MW-3	386.27
MW-4	386.11



Legend

- Monitoring Well Location (Unconsolidated Aquifer)
- Groundwater Flow Direction
- Groundwater Elevation Contours (measured feet above mean sea level)
- Watershed Divide
- Former AFFF Burn Pit
- Active Fire Training & Testing Area
- Detention Basin
- Subsurface Catch Basin
- Open Catch Area
- Property Boundary

NM: Not Measured
NA: TOC Elevation not Available

0 175 350 700 Feet
1 inch = 700 feet

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FIGURE 5
UNCONSOLIDATED GROUNDWATER ELEVATION CONTOURS: JANUARY 28, 2021

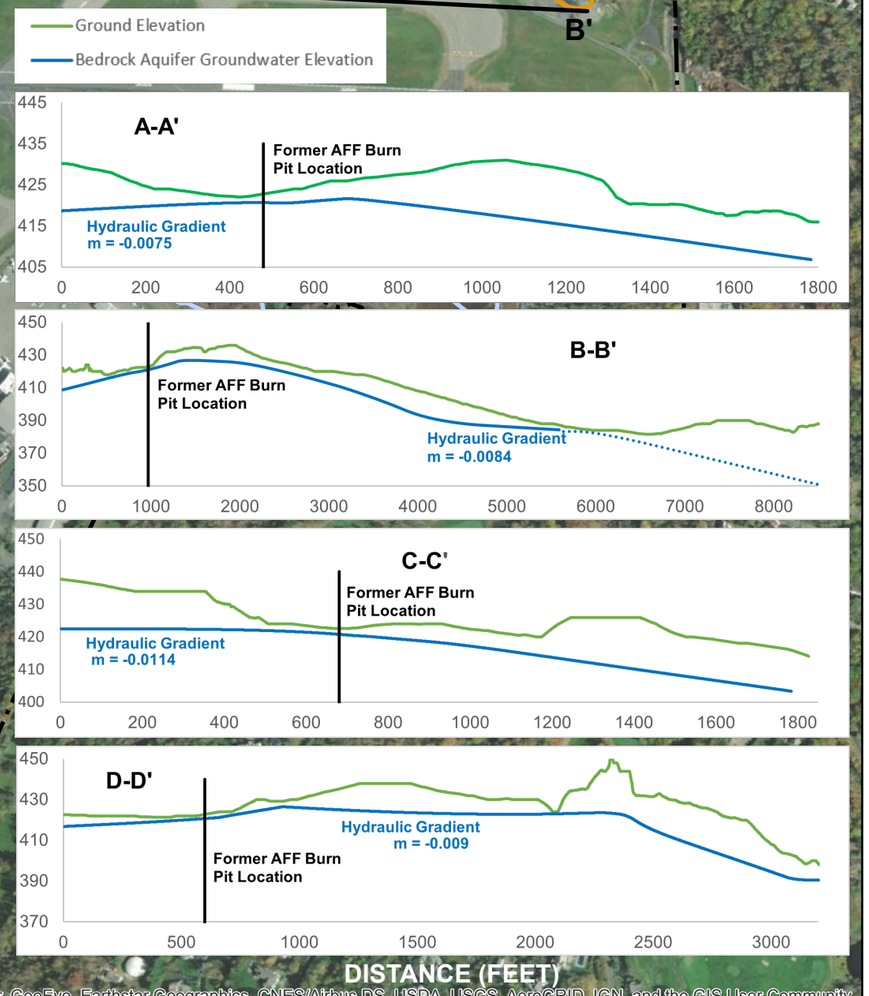
Revised	Drawn	Checked	Approved	Date
	LS	DL	SG	10/23/2023

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Figure 6 – Bedrock Groundwater Contour Map January 28, 2021

BEDROCK AQUIFER	
1/28/21 GROUNDWATER ELEVATION	
BRMW-1	426.48
BRMW-2	427.61
FMW-23	420.92
FMW-35	422.61
FMW-36	428.4
MW-10D	398.59
MW-41	NM
MW-42	407.78
MW-43	412.18
MW-48	417.4
MW-49	415.78
MW-51	415.86
MW-52	403.15
MW-53	418.17
MW-54D	407.05
MW-55D	399.71
MW-56D	382.09
MW-57	395.5
MW-59D	383.34
MW-60	405.91
Supply Well	NA
WW-1	425.98
XDDMW-10	389.63
XDDMW-11	390.1
XDDMW-7R	400.23

BEDROCK GROUNDWATER ELEVATION PROFILES



RYE LAKE

POTENTIAL GROUNDWATER SEEPAGE AREA

FORMER HANGAR B SEPTIC FIELD (V00611)

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Legend

- Monitoring Well Location (Bedrock Aquifer)
- Groundwater Elevation Contours (1/28/21)
- Groundwater Flow Direction
- Former AFFF Burn Pit
- Active Fire Training & Testing Area
- Detention Basin
- Subsurface Catch Basin
- Open Catch Area
- Property Boundary

NM: Not Measured
NA: TOC Elevation not Available

0 175 350 700 Feet
1 inch = 738 feet

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FIGURE 6
BEDROCK GROUNDWATER CONTOUR MAP
JANUARY 28, 2021

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	LS	DL	SG	2/11/2022

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Figure 7 – Sitewide Soil Results March 2020 PFOS Results

SB-01 (0.5'-1') 15.9
SB-16 (0'-0.5') 17.6
SB-15 (0.5'-1') 2.1
SB-14 (1'-1.5') ND
SB-02 (0'-0.5') 1.3
SB-03 (0'-0.5') 1.4
SB-04 (0'-0.5') 0.5
SB-13 (0.5'-1') 24.9
SB-05 (0'-0.5') 0.6
SB-06 (0'-0.5') 5.6
SB-07 (0'-0.5') 0.6 J
SB-12 (0'-0.5') 1.1
SB-10 (0'-0.5') 0.5 J
SB-11 (0'-0.5') 7.9
SB-08 (0'-0.5') 2.0
SB-09 (0'-0.5') 0.5 J

FORMER AFFF BURN PIT
Source area for PFAS.

ACTIVE FIRE TRAINING & TESTING AREA
Area of elevated soil and groundwater PFAS.

FORMER HANGER B AREA
Area of elevated soil and groundwater PFAS.

FORMER HANGER B
SEPTIC FIELD (V00611)

FAA TOWER (ASR-9)

HANGER E AREA
Area of elevated groundwater PFAS.
AFFF release in Hanger E.

RYE LAKE

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Legend

- Soil Sample Location
- Stream
- Ephemeral Stream
- Subsurface Catch Basin
- Open Catch Area
- Detention Basin
- Active Fire Training & Testing Area
- Former AFFF Burn Pit
- Property Boundary
- 1.1 — PFOS Concentration (parts per billion)
- (0'-0.5') — Sample Depth (feet below ground surface)
- J — Estimated
- ND — Not Detected

0 175 350 700 Feet
1 inch = 700 feet

N

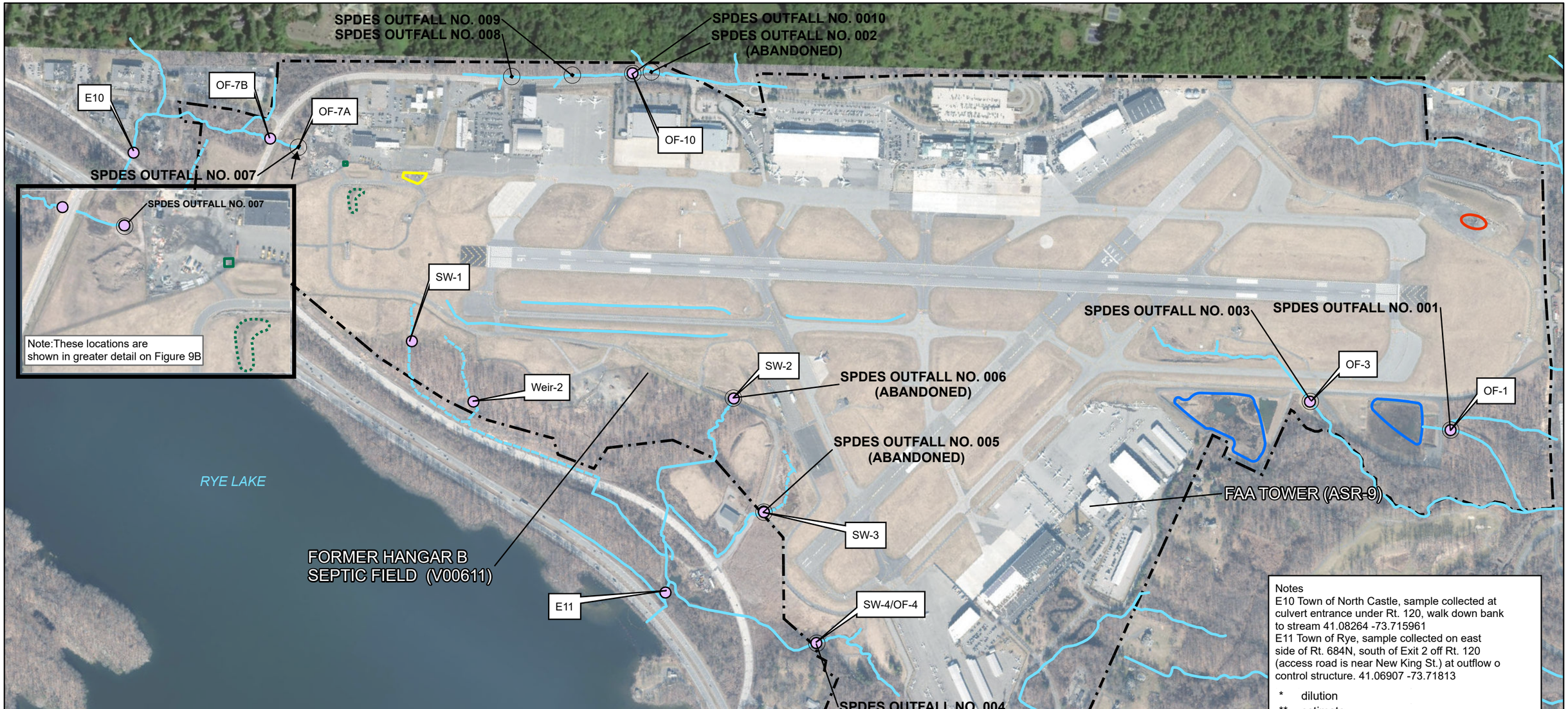
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FIGURE 7
SITE WIDE SOIL
MARCH 2020 PFOS RESULTS

Revised	Drawn	Checked	Approved	Date
	LS	DL	SG	2/11/2022

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Figure 9A – Sitewide Baseline Surface water PFOS/PFOA Concentrations



	SW-1		SW-2		SW-3		SW-4/OF-4		OF-1		OF-3		OF-7A		OF-7B		OF-10		Weir-2	
	PFOS	PFOA	PFOS	PFOA	PFOS	PFOA	PFOS	PFOA	PFOS	PFOA	PFOS	PFOA	PFOS	PFOA	PFOS	PFOA	PFOS	PFOA	PFOS	PFOA
04/02/19	375***	109*	126	18	28	15	12	21	100	16	88	20	3,990***	575***	3,070***	453***	2,040***	109	~	~
06/02/20	220	54	154	24	27	21	13	22	74	12	177	1	4,280*	793*	1,510 *	176*	2*	80	~	~
07/01/20	~	~	82	16	17	17	9	19	63	16	133	27	2,710*	469	3,140*	514*	654 *	33*	213*	54
08/03/20	~	~	93	21	17	22	9	19	40	9	127	26	2,570	554	~	~	2,270*	130	~	~
09/01/20	30*	ND	200*	24	13*	13*	5	7	22*	ND	10*	21*	360*	31*	~	~	299*	13*	59*	9*
10/1/2020	~	~	176	26	16	17	10	17	17	4	91	18	2,730*	645*	~	~	2,210*	96	~	~
11/2/2020	96	18	61	20	7	11	6	16	29	7	39	8	2,010*	389*	~	~	1,190*	56*	26	6

	E10		E11	
Date	PFOS	PFOA	PFOS	PFOA
01/29/19	420	100	29	47
04/17/19	460	110	25	38
07/24/19	950	140	20	16
10/15/19	1300	370	20	25
10/01/20	1210	204	24	13

Notes
E10 Town of North Castle, sample collected at culvert entrance under Rt. 120, walk down bank to stream 41.08264 -73.715961
E11 Town of Rye, sample collected on east side of Rt. 684N, south of Exit 2 off Rt. 120 (access road is near New King St.) at outflow o control structure. 41.06907 -73.71813

* dilution
** estimate
*** dilution & estimate
ND not detected
~ not sampled on date
ppt parts per trillion

Sources
Conditions Drainage Area Map. Nov. 2010.
Outfall Locations: TRC Engineers, Inc. Existing (2019)
Streams: Westchester County GIS & NYSDEC

SPDES - State Pollutant Discharge Elimination System

Legend

- Surface Water Sample Location
- Outfall Location
- Stream
- Ephemeral Stream
- Subsurface Catch Basin
- Open Catch Area
- Detention Basin
- Active Fire Training & Testing Area
- Former AFFF Burn Pit
- Property Boundary

0 175 350 700 Feet
1:8,400

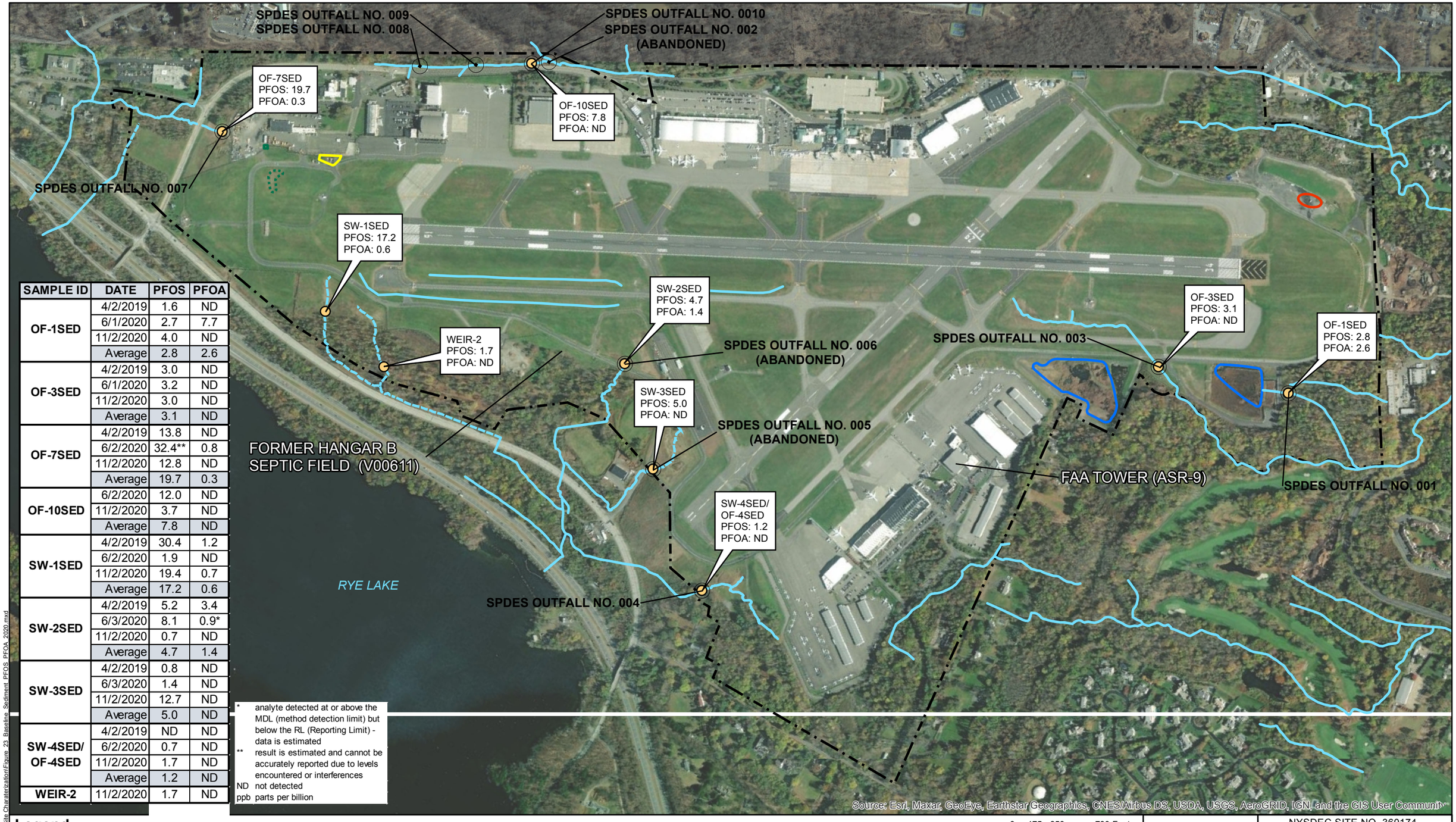
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FIGURE 9A
SITE WIDE BASELINE SURFACE
WATER PFOS/PFOA CONCENTRATIONS

Revised	Drawn	Checked	Approved	Date
	CL	DL	SG	3/4/2024

Figure 10 – Sediment PFOS/PFOA Concentrations



SAMPLE ID	DATE	PFOS	PFOA
OF-1SED	4/2/2019	1.6	ND
	6/1/2020	2.7	7.7
	11/2/2020	4.0	ND
	Average	2.8	2.6
OF-3SED	4/2/2019	3.0	ND
	6/1/2020	3.2	ND
	11/2/2020	3.0	ND
	Average	3.1	ND
OF-7SED	4/2/2019	13.8	ND
	6/2/2020	32.4**	0.8
	11/2/2020	12.8	ND
	Average	19.7	0.3
OF-10SED	6/2/2020	12.0	ND
	11/2/2020	3.7	ND
	Average	7.8	ND
SW-1SED	4/2/2019	30.4	1.2
	6/2/2020	1.9	ND
	11/2/2020	19.4	0.7
	Average	17.2	0.6
SW-2SED	4/2/2019	5.2	3.4
	6/3/2020	8.1	0.9*
	11/2/2020	0.7	ND
	Average	4.7	1.4
SW-3SED	4/2/2019	0.8	ND
	6/3/2020	1.4	ND
	11/2/2020	12.7	ND
	Average	5.0	ND
SW-4SED/ OF-4SED	4/2/2019	ND	ND
	6/2/2020	0.7	ND
	11/2/2020	1.7	ND
	Average	1.2	ND
WEIR-2	11/2/2020	1.7	ND

* analyte detected at or above the MDL (method detection limit) but below the RL (Reporting Limit) - data is estimated
** result is estimated and cannot be accurately reported due to levels encountered or interferences
ND not detected
ppb parts per billion

Legend

Sediment Sample
SW-4SED Sample ID
PFOS Average of Results (ppb)
PFOA Average of Results (ppb)

SPDES - State Pollutant Discharge Elimination System
Outfall Location
Stream
Ephemeral Stream
Subsurface Catch Basin
Open Catch Area
Detention Basin
Active Fire Training & Testing Area
Former AFFF Burn Pit
Property Boundary

0 175 350 700 Feet
1 inch = 700 feet

Sources
Conditions Drainage Area Map. Nov. 2010.
Streams: USGS National Hydrography Dataset..
Outfall Locations: TRC Engineers, Inc. Existing (2019)

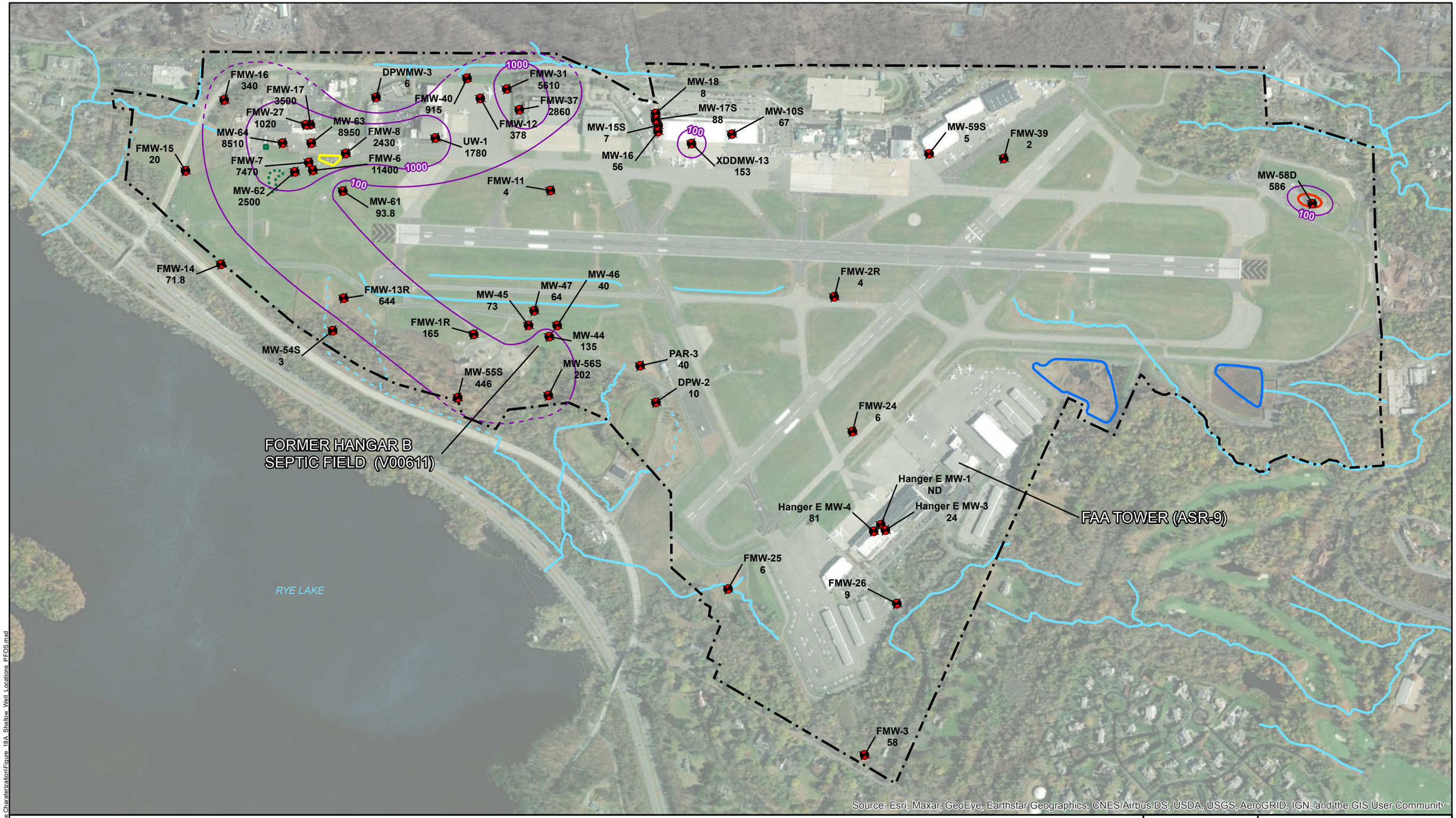
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FIGURE 10
SEDIMENT
PFOS/PFOA CONCENTRATIONS

Revised	Drawn	Checked	Approved	Date
	LS	SG	SG	2/15/2022

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Figure 11A – Shallow Groundwater PFOS Contour Map



Legend

- Overburden Monitoring Well Locations
- May 2020 PFOS Isopleth
- Inferred May 2020 PFOS Isopleth
- PFOS from Spring 2020 (ppt)
- ND: Not Detected
- Active Fire Training & Testing Area
- Former AFFF Burn Pit
- Detention Basin
- Subsurface Catch Basin
- Open Catch Area
- Property Boundary
- Stream
- Ephemeral Stream

0 175 350 700 Feet

1 inch = 700 feet

N

FIRST ENVIRONMENT

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FIGURE 11A
Shallow GW PFOS Contour Map

Revised	Drawn	Checked	Approved	Date
	LS	DL	SG	3/15/2022

K:\WESCHESTER AIRPORT\Site Characterization\Figure 18A Shallow Well Locations PFOS.mxd

Figure 11B – Shallow Groundwater PFOS Contour Map

FMW-16
51
FMW-17
41
DPWMW-3
2
FMW-40
69
FMW-31
188
FMW-27
63
FMW-12
73
MW-18
3
MW-17S
12
MW-16
4
MW-10S
18
MW-59S
5
FMW-39
2
MW-63
30100
UW-1
61
FMW-37
90
MW-64
1430
FMW-8
300
MW-15S
2
FMW-15
11
FMW-7
498
XDDMW-13
18
FMW-11
6
MW-61
5
MW-62
133
FMW-6
1740
MW-58D
468
FMW-14
57
FMW-13R
122
FMW-2R
16
MW-45
52
MW-47
25
MW-46
29
MW-54S
ND
FMW-1R
18
MW-44
58
PAR-3
20
MW-55S
8
MW-56S
251
DPW-2
6
FMW-24
19
FAA TOWER (ASR-9)
Hanger E MW-1
194
Hanger E MW-4
385
Hanger E MW-3
155
FMW-25
10
FMW-26
6
FMW-3
6
FORMER HANGAR B
SEPTIC FIELD (V00611)
RYE LAKE
10000
1000
100
Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Legend

- Overburden Monitoring Well Locations
- May 2020 PFOA Isopleth
- PFOA from Spring 2020 (ppt)
- ND: Not Detected
- Active Fire Training & Testing Area
- Former AFFF Burn Pit
- Detention Basin
- Subsurface Catch Basin
- Open Catch Area
- Property Boundary
- Stream
- Ephemeral Stream

0 175 350 700 Feet

1 inch = 700 feet

N

FIRST ENVIRONMENT

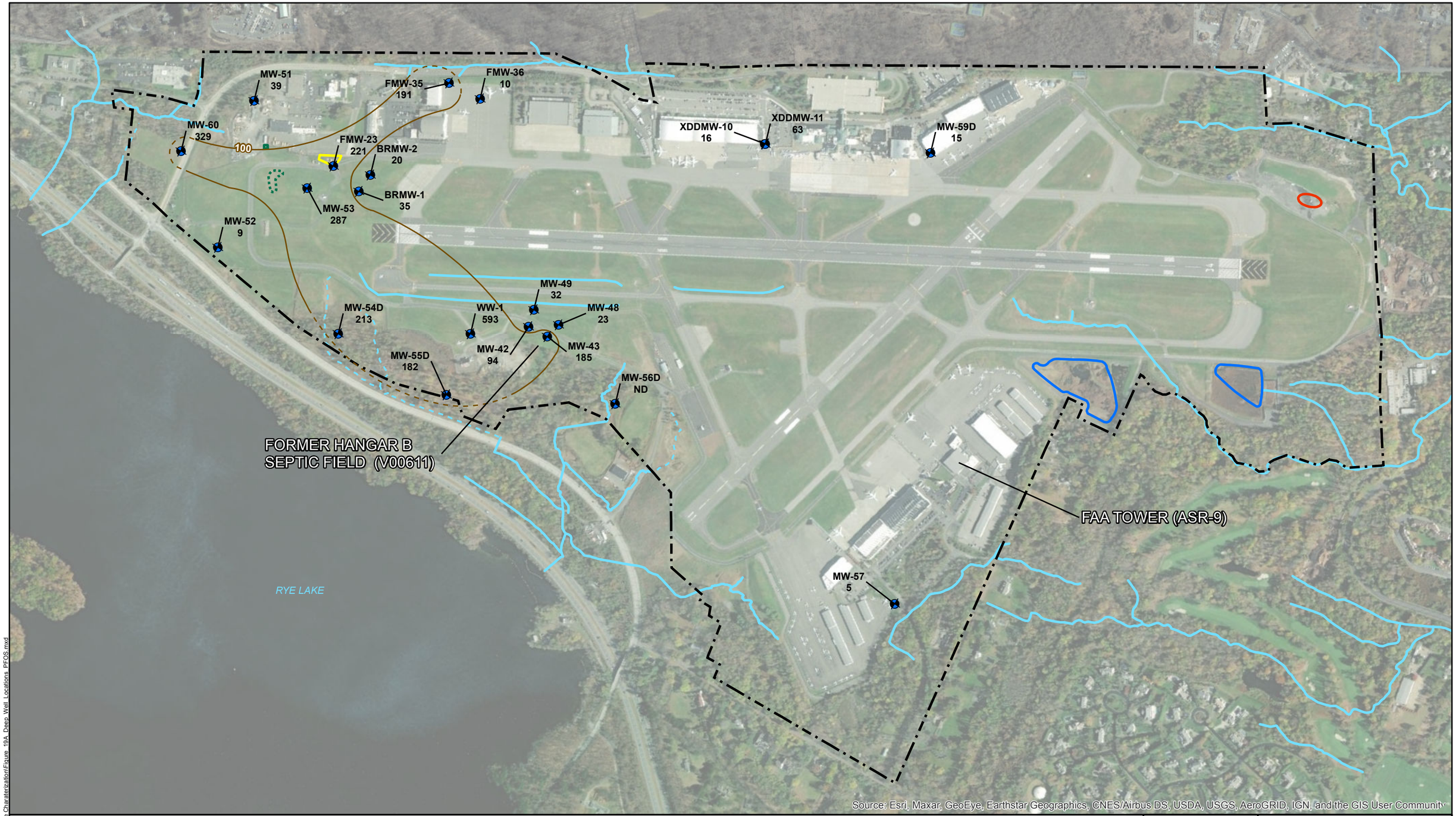
10 Park Place, Bldg 1A, Suite 504
Butler, NJ 07405

NYSDEC SITE NO. 360174
WESTCHESTER COUNTY AIRPORT
White Plains, Westchester County, New York
FIGURE 11B
Shallow GW PFOA Contour Map

Revised	Drawn	Checked	Approved	Date
	LS	DL	SG	3/15/2022

I:\WESCHESTER AIRPORT\Site Characterization\Figure 11B Shallow Well Locations PFOA.mxd

Figure 12A – Bedrock Groundwater PFOS Contour Map



Legend

- Bedrock Monitoring Well Locations
- May 2020 PFOS Isopleth
- Inferred May 2020 PFOS Isopleth
- PFOS from Spring 2020 (ppt)
- ND: Not Detected
- Active Fire Training & Testing Area
- Former AFFF Burn Pit
- Detention Basin
- Subsurface Catch Basin
- Open Catch Area
- Property Boundary
- Stream
- Ephemeral Stream

0 175 350 700 Feet

1 inch = 700 feet

N

FIRST ENVIRONMENT

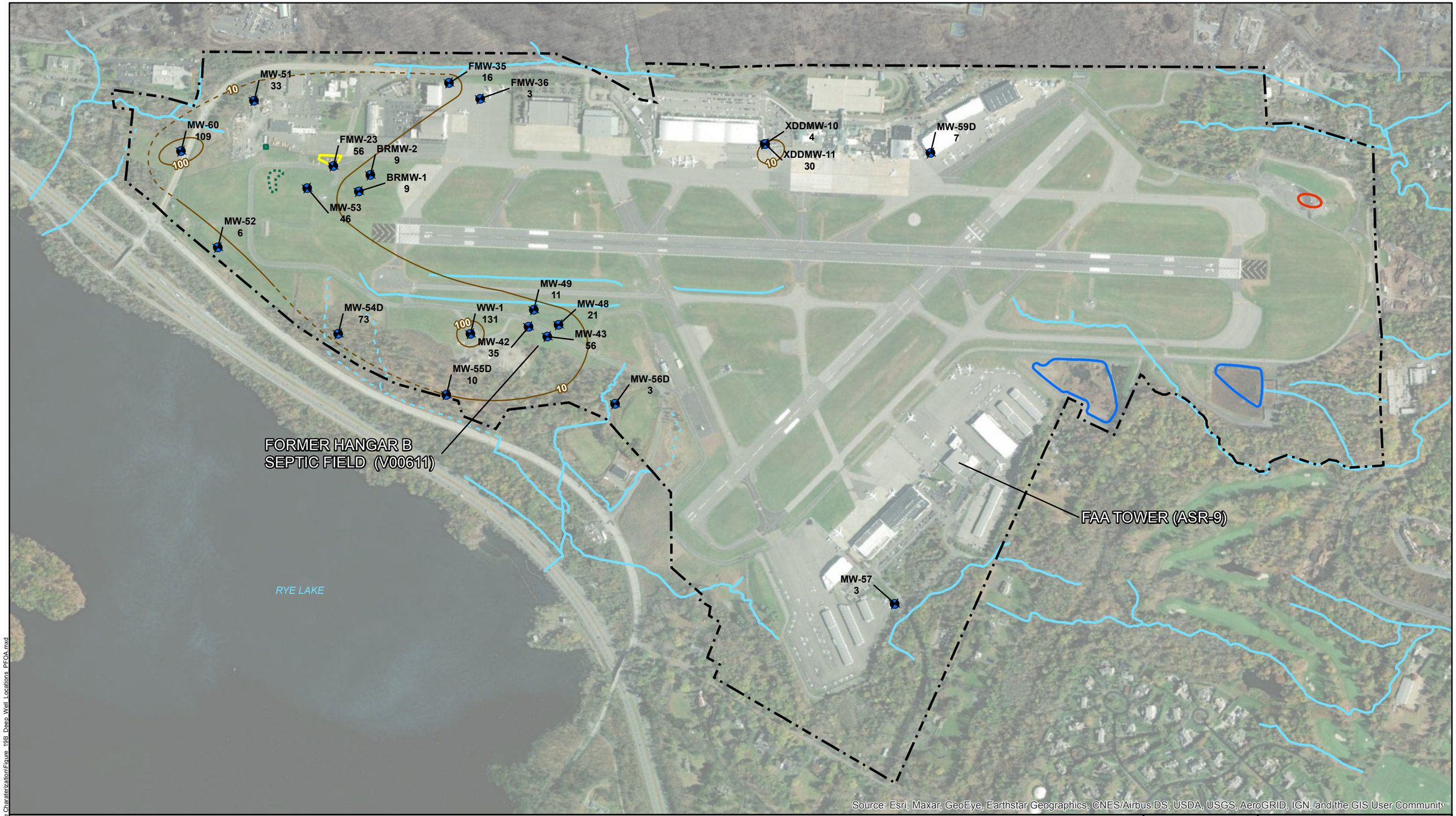
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Butler, NJ 07405

NYSDEC SITE NO. 360174
WESTCHESTER COUNTY AIRPORT
White Plains, Westchester County, New York
FIGURE 12A
Bedrcok GW PFOS Contour Map

Revised	Drawn	Checked	Approved	Date
	LS	DL	SG	3/15/2022

I:\WESCHESTER AIRPORT\Site Characterization\Figure 19A Deep Well Locations PFOS.mxd

Figure 12B – Bedrock Groundwater PFOA Contour Map



Legend

- Bedrock Monitoring Well Locations
- May 2020 PFOA Isopleth
- Inferred May 2020 PFOA Isopleth
- PFOA from Spring 2020 (ppt)
- ND: Not Detected
- Active Fire Training & Testing Area
- Former AFFF Burn Pit
- Detention Basin
- Subsurface Catch Basin
- Open Catch Area
- Property Boundary
- Stream
- Ephemeral Stream

0 175 350 700 Feet

1 inch = 700 feet

N

FIRST ENVIRONMENT

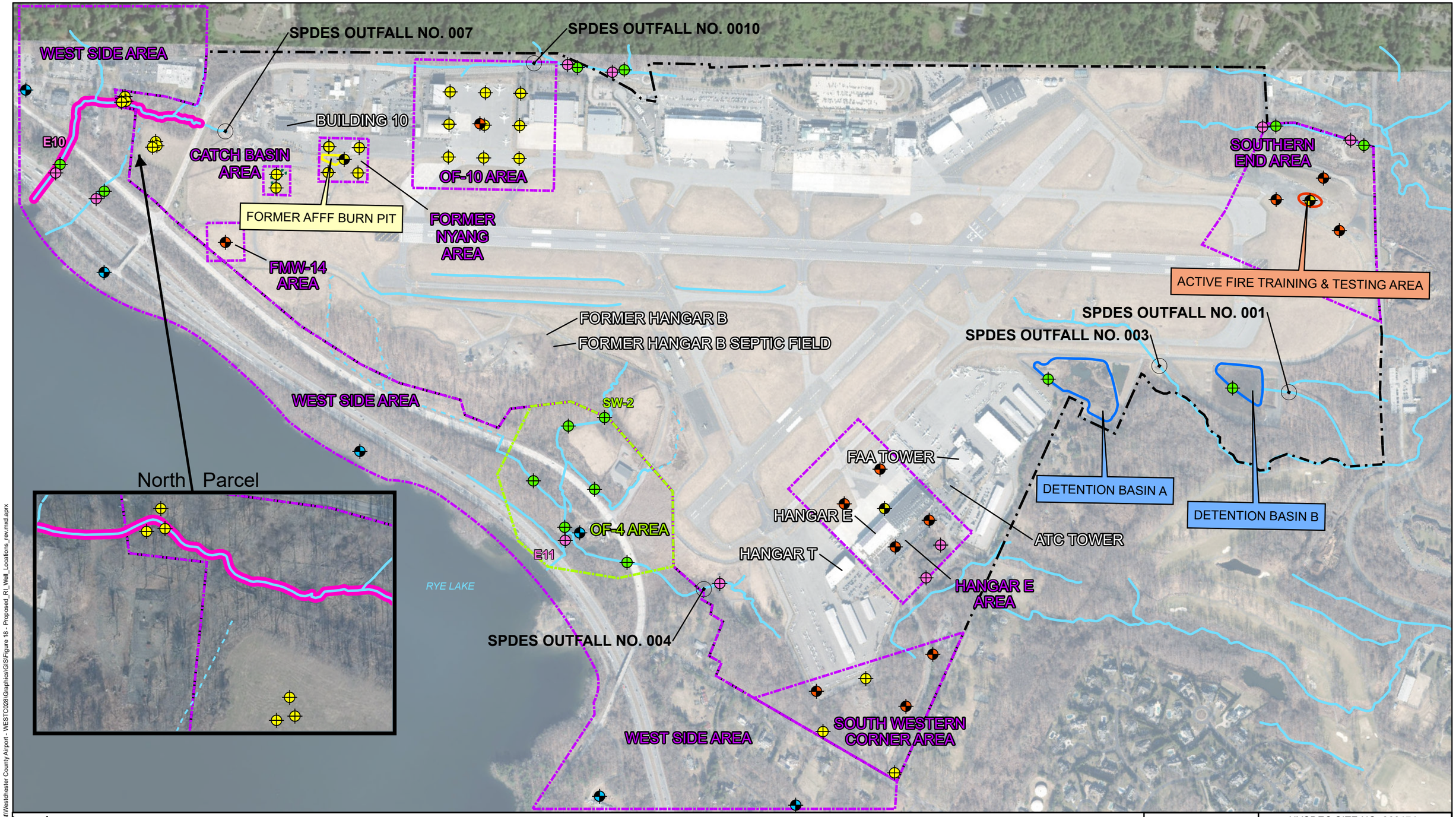
10 Park Place, Bldg 1A, Suite 504
Butler, NJ 07405

NYSDEC SITE NO. 360174
WESTCHESTER COUNTY AIRPORT
White Plains, Westchester County, New York
FIGURE 12B
Bedrcok GW PFOA Contour Map

Revised	Drawn	Checked	Approved	Date
	LS	DL	SG	3/15/2022

I:\WESCHESTER AIRPORT\Site Characterization\Figure 12B_Deep_Well Locations_PFOA.mxd

Figure 18 – Proposed RI Well & Sample Locations



Legend

- Proposed Shallow Well/Soil Sample
- Proposed Shallow/Deep Well Couplet/Soil Sample
- Proposed Bedrock Well/Soil Sample
- Proposed Soil Sample
- Proposed Sediment Sample
- Surface Water Sample
- Outfall Location
- Sample Areas
- Outfall 4 Sample Area
- Active Fire Training & Testing Area
- Former AFFF Burn Pit
- Detention Basin
- NYSDEC Desired Fish Sampling
- Open Catch Area
- Stream
- Ephemeral Stream
- Property Boundary

0 175 350 700 Feet

1:8,400

N

FIRST ENVIRONMENT

10 Park Place, Bldg 1A, Suite 504
Butler, NJ 07405

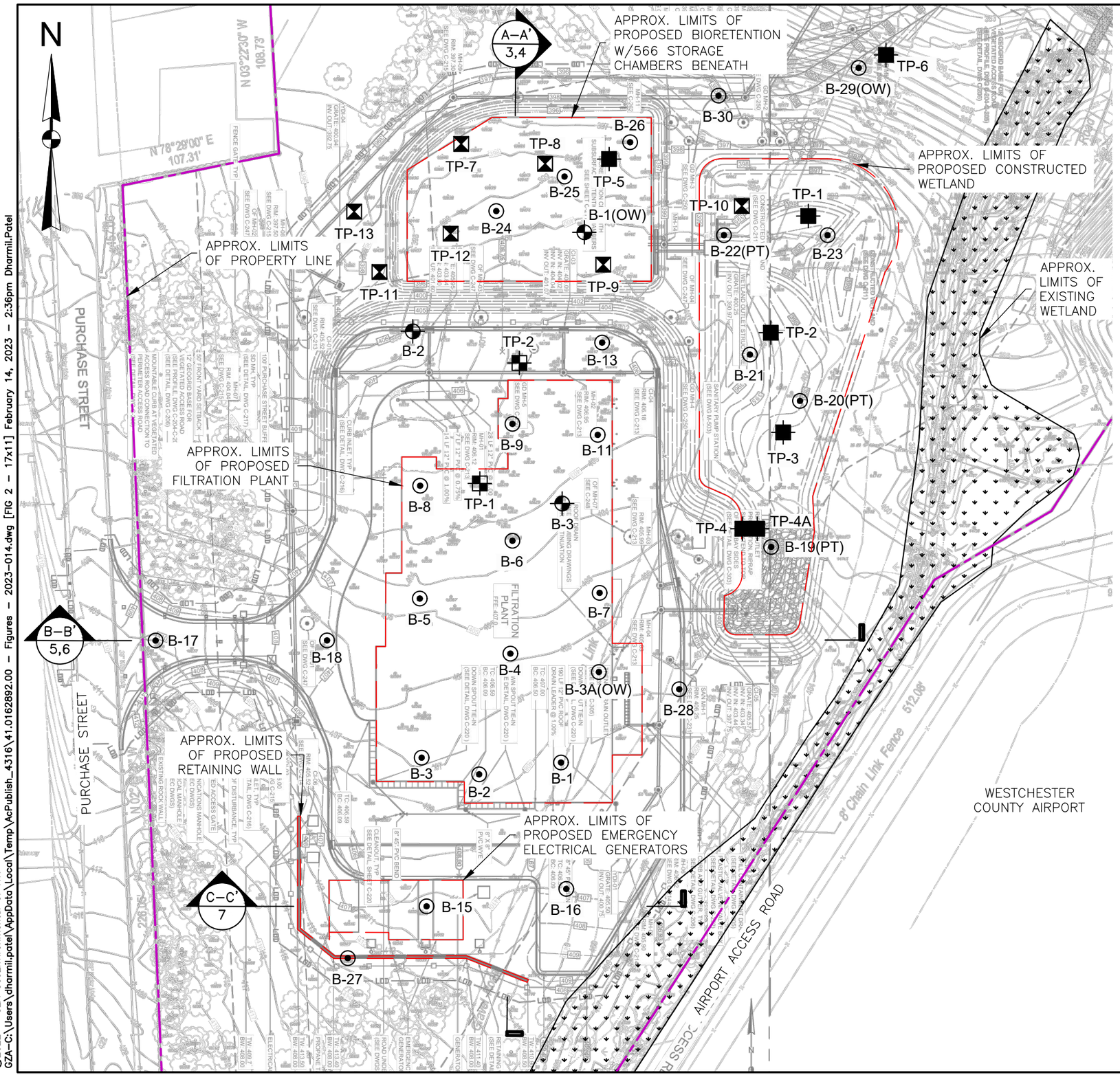
NYSDEC SITE NO. 360174
WESTCHESTER COUNTY AIRPORT
White Plains, Westchester County, New York

FIGURE 18
PROPOSED RI SAMPLE LOCATIONS

Revised	Drawn	Checked	SG	Date
	CL	DL	SG	2/23/2024

\\fed01.fedom.com\VOL2\extest\Westchester County Airport - WESTC028\Graphics\GIS\Figure 18 - Proposed_RI_Well_Locations_rev.mxd.aprx

ATTACHMENT B – HISTORICAL SAMPLE LOCATIONS AND DATA TABLES



GENERAL NOTES

1. BASE MAP DEVELOPED FROM TOPOGRAPHIC SURVEY, PREPARED BY GEORGE J. MOTTARELLA, DATED APRIL 17, 2021 AND FROM DRAWING C–101, C–121, & C–122 TITLED, PREPARED BY, HAZEN & SAWYER, DATED JANUARY, 2023.
2. EXPLORATION LOCATIONS WERE SURVEYED AND MARKED OUT BY HAZEN & SAWYER.
3. THE PURPOSE OF THIS DRAWING IS TO LOCATE, DESCRIBE, AND REPRESENT THE POSITIONS OF EXPLORATIONS AND MONITORING WELLS AND IN RELATION TO THE SUBJECT SITE. THIS DRAWING IS NOT CONSIDERED A LAND SURVEY. THE LOCATIONS SHOWN SHOULD BE CONSIDERED ACCURATE ONLY TO THE DEGREE IMPLIED BY THE METHOD USED.

LEGEND

- APPROXIMATE PROPERTY BOUNDARY
- APPROXIMATE LIMITS OF PROPOSED STRUCTURES
- APPROXIMATE LIMITS OF EXISTING WETLAND
- B-X — APPROXIMATE TEST BORING LOCATION (OW) INDICATES OBSERVATION WELL INSTALLED IN BORING (PT) INDICATES IN–SITU PERMEABILITY TESTING PERFORMED IN BORING
- TP-X — APPROXIMATE TEST PIT LOCATION (AUGUST 24, 2021)
- TP-X — APPROXIMATE TEST PIT LOCATION (NOVEMBER 4, 2021)
- B-X — APPROXIMATE TEST BORING LOCATION PERFORMED BY GENERAL BORINGS, INC. IN 2019.
- TP-X — APPROXIMATE TEST PIT LOCATION PERFORMED BY GENERAL BORINGS, INC. IN 2019.

0 35 70 140
SCALE IN FEET

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GZA–C:\Users\dharmil.patel\AppData\Local\Temp\AcPublish_4316\41.0162892.00 – Figures – 2023–014.dwg [FIG 2 – 17x11] February 14, 2023 – 2:36pm Dharmil.Patel

UNLESS SPECIFICALLY STATED BY WRITTEN AGREEMENT, THIS DRAWING IS THE SOLE PROPERTY OF GZA GEOENVIRONMENTAL, INC. (GZA). THE INFORMATION SHOWN ON THE DRAWING IS SOLELY FOR USE BY GZA'S CLIENT OR THE CLIENT'S DESIGNATED REPRESENTATIVE FOR THE SPECIFIC PROJECT AND LOCATION IDENTIFIED ON THE DRAWING. THE DRAWING SHALL NOT BE TRANSFERRED, REUSED, COPIED, OR ALTERED IN ANY MANNER FOR USE AT ANY OTHER LOCATION OR FOR ANY OTHER PURPOSE WITHOUT THE PRIOR WRITTEN CONSENT OF GZA. ANY TRANSFER, REUSE, OR MODIFICATION TO THE DRAWING BY THE CLIENT OR OTHERS, WITHOUT THE PRIOR WRITTEN EXPRESS CONSENT OF GZA, WILL BE AT THE USER'S SOLE RISK AND WITHOUT ANY RISK OR LIABILITY TO GZA.

WESTCHESTER JOINT WATER WORKS
WATER TREATMENT PLANT
WESTCHESTER COUNTY, NY

EXPLORATION LOCATION PLAN

PREPARED BY: GZA GeoEnvironmental of NY Engineers and Scientists www.gza.com		PREPARED FOR: Hazen	
PROJ MGR: DSP	REVIEWED BY: DSP	CHECKED BY: CAW	FIGURE 2
DESIGNED BY: ZSB	DRAWN BY: ZSB	SCALE: AS SHOWN	
DATE: FEBRUARY, 2023	PROJECT NO. 41.0162892.00	REVISION NO. 04	SHEET NO. 2 OF 7

Table 2 - Volatile Organic Compounds in Soil
Waste Characterization Report
Rye Lake Water Plant
Harrison, New York

LOCATION	Part 375 Unrestricted Use Soil Cleanup Objectives	Part 375 Residential Use Soil Cleanup Objectives	B-1 (1-2')		B-1 (6-7')		B-1 (10-11')		B-1 (14-15')		B-2 (16-17')	
LAB SAMPLE ID			5/27/2021		5/27/2021		5/27/2021		5/27/2021		6/2/2021	
DATE			L2128322-03		L2128321-03		L2128321-04		L2128321-05		L2129255-05	
SAMPLE DEPTH (ft.)			1-2'		6-7'		10-11'		14-15'		16-17'	
			Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual
Volatile Organic Compounds (VOC) BY EPA 5035/8260 (mg/kg)												
1,1,1,2-Tetrachloroethane	--	--	0.00063	U	0.00036	U	0.00039	U	0.00036	U	0.00046	U
1,1,1-Trichloroethane	0.68	100	0.00063	U	0.00036	U	0.00039	U	0.00036	U	0.00046	U
1,1,2,2-Tetrachloroethane	--	--	0.00063	U	0.00036	U	0.00039	U	0.00036	U	0.00046	U
1,1,2-Trichloroethane	--	--	0.0012	U	0.00072	U	0.00078	U	0.00071	U	0.00091	U
1,1-Dichloroethane	0.27	19	0.0012	U	0.00072	U	0.00078	U	0.00071	U	0.00091	U
1,1-Dichloroethene	0.33	100	0.0012	U	0.00072	U	0.00078	U	0.00071	U	0.00091	U
1,1-Dichloropropene	--	--	0.00063	U	0.00036	U	0.00039	U	0.00036	U	0.00046	U
1,2,3-Trichlorobenzene	--	--	0.0025	U	0.0014	U	0.0016	U	0.0014	U	0.0018	U
1,2,3-Trichloropropane	--	--	0.0025	U	0.0014	U	0.0016	U	0.0014	U	0.0018	U
1,2,4,5-Tetramethylbenzene	--	--	0.0025	U	0.0014	U	0.0016	U	0.0014	U	0.0018	U
1,2,4-Trichlorobenzene	--	--	0.0025	U	0.0014	U	0.0016	U	0.0014	U	0.0018	U
1,2,4-Trimethylbenzene	3.6	47	0.0025	U	0.0014	U	0.0016	U	0.0014	U	0.0018	U
1,2-Dibromo-3-chloropropane	--	--	0.0038	U	0.0022	U	0.0024	U	0.0021	U	0.0027	U
1,2-Dibromoethane	--	--	0.0012	U	0.00072	U	0.00078	U	0.00071	U	0.00091	U
1,2-Dichlorobenzene	1.1	100	0.0025	U	0.0014	U	0.0016	U	0.0014	U	0.0018	U
1,2-Dichloroethane	0.02	2.3	0.0012	U	0.00072	U	0.00078	U	0.00071	U	0.00091	U
1,2-Dichloroethene, Total	--	--	0.0012	U	0.00072	U	0.00078	U	0.00071	U	0.00091	U
1,2-Dichloropropane	--	--	0.0012	U	0.00072	U	0.00078	U	0.00071	U	0.00091	U
1,3,5-Trimethylbenzene	8.4	47	0.0025	U	0.0014	U	0.0016	U	0.0014	U	0.0018	U
1,3-Dichlorobenzene	2.4	17	0.0025	U	0.0014	U	0.0016	U	0.0014	U	0.0018	U
1,3-Dichloropropane	--	--	0.0025	U	0.0014	U	0.0016	U	0.0014	U	0.0018	U
1,3-Dichloropropene, Total	--	--	0.00063	U	0.00036	U	0.00039	U	0.00036	U	0.00046	U
1,4-Dichlorobenzene	1.8	9.8	0.0025	U	0.0014	U	0.0016	U	0.0014	U	0.0018	U
1,4-Dioxane	0.1	9.8	0.1	U	0.058	U	0.063	U	0.057	U	0.073	U
2,2-Dichloropropane	--	--	0.0025	U	0.0014	U	0.0016	U	0.0014	U	0.0018	U
2-Butanone	0.12	100	0.012	U	0.0072	U	0.0032	J	0.0071	U	0.0091	U
2-Hexanone	--	--	0.012	U	0.0072	U	0.0078	U	0.0071	U	0.0091	U
4-Methyl-2-pentanone	--	--	0.012	U	0.0072	U	0.0078	U	0.0071	U	0.0091	U
Acetone	0.05	100	0.012	U	0.0072	U	0.0074	J	0.0071	U	0.0068	J
Acrylonitrile	--	--	0.005	U	0.0029	U	0.0031	U	0.0028	U	0.0036	U
Benzene	0.06	2.9	0.00063	U	0.00036	U	0.00039	U	0.00036	U	0.00046	U
Bromobenzene	--	--	0.0025	U	0.0014	U	0.0016	U	0.0014	U	0.0018	U
Bromochloromethane	--	--	0.0025	U	0.0014	U	0.0016	U	0.0014	U	0.0018	U
Bromodichloromethane	--	--	0.00063	U	0.00036	U	0.00039	U	0.00036	U	0.00046	U
Bromoform	--	--	0.005	U	0.0029	U	0.0031	U	0.0028	U	0.0036	U
Bromomethane	--	--	0.0025	U	0.0014	U	0.0016	U	0.0014	U	0.0018	U
Carbon disulfide	--	--	0.012	U	0.0072	U	0.0078	U	0.0071	U	0.0091	U
Carbon tetrachloride	0.76	1.4	0.0012	U	0.00072	U	0.00078	U	0.00071	U	0.00091	U
Chlorobenzene	1.1	100	0.00063	U	0.00036	U	0.00039	U	0.00036	U	0.00046	U
Chloroethane	--	--	0.0025	U	0.0014	U	0.0016	U	0.0014	U	0.0018	U
Chloroform	0.37	10	0.0019	U	0.0011	U	0.0012	U	0.0011	U	0.0014	U
Chloromethane	--	--	0.005	U	0.0029	U	0.0018	J	0.0028	U	0.0036	U
cis-1,2-Dichloroethene	0.25	59	0.0012	U	0.00072	U	0.00078	U	0.00071	U	0.00091	U
cis-1,3-Dichloropropene	--	--	0.00063	U	0.00036	U	0.00039	U	0.00036	U	0.00046	U
Dibromochloromethane	--	--	0.0012	U	0.00072	U	0.00078	U	0.00071	U	0.00091	U
Dibromomethane	--	--	0.0025	U	0.0014	U	0.0016	U	0.0014	U	0.0018	U
Dichlorodifluoromethane	--	--	0.012	U	0.0072	U	0.0078	U	0.0071	U	0.0091	U
Ethyl ether	--	--	0.0025	U	0.0014	U	0.0016	U	0.0014	U	0.0018	U
Ethylbenzene	1	30	0.0012	U	0.00072	U	0.00078	U	0.00071	U	0.00091	U
Hexachlorobutadiene	--	--	0.005	U	0.0029	U	0.0031	U	0.0028	U	0.0036	U
Isopropylbenzene	--	--	0.0012	U	0.00072	U	0.00078	U	0.00071	U	0.00091	U
Methyl tert butyl ether	0.93	62	0.0025	U	0.0014	U	0.0016	U	0.0014	U	0.0018	U
Methylene chloride	0.05	51	0.0063	U	0.0036	U	0.0039	U	0.0036	U	0.0046	U
n-Butylbenzene	12	100	0.0012	U	0.00072	U	0.00078	U	0.00071	U	0.00091	U
n-Propylbenzene	3.9	100	0.0012	U	0.00072	U	0.00078	U	0.00071	U	0.00091	U
Naphthalene	12	100	0.005	U	0.0029	U	0.0031	U	0.0028	U	0.0036	U
o-Chlorotoluene	--	--	0.0025	U	0.0014	U	0.0016	U	0.0014	U	0.0018	U
o-Xylene	--	--	0.0012	U	0.00072	U	0.00078	U	0.00071	U	0.00091	U
p-Chlorotoluene	--	--	0.0025	U	0.0014	U	0.0016	U	0.0014	U	0.0018	U
p-Diethylbenzene	--	--	0.0025	U	0.0014	U	0.0016	U	0.0014	U	0.0018	U
p-Ethyltoluene	--	--	0.0025	U	0.0014	U	0.0016	U	0.0014	U	0.0018	U
p-Isopropyltoluene	--	--	0.0012	U	0.00072	U	0.00078	U	0.00071	U	0.00091	U
p/m-Xylene	--	--	0.0025	U	0.0014	U	0.0016	U	0.0014	U	0.0018	U
sec-Butylbenzene	11	100	0.0012	U	0.00072	U	0.00078	U	0.00071	U	0.00091	U
Styrene	--	--	0.0012	U	0.00072	U	0.00078	U	0.00071	U	0.00091	U
tert-Butylbenzene	5.9	100	0.0025	U	0.0014	U	0.0016	U	0.0014	U	0.0018	U
Tetrachloroethene	1.3	5.5	0.00063	U	0.00036	U	0.00039	U	0.00036	U	0.00046	U
Toluene	0.7	100	0.0012	U	0.00072	U	0.00078	U	0.00071	U	0.00091	U
trans-1,2-Dichloroethene	0.19	100	0.0019	U	0.0011	U	0.0012	U	0.0011	U	0.0014	U
trans-1,3-Dichloropropene	--	--	0.0012	U	0.00072	U	0.00078	U	0.00071	U	0.00091	U
trans-1,4-Dichloro-2-butene	--	--	0.0063	U	0.0036	U	0.0039	U	0.0036	U	0.0046	U
Trichloroethene	0.47	10	0.00063	U	0.00036	U	0.00039	U	0.00036	U	0.00046	U
Trichlorofluoromethane	--	--	0.005	U	0.0029	U	0.0031	U	0.0028	U	0.0036	U
Vinyl acetate	--	--	0.012	U	0.0072	U	0.0078	U	0.0071	U	0.0091	U
Vinyl chloride	0.02	0.21	0.0012	U	0.00072	U	0.00078	U	0.00071	U	0.00091	U
Xylenes, Total	0.26	100	0.0012	U	0.00072	U	0.00078	U	0.00071	U	0.00091	U

Table Notes:

--: No guidance value.
mg/kg: Milligrams per Kilogram.
U: Not detected at the reported detection limit for the sample.
J: Estimate Value. The analyte concentration is below the quantitative limit (RL), but above the method detection limit (MDL) or estimated detection limit (EDL).
Undetected value is greater than the standard or guidance value.

Table 2- Volatile Organic Compounds in Soil
Waste Characteriztion Report
Rye Lake Water Plant
Harrison, New York

LOCATION	Part 375 Unrestricted Use Soil Cleanup Objectives	Part 375 Residential Use Soil Cleanup Objectives	B-2 (20-21')		B-2 (24-25')		B-4 (6-7')		B-5 (1-2')		B-7 (16-17')	
LAB SAMPLE ID			6/2/2021		6/2/2021		5/27/2021		5/27/2021		6/2/2021	
DATE			L2129255-06		L2129255-07		L2128321-01		L2128322-01		L2129255-01	
SAMPLE DEPTH (ft.)			20-21'		24-25'		6-7'		1-2'		16-17'	
			Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual
Volatile Organic Compounds (VOC) BY EPA 5035/8260 (mg/kg)												
1,1,1,2-Tetrachloroethane	--	--	0.00026	U	0.00028	U	0.0005	U	0.00054	U	0.00029	U
1,1,1-Trichloroethane	0.68	100	0.00026	U	0.00028	U	0.0005	U	0.00054	U	0.00029	U
1,1,2,2-Tetrachloroethane	--	--	0.00026	U	0.00028	U	0.0005	U	0.00054	U	0.00029	U
1,1,2-Trichloroethane	--	--	0.00052	U	0.00056	U	0.001	U	0.0011	U	0.00058	U
1,1-Dichloroethane	0.27	19	0.00052	U	0.00056	U	0.001	U	0.0011	U	0.00058	U
1,1-Dichloroethene	0.33	100	0.00052	U	0.00056	U	0.001	U	0.0011	U	0.00058	U
1,1-Dichloropropene	--	--	0.00026	U	0.00028	U	0.0005	U	0.00054	U	0.00029	U
1,2,3-Trichlorobenzene	--	--	0.001	U	0.0011	U	0.002	U	0.0022	U	0.0012	U
1,2,3-Trichloropropane	--	--	0.001	U	0.0011	U	0.002	U	0.0022	U	0.0012	U
1,2,4,5-Tetramethylbenzene	--	--	0.001	U	0.0011	U	0.002	U	0.0022	U	0.0012	U
1,2,4-Trichlorobenzene	--	--	0.001	U	0.0011	U	0.002	U	0.0022	U	0.0012	U
1,2,4-Trimethylbenzene	3.6	47	0.001	U	0.0011	U	0.002	U	0.0022	U	0.0012	U
1,2-Dibromo-3-chloropropane	--	--	0.0015	U	0.0017	U	0.003	U	0.0033	U	0.0018	U
1,2-Dibromoethane	--	--	0.00052	U	0.00056	U	0.001	U	0.0011	U	0.00058	U
1,2-Dichlorobenzene	1.1	100	0.001	U	0.0011	U	0.002	U	0.0022	U	0.0012	U
1,2-Dichloroethane	0.02	2.3	0.00052	U	0.00056	U	0.001	U	0.0011	U	0.00058	U
1,2-Dichloroethene, Total	--	--	0.00052	U	0.00056	U	0.001	U	0.0011	U	0.00058	U
1,2-Dichloropropane	--	--	0.00052	U	0.00056	U	0.001	U	0.0011	U	0.00058	U
1,3,5-Trimethylbenzene	8.4	47	0.001	U	0.0011	U	0.002	U	0.0022	U	0.0012	U
1,3-Dichlorobenzene	2.4	17	0.001	U	0.0011	U	0.002	U	0.0022	U	0.0012	U
1,3-Dichloropropane	--	--	0.001	U	0.0011	U	0.002	U	0.0022	U	0.0012	U
1,3-Dichloropropene, Total	--	--	0.00026	U	0.00028	U	0.0005	U	0.00054	U	0.00029	U
1,4-Dichlorobenzene	1.8	9.8	0.001	U	0.0011	U	0.002	U	0.0022	U	0.0012	U
1,4-Dioxane	0.1	9.8	0.041	U	0.044	U	0.08	U	0.087	U	0.047	U
2,2-Dichloropropane	--	--	0.001	U	0.0011	U	0.002	U	0.0022	U	0.0012	U
2-Butanone	0.12	100	0.0052	U	0.0056	U	0.01	U	0.011	U	0.0058	U
2-Hexanone	--	--	0.0052	U	0.0056	U	0.01	U	0.011	U	0.0058	U
4-Methyl-2-pentanone	--	--	0.0052	U	0.0056	U	0.01	U	0.011	U	0.0058	U
Acetone	0.05	100	0.0052	U	0.0056	U	0.01	U	0.011	U	0.0079	
Acrylonitrile	--	--	0.0021	U	0.0022	U	0.004	U	0.0044	U	0.0023	U
Benzene	0.06	2.9	0.00026	U	0.00028	U	0.0005	U	0.00054	U	0.00029	U
Bromobenzene	--	--	0.001	U	0.0011	U	0.002	U	0.0022	U	0.0012	U
Bromochloromethane	--	--	0.001	U	0.0011	U	0.002	U	0.0022	U	0.0012	U
Bromodichloromethane	--	--	0.00026	U	0.00028	U	0.0005	U	0.00054	U	0.00029	U
Bromoform	--	--	0.0021	U	0.0022	U	0.004	U	0.0044	U	0.0023	U
Bromomethane	--	--	0.001	U	0.0011	U	0.002	U	0.0022	U	0.0012	U
Carbon disulfide	--	--	0.0052	U	0.0056	U	0.01	U	0.011	U	0.0058	U
Carbon tetrachloride	0.76	1.4	0.00052	U	0.00056	U	0.001	U	0.0011	U	0.00058	U
Chlorobenzene	1.1	100	0.00026	U	0.00028	U	0.0005	U	0.00054	U	0.00029	U
Chloroethane	--	--	0.001	U	0.0011	U	0.002	U	0.0022	U	0.0012	U
Chloroform	0.37	10	0.00077	U	0.00084	U	0.0015	U	0.0016	U	0.00088	U
Chloromethane	--	--	0.0021	U	0.0022	U	0.004	U	0.0044	U	0.0023	U
cis-1,2-Dichloroethene	0.25	59	0.00052	U	0.00056	U	0.001	U	0.0011	U	0.00058	U
cis-1,3-Dichloropropene	--	--	0.00026	U	0.00028	U	0.0005	U	0.00054	U	0.00029	U
Dibromochloromethane	--	--	0.00052	U	0.00056	U	0.001	U	0.0011	U	0.00058	U
Dibromomethane	--	--	0.001	U	0.0011	U	0.002	U	0.0022	U	0.0012	U
Dichlorodifluoromethane	--	--	0.0052	U	0.0056	U	0.01	U	0.011	U	0.0058	U
Ethyl ether	--	--	0.001	U	0.0011	U	0.002	U	0.0022	U	0.0012	U
Ethylbenzene	1	30	0.00052	U	0.00056	U	0.001	U	0.0011	U	0.00058	U
Hexachlorobutadiene	--	--	0.0021	U	0.0022	U	0.004	U	0.0044	U	0.0023	U
Isopropylbenzene	--	--	0.00052	U	0.00056	U	0.001	U	0.0011	U	0.00058	U
Methyl tert butyl ether	0.93	62	0.001	U	0.0011	U	0.002	U	0.0022	U	0.0012	U
Methylene chloride	0.05	51	0.0026	U	0.0028	U	0.005	U	0.0054	U	0.0029	U
n-Butylbenzene	12	100	0.00052	U	0.00056	U	0.001	U	0.0011	U	0.00058	U
n-Propylbenzene	3.9	100	0.00052	U	0.00056	U	0.001	U	0.0011	U	0.00058	U
Naphthalene	12	100	0.0021	U	0.0022	U	0.004	U	0.0044	U	0.0023	U
o-Chlorotoluene	--	--	0.001	U	0.0011	U	0.002	U	0.0022	U	0.0012	U
o-Xylene	--	--	0.00052	U	0.00056	U	0.001	U	0.0011	U	0.00058	U
p-Chlorotoluene	--	--	0.001	U	0.0011	U	0.002	U	0.0022	U	0.0012	U
p-Diethylbenzene	--	--	0.001	U	0.0011	U	0.002	U	0.0022	U	0.0012	U
p-Ethyltoluene	--	--	0.001	U	0.0011	U	0.002	U	0.0022	U	0.0012	U
p-Isopropyltoluene	--	--	0.00052	U	0.00056	U	0.001	U	0.0011	U	0.00058	U
p/m-Xylene	--	--	0.001	U	0.0011	U	0.002	U	0.0022	U	0.0012	U
sec-Butylbenzene	11	100	0.00052	U	0.00056	U	0.001	U	0.0011	U	0.00058	U
Styrene	--	--	0.00052	U	0.00056	U	0.001	U	0.0011	U	0.00058	U
tert-Butylbenzene	5.9	100	0.001	U	0.0011	U	0.002	U	0.0022	U	0.0012	U
Tetrachloroethene	1.3	5.5	0.00026	U	0.00028	U	0.0005	U	0.00054	U	0.00029	U
Toluene	0.7	100	0.00052	U	0.00056	U	0.001	U	0.0011	U	0.00058	U
trans-1,2-Dichloroethene	0.19	100	0.00077	U	0.00084	U	0.0015	U	0.0016	U	0.00088	U
trans-1,3-Dichloropropene	--	--	0.00052	U	0.00056	U	0.001	U	0.0011	U	0.00058	U
trans-1,4-Dichloro-2-butene	--	--	0.0026	U	0.0028	U	0.005	U	0.0054	U	0.0029	U
Trichloroethene	0.47	10	0.00026	U	0.00028	U	0.0005	U	0.00054	U	0.00029	U
Trichlorofluoromethane	--	--	0.0021	U	0.0022	U	0.004	U	0.0044	U	0.0023	U
Vinyl acetate	--	--	0.0052	U	0.0056	U	0.01	U	0.011	U	0.0058	U
Vinyl chloride	0.02	0.21	0.00052	U	0.00056	U	0.001	U	0.0011	U	0.00058	U
Xylenes, Total	0.26	100	0.00052	U	0.00056	U	0.001	U	0.0011	U	0.00058	U

Table Notes:

--: No guidance value.
mg/kg: Milligrams per Kilogram.
U: Not detected at the reported detection limit for the sample.
J: Estimate Value. The analyte concentration is below the quantitative limit (RL), but above the method detection limit (MDL) or estimated detection limit (EDL).
Undetected value is greater than the standard or guidance value.

Table 2- Volatile Organic Compounds in Soil
Waste Characteriztion Report
Rye Lake Water Plant
Harrison, New York

LOCATION	Part 375 Unrestricted Use Soil Cleanup Objectives	Part 375 Residential Use Soil Cleanup Objectives	B-7 (20-21')		B-7 (24-25')		B-9 (5-7')		B-10 (1-2')		B-10 (13-15')	
LAB SAMPLE ID			6/2/2021		6/2/2021		5/26/2021		5/26/2021		5/26/2021	
DATE			L2129255-02		L2129255-03		L2128025-07		L2128025-15		L2128025-09	
SAMPLE DEPTH (ft.)			20-21'		24-25'		5-7'		1-2'		13-15'	
			Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual
Volatile Organic Compounds (VOC) BY EPA 5035/8260 (mg/kg)												
1,1,1,2-Tetrachloroethane	--	--	0.00037	U	0.00033	U	0.00027	U	0.0007	U	0.0003	U
1,1,1-Trichloroethane	0.68	100	0.00037	U	0.00033	U	0.00027	U	0.0007	U	0.0003	U
1,1,2,2-Tetrachloroethane	--	--	0.00037	U	0.00033	U	0.00027	U	0.0007	U	0.0003	U
1,1,2-Trichloroethane	--	--	0.00075	U	0.00066	U	0.00054	U	0.0014	U	0.00061	U
1,1-Dichloroethane	0.27	19	0.00075	U	0.00066	U	0.00054	U	0.0014	U	0.00061	U
1,1-Dichloroethene	0.33	100	0.00075	U	0.00066	U	0.00054	U	0.0014	U	0.00061	U
1,1-Dichloropropene	--	--	0.00037	U	0.00033	U	0.00027	U	0.0007	U	0.0003	U
1,2,3-Trichlorobenzene	--	--	0.0015	U	0.0013	U	0.0011	U	0.0028	U	0.0012	U
1,2,3-Trichloropropane	--	--	0.0015	U	0.0013	U	0.0011	U	0.0028	U	0.0012	U
1,2,4,5-Tetramethylbenzene	--	--	0.0015	U	0.0013	U	0.0011	U	0.0028	U	0.0012	U
1,2,4-Trichlorobenzene	--	--	0.0015	U	0.0013	U	0.0011	U	0.0028	U	0.0012	U
1,2,4-Trimethylbenzene	3.6	47	0.0015	U	0.0013	U	0.0011	U	0.0028	U	0.0012	U
1,2-Dibromo-3-chloropropane	--	--	0.0022	U	0.002	U	0.0016	U	0.0042	U	0.0018	U
1,2-Dibromoethane	--	--	0.00075	U	0.00066	U	0.00054	U	0.0014	U	0.00061	U
1,2-Dichlorobenzene	1.1	100	0.0015	U	0.0013	U	0.0011	U	0.0028	U	0.0012	U
1,2-Dichloroethane	0.02	2.3	0.00075	U	0.00066	U	0.00054	U	0.0014	U	0.00061	U
1,2-Dichloroethene, Total	--	--	0.00075	U	0.00066	U	0.00054	U	0.0014	U	0.00061	U
1,2-Dichloropropane	--	--	0.00075	U	0.00066	U	0.00054	U	0.0014	U	0.00061	U
1,3,5-Trimethylbenzene	8.4	47	0.0015	U	0.0013	U	0.0011	U	0.0028	U	0.0012	U
1,3-Dichlorobenzene	2.4	17	0.0015	U	0.0013	U	0.0011	U	0.0028	U	0.0012	U
1,3-Dichloropropane	--	--	0.0015	U	0.0013	U	0.0011	U	0.0028	U	0.0012	U
1,3-Dichloropropene, Total	--	--	0.00037	U	0.00033	U	0.00027	U	0.0007	U	0.0003	U
1,4-Dichlorobenzene	1.8	9.8	0.0015	U	0.0013	U	0.0011	U	0.0028	U	0.0012	U
1,4-Dioxane	0.1	9.8	0.06	U	0.053	U	0.043	U	0.11	U	0.048	U
2,2-Dichloropropane	--	--	0.0015	U	0.0013	U	0.0011	U	0.0028	U	0.0012	U
2-Butanone	0.12	100	0.0075	U	0.0066	U	0.0014	J	0.014	U	0.0061	U
2-Hexanone	--	--	0.0075	U	0.0066	U	0.0054	U	0.014	U	0.0061	U
4-Methyl-2-pentanone	--	--	0.0075	U	0.0066	U	0.0054	U	0.014	U	0.0061	U
Acetone	0.05	100	0.0075	U	0.0066	U	0.012		0.014	U	0.0061	U
Acrylonitrile	--	--	0.003	U	0.0026	U	0.0021	U	0.0056	U	0.0024	U
Benzene	0.06	2.9	0.00037	U	0.00033	U	0.00011	J	0.0007	U	0.0003	U
Bromobenzene	--	--	0.0015	U	0.0013	U	0.0011	U	0.0028	U	0.0012	U
Bromochloromethane	--	--	0.0015	U	0.0013	U	0.0011	U	0.0028	U	0.0012	U
Bromodichloromethane	--	--	0.00037	U	0.00033	U	0.00027	U	0.0007	U	0.0003	U
Bromoform	--	--	0.003	U	0.0026	U	0.0021	U	0.0056	U	0.0024	U
Bromomethane	--	--	0.0015	U	0.0013	U	0.0011	U	0.0028	U	0.0012	U
Carbon disulfide	--	--	0.0075	U	0.0066	U	0.0054	U	0.014	U	0.0061	U
Carbon tetrachloride	0.76	1.4	0.00075	U	0.00066	U	0.00054	U	0.0014	U	0.00061	U
Chlorobenzene	1.1	100	0.00037	U	0.00033	U	0.00027	U	0.0007	U	0.0003	U
Chloroethane	--	--	0.0015	U	0.0013	U	0.0011	U	0.0028	U	0.0012	U
Chloroform	0.37	10	0.0011	U	0.001	U	0.0008	U	0.0021	U	0.00091	U
Chloromethane	--	--	0.003	U	0.0026	U	0.0021	U	0.0056	U	0.0024	U
cis-1,2-Dichloroethene	0.25	59	0.00075	U	0.00066	U	0.00054	U	0.0014	U	0.00061	U
cis-1,3-Dichloropropene	--	--	0.00037	U	0.00033	U	0.00027	U	0.0007	U	0.0003	U
Dibromochloromethane	--	--	0.00075	U	0.00066	U	0.00054	U	0.0014	U	0.00061	U
Dibromomethane	--	--	0.0015	U	0.0013	U	0.0011	U	0.0028	U	0.0012	U
Dichlorodifluoromethane	--	--	0.0075	U	0.0066	U	0.0054	U	0.014	U	0.0061	U
Ethyl ether	--	--	0.0015	U	0.0013	U	0.0011	U	0.0028	U	0.0012	U
Ethylbenzene	1	30	0.00075	U	0.00066	U	0.00054	U	0.0014	U	0.00061	U
Hexachlorobutadiene	--	--	0.003	U	0.0026	U	0.0021	U	0.0056	U	0.0024	U
Isopropylbenzene	--	--	0.00075	U	0.00066	U	0.00054	U	0.0014	U	0.00061	U
Methyl tert butyl ether	0.93	62	0.0015	U	0.0013	U	0.0011	U	0.0028	U	0.0012	U
Methylene chloride	0.05	51	0.0037	U	0.0033	U	0.0027	U	0.007	U	0.003	U
n-Butylbenzene	12	100	0.00075	U	0.00066	U	0.00054	U	0.0014	U	0.00061	U
n-Propylbenzene	3.9	100	0.00075	U	0.00066	U	0.00054	U	0.0014	U	0.00061	U
Naphthalene	12	100	0.003	U	0.0026	U	0.0021	U	0.0056	U	0.0024	U
o-Chlorotoluene	--	--	0.0015	U	0.0013	U	0.0011	U	0.0028	U	0.0012	U
o-Xylene	--	--	0.00075	U	0.00066	U	0.00054	U	0.0014	U	0.00061	U
p-Chlorotoluene	--	--	0.0015	U	0.0013	U	0.0011	U	0.0028	U	0.0012	U
p-Diethylbenzene	--	--	0.0015	U	0.0013	U	0.0011	U	0.0028	U	0.0012	U
p-Ethyltoluene	--	--	0.0015	U	0.0013	U	0.0011	U	0.0028	U	0.0012	U
p-Isopropyltoluene	--	--	0.00075	U	0.00066	U	0.00054	U	0.0014	U	0.00061	U
p/m-Xylene	--	--	0.0015	U	0.0013	U	0.0011	U	0.0028	U	0.0012	U
sec-Butylbenzene	11	100	0.00075	U	0.00066	U	0.00054	U	0.0014	U	0.00061	U
Styrene	--	--	0.00075	U	0.00066	U	0.00054	U	0.0014	U	0.00061	U
tert-Butylbenzene	5.9	100	0.0015	U	0.0013	U	0.0011	U	0.0028	U	0.0012	U
Tetrachloroethene	1.3	5.5	0.00037	U	0.00033	U	0.00027	U	0.0007	U	0.0003	U
Toluene	0.7	100	0.00075	U	0.00066	U	0.00054	U	0.0014	U	0.00061	U
trans-1,2-Dichloroethene	0.19	100	0.0011	U	0.001	U	0.0008	U	0.0021	U	0.00091	U
trans-1,3-Dichloropropene	--	--	0.00075	U	0.00066	U	0.00054	U	0.0014	U	0.00061	U
trans-1,4-Dichloro-2-butene	--	--	0.0037	U	0.0033	U	0.0027	U	0.007	U	0.003	U
Trichloroethene	0.47	10	0.00037	U	0.00033	U	0.00027	U	0.0007	U	0.0003	U
Trichlorofluoromethane	--	--	0.003	U	0.0026	U	0.0021	U	0.0056	U	0.0024	U
Vinyl acetate	--	--	0.0075	U	0.0066	U	0.0054	U	0.014	U	0.0061	U
Vinyl chloride	0.02	0.21	0.00075	U	0.00066	U	0.00054	U	0.0014	U	0.00061	U
Xylenes, Total	0.26	100	0.00075	U	0.00066	U	0.00054	U	0.0014	U	0.00061	U

Table Notes:

--: No guidance value.
mg/kg: Milligrams per Kilogram.
U: Not detected at the reported detection limit for the sample.
J: Estimate Value. The analyte concentration is below the quantitative limit (RL), but above the method detection limit (MDL) or estimated detection limit (EDL).
Undetected value is greater than the standard or guidance value.

Table 2- Volatile Organic Compounds in Soil
Waste Characteriztion Report
Rye Lake Water Plant
Harrison, New York

LOCATION	Part 375 Unrestricted Use Soil Cleanup Objectives	Part 375 Residential Use Soil Cleanup Objectives	B-13 (1-2')		B-13 (6-7')		B-16 (1-2')		B-16 (4-5')		B-17 (1-2')	
LAB SAMPLE ID			5/26/2021		5/26/2021		6/4/2021		6/4/2021		6/1/2021	
DATE			L2128025-13		L2128025-05		L2130255-01		L2130255-02		L2128995-01	
SAMPLE DEPTH (ft.)			1-2'		6-7'		1-2'		4-5'		1-2'	
			Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual
Volatile Organic Compounds (VOC) BY EPA 5035/8260 (mg/kg)												
1,1,1,2-Tetrachloroethane	--	--	0.00053	U	0.00066	U	0.00043	U	0.00041	U	0.00052	U
1,1,1-Trichloroethane	0.68	100	0.00053	U	0.00066	U	0.00043	U	0.00041	U	0.00052	U
1,1,2,2-Tetrachloroethane	--	--	0.00053	U	0.00066	U	0.00043	U	0.00041	U	0.00052	U
1,1,2-Trichloroethane	--	--	0.0011	U	0.0013	U	0.00085	U	0.00082	U	0.001	U
1,1-Dichloroethane	0.27	19	0.0011	U	0.0013	U	0.00085	U	0.00082	U	0.001	U
1,1-Dichloroethene	0.33	100	0.0011	U	0.0013	U	0.00085	U	0.00082	U	0.001	U
1,1-Dichloropropene	--	--	0.00053	U	0.00066	U	0.00043	U	0.00041	U	0.00052	U
1,2,3-Trichlorobenzene	--	--	0.0021	U	0.0026	U	0.0017	U	0.0016	U	0.0021	U
1,2,3-Trichloropropane	--	--	0.0021	U	0.0026	U	0.0017	U	0.0016	U	0.0021	U
1,2,4,5-Tetramethylbenzene	--	--	0.0021	U	0.0026	U	0.0017	U	0.0016	U	0.0021	U
1,2,4-Trichlorobenzene	--	--	0.0021	U	0.0026	U	0.0017	U	0.0016	U	0.0021	U
1,2,4-Trimethylbenzene	3.6	47	0.0021	U	0.0026	U	0.0017	U	0.0016	U	0.0021	U
1,2-Dibromo-3-chloropropane	--	--	0.0032	U	0.0039	U	0.0026	U	0.0024	U	0.0031	U
1,2-Dibromoethane	--	--	0.0011	U	0.0013	U	0.00085	U	0.00082	U	0.001	U
1,2-Dichlorobenzene	1.1	100	0.0021	U	0.0026	U	0.0017	U	0.0016	U	0.0021	U
1,2-Dichloroethane	0.02	2.3	0.0011	U	0.0013	U	0.00085	U	0.00082	U	0.001	U
1,2-Dichloroethene, Total	--	--	0.0011	U	0.0013	U	0.00085	U	0.00082	U	0.001	U
1,2-Dichloropropane	--	--	0.0011	U	0.0013	U	0.00085	U	0.00082	U	0.001	U
1,3,5-Trimethylbenzene	8.4	47	0.0021	U	0.0026	U	0.0017	U	0.0016	U	0.0021	U
1,3-Dichlorobenzene	2.4	17	0.0021	U	0.0026	U	0.0017	U	0.0016	U	0.0021	U
1,3-Dichloropropane	--	--	0.0021	U	0.0026	U	0.0017	U	0.0016	U	0.0021	U
1,3-Dichloropropene, Total	--	--	0.00053	U	0.00066	U	0.00043	U	0.00041	U	0.00052	U
1,4-Dichlorobenzene	1.8	9.8	0.0021	U	0.0026	U	0.0017	U	0.0016	U	0.0021	U
1,4-Dioxane	0.1	9.8	0.086	U	0.1	U	0.068	U	0.065	U	0.083	U
2,2-Dichloropropane	--	--	0.0021	U	0.0026	U	0.0017	U	0.0016	U	0.0021	U
2-Butanone	0.12	100	0.011	U	0.013	U	0.0085	U	0.0082	U	0.01	U
2-Hexanone	--	--	0.011	U	0.013	U	0.0085	U	0.0082	U	0.01	U
4-Methyl-2-pentanone	--	--	0.011	U	0.013	U	0.0085	U	0.0082	U	0.01	U
Acetone	0.05	100	0.028		0.0068	J	0.0085	U	0.0047	J	0.01	U
Acrylonitrile	--	--	0.0043	U	0.0052	U	0.0034	U	0.0033	U	0.0041	U
Benzene	0.06	2.9	0.00053	U	0.00066	U	0.00043	U	0.00041	U	0.00052	U
Bromobenzene	--	--	0.0021	U	0.0026	U	0.0017	U	0.0016	U	0.0021	U
Bromochloromethane	--	--	0.0021	U	0.0026	U	0.0017	U	0.0016	U	0.0021	U
Bromodichloromethane	--	--	0.00053	U	0.00066	U	0.00043	U	0.00041	U	0.00052	U
Bromoform	--	--	0.0043	U	0.0052	U	0.0034	U	0.0033	U	0.0041	U
Bromomethane	--	--	0.0021	U	0.0026	U	0.0017	U	0.0016	U	0.0021	U
Carbon disulfide	--	--	0.011	U	0.0086	J	0.0085	U	0.0082	U	0.01	U
Carbon tetrachloride	0.76	1.4	0.0011	U	0.0013	U	0.00085	U	0.00082	U	0.001	U
Chlorobenzene	1.1	100	0.00053	U	0.00066	U	0.00043	U	0.00041	U	0.00052	U
Chloroethane	--	--	0.0021	U	0.0026	U	0.0017	U	0.0016	U	0.0021	U
Chloroform	0.37	10	0.0016	U	0.002	U	0.0013	U	0.0012	U	0.0016	U
Chloromethane	--	--	0.0043	U	0.0052	U	0.0034	U	0.0033	U	0.0041	U
cis-1,2-Dichloroethene	0.25	59	0.0011	U	0.0013	U	0.00085	U	0.00082	U	0.001	U
cis-1,3-Dichloropropene	--	--	0.00053	U	0.00066	U	0.00043	U	0.00041	U	0.00052	U
Dibromochloromethane	--	--	0.0011	U	0.0013	U	0.00085	U	0.00082	U	0.001	U
Dibromomethane	--	--	0.0021	U	0.0026	U	0.0017	U	0.0016	U	0.0021	U
Dichlorodifluoromethane	--	--	0.011	U	0.013	U	0.0085	U	0.0082	U	0.01	U
Ethyl ether	--	--	0.0021	U	0.0026	U	0.0017	U	0.0016	U	0.0021	U
Ethylbenzene	1	30	0.0011	U	0.0013	U	0.00085	U	0.00082	U	0.001	U
Hexachlorobutadiene	--	--	0.0043	U	0.0052	U	0.0034	U	0.0033	U	0.0041	U
Isopropylbenzene	--	--	0.0011	U	0.0013	U	0.00085	U	0.00082	U	0.001	U
Methyl tert butyl ether	0.93	62	0.0021	U	0.0026	U	0.0017	U	0.0016	U	0.0021	U
Methylene chloride	0.05	51	0.0053	U	0.0066	U	0.0043	U	0.0041	U	0.0052	U
n-Butylbenzene	12	100	0.0011	U	0.0013	U	0.00085	U	0.00082	U	0.001	U
n-Propylbenzene	3.9	100	0.0011	U	0.0013	U	0.00085	U	0.00082	U	0.001	U
Naphthalene	12	100	0.0043	U	0.0052	U	0.0034	U	0.0033	U	0.0041	U
o-Chlorotoluene	--	--	0.0021	U	0.0026	U	0.0017	U	0.0016	U	0.0021	U
o-Xylene	--	--	0.0011	U	0.0013	U	0.00085	U	0.00082	U	0.001	U
p-Chlorotoluene	--	--	0.0021	U	0.0026	U	0.0017	U	0.0016	U	0.0021	U
p-Diethylbenzene	--	--	0.0021	U	0.0026	U	0.0017	U	0.0016	U	0.0021	U
p-Ethyltoluene	--	--	0.0021	U	0.0026	U	0.0017	U	0.0016	U	0.0021	U
p-Isopropyltoluene	--	--	0.0011	U	0.0013	U	0.00085	U	0.014		0.001	U
p/m-Xylene	--	--	0.0021	U	0.0026	U	0.0017	U	0.0016	U	0.0021	U
sec-Butylbenzene	11	100	0.0011	U	0.0013	U	0.00085	U	0.00082	U	0.001	U
Styrene	--	--	0.0011	U	0.0013	U	0.00085	U	0.00082	U	0.001	U
tert-Butylbenzene	5.9	100	0.0021	U	0.0026	U	0.0017	U	0.0016	U	0.0021	U
Tetrachloroethene	1.3	5.5	0.00053	U	0.00066	U	0.00043	U	0.00041	U	0.00052	U
Toluene	0.7	100	0.0011	U	0.0013	U	0.00085	U	0.00082	U	0.001	U
trans-1,2-Dichloroethene	0.19	100	0.0016	U	0.002	U	0.0013	U	0.0012	U	0.0016	U
trans-1,3-Dichloropropene	--	--	0.0011	U	0.0013	U	0.00085	U	0.00082	U	0.001	U
trans-1,4-Dichloro-2-butene	--	--	0.0053	U	0.0066	U	0.0043	U	0.0041	U	0.0052	U
Trichloroethene	0.47	10	0.00053	U	0.00066	U	0.00043	U	0.00041	U	0.00052	U
Trichlorofluoromethane	--	--	0.0043	U	0.0052	U	0.0034	U	0.0033	U	0.0041	U
Vinyl acetate	--	--	0.011	U	0.013	U	0.0085	U	0.0082	U	0.01	U
Vinyl chloride	0.02	0.21	0.0011	U	0.0013	U	0.00085	U	0.00082	U	0.001	U
Xylenes, Total	0.26	100	0.0011	U	0.0013	U	0.00085	U	0.00082	U	0.001	U

Table Notes:

--: No guidance value.
mg/kg: Milligrams per Kilogram.
U: Not detected at the reported detection limit for the sample.
J: Estimate Value. The analyte concentration is below the quantitative limit (RL), but above the method detection limit (MDL) or estimated detection limit (EDL).
Undetected value is greater than the standard or guidance value.

Table 2- Volatile Organic Compounds in Soil
Waste Characteriztion Report
Rye Lake Water Plant
Harrison, New York

LOCATION	Part 375 Unrestricted Use Soil Cleanup Objectives	Part 375 Residential Use Soil Cleanup Objectives	B-17 (6-7')		B-19 (1-2')		B-19 (5-6')		B-19 (9-10')		B-22 (1-2')	
LAB SAMPLE ID			6/1/2021		6/3/2021		6/3/2021		6/3/2021		5/26/2021	
DATE			L2128996-01		L2129818-01		L2129818-02		L2129818-03		L2128025-03	
SAMPLE DEPTH (ft.)			6-7'		1-2'		5-6'		9-10'		1-2'	
			Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual
Volatile Organic Compounds (VOC) BY EPA 5035/8260 (mg/kg)												
1,1,1,2-Tetrachloroethane	--	--	0.0003	U	0.00032	U	0.0003	U	0.00032	U	0.00055	U
1,1,1-Trichloroethane	0.68	100	0.0003	U	0.00032	U	0.0003	U	0.00032	U	0.00055	U
1,1,2,2-Tetrachloroethane	--	--	0.0003	U	0.00032	U	0.0003	U	0.00032	U	0.00055	U
1,1,2-Trichloroethane	--	--	0.00061	U	0.00065	U	0.0006	U	0.00063	U	0.0011	U
1,1-Dichloroethane	0.27	19	0.00061	U	0.00065	U	0.0006	U	0.00063	U	0.0011	U
1,1-Dichloroethene	0.33	100	0.00061	U	0.00065	U	0.0006	U	0.00063	U	0.0011	U
1,1-Dichloropropene	--	--	0.0003	U	0.00032	U	0.0003	U	0.00032	U	0.00055	U
1,2,3-Trichlorobenzene	--	--	0.0012	U	0.0013	U	0.0012	U	0.0013	U	0.0022	U
1,2,3-Trichloropropane	--	--	0.0012	U	0.0013	U	0.0012	U	0.0013	U	0.0022	U
1,2,4,5-Tetramethylbenzene	--	--	0.0012	U	0.0013	U	0.0012	U	0.0013	U	0.0022	U
1,2,4-Trichlorobenzene	--	--	0.0012	U	0.0013	U	0.0012	U	0.0013	U	0.0022	U
1,2,4-Trimethylbenzene	3.6	47	0.0012	U	0.0013	U	0.0012	U	0.0013	U	0.0022	U
1,2-Dibromo-3-chloropropane	--	--	0.0018	U	0.002	U	0.0018	U	0.0019	U	0.0033	U
1,2-Dibromoethane	--	--	0.00061	U	0.00065	U	0.0006	U	0.00063	U	0.0011	U
1,2-Dichlorobenzene	1.1	100	0.0012	U	0.0013	U	0.0012	U	0.0013	U	0.0022	U
1,2-Dichloroethane	0.02	2.3	0.00061	U	0.00065	U	0.0006	U	0.00063	U	0.0011	U
1,2-Dichloroethene, Total	--	--	0.00061	U	0.00065	U	0.0006	U	0.00063	U	0.0011	U
1,2-Dichloropropane	--	--	0.00061	U	0.00065	U	0.0006	U	0.00063	U	0.0011	U
1,3,5-Trimethylbenzene	8.4	47	0.0012	U	0.0013	U	0.0012	U	0.0013	U	0.0022	U
1,3-Dichlorobenzene	2.4	17	0.0012	U	0.0013	U	0.0012	U	0.0013	U	0.0022	U
1,3-Dichloropropane	--	--	0.0012	U	0.0013	U	0.0012	U	0.0013	U	0.0022	U
1,3-Dichloropropene, Total	--	--	0.0003	U	0.00032	U	0.0003	U	0.00032	U	0.00055	U
1,4-Dichlorobenzene	1.8	9.8	0.0012	U	0.0013	U	0.0012	U	0.0013	U	0.0022	U
1,4-Dioxane	0.1	9.8	0.049	U	0.052	U	0.048	U	0.05	U	0.087	U
2,2-Dichloropropane	--	--	0.0012	U	0.0013	U	0.0012	U	0.0013	U	0.0022	U
2-Butanone	0.12	100	0.0061	U	0.0065	U	0.006	U	0.0063	U	0.011	U
2-Hexanone	--	--	0.0061	U	0.0065	U	0.006	U	0.0063	U	0.011	U
4-Methyl-2-pentanone	--	--	0.0061	U	0.0065	U	0.006	U	0.0063	U	0.011	U
Acetone	0.05	100	0.0079		0.0046	J	0.0031	J	0.0063	U	0.011	U
Acrylonitrile	--	--	0.0024	U	0.0026	U	0.0024	U	0.0025	U	0.0044	U
Benzene	0.06	2.9	0.0003	U	0.00032	U	0.0003	U	0.00032	U	0.00055	U
Bromobenzene	--	--	0.0012	U	0.0013	U	0.0012	U	0.0013	U	0.0022	U
Bromochloromethane	--	--	0.0012	U	0.0013	U	0.0012	U	0.0013	U	0.0022	U
Bromodichloromethane	--	--	0.0003	U	0.00032	U	0.0003	U	0.00032	U	0.00055	U
Bromoform	--	--	0.0024	U	0.0026	U	0.0024	U	0.0025	U	0.0044	U
Bromomethane	--	--	0.0012	U	0.0013	U	0.0012	U	0.0013	U	0.0022	U
Carbon disulfide	--	--	0.0061	U	0.0065	U	0.0029	J	0.0063	U	0.011	U
Carbon tetrachloride	0.76	1.4	0.00061	U	0.00065	U	0.0006	U	0.00063	U	0.0011	U
Chlorobenzene	1.1	100	0.0003	U	0.00032	U	0.0003	U	0.00032	U	0.00055	U
Chloroethane	--	--	0.0012	U	0.0013	U	0.0012	U	0.0013	U	0.0022	U
Chloroform	0.37	10	0.00091	U	0.00098	U	0.0009	U	0.00095	U	0.0016	U
Chloromethane	--	--	0.0024	U	0.0026	U	0.0024	U	0.0025	U	0.0044	U
cis-1,2-Dichloroethene	0.25	59	0.00061	U	0.00065	U	0.0006	U	0.00063	U	0.0011	U
cis-1,3-Dichloropropene	--	--	0.0003	U	0.00032	U	0.0003	U	0.00032	U	0.00055	U
Dibromochloromethane	--	--	0.00061	U	0.00065	U	0.0006	U	0.00063	U	0.0011	U
Dibromomethane	--	--	0.0012	U	0.0013	U	0.0012	U	0.0013	U	0.0022	U
Dichlorodifluoromethane	--	--	0.0061	U	0.0065	U	0.006	U	0.0063	U	0.011	U
Ethyl ether	--	--	0.0012	U	0.0013	U	0.0012	U	0.0013	U	0.0022	U
Ethylbenzene	1	30	0.00061	U	0.00065	U	0.0006	U	0.00063	U	0.0011	U
Hexachlorobutadiene	--	--	0.0024	U	0.0026	U	0.0024	U	0.0025	U	0.0044	U
Isopropylbenzene	--	--	0.00061	U	0.00065	U	0.0006	U	0.00063	U	0.0011	U
Methyl tert butyl ether	0.93	62	0.0012	U	0.0013	U	0.0012	U	0.0013	U	0.0022	U
Methylene chloride	0.05	51	0.003	U	0.0032	U	0.003	U	0.0032	U	0.0055	U
n-Butylbenzene	12	100	0.00061	U	0.00065	U	0.0006	U	0.00063	U	0.0011	U
n-Propylbenzene	3.9	100	0.00061	U	0.00065	U	0.0006	U	0.00063	U	0.0011	U
Naphthalene	12	100	0.0024	U	0.0026	U	0.0024	U	0.0025	U	0.0044	U
o-Chlorotoluene	--	--	0.0012	U	0.0013	U	0.0012	U	0.0013	U	0.0022	U
o-Xylene	--	--	0.00061	U	0.00065	U	0.0006	U	0.00063	U	0.0011	U
p-Chlorotoluene	--	--	0.0012	U	0.0013	U	0.0012	U	0.0013	U	0.0022	U
p-Diethylbenzene	--	--	0.0012	U	0.0013	U	0.0012	U	0.0013	U	0.0022	U
p-Ethyltoluene	--	--	0.0012	U	0.0013	U	0.0012	U	0.0013	U	0.0022	U
p-Isopropyltoluene	--	--	0.00061	U	0.00011	J	0.0006	U	0.00063	U	0.0011	U
p/m-Xylene	--	--	0.0012	U	0.0013	U	0.0012	U	0.0013	U	0.0022	U
sec-Butylbenzene	11	100	0.00061	U	0.00065	U	0.0006	U	0.00063	U	0.0011	U
Styrene	--	--	0.00061	U	0.00065	U	0.0006	U	0.00063	U	0.0011	U
tert-Butylbenzene	5.9	100	0.0012	U	0.0013	U	0.0012	U	0.0013	U	0.0022	U
Tetrachloroethene	1.3	5.5	0.0003	U	0.00032	U	0.0003	U	0.00032	U	0.00055	U
Toluene	0.7	100	0.00061	U	0.00065	U	0.0006	U	0.00063	U	0.0011	U
trans-1,2-Dichloroethene	0.19	100	0.00091	U	0.00098	U	0.0009	U	0.00095	U	0.0016	U
trans-1,3-Dichloropropene	--	--	0.00061	U	0.00065	U	0.0006	U	0.00063	U	0.0011	U
trans-1,4-Dichloro-2-butene	--	--	0.003	U	0.0032	U	0.003	U	0.0032	U	0.0055	U
Trichloroethene	0.47	10	0.0003	U	0.00032	U	0.0003	U	0.00032	U	0.00055	U
Trichlorofluoromethane	--	--	0.0024	U	0.0026	U	0.0024	U	0.0025	U	0.0044	U
Vinyl acetate	--	--	0.0061	U	0.0065	U	0.006	U	0.0063	U	0.011	U
Vinyl chloride	0.02	0.21	0.00061	U	0.00065	U	0.0006	U	0.00063	U	0.0011	U
Xylenes, Total	0.26	100	0.00061	U	0.00065	U	0.0006	U	0.00063	U	0.0011	U

Table Notes:

--: No guidance value.
mg/kg: Milligrams per Kilogram.
U: Not detected at the reported detection limit for the sample.
J: Estimate Value. The analyte concentration is below the quantitative limit (RL), but above the method detection limit (MDL) or estimated detection limit (EDL).
Undetected value is greater than the standard or guidance value.

Table 2- Volatile Organic Compounds in Soil
Waste Characteriztion Report
Rye Lake Water Plant
Harrison, New York

LOCATION	Part 375 Unrestricted Use Soil Cleanup Objectives	Part 375 Residential Use Soil Cleanup Objectives	B-24 (1-2')		B-26 (1-2')		B-29 (1-2')		B-29 (5-6')		B-29 (24-25')	
LAB SAMPLE ID			5/26/2021		5/26/2021		6/2/2021		6/2/2021		6/2/2021	
DATE			L2128025-11		L2128025-01		L2129255-09		L2129255-10		L2129255-11	
SAMPLE DEPTH (ft.)			1-2'		1-2'		1-2'		5-6'		24-25'	
			Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual
Volatile Organic Compounds (VOC) BY EPA 5035/8260 (mg/kg)												
1,1,1,2-Tetrachloroethane	--	--	0.0007	U	0.00072	U	0.00054	U	0.00033	U	0.00045	U
1,1,1-Trichloroethane	0.68	100	0.0007	U	0.00072	U	0.00054	U	0.00033	U	0.00045	U
1,1,2,2-Tetrachloroethane	--	--	0.0007	U	0.00072	U	0.00054	U	0.00033	U	0.00045	U
1,1,2-Trichloroethane	--	--	0.0014	U	0.0014	U	0.0011	U	0.00066	U	0.0009	U
1,1-Dichloroethane	0.27	19	0.0014	U	0.0014	U	0.0011	U	0.00066	U	0.0009	U
1,1-Dichloroethene	0.33	100	0.0014	U	0.0014	U	0.0011	U	0.00066	U	0.0009	U
1,1-Dichloropropene	--	--	0.0007	U	0.00072	U	0.00054	U	0.00033	U	0.00045	U
1,2,3-Trichlorobenzene	--	--	0.0028	U	0.0029	U	0.0022	U	0.0013	U	0.0018	U
1,2,3-Trichloropropane	--	--	0.0028	U	0.0029	U	0.0022	U	0.0013	U	0.0018	U
1,2,4,5-Tetramethylbenzene	--	--	0.0028	U	0.0029	U	0.0022	U	0.0013	U	0.0018	U
1,2,4-Trichlorobenzene	--	--	0.0028	U	0.0029	U	0.0022	U	0.0013	U	0.0018	U
1,2,4-Trimethylbenzene	3.6	47	0.0028	U	0.0029	U	0.0022	U	0.0013	U	0.0018	U
1,2-Dibromo-3-chloropropane	--	--	0.0042	U	0.0043	U	0.0032	U	0.002	U	0.0027	U
1,2-Dibromoethane	--	--	0.0014	U	0.0014	U	0.0011	U	0.00066	U	0.0009	U
1,2-Dichlorobenzene	1.1	100	0.0028	U	0.0029	U	0.0022	U	0.0013	U	0.0018	U
1,2-Dichloroethane	0.02	2.3	0.0014	U	0.0014	U	0.0011	U	0.00066	U	0.0009	U
1,2-Dichloroethene, Total	--	--	0.0014	U	0.0014	U	0.0011	U	0.00066	U	0.0009	U
1,2-Dichloropropane	--	--	0.0014	U	0.0014	U	0.0011	U	0.00066	U	0.0009	U
1,3,5-Trimethylbenzene	8.4	47	0.0028	U	0.0029	U	0.0022	U	0.0013	U	0.0018	U
1,3-Dichlorobenzene	2.4	17	0.0028	U	0.0029	U	0.0022	U	0.0013	U	0.0018	U
1,3-Dichloropropane	--	--	0.0028	U	0.0029	U	0.0022	U	0.0013	U	0.0018	U
1,3-Dichloropropene, Total	--	--	0.0007	U	0.00072	U	0.00054	U	0.00033	U	0.00045	U
1,4-Dichlorobenzene	1.8	9.8	0.0028	U	0.0029	U	0.0022	U	0.0013	U	0.0018	U
1,4-Dioxane	0.1	9.8	0.11	U	0.12	U	0.087	U	0.053	U	0.072	U
2,2-Dichloropropane	--	--	0.0028	U	0.0029	U	0.0022	U	0.0013	U	0.0018	U
2-Butanone	0.12	100	0.014	U	0.014	U	0.011	U	0.0033	J	0.009	U
2-Hexanone	--	--	0.014	U	0.014	U	0.011	U	0.0066	U	0.009	U
4-Methyl-2-pentanone	--	--	0.014	U	0.014	U	0.011	U	0.0066	U	0.009	U
Acetone	0.05	100	0.014	U	0.014	U	0.013		0.029		0.009	U
Acrylonitrile	--	--	0.0056	U	0.0058	U	0.0043	U	0.0026	U	0.0036	U
Benzene	0.06	2.9	0.0007	U	0.00072	U	0.00054	U	0.00012	J	0.00045	U
Bromobenzene	--	--	0.0028	U	0.0029	U	0.0022	U	0.0013	U	0.0018	U
Bromochloromethane	--	--	0.0028	U	0.0029	U	0.0022	U	0.0013	U	0.0018	U
Bromodichloromethane	--	--	0.0007	U	0.00072	U	0.00054	U	0.00033	U	0.00045	U
Bromoform	--	--	0.0056	U	0.0058	U	0.0043	U	0.0026	U	0.0036	U
Bromomethane	--	--	0.0028	U	0.0029	U	0.0022	U	0.0013	U	0.0018	U
Carbon disulfide	--	--	0.014	U	0.014	U	0.011	U	0.0066	U	0.009	U
Carbon tetrachloride	0.76	1.4	0.0014	U	0.0014	U	0.0011	U	0.00066	U	0.0009	U
Chlorobenzene	1.1	100	0.0007	U	0.00072	U	0.00054	U	0.00033	U	0.00045	U
Chloroethane	--	--	0.0028	U	0.0029	U	0.0022	U	0.0013	U	0.0018	U
Chloroform	0.37	10	0.0021	U	0.0022	U	0.0016	U	0.00099	U	0.0013	U
Chloromethane	--	--	0.0056	U	0.0058	U	0.0043	U	0.0026	U	0.0036	U
cis-1,2-Dichloroethene	0.25	59	0.0014	U	0.0014	U	0.0011	U	0.00066	U	0.0009	U
cis-1,3-Dichloropropene	--	--	0.0007	U	0.00072	U	0.00054	U	0.00033	U	0.00045	U
Dibromochloromethane	--	--	0.0014	U	0.0014	U	0.0011	U	0.00066	U	0.0009	U
Dibromomethane	--	--	0.0028	U	0.0029	U	0.0022	U	0.0013	U	0.0018	U
Dichlorodifluoromethane	--	--	0.014	U	0.014	U	0.011	U	0.0066	U	0.009	U
Ethyl ether	--	--	0.0028	U	0.0029	U	0.0022	U	0.0013	U	0.0018	U
Ethylbenzene	1	30	0.0014	U	0.0014	U	0.0011	U	0.00066	U	0.0009	U
Hexachlorobutadiene	--	--	0.0056	U	0.0058	U	0.0043	U	0.0026	U	0.0036	U
Isopropylbenzene	--	--	0.0014	U	0.0014	U	0.0011	U	0.00066	U	0.0009	U
Methyl tert butyl ether	0.93	62	0.0028	U	0.0029	U	0.0022	U	0.0013	U	0.0018	U
Methylene chloride	0.05	51	0.007	U	0.0072	U	0.0054	U	0.0033	U	0.0045	U
n-Butylbenzene	12	100	0.0014	U	0.0014	U	0.0011	U	0.00066	U	0.0009	U
n-Propylbenzene	3.9	100	0.0014	U	0.0014	U	0.0011	U	0.00066	U	0.0009	U
Naphthalene	12	100	0.0056	U	0.0058	U	0.0043	U	0.00076	J	0.0036	U
o-Chlorotoluene	--	--	0.0028	U	0.0029	U	0.0022	U	0.0013	U	0.0018	U
o-Xylene	--	--	0.0014	U	0.0014	U	0.0011	U	0.00066	U	0.0009	U
p-Chlorotoluene	--	--	0.0028	U	0.0029	U	0.0022	U	0.0013	U	0.0018	U
p-Diethylbenzene	--	--	0.0028	U	0.0029	U	0.0022	U	0.0013	U	0.0018	U
p-Ethyltoluene	--	--	0.0028	U	0.0029	U	0.0022	U	0.0013	U	0.0018	U
p-Isopropyltoluene	--	--	0.0014	U	0.0014	U	0.0011	U	0.0001	J	0.00012	J
p/m-Xylene	--	--	0.0028	U	0.0029	U	0.0022	U	0.0013	U	0.0018	U
sec-Butylbenzene	11	100	0.0014	U	0.0014	U	0.0011	U	0.00066	U	0.0009	U
Styrene	--	--	0.0014	U	0.0014	U	0.0011	U	0.00066	U	0.0009	U
tert-Butylbenzene	5.9	100	0.0028	U	0.0029	U	0.0022	U	0.0013	U	0.0018	U
Tetrachloroethene	1.3	5.5	0.0007	U	0.00072	U	0.00054	U	0.00033	U	0.00045	U
Toluene	0.7	100	0.0014	U	0.0014	U	0.0011	U	0.00066	U	0.0009	U
trans-1,2-Dichloroethene	0.19	100	0.0021	U	0.0022	U	0.0016	U	0.00099	U	0.0013	U
trans-1,3-Dichloropropene	--	--	0.0014	U	0.0014	U	0.0011	U	0.00066	U	0.0009	U
trans-1,4-Dichloro-2-butene	--	--	0.007	U	0.0072	U	0.0054	U	0.0033	U	0.0045	U
Trichloroethene	0.47	10	0.0007	U	0.00072	U	0.00054	U	0.00033	U	0.00045	U
Trichlorofluoromethane	--	--	0.0056	U	0.0058	U	0.0043	U	0.0026	U	0.0036	U
Vinyl acetate	--	--	0.014	U	0.014	U	0.011	U	0.0066	U	0.009	U
Vinyl chloride	0.02	0.21	0.0014	U	0.0014	U	0.0011	U	0.00066	U	0.0009	U
Xylenes, Total	0.26	100	0.0014	U	0.0014	U	0.0011	U	0.00066	U	0.0009	U

Table Notes:

--: No guidance value.
mg/kg: Milligrams per Kilogram.
U: Not detected at the reported detection limit for the sample.
J: Estimate Value. The analyte concentration is below the quantitative limit (RL), but above the method detection limit (MDL) or estimated detection limit (EDL).
Undetected value is greater than the standard or guidance value.

Table 3 - Semi-Volatile Organic Compounds in Soil
Waste Characterization Report
Rye Lake Water Plant
Harrison, New York

LOCATION	Part 375 Unrestricted Use Soil Cleanup Objectives	Part 375 Residential Use Soil Cleanup Objectives	B-1 (0-5')		B-1 (5-15')		B-2 (15-25')		B-4 (5-15')		B-5 (0-5')		B-7 (15-25')		B-9 (5-15')		B-10 (0-5')	
DATE			5/27/2021		5/27/2021		6/2/2021		5/27/2021		5/27/2021		6/2/2021		5/26/2021		5/26/2021	
LAB SAMPLE ID			L2128322-04		L2128321-06		L2129255-08		L2128321-02		L2128322-02		L2129255-04		L2128025-08		L2128025-16	
			Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual
Semi-Volatile Organic Compounds (SVOCs) by EPA Method 8270D (mg/kg)																		
1,2,4,5-Tetrachlorobenzene	--	--	0.22	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
1,2,4-Trichlorobenzene	--	--	0.22	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
1,2-Dichlorobenzene	1.1	100	0.22	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
1,3-Dichlorobenzene	2.4	17	0.22	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
1,4-Dichlorobenzene	1.8	9.8	0.22	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
1,4-Dioxane	0.1	9.8	0.033	U	0.027	U	0.028	U	0.027	U	0.028	U	0.027	U	0.027	U	0.028	U
2,4,5-Trichlorophenol	--	--	0.22	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
2,4,6-Trichlorophenol	--	--	0.13	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U
2,4-Dichlorophenol	--	--	0.2	U	0.16	U	0.16	U	0.16	U	0.16	U	0.16	U	0.16	U	0.17	U
2,4-Dimethylphenol	--	--	0.22	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
2,4-Dinitrophenol	--	--	1	U	0.87	U	0.88	U	0.87	U	0.88	U	0.87	U	0.87	U	0.89	U
2,4-Dinitrotoluene	--	--	0.22	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
2,6-Dinitrotoluene	--	--	0.22	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
2-Chloronaphthalene	--	--	0.22	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
2-Chlorophenol	--	--	0.22	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
2-Methylnaphthalene	--	--	0.26	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
2-Methylphenol	0.33	100	0.22	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
2-Nitroaniline	--	--	0.22	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
2-Nitrophenol	--	--	0.47	U	0.39	U	0.4	U	0.39	U	0.4	U	0.39	U	0.39	U	0.4	U
3,3'-Dichlorobenzidine	--	--	0.22	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
3-Methylphenol/4-Methylphenol	0.33	34	0.31	U	0.26	U	0.26	U	0.26	U	0.26	U	0.26	U	0.26	U	0.27	U
3-Nitroaniline	--	--	0.22	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
4,6-Dinitro-o-cresol	--	--	0.57	U	0.47	U	0.48	U	0.47	U	0.48	U	0.47	U	0.47	U	0.48	U
4-Bromophenyl phenyl ether	--	--	0.22	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
4-Chloroaniline	--	--	0.22	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
4-Chlorophenyl phenyl ether	--	--	0.22	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
4-Nitroaniline	--	--	0.22	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
4-Nitrophenol	--	--	0.3	U	0.25	U	0.26	U	0.25	U	0.26	U	0.26	U	0.25	U	0.26	U
Acenaphthene	20	100	0.17	U	0.14	U	0.15	U	0.14	U	0.15	U	0.14	U	0.14	U	0.15	U
Acenaphthylene	100	100	0.17	U	0.14	U	0.15	U	0.14	U	0.15	U	0.14	U	0.14	U	0.15	U
Acetophenone	--	--	0.22	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
Anthracene	100	100	0.13	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U
Benzo(a)anthracene	1	1	0.13	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U
Benzo(a)pyrene	1	1	0.17	U	0.14	U	0.15	U	0.14	U	0.15	U	0.14	U	0.14	U	0.15	U
Benzo(b)fluoranthene	1	1	0.13	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U
Benzo(ghi)perylene	100	100	0.17	U	0.14	U	0.15	U	0.14	U	0.15	U	0.14	U	0.14	U	0.15	U
Benzo(k)fluoranthene	0.8	1	0.13	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U
Benzoic Acid	--	--	0.71	U	0.59	U	0.6	U	0.59	U	0.6	U	0.59	U	0.59	U	0.6	U
Benzyl Alcohol	--	--	0.22	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
Biphenyl	--	--	0.5	U	0.41	U	0.42	U	0.41	U	0.42	U	0.42	U	0.41	U	0.42	U
Bis(2-chloroethoxy)methane	--	--	0.24	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
Bis(2-chloroethyl)ether	--	--	0.2	U	0.16	U	0.16	U	0.16	U	0.16	U	0.16	U	0.16	U	0.17	U
Bis(2-chloroisopropyl)ether	--	--	0.26	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U	0.22	U
Bis(2-ethylhexyl)phthalate	--	--	0.22	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
Butyl benzyl phthalate	--	--	0.22	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
Carbazole	--	--	0.22	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
Chrysene	1	1	0.13	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U
Di-n-butylphthalate	--	--	0.22	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
Di-n-octylphthalate	--	--	0.22	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
Dibenzo(a,h)anthracene	0.33	0.33	0.13	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U
Dibenzofuran	7	14	0.22	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
Diethyl phthalate	--	--	0.22	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
Dimethyl phthalate	--	--	0.22	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
Fluoranthene	100	100	0.13	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U
Fluorene	30	100	0.22	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
Hexachlorobenzene	0.33	0.33	0.13	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U
Hexachlorobutadiene	--	--	0.22	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
Hexachlorocyclopentadiene	--	--	0.62	U	0.52	U	0.53	U	0.52	U	0.53	U	0.52	U	0.52	U	0.53	U
Hexachloroethane	--	--	0.17	U	0.14	U	0.15	U	0.14	U	0.15	U	0.14	U	0.14	U	0.15	U
Indeno(1,2,3-cd)pyrene	0.5	0.5	0.17	U	0.14	U	0.15	U	0.14	U	0.15	U	0.14	U	0.14	U	0.15	U
Isophorone	--	--	0.2	U	0.16	U	0.16	U	0.16	U	0.16	U	0.16	U	0.16	U	0.17	U
n-Nitrosodi-n-propylamine	--	--	0.22	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
Naphthalene	12	100	0.22	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
NDPA/DPA	--	--	0.17	U	0.14	U	0.15	U	0.14	U	0.15	U	0.14	U	0.14	U	0.15	U
Nitrobenzene	--	--	0.2	U	0.16	U	0.16	U	0.16	U	0.16	U	0.16	U	0.16	U	0.17	U
p-Chloro-m-cresol	--	--	0.22	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
Pentachlorophenol	0.8	2.4	0.17	U	0.14	U	0.15	U	0.14	U	0.15	U	0.14	U	0.14	U	0.15	U
Phenanthrene	100	100	0.13	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U
Phenol	0.33	100	0.22	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U	0.18	U
Pyrene	100	100	0.13	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U

Table Notes:

--: No guidance value.

mg/kg: Milligrams per Kilogram.

U: Not detected at the reported detection limit for the sample.

J: Estimate Value. The analyte concentration is below the quantitative limit (RL), but above the method detection limit (MDL) or estimated detection limit (EDL).

Table 3 - Semi-Volatile Organic Compounds in Soil
Waste Characterization Report
Rye Lake Water Plant
Harrison, New York

LOCATION	Part 375 Unrestricted Use Soil Cleanup Objectives	Part 375 Residential Use Soil Cleanup Objectives	B-10 (13-23')		B-13 (0-5')		B-13 (5-15')		B-17 (0-5')		B-17 (5-10')		B-19 (0-10')		B-22 (0-10')		B-24 (0-5')		B-26 (0-10')		B-29 (0-10')	
DATE			5/26/2021		5/26/2021		5/26/2021		6/1/2021		6/1/2021		6/3/2021		5/26/2021		5/26/2021		5/26/2021		6/2/2021	
LAB SAMPLE ID			L2128025-10		L2128025-14		L2128025-06		L2128995-02		L2128996-02		L2129818-04		L2128025-03		L2128025-12		L2128025-02		L2129255-12	
			Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual
Semi-Volatile Organic Compounds (SVOCs) by EPA Method 8270D (mg/kg)																						
1,2,4,5-Tetrachlorobenzene	--	--	0.18	U	0.18	U	0.19	U	0.18	U	0.18	U	0.18	U	0.18	U	0.19	U	0.21	U	0.18	U
1,2,4-Trichlorobenzene	--	--	0.18	U	0.18	U	0.19	U	0.18	U	0.18	U	0.18	U	0.18	U	0.19	U	0.21	U	0.18	U
1,2-Dichlorobenzene	1.1	100	0.18	U	0.18	U	0.19	U	0.18	U	0.18	U	0.18	U	0.18	U	0.19	U	0.21	U	0.18	U
1,3-Dichlorobenzene	2.4	17	0.18	U	0.18	U	0.19	U	0.18	U	0.18	U	0.18	U	0.18	U	0.19	U	0.21	U	0.18	U
1,4-Dichlorobenzene	1.8	9.8	0.18	U	0.18	U	0.19	U	0.18	U	0.18	U	0.18	U	0.18	U	0.19	U	0.21	U	0.18	U
1,4-Dioxane	0.1	9.8	0.027	U	0.027	U	0.028	U	0.027	U	0.027	U	0.027	U	0.028	U	0.029	U	0.031	U	0.028	U
2,4,5-Trichlorophenol	--	--	0.18	U	0.18	U	0.19	U	0.18	U	0.18	U	0.18	U	0.18	U	0.19	U	0.21	U	0.18	U
2,4,6-Trichlorophenol	--	--	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.12	U	0.12	U	0.11	U
2,4-Dichlorophenol	--	--	0.16	U	0.16	U	0.17	U	0.16	U	0.16	U	0.16	U	0.16	U	0.18	U	0.19	U	0.17	U
2,4-Dimethylphenol	--	--	0.18	U	0.18	U	0.19	U	0.18	U	0.18	U	0.18	U	0.18	U	0.19	U	0.21	U	0.18	U
2,4-Dinitrophenol	--	--	0.88	U	0.86	U	0.91	U	0.88	U	0.87	U	0.88	U	0.88	U	0.94	U	1	U	0.89	U
2,4-Dinitrotoluene	--	--	0.18	U	0.18	U	0.19	U	0.18	U	0.18	U	0.18	U	0.18	U	0.19	U	0.21	U	0.18	U
2,6-Dinitrotoluene	--	--	0.18	U	0.18	U	0.19	U	0.18	U	0.18	U	0.18	U	0.18	U	0.19	U	0.21	U	0.18	U
2-Chloronaphthalene	--	--	0.18	U	0.18	U	0.19	U	0.18	U	0.18	U	0.18	U	0.18	U	0.19	U	0.21	U	0.18	U
2-Chlorophenol	--	--	0.18	U	0.18	U	0.19	U	0.18	U	0.18	U	0.18	U	0.18	U	0.19	U	0.21	U	0.18	U
2-Methylnaphthalene	--	--	0.22	U	0.22	U	0.23	U	0.22	U	0.22	U	0.22	U	0.22	U	0.23	U	0.25	U	0.22	U
2-Methylphenol	0.33	100	0.18	U	0.18	U	0.19	U	0.18	U	0.18	U	0.18	U	0.18	U	0.19	U	0.21	U	0.18	U
2-Nitroaniline	--	--	0.18	U	0.18	U	0.19	U	0.18	U	0.18	U	0.18	U	0.18	U	0.19	U	0.21	U	0.18	U
2-Nitrophenol	--	--	0.4	U	0.39	U	0.41	U	0.39	U	0.39	U	0.39	U	0.4	U	0.42	U	0.45	U	0.4	U
3,3'-Dichlorobenzidine	--	--	0.18	U	0.18	U	0.19	U	0.18	U	0.18	U	0.18	U	0.18	U	0.19	U	0.21	U	0.18	U
3-Methylphenol/4-Methylphenol	0.33	34	0.26	U	0.26	U	0.27	U	0.26	U	0.26	U	0.26	U	0.26	U	0.28	U	0.3	U	0.27	U
3-Nitroaniline	--	--	0.18	U	0.18	U	0.19	U	0.18	U	0.18	U	0.18	U	0.18	U	0.19	U	0.21	U	0.18	U
4,6-Dinitro-o-cresol	--	--	0.48	U	0.47	U	0.49	U	0.48	U	0.47	U	0.47	U	0.48	U	0.51	U	0.54	U	0.48	U
4-Bromophenyl phenyl ether	--	--	0.18	U	0.18	U	0.19	U	0.18	U	0.18	U	0.18	U	0.18	U	0.19	U	0.21	U	0.18	U
4-Chloroaniline	--	--	0.18	U	0.18	U	0.19	U	0.18	U	0.18	U	0.18	U	0.18	U	0.19	U	0.21	U	0.18	U
4-Chlorophenyl phenyl ether	--	--	0.18	U	0.18	U	0.19	U	0.18	U	0.18	U	0.18	U	0.18	U	0.19	U	0.21	U	0.18	U
4-Nitroaniline	--	--	0.18	U	0.18	U	0.19	U	0.18	U	0.18	U	0.18	U	0.18	U	0.19	U	0.21	U	0.18	U
4-Nitrophenol	--	--	0.26	U	0.25	U	0.26	U	0.26	U	0.25	U	0.26	U	0.26	U	0.27	U	0.29	U	0.26	U
Acenaphthene	20	100	0.15	U	0.14	U	0.15	U	0.15	U	0.14	U	0.15	U	0.15	U	0.16	U	0.17	U	0.15	U
Acenaphthylene	100	100	0.15	U	0.14	U	0.15	U	0.15	U	0.14	U	0.15	U	0.15	U	0.16	U	0.17	U	0.15	U
Acetophenone	--	--	0.18	U	0.18	U	0.19	U	0.18	U	0.18	U	0.18	U	0.18	U	0.19	U	0.21	U	0.18	U
Anthracene	100	100	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.12	U	0.12	U	0.11	U
Benzo(a)anthracene	1	1	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.12	U	0.12	U	0.11	U
Benzo(a)pyrene	1	1	0.15	U	0.14	U	0.15	U	0.15	U	0.14	U	0.15	U	0.15	U	0.16	U	0.17	U	0.15	U
Benzo(b)fluoranthene	1	1	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.12	U	0.12	U	0.11	U
Benzo(ghi)perylene	100	100	0.15	U	0.14	U	0.15	U	0.15	U	0.14	U	0.15	U	0.15	U	0.16	U	0.17	U	0.15	U
Benzo(k)fluoranthene	0.8	1	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.12	U	0.12	U	0.11	U
Benzoic Acid	--	--	0.59	U	0.58	U	0.61	U	0.59	U	0.59	U	0.59	U	0.59	U	0.63	U	0.67	U	0.6	U
Benzyl Alcohol	--	--	0.18	U	0.18	U	0.19	U	0.18	U	0.18	U	0.18	U	0.18	U	0.19	U	0.21	U	0.18	U
Biphenyl	--	--	0.42	U	0.41	U	0.43	U	0.42	U	0.41	U	0.42	U	0.42	U	0.44	U	0.47	U	0.42	U
Bis(2-chloroethoxy)methane	--	--	0.2	U	0.19	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.21	U	0.22	U	0.2	U
Bis(2-chloroethyl)ether	--	--	0.16	U	0.16	U	0.17	U	0.16	U	0.16	U	0.16	U	0.16	U	0.18	U	0.19	U	0.17	U
Bis(2-chloroisopropyl)ether	--	--	0.22	U	0.22	U	0.23	U	0.22	U	0.22	U	0.22	U	0.22	U	0.23	U	0.25	U	0.22	U
Bis(2-ethylhexyl)phthalate	--	--	0.18	U	0.18	U	0.19	U	0.18	U	0.18	U	0.18	U	0.18	U	0.19	U	0.21	U	0.18	U
Butyl benzyl phthalate	--	--	0.18	U	0.18	U	0.19	U	0.18	U	0.18	U	0.18	U	0.18	U	0.19	U	0.21	U	0.18	U
Carbazole	--	--	0.18	U	0.18	U	0.19	U	0.18	U	0.18	U	0.18	U	0.18	U	0.19	U	0.21	U	0.18	U
Chrysene	1	1	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.021	J	0.12	U	0.11	U
Di-n-butylphthalate	--	--	0.18	U	0.18	U	0.19	U	0.18	U	0.18	U	0.18	U	0.18	U	0.19	U	0.21	U	0.18	U
Di-n-octylphthalate	--	--	0.18	U	0.18	U	0.19	U	0.18	U	0.18	U	0.18	U	0.18	U	0.19	U	0.21	U	0.18	U
Dibenzo(a,h)anthracene	0.33	0.33	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.12	U	0.12	U	0.11	U
Dibenzofuran	7	14	0.18	U	0.18	U	0.19	U	0.18	U	0.18	U	0.18	U	0.18	U	0.19	U	0.21	U	0.18	U
Diethyl phthalate	--	--	0.18	U	0.18	U	0.19	U	0.18	U	0.18	U	0.18	U	0.18	U	0.19	U	0.21	U	0.18	U
Dimethyl phthalate	--	--	0.18	U	0.18	U	0.19	U	0.18	U	0.18	U	0.18	U	0.18	U	0.19	U	0.21	U	0.18	U
Fluoranthene	100	100	0.11	U	0.11	U	0.11	U	0.025	J	0.11	U	0.11	U	0.11	U	0.036	J	0.12	U	0.026	J
Fluorene	30	100	0.18	U	0.18	U	0.19	U	0.18	U	0.18	U	0.18	U	0.18	U	0.19	U	0.21	U	0.18	U
Hexachlorobenzene	0.33	0.33	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.12	U	0.12	U	0.11	U
Hexachlorobutadiene	--	--	0.18	U	0.18	U	0.19	U	0.18	U	0.18	U	0.18	U	0.18	U	0.19	U	0.21	U	0.18	U
Hexachlorocyclopentadiene	--	--	0.52	U	0.52	U	0.54	U	0.52	U	0.52	U	0.52	U	0.52	U	0.56	U	0.59	U	0.53	U
Hexachloroethane	--	--	0.15	U	0.14	U	0.15	U	0.15	U	0.14	U	0.15	U	0.15	U	0.16	U	0.17	U	0.15	U
Indeno(1,2,3-cd)pyrene	0.5	0.5	0.15	U	0.14	U	0.15	U	0.15	U	0.14	U	0.15	U	0.15	U	0.16	U	0.17	U	0.15	U
Isophorone	--	--	0.16	U	0.16	U	0.17	U	0.16	U	0.16	U	0.16	U	0.16	U	0.18	U	0.19	U	0.17	U
n-Nitrosodi-n-propylamine	--	--	0.18	U	0.18	U	0.19	U	0.18	U	0.18	U	0.18	U	0.18	U	0.19	U	0.21	U	0.18	U
Naphthalene	12	100	0.18	U	0.18	U	0.19	U	0.18	U	0.18	U	0.18	U	0.18	U	0.19	U	0.21	U	0.18	U
NDPA/DPA	--	--	0.15	U	0.14	U	0.15	U	0.15	U	0.14	U	0.15	U	0.15	U	0.16	U	0.17	U	0.15	U
Nitrobenzene	--	--	0.16	U	0.16	U	0.17	U	0.16	U	0.16	U	0.16	U	0.16	U	0.18	U	0.19	U	0.17	U
p-Chloro-m-cresol	--	--	0.18	U	0.18	U	0.19	U	0.18	U	0.18	U	0.18	U	0.18	U	0.19	U	0.21	U	0.18	U
Pentachlorophenol	0.8	2.4	0.15	U	0.14	U	0.15	U	0.15	U	0.14	U	0.15	U	0.15	U	0.16	U	0.17	U	0.15	U
Phenanthrene	100	100	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.11	U	0.12	U	0.12	U	0.031	J
Phenol	0.33	100	0.18	U	0.18	U	0.19	U	0.18	U	0.18	U	0.18	U	0.18	U	0.19	U	0.21	U	0.18	U
Pyrene	100	100	0.11	U	0.11	U	0.11	U	0.029	J	0.11	U	0.11	U	0.11	U	0.032	J	0.12	U	0.022	J

Table Notes:

--: No guidance value.

mg/kg: Milligrams per Kilogram.

U: Not detected at the reported detection limit for the sample.

J: Estimate Value. The analyte concentration is below the quantitative limit (RL), but above the method detection limit (MDL) or estimated detection limit (EDL).

Table 4 - TAL Metals in Soil
Waste Characteriztion Report
Rye Lake Water Plant
Harrison, New York

LOCATION	Part 375 Unrestricted Use Soil Cleanup Objectives	Part 375 Residential Use Soil Cleanup Objectives	B-1 (0-5')		B-1 (5-15')		B-2 (15-25')		B-4 (5-15')		B-5 (0-5')		B-7 (15-25')		B-9 (5-15')		B-10 (0-5')		B-10 (13-23')	
DATE			5/27/2021		5/27/2021		6/2/2021		5/27/2021		5/27/2021		6/2/2021		5/26/2021		5/26/2021		5/26/2021	
LAB SAMPLE ID			L2128322-04		L2128321-06		L2129255-08		L2128321-02		L2128322-02		L2129255-04		L2128025-08		L2128025-16		L2128025-10	
			Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual
Total Metals (mg/kg)																				
Aluminum, Total	--	--	11100		5300		5780		6700		9650		6140		7150		9380		6250	
Antimony, Total	--	--	5.18	U	4.33	U	4.28	U	4.24	U	4.28	U	4.26	U	4.25	U	4.37	U	4.27	U
Arsenic, Total	13	16	1.57		0.546	J	0.941		1.49		1.49		0.998		0.79	J	1.62		0.82	J
Barium, Total	350	350	101		82.6		74.2		99.9		124		104		93.3		71.2		97.8	
Beryllium, Total	7.2	14	0.518	U	0.433	U	0.188	J	0.424	U	0.428	U	0.23	J	0.23	J	0.376	J	0.239	J
Cadmium, Total	2.5	2.5	0.404	J	0.234	J	0.308	J	0.263	J	0.3	J	0.341	J	0.298	J	0.323	J	0.307	J
Calcium, Total	--	--	1500		4350		1730		2610		1540		1860		2110		907		5400	
Chromium, Total	--	--	32.3		17		18.7		25.2		19.2		19.7		27.1		25		21.2	
Cobalt, Total	--	--	10.5		6.57		6.92		7.87		7.8		6.86		8.54		8.65		7.53	
Copper, Total	50	270	24.4		11.8		20.2		13.8		12.1		12.7		14.8		20.4		13.5	
Iron, Total	--	--	22500		12900		12400		15200		17600		13700		14700		15600		14500	
Lead, Total	63	400	4.51	J	4.1	J	3.13	J	3.9	J	2.51	J	3.55	J	4.05	J	8.75		3.86	J
Magnesium, Total	--	--	4180		3830		2890		3860		3430		2710		4190		3830		4770	
Manganese, Total	1600	2000	397		153		166		239		302		164		179		233		161	
Mercury, Total	0.18	0.81	0.083	U	0.069	U	0.079	U	0.07	U	0.071	U	0.076	U	0.073	U	0.072	U	0.075	U
Nickel, Total	30	140	22.4		10.4		12.2		12.2		10.2		10.6		13		20.5		12.5	
Potassium, Total	--	--	2820		2040		2250		2910		2670		2260		2550		2140		2860	
Selenium, Total	3.9	36	2.07	U	1.73	U	0.316	J	1.7	U	1.71	U	0.239	J	0.357	J	1.75	U	0.333	J
Silver, Total	2	36	1.04	U	0.866	U	0.855	U	0.848	U	0.857	U	0.853	U	0.85	U	0.873	U	0.854	U
Sodium, Total	--	--	69.6	J	123	J	110	J	120	J	63	J	101	J	114	J	55.5	J	112	J
Thallium, Total	--	--	2.07	U	1.73	U	1.71	U	1.7	U	1.71	U	1.7	U	1.7	U	1.75	U	1.71	U
Vanadium, Total	--	--	43.7		23.8		25.3		29.7		32		28.3		37.6		29.2		28.4	
Zinc, Total	109	2200	46.4		25.7		32.4		32		44.5		27.6		36.9		42.1		30.3	

Table Notes:

--: No guidance value

mg/kg: Milligrams per Kilogram

U: Not detected at the reported detection limit for the sample.

J: Estimate Value. The analyte concentration is below the quantitative limit (RL), but above the method detection limit (MDL) or estimated detection limit (EDL)

Table 4 - TAL Metals in Soil
Waste Characterization Report
Rye Lake Water Plant
Harrison, New York

LOCATION	Part 375 Unrestricted Use Soil Cleanup Objectives	Part 375 Residential Use Soil Cleanup Objectives	B-13 (0-5')		B-13 (5-15')		B-17 (0-5')		B-17 (5-10')		B-19 (0-10')		B-22 (0-10')		B-24 (0-5')		B-26 (0-10')		B-29 (0-10')	
DATE			5/26/2021		5/26/2021		6/1/2021		6/1/2021		6/3/2021		5/26/2021		5/26/2021		5/26/2021		6/2/2021	
LAB SAMPLE ID			L2128025-14		L2128025-06		L2128995-02		L2128996-02		L2129818-04		L2128025-03		L2128025-12		L2128025-02		L2129255-12	
			Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual
Total Metals (mg/kg)																				
Aluminum, Total	--	--	11700		8180		9410		7450		8020		8240		14200		10700		10000	
Antimony, Total	--	--	4.29	U	4.46	U	4.22	U	4.24	U	4.18	U	4.37	U	4.59	U	5.1	U	4.33	U
Arsenic, Total	13	16	2.57		0.767	J	1.81		1.09		0.819	J	0.936		3.11		1.26		1.96	
Barium, Total	350	350	53.7		84.1		88.1		93.8		90		63.9		86		96.2		104	
Beryllium, Total	7.2	14	0.394	J	0.357	J	0.245	J	0.22	J	0.418	U	0.323	J	0.514		0.377	J	0.372	J
Cadmium, Total	2.5	2.5	0.326	J	0.294	J	0.312	J	0.271	J	0.334	J	0.28	J	0.422	J	0.347	J	0.537	J
Calcium, Total	--	--	842		1010		858		1280		1670		1000		435		1080		1960	
Chromium, Total	--	--	23.5		17.3		24.9		14.4		16.7		15.1		26.3		19		34.8	
Cobalt, Total	--	--	6.86		7.42		8.63		10.1		6.02		5.24		9.19		7.62		12.2	
Copper, Total	50	270	14.5		13		7.29		16.1		11.3		17.8		11.5		15.8		23.8	
Iron, Total	--	--	15600		14400		13500		10900		13800		12900		20000		16300		20700	
Lead, Total	63	400	21.6		5.05		5.95		3.11	J	2.56	J	3.83	J	14.5		4.98	J	5.4	
Magnesium, Total	--	--	2870		2180		3650		1980		3020		1870		3100		2380		5100	
Manganese, Total	1600	2000	245		311		192		248		241		213		400		365		346	
Mercury, Total	0.18	0.81	0.07	U	0.077	U	0.079	U	0.078	U	0.078	U	0.077	U	0.077	U	0.092	U	0.081	U
Nickel, Total	30	140	12.8		12.2		13.4		11.7		12.5		12.3		14.2		13.1		21.3	
Potassium, Total	--	--	961		1820		2470		1550		2250		1630		692		1920		2770	
Selenium, Total	3.9	36	0.883	J	1.78	U	0.354	J	1.7	U	1.67	U	0.42	J	1.14	J	0.449	J	0.364	J
Silver, Total	2	36	0.858	U	0.892	U	0.844	U	0.848	U	0.836	U	0.874	U	0.917	U	1.02	U	0.866	U
Sodium, Total	--	--	44.2	J	67	J	53.5	J	83.9	J	104	J	61.3	J	35.3	J	84.7	J	74.5	J
Thallium, Total	--	--	1.72	U	1.78	U	1.69	U	1.7	U	1.67	U	1.75	U	1.83	U	2.04	U	1.73	U
Vanadium, Total	--	--	32.7		26.9		29		22		25.3		23.3		37.3		30.8		42.8	
Zinc, Total	109	2200	45.4		30.3		35.7		20.9		27.8		28.4		59.9		27		50.9	

Table Notes:

--: No guidance value

mg/kg: Milligrams per Kilogram

U: Not detected at the reported detection limit for the sample.

J: Estimate Value. The analyte concentration is below the quantitative limit (RL), but above the method detection limit (MDL) or estimated detection limit (EDL)

Table 5 - Pesticides, Polychlorinated Biphenyls, and Herbicides in Soil
Waste Characterization Report
Rye Lake Water Plant
Harrison, New York

SAMPLE LOCATION	Part 375 Unrestricted Use Soil Cleanup Objectives	Part 375 Residential Use Soil Cleanup Objectives	B-1 (0-5')		B-1 (5-15')		B-2 (15-25')		B-4 (5-15')		B-5 (0-5')		B-7 (15-25')		B-9 (5-15')		B-10 (0-5')		B-10 (13-23')	
DATE			5/27/2021		5/27/2021		6/2/2021		5/27/2021		5/27/2021		6/2/2021		5/26/2021		5/26/2021		5/26/2021	
LAB SAMPLE ID			L2128322-04		L2128321-06		L2129255-08		L2128321-02		L2128322-02		L2129255-04		L2128025-08		L2128025-16		L2128025-10	
SAMPLE TYPE			Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual
Organochlorine Pesticides by GC																				
4,4'-DDD	0.0033	2.6	0.00202	U	0.00174	U	0.00172	U	0.00176	U	0.00178	U	0.00174	U	0.00174	U	0.00176	U	0.00175	U
4,4'-DDE	0.0033	1.8	0.00202	U	0.00174	U	0.00172	U	0.00176	U	0.00178	U	0.00174	U	0.00174	U	0.00176	U	0.00175	U
4,4'-DDT	0.0033	1.7	0.00379	U	0.00327	U	0.00323	U	0.0033	U	0.00334	U	0.00327	U	0.00326	U	0.00329	U	0.00329	U
Aldrin	0.005	0.019	0.00202	U	0.00174	U	0.00172	U	0.00176	U	0.00178	U	0.00174	U	0.00174	U	0.00176	U	0.00175	U
Alpha-BHC	0.02	0.097	0.000843	U	0.000726	U	0.000717	U	0.000733	U	0.000742	U	0.000726	U	0.000724	U	0.000732	U	0.000731	U
Beta-BHC	0.036	0.072	0.00202	U	0.00174	U	0.00172	U	0.00176	U	0.00178	U	0.00174	U	0.00174	U	0.00176	U	0.00175	U
Chlordane	--	--	0.0169	U	0.0145	U	0.0143	U	0.0146	U	0.0148	U	0.0145	U	0.0145	U	0.0146	U	0.0146	U
cis-Chlordane	0.094	0.91	0.00253	U	0.00218	U	0.00215	U	0.0022	U	0.00222	U	0.00218	U	0.00217	U	0.0022	U	0.00219	U
Delta-BHC	0.04	100	0.00202	U	0.00174	U	0.00172	U	0.00176	U	0.00178	U	0.00174	U	0.00174	U	0.00176	U	0.00175	U
Dieldrin	0.005	0.039	0.00126	U	0.00109	U	0.00108	U	0.0011	U	0.00111	U	0.00109	U	0.00109	U	0.0011	U	0.0011	U
Endosulfan I	2.4	4.8	0.00202	U	0.00174	U	0.00172	U	0.00176	U	0.00178	U	0.00174	U	0.00174	U	0.00176	U	0.00175	U
Endosulfan II	2.4	4.8	0.00202	U	0.00174	U	0.00172	U	0.00176	U	0.00178	U	0.00174	U	0.00174	U	0.00176	U	0.00175	U
Endosulfan sulfate	2.4	4.8	0.000843	U	0.000726	U	0.000717	U	0.000733	U	0.000742	U	0.000726	U	0.000724	U	0.000732	U	0.000731	U
Endrin	0.014	2.2	0.000843	U	0.000726	U	0.000717	U	0.000733	U	0.000742	U	0.000726	U	0.000724	U	0.000732	U	0.000731	U
Endrin aldehyde	--	--	0.00253	U	0.00218	U	0.00215	U	0.0022	U	0.00222	U	0.00218	U	0.00217	U	0.0022	U	0.00219	U
Endrin ketone	--	--	0.00202	U	0.00174	U	0.00172	U	0.00176	U	0.00178	U	0.00174	U	0.00174	U	0.00176	U	0.00175	U
Heptachlor	0.042	0.42	0.00101	U	0.000871	U	0.000861	U	0.000879	U	0.00089	U	0.000872	U	0.000869	U	0.000878	U	0.000877	U
Heptachlor epoxide	--	--	0.00379	U	0.00327	U	0.00323	U	0.0033	U	0.00334	U	0.00327	U	0.00326	U	0.00329	U	0.00329	U
Lindane	0.1	0.28	0.000843	U	0.000726	U	0.000717	U	0.000733	U	0.000742	U	0.000726	U	0.000724	U	0.000732	U	0.000731	U
Methoxychlor	--	--	0.00379	U	0.00327	U	0.00323	U	0.0033	U	0.00334	U	0.00327	U	0.00326	U	0.00329	U	0.00329	U
Toxaphene	--	--	0.0379	U	0.0327	U	0.0323	U	0.033	U	0.0334	U	0.0327	U	0.0326	U	0.0329	U	0.0329	U
trans-Chlordane	--	--	0.00253	U	0.00218	U	0.00215	U	0.0022	U	0.00222	U	0.00218	U	0.00217	U	0.0022	U	0.00219	U
Polychlorinated Biphenyls by GC																				
Aroclor 1016	0.1	1	0.0423	U	0.0351	U	0.0356	U	0.0363	U	0.0364	U	0.035	U	0.0365	U	0.036	U	0.0362	U
Aroclor 1221	0.1	1	0.0423	U	0.0351	U	0.0356	U	0.0363	U	0.0364	U	0.035	U	0.0365	U	0.036	U	0.0362	U
Aroclor 1232	0.1	1	0.0423	U	0.0351	U	0.0356	U	0.0363	U	0.0364	U	0.035	U	0.0365	U	0.036	U	0.0362	U
Aroclor 1242	0.1	1	0.0423	U	0.0351	U	0.0356	U	0.0363	U	0.0364	U	0.035	U	0.0365	U	0.036	U	0.0362	U
Aroclor 1248	0.1	1	0.0423	U	0.0351	U	0.0356	U	0.0363	U	0.0364	U	0.035	U	0.0365	U	0.036	U	0.0362	U
Aroclor 1254	0.1	1	0.0423	U	0.0351	U	0.0356	U	0.0363	U	0.0364	U	0.035	U	0.0365	U	0.036	U	0.0362	U
Aroclor 1260	0.1	1	0.0423	U	0.0351	U	0.0356	U	0.0363	U	0.0364	U	0.035	U	0.0365	U	0.036	U	0.0362	U
Aroclor 1262	0.1	1	0.0423	U	0.0351	U	0.0356	U	0.0363	U	0.0364	U	0.035	U	0.0365	U	0.036	U	0.0362	U
Aroclor 1268	0.1	1	0.0423	U	0.0351	U	0.0356	U	0.0363	U	0.0364	U	0.035	U	0.0365	U	0.036	U	0.0362	U
Chlorinated Herbicides by GC																				
2,4,5-T	--	--	0.217	U	NA		NA		NA		0.184	U	NA		NA		0.185	U	NA	
2,4,5-TP (Silvex)	3.8	58	0.217	U	NA		NA		NA		0.184	U	NA		NA		0.185	U	NA	
2,4-D	--	--	0.217	U	NA		NA		NA		0.184	U	NA		NA		0.185	U	NA	

TABLE NOTES:

--: No Guidance Value.

mg/kg: Milligrams per kilogram.

NA: Not Analyzed.

U: Not detected at the reported detection limit for the sample.

J: Estimated value. The analyte concentration is below the reporting limit (RL), but above the method detection limit (MDL) or estimated detection limit (EDL).

Undetected value is greater than the standard or guidance value.

Table 5 - Pesticides, Polychlorinated Biphenyls, and Herbicides in Soil
Waste Characterization Report
Rye Lake Water Plant
Harrison, New York

SAMPLE LOCATION	Part 375 Unrestricted Use Soil Cleanup Objectives	Part 375 Residential Use Soil Cleanup Objectives	B-13 (0-5')		B-13 (5-15')		B-17 (0-5')		B-17 (5-10')		B-19 (0-10')		B-22 (0-10')		B-24 (0-5')		B-26 (0-10')		B-29 (0-10')	
DATE			5/26/2021		5/26/2021		6/1/2021		6/1/2021		6/3/2021		5/26/2021		5/26/2021		5/26/2021		6/2/2021	
LAB SAMPLE ID			L2128025-14		L2128025-06		L2128995-02		L2128996-02		L2129818-04		L2128025-03		L2128025-12		L2128025-02		L2129255-12	
SAMPLE TYPE			Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual
Organochlorine Pesticides by GC																				
4,4'-DDD	0.0033	2.6	0.00165	U	0.00179	U	0.00172	U	0.00175	U	0.00172	U	0.0017	U	0.00184	U	0.00199	U	0.00176	U
4,4'-DDE	0.0033	1.8	0.00165	U	0.00179	U	0.00172	U	0.00175	U	0.00172	U	0.0017	U	0.00184	U	0.00199	U	0.00176	U
4,4'-DDT	0.0033	1.7	0.00309	U	0.00335	U	0.00323	U	0.00328	U	0.00323	U	0.00319	U	0.00345	U	0.00373	U	0.00329	U
Aldrin	0.005	0.019	0.00165	U	0.00179	U	0.00172	U	0.00175	U	0.00172	U	0.0017	U	0.00184	U	0.00199	U	0.00176	U
Alpha-BHC	0.02	0.097	0.000687	U	0.000745	U	0.000719	U	0.000729	U	0.000718	U	0.000708	U	0.000767	U	0.000828	U	0.000732	U
Beta-BHC	0.036	0.072	0.00165	U	0.00179	U	0.00172	U	0.00175	U	0.00172	U	0.0017	U	0.00184	U	0.00199	U	0.00176	U
Chlordane	--	--	0.0137	U	0.0149	U	0.0144	U	0.0146	U	0.0144	U	0.0142	U	0.0153	U	0.0166	U	0.0146	U
cis-Chlordane	0.094	0.91	0.00206	U	0.00223	U	0.00216	U	0.00219	U	0.00216	U	0.00212	U	0.0023	U	0.00248	U	0.00219	U
Delta-BHC	0.04	100	0.00165	U	0.00179	U	0.00172	U	0.00175	U	0.00172	U	0.0017	U	0.00184	U	0.00199	U	0.00176	U
Dieldrin	0.005	0.039	0.00103	U	0.00112	U	0.00108	U	0.00109	U	0.00108	U	0.00106	U	0.00115	U	0.00124	U	0.0011	U
Endosulfan I	2.4	4.8	0.00165	U	0.00179	U	0.00172	U	0.00175	U	0.00172	U	0.0017	U	0.00184	U	0.00199	U	0.00176	U
Endosulfan II	2.4	4.8	0.00165	U	0.00179	U	0.00172	U	0.00175	U	0.00172	U	0.0017	U	0.00184	U	0.00199	U	0.00176	U
Endosulfan sulfate	2.4	4.8	0.000687	U	0.000745	U	0.000719	U	0.000729	U	0.000718	U	0.000708	U	0.000767	U	0.000828	U	0.000732	U
Endrin	0.014	2.2	0.000687	U	0.000745	U	0.000719	U	0.000729	U	0.000718	U	0.000708	U	0.000767	U	0.000828	U	0.000732	U
Endrin aldehyde	--	--	0.00206	U	0.00223	U	0.00216	U	0.00219	U	0.00216	U	0.00212	U	0.0023	U	0.00248	U	0.00219	U
Endrin ketone	--	--	0.00165	U	0.00179	U	0.00172	U	0.00175	U	0.00172	U	0.0017	U	0.00184	U	0.00199	U	0.00176	U
Heptachlor	0.042	0.42	0.000824	U	0.000894	U	0.000862	U	0.000875	U	0.000862	U	0.00085	U	0.00092	U	0.000994	U	0.000878	U
Heptachlor epoxide	--	--	0.00309	U	0.00335	U	0.00323	U	0.00328	U	0.00323	U	0.00319	U	0.00345	U	0.00373	U	0.00329	U
Lindane	0.1	0.28	0.000687	U	0.000745	U	0.000719	U	0.000729	U	0.000718	U	0.000708	U	0.000767	U	0.000828	U	0.000732	U
Methoxychlor	--	--	0.00309	U	0.00335	U	0.00323	U	0.00328	U	0.00323	U	0.00319	U	0.00345	U	0.00373	U	0.00329	U
Toxaphene	--	--	0.0309	U	0.0335	U	0.0323	U	0.0328	U	0.0323	U	0.0319	U	0.0345	U	0.0373	U	0.0329	U
trans-Chlordane	--	--	0.00206	U	0.00223	U	0.00216	U	0.00219	U	0.00216	U	0.00212	U	0.0023	U	0.00248	U	0.00219	U
Polychlorinated Biphenyls by GC																				
Aroclor 1016	0.1	1	0.0364	U	0.0369	U	0.0361	U	0.0376	U	0.0357	U	0.0353	U	0.0389	U	0.041	U	0.0374	U
Aroclor 1221	0.1	1	0.0364	U	0.0369	U	0.0361	U	0.0376	U	0.0357	U	0.0353	U	0.0389	U	0.041	U	0.0374	U
Aroclor 1232	0.1	1	0.0364	U	0.0369	U	0.0361	U	0.0376	U	0.0357	U	0.0353	U	0.0389	U	0.041	U	0.0374	U
Aroclor 1242	0.1	1	0.0364	U	0.0369	U	0.0361	U	0.0376	U	0.0357	U	0.0353	U	0.0389	U	0.041	U	0.0374	U
Aroclor 1248	0.1	1	0.0364	U	0.0369	U	0.0361	U	0.0376	U	0.0357	U	0.0353	U	0.0389	U	0.041	U	0.0374	U
Aroclor 1254	0.1	1	0.0364	U	0.0369	U	0.0361	U	0.0376	U	0.0357	U	0.0353	U	0.0389	U	0.041	U	0.0374	U
Aroclor 1260	0.1	1	0.0364	U	0.00776	J	0.0361	U	0.0438		0.0357	U	0.0353	U	0.0389	U	0.041	U	0.0374	U
Aroclor 1262	0.1	1	0.0364	U	0.0369	U	0.0361	U	0.0376	U	0.0357	U	0.0353	U	0.0389	U	0.041	U	0.0374	U
Aroclor 1268	0.1	1	0.0364	U	0.0369	U	0.0361	U	0.0376	U	0.0357	U	0.0353	U	0.0389	U	0.041	U	0.0374	U
Chlorinated Herbicides by GC																				
2,4,5-T	--	--	0.182	U	NA		0.18	U	NA		NA		NA		0.195	U	NA		NA	
2,4,5-TP (Silvex)	3.8	58	0.182	U	NA		0.18	U	NA		NA		NA		0.195	U	NA		NA	
2,4-D	--	--	0.182	U	NA		0.18	U	NA		NA		NA		0.195	U	NA		NA	

TABLE NOTES:

--: No Guidance Value.

mg/kg: Milligrams per kilogram.

NA: Not Analyzed.

U: Not detected at the reported detection limit for the sample.

J: Estimated value. The analyte concentration is below the reporting limit (RL), but above the method detection limit (MDL) or estimated detection limit (EDL).

Undetected value is greater than the standard or guidance value.

Table 6 - TCLP Metals in Soil
Waste Characterization Report
Rye Lake Water Plant
Harrison, New York

LOCATION	Maximum Contaminant Concentrations for Toxicity (40 CFR 261 6/96)	B-1 (0-5')		B-5 (0-5')		B-10 (0-5')		B-13 (0-5')		B-17 (0-5')		B-24 (0-5')	
LAB SAMPLE ID		5/27/2021		5/27/2021		5/26/2021		5/27/2021		6/1/2021		5/26/2021	
DATE		L2128322-04		L2128322-02		L2133087-03		L2133087-02		L2128995-02		L2133087-01	
		Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual
TCLP Metals by EPA 1311 (mg/L)													
Arsenic, TCLP	5	1	U	1	U	0.03	J	0.024	J	1	U	1	U
Barium, TCLP	100	0.513		0.833		0.651		1.42		0.373	J	0.552	
Cadmium, TCLP	1	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U
Chromium, TCLP	5	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
Lead, TCLP	5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Mercury, TCLP	0.2	0.001	J	0.0008	J	0.001	U	0.001	U	0.001	U	0.001	U
Selenium, TCLP	1	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Silver, TCLP	5	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U	0.1	U

Table Notes:

--: No guidance value

mg/L: Milligrams per Liter

U: Not detected at the reported detection limit for the sample.

J: Estimate Value. The analyte concentration is below the quantitative limit (RL), but above the method detection limit (MDL) or estimated detection limit (EDL)

Table 7- Waste Characterization Parameters
Waste Characterization Report
Rye Lake Water Plant
Harrison, New York

SAMPLE LOCATION		EPA RCRA Characteristic		B-1 (0-5')		B-5 (0-5')		B-10 (0-5')		B-13 (0-5')		B-17 (0-5')		B-24 (0-5')	
LAB SAMPLE ID				5/27/2021		5/27/2021		5/26/2021		5/26/2021		6/1/2021		5/26/2021	
DATE				L2128322-04		L2128322-02		L2133087-03		L2133087-02		L2128995-02		L2133087-01	
	Units			Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual
General Chemistry															
Corrosivity (pH)	S.U.	pH <2 or pH > 12		6.7		6.1		5.1		5.2		7		5.2	
Cyanide, Reactive	mg/kg	250		10	U	10	U	10	U	10	U	10	U	10	U
Sulfide, Reactive	mg/kg	500		10	U	10	U	10	U	10	U	10	U	10	U
Ignitability	-	--		NI		NI		NI		NI		NI		NI	
SAMPLE LOCATION		Part 375 Unrestricted Use Soil Cleanup Objectives	Part 375 Restricted Residential Use Soil Cleanup Objectives	B-1 (0-5')		B-5 (0-5')		B-10 (0-5')		B-13 (0-5')		B-17 (0-5')		B-24 (0-5')	
LAB SAMPLE ID				5/27/2021		5/27/2021		5/26/2021		5/26/2021		6/1/2021		5/26/2021	
DATE				L2128322-04		L2128322-02		L2133087-03		L2133087-02		L2128995-02		L2133087-01	
	Units			Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual	Results	Qual
General Chemistry															
Solids, Total	%	--	--	75.4		88.4		89.3		91.3		90.7		83.4	

Table Notes:

S.U.: Standard Units.

U: Not detected at the reported detection limit for the sample.

J: Estimated value. The analyte concentration is below the reporting limit (RL), but above the method detection limit (MDL) or estimated detection limit (EDL).

mg/kg: Milligrams per kilograms.

--: No Guidance Value.

-: No unit.

NI: Non-Ignitable

Appendix G1 - Volatile Organic Compounds in Groundwater
Geotechnical Engineering Report
Rye Lake Water Plant
Harrison, New York

LOCATION	NYSDEC TOGS 1.1.1 AWQS	MW-29		MW-3A		EW-01	
SAMPLING DATE		6/16/2021		6/16/2021		6/16/2021	
LAB SAMPLE ID		L2132604-01		L2132604-02		L2132604-03	
SAMPLE TYPE		Water		Water		Water	
		Results	Qual	Results	Qual	Results	Qual
Volatile Organic Compounds (VOC) by 8260C (ug/L)							
1,1,1,2-Tetrachloroethane	5	2.5	U	2.5	U	2.5	U
1,1,1-Trichloroethane	5	2.5	U	2.5	U	2.5	U
1,1,2,2-Tetrachloroethane	5	0.5	U	0.5	U	0.5	U
1,1,2-Trichloroethane	1	1.5	U	1.5	U	1.5	U
1,1-Dichloroethane	5	2.5	U	2.5	U	2.5	U
1,1-Dichloroethene	5	0.5	U	0.5	U	0.5	U
1,1-Dichloropropene	5	2.5	U	2.5	U	2.5	U
1,2,3-Trichlorobenzene	5	2.5	U	2.5	U	2.5	U
1,2,3-Trichloropropane	0.04	2.5	U	2.5	U	2.5	U
1,2,4,5-Tetramethylbenzene	5	2	U	2	U	2	U
1,2,4-Trichlorobenzene	5	2.5	U	2.5	U	2.5	U
1,2,4-Trimethylbenzene	5	2.5	U	2.5	U	2.5	U
1,2-Dibromo-3-chloropropane	0.04	2.5	U	2.5	U	2.5	U
1,2-Dibromoethane	0.0006	2	U	2	U	2	U
1,2-Dichlorobenzene	3	2.5	U	2.5	U	2.5	U
1,2-Dichloroethane	0.6	0.5	U	0.5	U	0.5	U
1,2-Dichloroethene, Total	--	2.5	U	2.5	U	2.5	U
1,2-Dichloropropane	1	1	U	1	U	1	U
1,3,5-Trimethylbenzene	5	2.5	U	2.5	U	2.5	U
1,3-Dichlorobenzene	3	2.5	U	2.5	U	2.5	U
1,3-Dichloropropane	5	2.5	U	2.5	U	2.5	U
1,3-Dichloropropene, Total	--	0.5	U	0.5	U	0.5	U
1,4-Dichlorobenzene	3	2.5	U	2.5	U	2.5	U
1,4-Dioxane	--	250	U	250	U	250	U
2,2-Dichloropropane	5	2.5	U	2.5	U	2.5	U
2-Butanone	50	5	U	5	U	5	U
2-Hexanone	50	5	U	5	U	5	U
4-Methyl-2-pentanone	--	5	U	5	U	5	U
Acetone	50	5	U	5	U	5	U
Acrylonitrile	5	5	U	5	U	5	U
Benzene	1	0.5	U	0.5	U	0.5	U
Bromobenzene	5	2.5	U	2.5	U	2.5	U
Bromochloromethane	5	2.5	U	2.5	U	2.5	U
Bromodichloromethane	50	0.5	U	0.5	U	0.5	U
Bromoform	50	2	U	2	U	2	U
Bromomethane	5	2.5	U	2.5	U	2.5	U
Carbon disulfide	60	5	U	5	U	5	U
Carbon tetrachloride	5	0.5	U	0.5	U	0.5	U
Chlorobenzene	5	2.5	U	2.5	U	2.5	U
Chloroethane	5	2.5	U	2.5	U	2.5	U
Chloroform	7	2.5	U	2.5	U	2.5	U
Chloromethane	--	2.5	U	2.5	U	2.5	U
cis-1,2-Dichloroethene	5	2.5	U	2.5	U	2.5	U
cis-1,3-Dichloropropene	0.4	0.5	U	0.5	U	0.5	U
Dibromochloromethane	50	0.5	U	0.5	U	0.5	U
Dibromomethane	5	5	U	5	U	5	U
Dichlorodifluoromethane	5	5	U	5	U	5	U
Ethyl ether	--	2.5	U	2.5	U	2.5	U
Ethylbenzene	5	2.5	U	2.5	U	2.5	U
Hexachlorobutadiene	0.5	2.5	U	2.5	U	2.5	U
Isopropylbenzene	5	2.5	U	2.5	U	2.5	U
Methyl tert butyl ether	10	2.5	U	2.5	U	2.5	U
Methylene chloride	5	2.5	U	2.5	U	2.5	U
Naphthalene	10	2.5	U	2.5	U	2.5	U
n-Butylbenzene	5	2.5	U	2.5	U	2.5	U
n-Propylbenzene	5	2.5	U	2.5	U	2.5	U
o-Chlorotoluene	5	2.5	U	2.5	U	2.5	U
o-Xylene	5	2.5	U	2.5	U	2.5	U
p/m-Xylene	5	2.5	U	2.5	U	2.5	U
p-Chlorotoluene	5	2.5	U	2.5	U	2.5	U
p-Diethylbenzene	--	2	U	2	U	2	U
p-Ethyltoluene	--	2	U	2	U	2	U
p-Isopropyltoluene	5	2.5	U	2.5	U	2.5	U
sec-Butylbenzene	5	2.5	U	2.5	U	2.5	U
Styrene	5	2.5	U	2.5	U	2.5	U
tert-Butylbenzene	5	2.5	U	2.5	U	2.5	U
Tetrachloroethene	5	0.5	U	0.5	U	0.5	U
Toluene	5	2.5	U	2.5	U	2.5	U
trans-1,2-Dichloroethene	5	2.5	U	2.5	U	2.5	U
trans-1,3-Dichloropropene	0.4	0.5	U	0.5	U	0.5	U
trans-1,4-Dichloro-2-butene	5	2.5	U	2.5	U	2.5	U
Trichloroethene	5	0.5	U	0.5	U	0.5	U
Trichlorofluoromethane	5	2.5	U	2.5	U	2.5	U
Vinyl acetate	--	5	U	5	U	5	U
Vinyl chloride	2	1	U	1	U	1	U
Xylenes, Total	--	2.5	U	2.5	U	2.5	U

Table Notes:

	The reporting limit exceeds the New York State Department of Environmental Conservation Technical Organzational Guidance Series 1.1.1 Ambient Water Quality Standards and Guidance Values.
J	Estimate Value. The analyte concentration is below the
U	Not detected at the reported detection limit for the sample
--	No Guidance Value
ug/L	Results are reported in microgram per liter

Appendix G2 - Volatile Organic Compounds in Groundwater
Geotechnical Engineering Report
Rye Lake Water Plant
Harrison, New York

LOCATION	NYSDEC TOGS 1.1.1 AWQS	MW-29		MW-3A		EW-01	
SAMPLING DATE		6/16/2021		6/16/2021		6/16/2021	
LAB SAMPLE ID		L2132604-01		L2132604-02		L2132604-03	
SAMPLE TYPE		Water		Water		Water	
		Results	Qual	Results	Qual	Results	Qual
Semivolatile Organic Chemicals by GC							
1,2,4,5-Tetrachlorobenzene	5	10	U	10	U	10	U
1,2,4-Trichlorobenzene	5	5	U	5	U	5	U
1,2-Dichlorobenzene	3	2	U	2	U	2	U
1,3-Dichlorobenzene	3	2	U	2	U	2	U
1,4-Dichlorobenzene	3	2	U	2	U	2	U
2,4,5-Trichlorophenol	--	5	U	5	U	5	U
2,4,6-Trichlorophenol	--	5	U	5	U	5	U
2,4-Dichlorophenol	1	5	U	5	U	5	U
2,4-Dimethylphenol	50	5	U	5	U	5	U
2,4-Dinitrophenol	10	20	U	20	U	20	U
2,4-Dinitrotoluene	5	5	U	5	U	5	U
2,6-Dinitrotoluene	5	5	U	5	U	5	U
2-Chloronaphthalene	10	0.2	U	0.2	U	0.2	U
2-Chlorophenol	--	2	U	2	U	2	U
2-Methylnaphthalene	--	0.04	J	0.1	U	0.1	U
2-Methylphenol	--	5	U	5	U	5	U
2-Nitroaniline	5	5	U	5	U	5	U
2-Nitrophenol	--	10	U	10	U	10	U
3,3'-Dichlorobenzidine	5	5	U	5	U	5	U
3-Methylphenol/4-Methylphenol	--	5	U	5	U	5	U
3-Nitroaniline	5	5	U	5	U	5	U
4,6-Dinitro-o-cresol	--	10	U	10	U	10	U
4-Bromophenyl phenyl ether	--	2	U	2	U	2	U
4-Chloroaniline	5	5	U	5	U	5	U
4-Chlorophenyl phenyl ether	--	2	U	2	U	2	U
4-Nitroaniline	5	5	U	5	U	5	U
4-Nitrophenol	--	10	U	10	U	10	U
Acenaphthene	20	0.03	J	0.1	U	0.1	U
Acenaphthylene	--	0.03	J	0.1	U	0.1	U
Acetophenone	--	5	U	5	U	5	U
Anthracene	50	0.05	J	0.1	U	0.1	U
Benzo(a)anthracene	0.002	0.05	J	0.1	U	0.1	U
Benzo(a)pyrene	0	0.05	J	0.1	U	0.1	U
Benzo(b)fluoranthene	0.002	0.06	J	0.1	U	0.1	U
Benzo(ghi)perylene	--	0.07	J	0.1	U	0.1	U
Benzo(k)fluoranthene	0.002	0.03	J	0.1	U	0.1	U
Benzoic Acid	--	50	U	50	U	50	U
Benzyl Alcohol	--	2	U	2	U	2	U
Biphenyl	--	2	U	2	U	2	U
Bis(2-chloroethoxy)methane	5	5	U	5	U	5	U
Bis(2-chloroethyl)ether	1	2	U	2	U	2	U
Bis(2-chloroisopropyl)ether	5	2	U	2	U	2	U
Bis(2-ethylhexyl)phthalate	5	3	U	3	U	3	U
Butyl benzyl phthalate	50	5	U	5	U	5	U
Carbazole	--	2	U	2	U	2	U
Chrysene	0.002	0.04	J	0.1	U	0.1	U
Dibenzo(a,h)anthracene	--	0.02	J	0.1	U	0.1	U
Dibenzofuran	--	2	U	2	U	2	U
Diethyl phthalate	50	5	U	0.48	J	5	U
Dimethyl phthalate	50	5	U	5	U	5	U
Di-n-butylphthalate	50	5	U	5	U	5	U
Di-n-octylphthalate	50	5	U	5	U	5	U
Fluoranthene	50	0.12		0.1	U	0.1	U
Fluorene	50	0.05	J	0.1	U	0.1	U
Hexachlorobenzene	0.04	0.8	U	0.8	U	0.8	U
Hexachlorobutadiene	0.5	0.5	U	0.5	U	0.5	U
Hexachlorocyclopentadiene	5	20	U	20	U	20	U
Hexachloroethane	5	0.8	U	0.8	U	0.8	U
Indeno(1,2,3-cd)pyrene	0.002	0.07	J	0.1	U	0.1	U
Isophorone	50	5	U	5	U	5	U
Naphthalene	10	0.26		0.1	U	0.1	U
NDPA/DPA	50	2	U	2	U	2	U
Nitrobenzene	0.4	2	U	2	U	2	U
n-Nitrosodi-n-propylamine	--	5	U	5	U	5	U
p-Chloro-m-cresol	--	2	U	2	U	2	U
Pentachlorophenol	1	0.8	U	0.8	U	0.8	U
Phenanthrene	50	0.17		0.1	U	0.1	U
Phenol	1	5	U	5	U	5	U
Pyrene	50	0.08	J	0.1	U	0.1	U

Table Notes:

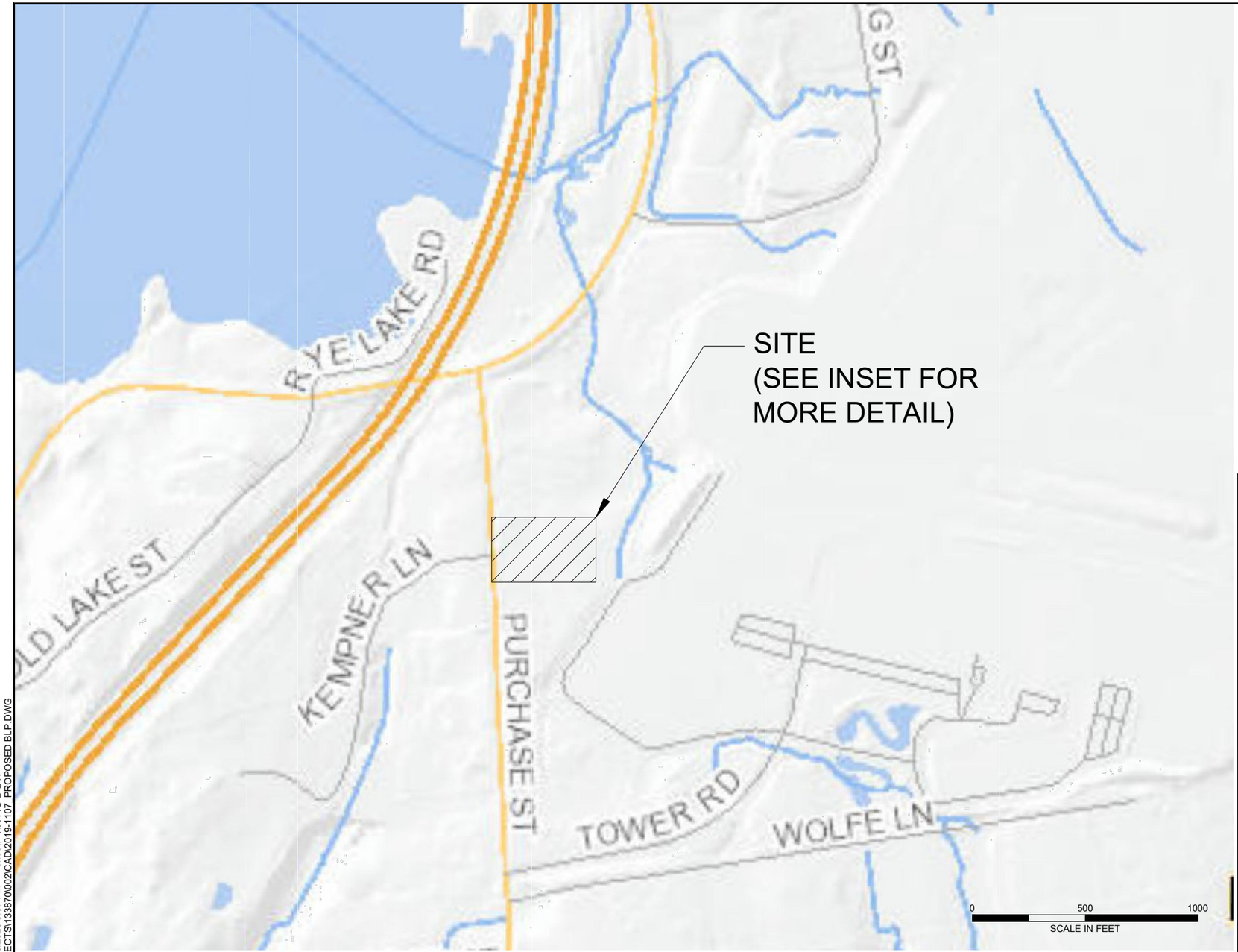
	The reporting limit exceeds the New York State Department of Environmental Conservation Technical Organzational Guidance Series 1.1.1 Ambient Water Quality Standards and Guidance Values.
	The detected value exceeds the New York State Department of Environmental Conservation Technical Organizational Guidance Series 1.1.1 Ambient Water Quality Standards and Guidance Values.
J	Estimate Value. The analyte concentration is below the quantitative limit (RL), but above the method detection limit
U	Not detected at the reported detection limit for the sample
--	No Guidance Value
ug/L	Results are reported in microgram per liter

Appendix G3 - Metals in Groundwater
Geotechnical Engineering Report
Rye Lake Water Plant
Harrison, New York

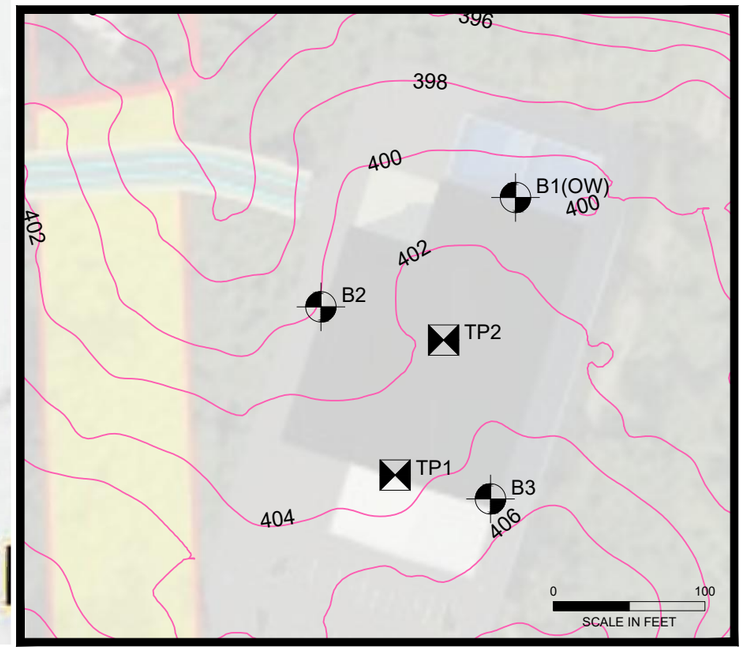
LOCATION	NYSDEC TOGS 1.1.1 AWQS	MW-29		MW-3A		EW-01	
SAMPLING DATE		6/16/2021		6/16/2021		6/16/2021	
LAB SAMPLE ID		L2132604-01		L2132604-02		L2132604-03	
SAMPLE TYPE		Water		Water		Water	
		Results	Qual	Results	Qual	Results	Qual
Total Metals							
Aluminum, Total	--	133		38.1		81800	
Antimony, Total	3	4	U	4	U	4	U
Arsenic, Total	25	0.5	U	0.5	U	6.81	
Barium, Total	1000	49.01		24.02		1782	
Beryllium, Total	3	0.5	U	0.5	U	1.59	
Cadmium, Total	5	0.2	U	0.2	U	1.01	
Calcium, Total	--	31600		13900		70500	
Chromium, Total	50	0.85	J	0.26	J	285	
Cobalt, Total	--	0.58		0.5	U	80.33	
Copper, Total	200	0.74	J	0.91	J	230.2	
Iron, Total	300	267		68.2		164000	
Lead, Total	25	1	U	1	U	37.86	
Magnesium, Total	35000	12400		5480		63300	
Manganese, Total	300	83.65		9.7		4120	
Mercury, Total	0.7	0.2	U	0.2	U	0.2	U
Nickel, Total	100	1.51	J	2	U	177.3	
Potassium, Total	--	2800		940		40400	
Selenium, Total	10	5	U	5	U	10.7	
Silver, Total	50	0.4	U	0.4	U	0.33	J
Sodium, Total	20000	8750		4030		10800	
Thallium, Total	0.5	1	U	1	U	1.81	
Vanadium, Total	--	5	U	5	U	234.4	
Zinc, Total	2000	4.17	J	10	U	356.8	

Table Notes:

	The reporting limit exceeds the New York State Department of Environmental Conservation Technical Organzational Guidance Series 1.1.1 Ambient Water Quality Standards and Guidance Values.
	The detected value exceeds the New York State Department of Environmental Conservation Technical Organzational Guidance Series 1.1.1 Ambient Water Quality Standards and Guidance Values.
J	Estimate Value. The analyte concentration is below the
U	Not detected at the reported detection limit for the sample
--	No Guidance Value
ug/L	Results are reported in microgram per liter



INSET
SUBSURFACE EXPLORATION PLAN



LEGEND

B2	APPROXIMATE LOCATION OF TEST BORING DRILLED BETWEEN 21 AND 22 NOVEMBER 2019.
TP2	APPROXIMATE LOCATION OF TEST PIT EXCAVATED ON 20 NOVEMBER 2019.
"OW"	INDICATES OBSERVATION WELL INSTALLED IN COMPLETED BOREHOLE.

NOTES

1. DRAWING BACKGROUND AND CONTOURS OBTAINED FROM WESTCHESTER COUNTY GIS WEBSITE.

N

HALEY ALDRICH

WJWW FILTRATION PLANT
WEST HARRISON, NEW YORK

SUBSURFACE EXPLORATION PLAN

SCALE: AS SHOWN
JANUARY 2020

FIGURE 2

JBUCHANON Printed: 2/20/2020 9:07 PM Sheet: HA-FIG-B-L-H
\\HALEYALDRICH.COM\SHARE\CP\PROJECTS\138700002\CAD\2019-1107_PROPOSED BLP.DWG

TABLE II
SUMMARY OF ANALYTICAL RESULTS FOR SOIL
WJWW FILTRATION PLANT
WEST HARRISON, NEW YORK

				LOCATION	TP2-S1	TP2-S2
				SAMPLING DATE	11/20/2019	11/20/2019
				LAB SAMPLE ID	9110638-01	9110638-02
				SAMPLE TYPE	SUBSOIL	GLACIAL TILL
				SAMPLE DEPTH (ft.)	1-3	3
	CasNum	**Unrestricted Use SCO**	**Residential Use SCO**	**Units**	**Results**	**Results**
Gasoline Range Organics						
Gasoline Range Organics	NONE	--	--	mg/kg	ND(8)	ND(7)
Diesel Range Organics						
Diesel Range Organics	NONE	--	--	mg/kg	ND(62)	ND(59)
Organochlorine Pesticides						
4,4'-DDE	72-55-9	0.0033	1.8	mg/kg	**0.002**	ND
4,4'-DDT	50-29-3	0.0033	94	mg/kg	ND	**0.0015**
Chlorinated Herbicides						
					ND	ND
Polychlorinated Biphenyls						
PCBs, Total	1336-36-3	0.1	1	mg/kg	ND	ND
Semivolatile Organics						
SUM					ND	ND
Total Metals						
Arsenic, Total	7440-38-2	13	16	mg/kg	**6.7**	**5**
Barium, Total	7440-39-3	350	350	mg/kg	**64**	**59**
Cadmium, Total	7440-43-9		60	mg/kg	ND(0.63)	ND(0.6)
Chromium, Total	7440-47-3	--	--	mg/kg	**28**	**22**
Lead, Total	7439-92-1	63	400	mg/kg	**27**	**6.4**
Mercury, Total	7439-97-6	0.18	0.81	mg/kg	ND(0.15)	ND(0.14)
Selenium, Total	7782-49-2	3.9	36	mg/kg	ND(3.1)	ND(3)
Silver, Total	7440-22-4		6800	mg/kg	ND(2.5)	ND(2.4)
Volatile Organics						
SUM					ND	ND

NOTES:

1. This table typically includes only those compounds detected on the dates indicated
2. SCO refers to the Soil Cleanup Objective tables as set forth by the New York State Department of Environmental Conservation (DEC) 6 NYCRR Part 375 Environmental Remediation Programs, Section 6
3. SCO criteria are listed in the same units as the analyte test result reported.
4. ND(0.01) means that the compound was not detected above laboratory detection limit. The number in parentheses is the detection limit
5. - means not applicable or not analyzed.
6. mg/kg means milligrams per kilogram (ppm)
7. SCO categories for Unrestricted Use and Residential Use take precedence over other SCO categories (Restricted-Residential, Commercial, and Industrial). The other SCO categories are not provided for comparison since the compounds detected did not exceed the more stringent SCO criteria.

TABLE III
SUMMARY OF ANALYTICAL RESULTS FOR WATER
WJWW FILTRATION PLANT
WEST HARRISON, NEW YORK

	LOCATION SAMPLING DATE LAB SAMPLE ID Units	B1-GW1 12/13/2019 9120449-01 Results	B1-GW1 12/13/2019 L1960336-01 Results
Perfluorinated Alkyl Acids	ng/L	NT	ND(1.94)
Ethylene Glycol	mg/L	ND(10)	NT
Semivolatile Organics	ug/L	ND	NT
Volatile Organics	ug/L	ND	NT

NOTES:

1. This table typically includes only those compounds detected on the dates indicated.
2. Refer to the laboratory analytical reports in Appendix B for detailed results.
3. "ND(10)" means that the compound was not detected above the laboratory reporting limit. The number in parantheses is the reporting limit.
4. "NT" means not tested.
5. mg/L means milligrams per liter (ppm)
6. ng/L means nanograms per liter (ppt)
7. ug/L mean micrograms per liter (ppb)

ATTACHMENT C – MONTIORING WELL CONSTRUCTION LOGS

GROUNDWATER OBSERVATION WELL INSTALLATION REPORT

HALEY ALDRICH

Well No. B1(OW)
Boring No. B1(OW)

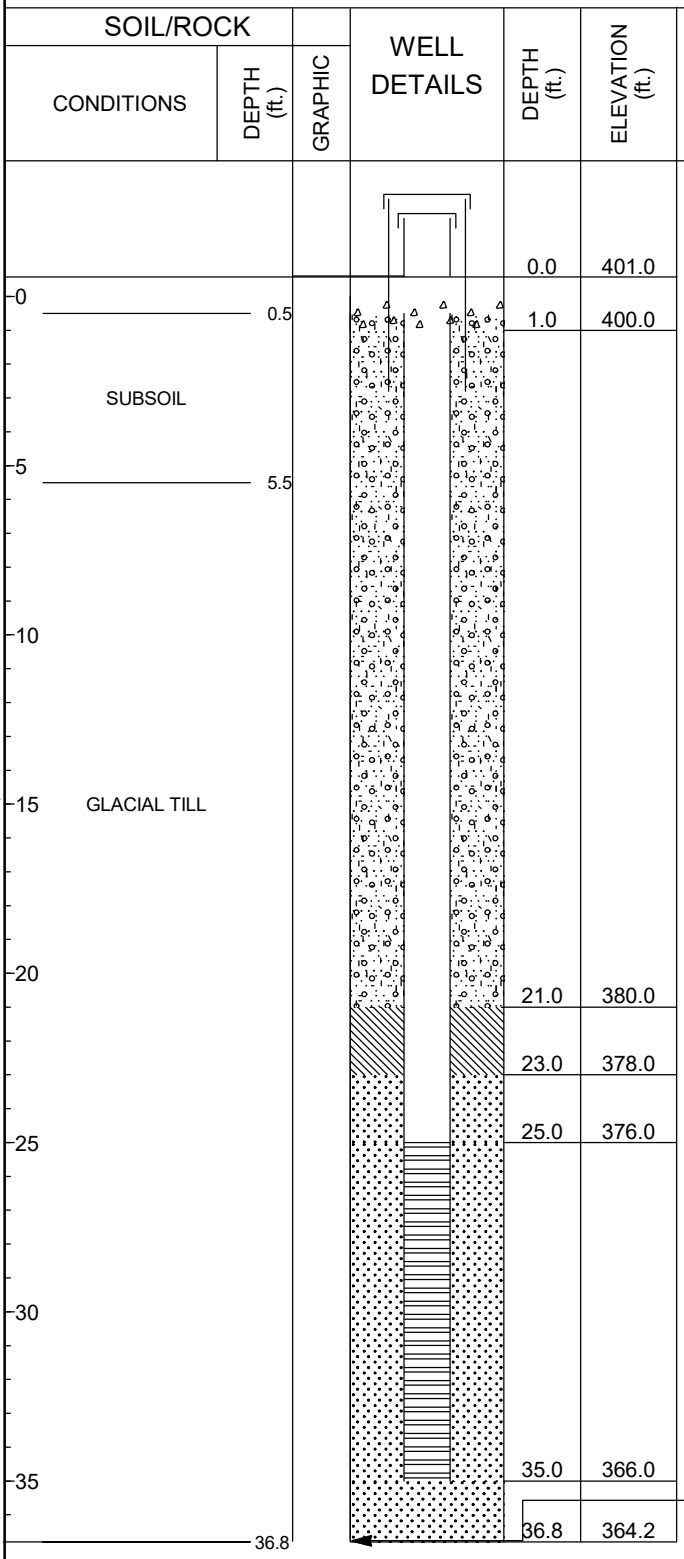
Project WJWW Filtration Plant
Location Purchase, New York
Client Hazen & Sawyer
Contractor General Borings, Inc.
Driller J. Casson

Initial Water Level (depth bgs) 30.0 ft

Well Diagram
- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

File No. 133870-002
Date Installed 22 Nov 2019
H&A Rep. S. Brousseau
Location N 41.06471 W 73.71797

Ground El. 401.0 (est.)
Datum NAVD88



WELL CONSTRUCTION DETAILS

Type of protective cover: Padlock
Depth of Guard Pipe below ground surface: NA
Depth of top of riser below ground surface: ft
Type of protective casing: Guard Pipe
- Length: 5.0 ft
- Inside diameter: 4.0 in.
- Depth of bottom of Guard Pipe: -

Type of riser pipe: Schedule 40 PVC
- Inside diameter of riser pipe: 2.0 in.
- Depth of bottom of riser pipe: 25.0 ft

Type of Seals	Top of Seal (ft)	Thickness (ft)
Concrete	0.0	1.0
Bentonite	21.0	2.0
	-	-

Diameter of borehole: 7.0 in.
Depth to top of well screen: 25.0 ft
- Type of screen: Machine slotted Sch 40 PVC
- Screen gauge or size of openings: 0.010 in.
- Diameter of screen: 2.0 in.
- Type of Backfill around Screen: Filter Sand
- Depth to bottom of well screen: 35.0 ft

Bottom of silt trap: 35.3 ft
Depth of bottom of borehole: 36.8 ft

COMMENTS:

HA-LIB09-BOS-HAR.GLB GW INSTALLATION REPORT-07-1 F:\133870\002\GINT\133870-002 HAI TB LOGS.GPJ Feb 24, 20

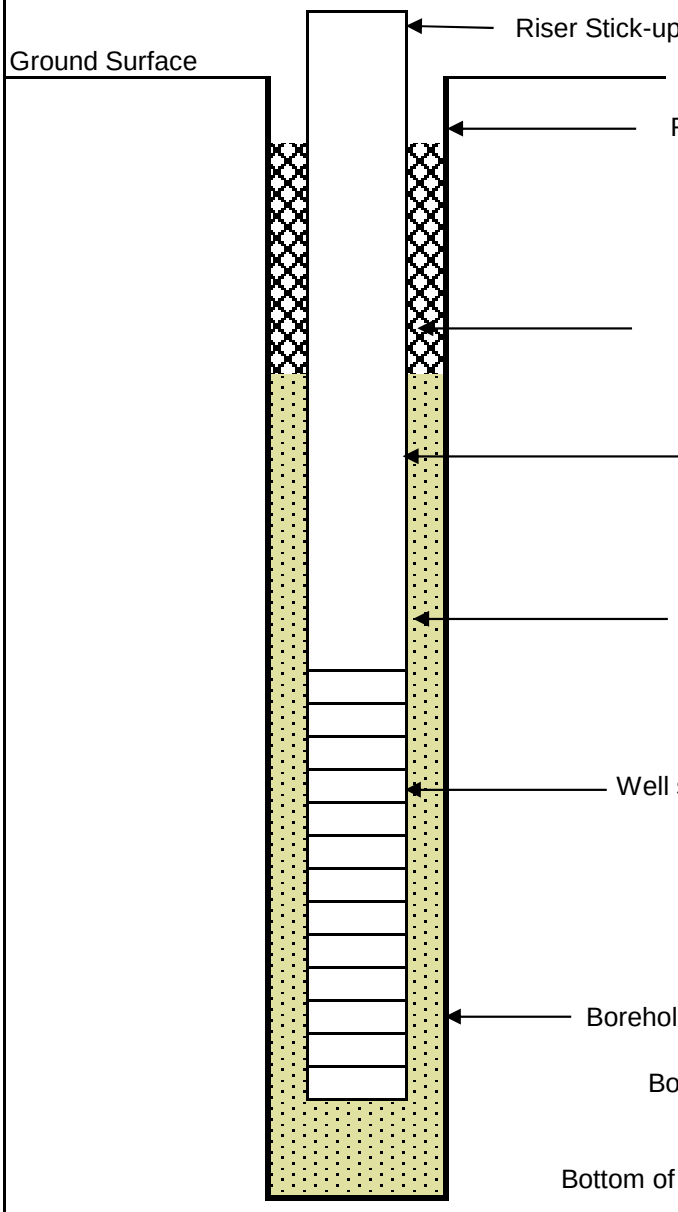
TEMPORARY GROUNDWATER OBSERVATION WELL INSTALLATION LOG

GZA GEOENVIRONMENTAL OF NEW YORK 104 WEST 29TH STREET, 10TH FLOOR NEW YORK, NEW YORK 10001 GEOTECHNICAL CONSULTANTS	**Proj. Name:** Westchester Joint Water Works Proposed Filtration Plant **Location:** Westchester County, New York	WELL NO. B-3a(OW) SHEET 1 of 1 GZA PROJECT NO. 41.0162892.00 PROJECT LOCATION See Plan

CONTRACTOR	Craig Testing Co., Inc.	BORING LOCATION	B-3a
		GROUND SURFACE EL. (FT)	407
FOREMAN	Paul Mullins	DATUM	NAVD 88
GZA ENG.	A. Amador	DATE INSALLTED	5/18/2021

WATER LEVELS

DATE	TIME	DEPTH (FT)
5/26/2021	730 AM	5
5/27/2021	730 AM	5.1
6/1/2021	800 AM	5.2
6/4/2021	1100 AM	3.7



Riser Stick-up from Ground Surface 3.0 ft.

Round Well Protector, Steel Cap

Bentonite Seal from 0 ft. to 2 ft.

Riser Pipe from -3.0 ft. to 17.0 ft.

Filter pack 2 ft. to 27 ft.

Sand Size #2 Filter Sand

Well screen from 17.0 ft. to 27.0 ft.

Diameter 2 inches
Slot size 0.001 inches
Type 2" PVC

Borehole diameter 4 inches

Bottom Cap at 27.0 ft.

Bottom of Borehole at 60.4 ft.

(NOT TO SCALE)

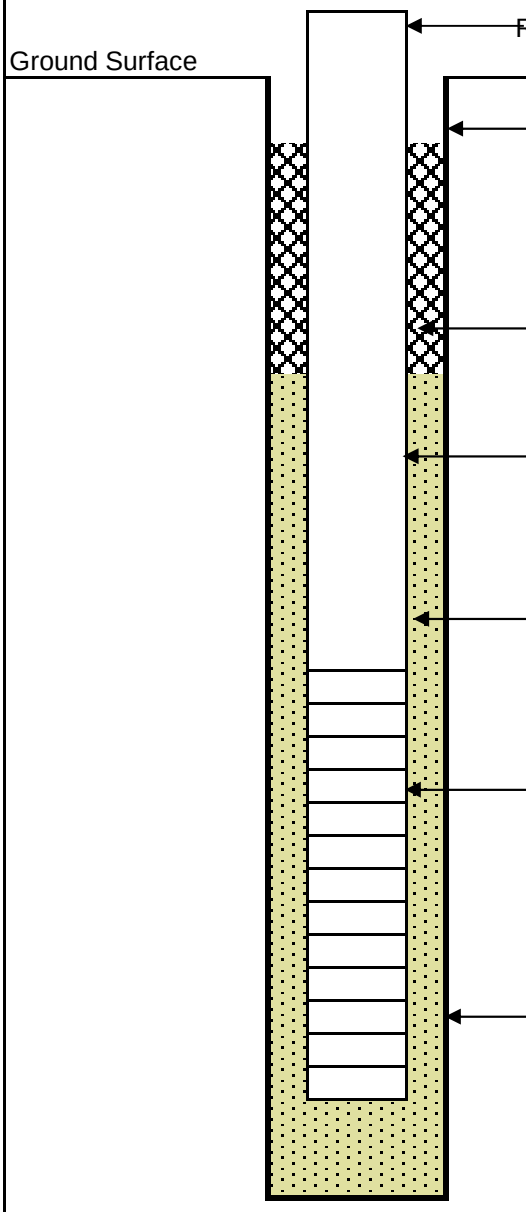
TEMPORARY GROUNDWATER OBSERVATION WELL INSTALLATION LOG

GZA GEOENVIRONMENTAL OF NEW YORK 104 WEST 29TH STREET, 10TH FLOOR NEW YORK, NEW YORK 10001 GEOTECHNICAL CONSULTANTS	**Proj. Name:** Westchester Joint Water Works Proposed Filtration Plant **Location:** Westchester County, New York	WELL NO. B-29(OW) SHEET 1 of 1 GZA PROJECT NO. 41.0162892.00 PROJECT LOCATION See Plan

CONTRACTOR	Craig Testing Co., Inc.	BORING LOCATION	B-29
		GROUND SURFACE EL. (FT)	389
FOREMAN	Paul Mullins	DATUM	NAVD 88
GZA ENG.	A. Amador	DATE INSALLTED	6/2/2021

WATER LEVELS

DATE	TIME	DEPTH (FT)
6/3/2021	1000 AM	7
6/4/2021	800 AM	8



Riser Stick-up from Ground Surface 3.0 ft.

Ground Surface

Round Well Protector, Steel Cap

Bentonite Seal from 0 ft. to 4 ft.

Riser Pipe from -3.0 ft. to 15.0 ft.

Filter pack 4 ft. to 25 ft.

Sand Size #2 Filter Sand

Well screen from 15.0 ft. to 25.0 ft.

Diameter 2 inches
Slot size 0.001 inches
Type 2" PVC

Borehole diameter 4 inches

Bottom Cap at 25.0 ft.

Bottom of Borehole at 25 ft.

(NOT TO SCALE)

GZA Geoenvironmental of NY

Well No. **B-29(OW)**



GZA GeoEnvironmental of New York

APPENDIX D

CONSTRUCTION HEALTH AND SAFETY PLAN

Known for excellence.
Built on trust.



CONSTRUCTION HEALTH AND SAFETY PLAN

Rye Lake Water Filtration Plant

BCP Site No. C360174
Westchester County Airport

July 2025
File No. 41.0162892.01



PREPARED FOR

WESTCHESTER
JOINT WATER WORKS
Filtration

1625 Mamaroneck Avenue
Mamaroneck, NY 10543

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www.gza.com

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1.0 INTRODUCTION

1.1 OVERVIEW

This project-specific Construction Health and Safety Plan (CHASP) has been developed by GZA GeoEnvironmental of New York (GZA) on behalf of Hazen and Sawyer (Hazen) for construction of Westchester Joint Water Works (WJWW) Rye Lake Water Filtration Plant (Site/WFP) to establish the procedures necessary for the protection from potential contaminated materials resulting from the construction activities at the proposed WFP. The Site is located within the property boundary of the Westchester County Airport Brownfield Cleanup Program (BCP) site (No. C360174). The County of Westchester (County) owns and operates the Airport and entered into the Brownfield Cleanup Agreement (BCA) in August 2021 as a participant. The County transferred a portion of the Airport property to WJWW in 2024 for the construction of the WFP. This CHASP is intended to supplement the Contractor's Safety Program. The procedures in this plan have been developed based on current knowledge regarding the hazards which are known or anticipated for the operations to be conducted at this Site.

1.2 SITE HAZARDS

This CHASP covers only the hazards associated with potential chemical exposures. Physical hazards such as injuries from typical excavation field work activities, including the operation of heavy equipment, noise exposure, heat and cold stress, electrical hazards, fire hazards, excavation hazards and general safety hazards associated with walking on working surfaces (trip and fall) are covered by the Contractor's safety program.

The construction activities call for the handling, transport and disposal of soil, fill, fluids, and other materials removed from the property Site activities may pose chemical exposure hazards. Potential chemical exposure hazards include skin contact, ingestion and inhalation hazards which may result from the presence of volatile organic compounds, semi-volatile organic compounds, and inorganic metallic elements (metals) on-Site. The potential adverse health effects form these detected contaminants are diverse. Many of these compounds are known or suspected to result in chronic illness from long-term exposures. However, due to the limited nature of the proposed construction, only acute effects are a potential concern. See **Section 2.0** for detailed chemical hazard information.

1.3 PROJECT TEAM

The organizational structure established for the implementation of construction health and safety requirements established by this CHASP, include identifying personnel who have been assigned specific authority to implement and enforce the provisions of this CHASP. Prior to the construction appropriate personnel will be identified in the table below:

Name	Project Title/Assigned Role	Phone Numbers
Zachary Landis	Project Manager	Work: 212-594-8140 Mobile: 917-301-5010
TBD	Site Supervisor	Work: Mobile:
TBD	Site Health and Safety Officer	Work: Mobile:
TBD	Alternate Site Health and Safety Officer	Work: Mobile:

The control of Site hazards is dependent upon the degree to which management enforces compliance and employees cooperate with the specified health and safety requirements. Therefore, personnel at all levels of the organization must recognize their individual responsibility to comply. All activities covered by this CHASP must be conducted in compliance with this CHASP and with applicable federal, state, and local health and safety regulations, including 29 Code of Federal Regulations (CFR) 1910.120. Personnel covered by this CHASP who cannot or will not comply must be excluded from Site activities by the Project Superintendent.

2.0 HAZARD ASSESSMENT

The following hazard assessment applies only to the activities within the specified scope of this CHASP.

2.1 CHEMICAL HAZARDS AND KNOWN/SUSPECT CHEMICALS OF CONCERN

A summary of previous investigations is included in the BCP Interim Site Management Plan (ISMP) for the BCP Site dated June 2025. The ISMP also includes a Health and Safety Plan as an attachments (see **ISMP Appendix E**). To supplement the sampling performed during the BCP investigations, GZA performed some sampling in the vicinity of the proposed construction areas. The chemical hazard information provided below is based in part on the data provided in the Waste Characterization Report performed by GZA, dated July 9, 2021. Safety Data Sheets (SDS)are included in **Attachment 3.** During the investigation, representative Site soiland groundwater samples were collected. Constituents with exceeding concentrations and their respective health effects are listed below for reference. Information presented is based upon established Occupational Safety and Health Administration (OSHA) permissible exposure limits (PEL) and The National Institute for Occupational Safety and Health (NIOSH) recommended exposure limits (RELs) with time-weighted average (TWA). All other analytical parameters were reported within acceptable levels for Site urban residential land use. See **Section 4.2** for a description of the PPE that should be used for this Site.

Chemicals	REL/PEL/STEL (ppm)	Health Hazards
Benz(a)anthracene	PEL = 0.2 mg/m³ TWA REL = 0.1 mg/m³ TWA	Irritation to respiratory system, bladder, kidneys, skin; dermatitis, bronchitis, cumulative lung damage; suspect human carcinogen.
Beno(a)pyrene	PEL = 0.2 mg/m³ TWA REL = 0.1 mg/m³ TWA	Irritation to respiratory system, bladder, kidneys, skin; dermatitis, bronchitis, cumulative lung damage; suspect human carcinogen.
Benzo(b)fluoranthene	PEL = 0.2 mg/m³ TWA REL = 0.1 mg/m³ TWA	No signs or symptoms of acute or chronic exposure have been reported in humans; suspect human carcinogen.
Benzo(k)fluoranthene	PEL = 0.2 mg/m³ TWA	Contact can irritate the skin and eyes. Benzo(k)fluoranthene may be a carcinogen.
Chrysene	PEL = 0.2 mg/m³ TWA REL = 0.1 mg/m³ TWA	Irritation to respiratory system, bladder, kidneys, skin; dermatitis, bronchitis, cumulative lung damage; suspect human carcinogen.
Indeno(1,2,3-cd)pyrene	PEL = 0.2 mg/m³ TWA REL = 0.1 mg/m³ TWA	No signs or symptoms of acute or chronic exposure have been reported in humans; suspect human carcinogen.
Barium	PEL = 0.5 mg/m³ TWA	Causes burns of eyes, skin, and mucous membrane.
Chromium	PEL = 1 mg/m³ TWA	No signs or symptoms of acute or chronic exposure have been reported in humans.
Copper	PEL = 0.1 mg/m³ REL = 0.1 mg/m³	Irritation eyes, upper respiratory system; metal fume fever: chills, muscle ache, nausea, fever, dry throat, cough, lassitude (weakness, exhaustion); metallic or sweet taste; discoloration skin, hair.
Iron	PEL = 10 mg/m³ TWA REL = 5 mg/m³ TWA	Irritation to respiratory system, associated with conjunctivitis, choroiditis, and retinitis.
Lead	PEL = 0.05 mg/m³ REL = 0.05 mg/m³	Lassitude (weakness, exhaustion), insomnia; facial pallor; anorexia, weight loss, malnutrition; constipation, abdominal pain, colic; anemia; gingival lead line; tremor; paralysis wrist, ankles; encephalopathy; kidney disease; irritation eyes; hypertension.
Magnesium	PEL = 15 mg/m³	Irritation eyes, nose; metal fume fever: cough, chest pain, flu-like fever.
Manganese	PEL = 5 mg/m³ REL = 1 mg/m³	Manganism, asthenia, insomnia, mental confusion, metal fume fever, dry throat, cough, chest tightness, low-back pain, vomiting, malaise, kidney damage.
Nickel	PEL = 0.5 mg/m³ TWA REL = 0.015 mg/m³ TWA	Causes damage to lungs through prolonged or repeated exposure; suspect human carcinogen.
Selenium	PEL = 0.2 mg/m³ TWA	No signs or symptoms of acute or chronic exposure have been reported in humans.
Thallium	PEL = 0.1 mg/m³ TWA	May cause damage to organs and blood through prolonged or repeated exposure
PFOA	No occupational exposure limit values	Harmful if swallowed or inhaled and causes can cause serious eye damage. A suspected carcinogen. Causes damage to the liver through prolonged or repeated exposure. May damage fertility or the unborn child.
PFOS	No occupational exposure limit values	Harmful is swallowed. Causes severe skin burns and eye damage. May cause respiratory irritation.

Continued site investigation activities will be performed at the site to fully characterize the nature and extent of contamination, and future amendments to the CHASP will be made to incorporate that data as warranted. This CHASP covers potential exposures to contaminated soil, groundwater, sediments, and surface water.

2.2 VOLATILE ORGANIC COMPOUNDS (VOCS)

VOCs were not detected in previous soil and groundwater samples.

2.3 SEMI-VOLATILE ORGANIC COMPOUNDS (SVOCS)

The SVOCs detected in the groundwater sampling that exceeded the NYSDEC TOGS 1.1.1 AWQS are Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Chrysene, and Indeno(1,2,3-cd)pyrene.

Due to the relatively low vapor pressure of SVOCs, no vapor hazards are anticipated at ambient temperatures. However, if Site conditions are dry, the generation of contaminated dusts may pose a potential inhalation hazard. Therefore, dust levels should be controlled with wetting, if necessary, as described in **Section 3.2**. In addition, repeated contact with certain SVOCs have been associated with the development of skin cancer. Dermal contact with SVOCs with the skin may cause photosensitization of the skin, producing skin burns after subsequent exposure to ultraviolet radiation. Protective measures, such as the wearing of chemically resistant gloves, are appropriate when handling SVOC contaminated materials.

2.4 METALS

Metals detected above the NYSDEC TOGS 1.1.1 AWQS in groundwater during previous investigation sampling are aluminum, barium, chromium, copper, iron, lead, magnesium, manganese, nickel, selenium, and thallium.

Overexposure to metal compounds has been associated with a variety of local and systemic health hazards, both acute and chronic in nature, including lung damage, neurological effects, gastrointestinal effects, kidney and liver damage, allergic dermatitis, and other skin disorders. Exposure to metals is most commonly through inhalation and ingestion of dust. Due to the wide variety of metals detected in soil and groundwater samples, a Community Air Monitoring Program (CAMP) should be implemented to monitor the total dust in air. GZA believes that airborne metals are not a significant risk to Site workers. However, if Site conditions are dry, the generation of contaminated dusts may pose a potential inhalation hazard. Therefore, dust levels should be controlled with wetting, if necessary, as described in **Section 3.2**.

2.5 POLYCHLORINATED BIPHENYLS (PCBS)

Polychlorinated biphenyls (PCBs) were not detected in previous soil or groundwater samples. PCBs are generally observed in the shallow soil and at concentrations that are typically found in historic fill observed in New York City. Due to the relatively low vapor pressure of PCBs, vapor hazards at ambient temperatures are not expected to occur. However, if Site conditions are dry, the

generation of contaminated dusts may pose a potential inhalation hazard. Therefore, dust levels should be controlled with wetting, if necessary, as described in **Section 3.2**.

2.6 PESTICIDES

Pesticides were not detected in soil samples above the NYSDEC Part 375 UUSCOs during waste characterization sampling.

Due to the relatively low vapor pressure of pesticide compounds, vapor hazards at ambient temperatures are not expected to occur. However, if Site conditions are dry, the generation of contaminated dusts may pose a potential inhalation hazard. Therefore, dust levels should be controlled with wetting, if necessary, as described in **Section 3.2**. In addition, exposure to high doses with certain pesticide compounds have been associated human symptoms including vomiting, tremors or shakiness, and seizures. Certain pesticides are also considered possible human carcinogens.

2.7 PER- AND POLYFLUOROALKYL SUBSTANCES (PFAS)

The emerging contaminant Perfluorooctanesulfonic Acid (PFOS) and perfluorooctanoic acid (PFOA) was detected in soil samples throughout the Airport property above the NYSDEC Part 375 UUSCO during the Site characterization.

Due to the relatively low vapor pressure of PFAS compounds, vapor hazards at ambient temperatures are not expected to occur. However, if Site conditions are dry, the generation of contaminated dusts may pose a potential inhalation hazard. Therefore, dust levels should be controlled with wetting, if necessary, as described in **Section 3.2**. In addition, PFAS exposure can cause increased cholesterol, changes in liver enzymes, decrease infant birth weight, increase risk of testicular and kidney cancer, increased risk of high blood pressure or pre-eclampsia in pregnant women, decreased effectiveness of vaccines in children.

3.0 AIR MONITORING

Air monitoring falls into two separate categories: direct reading/environmental monitoring, and personal exposure monitoring. The following Sections summarize the types of environmental monitoring as well as the appropriate response actions applicable to the Site.

3.1 ORGANIC VAPOR MONITORING

Volatile organic vapor hazards have not been identified for the Site (see **Section 2.0**). However, organic vapor monitoring with a photoionization detector (PID) is expected to be required for the Site. Monitoring for VOCs will be conducted prior to the start of ground intrusive activities, to

establish the Site background VOC concentration levels. The background concentration will then be incorporated and considered when evaluating VOC concentrations at the Site. As per DER-10, vapor monitoring will be performed during all ground intrusive activities. 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. A community air monitoring program is included as an attachment to the IRMWP (see **IRMWP Appendix I**).

3.1.1 Air Monitoring Instruments and Action Levels

Ambient air concentrations of VOCs will be monitored utilizing a PID at upwind and downwind locations from the active ground intrusive work. A third monitoring location will be set up along the western property boundary closest to the residential properties in the area. PIDs will be calibrated daily and will log data with 15-minute averages. Downwind and residential boundary monitoring VOC concentration averages will be compared to the below response actions with applicable actions taken as necessary.

Response Levels (above background levels)	**Action**
0 to 5 ppm	No action required.
5 to 25 ppm	Temporarily halt work activities and continue monitoring. If instantaneous readings readily decrease to <5ppm over background, work activities may resume. If readings >5ppm over background persist, the source of vapors will be investigated and identified. Corrective actions will be taken to abate the emissions with continued monitoring to ensure VOC concentrations decrease. Work may resume once downwind and residential boundary VOC concentrations are <5ppm over background for a 15-minute averaging period.
> 25 ppm	Halt work, secure operations, withdraw from work area and discontinue work at that location until contaminants can be evaluated, and detailed plan implemented.

3.2 TOTAL PARTICULATES

Due to the potential presence of PFAS and metals in soils on-Site, total respirable particulates may be a concern. Dust levels should be visually monitored and if levels become noticeable, soils should be wetted down to control dusty conditions. Wetting may be accomplished using various methods, including a hose connected to a fire hydrant or other on-Site source of water. The Client's Project Superintendent shall be responsible for determining when the wetting of soils is

needed and the most appropriate method to use. In addition, recommended measurements for particulate monitoring are detailed below.

3.3 PARTICULATE MONITORING, RESPONSE LEVELS, AND ACTIONS

Particulate concentrations should be monitored during all 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. Particulate monitoring will be conducted at upwind and downwind locations from the active ground intrusive work. A third monitoring location will be set up along the western property boundary closest to the residential properties in the area. The particulate air monitoring work will be conducted using real-time dust monitor capable of measuring particulate matter less than 10-micrometers in size (PM-10) over a period of 15-minute averaging period, such as a TSI Dusttrak II or approved equivalent. The equipment must be equipped with an audible alarm to indicate excess of the action level. Downwind and residential boundary monitoring PM-10 concentration averages will be compared to the below response actions with applicable actions taken as necessary.

Response Levels (above background levels)	**Action**
0 to 100 micrograms per cubic meter (µg/m^3)	No action required.
100 µg/m^3 to 150 µg/m^3	Apply dust suppression, i.e. water spray, on working area(s) generating dust. Work may continue as long as PM-10 levels remain below 150 µg/m^3 above background.
> 150 ug/m^3	Halt work and apply dust suppression, i.e. water spray. If PM-10 levels remain above 150 µg/m^3 above background, a re-evaluation of activities will be initiated along with application of additional dust suppression measures and controls. If PM-10 levels reduce below 150 µg/m^3 above background, work may resume.

3.4 PERSONAL EXPOSURE MONITORING

No personal exposure monitoring is anticipated during the activities covered under this CHASP.

4.0 PERSONAL PROTECTIVE EQUIPMENT

Personal protective equipment (PPE) will be donned as described below for the activities covered by this CHASP. Based on available analytical data and the proposed intrusive activities, the Contractor, anticipates that all activities will require Level D or Modified Level D PPE.

4.1 GENERAL SITE WORK

General Site work conducted outside the excavation areas, operators of heavy equipment, and non-intrusive activities which do not generate dust will require Level D protective equipment. Level D is defined as:

- Hardhat
- Eye protection
- Hearing protection (with site workers at all times and donned when appropriate)
- Steel-toed work boots
- Work clothes

Workers shall wear appropriate hearing protection during designated hearing protection-required tasks (such as, jack hammering, pile driving etc.). To reduce the exposure to noise, personnel working in areas of excessive noise must use hearing protectors (earplugs or earmuffs).

Rule-of-Thumb: Wherever actual data from sound level meters or noise dosimeters is unavailable, if it is necessary to raise one's voice above a normal conversational level to communicate with others within 3 to 5 feet away, hearing protection should be worn.

4.2 EXCAVATION AREAS AND OTHER SOIL HANDLING

Personnel working in the areas of active excavation, but not operating heavy equipment, and any other personnel potentially contacting contaminated materials will be required to wear Modified Level D PPE. Modified Level D is defined as:

- Hardhat
- Eye protection
- Hearing protection (as warranted see above)
- Steel-toed work boots
- Tyvek Coveralls
- Disposable nitrile chemically resistant gloves

Level C PPE and Level B are not expected to be required.

5.0 SITE CONTROL

To prevent both exposure of unprotected personnel and migration of contamination due to tracking by personnel or equipment, work areas along with personal protective equipment requirements will be clearly identified with signage. Pedestrian traffic will be managed to the extent possible by the Contractor's Traffic and Pedestrian Control Plan.

The Contractor will designate a work zone and support zone as defined below.

5.1 WORK ZONE

Work zones on Site will be temporary or dynamic, encompassing the work area(s) actively being worked in on that particular day(s). Site personnel will be advised of the current work area(s) as part of site safety meetings. The Contractor will have a hydrant permit or other water source available to wet down exposed soils to control dust.

5.2 SUPPORT ZONE

The support zone will consist of an area outside the areas of active excavation and soil handling, where equipment and support vehicles will be located. Eating, drinking, and smoking will be permitted only in this area. Sanitary facilities will be located on Site. In addition, potable water and water and soap for hand washing will be available at the Site.

5.3 OTHER SITE CONTROL AND SAFETY MEASURES

The following measures are designed to augment the specific health and safety guidelines provided in this plan. These issues will form the basis of the Site ordination and daily safety meetings discussed in **Section 7.0**, below.

- The Site hazards will be evaluated by the Client's Project Superintendent using the Site Safety Checklist.
- No one is to perform field work alone. Team members must be intimately familiar with the procedures for initiating an emergency response.
- Avoidance of contamination is of the utmost importance. Whenever possible, avoid contact with contaminated (or potentially contaminated) surfaces or materials. Walk around (not through) puddles and dis-colored surfaces. Do not kneel on the ground or set equipment on the ground.

- Eating, drinking, chewing gum or tobacco, smoking or any practice that increases the probability of hand-to-mouth transfer and ingestion of materials is prohibited except in the support zone after proper decontamination as defined in **Section 6.0.**
- The use of alcohol or drugs is prohibited during the conduct or field operations.
- Safety equipment (PPE) will be required for all field personnel unless otherwise approved by the subcontractor's health and safety representatives and/or the Project Superintendent.

5.4 SITE SECURITY

The Site shall be unoccupied during Site work accept for Contractor personnel and subcontractors. If possible, access to the work areas during field work will be limited by closing site gates to reduce unauthorized pedestrian traffic. The Client's Project Superintendent is responsible for identifying the presence of all employees on Site.

Equipment left on Site during off hours must be locked, immobilized, and/or otherwise secured to prevent theft or unauthorized use or access. The Contractor and subcontractors' employees will not be permitted on Site during off-hours without specific client approval.

6.0 DECONTAMINATION

Proper decontamination will be performed for personnel and equipment before leaving the Site. All solid waste generated during decontamination will be bagged by the Contractor personnel and stored on Site for disposal. Decontamination wash water shall be drummed, analyzed, and transported off-site for proper disposal unless otherwise approved by the Department (i.e., on-site treatment with authorized discharge).

6.1 PERSONAL DECONTAMINATION

Personal decontamination will be accomplished by following a systematic procedure of cleaning and removal of personal protective equipment (PPE). The Contractor will supply decontamination equipment to allow PPE to be brushed to remove gross contamination and then scrubbed clean in a detergent solution and then rinsed clean. To facilitate this, a three-basin wash system will be set up on site by the Contractor.

Disposable PPE, such as Tyvek coveralls, gloves, and hearing protection, etc. will be placed in trash bags in an on-Site container pending a disposal. Alternative chemical decontamination procedures, such as steam-cleaning reusable rubber outer boots, may be used if necessary.

Steps required in a decontamination sequence will depend on the level of protection worn in accordance with **Section 4.0**:

1. Remove and wipe clean hard hat
2. Brush boots and gloves of gross contamination
3. Scrub boots and gloves clean
4. Remove boot covers (if in use)
5. Rinse boots and gloves
6. Dry non-disposable equipment with paper towels
7. Remove Tyvek coveralls
8. Remove eye protection
9. Remove chemically resistant gloves

6.2 EQUIPMENT DECONTAMINATION

Hand tools and portable equipment will be decontaminated between sampling locations and upon leaving the active excavation areas using the same procedures for personal decontamination. Wooden tools are difficult to decontaminate because they absorb chemicals. Wooden hand tools will be kept on Site for the project duration and handled only by protected workers. At the end of the Site activities, wooden tools will be discarded if they cannot be decontaminated properly.

Large Equipment will be decontaminated in an area near the entrance to the Site. Decontamination of large equipment will mitigate the risk of spreading potentially contaminated soil off-Site. The Contractor will use a combination of long-handled brushed, rods and shovels for general exterior cleaning and dislodging contaminated soil caught in tires and the undersides of vehicles and equipment.

Prior to leaving the Site, large equipment will be inspected to assure that excess material has not adhered to the equipment. If needed, the Contractor will clean the large equipment, including washing tires and undercarriages with a hose to remove excess adhered soil prior to leaving the Site.

Exposed excavated material will be covered on each truck after loading. The cover will be secured and remain in place until the container has reached the disposal facility.

7.0 MEDICAL MONITORING AND TRAINING REQUIREMENTS

Training records for Site personnel and subcontractors shall be provided by the Contractor prior to on-Site work and will be maintained on Site.

7.1 MEDICAL MONITORING

Only those workers excavating the hazardous lead areas are anticipated to need respiratory protection. Other excavation areas and general Site work it is anticipated that respiratory protection is not required by the levels of soil contamination. Therefore, only the workers excavating the hazardous lead areas will require medical monitoring requirements on this project.

7.2 TRAINING

All personnel covered by this CHASP must have completed the appropriate training requirements specified in 29 CFR 1910.1200 Hazard Communication and 29 CFR 1910.120(e). In accordance with NYC Department of Building, Local Law 196, at job sites where it is required to designate a Construction Superintendent, Site Safety Coordinators or Site Safety Managers will need, workers will need to undergo Construction Safety Training (i.e., OSHA 10-hour and OSHA 30-hour classes).

Workers requiring access to the excavation (laborers and operators) prior to completion of soil remedial activities will require 40-hour HAZWOPER training due to the presence of hazardous lead in soil and the potential for gasoline contaminated soils and underground storage tanks.

Also, at least one Contractor employee must be on Site during all activities to act as the Site Foreman and will be responsible for identifying existing and predictable hazards in surroundings or working conditions that are unsanitary, hazardous, or dangerous to Site workers and or the community, and will have the authorization to take prompt corrective measures to eliminate them. This individual must have documentation of at least three days of supervised field experience as well as completion of the specified 8-hour training course for managers and supervisors. Records of certifications and training will be kept by the Contractor.

7.3 SUBCONTRACTORS

Subcontractors will be required to provide to the Contractor Project (Site) Manager specific written documentation that each individual assigned to this project has completed the medical monitoring and training requirements specified above. This information must be provided prior to their performing any work on site.

7.4 SITE SAFETY MEETINGS

Prior to the commencement of on-Site investigative activities, a Site safety meeting will be held to review the specific requirements of this CHASP. Sign-off sheets will be collected at this meeting (see **Attachment 1**). Short safety refresher meetings will be conducted daily or as conditions or work activates change. In addition, the Project Superintendent will document that

Site visitors have had the required training in accordance with 29 CFR 1910.120 and will provide documented pre-entry safety briefings.

8.0 EMERGENCY ACTION PLAN

OSHA defines emergency response as any "response effort by employees from outside the immediate release area or by other designated responders (i.e., mutual-aid groups, local fire departments, etc.) to an occurrence which results, or is likely to result in an uncontrolled release of a hazardous substance." The Contractor personnel covered by this CHASP may not participate in any emergency response where there are potential safety or health hazards (i.e., fire, explosion, or chemical exposure). The Contractor response actions will be limited to evacuation and medical/first aid as described below.

The basic elements of an emergency evacuation plan include employee training, alarm systems, escape routes, escape procedures, critical operations or equipment, rescue and medical duty assignments, designation of responsible parties, emergency reporting procedures, and methods to account for all employees after evacuation.

8.1 EMPLOYEE INFORMATION

General training regarding emergency evacuation procedures is included in the Contractor initial and refresher training courses. Also, as described, employees must be instructed in the specific aspects of emergency evacuation applicable to the Site as part of the site safety meeting prior to the commencement of all on-site activities. On-Site refresher or update training is required anytime escape routes or procedures are modified, or personnel assignments are changed. This information will be provided during the Site safety meetings (see **Section 7.4**) will be documented by the Contractor.

8.2 EMERGENCY SIGNAL AND ALARM SYSTEMS

An emergency communication system must be in effect at all sites. The most simple and effective emergency communication system in many situations will be direct verbal communications. Each site must be assessed at the time of initial Site activity and periodically as the work progresses. Verbal communications must be supplemented anytime voices cannot be clearly perceived above ambient noise levels (i.e., noise from heavy equipment, trucks, etc.) and anytime a clear line-of-sight cannot be easily maintained amongst all personnel because of distance, terrain, or other obstructions. The Contractor will maintain an air horn (or whistle) on-Site that will be used to signal an emergency so that it can be heard over other construction noises on-Site.

8.3 EMERGENCY CONTACTS

Police:	911
Fire:	911
Ambulance:	911
White Plains Hospital Emergency Room:	(914) 681-0600

8.4 HOSPITAL LOCATION

The closest emergency room is located at White Plains Hospital 41 East Post Road, White Plains, NY 10601. **Attachment 2** presents a hospital route map.

8.5 INCIDENT REPORTING PROCEDURES

Any incident (other than minor first aid treatment) resulting in injury, illness or property damage requires an accident investigation and report. The investigation should be initiated as soon as emergency conditions are under control. The purpose of this investigation is not to attribute blame but to determine the pertinent facts, so that repeat or similar occurrences can be avoided.

The investigation should begin while details are still fresh in the mind of anyone involved. The person administering first aid may be able to start the fact gathering process if the injured can speak. Pertinent facts must be determined. Questions beginning with who, what, when, where, and how are usually most effective to discover ways to improve job performance in terms of efficiency and quality of work, as well as safety and health concerns. An Accident and Injury Report Form is included as **Attachment 4**.

ATTACHMENT D-1
HEALTH AND SAFETY BRIEFING

Health and Safety Briefing/Site Orientation Record/Hazard Communication

This is to verify that I, the undersigned, have been provided with a site (orientation) briefing, including hazard communication, regarding the safety and health considerations at the Rye Lake Water Filtration Plant site. I agree to abide by my employer's Site-specific safety and health plan and other safety or health requirements applicable to the Site.

Name (Print)	Signature	Company	Date

Site (orientation) briefing conducted by: _____

Date:_____

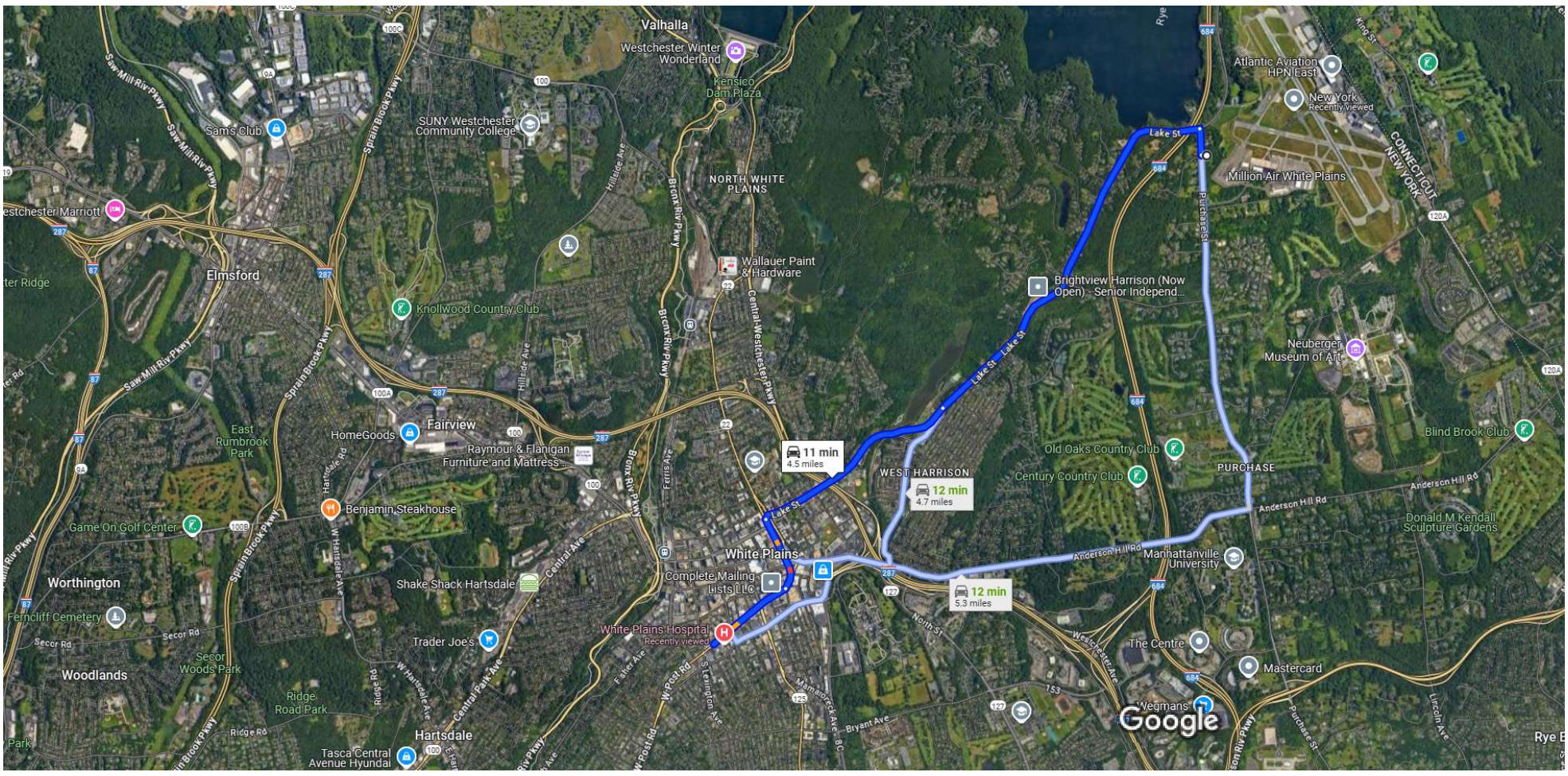
Health and Safety Briefing/Site Orientation Record

ATTACHMENT D-2
ROUTE TO HOSPITAL

Google Maps

Westchester County, New York to White Plains Hospital Emergency Room, 41 E Post Rd, White Plains, NY 10601

Drive 4.5 miles, 11 min



Westchester County
New York

1. Head north on Purchase St toward Lake St — 0.1 mi
2. Turn left onto Lake St — 2.2 mi
3. Continue straight onto Lake St/Veterans Memorial Dr — 1.2 mi
   - Continue to follow Lake St
4. Use any lane to turn left onto N Broadway — 0.4 mi
5. Continue onto E Post Rd — 0.5 mi
   - Pass by Webster Bank (on the right)
   - Destination will be on the left

White Plains Hospital Emergency Room
41 E Post Rd, White Plains, NY 10601

ATTACHMENT D-3
SAFETY DATA SHEETS

SAFETY DATA SHEET

Version 6.12
Revision Date 05/01/2025
Print Date 05/02/2025

SECTION 1. IDENTIFICATION

1.1 Product identifiers

Product name : Indeno[1,2,3-*cd*]pyrene

Product Number : 48499
Brand : Supelco
CAS-No. : 193-39-5

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

Identified uses : Laboratory chemicals, Synthesis of substances

Uses advised against : The product is being supplied under the TSCA R&D Exemption (40 CFR Section 720.36). It is the recipient's responsibility to comply with the requirements of the R&D exemption. The product may not be used for a non-exempt commercial purpose under TSCA unless appropriate consent is granted in writing by MilliporeSigma.

1.3 Details of the supplier of the safety data sheet

Company : Sigma-Aldrich Inc.
3050 SPRUCE ST
ST. LOUIS MO 63103
UNITED STATES

Telephone : +1 314 771-5765
Fax : +1 800 325-5052

1.4 Emergency telephone

Emergency Phone # : 800-424-9300 CHEMTREC (USA) +1-703-527-3887 CHEMTREC (International) 24 Hours/day; 7 Days/week

SECTION 2. HAZARDS IDENTIFICATION

GHS classification in accordance with the OSHA Hazard Communication Standard (29 CFR 1910.1200)

Carcinogenicity : Category 2

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Other hazards

None known.

GHS label elements

Hazard pictograms :



Signal Word : Warning

Hazard Statements : H351 Suspected of causing cancer.

Precautionary Statements :

Prevention:

P201 Obtain special instructions before use.
P202 Do not handle until all safety precautions have been read and understood.
P280 Wear protective gloves, protective clothing, eye protection and face protection.

Response:

P308 + P313 IF exposed or concerned: Get medical advice/ attention.

Storage:

P405 Store locked up.

Disposal:

P501 Dispose of contents/ container to an approved waste disposal plant.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Substance

Components

Chemical name	CAS No./Unique ID	Concentration (% w/w)	Trade secret
Indeno[1,2,3-cd]pyrene	193-39-5*	>= 80 - <= 100	TSC

* Indicates that the identifier is a CAS No.
TSC- the actual concentration or concentration range is withheld as a trade secret

SECTION 4. FIRST AID MEASURES

General advice : Show this material safety data sheet to the doctor in attendance.

If inhaled : After inhalation: fresh air. Call in physician.

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In case of skin contact	:	In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/ shower. Consult a physician.
In case of eye contact	:	After eye contact: rinse out with plenty of water. Call in ophthalmologist. Remove contact lenses.
If swallowed	:	After swallowing: immediately make victim drink water (two glasses at most). Consult a physician.
Most important symptoms and effects, both acute and delayed	:	The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11
Protection of first-aiders	:	For personal protection see section 8.
Notes to physician	:	No data available

SECTION 5. FIRE-FIGHTING MEASURES

Suitable extinguishing media	:	Water Foam Carbon dioxide (CO2) Dry powder
Unsuitable extinguishing media	:	For this substance/mixture no limitations of extinguishing agents are given.
Specific hazards during fire fighting	:	Combustible. Development of hazardous combustion gases or vapours possible in the event of fire.
Hazardous combustion products	:	Carbon oxides
Specific extinguishing methods	:	No data available
Further information	:	Prevent fire extinguishing water from contaminating surface water or the ground water system.
Special protective	:	Stay in danger area only with self-contained breathing

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equipment for fire-fighters	apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures	:	Advice for non-emergency personnel: Avoid inhalation of dusts. Avoid substance contact. Ensure adequate ventilation. Evacuate the danger area, observe emergency procedures, consult an expert. Advice for emergency responders: For personal protection see section 8.
Environmental precautions	:	Do not let product enter drains.
Methods and materials for containment and cleaning up	:	Cover drains. Collect, bind, and pump off spills. Observe possible material restrictions (see sections 7 and 10). Take up dry. Dispose of properly. Clean up affected area. Avoid generation of dusts.

SECTION 7. HANDLING AND STORAGE

For precautions see section 2.2.

Advice on safe handling	:	Work under hood. Do not inhale substance/mixture.
Further information on storage conditions	:	Tightly closed. Dry. Keep locked up or in an area accessible only to qualified or authorized persons.
Storage class	:	11, Combustible Solids
Recommended storage temperature	:	Recommended storage temperature see product label.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Ingredients with workplace control parameters

Contains no substances with occupational exposure limit values.

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Biological occupational exposure limits

Components	CAS-No.	Control parameters	Biological specimen	Sampling time	Permissible concentration	Basis
Indeno[1,2,3-cd]pyrene	193-39-5	1-Hydroxypyrene	Urine	End of shift at end of workweek	2.5 µg/l	ACGIH BEI

Engineering measures : No data available

Personal protective equipment

Respiratory protection : required when dusts are generated.

Our recommendations on filtering respiratory protection are based on the following standards: DIN EN 143, DIN 14387 and other accompanying standards relating to the used respiratory protection system.

Recommended Filter type: : Filter type P3

The entrepeneur has to ensure that maintenance, cleaning and testing of respiratory protective devices are carried out according to the instructions of the producer. These measures have to be properly documented.

Hand protection

Material : Nitrile rubber
Break through time : 480 min
Glove thickness : 0.11 mm
Protective index : Full contact
Manufacturer : KCL 741 Dermatril® L

Material : Nitrile rubber
Break through time : 480 min
Glove thickness : 0.11 mm
Protective index : Splash contact
Manufacturer : KCL 741 Dermatril® L

Remarks : Handle with impervious gloves.
This recommendation applies only to the product stated in the safety data sheet, supplied by us and for the designated use. When dissolving in or mixing

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		with other substances and under conditions deviating from those stated in EN 16523-1 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: www.kcl.de).
Eye protection	:	Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU). Safety glasses
Skin and body protection	:	protective clothing
Hygiene measures	:	Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	:	solid
Color	:	No data available
Odor	:	No data available
Odor Threshold	:	No data available
pH	:	No data available
	:	326.5 °F / 163.6 °C
Boiling point/boiling range	:	No data available
Flash point	:	Not applicable
Evaporation rate	:	No data available
Flammability (solid, gas)	:	No data available
Flammability (liquids)	:	No data available
Burning rate	:	No data available
Upper explosion limit / Upper flammability limit	:	No data available
Lower explosion limit / Lower flammability limit	:	No data available
Vapor pressure	:	No data available

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Relative vapor density	:	No data available
Relative density	:	No data available
Density	:	No data available
Water solubility	:	No data available
Partition coefficient: n-octanol/water	:	No data available
Autoignition temperature	:	No data available
Decomposition temperature	:	No data available
Viscosity, dynamic	:	No data available
Viscosity, kinematic	:	No data available
Flow time	:	No data available
Explosive properties	:	No data available
Oxidizing properties	:	No data available
Molecular weight	:	276.33 g/mol
Particle characteristics Particle size	:	No data available

SECTION 10. STABILITY AND REACTIVITY

Reactivity	:	The following applies in general to flammable organic substances and mixtures: in correspondingly fine distribution, when whirled up a dust explosion potential may generally be assumed.
Chemical stability	:	The product is chemically stable under standard ambient conditions (room temperature) .
Possibility of hazardous reactions	:	No data available
Conditions to avoid	:	no information available
Incompatible materials	:	Strong oxidizing agents
Hazardous decomposition products	:	In the event of fire: see section 5

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SECTION 11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity
Oral: No data available
Inhalation: No data available
Dermal: No data available

Skin corrosion/irritation
Remarks: No data available

Serious eye damage/eye irritation
Remarks: No data available

Respiratory or skin sensitization
No data available

Germ cell mutagenicity
No data available

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

IARC: 2B - Group 2B: Possibly carcinogenic to humans (Indeno[1,2,3-cd]pyrene)

NTP: RAHC - Reasonably anticipated to be a human carcinogen (Indeno[1,2,3-cd]pyrene)

OSHA: No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

Reproductive toxicity
No data available

Specific target organ toxicity - single exposure
No data available

Specific target organ toxicity - repeated exposure
No data available

Aspiration hazard
No data available

11.2 Additional Information

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

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Components:

Indeno[1,2,3-cd]pyrene:

Toxicity to fish : Remarks: No data available

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Persistence and degradability

Components:

Indeno[1,2,3-cd]pyrene:

Biodegradability : Remarks: No data available

Bioaccumulative potential

Components:

Indeno[1,2,3-cd]pyrene:

Bioaccumulation : Remarks: No data available

Mobility in soil

Components:

Indeno[1,2,3-cd]pyrene:

Stability in soil : Remarks: No data available

Other adverse effects

Product:

Ozone-Depletion Potential : Regulation: 40 CFR Protection of Environment; Part 82 Protection of Stratospheric Ozone - CAA Section 602 Class I Substances
Remarks: This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B).

Components:

Indeno[1,2,3-cd]pyrene:

Additional ecological information : No data available

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods

Waste from residues : Waste material must be disposed of in accordance with the national and local regulations. Leave chemicals in original containers. No mixing with other waste. Handle uncleaned containers like the product itself.

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SECTION 14. TRANSPORT INFORMATION

International Regulations

IATA-DGR
Not regulated as a dangerous good

IMDG-Code
Not regulated as a dangerous good

Transport in bulk according to IMO instruments
Not applicable for product as supplied.

National regulation

49 CFR Road

UN/ID/NA number	:	UN 3077
Proper shipping name	:	Environmentally hazardous substance, solid, n.o.s. (Indeno[1,2,3-cd]pyrene)
Class	:	9
Packing group	:	III
Labels	:	Class 9 - Miscellaneous dangerous substances and articles
ERG Code	:	171
Marine pollutant	:	no
Poison Inhalation Hazard	:	No

Special precautions for user

Remarks	:	Not classified as dangerous in the meaning of transport regulations.

The transport classification(s) provided herein are for informational purposes only, and solely based upon the properties of the unpackaged material as it is described within this Safety Data Sheet. Transportation classifications may vary by mode of transportation, package sizes, and variations in regional or country regulations.

SECTION 15. REGULATORY INFORMATION

CERCLA Reportable Quantity

Components	CAS-No.	Component RQ (lbs)	Calculated product RQ (lbs)
Indeno[1,2,3-cd]pyrene	193-39-5	100	100

SARA 304 Extremely Hazardous Substances Reportable Quantity
This material does not contain any components with a section 304 EHS RQ.

SARA 302 Extremely Hazardous Substances Threshold Planning Quantity
This material does not contain any components with a section 302 EHS TPQ.

SARA 311/312 Hazards : Chronic Health Hazard

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SARA 313 : The following components are subject to reporting levels established by SARA Title III, Section 313:

Indeno[1,2,3-cd]pyrene	193-39-5	>= 90 - <= 100 %

Clean Air Act

This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B).
The following chemical(s) are listed as HAP under the U.S. Clean Air Act, Section 112 (40 CFR 61):

Indeno[1,2,3-cd]pyrene	193-39-5	>= 90 - <= 100 %

This product does not contain any chemicals listed under the U.S. Clean Air Act Section 112(r) for Accidental Release Prevention (40 CFR 68.130, Subpart F).
This product does not contain any chemicals listed under the U.S. Clean Air Act Section 111 SOCMI Intermediate or Final VOC's (40 CFR 60.489).

Clean Water Act

This product does not contain any Hazardous Substances listed under the U.S. CleanWater Act, Section 311, Table 116.4A.
This product does not contain any Hazardous Chemicals listed under the U.S. CleanWater Act, Section 311, Table 117.3.
This product contains the following toxic pollutants listed under the U.S. Clean Water Act Section 307

Indeno[1,2,3-cd]pyrene	193-39-5	>= 90 - <= 100 %

This product contains the following priority pollutants related to the U.S. Clean Water Act:

Indeno[1,2,3-cd]pyrene	193-39-5	>= 90 - <= 100 %

US State Regulations

Massachusetts Right To Know

Indeno[1,2,3-cd]pyrene	193-39-5

Pennsylvania Right To Know

Indeno[1,2,3-cd]pyrene	193-39-5

Maine Chemicals of High Concern

Product does not contain any listed chemicals

Vermont Chemicals of High Concern

Product does not contain any listed chemicals

Washington Chemicals of High Concern

Product does not contain any listed chemicals

California Prop. 65

WARNING: This product can expose you to chemicals including Indeno[1,2,3-cd]pyrene, which is/are known to the State of California to cause cancer. For more information go to www.P65Warnings.ca.gov.

The ingredients of this product are reported in the following inventories:

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TSCA : All substances listed as active on the TSCA inventory

TSCA list

No substances are subject to a Significant New Use Rule.

No substances are subject to TSCA 12(b) export notification requirements.

SECTION 16. OTHER INFORMATION

Full text of other abbreviations

ACGIH BEI : ACGIH - Biological Exposure Indices (BEI)

AIIC - Australian Inventory of Industrial Chemicals; ASTM - American Society for the Testing of Materials; bw - Body weight; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DOT - Department of Transportation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; EHS - Extremely Hazardous Substance; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; HMIS - Hazardous Materials Identification System; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; MSHA - Mine Safety and Health Administration; n.o.s. - Not Otherwise Specified; NFPA - National Fire Protection Association; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; RCRA - Resource Conservation and Recovery Act; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RQ - Reportable Quantity; SADT - Self-Accelerating Decomposition Temperature; SARA - Superfund Amendments and Reauthorization Act; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TECI - Thailand Existing Chemicals Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative

The information is believed to be correct but is not exhaustive and will be used solely as a guideline, which is based on current knowledge of the chemical substance or mixture and is

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applicable to appropriate safety precautions for the product. 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.
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Revision Date : 05/01/2025

The branding on the header and/or footer of this document may temporarily not visually match the product purchased as we transition our branding. However, all of the information in the document regarding the product remains unchanged and matches the product ordered. For further information please contact mlsbranding@sial.com.

US / EN

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SAFETY DATA SHEET

Version 8.5
Revision Date 09/07/2024
Print Date 09/08/2024

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifiers

Product name : Chrysene

Product Number : 769215
Brand : Aldrich
Index-No. : 601-048-00-0
CAS-No. : 218-01-9

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

Identified uses : Laboratory chemicals, Synthesis of substances

Uses advised against : The product is being supplied under the TSCA R&D Exemption (40 CFR Section 720.36). It is the recipient's responsibility to comply with the requirements of the R&D exemption. The product may not be used for a non-exempt commercial purpose under TSCA unless appropriate consent is granted in writing by MilliporeSigma.

1.3 Details of the supplier of the safety data sheet

Company : Sigma-Aldrich Inc.
3050 SPRUCE ST
ST. LOUIS MO 63103
UNITED STATES

Telephone : +1 314 771-5765
Fax : +1 800 325-5052

1.4 Emergency telephone

Emergency Phone # : 800-424-9300 CHEMTREC (USA) +1-703-527-3887 CHEMTREC (International) 24 Hours/day; 7 Days/week

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)

Germ cell mutagenicity (Category 2), H341
Carcinogenicity (Category 1B), H350
Short-term (acute) aquatic hazard (Category 1), H400

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Long-term (chronic) aquatic hazard (Category 1), H410

For the full text of the H-Statements mentioned in this Section, see Section 16.

2.2 GHS Label elements, including precautionary statements

Pictogram



Signal Word Danger

Hazard Statements

H341	Suspected of causing genetic defects.
H350	May cause cancer.
H410	Very toxic to aquatic life with long lasting effects.

Precautionary Statements

P201	Obtain special instructions before use.
P202	Do not handle until all safety precautions have been read and understood.
P273	Avoid release to the environment.
P280	Wear protective gloves/ protective clothing/ eye protection/ face protection.
P308 + P313	IF exposed or concerned: Get medical advice/ attention.
P391	Collect spillage.
P405	Store locked up.
P501	Dispose of contents/ container to an approved waste disposal plant.

2.3 Hazards not otherwise classified (HNOC) or not covered by GHS - none

SECTION 3: Composition/information on ingredients

3.1 Substances

Formula	:	C18H12
Molecular weight	:	228.29 g/mol
CAS-No.	:	218-01-9
EC-No.	:	205-923-4
Index-No.	:	601-048-00-0

Component	Classification	Concentration
chrysene		
	Muta. 2; Carc. 1B; Aquatic Acute 1; Aquatic Chronic 1; H341, H350, H400, H410 M-Factor - Aquatic Acute: 10 M-Factor - Aquatic Chronic: 10	<= 100 %

For the full text of the H-Statements mentioned in this Section, see Section 16.

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SECTION 4: First aid measures

4.1 Description of first-aid measures

General advice
Show this material safety data sheet to the doctor in attendance.

If inhaled
After inhalation: fresh air. Call in physician.

In case of skin contact
In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/ shower. Consult a physician.

In case of eye contact
After eye contact: rinse out with plenty of water. Call in ophthalmologist. Remove contact lenses.

If swallowed
After swallowing: immediately make victim drink water (two glasses at most). Consult a physician.

4.2 Most important symptoms and effects, both acute and delayed
The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

4.3 Indication of any immediate medical attention and special treatment needed
No data available

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media
Water Foam Carbon dioxide (CO2) Dry powder

Unsuitable extinguishing media
For this substance/mixture no limitations of extinguishing agents are given.

5.2 Special hazards arising from the substance or mixture
Carbon oxides
Combustible.
Development of hazardous combustion gases or vapours possible in the event of fire.

5.3 Advice for firefighters
Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

5.4 Further information
Prevent fire extinguishing water from contaminating surface water or the ground water system.

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SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Advice for non-emergency personnel: Avoid generation and inhalation of dusts in all circumstances. Avoid substance contact. Ensure adequate ventilation. Evacuate the danger area, observe emergency procedures, consult an expert.
For personal protection see section 8.

6.2 Environmental precautions

Do not let product enter drains.

6.3 Methods and materials for containment and cleaning up

Cover drains. Collect, bind, and pump off spills. Observe possible material restrictions (see sections 7 and 10). Take up carefully. Dispose of properly. Clean up affected area. Avoid generation of dusts.

6.4 Reference to other sections

For disposal see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Advice on safe handling
Work under hood. Do not inhale substance/mixture.

Hygiene measures
Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance.
For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities

Storage conditions
Tightly closed. Dry. Keep in a well-ventilated place. Keep locked up or in an area accessible only to qualified or authorized persons.

Storage class
Storage class (TRGS 510): 6.1C: Combustible, acute toxic Cat.3 / toxic compounds or compounds which causing chronic effects

7.3 Specific end use(s)

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Ingredients with workplace control parameters

Component	CAS-No.	Value	Control parameters	Basis
	Remarks	Confirmed animal carcinogen with unknown relevance to		

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		humans		
chrysene	218-01-9	TWA	0.2 mg/m3	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
		OSHA specifically regulated carcinogen		
		TWA	0.1 mg/m3	USA. NIOSH Recommended Exposure Limits
		Potential Occupational Carcinogen		
		PEL	0.2 mg/m3	California permissible exposure limits for chemical contaminants (Title 8, Article 107)

Biological occupational exposure limits

Component	CAS-No.	Parameters	Value	Biological specimen	Basis
chrysene	218-01-9	1-Hydroxypyrene	2.5 µg/l	Urine	ACGIH - Biological Exposure Indices (BEI)
	Remarks	End of shift at end of workweek			
		3-hydroxybenzo(a)pyrene		Urine	ACGIH - Biological Exposure Indices (BEI)
		End of shift at end of workweek			

8.2 Exposure controls

Appropriate engineering controls
Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance.

Personal protective equipment

Eye/face protection
Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU). Safety glasses

Skin protection
This recommendation applies only to the product stated in the safety data sheet, supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN 16523-1 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: www.kcl.de).
Full contact
Material: Nitrile rubber
Minimum layer thickness: 0.11 mm
Break through time: 480 min
Material tested:KCL 741 Dermatril® L

This recommendation applies only to the product stated in the safety data sheet, supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN 16523-1 please

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contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: www.kcl.de).
Splash contact
Material: Nitrile rubber
Minimum layer thickness: 0.11 mm
Break through time: 480 min
Material tested:KCL 741 Dermatril® L

Body Protection
protective clothing

Respiratory protection
Recommended Filter type: Filter type P3
The entrepeneur has to ensure that maintenance, cleaning and testing of respiratory protective devices are carried out according to the instructions of the producer. These measures have to be properly documented.
required when dusts are generated.
Our recommendations on filtering respiratory protection are based on the following standards: DIN EN 143, DIN 14387 and other accompanying standards relating to the used respiratory protection system.

Control of environmental exposure
Do not let product enter drains.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

a)	Appearance	Form: solid
b)	Odor	No data available
c)	Odor Threshold	No data available
d)	pH	No data available
e)	Melting point/freezing point	Melting point/ range: 258 °C (496 °F)
f)	Initial boiling point and boiling range	No data available
g)	Flash point	()Not applicable
h)	Evaporation rate	No data available
i)	Flammability (solid, gas)	No data available
j)	Upper/lower flammability or explosive limits	No data available
k)	Vapor pressure	No data available
l)	Vapor density	No data available
m)	Density	1.274 g/cm3 at 20 °C (68 °F)

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	Relative density	No data available
n)	Water solubility	insoluble
o)	Partition coefficient: n-octanol/water	log Pow: 5.73 - Potential bioaccumulation, (HSDB)
p)	Autoignition temperature	No data available
q)	Decomposition temperature	No data available
r)	Viscosity	No data available
s)	Explosive properties	No data available
t)	Oxidizing properties	none

9.2 Other safety information
No data available

SECTION 10: Stability and reactivity

10.1 Reactivity
The following applies in general to flammable organic substances and mixtures: in correspondingly fine distribution, when whirled up a dust explosion potential may generally be assumed.

10.2 Chemical stability
The product is chemically stable under standard ambient conditions (room temperature) .

10.3 Possibility of hazardous reactions
Violent reactions possible with:
Strong oxidizing agents

10.4 Conditions to avoid
no information available

10.5 Incompatible materials
No data available

10.6 Hazardous decomposition products
In the event of fire: see section 5

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity
Oral: No data available
Inhalation: No data available
Dermal: No data available
No data available

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Skin corrosion/irritation
No data available

Serious eye damage/eye irritation
No data available

Respiratory or skin sensitization
No data available

Germ cell mutagenicity
In vitro tests showed mutagenic effects
Test Type: Ames test
Test system: Salmonella typhimurium
Result: positive
Remarks: (Lit.)

Carcinogenicity
Possible human carcinogen

IARC: 2B - Group 2B: Possibly carcinogenic to humans (chrysene)

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

OSHA: OSHA specifically regulated carcinogen (chrysene)

Reproductive toxicity
No data available

Specific target organ toxicity - single exposure
No data available

Specific target organ toxicity - repeated exposure
No data available

Aspiration hazard
No data available

11.2 Additional Information

RTECS: GC0700000
To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Property that cannot be excluded on the basis of structure- effect considerations:

Nausea
Vomiting
Risk of methaemoglobin formation with headache, cardiac dysrhythmia, drop in blood pressure, dyspnoea and spasms, principal symptom: cyanosis (blue discolouration of the blood).

This substance should be handled with particular care.

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SECTION 12: Ecological information

12.1 Toxicity
No data available

12.2 Persistence and degradability
No data available

12.3 Bioaccumulative potential
No data available

12.4 Mobility in soil
No data available

12.5 Results of PBT and vPvB assessment
PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

12.6 Endocrine disrupting properties
No data available

12.7 Other adverse effects
Discharge into the environment must be avoided.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product
Waste material must be disposed of in accordance with the national and local regulations. Leave chemicals in original containers. No mixing with other waste. Handle uncleaned containers like the product itself.

SECTION 14: Transport information

DOT (US)
UN number: 3077 Class: 9 Packing group: III
Proper shipping name: Environmentally hazardous substance, solid, n.o.s. (chrysene)
Reportable Quantity (RQ): 100 lbs
Poison Inhalation Hazard: No

IMDG
UN number: 3077 Class: 9 Packing group: III EMS-No: F-A, S-F
Proper shipping name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (chrysene)
Marine pollutant : yes
Marine pollutant : no

IATA

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UN number: 3077 Class: 9 Packing group: III
Proper shipping name: Environmentally hazardous substance, solid, n.o.s. (chrysene)

Further information

EHS-Mark required (ADR 2.2.9.1.10, IMDG code 2.10.3) for single packagings and combination packagings containing inner packagings with Dangerous Goods > 5L for liquids or > 5kg for solids.

SECTION 15: Regulatory information

CERCLA Reportable Quantity

Components	CAS-No.	Component RQ (lbs)	Calculated product RQ (lbs)
chrysene	218-01-9	100	100

SARA 304 Extremely Hazardous Substances Reportable Quantity

This material does not contain any components with a section 304 EHS RQ.

SARA 302 Extremely Hazardous Substances Threshold Planning Quantity

This material does not contain any components with a section 302 EHS TPQ.

SARA 311/312 Hazards : Chronic Health Hazard

SARA 313 : The following components are subject to reporting levels established by SARA Title III, Section 313:

chrysene 218-01-9 >= 90 - <= 100 %

US State Regulations

Massachusetts Right To Know

chrysene 218-01-9

Pennsylvania Right To Know

chrysene 218-01-9

Maine Chemicals of High Concern

Product does not contain any listed chemicals

Vermont Chemicals of High Concern

Product does not contain any listed chemicals

Washington Chemicals of High Concern

Product does not contain any listed chemicals

California Prop. 65

WARNING: This product can expose you to chemicals including chrysene, which is/are known to the State of California to cause cancer. For more information go to www.P65Warnings.ca.gov.

The ingredients of this product are reported in the following inventories:

TSCA : All substances listed as active on the TSCA inventory

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TSCA list

No substances are subject to a Significant New Use Rule.

No substances are subject to TSCA 12(b) export notification requirements.

SECTION 16: Other information

Further information

The information is believed to be correct but is not exhaustive and will be used solely as a guideline, which is based on current knowledge of the chemical substance or mixture and is applicable to appropriate safety precautions for the product. 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.

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Version: 8.5 Revision Date: 09/07/2024 Print Date: 09/08/2024

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SAFETY DATA SHEET

Version 6.13
Revision Date 04/28/2025
Print Date 04/29/2025

SECTION 1. IDENTIFICATION

1.1 Product identifiers

Product name : Benzo[k]fluoranthene

Product Number : 392251
Brand : Aldrich
Index-No. : 601-036-00-5
CAS-No. : 207-08-9

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

Identified uses : Laboratory chemicals, Synthesis of substances

Uses advised against : The product is being supplied under the TSCA R&D Exemption (40 CFR Section 720.36). It is the recipient's responsibility to comply with the requirements of the R&D exemption. The product may not be used for a non-exempt commercial purpose under TSCA unless appropriate consent is granted in writing by MilliporeSigma.

1.3 Details of the supplier of the safety data sheet

Company : Sigma-Aldrich Inc.
3050 SPRUCE ST
ST. LOUIS MO 63103
UNITED STATES

Telephone : +1 314 771-5765
Fax : +1 800 325-5052

1.4 Emergency telephone

Emergency Phone # : 800-424-9300 CHEMTREC (USA) +1-703-527-3887 CHEMTREC (International) 24 Hours/day; 7 Days/week

SECTION 2. HAZARDS IDENTIFICATION

GHS classification in accordance with the OSHA Hazard Communication Standard (29 CFR 1910.1200)

Carcinogenicity : Category 1B

Short-term (acute) : Category 1

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aquatic hazard

Long-term (chronic) aquatic hazard : Category 1

Other hazards

None known.

GHS label elements

Hazard pictograms :



Signal Word : Danger

Hazard Statements : H350 May cause cancer.
H410 Very toxic to aquatic life with long lasting effects.

Precautionary Statements :

Prevention:

P201 Obtain special instructions before use.
P202 Do not handle until all safety precautions have been read and understood.
P273 Avoid release to the environment.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

Response:

P308 + P313 IF exposed or concerned: Get medical advice/ attention.
P391 Collect spillage.

Storage:

P405 Store locked up.

Disposal:

P501 Dispose of contents/ container to an approved waste disposal plant.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Substance

Components

Chemical name	CAS No./Unique ID	Concentration (% w/w)	Trade secret
Benzo[k]fluoranthene	207-08-9*	>= 90 - <= 100	-

* Indicates that the identifier is a CAS No.

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Actual concentration is withheld as a trade secret

SECTION 4. FIRST AID MEASURES

General advice	:	Show this material safety data sheet to the doctor in attendance.
If inhaled	:	After inhalation: fresh air. Call in physician.
In case of skin contact	:	In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/ shower. Consult a physician.
In case of eye contact	:	After eye contact: rinse out with plenty of water. Call in ophthalmologist. Remove contact lenses.
If swallowed	:	After swallowing: immediately make victim drink water (two glasses at most). Consult a physician.
Most important symptoms and effects, both acute and delayed	:	The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11
Protection of first-aiders	:	For personal protection see section 8.
Notes to physician	:	No data available

SECTION 5. FIRE-FIGHTING MEASURES

Suitable extinguishing media	:	Water Foam Carbon dioxide (CO2) Dry powder
Unsuitable extinguishing media	:	For this substance/mixture no limitations of extinguishing agents are given.
Specific hazards during fire fighting	:	Combustible. Development of hazardous combustion gases or vapours possible in the event of fire.
Hazardous combustion products	:	Carbon oxides

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Specific extinguishing methods	:	No data available
Further information	:	Prevent fire extinguishing water from contaminating surface water or the ground water system.
Special protective equipment for fire-fighters	:	Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures	:	Advice for non-emergency personnel: Avoid generation and inhalation of dusts in all circumstances. Avoid substance contact. Ensure adequate ventilation. Evacuate the danger area, observe emergency procedures, consult an expert. Advice for emergency responders: For personal protection see section 8.
Environmental precautions	:	Do not let product enter drains.
Methods and materials for containment and cleaning up	:	Cover drains. Collect, bind, and pump off spills. Observe possible material restrictions (see sections 7 and 10). Take up carefully. Dispose of properly. Clean up affected area. Avoid generation of dusts.

SECTION 7. HANDLING AND STORAGE

For precautions see section 2.2.

Advice on safe handling	:	Work under hood. Do not inhale substance/mixture.
Further information on storage conditions	:	Tightly closed. Dry. Keep in a well-ventilated place. Keep locked up or in an area accessible only to qualified or authorized persons.
Storage class	:	6.1C, Combustible, acute toxic Cat.3 / toxic compounds or compounds which causing chronic effects

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Recommended storage temperature : Recommended storage temperature see product label.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Ingredients with workplace control parameters

Biological occupational exposure limits

Components	CAS-No.	Control parameters	Biological specimen	Sampling time	Permissible concentration	Basis
Benzo[k]fluoranthene	207-08-9	1-Hydroxypyrene	Urine	End of shift at end of workweek	2.5 µg/l	ACGIH BEI

Engineering measures : No data available

Personal protective equipment

Respiratory protection : required when dusts are generated.

Our recommendations on filtering respiratory protection are based on the following standards: DIN EN 143, DIN 14387 and other accompanying standards relating to the used respiratory protection system.

Recommended Filter type: : Filter type P3

The entrepeneur has to ensure that maintenance, cleaning and testing of respiratory protective devices are carried out according to the instructions of the producer. These measures have to be properly documented.

Hand protection

Material : Nitrile rubber
Break through time : 480 min
Glove thickness : 0.11 mm
Protective index : Full contact
Manufacturer : KCL 741 Dermatril® L

Material : Nitrile rubber
Break through time : 480 min

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Glove thickness	:	0.11 mm
Protective index	:	Splash contact
Manufacturer	:	KCL 741 Dermatril® L
Remarks	:	Handle with impervious gloves. This recommendation applies only to the product stated in the safety data sheet, supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN 16523-1 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: www.kcl.de).
Eye protection	:	Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU). Safety glasses
Skin and body protection	:	protective clothing
Hygiene measures	:	Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	:	crystalline
Color	:	yellow
Odor	:	No data available
Odor Threshold	:	No data available
pH	:	No data available
Melting point/ range	:	419 - 423 °F / 215 - 217 °C Method: lit.
Boiling point	:	896 °F / 480 °C
Flash point	:	No data available
Evaporation rate	:	No data available
Flammability (solid, gas)	:	No data available
Flammability (liquids)	:	No data available

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Burning rate	:	No data available
Upper explosion limit / Upper flammability limit	:	No data available
Lower explosion limit / Lower flammability limit	:	No data available
Vapor pressure	:	No data available
Relative vapor density	:	No data available
Relative density	:	No data available
Density	:	1.286 g/cm3 (68 °F / 20 °C)
Solubility(ies)		
Water solubility	:	insoluble
Partition coefficient: n-octanol/water	:	log Pow: 6.188 (77 °F / 25 °C) Potential bioaccumulation
Autoignition temperature	:	No data available
Decomposition temperature	:	No data available
Viscosity, dynamic	:	No data available
Viscosity, kinematic	:	No data available
Flow time	:	No data available
Explosive properties	:	No data available
Oxidizing properties	:	none
Molecular weight	:	252.31 g/mol
Particle characteristics		
Particle size	:	No data available

SECTION 10. STABILITY AND REACTIVITY

Reactivity	:	The following applies in general to flammable organic substances and mixtures: in correspondingly fine distribution, when whirled up a dust explosion potential may generally be assumed.
Chemical stability	:	The product is chemically stable under standard

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ambient conditions (room temperature) .

Possibility of hazardous reactions	:	No data available
Conditions to avoid	:	no information available
Incompatible materials	:	Strong oxidizing agents
Hazardous decomposition products	:	In the event of fire: see section 5

SECTION 11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity
Oral: No data available
Inhalation: Irritating to respiratory system.
Dermal: No data available

Skin corrosion/irritation
No data available

Serious eye damage/eye irritation
No data available

Respiratory or skin sensitization
No data available

Germ cell mutagenicity
No data available

Carcinogenicity
Presumed to have carcinogenic potential for humans

IARC:	2B - Group 2B: Possibly carcinogenic to humans (Benzo[k]fluoranthene)
NTP:	RAHC - Reasonably anticipated to be a human carcinogen (Benzo[k]fluoranthene)
OSHA:	No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

Reproductive toxicity
No data available

Specific target organ toxicity - single exposure
No data available

Specific target organ toxicity - repeated exposure
No data available

Aspiration hazard
No data available

11.2 Additional Information

RTECS: DF6350000

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

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Components:

Benzo[k]fluoranthene:

Toxicity to fish	:	Remarks: No data available
M-Factor (Acute aquatic toxicity)	:	10
M-Factor (Chronic aquatic toxicity)	:	10

Persistence and degradability

No data available

Bioaccumulative potential

Components:

Benzo[k]fluoranthene:

Partition coefficient: n-octanol/water	:	log Pow: 6.188 (77 °F / 25 °C) Remarks: Potential bioaccumulation

Mobility in soil

No data available

Other adverse effects

No data available

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods

Waste from residues	:	Waste material must be disposed of in accordance with the national and local regulations. Leave chemicals in original containers. No mixing with other waste. Handle uncleaned containers like the product itself.

SECTION 14. TRANSPORT INFORMATION

International Regulations

IATA-DGR

UN/ID No.	:	UN 3077

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Proper shipping name	:	Environmentally hazardous substance, solid, n.o.s. (Benzo[k]fluoranthene)
Class	:	9
Packing group	:	III
Labels	:	Class 9 - Miscellaneous dangerous substances and articles
Packing instruction (cargo aircraft)	:	956
Packing instruction (passenger aircraft)	:	956

IMDG-Code

UN number	:	UN 3077
Proper shipping name	:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Benzo[k]fluoranthene)
Class	:	9
Packing group	:	III
Labels	:	9
EmS Code	:	F-A, S-F
Marine pollutant	:	yes

Transport in bulk according to IMO instruments

Not applicable for product as supplied.

National regulation

49 CFR Road

UN/ID/NA number	:	UN 3077
Proper shipping name	:	Environmentally hazardous substance, solid, n.o.s. (Benzo[k]fluoranthene)
Class	:	9
Packing group	:	III
Labels	:	Class 9 - Miscellaneous dangerous substances and articles
ERG Code	:	171
Marine pollutant	:	no
Poison Inhalation Hazard	:	No

Special precautions for user

Remarks	:	EHS-Mark required (ADR 2.2.9.1.10, IMDG code 2.10.3) for single packagings and combination packagings containing inner packagings with Dangerous Goods > 5L for liquids or > 5kg for solids.

The transport classification(s) provided herein are for informational purposes only, and solely based upon the properties of the unpackaged material as it is described within this Safety Data Sheet. Transportation classifications may vary by mode of transportation, package sizes, and variations in regional or country regulations.

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SECTION 15. REGULATORY INFORMATION

CERCLA Reportable Quantity

Components	CAS-No.	Component RQ (lbs)	Calculated product RQ (lbs)
Benzo[k]fluoranthene	207-08-9	5000	5000

SARA 304 Extremely Hazardous Substances Reportable Quantity

This material does not contain any components with a section 304 EHS RQ.

SARA 302 Extremely Hazardous Substances Threshold Planning Quantity

This material does not contain any components with a section 302 EHS TPQ.

SARA 311/312 Hazards : Acute Health Hazard
Chronic Health Hazard

SARA 313 : The following components are subject to reporting levels established by SARA Title III, Section 313:

Benzo[k]fluoranthene	207-08-9	>= 90 - <= 100 %

US State Regulations

Massachusetts Right To Know

Benzo[k]fluoranthene 207-08-9

Pennsylvania Right To Know

Benzo[k]fluoranthene 207-08-9

Maine Chemicals of High Concern

Product does not contain any listed chemicals

Vermont Chemicals of High Concern

Product does not contain any listed chemicals

Washington Chemicals of High Concern

Product does not contain any listed chemicals

California Prop. 65

WARNING: This product can expose you to chemicals including Benzo[k]fluoranthene, which is/are known to the State of California to cause cancer. For more information go to www.P65Warnings.ca.gov.

The ingredients of this product are reported in the following inventories:

TSCA : Product contains substance(s) not listed on TSCA inventory.

TSCA list

No substances are subject to a Significant New Use Rule.

No substances are subject to TSCA 12(b) export notification requirements.

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SECTION 16. OTHER INFORMATION

Full text of other abbreviations

ACGIH BEI : ACGIH - Biological Exposure Indices (BEI)

AIIC - Australian Inventory of Industrial Chemicals; ASTM - American Society for the Testing of Materials; bw - Body weight; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DOT - Department of Transportation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; EHS - Extremely Hazardous Substance; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; HMIS - Hazardous Materials Identification System; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; MSHA - Mine Safety and Health Administration; n.o.s. - Not Otherwise Specified; NFPA - National Fire Protection Association; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; RCRA - Resource Conservation and Recovery Act; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RQ - Reportable Quantity; SADT - Self-Accelerating Decomposition Temperature; SARA - Superfund Amendments and Reauthorization Act; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TECI - Thailand Existing Chemicals Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative

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Revision Date : 04/28/2025

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US / EN

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Safety Data Sheet
acc. to OSHA HCS

Revision date: 01/08/2025

*
1 Identification

· **Product identifier**

· **Product Name: Benzo(b)fluoranthene Standard (1X1 mL)**

· **Part no. :** P-660-1

· **Restrictions**
After February 3, 2025, this chemical substance (as defined in TSCA section 3(2))/ product cannot be distributed in commerce to retailers. After January 28, 2026, this chemical substance (as defined in TSCA section 3(2))/ product is and can only be distributed in commerce or processed with a concentration of methylene chloride equal to or greater than 0.1% by weight for the following purposes: (1) Processing as a reactant; (2) Processing for incorporation into a formulation, mixture, or reaction product; (3) Processing for repackaging; (4) Processing for recycling; (5) Industrial or commercial use as a laboratory chemical; (6) Industrial or commercial use as a bonding agent for solvent welding; (7) Industrial and commercial use as a paint and coating remover from safety critical, corrosion sensitive components of aircraft and spacecraft; (8) Industrial and commercial use as a processing aid; (9) Industrial and commercial use for plastic and rubber products manufacturing; (10) Industrial and commercial use as a solvent that becomes part of a formulation or mixture, where that formulation or mixture will be used inside a manufacturing process, and the solvent (methylene chloride) will be reclaimed; (11) Industrial and commercial use in the refinishing for wooden furniture, decorative pieces, and architectural fixtures of artistic, cultural or historic value until May 8, 2029; (12) Industrial and commercial use in adhesives and sealants in aircraft, space vehicle, and turbine applications for structural and safety critical non-structural applications until May 8, 2029; (13) Disposal; and (14) Export.

· **Application of the substance / the mixture** Reagents and Standards for Analytical Chemical Laboratory Use

· **Details of the supplier of the safety data sheet**

· **Manufacturer/Supplier:**
Agilent Technologies, Inc.
5301 Stevens Creek Blvd.
Santa Clara, CA 95051 USA

· **Information department:**
Telephone: 800-227-9770
e-mail: pdl-msds_author@agilent.com

· **Emergency telephone number:** CHEMTREC®: 1-800-424-9300

*
2 Hazard(s) identification

· **Classification of the substance or mixture**



GHS08 Health hazard

Carcinogenicity 1B	H350 May cause cancer.
Specific Target Organ Toxicity - Repeated Exposure 2	H373 May cause damage to organs through prolonged or repeated exposure.



GHS07

Skin Irritation 2	H315 Causes skin irritation.
Eye Irritation 2A	H319 Causes serious eye irritation.
Specific Target Organ Toxicity - Single Exposure 3	H335 May cause respiratory irritation.

· **Label elements**

· **GHS label elements** The product is classified and labeled according to the Globally Harmonized System (GHS).

(Contd. on page 2)

Safety Data Sheet
acc. to OSHA HCS

Printing date: 01/08/2025 Revision date: 01/08/2025

Product Name: Benzo(b)fluoranthene Standard (1X1 mL)

(Contd. of page 1)

· **Hazard pictograms**



GHS07 GHS08

· **Signal word** Danger

· **Hazard-determining components of labeling:**
dichloromethane

· **Hazard statements**
H315 Causes skin irritation.
H319 Causes serious eye irritation.
H350 May cause cancer.
H335 May cause respiratory irritation.
H373 May cause damage to organs through prolonged or repeated exposure.

· **Precautionary statements**

P260	Do not breathe vapours.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P264	Wash thoroughly after handling.
P271	Use only outdoors or in a well-ventilated area.
P201	Obtain special instructions before use.
P202	Do not handle until all safety precautions have been read and understood.
P308+P313	IF exposed or concerned: Get medical advice/attention.
P321	Specific treatment (see on this label).
P304+P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P312	Call a poison center/doctor if you feel unwell.
P332+P313	If skin irritation occurs: Get medical advice/attention.
P337+P313	If eye irritation persists: Get medical advice/attention.
P314	Get medical advice/attention if you feel unwell.
P302+P352	If on skin: Wash with plenty of water.
P305+P351+P338	If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P362+P364	Take off contaminated clothing and wash it before reuse.
P403+P233	Store in a well-ventilated place. Keep container tightly closed.
P405	Store locked up.
P501	Dispose of contents/container in accordance with local/regional/national/international regulations.

· **Classification system:**
· **NFPA ratings (scale 0 - 4)**



Health = 2
Fire = 0
Reactivity = 0

· **HMIS-ratings (scale 0 - 4)**



Health = *2
Fire = 0
Reactivity = 0

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· **Other hazards**
· **Results of PBT and vPvB assessment**
· **PBT:** Not applicable.
· **vPvB:** Not applicable.

*
3 Composition/information on ingredients

· **Chemical characterization: Mixtures**
· **Description:** Mixture of the substances listed below with nonhazardous additions.

· **Dangerous components:**		
75-09-2	dichloromethane	99.9925%

*
4 First-aid measures

· **Description of first aid measures**
· **General information:**
Immediately remove any clothing soiled by the product.
Symptoms of poisoning may even occur after several hours; therefore medical observation for at least 48 hours after the accident.
· **After inhalation:** In case of unconsciousness place patient stably in side position for transportation.
· **After skin contact:** Immediately wash with water and soap and rinse thoroughly.
· **After eye contact:**
Rinse opened eye for several minutes under running water. If symptoms persist, consult a doctor.
· **After swallowing:** If symptoms persist consult doctor.
· **Information for doctor:**
· **Most important symptoms and effects, both acute and delayed** No further relevant information available.
· **Indication of any immediate medical attention and special treatment needed**
No further relevant information available.

*
5 Fire-fighting measures

· **Extinguishing media**
· **Suitable extinguishing agents:** Use fire fighting measures that suit the environment.
· **Special hazards arising from the substance or mixture**
During heating or in case of fire poisonous gases are produced.
· **Advice for firefighters**
· **Protective equipment:** Mouth respiratory protective device.

*
6 Accidental release measures

· **Personal precautions, protective equipment and emergency procedures** Mount respiratory protective device.
· **Environmental precautions:** Do not allow to enter sewers/ surface or ground water.
· **Methods and material for containment and cleaning up:**
Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
Dispose contaminated material as waste according to section 13.
Ensure adequate ventilation.
· **Reference to other sections**
See Section 7 for information on safe handling.

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See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

· **Protective Action Criteria for Chemicals**

· **PAC-1:**		
75-09-2	dichloromethane	200 ppm
205-99-2	benz[e]acephenanthrylene	0.12 mg/m³

· **PAC-2:**		
75-09-2	dichloromethane	560 ppm
205-99-2	benz[e]acephenanthrylene	1.3 mg/m³

· **PAC-3:**		
75-09-2	dichloromethane	6,900 ppm
205-99-2	benz[e]acephenanthrylene	7.9 mg/m³

*
7 Handling and storage

· **Handling:**
· **Precautions for safe handling**
Ensure good ventilation/exhaustion at the workplace.
Open and handle receptacle with care.
Prevent formation of aerosols.
· **Information about protection against explosions and fires:** Keep respiratory protective device available.

· **Conditions for safe storage, including any incompatibilities**
· **Storage:**
· **Requirements to be met by storerooms and receptacles:** No special requirements.
· **Information about storage in one common storage facility:** Not required.
· **Further information about storage conditions:** Keep receptacle tightly sealed.
· **Specific end use(s)** No further relevant information available.

*
8 Exposure controls/personal protection

· **Additional information about design of technical systems:** No further data; see section 7.

· **Control parameters**

· **Components with limit values that require monitoring at the workplace:**	
75-09-2 dichloromethane	
PEL	Short-term value: 125 ppm Long-term value: 25 ppm see 29 CFR 1910.1052
REL	See Pocket Guide App. A
TLV	Long-term value: 50 ppm BEI, A3

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· **Ingredients with biological limit values:**

75-09-2 dichloromethane

BEI	0.3 mg/L Medium: urine Time: end of shift Parameter: Dichloromethane (semi-quantitative)

· **Additional information:** The lists that were valid during the creation were used as basis.

· **Exposure controls**
· **Personal protective equipment:**
· **General protective and hygienic measures:**
Keep away from foodstuffs, beverages and feed.
Immediately remove all soiled and contaminated clothing.
Wash hands before breaks and at the end of work.
Store protective clothing separately.
Do not inhale gases / fumes / aerosols.
Avoid contact with the eyes and skin.
· **Breathing equipment:**
When used as intended with Agilent instruments, the use of the product under normal laboratory conditions and with standard practices does not result in significant airborne exposures and therefore respiratory protection is not needed.
Under an emergency condition where a respirator is deemed necessary, use a NIOSH or equivalent approved device/equipment with appropriate organic or acid gas cartridge.
· **Protection of hands:**
Although not recommended for constant contact with the chemicals or for clean-up, nitrile gloves 11-13 mil thickness are recommended for normal use. The breakthrough time is 1 hr. For cleaning a spill where there is direct contact of the chemical, butyl rubber gloves are recommended 12-15 mil thickness with breakthrough times exceeding 4 hrs. Supplier recommendations should be followed.
· **Material of gloves**
For normal use: nitrile rubber, 11-13 mil thickness
For direct contact with the chemical: butyl rubber, 12-15 mil thickness
· **Penetration time of glove material**
For normal use: nitrile rubber: 1 hour
For direct contact with the chemical: butyl rubber: >4 hours
· **Eye protection:**
Safety glasses



Tightly sealed goggles

*
9 Physical and chemical properties

· **Information on basic physical and chemical properties**
· **General Information**
· **Appearance:**

Form:	Fluid
Color:	Colorless
· **Odor:**	Like chlorine

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· **Odor threshold:**	Not determined.
· **pH-value:**	Not determined.
· **Change in condition**	
Melting point/Melting range:	-95.1 °C (-139.2 °F)
Boiling point/Boiling range:	40 °C (104 °F)
· **Flash point:**	Not applicable.
· **Flammability (solid, gaseous):**	Not applicable.
· **Auto igniting:**	605 °C (1,121 °F)
· **Decomposition temperature:**	Not determined.
· **Ignition temperature:**	Product is not selfigniting.
· **Danger of explosion:**	Product does not present an explosion hazard.
· **Explosion limits:**	
Lower:	13 Vol %
Upper:	22 Vol %
· **Vapor pressure at 20 °C (68 °F):**	360 hPa (270 mm Hg)
· **Density at 20 °C (68 °F):**	1.3 g/cm³ (10.8485 lbs/gal)
· **Relative density**	Not determined.
· **Vapor density**	Not determined.
· **Evaporation rate**	Not determined.
· **Solubility in / Miscibility with**	
Water at 20 °C (68 °F):	20 g/l
· **Partition coefficient (n-octanol/water):**	Not determined.
· **Viscosity:**	
Dynamic at 20 °C (68 °F):	0.43 mPas
Kinematic:	Not determined.
· **Solvent content:**	
Organic solvents:	100.0 %
VOC content:	0.00 % 0.0 g/l / 0.00 lb/gal
Solids content:	0.0 %
· **Other information**	No further relevant information available.

10 Stability and reactivity

· **Reactivity** No further relevant information available.
· **Chemical stability**
· **Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.
· **Possibility of hazardous reactions** No dangerous reactions known.
· **Conditions to avoid** No further relevant information available.
· **Incompatible materials:** No further relevant information available.

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· **Hazardous decomposition products:** No dangerous decomposition products known.

*
11 Toxicological information

· **Information on toxicological effects**
· **Acute toxicity:**

· **LD/LC50 values that are relevant for classification:**		
75-09-2 dichloromethane		
Oral	LD50	1,600 mg/kg (rat)
Dermal	LD50	>2,000 mg/kg (rat)
Inhalative	LC50/4 h	88 mg/L (rat)

· **Primary irritant effect:**
· **on the skin:** Irritant to skin and mucous membranes.
· **on the eye:** Irritating effect.
· **Sensitization:** No sensitizing effects known.
· **Additional toxicological information:**
The product shows the following dangers according to internally approved calculation methods for preparations:
Irritant

· **Carcinogenic categories**

· **IARC (International Agency for Research on Cancer)**		
75-09-2	dichloromethane	2A
205-99-2	benz[e]acephenanthrylene	2B

· **NTP (National Toxicology Program)**
All components have the value R.

· **OSHA-Ca (Occupational Safety & Health Administration)**	
75-09-2	dichloromethane

12 Ecological information

· **Toxicity**
· **Aquatic toxicity:** No further relevant information available.
· **Persistence and degradability** No further relevant information available.
· **Behavior in environmental systems:**
· **Bioaccumulative potential** No further relevant information available.
· **Mobility in soil** No further relevant information available.
· **Additional ecological information:**
· **General notes:**
Water hazard class 2 (Self-assessment): hazardous for water
Do not allow product to reach ground water, water course or sewage system.
Danger to drinking water if even small quantities leak into the ground.
· **Results of PBT and vPvB assessment**
· **PBT:** Not applicable.
· **vPvB:** Not applicable.
· **Other adverse effects** No further relevant information available.

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13 Disposal considerations

· **Waste treatment methods**
· **Recommendation:**
Must not be disposed of together with household garbage. Do not allow product to reach sewage system.

· **Uncleaned packagings:**
· **Recommendation:** Disposal must be made according to official regulations.

*
14 Transport information

· **Not Regulated, De minimis Quantities**	-
· **UN-Number**	
· **DOT, IMDG, IATA**	UN1593
· **UN proper shipping name**	
· **DOT**	Dichloromethane
· **IMDG, IATA**	DICHLOROMETHANE
· **Transport hazard class(es)**	
· **DOT**	
· **Class**	6.1 Toxic substances
· **Label**	6.1
· **IMDG, IATA**	
· **Class**	6.1 Toxic substances
· **Label**	6.1
· **Packing group**	
· **DOT, IMDG, IATA**	III
· **Environmental hazards:**	Not applicable.
· **Special precautions for user**	Warning: Toxic substances
· **Hazard identification number (Kemler code):**	60
· **EMS Number:**	F-A,S-A
· **Segregation groups**	(SGG10) Liquid halogenated hydrocarbons
· **Stowage Category**	A
· **Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code**	Not applicable.

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· **Transport/Additional information:**

· **DOT**

· **Quantity limitations**	On passenger aircraft/rail: 60 L On cargo aircraft only: 220 L
· **Hazardous substance:**	1000 lbs, 454 kg

· **IMDG**

· **Limited quantities (LQ)**	5L
· **Excepted quantities (EQ)**	Code: E1 Maximum net quantity per inner packaging: 30 ml Maximum net quantity per outer packaging: 1000 ml
· **UN "Model Regulation":**	UN 1593 DICHLOROMETHANE, 6.1, III

*
15 Regulatory information

· **Safety, health and environmental regulations/legislation specific for the substance or mixture**
· **Sara**

· **Section 355 (extremely hazardous substances):**

None of the ingredients is listed.

· **Section 313 (Specific toxic chemical listings):**

All ingredients are listed.

· **TSCA (Toxic Substances Control Act):**
After February 3, 2025, this chemical substance (as defined in TSCA section 3(2))/ product cannot be distributed in commerce to retailers. After January 28, 2026, this chemical substance (as defined in TSCA section 3(2))/ product is and can only be distributed in commerce or processed with a concentration of methylene chloride equal to or greater than 0.1% by weight for the following purposes: (1) Processing as a reactant; (2) Processing for incorporation into a formulation, mixture, or reaction product; (3) Processing for repackaging; (4) Processing for recycling; (5) Industrial or commercial use as a laboratory chemical; (6) Industrial or commercial use as a bonding agent for solvent welding; (7) Industrial and commercial use as a paint and coating remover from safety critical, corrosion sensitive components of aircraft and spacecraft; (8) Industrial and commercial use as a processing aid; (9) Industrial and commercial use for plastic and rubber products manufacturing; (10) Industrial and commercial use as a solvent that becomes part of a formulation or mixture, where that formulation or mixture will be used inside a manufacturing process, and the solvent (methylene chloride) will be reclaimed; (11) Industrial and commercial use in the refinishing for wooden furniture, decorative pieces, and architectural fixtures of artistic, cultural or historic value until May 8, 2029; (12) Industrial and commercial use in adhesives and sealants in aircraft, space vehicle, and turbine applications for structural and safety critical non-structural applications until May 8, 2029; (13) Disposal; and (14) Export.

75-09-2	dichloromethane	ACTIVE

· **Hazardous Air Pollutants**

All ingredients are listed.

· **Proposition 65**

· **Chemicals known to cause cancer:**

All ingredients are listed.

· **Chemicals known to cause reproductive toxicity for females:**

None of the ingredients is listed.

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· **Chemicals known to cause reproductive toxicity for males:**
None of the ingredients is listed.

· **Chemicals known to cause developmental toxicity:**
None of the ingredients is listed.

· **Carcinogenic categories**

· **EPA (Environmental Protection Agency)**		
75-09-2	dichloromethane	L
205-99-2	benz[e]acephenanthrylene	B2

· **TLV (Threshold Limit Value)**		
75-09-2	dichloromethane	A3
205-99-2	benz[e]acephenanthrylene	A2

· **NIOSH-Ca (National Institute for Occupational Safety and Health)**	
75-09-2	dichloromethane

· **National regulations:**

· **Information about limitation of use:**
Workers are not allowed to be exposed to the hazardous carcinogenic materials contained in this preparation.
Exceptions can be made by the authorities in certain cases.
· **Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

*
16 Other information

The information contained in this document is based on Agilent's state of knowledge at the time of preparation.
No warranty as to its accurateness, completeness or suitability for a particular purpose is expressed or implied.

· **Department issuing SDS:** Document Control / Regulatory
· **Contact:** pdl-acg-regulatory-cq@agilent.com
· **Date of preparation / last revision** 01/08/2025 / 4
· **Abbreviations and acronyms:**
ADR: Accord relatif au transport international des marchandises dangereuses par route (European Agreement Concerning the International Carriage of Dangerous Goods by Road)
IMDG: International Maritime Code for Dangerous Goods
DOT: US Department of Transportation
IATA: International Air Transport Association
EINECS: European Inventory of Existing Commercial Chemical Substances
ELINCS: European List of Notified Chemical Substances
CAS: Chemical Abstracts Service (division of the American Chemical Society)
NFPA: National Fire Protection Association (USA)
HMIS: Hazardous Materials Identification System (USA)
VOC: Volatile Organic Compounds (USA, EU)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent
PBT: Persistent, Bioaccumulative and Toxic
vPvB: very Persistent and very Bioaccumulative
NIOSH: National Institute for Occupational Safety
OSHA: Occupational Safety & Health
TLV: Threshold Limit Value
PEL: Permissible Exposure Limit
REL: Recommended Exposure Limit
BEI: Biological Exposure Limit
Skin Irritation 2: Skin corrosion/irritation – Category 2
Eye Irritation 2A: Serious eye damage/eye irritation – Category 2A
Carcinogenicity 1B: Carcinogenicity – Category 1B

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Specific Target Organ Toxicity - Single Exposure 3: Specific target organ toxicity (single exposure) – Category 3
Specific Target Organ Toxicity - Repeated Exposure 2: Specific target organ toxicity (repeated exposure) – Category 2

· *** Data compared to the previous version altered.**

SAFETY DATA SHEET

Revision Date 25-Mar-2024 **Revision Number** 4

1. Identification

Product Name **Benzo[a]pyrene**

Cat No. : **15856**

CAS No 50-32-8
Synonyms Benzo[def]chrysene.; 3,4-Benzopyrene; 3,4-Benzpyrene

Recommended Use Laboratory chemicals.
Uses advised against Food, drug, pesticide or biocidal product use.

Details of the supplier of the safety data sheet

Company
Thermo Fisher Scientific Chemicals, Inc.
30 Bond Street
Ward Hill, MA 01835-8099
Tel: 800-343-0660
Fax: 800-322-4757

Emergency Telephone Number
For information **US** call: 001-800-227-6701 / **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)

Skin Sensitization	Category 1
Germ Cell Mutagenicity	Category 1B
Carcinogenicity	Category 1A
Reproductive Toxicity	Category 1B

Label Elements

Signal Word
Danger

Hazard Statements
May cause an allergic skin reaction
May cause genetic defects

May cause cancer
May damage fertility. May damage the unborn child



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
Avoid breathing dust/fume/gas/mist/vapors/spray
Contaminated work clothing should not be allowed out of the workplace
Wear protective gloves
Response
IF exposed or concerned: Get medical attention/advice
Skin
IF ON SKIN: Wash with plenty of soap and water
If skin irritation or rash occurs: Get medical advice/attention
Wash contaminated clothing before reuse
Storage
Store locked up
Disposal
Dispose of contents/container to an approved waste disposal plant
Hazards not otherwise classified (HNOC)
Very toxic to aquatic life with long lasting effects
WARNING. Cancer - https://www.p65warnings.ca.gov/.

3. Composition/Information on Ingredients

Component	CAS No	Weight %
Benzo[a]pyrene	50-32-8	> 96

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. Get medical attention if symptoms occur.

Most important symptoms and effects None reasonably foreseeable. . May cause allergic skin reaction. Symptoms of allergic reaction may include rash, itching, swelling, trouble breathing, tingling of the hands and feet, dizziness, lightheadedness, chest pain, muscle pain or flushing

Notes to Physician Treat symptomatically

5. Fire-fighting measures

Unsuitable Extinguishing Media No information available

Flash Point No information available
Method - No information available

Autoignition Temperature Not applicable
Explosion Limits
Upper No data available
Lower No data available
Sensitivity to Mechanical Impact No information available
Sensitivity to Static Discharge No information available

Specific Hazards Arising from the Chemical
Do not allow run-off from fire-fighting to enter drains or water courses.

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
2	1	0	N/A

6. Accidental release measures

Personal Precautions Ensure adequate ventilation. Use personal protective equipment as required. Avoid dust formation.

Environmental Precautions Do not flush into surface water or sanitary sewer system. Do not allow material to contaminate ground water system. Prevent product from entering drains. Local authorities should be advised if significant spillages cannot be contained.

Methods for Containment and Clean Up Sweep up and shovel into suitable containers for disposal. Keep in suitable, closed containers for disposal.

7. Handling and storage

Handling Wear personal protective equipment/face protection. Ensure adequate ventilation. Do not get in eyes, on skin, or on clothing. Avoid ingestion and inhalation. Avoid dust formation.

Storage. Keep containers tightly closed in a dry, cool and well-ventilated place. Incompatible Materials. Oxidizing agent.

8. Exposure controls / personal protection

Exposure Guidelines

Component	ACGIH TLV	OSHA PEL	NIOSH	Mexico OEL (TWA)
Benzo[a]pyrene		TWA: 0.2 mg/m³		

Legend

OSHA - Occupational Safety and Health Administration

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.
Recommended Filter type:	Particulates filter conforming to EN 143.
Hygiene Measures	Handle in accordance with good industrial hygiene and safety practice.

9. Physical and chemical properties

Physical State	Powder Solid
Appearance	Dark yellow
Odor	aromatic
Odor Threshold	No information available
pH	Not applicable
Melting Point/Range	175 - 179 °C / 347 - 354.2 °F
Boiling Point/Range	495 °C / 923 °F @ 760 mmHg
Flash Point	No information available
Evaporation Rate	Not applicable
Flammability (solid,gas)	No information available
Flammability or explosive limits	
Upper	No data available
Lower	No data available
Vapor Pressure	No information available
Vapor Density	Not applicable
Specific Gravity	No information available
Solubility	Insoluble in water
Partition coefficient; n-octanol/water	No data available
Autoignition Temperature	Not applicable
Decomposition Temperature	No information available
Viscosity	Not applicable
Molecular Formula	C20H12
Molecular Weight	252.31

10. Stability and reactivity

Reactive Hazard	None known, based on information available
Stability	Stable under normal conditions.
Conditions to Avoid	Incompatible products.
Incompatible Materials	Oxidizing agent
Hazardous Decomposition Products	Carbon monoxide (CO), Carbon dioxide (CO_2)
Hazardous Polymerization	Hazardous polymerization does not occur.
Hazardous Reactions	None under normal processing.

11. Toxicological information

Acute Toxicity

Product Information
Component Information
Toxicologically Synergistic Products No information available

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

Irritation No information available

Sensitization May cause sensitization by skin contact

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

Component	CAS No	IARC	NTP	ACGIH	OSHA	Mexico
Benzo[a]pyrene	50-32-8	Group 1	Reasonably Anticipated	A2	X	A2

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)

ACGIH: (American Conference of Governmental Industrial Hygienists)
A1 - Known Human Carcinogen
A2 - Suspected Human Carcinogen
A3 - Animal Carcinogen

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 allergic reaction may include rash, itching, swelling, trouble breathing, tingling of the hands and feet, dizziness, lightheadedness, chest pain, muscle pain or flushing

Endocrine Disruptor Information

Component	EU - Endocrine Disrupters Candidate List	EU - Endocrine Disruptors - Evaluated Substances	Japan - Endocrine Disruptor Information
Benzo[a]pyrene	Group III Chemical	Not applicable	Not applicable

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

12. Ecological information

Ecotoxicity
Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment. The product contains following substances which are hazardous for the environment.

Persistence and Degradability May persist

Bioaccumulation/ Accumulation No information available.

Mobility Is not likely mobile in the environment due its low water solubility.

Component	log Pow
Benzo[a]pyrene	6.06

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
Benzo[a]pyrene - 50-32-8	U022	-

14. Transport information

DOT

UN-No UN3077
Proper Shipping Name Environmentally hazardous substances, solid, n.o.s.
Technical Name Benzo[a]pyrene
Hazard Class 9
Packing Group III

TDG

UN-No UN3077
Proper Shipping Name Environmentally hazardous substances, solid, n.o.s.
Hazard Class 9
Packing Group III

IATA

UN-No UN3077
Proper Shipping Name Environmentally hazardous substances, solid, n.o.s.
Hazard Class 9
Packing Group III

IMDG/IMO

UN-No UN3077
Proper Shipping Name Environmentally hazardous substances, solid, n.o.s.
Hazard Class 9
Packing Group III

15. Regulatory information

United States of America Inventory

Component	CAS No	TSCA	TSCA Inventory notification - Active-Inactive	TSCA - EPA Regulatory Flags
Benzo[a]pyrene	50-32-8	X	ACTIVE	-

Legend:
TSCA US EPA (TSCA) - Toxic Substances Control Act, (40 CFR Part 710)
X - Listed
'-' - Not Listed

TSCA - Per 40 CFR 751, Regulation of Certain Chemical Substances & Mixtures, Under TSCA Section 6(h) (PBT) Not applicable

TSCA 12(b) - Notices of Export Not applicable

International Inventories

Canada (DSL/NDSL), Europe (EINECS/ELINCS/NLP), Philippines (PICCS), Japan (ENCS), Japan (ISHL), Australia (AICS), China (IECSC), Korea (KECL).

Component	CAS No	DSL	NDSL	EINECS	PICCS	ENCS	ISHL	AICS	IECSC	KECL
Benzo[a]pyrene	50-32-8	X	-	200-028-5	X	-		-	X	KE-05-0184

KECL - NIER number or KE number (http://ncis.nier.go.kr/en/main.do)

U.S. Federal Regulations

SARA 313
Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains a chemical or chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372. Note that PBT chemicals are not eligible for the de minimis exemption. For these chemicals, supplier notification limits are provided.
> 0 % = no low concentration cut-off set, supplier notification limit applies.

Component	CAS No	Weight %	SARA 313 - Threshold Values %	SARA 313 - Reporting threasholds
Benzo[a]pyrene	50-32-8	> 96	> 0 %	RT = 100 lb

SARA 311/312 Hazard Categories
Should this product meet EPCRA 311/312 Tier reporting criteria at 40 CFR 370, refer to Section 2 of this SDS for appropriate classifications.

CWA (Clean Water Act)

Component	CWA - Hazardous Substances	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants
Benzo[a]pyrene	-	-	X	X

Clean Air Act Not applicable

OSHA - Occupational Safety and Health Administration Not applicable

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) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355).

Component	Hazardous Substances RQs	CERCLA Extremely Hazardous Substances RQs	SARA Reportable Quantity (RQ)
Benzo[a]pyrene	1 lb	-	1 lb 0.454 kg

California Proposition 65 This product contains the following Proposition 65 chemicals.

Component	CAS No	California Prop. 65	Prop 65 NSRL	Category
Benzo[a]pyrene	50-32-8	Carcinogen	0.06 µg/day	Carcinogen

U.S. State Right-to-Know Regulations

Component	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island
Benzo[a]pyrene	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

Authorisation/Restrictions according to EU REACH

Component	CAS No	REACH (1907/2006) - Annex XIV - Substances Subject to Authorization	REACH (1907/2006) - Annex XVII - Restrictions on Certain Dangerous Substances	REACH Regulation (EC 1907/2006) article 59 - Candidate List of Substances of Very High Concern (SVHC)
Benzo[a]pyrene	50-32-8	-	Use restricted. See item 72. (see link for restriction details) Use restricted. See item 30. (see link for restriction details) Use restricted. See item 28. (see link for restriction details) Use restricted. See item 50[a]. (see link for restriction details) Use restricted. See item 29. (see link for restriction details) Use restricted. See item 75. (see link for restriction details)	SVHC Candidate list - 200-028-5 - Carcinogenic (article 57a); Mutagenic (Article 57b); Toxic for reproduction (Article 57c); PBT (Article 57d); vPvB (Article 57e)

After the sunset date the use of this substance requires either an authorization or can only be used for exempted uses, e.g. use in scientific research and development which includes routine analytics or use as intermediate.

REACH links
https://echa.europa.eu/authorisation-list
https://echa.europa.eu/substances-restricted-under-reach
https://echa.europa.eu/candidate-list-table

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

Component	CAS No	OECD HPV	Persistent Organic Pollutant	Ozone Depletion Potential	Restriction of Hazardous Substances (RoHS)
Benzo[a]pyrene	50-32-8	Not applicable	Annex III - Substance subject to release reduction	Not applicable	Not applicable

Contains component(s) that meet a 'definition' of per & poly fluoroalkyl substance (PFAS)?
See table for values

PFAS Legend
Listed = Meets the PFAS definition of the named authority

Other International Regulations

Component	CAS No	Seveso III Directive (2012/18/EC) - Qualifying Quantities	Seveso III Directive (2012/18/EC) - Qualifying Quantities	Rotterdam Convention (PIC)	Basel Convention (Hazardous Waste)

		for Major Accident Notification	for Safety Report Requirements		
Benzo[a]pyrene	50-32-8	Not applicable	Not applicable	Not applicable	Not applicable

16. Other information

Prepared By
Health, Safety and Environmental Department
Email: chem.techinfo@thermofisher.com
www.thermofisher.com

Revision Date 25-Mar-2024
Print Date 25-Mar-2024
Revision Summary New emergency telephone response service provider.

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

Version 6.12
Revision Date 04/28/2025
Print Date 04/29/2025

SECTION 1. IDENTIFICATION

1.1 Product identifiers

Product name : Benz[*a*]anthracene

Product Number : B2209
Brand : Aldrich
Index-No. : 601-033-00-9
CAS-No. : 56-55-3

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

Identified uses : Laboratory chemicals, Synthesis of substances

Uses advised against : The product is being supplied under the TSCA R&D Exemption (40 CFR Section 720.36). It is the recipient's responsibility to comply with the requirements of the R&D exemption. The product may not be used for a non-exempt commercial purpose under TSCA unless appropriate consent is granted in writing by MilliporeSigma.

1.3 Details of the supplier of the safety data sheet

Company : Sigma-Aldrich Inc.
3050 SPRUCE ST
ST. LOUIS MO 63103
UNITED STATES

Telephone : +1 314 771-5765
Fax : +1 800 325-5052

1.4 Emergency telephone

Emergency Phone # : 800-424-9300 CHEMTREC (USA) +1-703-527-3887 CHEMTREC (International) 24 Hours/day; 7 Days/week

SECTION 2. HAZARDS IDENTIFICATION

GHS classification in accordance with the OSHA Hazard Communication Standard (29 CFR 1910.1200)

Carcinogenicity : Category 1B

Short-term (acute) : Category 1

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aquatic hazard

Long-term (chronic) aquatic hazard : Category 1

Other hazards

None known.

GHS label elements

Hazard pictograms :



Signal Word : Danger

Hazard Statements : H350 May cause cancer.
H410 Very toxic to aquatic life with long lasting effects.

Precautionary Statements :

Prevention:

P201 Obtain special instructions before use.
P202 Do not handle until all safety precautions have been read and understood.
P273 Avoid release to the environment.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

Response:

P308 + P313 IF exposed or concerned: Get medical advice/ attention.
P391 Collect spillage.

Storage:

P405 Store locked up.

Disposal:

P501 Dispose of contents/ container to an approved waste disposal plant.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Substance

Components

Chemical name	CAS No./Unique ID	Concentration (% w/w)	Trade secret
Benz[a]anthracene	56-55-3*	>= 90 - <= 100	-

* Indicates that the identifier is a CAS No.

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Actual concentration is withheld as a trade secret

SECTION 4. FIRST AID MEASURES

General advice	:	Show this material safety data sheet to the doctor in attendance.
If inhaled	:	After inhalation: fresh air. Call in physician.
In case of skin contact	:	In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/ shower. Consult a physician.
In case of eye contact	:	After eye contact: rinse out with plenty of water. Call in ophthalmologist. Remove contact lenses.
If swallowed	:	After swallowing: immediately make victim drink water (two glasses at most). Consult a physician.
Most important symptoms and effects, both acute and delayed	:	The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11
Protection of first-aiders	:	For personal protection see section 8.
Notes to physician	:	No data available

SECTION 5. FIRE-FIGHTING MEASURES

Unsuitable extinguishing media	:	For this substance/mixture no limitations of extinguishing agents are given.
Hazardous combustion products	:	Carbon oxides Nature of decomposition products not known.
Specific extinguishing methods	:	No data available
Further information	:	Prevent fire extinguishing water from contaminating surface water or the ground water system.
Special protective equipment for fire-fighters	:	Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

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SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures	:	Advice for non-emergency personnel: Avoid generation and inhalation of dusts in all circumstances. Avoid substance contact. Ensure adequate ventilation. Evacuate the danger area, observe emergency procedures, consult an expert. Advice for emergency responders: For personal protection see section 8.
Environmental precautions	:	Do not let product enter drains.
Methods and materials for containment and cleaning up	:	Cover drains. Collect, bind, and pump off spills. Observe possible material restrictions (see sections 7 and 10). Take up carefully. Dispose of properly. Clean up affected area. Avoid generation of dusts.

SECTION 7. HANDLING AND STORAGE

For precautions see section 2.2.

Advice on safe handling	:	Work under hood. Do not inhale substance/mixture.
Further information on storage conditions	:	Tightly closed. Dry. Keep in a well-ventilated place. Keep locked up or in an area accessible only to qualified or authorized persons.
Storage class	:	6.1C, Combustible, acute toxic Cat.3 / toxic compounds or compounds which causing chronic effects
Recommended storage temperature	:	Recommended storage temperature see product label.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Ingredients with workplace control parameters

Contains no substances with occupational exposure limit values.

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Biological occupational exposure limits

Components	CAS-No.	Control parameters	Biological specimen	Sampling time	Permissible concentration	Basis
Benz[a]anthracene	56-55-3	1-Hydroxypyrene	Urine	End of shift at end of workweek	2.5 µg/l	ACGIH BEI

Engineering measures : No data available

Personal protective equipment

Respiratory protection : required when dusts are generated.

Our recommendations on filtering respiratory protection are based on the following standards: DIN EN 143, DIN 14387 and other accompanying standards relating to the used respiratory protection system.

Recommended Filter type: : Filter type P3

The entrepeneur has to ensure that maintenance, cleaning and testing of respiratory protective devices are carried out according to the instructions of the producer. These measures have to be properly documented.

Hand protection

Material	:	Nitrile rubber
Break through time	:	480 min
Glove thickness	:	0.11 mm
Protective index	:	Full contact
Manufacturer	:	Dermatril® (KCL 740 / Aldrich Z677272, Size M)

Material	:	Nitrile rubber
Break through time	:	480 min
Glove thickness	:	0.11 mm
Protective index	:	Splash contact
Manufacturer	:	Dermatril® (KCL 740 / Aldrich Z677272, Size M)

Manufacturer : data source: KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 87300, e-mail sales@kcl.de, test method: EN374

Remarks : Handle with gloves. Gloves must be inspected prior to

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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.
If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the EC approved gloves. This recommendation is advisory only and must be evaluated by an industrial hygienist and safety officer familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

Eye protection	:	Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU). Safety glasses
Skin and body protection	:	protective clothing
Hygiene measures	:	Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	:	solid
Color	:	No data available
Odor	:	No data available
Odor Threshold	:	No data available
pH	:	No data available
Melting point/ range	:	315 - 318 °F / 157 - 159 °C
Boiling point/boiling range	:	819.7 °F / 437.6 °C
Flash point	:	No data available
Evaporation rate	:	No data available
Flammability (solid, gas)	:	No data available
Flammability (liquids)	:	No data available

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Burning rate	:	No data available
Upper explosion limit / Upper flammability limit	:	No data available
Lower explosion limit / Lower flammability limit	:	No data available
Vapor pressure	:	No data available
Relative vapor density	:	No data available
Relative density	:	No data available
Density	:	No data available
Water solubility	:	No data available
Partition coefficient: n-octanol/water	:	No data available
Autoignition temperature	:	No data available
Decomposition temperature	:	No data available
Viscosity, dynamic	:	No data available
Viscosity, kinematic	:	No data available
Flow time	:	No data available
Explosive properties	:	No data available
Oxidizing properties	:	No data available
Molecular weight	:	228.29 g/mol
Particle characteristics Particle size	:	No data available

SECTION 10. STABILITY AND REACTIVITY

Reactivity	:	No data available
Chemical stability	:	The product is chemically stable under standard ambient conditions (room temperature) .
Possibility of hazardous reactions	:	No data available

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Conditions to avoid	:	no information available
Incompatible materials	:	Strong oxidizing agents
Hazardous decomposition products	:	In the event of fire: see section 5

SECTION 11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity
Oral: No data available
Inhalation: No data available
Dermal: No data available
No data available

Skin corrosion/irritation
No data available

Serious eye damage/eye irritation
No data available

Respiratory or skin sensitization
No data available

Germ cell mutagenicity
No data available

Carcinogenicity
This product is or contains a component that has been reported to be probably carcinogenic based on its IARC, OSHA, ACGIH, NTP, or EPA classification.
Possible human carcinogen

IARC:	2B - Group 2B: Possibly carcinogenic to humans (Benz[a]anthracene)
NTP:	RAHC - Reasonably anticipated to be a human carcinogen (Benz[a]anthracene)
OSHA:	No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

Reproductive toxicity
No data available

Specific target organ toxicity - single exposure
No data available

Specific target organ toxicity - repeated exposure
No data available

Aspiration hazard
No data available

11.2 Additional Information

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

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SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Components:

Benz[a]anthracene:

Toxicity to fish	:	Remarks: No data available
M-Factor (Acute aquatic toxicity)	:	10
M-Factor (Chronic aquatic toxicity)	:	10

Ecotoxicology Assessment

Acute aquatic toxicity	:	Very toxic to aquatic life.
Chronic aquatic toxicity	:	Very toxic to aquatic life with long lasting effects.

Persistence and degradability

No data available

Bioaccumulative potential

No data available

Mobility in soil

No data available

Other adverse effects

Components:

Benz[a]anthracene:

Additional ecological information	:	Discharge into the environment must be avoided.

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods

Waste from residues	:	Waste material must be disposed of in accordance with the national and local regulations. Leave chemicals in original containers. No mixing with other waste. Handle uncleaned containers like the product itself.

SECTION 14. TRANSPORT INFORMATION

International Regulations

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IATA-DGR

UN/ID No.	:	UN 3077
Proper shipping name	:	Environmentally hazardous substance, solid, n.o.s. (Benz[a]anthracene)
Class	:	9
Packing group	:	III
Labels	:	Class 9 - Miscellaneous dangerous substances and articles
Packing instruction (cargo aircraft)	:	956
Packing instruction (passenger aircraft)	:	956

IMDG-Code

UN number	:	UN 3077
Proper shipping name	:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Benz[a]anthracene)
Class	:	9
Packing group	:	III
Labels	:	9
EmS Code	:	F-A, S-F
Marine pollutant	:	yes

Transport in bulk according to IMO instruments

Not applicable for product as supplied.

National regulation

49 CFR Road

Not regulated as a dangerous good

Poison Inhalation Hazard	:	No

Special precautions for user

Remarks	:	EHS-Mark required (ADR 2.2.9.1.10, IMDG code 2.10.3) for single packagings and combination packagings containing inner packagings with Dangerous Goods > 5L for liquids or > 5kg for solids. Packages smaller than or equal to 5 kg / L , not dangerous goods of Class 9

The transport classification(s) provided herein are for informational purposes only, and solely based upon the properties of the unpackaged material as it is described within this Safety Data Sheet. Transportation classifications may vary by mode of transportation, package sizes, and variations in regional or country regulations.

SECTION 15. REGULATORY INFORMATION

CERCLA Reportable Quantity

Components	CAS-No.	Component RQ (lbs)	Calculated product RQ (lbs)

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Benz[a]anthracene	56-55-3	10	10

SARA 304 Extremely Hazardous Substances Reportable Quantity

This material does not contain any components with a section 304 EHS RQ.

SARA 302 Extremely Hazardous Substances Threshold Planning Quantity

This material does not contain any components with a section 302 EHS TPQ.

SARA 311/312 Hazards : Chronic Health Hazard

SARA 313 : The following components are subject to reporting levels established by SARA Title III, Section 313:

Benz[a]anthrac ene	56-55-3	>= 90 - <= 100 %

US State Regulations

Massachusetts Right To Know

Benz[a]anthracene 56-55-3

Pennsylvania Right To Know

Benz[a]anthracene 56-55-3

Maine Chemicals of High Concern

Product does not contain any listed chemicals

Vermont Chemicals of High Concern

Product does not contain any listed chemicals

Washington Chemicals of High Concern

Product does not contain any listed chemicals

California Prop. 65

WARNING: This product can expose you to chemicals including Benz[a]anthracene, which is/are known to the State of California to cause cancer. For more information go to www.P65Warnings.ca.gov.

The ingredients of this product are reported in the following inventories:

TSCA : On TSCA Inventory

TSCA list

No substances are subject to a Significant New Use Rule.

No substances are subject to TSCA 12(b) export notification requirements.

SECTION 16. OTHER INFORMATION

Full text of other abbreviations

ACGIH BEI : ACGIH - Biological Exposure Indices (BEI)

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AIIC - Australian Inventory of Industrial Chemicals; ASTM - American Society for the Testing of Materials; bw - Body weight; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DOT - Department of Transportation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; EHS - Extremely Hazardous Substance; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; HMIS - Hazardous Materials Identification System; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; MSHA - Mine Safety and Health Administration; n.o.s. - Not Otherwise Specified; NFPA - National Fire Protection Association; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; RCRA - Resource Conservation and Recovery Act; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RQ - Reportable Quantity; SADT - Self-Accelerating Decomposition Temperature; SARA - Superfund Amendments and Reauthorization Act; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TECI - Thailand Existing Chemicals Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative

The information is believed to be correct but is not exhaustive and will be used solely as a guideline, which is based on current knowledge of the chemical substance or mixture and is applicable to appropriate safety precautions for the product. 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.
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Revision Date : 04/28/2025

The branding on the header and/or footer of this document may temporarily not visually match the product purchased as we transition our branding. However, all of the information

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in the document regarding the product remains unchanged and matches the product ordered. For further information please contact mlsbranding@sial.com.

US / EN

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SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Version 6.9
Revision Date 04.03.2024
Print Date 20.05.2025
GENERIC EU MSDS - NO COUNTRY SPECIFIC DATA - NO OEL DATA

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifiers

Product name	:	Thallium
Product Number	:	277932
Brand	:	Aldrich
Index-No.	:	081-001-00-3
REACH No.	:	A registration number is not available for this substance as the substance or its uses are exempted from registration, the annual tonnage does not require a registration or the registration is envisaged for a later registration deadline.
CAS-No.	:	7440-28-0

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

Identified uses	:	Laboratory chemicals, Manufacture of substances

1.3 Details of the supplier of the safety data sheet

Company	:	Sigma-Aldrich Inc. 3050 SPRUCE ST ST. LOUIS MO 63103 UNITED STATES
Telephone	:	+1 314 771-5765
Fax	:	+1 800 325-5052

1.4 Emergency telephone

Emergency Phone #	:	800-424-9300 CHEMTREC (USA) +1-703-527-3887 CHEMTREC (International) 24 Hours/day; 7 Days/week

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Acute toxicity, (Category 2)	H300: Fatal if swallowed.
Acute toxicity, (Category 2)	H330: Fatal if inhaled.

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Specific target organ toxicity - repeated exposure, (Category 2)	H373: May cause damage to organs through prolonged or repeated exposure.
Long-term (chronic) aquatic hazard, (Category 4)	H413: May cause long lasting harmful effects to aquatic life.

2.2 Label elements

Labelling according Regulation (EC) No 1272/2008

Pictogram



Signal Word	Danger
Hazard Statements	
H300 + H330	Fatal if swallowed or if inhaled.
H373	May cause damage to organs through prolonged or repeated exposure.
H413	May cause long lasting harmful effects to aquatic life.
Precautionary Statements	
P260	Do not breathe dust.
P264	Wash skin thoroughly after handling.
P271	Use only outdoors or in a well-ventilated area.
P273	Avoid release to the environment.
P304 + P340 + P310	IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/ doctor.
P314	Get medical advice/ attention if you feel unwell.
Supplemental Hazard Statements	none

Reduced Labeling (<= 125 ml)

Pictogram



Signal Word	Danger
Hazard Statements	
H413	May cause long lasting harmful effects to aquatic life.
H300 + H330	Fatal if swallowed or if inhaled.
Precautionary Statements	
P260	Do not breathe dust.
P264	Wash skin thoroughly after handling.
P271	Use only outdoors or in a well-ventilated area.
P304 + P340 + P310	IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/ doctor.
Supplemental Hazard Statements	none

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2.3 Other hazards

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

Ecological information:
The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.
Toxicological information:
The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

SECTION 3: Composition/information on ingredients

3.1 Substances

Formula	:	Tl
Molecular weight	:	204,38 g/mol
CAS-No.	:	7440-28-0
EC-No.	:	231-138-1
Index-No.	:	081-001-00-3

Component		Classification	Concentration
Thallium			
CAS-No. EC-No. Index-No.	7440-28-0 231-138-1 081-001-00-3	Acute Tox. 2; STOT RE 2; Aquatic Chronic 4; H300, H330, H373, H413	<= 100 %

For the full text of the H-Statements mentioned in this Section, see Section 16.

SECTION 4: First aid measures

4.1 Description of first-aid measures

General advice
First aiders need to protect themselves. Show this material safety data sheet to the doctor in attendance.

If inhaled
After inhalation: fresh air. Immediately call in physician. If breathing stops: immediately apply artificial respiration, if necessary also oxygen.

In case of skin contact
In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/ shower. Consult a physician.

In case of eye contact
After eye contact: rinse out with plenty of water. Call in ophthalmologist. Remove contact lenses.

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If swallowed
If swallowed: give water to drink (two glasses at most). Seek medical advice immediately. In exceptional cases only, if medical care is not available within one hour, induce vomiting (only in persons who are wide awake and fully conscious), administer activated charcoal (20 - 40 g in a 10% slurry) and consult a doctor as quickly as possible.

4.2 Most important symptoms and effects, both acute and delayed
The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

4.3 Indication of any immediate medical attention and special treatment needed
No data available

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media
Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable extinguishing media
For this substance/mixture no limitations of extinguishing agents are given.

5.2 Special hazards arising from the substance or mixture
thallium oxides
Not combustible.
Ambient fire may liberate hazardous vapours.

5.3 Advice for firefighters
Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

5.4 Further information
Prevent fire extinguishing water from contaminating surface water or the ground water system.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures
Advice for non-emergency personnel: Avoid generation and inhalation of dusts in all circumstances. Avoid substance contact. Ensure adequate ventilation. Evacuate the danger area, observe emergency procedures, consult an expert.
For personal protection see section 8.

6.2 Environmental precautions
Do not let product enter drains.

6.3 Methods and materials for containment and cleaning up
Cover drains. Collect, bind, and pump off spills. Observe possible material restrictions (see sections 7 and 10). Take up carefully. Dispose of properly. Clean up affected area. Avoid generation of dusts.

6.4 Reference to other sections
For disposal see section 13.

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SECTION 7: Handling and storage

7.1 Precautions for safe handling

Advice on safe handling
Work under hood. Do not inhale substance/mixture.

Hygiene measures
Change contaminated clothing. Preventive skin protection recommended. Wash hands after working with substance.
For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities

Storage conditions
Tightly closed. Dry. Keep in a well-ventilated place. Keep locked up or in an area accessible only to qualified or authorized persons.

Storage class
Storage class (TRGS 510): 6.1B: Non-combustible, acute toxic Cat. 1 and 2 / very toxic hazardous materials

7.3 Specific end use(s)

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Ingredients with workplace control parameters

8.2 Exposure controls

Personal protective equipment

Eye/face protection
Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU). Safety glasses

Body Protection
protective clothing

Respiratory protection
required when dusts are generated.
Our recommendations on filtering respiratory protection are based on the following standards: DIN EN 143, DIN 14387 and other accompanying standards relating to the used respiratory protection system.
Recommended Filter type: Filter type P3

The entrepeneur has to ensure that maintenance, cleaning and testing of respiratory protective devices are carried out according to the instructions of the producer. These measures have to be properly documented.

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Control of environmental exposure
Do not let product enter drains.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

a)	Physical state	granular
b)	Color	light gray
c)	Odor	No data available
d)	Melting point/freezing point	Melting point/range: 303 °C - lit.
e)	Initial boiling point and boiling range	1.457 °C - lit.
f)	Flammability (solid, gas)	The product is not flammable.
g)	Upper/lower flammability or explosive limits	No data available
h)	Flash point	Not applicable
i)	Autoignition temperature	No data available
j)	Decomposition temperature	No data available
k)	pH	No data available
l)	Viscosity	Viscosity, kinematic: No data available Viscosity, dynamic: No data available
m)	Water solubility	No data available
n)	Partition coefficient: n-octanol/water	No data available
o)	Vapor pressure	No data available
p)	Density	No data available
	Relative density	No data available
q)	Relative vapor density	No data available
r)	Particle characteristics	No data available
s)	Explosive properties	No data available
t)	Oxidizing properties	No data available

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9.2 Other safety information
No data available

SECTION 10: Stability and reactivity

10.1 Reactivity
No data available

10.2 Chemical stability
The product is chemically stable under standard ambient conditions (room temperature) .

10.3 Possibility of hazardous reactions
No data available

10.4 Conditions to avoid
Air sensitive.
no information available

10.5 Incompatible materials
Strong acids, Strong oxidizing agents

10.6 Hazardous decomposition products
In the event of fire: see section 5

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity
Acute toxicity estimate Oral - 5,1 mg/kg
(Expert judgment)
Oral: No data available
Acute toxicity estimate Inhalation - 4 h - 0,051 mg/l - dust/mist

(Expert judgment)
Dermal: No data available

Skin corrosion/irritation
Remarks: No data available

Serious eye damage/eye irritation
Remarks: No data available

Respiratory or skin sensitization
No data available

Germ cell mutagenicity
No data available

Carcinogenicity
No data available

Reproductive toxicity
Possible risk of congenital malformation in the fetus.

Specific target organ toxicity - single exposure
No data available

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Specific target organ toxicity - repeated exposure
May cause damage to organs through prolonged or repeated exposure.

Aspiration hazard
No data available

11.2 Additional Information

Endocrine disrupting properties

Product:

Assessment	The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

RTECS: XG3425000
The most characteristic symptom of thallium exposure is alopecia (loss of hair). Cutaneous effects may include dry, scaly skin and impairment of nail growth often resulting in the appearance of crescent-shaped strips across fingernails and toenails (Mees' line). Other symptoms in acute poisoning relate chiefly to the gastrointestinal tract, nervous system, skin, eyes, and cardiovascular system. Acute poisoning results in swelling of the feet and legs, arthralgia, vomiting, insomnia, hyperesthesia and paresthesia of the hands and feet, mental confusion, polyneuritis with severe pain in the legs and loins, partial paralysis of the legs, angina-like pains, nephritis, wasting and weakness, and lymphocytosis and eosinophilia. In chronic poisoning, central and peripheral nervous system abnormalities may persist including ataxia, tremor, incoordination, paralysis of extremities, endocrine disorders, memory loss, and psychoses may develop., To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

SECTION 12: Ecological information

12.1 Toxicity

Toxicity to fish	LC50 - Cyprinodon variegatus (sheepshead minnow) - 21,0 mg/l - 96,0 h
	mortality NOEC - Cyprinodon variegatus (sheepshead minnow) - 14,0 mg/l - 96,0 h

12.2 Persistence and degradability
No data available

12.3 Bioaccumulative potential
No data available

12.4 Mobility in soil
No data available

12.5 Results of PBT and vPvB assessment
This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

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12.6 Endocrine disrupting properties

Product:

Assessment : The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

12.7 Other adverse effects

No data available

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product

See www.retrologistik.com for processes regarding the return of chemicals and containers, or contact us there if you have further questions.

SECTION 14: Transport information

14.1 UN number

ADR/RID: 3288 IMDG: 3288 IATA: 3288

14.2 UN proper shipping name

ADR/RID: TOXIC SOLID, INORGANIC, N.O.S. (Thallium)
IMDG: TOXIC SOLID, INORGANIC, N.O.S. (Thallium)
IATA: Toxic solid, inorganic, n.o.s. (Thallium)

14.3 Transport hazard class(es)

ADR/RID: 6.1 IMDG: 6.1 IATA: 6.1

14.4 Packaging group

ADR/RID: II IMDG: II IATA: II

14.5 Environmental hazards

ADR/RID: no IMDG Marine pollutant: no IATA: no

14.6 Special precautions for user

Tunnel restriction code : (D/E)

Further information : No data available

SECTION 15: Regulatory information

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

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This material safety data sheet complies with the requirements of Regulation (EC) No. 1907/2006.

Authorisations and/or restrictions on use

National legislation

Seveso III: Directive 2012/18/EU of the European Parliament and of the Council on the control of major-accident hazards involving dangerous substances.	H2	ACUTE TOXIC

Other regulations

Observe work restrictions regarding maternity protection in accordance to Dir 92/85/EEC or stricter national regulations where applicable.

Take note of Dir 94/33/EC on the protection of young people at work.

15.2 Chemical Safety Assessment

For this product a chemical safety assessment was not carried out

SECTION 16: Other information

Full text of H-Statements

H300	Fatal if swallowed.
H330	Fatal if inhaled.
H373	May cause damage to organs through prolonged or repeated exposure.
H413	May cause long lasting harmful effects to aquatic life.

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Full text of other abbreviations

ADN - European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways; ADR - Agreement concerning the International Carriage of Dangerous Goods by Road; AIIC - Australian Inventory of Industrial Chemicals; ASTM - American Society for the Testing of Materials; bw - Body weight; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RID - Regulations concerning the International Carriage of Dangerous Goods by Rail; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TECI - Thailand Existing Chemicals Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative

Further information

The information is believed to be correct but is not exhaustive and will be used solely as a guideline, which is based on current knowledge of the chemical substance or mixture and is applicable to appropriate safety precautions for the product. 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.

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SAFETY DATA SHEET

Revision Date 26-Dec-2021 **Revision Number** 4

1. Identification

Product Name **Selenium**

Cat No. : **AC419270000; AC419271000; AC419275000**

CAS No 7782-49-2
Synonyms None

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

Acros Organics
One Reagent Lane
Fair Lawn, NJ 07410

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

2. Hazard(s) identification

Classification

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

Acute oral toxicity	Category 3
Acute Inhalation Toxicity - Dusts and Mists	Category 3
Specific target organ toxicity - (repeated exposure)	Category 2

Label Elements

Signal Word
Danger

Hazard Statements
May cause damage to organs through prolonged or repeated exposure
Toxic if swallowed or if inhaled



Precautionary Statements
Prevention
Wash face, hands and any exposed skin thoroughly after handling
Do not eat, drink or smoke when using this product
Use only outdoors or in a well-ventilated area
Do not breathe dust/fume/gas/mist/vapors/spray
Response
Get medical attention/advice if you feel unwell
Inhalation
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
Call a POISON CENTER or doctor/physician
Ingestion
IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician
Rinse mouth
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)
May cause long lasting harmful effects to aquatic life

3. Composition/Information on Ingredients

Component	CAS No	Weight %
Selenium	7782-49-2	> 99.5

4. First-aid measures

General Advice Show this safety data sheet to the doctor in attendance. Immediate medical attention is required.

Eye Contact Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Immediate medical attention is required.

Skin Contact Wash off immediately with plenty of water for at least 15 minutes. Immediate medical attention is required.

Inhalation Remove to fresh air. If not breathing, give artificial respiration. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Immediate medical attention is required.

Ingestion Do NOT induce vomiting. Call a physician or poison control center immediately.

Most important symptoms and effects None reasonably foreseeable.

Notes to Physician Treat symptomatically

5. Fire-fighting measures

Unsuitable Extinguishing Media No information available

Flash Point No information available
Method - No information available

Autoignition Temperature Not applicable
Explosion Limits
Upper No data available
Lower No data available
Sensitivity to Mechanical Impact No information available
Sensitivity to Static Discharge No information available

Specific Hazards Arising from the Chemical
Dust can form an explosive mixture with air.

Hazardous Combustion Products
None known.
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. Thermal decomposition can lead to release of irritating gases and vapors.

NFPA

Health	Flammability	Instability	Physical hazards
3	0	0	N/A

6. Accidental release measures

Personal Precautions Ensure adequate ventilation. Use personal protective equipment as required. Avoid dust formation. Keep people away from and upwind of spill/leak. Evacuate personnel to safe areas.
Environmental Precautions Should not be released into the environment.

Methods for Containment and Clean Up Sweep up and shovel into suitable containers for disposal. Avoid dust formation.

7. Handling and storage

Handling Wear personal protective equipment/face protection. Do not get in eyes, on skin, or on clothing. Avoid dust formation. Use only under a chemical fume hood. Do not breathe (dust, vapor, mist, gas). Do not ingest. If swallowed then seek immediate medical assistance.

Storage. Keep in a dry, cool and well-ventilated place. Keep container tightly closed. Keep under nitrogen. Incompatible Materials. Acids. Strong oxidizing agents. Fluorine. oxygen. Metals.

8. Exposure controls / personal protection

Exposure Guidelines

Component	ACGIH TLV	OSHA PEL	NIOSH IDLH	Mexico OEL (TWA)
Selenium	TWA: 0.2 mg/m³	(Vacated) TWA: 0.2 mg/m³	IDLH: 1 mg/m³ TWA: 0.2 mg/m³	TWA: 0.2 mg/m³

Legend

ACGIH - American Conference of Governmental Industrial Hygienists
OSHA - Occupational Safety and Health Administration
NIOSH IDLH: NIOSH - National Institute for Occupational Safety and Health

Engineering Measures 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 A NIOSH/MSHA approved air purifying dust or mist respirator or European Standard EN 149.

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

9. Physical and chemical properties

Physical State	Powder Solid Granules
Appearance	Dark grey
Odor	No information available
Odor Threshold	No information available
pH	No information available
Melting Point/Range	217 - 222 °C / 422.6 - 431.6 °F
Boiling Point/Range	685 °C / 1265 °F
Flash Point	No information available
Evaporation Rate	Not applicable
Flammability (solid,gas)	No information available
Flammability or explosive limits	
Upper	No data available
Lower	No data available
Vapor Pressure	1 mmHg @ 345 °C
Vapor Density	Not applicable
Specific Gravity	4.810
Solubility	No information available
Partition coefficient; n-octanol/water	No data available
Autoignition Temperature	Not applicable
Decomposition Temperature	No information available
Viscosity	Not applicable
Molecular Formula	Se
Molecular Weight	78.96

10. Stability and reactivity

Reactive Hazard None known, based on information available

Stability Stable under normal conditions.

Conditions to Avoid Incompatible products.

Incompatible Materials Acids, Strong oxidizing agents, Fluorine, oxygen, Metals

Hazardous Decomposition Products None under normal use conditions

Hazardous Polymerization Hazardous polymerization does not occur.

Hazardous Reactions None under normal processing.

11. Toxicological information

Acute Toxicity

Product Information

Component Information

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Selenium	LD50 = 6700 mg/kg (Rat)	Not listed	>5.67 mg/l (Rat) 4hr

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
Selenium	7782-49-2	Not listed	Not listed	Not listed	Not listed	Not listed

Mutagenic Effects No information available

Reproductive Effects No information available.

Developmental Effects No information available.

Teratogenicity No information available.

STOT - single exposure None known

STOT - repeated exposure None known

Aspiration hazard No information available

Symptoms / effects,both acute and delayed No information available

Endocrine Disruptor Information No information available

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

12. Ecological information

Ecotoxicity

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Component	Freshwater Algae	Freshwater Fish	Microtox	Water Flea
Selenium	Not listed	LC50: > 100 mg/L, 96h semi-static (Oncorhynchus mykiss)	Not listed	Not listed

Persistence and Degradability Insoluble in water

Bioaccumulation/ Accumulation No information available.

Mobility Is not likely mobile in the environment due its low water solubility.

13. Disposal considerations

Waste Disposal Methods Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

14. Transport information

DOT

UN-No	UN3283
Hazard Class	6.1
Packing Group	III

TDG

UN-No	UN3283
Hazard Class	6.1
Packing Group	III

IATA

UN-No	UN3283
Proper Shipping Name	SELENIUM COMPOUND, SOLID, N.O.S.
Hazard Class	6.1
Packing Group	III

IMDG/IMO

UN-No	UN3283
Proper Shipping Name	SELENIUM COMPOUND, SOLID, N.O.S.
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
Selenium	7782-49-2	X	ACTIVE	-

Legend:
TSCA US EPA (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), Japan (ISHL), Australia (AICS), China (IECSC), Korea (KECL).

Component	CAS No	DSL	NDSL	EINECS	PICCS	ENCS	ISHL	AICS	IECSC	KECL
Selenium	7782-49-2	X	-	231-957-4	X	X		X	X	KE-30924

KECL - NIER number or KE number (http://ncis.nier.go.kr/en/main.do)

U.S. Federal Regulations

SARA 313

Component	CAS No	Weight %	SARA 313 - Threshold Values %
Selenium	7782-49-2	> 99.5	1.0

SARA 311/312 Hazard Categories See section 2 for more information

CWA (Clean Water Act)

Component	CWA - Hazardous Substances	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants
Selenium	-	-	X	X

Clean Air Act

OSHA - Occupational Safety and Health Administration Not applicable

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
Selenium	100 lb	-

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
Selenium	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

Authorisation/Restrictions according to EU REACH

Component	REACH (1907/2006) - Annex XIV - Substances Subject to Authorization	REACH (1907/2006) - Annex XVII - Restrictions on Certain Dangerous Substances	REACH Regulation (EC 1907/2006) article 59 - Candidate List of Substances of Very High Concern (SVHC)
Selenium	-	Use restricted. See item 75. (see link for restriction details)	-

https://echa.europa.eu/substances-restricted-under-reach

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

Component	CAS No	OECD HPV	Persistent Organic Pollutant	Ozone Depletion Potential	Restriction of Hazardous Substances (RoHS)
Selenium	7782-49-2	Not applicable	Not applicable	Not applicable	Not applicable

Component	CAS No	Seveso III Directive (2012/18/EC) - Qualifying Quantities for Major Accident Notification	Seveso III Directive (2012/18/EC) - Qualifying Quantities for Safety Report Requirements	Rotterdam Convention (PIC)	Basel Convention (Hazardous Waste)
Selenium	7782-49-2	Not applicable	Not applicable	Not applicable	Annex I - Y25

16. Other information

Prepared By Regulatory Affairs
Thermo Fisher Scientific
Email: EMSDS.RA@thermofisher.com

Revision Date 26-Dec-2021
Print Date 26-Dec-2021

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

Version 6.7
Revision Date 09/06/2024
Print Date 09/07/2024

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifiers

Product name : Nickel

Product Number : 266981
Brand : Aldrich
Index-No. : 028-002-01-4
CAS-No. : 7440-02-0

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

Identified uses : Laboratory chemicals, Synthesis of substances

Uses advised against : The product is being supplied under the TSCA R&D Exemption (40 CFR Section 720.36). It is the recipient's responsibility to comply with the requirements of the R&D exemption. The product may not be used for a non-exempt commercial purpose under TSCA unless appropriate consent is granted in writing by MilliporeSigma.

1.3 Details of the supplier of the safety data sheet

Company : Sigma-Aldrich Inc.
3050 SPRUCE ST
ST. LOUIS MO 63103
UNITED STATES

Telephone : +1 314 771-5765
Fax : +1 800 325-5052

1.4 Emergency telephone

Emergency Phone # : 800-424-9300 CHEMTREC (USA) +1-703-527-3887 CHEMTREC (International) 24 Hours/day; 7 Days/week

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)

Skin sensitization (Category 1), H317
Carcinogenicity (Category 2), H351
Specific target organ toxicity - repeated exposure, Inhalation (Category 1), Lungs, H372

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Short-term (acute) aquatic hazard (Category 3), H402
Long-term (chronic) aquatic hazard (Category 3), H412

For the full text of the H-Statements mentioned in this Section, see Section 16.

2.2 GHS Label elements, including precautionary statements

Pictogram



Signal Word Danger

Hazard Statements

H317	May cause an allergic skin reaction.
H351	Suspected of causing cancer.
H372	Causes damage to organs (Lungs) through prolonged or repeated exposure if inhaled.
H412	Harmful to aquatic life with long lasting effects.

Precautionary Statements

P201	Obtain special instructions before use.
P202	Do not handle until all safety precautions have been read and understood.
P260	Do not breathe dust.
P264	Wash skin thoroughly after handling.
P270	Do not eat, drink or smoke when using this product.
P272	Contaminated work clothing must not be allowed out of the workplace.
P273	Avoid release to the environment.
P280	Wear protective gloves/ protective clothing/ eye protection/ face protection.
P302 + P352	IF ON SKIN: Wash with plenty of soap and water.
P308 + P313	IF exposed or concerned: Get medical advice/ attention.
P333 + P313	If skin irritation or rash occurs: Get medical advice/ attention.
P363	Wash contaminated clothing before reuse.
P405	Store locked up.
P501	Dispose of contents/ container to an approved waste disposal plant.

2.3 Hazards not otherwise classified (HNOC) or not covered by GHS - none

SECTION 3: Composition/information on ingredients

3.1 Substances

Formula	:	Ni
Molecular weight	:	58.69 g/mol
CAS-No.	:	7440-02-0
EC-No.	:	231-111-4
Index-No.	:	028-002-01-4

Component	Classification	Concentration
nickel powder; [particle diameter < 1 mm]		
	Skin Sens. 1; Carc. 2;	<= 100 %

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	STOT RE 1; Aquatic Acute 3; Aquatic Chronic 3; H317, H351, H372, H402, H412	

For the full text of the H-Statements mentioned in this Section, see Section 16.

SECTION 4: First aid measures

4.1 Description of first-aid measures

General advice
Show this material safety data sheet to the doctor in attendance.

If inhaled
After inhalation: fresh air. Call in physician.

In case of skin contact
In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/ shower. Consult a physician.

In case of eye contact
After eye contact: rinse out with plenty of water. Call in ophthalmologist. Remove contact lenses.

If swallowed
After swallowing: immediately make victim drink water (two glasses at most). Consult a physician.

4.2 Most important symptoms and effects, both acute and delayed
The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

4.3 Indication of any immediate medical attention and special treatment needed
No data available

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media
Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable extinguishing media
For this substance/mixture no limitations of extinguishing agents are given.

5.2 Special hazards arising from the substance or mixture
Nickel/nickel oxides
Not combustible.
Ambient fire may liberate hazardous vapours.

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5.3 Advice for firefighters
Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

5.4 Further information
Suppress (knock down) gases/vapors/mists with a water spray jet. Prevent fire extinguishing water from contaminating surface water or the ground water system.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures
Advice for non-emergency personnel: Avoid generation and inhalation of dusts in all circumstances. Avoid substance contact. Ensure adequate ventilation. Evacuate the danger area, observe emergency procedures, consult an expert.
For personal protection see section 8.

6.2 Environmental precautions
Do not let product enter drains.

6.3 Methods and materials for containment and cleaning up
Cover drains. Collect, bind, and pump off spills. Observe possible material restrictions (see sections 7 and 10). Take up dry. Dispose of properly. Clean up affected area. Avoid generation of dusts.

6.4 Reference to other sections
For disposal see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Advice on safe handling
Work under hood. Do not inhale substance/mixture.

Hygiene measures
Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance.
For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities

Storage conditions
Tightly closed. Keep away from heat and sources of ignition. Keep locked up or in an area accessible only to qualified or authorized persons.

Handle and store under inert gas.

Storage class
Storage class (TRGS 510): 4.1B: Flammable solid hazardous materials

7.3 Specific end use(s)
Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

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SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Ingredients with workplace control parameters

Component	CAS-No.	Value	Control parameters	Basis
nickel powder; [particle diameter < 1 mm]	7440-02-0	TWA	1.5 mg/m3	USA. ACGIH Threshold Limit Values (TLV)
	Remarks	Not suspected as a human carcinogen		
		PEL	0.5 mg/m3	California permissible exposure limits for chemical contaminants (Title 8, Article 107)
		TWA	1 mg/m3	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
		TWA	0.015 mg/m3	USA. NIOSH Recommended Exposure Limits
		Potential Occupational Carcinogen		

Biological occupational exposure limits

Component	CAS-No.	Parameters	Value	Biological specimen	Basis
nickel powder; [particle diameter < 1 mm]	7440-02-0	Nickel	5 µg/l	Urine	ACGIH - Biological Exposure Indices (BEI)
	Remarks	End of shift at end of workweek			
		Nickel	30 µg/l	Urine	ACGIH - Biological Exposure Indices (BEI)
		End of shift at end of workweek			

8.2 Exposure controls

Appropriate engineering controls
Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance.

Personal protective equipment

Eye/face protection
Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU). Safety glasses

Body Protection
protective clothing

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Respiratory protection
Recommended Filter type: Filter type P3
The entrepeneur has to ensure that maintenance, cleaning and testing of respiratory protective devices are carried out according to the instructions of the producer. These measures have to be properly documented.
required when dusts are generated.
Our recommendations on filtering respiratory protection are based on the following standards: DIN EN 143, DIN 14387 and other accompanying standards relating to the used respiratory protection system.

Control of environmental exposure
Do not let product enter drains.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

a)	Appearance	Form: powder Color: gray
b)	Odor	No data available
c)	Odor Threshold	No data available
d)	pH	No data available
e)	Melting point/freezing point	Melting point: 1,455 °C (2,651 °F)
f)	Initial boiling point and boiling range	2,730 °C 4,946 °F
g)	Flash point	()Not applicable
h)	Evaporation rate	No data available
i)	Flammability (solid, gas)	No data available
j)	Upper/lower flammability or explosive limits	No data available
k)	Vapor pressure	1 hPa at 1,810 °C (3,290 °F)
l)	Vapor density	No data available
m)	Density	8.9 g/cm3 at 25 °C (77 °F) - lit.
	Relative density	No data available
n)	Water solubility	insoluble
o)	Partition coefficient: n-octanol/water	Not applicable for inorganic substances
p)	Autoignition temperature	No data available
q)	Decomposition	No data available

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temperature

r)	Viscosity	No data available
s)	Explosive properties	No data available
t)	Oxidizing properties	none

9.2 Other safety information
No data available

SECTION 10: Stability and reactivity

10.1 Reactivity
No data available

10.2 Chemical stability
The product is chemically stable under standard ambient conditions (room temperature) .

10.3 Possibility of hazardous reactions
No data available

10.4 Conditions to avoid
no information available

10.5 Incompatible materials
acids, Oxidizing agents, Sulfur compounds, Hydrogen gas, Oxygen, Methanol, organic solvents, Aluminum, Fluorine, Ammonia

10.6 Hazardous decomposition products
In the event of fire: see section 5

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity
LD50 Oral - Rat - male and female - > 9,000 mg/kg
(OECD Test Guideline 401)
Inhalation: No data available
Dermal: No data available
No data available

Skin corrosion/irritation
Skin - Rabbit
Result: No skin irritation - 4 h
(OECD Test Guideline 404)

Serious eye damage/eye irritation
Eyes - Rabbit
Result: No eye irritation

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(OECD Test Guideline 405)

Respiratory or skin sensitization
No data available

Germ cell mutagenicity
No data available
Test Type: gene mutation test
Test system: Chinese hamster fibroblasts
Metabolic activation: without metabolic activation
Method: OECD Test Guideline 476
Result: negative
Test Type: Micronucleus test
Test system: Chinese hamster fibroblasts
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 487
Result: negative

Carcinogenicity
Suspected of causing cancer.

IARC: 2B - Group 2B: Possibly carcinogenic to humans (nickel powder; [particle diameter < 1 mm])

1 - Group 1: Carcinogenic to humans (nickel powder; [particle diameter < 1 mm])

2B - Group 2B: Possibly carcinogenic to humans (nickel powder; [particle diameter < 1 mm])

IARC: 2B - Group 2B: Possibly carcinogenic to humans (nickel powder; [particle diameter < 1 mm])

1 - Group 1: Carcinogenic to humans (nickel powder; [particle diameter < 1 mm])

2B - Group 2B: Possibly carcinogenic to humans (nickel powder; [particle diameter < 1 mm])

NTP: RAHC - Reasonably anticipated to be a human carcinogen (nickel powder; [particle diameter < 1 mm])

RAHC - Reasonably anticipated to be a human carcinogen (nickel powder; [particle diameter < 1 mm])

OSHA: No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

Reproductive toxicity
No data available

Specific target organ toxicity - single exposure
No data available

Specific target organ toxicity - repeated exposure
Inhalation - Causes damage to organs through prolonged or repeated exposure.
- Lungs

Aspiration hazard
No data available

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11.2 Additional Information

Repeated dose toxicity - Rat - male and female - Oral - 728 d - NOAEL (No observed adverse effect level) - 2.2 mg/kg - LOAEL (Lowest observed adverse effect level) - 6.7 mg/kg

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

Stomach - Irregularities - Based on Human Evidence

Stomach - Irregularities - Based on Human Evidence

SECTION 12: Ecological information

12.1 Toxicity

Toxicity to fish	semi-static test LC50 - Oncorhynchus mykiss (rainbow trout) - 15.3 mg/l - 96 h Remarks: (ECHA)
Toxicity to daphnia and other aquatic invertebrates	static test LC50 - Ceriodaphnia dubia (water flea) - 0.074 mg/l - 48 h Remarks: (ECHA)
Toxicity to algae	static test EC50 - Pseudokirchneriella subcapitata (green algae) - > 81.5 - 148 mg/l - 72 h (OECD Test Guideline 201)
Toxicity to daphnia and other aquatic invertebrates(Chronic toxicity)	semi-static test EC10 - Ceriodaphnia dubia (water flea) - > 2.8 - 53.6 µg/l - 7 d (US-EPA)

12.2 Persistence and degradability

The methods for determining biodegradability are not applicable to inorganic substances.

12.3 Bioaccumulative potential

No data available

12.4 Mobility in soil

No data available

12.5 Results of PBT and vPvB assessment

PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

12.6 Endocrine disrupting properties

No data available

12.7 Other adverse effects

No data available

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SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product
Waste material must be disposed of in accordance with the national and local regulations. Leave chemicals in original containers. No mixing with other waste. Handle uncleaned containers like the product itself.

SECTION 14: Transport information

DOT (US)
UN number: 3089 Class: 4.1 Packing group: II
Proper shipping name: Metal powders, flammable, n.o.s.
Reportable Quantity (RQ):
Poison Inhalation Hazard: No

IMDG
UN number: 3089 Class: 4.1 Packing group: II EMS-No: F-G, S-G
Proper shipping name: METAL POWDER, FLAMMABLE, N.O.S. (nickel powder; [particle diameter < 1 mm])
Marine pollutant : yes

IATA
UN number: 3089 Class: 4.1 Packing group: II
Proper shipping name: Metal powder, flammable, n.o.s.

SECTION 15: Regulatory information

CERCLA Reportable Quantity
This material does not contain any components with a CERCLA RQ.

SARA 304 Extremely Hazardous Substances Reportable Quantity
This material does not contain any components with a section 304 EHS RQ.

SARA 302 Extremely Hazardous Substances Threshold Planning Quantity
This material does not contain any components with a section 302 EHS TPQ.

SARA 311/312 Hazards : Fire Hazard
Acute Health Hazard
Chronic Health Hazard

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

US State Regulations

Massachusetts Right To Know

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

Pennsylvania Right To Know

nickel powder; [particle diameter < 1 mm]	7440-02-0

Maine Chemicals of High Concern

nickel powder; [particle diameter < 1 mm]	7440-02-0

Vermont Chemicals of High Concern

Product does not contain any listed chemicals

Washington Chemicals of High Concern

Product does not contain any listed chemicals

California Prop. 65

WARNING: This product can expose you to chemicals including nickel powder; [particle diameter < 1 mm], which is/are known to the State of California to cause cancer. For more information go to www.P65Warnings.ca.gov.

The ingredients of this product are reported in the following inventories:

TSCA : All substances listed as active on the TSCA inventory

TSCA list

No substances are subject to a Significant New Use Rule.

No substances are subject to TSCA 12(b) export notification requirements.

SECTION 16: Other information

Further information

The information is believed to be correct but is not exhaustive and will be used solely as a guideline, which is based on current knowledge of the chemical substance or mixture and is applicable to appropriate safety precautions for the product. 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.

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SAFETY DATA SHEET

Version 6.9
Revision Date 04/24/2025
Print Date 04/24/2025

SECTION 1. IDENTIFICATION

1.1 Product identifiers

Product name : Chromium

Product Number : 266299
Brand : Aldrich
CAS-No. : 7440-47-3

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

Identified uses : Laboratory chemicals, Synthesis of substances

Uses advised against : The product is being supplied under the TSCA R&D Exemption (40 CFR Section 720.36). It is the recipient's responsibility to comply with the requirements of the R&D exemption. The product may not be used for a non-exempt commercial purpose under TSCA unless appropriate consent is granted in writing by MilliporeSigma.

1.3 Details of the supplier of the safety data sheet

Company : Sigma-Aldrich Inc.
3050 SPRUCE ST
ST. LOUIS MO 63103
UNITED STATES

Telephone : +1 314 771-5765
Fax : +1 800 325-5052

1.4 Emergency telephone

Emergency Phone # : 800-424-9300 CHEMTREC (USA) +1-703-527-3887 CHEMTREC (International) 24 Hours/day; 7 Days/week

SECTION 2. HAZARDS IDENTIFICATION

GHS classification in accordance with the OSHA Hazard Communication Standard (29 CFR 1910.1200)

Not a hazardous substance or mixture.

Other hazards

None known.

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GHS label elements

Not a hazardous substance or mixture.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Substance

Components

Chemical name	CAS No./Unique ID	Concentration (% w/w)	Trade secret
chromium	7440-47-3*	>= 90 - <= 100	-

* Indicates that the identifier is a CAS No.
Actual concentration is withheld as a trade secret

SECTION 4. FIRST AID MEASURES

If inhaled : After inhalation: fresh air.

In case of skin contact : In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/ shower.

In case of eye contact : After eye contact: rinse out with plenty of water. Remove contact lenses.

If swallowed : After swallowing: make victim drink water (two glasses at most). Consult doctor if feeling unwell.

Most important symptoms and effects, both acute and delayed : The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

Protection of first-aiders : For personal protection see section 8.

Notes to physician : No data available

SECTION 5. FIRE-FIGHTING MEASURES

Unsuitable extinguishing media : For this substance/mixture no limitations of extinguishing agents are given.

Hazardous combustion products : Chromium oxides

Specific extinguishing methods : No data available

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Further information	:	none
Special protective equipment for fire-fighters	:	In the event of fire, wear self-contained breathing apparatus.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures	:	Advice for non-emergency personnel: Avoid inhalation of dusts. Evacuate the danger area, observe emergency procedures, consult an expert. Advice for emergency responders: For personal protection see section 8.
Environmental precautions	:	No special precautionary measures necessary.
Methods and materials for containment and cleaning up	:	Observe possible material restrictions (see sections 7 and 10). Take up dry. Dispose of properly. Clean up affected area. Avoid generation of dusts.

SECTION 7. HANDLING AND STORAGE

For precautions see section 2.2.

Further information on storage conditions	:	Tightly closed. Dry.
Storage class	:	11, Combustible Solids
Recommended storage temperature	:	Recommended storage temperature see product label.
Further information on storage stability	:	Air sensitive.
Packaging material	:	Suitable material: Amber Glass Bottle/Jar

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Ingredients with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis

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chromium	7440-47-3	TWA	0.5 mg/m3 (chromium)	ACGIH
		TWA	1 mg/m3 (chromium)	OSHA Z-1

Biological occupational exposure limits

Components	CAS-No.	Control parameters	Biological specimen	Sampling time	Permissible concentration	Basis
chromium	7440-47-3	Total chromium (chromium)	Urine	End of shift at end of workweek	0.7 µg/l	ACGIH BEI

Engineering measures : No data available

Personal protective equipment

Respiratory protection : required when dusts are generated.

Our recommendations on filtering respiratory protection are based on the following standards: DIN EN 143, DIN 14387 and other accompanying standards relating to the used respiratory protection system.

Recommended Filter type: : Filter type P1

The entrepeneur has to ensure that maintenance, cleaning and testing of respiratory protective devices are carried out according to the instructions of the producer. These measures have to be properly documented.

Hand protection

Material : Nitrile rubber
Break through time : 480 min
Glove thickness : 0.11 mm
Protective index : Full contact
Manufacturer : Dermatril® (KCL 740 / Aldrich Z677272, Size M)

Material : Nitrile rubber
Break through time : 480 min
Glove thickness : 0.11 mm
Protective index : Splash contact
Manufacturer : Dermatril® (KCL 740 / Aldrich Z677272, Size M)

Manufacturer : data source: KCL GmbH, D-36124 Eichenzell, phone

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		+49 (0)6659 87300, e-mail sales@kcl.de, test method: EN374
Remarks	:	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. If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the EC approved gloves. This recommendation is advisory only and must be evaluated by an industrial hygienist and safety officer familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.
Eye protection	:	Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU). Safety glasses
Hygiene measures	:	Change contaminated clothing. Wash hands after working with substance.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	:	powder
Color	:	light gray
Odor	:	odorless
Odor Threshold	:	No data available
pH	:	No data available
Melting point/ range	:	3,375 °F / 1,857 °C Method: lit.
Boiling point/boiling range	:	4,842 °F / 2,672 °C Method: lit.
Flash point	:	Not applicable
Evaporation rate	:	No data available
Flammability (solid, gas)	:	No data available

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Flammability (liquids)	:	No data available
Burning rate	:	No data available
Upper explosion limit / Upper flammability limit	:	No data available
Lower explosion limit / Lower flammability limit	:	No data available
Vapor pressure	:	No data available
Relative vapor density	:	No data available
Relative density	:	No data available
Density	:	7.14 g/mL (77 °F / 25 °C) Method: lit.
Solubility(ies)		
Water solubility	:	insoluble
Partition coefficient: n-octanol/water	:	Not applicable for inorganic substances
Autoignition temperature	:	No data available
Decomposition temperature	:	No data available
Viscosity, dynamic	:	No data available
Viscosity, kinematic	:	No data available
Flow time	:	No data available
Explosive properties	:	No data available
Oxidizing properties	:	none
Molecular weight	:	52.00 g/mol
Particle characteristics		
Particle size	:	No data available

SECTION 10. STABILITY AND REACTIVITY

Reactivity	:	No data available

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Chemical stability	:	The product is chemically stable under standard ambient conditions (room temperature) .
Possibility of hazardous reactions	:	No data available
Conditions to avoid	:	no information available
Incompatible materials	:	Strong acids Strong oxidizing agents
Hazardous decomposition products	:	In the event of fire: see section 5

SECTION 11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity
Oral: No data available
Inhalation: No data available
Dermal: No data available
No data available

Skin corrosion/irritation
Remarks: No data available

Serious eye damage/eye irritation
Remarks: No data available

Respiratory or skin sensitization
No data available

Germ cell mutagenicity
No data available

Carcinogenicity

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

NTP: No ingredient 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 on OSHA's list of regulated carcinogens.

Reproductive toxicity
No data available

Specific target organ toxicity - single exposure
No data available

Specific target organ toxicity - repeated exposure
No data available

Aspiration hazard
No data available

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11.2 Additional Information

RTECS: GB4200000
To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Stomach - Irregularities - Based on Human Evidence

Stomach - Irregularities - Based on Human Evidence

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Components:

chromium:

Toxicity to fish	:	LC50 (Cyprinus carpio (Carp)): 14.3 mg/l Exposure time: 96 h
Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Daphnia magna (Water flea)): 0.07 mg/l Exposure time: 48 h

Persistence and degradability

Components:

chromium:

Biodegradability	:	Remarks: The methods for determining biodegradability are not applicable to inorganic substances.

Bioaccumulative potential

Components:

chromium:

Bioaccumulation	:	Species: Oncorhynchus mykiss (rainbow trout) Bioconcentration factor (BCF): 1.03 - 1.22 Exposure time: 30 d Concentration: 50 µg/l
Partition coefficient: n-octanol/water	:	Remarks: Not applicable for inorganic substances

Mobility in soil

Components:

chromium:

Stability in soil	:	Remarks: No data available

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Other adverse effects

Components:

chromium:

Additional ecological information	:	No data available

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods

Waste from residues	:	Waste material must be disposed of in accordance with the national and local regulations. Leave chemicals in original containers. No mixing with other waste. Handle uncleaned containers like the product itself.

SECTION 14. TRANSPORT INFORMATION

International Regulations

IATA-DGR
Not regulated as a dangerous good

IMDG-Code
Not regulated as a dangerous good

Transport in bulk according to IMO instruments
Not applicable for product as supplied.

National regulation

49 CFR Road

UN/ID/NA number	:	UN 3077
Proper shipping name	:	Environmentally hazardous substance, solid, n.o.s. (chromium)
Class	:	9
Packing group	:	III
Labels	:	Class 9 - Miscellaneous dangerous substances and articles
ERG Code	:	171
Marine pollutant	:	no
Poison Inhalation Hazard	:	No

Special precautions for user

Remarks	:	Not classified as dangerous in the meaning of transport regulations.

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The transport classification(s) provided herein are for informational purposes only, and solely based upon the properties of the unpackaged material as it is described within this Safety Data Sheet. Transportation classifications may vary by mode of transportation, package sizes, and variations in regional or country regulations.

SECTION 15. REGULATORY INFORMATION

CERCLA Reportable Quantity

Components	CAS-No.	Component RQ (lbs)	Calculated product RQ (lbs)
chromium	7440-47-3	5000	5000

SARA 304 Extremely Hazardous Substances Reportable Quantity

This material does not contain any components with a section 304 EHS RQ.

SARA 302 Extremely Hazardous Substances Threshold Planning Quantity

This material does not contain any components with a section 302 EHS TPQ.

SARA 311/312 Hazards : Chronic Health Hazard

SARA 313 : The following components are subject to reporting levels established by SARA Title III, Section 313:

chromium 7440-47-3 >= 90 - <= 100 %

US State Regulations

Massachusetts Right To Know

chromium 7440-47-3

Pennsylvania Right To Know

chromium 7440-47-3

Maine Chemicals of High Concern

Product does not contain any listed chemicals

Vermont Chemicals of High Concern

Product does not contain any listed chemicals

Washington Chemicals of High Concern

Product does not contain any listed chemicals

The ingredients of this product are reported in the following inventories:

TSCA : All substances listed as active on the TSCA inventory

TSCA list

No substances are subject to a Significant New Use Rule.

No substances are subject to TSCA 12(b) export notification requirements.

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SECTION 16. OTHER INFORMATION

Full text of other abbreviations

ACGIH	:	USA. ACGIH Threshold Limit Values (TLV)
ACGIH BEI	:	ACGIH - Biological Exposure Indices (BEI)
OSHA Z-1	:	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
ACGIH / TWA	:	8-hour, time-weighted average
OSHA Z-1 / TWA	:	8-hour time weighted average

AIIC - Australian Inventory of Industrial Chemicals; ASTM - American Society for the Testing of Materials; bw - Body weight; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DOT - Department of Transportation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; EHS - Extremely Hazardous Substance; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; HMIS - Hazardous Materials Identification System; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; MSHA - Mine Safety and Health Administration; n.o.s. - Not Otherwise Specified; NFPA - National Fire Protection Association; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; RCRA - Resource Conservation and Recovery Act; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RQ - Reportable Quantity; SADT - Self-Accelerating Decomposition Temperature; SARA - Superfund Amendments and Reauthorization Act; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TECI - Thailand Existing Chemicals Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative

The information is believed to be correct but is not exhaustive and will be used solely as a guideline, which is based on current knowledge of the chemical substance or mixture and is applicable to appropriate safety precautions for the product. 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

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Revision Date : 04/24/2025

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US / EN

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SAFETY DATA SHEET

Creation Date 09-Mar-2018 **Revision Date** 19-May-2022 **Revision Number** 7

1. Identification

Product Name **Barium**

Cat No. : **AC317860000; AC317860250; AC317861000; AC317865000**

CAS No 7440-39-3
Synonyms No information available

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 Company
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 solids	Category 2
Substances/mixtures which, in contact with water, emit flammable gases	Category 1
Acute oral toxicity	Category 3
Skin Corrosion/Irritation	Category 1 B
Serious Eye Damage/Eye Irritation	Category 1
Specific target organ toxicity (single exposure)	Category 3
Target Organs - Respiratory system.	

Label Elements

Signal Word
Danger

Hazard Statements

Flammable solid
In contact with water releases flammable gases which may ignite spontaneously
Toxic if swallowed
Causes severe skin burns and eye damage
May cause respiratory irritation



Precautionary Statements
Prevention
Wash face, hands and any exposed skin thoroughly after handling
Do not eat, drink or smoke when using this product
Do not breathe dust/fume/gas/mist/vapors/spray
Wear protective gloves/protective clothing/eye protection/face protection
Use only outdoors or in a well-ventilated area
Keep away from heat/sparks/open flames/hot surfaces. - No smoking
Ground/bond container and receiving equipment
Use explosion-proof electrical/ventilating/lighting equipment
Keep away from any possible contact with water, because of violent reaction and possible flash fire
Handle under inert gas. Protect from moisture
Response
Immediately call a POISON CENTER or doctor/physician
Inhalation
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
Skin
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower
Wash contaminated clothing before reuse
Brush off loose particles from skin. Immerse in cool water/wrap with wet bandages
Eyes
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
Ingestion
Rinse mouth
Do NOT induce vomiting
Fire
In case of fire: Use CO2, dry chemical, or foam for extinction
Storage
Store locked up
Store in a well-ventilated place. Keep container tightly closed
Store in a dry place. Store in a closed container
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 %
Barium	7440-39-3	<=100

4. First-aid measures

General Advice	Show this safety data sheet to the doctor in attendance. Immediate medical attention is required.
Eye Contact	In the case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
Skin Contact	Wash off immediately with plenty of water for at least 15 minutes. Immediate medical attention is required.
Inhalation	Remove to fresh air. If not breathing, give artificial respiration. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Immediate medical attention is required.
Ingestion	Do NOT induce vomiting. Call a physician or poison control center immediately.
Most important symptoms and effects	Causes burns by all exposure routes. Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated: Ingestion causes severe swelling, severe damage to the delicate tissue and danger of perforation
Notes to Physician	Treat symptomatically

5. Fire-fighting measures

Suitable Extinguishing Media	CO_2, dry chemical, dry sand, alcohol-resistant foam.
Unsuitable Extinguishing Media	No information available
Flash Point	No information available
Method -	No information available
Autoignition Temperature	No information available
Explosion Limits	
Upper	No data available
Lower	No data available
Sensitivity to Mechanical Impact	No information available
Sensitivity to Static Discharge	No information available

Specific Hazards Arising from the Chemical
The product causes burns of eyes, skin and mucous membranes.

Hazardous Combustion Products
Barium oxides.
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. Thermal decomposition can lead to release of irritating gases and vapors.

NFPA

Health	Flammability	Instability	Physical hazards
3	3	2	W

6. Accidental release measures

Personal Precautions	Use personal protective equipment as required. Evacuate personnel to safe areas. Ensure adequate ventilation. Keep people away from and upwind of spill/leak. Avoid dust formation.
Environmental Precautions	Should not be released into the environment.
Methods for Containment and Clean Up	Sweep up and shovel into suitable containers for disposal. Avoid dust formation.

7. Handling and storage

Handling Wear personal protective equipment/face protection. Do not get in eyes, on skin, or on clothing. Use only under a chemical fume hood. Do not ingest. If swallowed then seek immediate medical assistance. Do not breathe (dust, vapor, mist, gas). Avoid dust formation.

Storage. Corrosives area. Store contents under argon. Keep containers tightly closed in a dry, cool and well-ventilated place. Keep from any possible contact with water. Incompatible Materials. Water.

8. Exposure controls / personal protection

Exposure Guidelines

Component	ACGIH TLV	OSHA PEL	NIOSH IDLH	Mexico OEL (TWA)
Barium	TWA: 0.5 mg/m³	(Vacated) TWA: 0.5 mg/m³		TWA: 0.5 mg/m³

Legend

ACGIH - American Conference of Governmental Industrial Hygienists
OSHA - Occupational Safety and Health Administration

Engineering Measures 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	Solid
Appearance	Grey Gold
Odor	No information available
Odor Threshold	No information available
pH	No information available
Melting Point/Range	727 °C / 1340.6 °F
Boiling Point/Range	1640 °C / 2984 °F
Flash Point	No information available
Evaporation Rate	Not applicable
Flammability (solid,gas)	No information available
Flammability or explosive limits	
Upper	No data available
Lower	No data available
Vapor Pressure	No information available
Vapor Density	Not applicable
Density	3.62
Specific Gravity	No information available
Solubility	No information available
Partition coefficient; n-octanol/water	No data available

Autoignition Temperature	No information available
Decomposition Temperature	No information available
Viscosity	Not applicable
Molecular Formula	Ba
Molecular Weight	137.33

10. Stability and reactivity

Reactive Hazard Yes

Stability Stable under normal conditions.

Conditions to Avoid Exposure to moist air or water.

Incompatible Materials Water

Hazardous Decomposition Products Barium oxides

Hazardous Polymerization Hazardous polymerization does not occur.

Hazardous Reactions None under normal processing.

11. Toxicological information

Acute Toxicity

Product Information

Component Information

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Barium	LD50 = 132 mg/kg (Rat)	Not listed	Not listed

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
Barium	7440-39-3	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 Respiratory system

STOT - repeated exposure None known

Aspiration hazard No information available

Symptoms / effects,both acute and delayed Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated: Ingestion causes severe swelling, severe damage to the delicate tissue and danger of perforation

Endocrine Disruptor Information No information available

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

12. Ecological information

Ecotoxicity

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Component	Freshwater Algae	Freshwater Fish	Microtox	Water Flea
Barium	Not listed	LC50: > 500 mg/L/96h (Cyprinodon variegatus)	Not listed	Not listed

Persistence and Degradability No information available

Bioaccumulation/ Accumulation No information available.

Mobility No information available.

13. Disposal considerations

Waste Disposal Methods Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

14. Transport information

DOT

UN-No UN1400
Proper Shipping Name BARIUM
Hazard Class 4.3
Packing Group II

TDG

UN-No UN1400
Proper Shipping Name BARIUM
Hazard Class 4.3
Packing Group II

IATA

UN-No UN1400
Proper Shipping Name BARIUM
Hazard Class 4.3
Packing Group II

IMDG/IMO

UN-No UN1400
Proper Shipping Name BARIUM
Hazard Class 4.3
Packing Group II

15. Regulatory information

United States of America Inventory

Component	CAS No	TSCA	TSCA Inventory notification - Active-Inactive	TSCA - EPA Regulatory Flags
Barium	7440-39-3	X	ACTIVE	-

Legend:
TSCA US EPA (TSCA) - Toxic Substances Control Act, (40 CFR Part 710)
X - Listed
'-' - Not Listed

TSCA - Per 40 CFR 751, Regulation of Certain Chemical Substances & Mixtures, Under TSCA Section 6(h) (PBT) Not applicable

TSCA 12(b) - Notices of Export Not applicable

International Inventories
X = listed.

Component	CAS No	DSL	NDSL	EINECS	PICCS	ENCS	ISHL	AICS	IECSC	KECL
Barium	7440-39-3	X	-	231-149-1	X	X		X	X	KE-02022

KECL - NIER number or KE number (http://ncis.nier.go.kr/en/main.do)

U.S. Federal Regulations

SARA 313

Component	CAS No	Weight %	SARA 313 - Threshold Values %
Barium	7440-39-3	<=100	1.0

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

Component	Hazardous Substances RQs	CERCLA EHS RQs
Barium	1000 lb	-

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
Barium	X	X	X	-	X

U.S. Department of Transportation
Reportable Quantity (RQ): N
DOT Marine Pollutant N
DOT Severe Marine Pollutant N

U.S. Department of Homeland Security This product does not contain any DHS chemicals.

Other International Regulations

Mexico - Grade No information available

Authorisation/Restrictions according to EU REACH Not applicable

Component	CAS No	REACH (1907/2006) - Annex XIV - Substances Subject to Authorization	REACH (1907/2006) - Annex XVII - Restrictions on Certain Dangerous Substances	REACH Regulation (EC 1907/2006) article 59 - Candidate List of Substances of Very High Concern (SVHC)
Barium	7440-39-3	-	-	-

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

Component	CAS No	OECD HPV	Persistent Organic Pollutant	Ozone Depletion Potential	Restriction of Hazardous Substances (RoHS)
Barium	7440-39-3	Not applicable	Not applicable	Not applicable	Not applicable

Component	CAS No	Seveso III Directive (2012/18/EC) - Qualifying Quantities for Major Accident Notification	Seveso III Directive (2012/18/EC) - Qualifying Quantities for Safety Report Requirements	Rotterdam Convention (PIC)	Basel Convention (Hazardous Waste)
Barium	7440-39-3	Not applicable	Not applicable	Not applicable	Not applicable

16. Other information

Prepared By
Regulatory Affairs
Thermo Fisher Scientific
Email: EMSDS.RA@thermofisher.com

Creation Date 09-Mar-2018
Revision Date 19-May-2022
Print Date 19-May-2022
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

Lead

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Date of issue: 12/15/2014 Revision date: 12/15/2014 Version: 1.1

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product form : Substance

CAS No : 7439-92-1

Formula : Pb

Synonyms : C.I. 77575, in massive state / elemental lead, in massive state / glover, in massive state

BIG no : 10073

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

Use of the substance/mixture : Solder
Battery: component
Construction
Electrodes

1.3. Details of the supplier of the safety data sheet

GSC International, Inc.
1747 N. Deffer Drive
Nixa,
MO 65714
United States of America

Tel: 417-374-7431
Fax: 417-374-7442
Email: info@gscinternationalinc.com

1.4. Emergency telephone number

Country	Organization/Company	Address	Emergency number
MEXICO	Servicio de Informacion Toxicologica Sintox	Tintoreto #32 Edif. a Desp. Col. Nochebuena Mixcoac México, D.F.	1 800 009 2800 +52 55 5611 2634 /+52 55 5598 9095
UNITED STATES OF AMERICA	American Association of Poison Control Centers		1-800-222-1222

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification (GHS-US)

Acute Tox. 4 (Oral)	H302
Acute Tox. 4 (Inhalation)	H332
Carc. 1B	H350
Repr. 1A	H360
STOT RE 2	H373
Aquatic Acute 1	H400
Aquatic Chronic 1	H410

Full text of H-phrases: see section 16

2.2. Label elements

GHS-US labeling

Hazard pictograms (GHS-US) :



GHS07 GHS08 GHS09

Signal word (GHS-US) : Danger

Hazard statements (GHS-US) : H302+H332 - Harmful if swallowed or if inhaled
H350 - May cause cancer
H360 - May damage fertility or the unborn child
H373 - May cause damage to organs through prolonged or repeated exposure

H400 - Very toxic to aquatic life
H410 - Very toxic to aquatic life with long lasting effects

Precautionary statements (GHS-US) : P201 - Obtain special instructions before use
P202 - Do not handle until all safety precautions have been read and understood
P260 - Do not breathe dust, fume
P264 - Wash hands thoroughly after handling
P270 - Do not eat, drink or smoke when using this product
P273 - Avoid release to the environment
P304+P340 - If inhaled: Remove person to fresh air and keep comfortable for breathing
P308+P313 - If exposed or concerned: Get medical advice/attention
P314 - Get medical advice/attention if you feel unwell
P501 - Dispose of contents/container to a licensed hazardous-waste disposal contractor or collection site except for empty clean containers which can be disposed of as non-hazardous waste

2.3. Other hazards

No additional information available

2.4. Unknown acute toxicity (GHS-US)

Not applicable

SECTION 3: Composition/information on ingredients

3.1. Substance

Name	Product identifier	%	Classification (GHS-US)
Lead (Main constituent)	(CAS No) 7439-92-1	> 99,9	Acute Tox. 4 (Oral), H302 Acute Tox. 4 (Inhalation), H332 Carc. 1B, H350 Repr. 1A, H360 STOT RE 2, H373 Aquatic Acute 1, H400 Aquatic Chronic 1, H410

Full text of H-phrases: see section 16

3.2. Mixture

Not applicable

4.1. Description of first aid measures

First-aid measures general : If you feel unwell, seek medical advice. IF exposed or concerned: Get medical advice/attention. Call a poison center/doctor/physician if you feel unwell.

First-aid measures after inhalation : Remove person to fresh air and keep comfortable for breathing. Not applicable. Call a poison center/doctor/physician if you feel unwell.

First-aid measures after skin contact : Not applicable. Wash skin with plenty of water.

First-aid measures after eye contact : Not applicable. Rinse eyes with water as a precaution.

First-aid measures after ingestion : Not applicable. Rinse mouth. Call a poison center/doctor/physician if you feel unwell.

4.2. Most important symptoms and effects, both acute and delayed

Symptoms/injuries after inhalation : No effects known.

Symptoms/injuries after skin contact : No effects known.

Symptoms/injuries after eye contact : No effects known.

Symptoms/injuries after ingestion : No effects known.

Chronic symptoms : No effects known.

4.3. Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media : Adapt extinguishing media to the environment.

Unsuitable extinguishing media : No unsuitable extinguishing media known.

5.2. Special hazards arising from the substance or mixture

Fire hazard : DIRECT FIRE HAZARD. Non combustible.

Explosion hazard	:	DIRECT EXPLOSION HAZARD. No data available on direct explosion hazard. INDIRECT EXPLOSION HAZARD. No data available on indirect explosion hazard.
Reactivity	:	On burning: formation of metallic fumes. Oxidizes on exposure to air.

5.3. Advice for firefighters

Precautionary measures fire	:	Exposure to fire/heat: keep upwind. Exposure to fire/heat: consider evacuation. Exposure to heat: have neighborhood close doors and windows.
Firefighting instructions	:	Dilute toxic gases with water spray. Take account of toxic fire-fighting water. Use water moderately and if possible collect or contain it.
Protection during firefighting	:	Heat/fire exposure: compressed air/oxygen apparatus. Do not attempt to take action without suitable protective equipment. Self-contained breathing apparatus. Complete protective clothing.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

Protective equipment	:	Gloves. Protective clothing. See "Material-Handling" to select protective clothing.
Emergency procedures	:	Mark the danger area. No naked flames.

6.1.2. For emergency responders

Protective equipment	:	Do not attempt to take action without suitable protective equipment. For further information refer to section 8: "Exposure controls/personal protection".

6.2. Environmental precautions

Avoid release to the environment. Prevent soil and water pollution. Prevent spreading in sewers. Notify authorities if product enters sewers or public waters.

6.3. Methods and material for containment and cleaning up

For containment	:	Not applicable. Collect spillage.
Methods for cleaning up	:	Recover mechanically the product. Pick-up the material. Take collected spill to manufacturer/competent authority. Notify authorities if product enters sewers or public waters.
Other information	:	Dispose of materials or solid residues at an authorized site.

6.4. Reference to other sections

For further information refer to section 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling	:	Meet the legal requirements. Do not discharge the waste into the drain. Handle unclean empty containers as full ones. Observe strict hygiene. Measure the concentration in the atmosphere. Carry out operations in the open/under local exhaust/ventilation or with respiratory protection. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not breathe dust, fume. Use only outdoors or in a well-ventilated area. Take all necessary technical measures to avoid or minimize the release of the product on the workplace. Limit quantities of product at the minimum necessary for handling and limit the number of exposed workers. Provide local exhaust or general room ventilation. Wear personal protective equipment. Floors, walls and other surfaces in the hazard area must be cleaned regularly.
Hygiene measures	:	Separate working clothes from town clothes. Launder separately. Do not eat, drink or smoke when using this product. Always wash hands after handling the product.

7.2. Conditions for safe storage, including any incompatibilities

Technical measures	:	Does not require any specific or particular technical measures. Comply with applicable regulations.
Storage conditions	:	Store locked up. Store in a well-ventilated place. Keep cool.
Incompatible materials	:	Strong acids, strong bases and oxidation agents.
Heat-ignition	:	KEEP SUBSTANCE AWAY FROM: heat sources.
Prohibitions on mixed storage	:	KEEP SUBSTANCE AWAY FROM: oxidizing agents. Strong acids. Strong bases.
Storage area	:	Meet the legal requirements.
Special rules on packaging	:	SPECIAL REQUIREMENTS: closing. correctly labeled. meet the legal requirements. Secure fragile packaging in solid containers.

7.3. Specific end use(s)

No additional information available

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Lead (7439-92-1)		
ACGIH	ACGIH TWA (mg/m³)	0,05 mg/m³
ACGIH	Remark (ACGIH)	CNS & PNS impair
OSHA	Not applicable	

8.2. Exposure controls

Appropriate engineering controls : Provide adequate general and local exhaust ventilation. Ensure good ventilation of the work station.

Personal protective equipment : Protective goggles. Gloves.



Materials for protective clothing : GIVE EXCELLENT RESISTANCE: No data available. GIVE GOOD RESISTANCE: butyl rubber. PVC. GIVE LESS RESISTANCE: No data available. GIVE POOR RESISTANCE: No data available.

Hand protection : protective gloves.

Eye protection : Safety glasses.

Skin and body protection : Not required for normal conditions of use.

Respiratory protection : Wear respiratory protection.

Environmental exposure controls : Avoid release to the environment.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state : Solid

Appearance : Metal.

Molecular mass : 207,20 g/mol

Color : White to blue-grey

Odor : Odorless

Odor threshold : No data available

pH : No data available

Relative evaporation rate (butyl acetate=1) : No data available

Melting point : 327 °C

Freezing point : No data available

Boiling point : 1740 °C

Flash point : Not applicable

Auto-ignition temperature : No data available

Decomposition temperature : No data available

Flammability (solid, gas) : No data available

Vapor pressure : < 0,1 hPa

Relative vapor density at 20 °C : No data available

Relative density : 11,3

Specific gravity / density : 11340 kg/m³

Solubility : insoluble in water. Substance sinks in water. Soluble in nitric acid. Insoluble in organic solvents. Water: < 0,1 g/100ml

Log Pow : 0,73 (Estimated value)

Log Kow : No data available

Viscosity, kinematic	:	Not applicable
Viscosity, dynamic	:	No data available
Explosive properties	:	No data available
Oxidizing properties	:	No data available
Explosive limits	:	No data available

9.2. Other information

VOC content : Not applicable (inorganic)

SECTION 10: Stability and reactivity

10.1. Reactivity

On burning: formation of metallic fumes. Oxidizes on exposure to air.

10.2. Chemical stability

Unstable on exposure to air.

10.3. Possibility of hazardous reactions

No additional information available

10.4. Conditions to avoid

No additional information available

10.5. Incompatible materials

Acids. Bases.

10.6. Hazardous decomposition products

Thermal decomposition generates : fume.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity : Oral: Harmful if swallowed. Inhalation: Harmful if inhaled.

Lead (\f)7439-92-1	
LD50 oral rat	> 2000 mg/kg body weight (Rat; Weight of evidence)
LD50 dermal rat	> 2000 mg/kg body weight (Rat; Experimental value; OECD 402: Acute Dermal Toxicity)
ATE US (oral)	500,000 mg/kg body weight
ATE US (gases)	4500,000 ppmV/4h
ATE US (vapors)	11,000 mg/l/4h
ATE US (dust, mist)	1,500 mg/l/4h
Additional information	Lead massive metal is not considered to be acutely toxic. It is not easily inhaled or ingested, and if it is accidentally ingested normally passes through the gastrointestinal system without significant absorption into the body. Lead is not easily absorbed through the skin.

Skin corrosion/irritation : Not classified
(Based on available data, the classification criteria are not met)

Serious eye damage/irritation : Not classified
(Based on available data, the classification criteria are not met)

Respiratory or skin sensitization : Not classified
(Based on available data, the classification criteria are not met)

Germ cell mutagenicity : Not classified
(Based on available data, the classification criteria are not met)

Carcinogenicity : May cause cancer.

Lead (7439-92-1)	
Additional information	There is some evidence that inorganic lead compounds may have a carcinogenic effect, and they have been classified by IARC as probably carcinogenic to humans. However, it is considered that this classification does not apply to lead in articles, given the very low bioavailability of metallic lead. Carcinogenicity studies of lead metal powder have been negative. Epidemiology studies of workers exposed to inorganic lead compounds have found a limited association with stomach cancer. IARC has concluded that lead metal is possibly carcinogenic to humans (Group aB).
IARC group	2B - Possibly carcinogenic to humans
National Toxicology Program (NTP) Status	3 - Reasonably anticipated to be Human Carcinogen

Reproductive toxicity : May damage fertility or the unborn child.

Specific target organ toxicity (single exposure) : Not classified

(Based on available data, the classification criteria are not met)

Specific target organ toxicity (repeated exposure) : May cause damage to organs through prolonged or repeated exposure.

Lead (7439-92-1)	
Additional information	Lead is a cumulative poison and may be absorbed into the body through ingestion or inhalation. Although inhalation and ingestion of lead in massive form are unlikely, poor hygiene practises may result in hand to mouth transfer which maybe significant over a prolonged period of time. Inorganic lead compounds have been documented in observational human studies to produce toxicity in multiple organ systems and body function including the haemotopoetic (blood) system, kidney function, reproductive function and the central nervous system.

Aspiration hazard : Not classified

(Based on available data, the classification criteria are not met)

Symptoms/injuries after inhalation : No effects known.

Symptoms/injuries after skin contact : No effects known.

Symptoms/injuries after eye contact : No effects known.

Symptoms/injuries after ingestion : No effects known.

Chronic symptoms : No effects known.

SECTION 12: Ecological information

12.1. Toxicity

Ecology - general : Dangerous for the environment. Very toxic to aquatic life with long lasting effects.

Ecology - air : Not dangerous for the ozone layer (Regulation (EC) No 1005/2009). Not included in the list of fluorinated greenhouse gases (Regulation (EC) No 842/2006). TA-Luft Klasse 5.2.2/II.

Ecology - water : No water pollutant (surface water). Maximum concentration in drinking water: 0.010 mg/l (lead) (Directive 98/83/EC). Highly toxic to aquatic organisms.

Lead (7439-92-1)	
LC50 fish 1	2,8 (0,44 - 542) mg/l (96h) Coughlan, D.J., S.P. Gloss, and J. Kubota 1986. Acute and Sub-Chronic Toxicity of Lead to the Early Life Stages of Small mouth Bass (Micropterus dolomieui). Water Air Soil Pollut. 28(3/4):265-275
EC50 Daphnia 1	4,46 (0,53 - 5,1) mg/l (48h) Govindarajan, S., C.P. Valsaraj, R. Mohan, V. Hariprasad, and R. Ramasubramanian 1993. Toxicity of Heavy Metals in Aquaculture Organisms: Penaeus indicus, Perna viridis, Artemia salina and Skeletonema costatum. Pollut.Res. 12(3):187-189

12.2. Persistence and degradability

Lead (7439-92-1)	
Persistence and degradability	Biodegradability: Not applicable. No (test)data available on mobility of the substance.
ThOD	Not applicable (inorganic)

12.3. Bioaccumulative potential

Lead (7439-92-1)	
Log Pow	0,73 (Estimated value)
Bioaccumulative potential	Low bioaccumulation potential (Log Kow < 4).

12.4. Mobility in soil

No additional information available

12.5. Other adverse effects

Effect on ozone layer :

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Waste disposal recommendations : Dispose in a safe manner in accordance with local/national regulations. Hazardous waste shall not be mixed together with other waste. Different types of hazardous waste shall not be mixed together if this may entail a risk of pollution or create problems for the further management of the waste. Hazardous waste shall be managed responsibly. All entities that store, transport or handle hazardous waste shall take the necessary measures to prevent risks of pollution or damage to people or animals. Reuse or recycle following decontamination. Remove to an authorized dump (Class I). Do not discharge into surface water (2000/60/EC, Council decision 2455/2001/EC, O.J. L331 of 15/12/2001).

Additional information : LWCA (the Netherlands): KGA category 05. Hazardous waste according to Directive 2008/98/EC.

SECTION 14: Transport information

In accordance with DOT

Transport document description : UN3077 Environmentally hazardous substances, solid, n.o.s. Lead(7439-92-1), 9, III

UN-No.(DOT) : UN3077

Proper Shipping Name (DOT) : Environmentally hazardous substances, solid, n.o.s.
Lead(7439-92-1)

Department of Transportation (DOT) Hazard Classes : 9 - Class 9 - Miscellaneous hazardous material 49 CFR 173.140

Hazard labels (DOT) : 9 - Class 9 (Miscellaneous dangerous materials)



DOT Symbols : G - Identifies PSN requiring a technical name

Packing group (DOT) : III - Minor Danger

DOT Special Provisions (49 CFR 172.102)	:	8 - A hazardous substance that is not a hazardous waste may be shipped under the shipping description “Other regulated substances, liquid or solid, n.o.s.”, as appropriate. In addition, for solid materials, special provision B54 applies. 146 - This description may be used for a material that poses a hazard to the environment but does not meet the definition for a hazardous waste or a hazardous substance, as defined in 171.8 of this subchapter, or any hazard class as defined in Part 173 of this subchapter, if it is designated as environmentally hazardous by the Competent Authority of the country of origin, transit or destination. 335 - Mixtures of solids that are not subject to this subchapter and environmentally hazardous liquids or solids may be classified as “Environmentally hazardous substances, solid, n.o.s,” UN3077 and may be transported under this entry, provided there is no free liquid visible at the time the material is loaded or at the time the packaging or transport unit is closed. Each transport unit must be leak-proof when used as bulk packaging. A112 - Notwithstanding the quantity limits shown in Column (9A) and (9B) for this entry, the following IBCs are authorized for transportation aboard passenger and cargo-only aircraft. Each IBC may not exceed a maximum net quantity of 1,000 kg: a. Metal: 11A, 11B, 11N, 21A, 21B and 21N b. Rigid plastics: 11H1, 11H2, 21H1 and 21H2 c. Composite with plastic inner receptacle: 11HZ1, 11HZ2, 21HZ1 and 21HZ2 d. Fiberboard: 11G e. Wooden: 11C, 11D and 11F (with inner liners) f. Flexible: 13H2, 13H3, 13H4, 13H5, 13L2, 13L3, 13L4, 13M1 and 13M2 (flexible IBCs must be sift-proof and water resistant or must be fitted with a sift-proof and water resistant liner). B54 - Open-top, sift-proof rail cars are also authorized. IB8 - Authorized IBCs: Metal (11A, 11B, 11N, 21A, 21B, 21N, 31A, 31B and 31N); Rigid plastics (11H1, 11H2, 21H1, 21H2, 31H1 and 31H2); Composite (11HZ1, 11HZ2, 21HZ1, 21HZ2, 31HZ1 and 31HZ2); Fiberboard (11G); Wooden (11C, 11D and 11F); Flexible (13H1, 13H2, 13H3, 13H4, 13H5, 13L1, 13L2, 13L3, 13L4, 13M1 or 13M2). IP3 - Flexible IBCs must be sift-proof and water-resistant or must be fitted with a sift-proof and water-resistant liner. N20 - A 5M1 multi-wall paper bag is authorized if transported in a closed transport vehicle. T1 - 1.5 178.274(d)(2) Normal..... 178.275(d)(2) TP33 - The portable tank instruction assigned for this substance applies for granular and powdered solids and for solids which are filled and discharged at temperatures above their melting point which are cooled and transported as a solid mass. Solid substances transported or offered for transport above their melting point are authorized for transportation in portable tanks conforming to the provisions of portable tank instruction T4 for solid substances of packing group III or T7 for solid substances of packing group II, unless a tank with more stringent requirements for minimum shell thickness, maximum allowable working pressure, pressure-relief devices or bottom outlets are assigned in which case the more stringent tank instruction and special provisions shall apply. Filling limits must be in accordance with portable tank special provision TP3. Solids meeting the definition of an elevated temperature material must be transported in accordance with the applicable requirements of this subchapter.
DOT Packaging Exceptions (49 CFR 173.xxx)	:	155
DOT Packaging Non Bulk (49 CFR 173.xxx)	:	213
DOT Packaging Bulk (49 CFR 173.xxx)	:	240
DOT Quantity Limitations Passenger aircraft/rail (49 CFR 173.27)	:	No limit
DOT Quantity Limitations Cargo aircraft only (49 CFR 175.75)	:	No limit
DOT Vessel Stowage Location	:	A - The material may be stowed ‘‘on deck’’ or ‘‘under deck’’ on a cargo vessel and on a passenger vessel.

Additional information

Other information : No supplementary information available.

ADR

No additional information available

Transport by sea

UN-No. (IMDG)	:	3077
Proper Shipping Name (IMDG)	:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.
Class (IMDG)	:	9 - Miscellaneous dangerous compounds
Packing group (IMDG)	:	III - substances presenting low danger

Air transport

UN-No.(IATA)	:	3077
Proper Shipping Name (IATA)	:	Environmentally hazardous substance, solid, n.o.s.
Class (IATA)	:	9 - Miscellaneous Dangerous Goods
Packing group (IATA)	:	III - Minor Danger

SECTION 15: Regulatory information

15.1. US Federal regulations

Lead (7439-92-1)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory Listed on United States SARA Section 313 Not listed on the United States SARA Section 313	
RQ (Reportable quantity, section 304 of EPA's List of Lists)	10 lb

15.2. International regulations

CANADA

No additional information available

EU-Regulations

No additional information available

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

Repr. 1A	H360Df
Acute Tox. 4 (Inhalation)	H332
Acute Tox. 4 (Oral)	H302
STOT RE 2	H373
Aquatic Acute 1	H400
Aquatic Chronic 1	H410

Full text of H-phrases: see section 16

Classification according to Directive 67/548/EEC [DSD] or 1999/45/EC [DPD]

Repr.Cat.1; R61
Repr.Cat.3; R62
Xn; R20/22
R33
N; R50/53

Full text of R-phrases: see section 16

15.2.2. National regulations

Lead (7439-92-1)
Listed on IARC (International Agency for Research on Cancer) Listed as carcinogen on NTP (National Toxicology Program)

15.3. US State regulations

No additional information available

SECTION 16: Other information

Revision date	:	12/15/2014

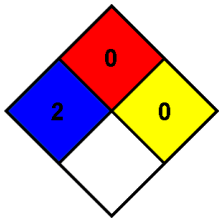
Full text of H-phrases:

Acute Tox. 4 (Inhalation)	Acute toxicity (inhalation) Category 4
Acute Tox. 4 (Oral)	Acute toxicity (oral) Category 4
Aquatic Acute 1	Hazardous to the aquatic environment - Acute Hazard Category 1
Aquatic Chronic 1	Hazardous to the aquatic environment - Chronic Hazard Category 1
Carc. 1B	Carcinogenicity Category 1B
Repr. 1A	Reproductive toxicity Category 1A
STOT RE 2	Specific target organ toxicity (repeated exposure) Category 2
H302	Harmful if swallowed
H332	Harmful if inhaled
H350	May cause cancer
H360	May damage fertility or the unborn child
H373	May cause damage to organs through prolonged or repeated exposure
H400	Very toxic to aquatic life
H410	Very toxic to aquatic life with long lasting effects

NFPA health hazard : 2 - Intense or continued exposure could cause temporary incapacitation or possible residual injury unless prompt medical attention is given.

NFPA fire hazard : 0 - Materials that will not burn.

NFPA reactivity : 0 - Normally stable, even under fire exposure conditions, and are not reactive with water.



HMIS III Rating

Health : * Chronic Hazard - Chronic (long-term) health effects may result from repeated overexposure

Flammability : 0 Minimal Hazard

Physical : 0 Minimal Hazard

Personal Protection : B

SDS US (GHS HazCom 2012)

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product

Safety Data Sheet
acc. to OSHA HCS

Printing date 03/23/2019 Version Number 2 Reviewed on 03/23/2019

*
1 Identification

· **Product identifier**

· **Trade name: Perfluorooctanoic Acid (PFOA)**

· **Part number:** N-1588
· **CAS Number:**
335-67-1
· **EC number:**
206-397-9
· **Index number:**
607-704-00-2
· **Application of the substance / the mixture** Reagents and Standards for Analytical Chemical Laboratory Use

· **Details of the supplier of the safety data sheet**
· **Manufacturer/Supplier:**
Agilent Technologies, Inc.
5301 Stevens Creek Blvd.
Santa Clara, CA 95051 USA

· **Information department:**
Telephone: 800-227-9770
e-mail: pdl-msds_author@agilent.com
· **Emergency telephone number:** CHEMTREC®: 1-800-424-9300

*
2 Hazard(s) identification

· **Classification of the substance or mixture**


GHS08 Health hazard

Carc. 2 H351 Suspected of causing cancer.
Repr. 1B H360 May damage fertility or the unborn child.
STOT RE 1 H372 Causes damage to the liver through prolonged or repeated exposure.


GHS05 Corrosion

Eye Dam. 1 H318 Causes serious eye damage.


GHS07

Acute Tox. 4 H302 Harmful if swallowed.
Acute Tox. 4 H332 Harmful if inhaled.

· **Label elements**
· **GHS label elements** The substance is classified and labeled according to the Globally Harmonized System (GHS).

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Trade name: Perfluorooctanoic Acid (PFOA)

(Contd. of page 1)

· **Hazard pictograms**



GHS05 GHS07 GHS08

· **Signal word** Danger

· **Hazard-determining components of labeling:**
perfluorooctanoic acid (PFOA)
· **Hazard statements**
Harmful if swallowed or if inhaled.
Causes serious eye damage.
Suspected of causing cancer.
May damage fertility or the unborn child.
Causes damage to the liver through prolonged or repeated exposure.
· **Precautionary statements**
Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Do not breathe dust/fume/gas/mist/vapors/spray.
Wash thoroughly after handling.
Do not eat, drink or smoke when using this product.
Use only outdoors or in a well-ventilated area.
Wear protective gloves/protective clothing/eye protection/face protection.
If swallowed: Call a poison center/doctor if you feel unwell.
Rinse mouth.
IF INHALED: Remove person to fresh air and keep comfortable for breathing.
If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do.
Continue rinsing.
Immediately call a poison center/doctor.
IF exposed or concerned: Get medical advice/attention.
Get medical advice/attention if you feel unwell.
Store locked up.
Dispose of contents/container in accordance with local/regional/national/international regulations.
· **Classification system:**
· **NFPA ratings (scale 0 - 4)**



Health = 3
Fire = 0
Reactivity = 0

· **HMIS-ratings (scale 0 - 4)**



Health = *3
Fire = 0
Reactivity = 0

· **Other hazards**
· **Results of PBT and vPvB assessment**
· **PBT:** Not applicable.

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Trade name: Perfluorooctanoic Acid (PFOA)

(Contd. of page 2)

· **vPvB:** Not applicable.

3 Composition/information on ingredients

· **Chemical characterization: Substances**
· **CAS No. Description**
335-67-1 perfluorooctanoic acid (PFOA)
· **Identification number(s)**
· **EC number:** 206-397-9
· **Index number:** 607-704-00-2

4 First-aid measures

· **Description of first aid measures**
· **General information:**
Symptoms of poisoning may even occur after several hours; therefore medical observation for at least 48 hours after the accident.
· **After inhalation:**
Supply fresh air. If required, provide artificial respiration. Keep patient warm. Consult doctor if symptoms persist.
In case of unconsciousness place patient stably in side position for transportation.
· **After skin contact:** Generally the product does not irritate the skin.
· **After eye contact:** Rinse opened eye for several minutes under running water. Then consult a doctor.
· **After swallowing:** Immediately call a doctor.
· **Information for doctor:**
· **Most important symptoms and effects, both acute and delayed** No further relevant information available.
· **Indication of any immediate medical attention and special treatment needed**
No further relevant information available.

5 Fire-fighting measures

· **Extinguishing media**
· **Suitable extinguishing agents:** Use fire fighting measures that suit the environment.
· **Special hazards arising from the substance or mixture**
During heating or in case of fire poisonous gases are produced.
· **Advice for firefighters**
· **Protective equipment:** Mouth respiratory protective device.

6 Accidental release measures

· **Personal precautions, protective equipment and emergency procedures**
Mount respiratory protective device.
Wear protective equipment. Keep unprotected persons away.
· **Environmental precautions:** Do not allow to enter sewers/ surface or ground water.
· **Methods and material for containment and cleaning up:**
Use neutralizing agent.
Dispose contaminated material as waste according to item 13.
Ensure adequate ventilation.

(Contd. on page 4)

(Contd. of page 3)

· **Reference to other sections**
See Section 7 for information on safe handling.
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.
· **Protective Action Criteria for Chemicals**

· **PAC-1:**
1.1 mg/m³

· **PAC-2:**
12 mg/m³

· **PAC-3:**
75 mg/m³

7 Handling and storage

· **Handling:**
· **Precautions for safe handling**
Thorough dedusting.
Ensure good ventilation/exhaustion at the workplace.
Open and handle receptacle with care.
· **Information about protection against explosions and fires:** Keep respiratory protective device available.

· **Conditions for safe storage, including any incompatibilities**
· **Storage:**
· **Requirements to be met by storerooms and receptacles:** No special requirements.
· **Information about storage in one common storage facility:** Not required.
· **Further information about storage conditions:** Keep receptacle tightly sealed.
· **Specific end use(s)** No further relevant information available.

*

8 Exposure controls/personal protection

· **Additional information about design of technical systems:** No further data; see item 7.

· **Control parameters**
· **Components with limit values that require monitoring at the workplace:** Not required.
· **Additional information:** The lists that were valid during the creation were used as basis.

· **Exposure controls**
· **Personal protective equipment:**
· **General protective and hygienic measures:**
Keep away from foodstuffs, beverages and feed.
Immediately remove all soiled and contaminated clothing.
Wash hands before breaks and at the end of work.
Store protective clothing separately.
Avoid contact with the eyes.
Avoid contact with the eyes and skin.
· **Breathing equipment:**
When used as intended with Agilent instruments, the use of the product under normal laboratory conditions and with standard practices does not result in significant airborne exposures and therefore respiratory protection is not needed.
Under an emergency condition where a respirator is deemed necessary, use a NIOSH or equivalent approved device/equipment with appropriate organic or acid gas cartridge.

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· **Protection of hands:**
Although not recommended for constant contact with the chemicals or for clean-up, nitrile gloves 11-13 mil thickness are recommended for normal use. The breakthrough time is 1 hr. For cleaning a spill where there is direct contact of the chemical, butyl rubber gloves are recommended 12-15 mil thickness with breakthrough times exceeding 4 hrs. Supplier recommendations should be followed.
· **Material of gloves**
For normal use: nitrile rubber, 11-13 mil thickness
For direct contact with the chemical: butyl rubber, 12-15 mil thickness
The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer.
· **Penetration time of glove material**
For normal use: nitrile rubber: 1 hour
For direct contact with the chemical: butyl rubber: >4 hours
· **Eye protection:**



Tightly sealed goggles

9 Physical and chemical properties

· **Information on basic physical and chemical properties**	
· **General Information**	
· **Appearance:**	
Form:	Solid
Color:	Not determined.
· **Odor:**	Characteristic
· **Odor threshold:**	Not determined.
· **pH-value:**	Not applicable.
· **Change in condition**	
Melting point/Melting range:	55-56 °C (131-132.8 °F)
Boiling point/Boiling range:	190 °C (374 °F)
· **Flash point:**	Not applicable.
· **Flammability (solid, gaseous):**	Product is not flammable.
· **Decomposition temperature:**	Not determined.
· **Auto igniting:**	Not determined.
· **Danger of explosion:**	Product does not present an explosion hazard.
· **Explosion limits:**	
Lower:	Not determined.
Upper:	Not determined.
· **Vapor pressure at 20 °C (68 °F):**	0.69 hPa (0.5 mm Hg)
· **Density at 20 °C (68 °F):**	0.9 g/cm³ (7.5105 lbs/gal)
· **Relative density**	Not determined.
· **Vapor density**	Not applicable.

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· **Evaporation rate**	Not applicable.
· **Solubility in / Miscibility with Water at 20 °C (68 °F):**	3.4 g/l
· **Partition coefficient (n-octanol/water):**	Not determined.
· **Viscosity:**	
Dynamic:	Not applicable.
Kinematic:	Not applicable.
VOC content:	0.00 % 0.0 g/l / 0.00 lb/gal
Solids content:	100.0 %
· **Other information**	No further relevant information available.

10 Stability and reactivity

· **Reactivity** No further relevant information available.
· **Chemical stability**
· **Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.
· **Possibility of hazardous reactions** No dangerous reactions known.
· **Conditions to avoid** No further relevant information available.
· **Incompatible materials:** No further relevant information available.
· **Hazardous decomposition products:** No dangerous decomposition products known.

11 Toxicological information

· **Information on toxicological effects**
· **Acute toxicity:**

· **LD/LC50 values that are relevant for classification:**

ATE (Acute Toxicity Estimate)

Oral	LD50	500 mg/kg
Inhalative	LC50/4 h	1.5 mg/L

· **Primary irritant effect:**
· **on the skin:** No irritant effect.
· **on the eye:** Strong irritant with the danger of severe eye injury.
· **Sensitization:** No sensitizing effects known.
· **Additional toxicological information:**

· **Carcinogenic categories**

· **IARC (International Agency for Research on Cancer)**

2B

· **NTP (National Toxicology Program)**

Substance is not listed.

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· **OSHA-Ca (Occupational Safety & Health Administration)**

Substance is not listed.

12 Ecological information

· **Toxicity**
· **Aquatic toxicity:** No further relevant information available.
· **Persistence and degradability** No further relevant information available.
· **Behavior in environmental systems:**
· **Bioaccumulative potential** No further relevant information available.
· **Mobility in soil** No further relevant information available.
· **Additional ecological information:**
· **General notes:**
Water hazard class 2 (Assessment by list): hazardous for water
Do not allow product to reach ground water, water course or sewage system.
Must not reach bodies of water or drainage ditch undiluted or unneutralized.
Danger to drinking water if even small quantities leak into the ground.
· **Results of PBT and vPvB assessment**
· **PBT:** Not applicable.
· **vPvB:** Not applicable.
· **Other adverse effects** No further relevant information available.

13 Disposal considerations

· **Waste treatment methods**
· **Recommendation:**
Must not be disposed of together with household garbage. Do not allow product to reach sewage system.

· **Uncleaned packagings:**
· **Recommendation:** Disposal must be made according to official regulations.

14 Transport information

· **UN-Number**	
· **DOT, IMDG, IATA**	UN3261
· **UN proper shipping name**	
· **DOT**	Corrosive solid, acidic, organic, n.o.s. (perfluorooctanoic acid (PFOA))
· **IMDG, IATA**	CORROSIVE SOLID, ACIDIC, ORGANIC, N.O.S. (perfluorooctanoic acid (PFOA))

(Contd. on page 8)

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· **Transport hazard class(es)**

· **IATA**



· **Class**	8 Corrosive substances
· **Label**	8
· **Environmental hazards:**	Not applicable.
· **Special precautions for user**	Warning: Corrosive substances
· **Danger code (Kemler):**	80
· **EMS Number:**	F-A,S-B
· **Segregation groups**	Acids
· **Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code**	Not applicable.
· **Transport/Additional information:**	
· **DOT**	
· **Quantity limitations**	On passenger aircraft/rail: 25 kg On cargo aircraft only: 100 kg
· **IMDG**	
· **Limited quantities (LQ)**	5 kg
· **Excepted quantities (EQ)**	Code: E1 Maximum net quantity per inner packaging: 30 g Maximum net quantity per outer packaging: 1000 g
· **UN "Model Regulation":**	UN 3261 CORROSIVE SOLID, ACIDIC, ORGANIC, N.O.S. (PERFLUOROOCTANOIC ACID (PFOA)), 8, III

15 Regulatory information

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

· **Sara**

· **Section 355 (extremely hazardous substances):**

Substance is not listed.

· **Section 313 (Specific toxic chemical listings):**

Substance is not listed.

· **TSCA (Toxic Substances Control Act):**

Substance is listed.

· **Proposition 65**

· **Chemicals known to cause cancer:**

Substance is not listed.

· **Chemicals known to cause reproductive toxicity for females:**

Substance is not listed.

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Trade name: Perfluorooctanoic Acid (PFOA)

(Contd. of page 8)

· **Chemicals known to cause reproductive toxicity for males:**
Substance is not listed.

· **Chemicals known to cause developmental toxicity:**
Substance is listed.

· **Carcinogenic categories**

· **EPA (Environmental Protection Agency)**
Substance is not listed.

· **TLV (Threshold Limit Value established by ACGIH)**
Substance is not listed.

· **NIOSH-Ca (National Institute for Occupational Safety and Health)**
Substance is not listed.

· **Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

*
16 Other information

The information contained in this document is based on Agilent's state of knowledge at the time of preparation. No warranty as to its accurateness, completeness or suitability for a particular purpose is expressed or implied.

· **Date of preparation / last revision** 03/23/2019 / 1

· **Abbreviations and acronyms:**
ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
IMDG: International Maritime Code for Dangerous Goods
DOT: US Department of Transportation
IATA: International Air Transport Association
ACGIH: American Conference of Governmental Industrial Hygienists
EINECS: European Inventory of Existing Commercial Chemical Substances
CAS: Chemical Abstracts Service (division of the American Chemical Society)
NFPA: National Fire Protection Association (USA)
HMIS: Hazardous Materials Identification System (USA)
VOC: Volatile Organic Compounds (USA, EU)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent
PBT: Persistent, Bioaccumulative and Toxic
vPvB: very Persistent and very Bioaccumulative
NIOSH: National Institute for Occupational Safety
OSHA: Occupational Safety & Health
TLV: Threshold Limit Value
PEL: Permissible Exposure Limit
REL: Recommended Exposure Limit
Acute Tox. 4: Acute toxicity – Category 4
Eye Dam. 1: Serious eye damage/eye irritation – Category 1
Carc. 2: Carcinogenicity – Category 2
Repr. 1B: Reproductive toxicity – Category 1B
STOT RE 1: Specific target organ toxicity (repeated exposure) – Category 1

· *** Data compared to the previous version altered.**

Perfluorooctanesulfonic acid

Safety Data Sheet 6164308

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Date of issue: 12/10/2015 Version: 1.0

SECTION 1: Identification

1.1. Identification

Product form	:	Substance
Substance name	:	Perfluorooctanesulfonic acid
CAS No	:	1763-23-1
Product code	:	6164-3-08
Formula	:	C8HF17O3S
Synonyms	:	1,1,2,2,3,3,4,4,5,5,6,6,7,7,8,8,8-Heptadecafluorooctane-1-sulfonic acid
Other means of identification	:	MFCD00042454

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

Use of the substance/mixture	:	Laboratory chemicals Manufacture of substances Scientific research and development

1.3. Details of the supplier of the safety data sheet

SynQuest Laboratories, Inc.
P.O. Box 309
Alachua, FL 32615 - United States of America
T (386) 462-0788 - F (386) 462-7097
info@synquestlabs.com - www.synquestlabs.com

1.4. Emergency telephone number

Emergency number	:	(844) 523-4086 (3E Company - Account 10069)

SECTION 2: Hazard(s) identification

2.1. Classification of the substance or mixture

Classification (GHS-US)

Acute Tox. 4 (Oral)	H302 -	Harmful if swallowed
Skin Corr. 1B	H314 -	Causes severe skin burns and eye damage
Eye Dam. 1	H318 -	Causes serious eye damage
STOT SE 3	H335 -	May cause respiratory irritation

Full text of H-phrases: see section 16

2.2. Label elements

GHS-US labeling

Hazard pictograms (GHS-US) :



GHS05 GHS07

Signal word (GHS-US) : Danger

Hazard statements (GHS-US) :
H302 - Harmful if swallowed
H314 - Causes severe skin burns and eye damage
H335 - May cause respiratory irritation

Precautionary statements (GHS-US) :
P260 - Do not breathe dust, mist, spray
P264 - Wash skin thoroughly after handling
P270 - Do not eat, drink or smoke when using this product
P271 - Use only outdoors or in a well-ventilated area
P280 - Wear protective gloves/protective clothing/eye protection/face protection
P301+P312 - If swallowed: Call a POISON CENTER or doctor/ physician if you feel unwell
P301+P330+P331 - If swallowed: rinse mouth. Do NOT induce vomiting
P303+P361+P353 - If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower
P304+P340 - If inhaled: Remove person to fresh air and keep comfortable for breathing
P305+P351+P338 - If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
P310 - Immediately call a POISON CENTER or doctor/ physician
P321 - Specific treatment (see supplemental first aid instructions on this label)
P330 - Rinse mouth

P363 - Wash contaminated clothing before reuse
P403+P233 - Store in a well-ventilated place. Keep container tightly closed
P405 - Store locked up
P501 - Dispose of contents/container to an approved waste disposal plant

2.3. Other hazards

No additional information available

2.4. Unknown acute toxicity (GHS US)

Not applicable

SECTION 3: Composition/information on ingredients

3.1. Substance

Substance type : Mono-constituent

Name	Product identifier	%	Classification (GHS-US)
Perfluorooctanesulfonic acid (Main constituent)	(CAS No) 1763-23-1	<= 100	Acute Tox. 4 (Oral), H302 Skin Corr. 1B, H314 Eye Dam. 1, H318 STOT SE 3, H335

Full text of H-phrases: see section 16

3.2. Mixture

Not applicable

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures general : In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). Move the affected personnel away from the contaminated area.

First-aid measures after inhalation : Remove person to fresh air and keep comfortable for breathing. If not breathing, give artificial respiration. Get immediate medical advice/attention.

First-aid measures after skin contact : Wash with plenty of soap and water. Remove contaminated clothing and shoes. Get immediate medical advice/attention.

First-aid measures after eye contact : Immediately flush eyes thoroughly with water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get immediate medical advice/attention.

First-aid measures after ingestion : Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth out with water. Get immediate medical advice/attention.

4.2. Most important symptoms and effects, both acute and delayed

Symptoms/injuries : The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11.

Symptoms/injuries after inhalation : Material is destructive to tissue of the mucuous membranes and upper respiratory tract. Cough, shortness of breath, headache, nausea.

4.3. Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media : Alcohol resistant foam. Carbon dioxide. Dry powder. Water spray. Use extinguishing media appropriate for surrounding fire.

5.2. Special hazards arising from the substance or mixture

Fire hazard : Thermal decomposition generates: Carbon oxides. Hydrogen fluoride. Sulfur oxides.

5.3. Advice for firefighters

Firefighting instructions : In case of fire: Evacuate area.

Protection during firefighting : Wear gas tight chemically protective clothing in combination with self contained breathing apparatus. For further information refer to section 8: "Exposure controls/personal protection".

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

General measures : Evacuate unnecessary personnel. Ensure adequate air ventilation. Do not breathe dust.

6.1.1. For non-emergency personnel

Emergency procedures : Only qualified personnel equipped with suitable protective equipment may intervene.

6.1.2. For emergency responders

Protective equipment	:	Do not attempt to take action without suitable protective equipment. For further information refer to section 8: "Exposure controls/personal protection".

6.2. Environmental precautions

Avoid release to the environment. Notify authorities if product enters sewers or public waters.

6.3. Methods and material for containment and cleaning up

For containment	:	Stop leak if safe to do so.
Methods for cleaning up	:	Sweep or shovel spills into appropriate container for disposal. Minimize generation of dust.
Other information	:	For disposal of solid materials or residues refer to section 13 : "Disposal considerations".

6.4. Reference to other sections

No additional information available

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling	:	Do not handle until all safety precautions have been read and understood. Ensure good ventilation of the work station. Do not breathe dust, mist, spray. Wear personal protective equipment. Avoid contact with skin and eyes.
Hygiene measures	:	Handle in accordance with good industrial hygiene and safety procedures. Do not eat, drink or smoke when using this product. Always wash hands after handling the product.

7.2. Conditions for safe storage, including any incompatibilities

Technical measures	:	Comply with applicable regulations.
Storage conditions	:	Keep container closed when not in use. Hygroscopic. Keep contents under inert gas.
Incompatible materials	:	Refer to Section 10 on Incompatible Materials.
Storage area	:	Store in dry, cool, well-ventilated area.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

No additional information available

8.2. Exposure controls

Appropriate engineering controls	:	Ensure good ventilation of the work station. Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure.
Hand protection	:	Protective gloves. 29 CFR 1910.138: Hand Protection.
Eye protection	:	Chemical goggles or safety glasses. Face shield. 29 CFR 1910.133: Eye and Face Protection.
Skin and body protection	:	Wear suitable protective clothing.
Respiratory protection	:	In case of inadequate ventilation wear respiratory protection. 29 CFR 1910.134: Respiratory Protection.
Other information	:	Safety shoes. 29 CFR 1910.136: Foot Protection.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	:	Solid
Color	:	No data available
Odor	:	No data available
Odor threshold	:	No data available
pH	:	No data available
Melting point	:	No data available
Freezing point	:	No data available
Boiling point	:	145 °C (@ 10 mm Hg)
Flash point	:	No data available
Relative evaporation rate (butyl acetate=1)	:	No data available
Flammability (solid, gas)	:	No data available
Explosion limits	:	No data available
Explosive properties	:	No data available

Oxidizing properties	:	No data available
Vapor pressure	:	No data available
Relative density	:	1.25 (@ 25 °C)
Relative vapor density at 20 °C	:	No data available
Molecular mass	:	500.13 g/mol
Solubility	:	No data available
Log Pow	:	No data available
Auto-ignition temperature	:	No data available
Decomposition temperature	:	No data available
Viscosity	:	No data available
Viscosity, kinematic	:	No data available
Viscosity, dynamic	:	No data available

9.2. Other information

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

No additional information available

10.2. Chemical stability

The product is stable at normal handling and storage conditions.

10.3. Possibility of hazardous reactions

No additional information available

10.4. Conditions to avoid

Keep away from heat, sparks and flame.

10.5. Incompatible materials

Strong bases. Strong oxidizing agents.

10.6. Hazardous decomposition products

Under normal conditions of storage and use, hazardous decomposition products should not be produced. Hazardous decomposition products in case of fire, see Section 5.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity	:	Oral: Harmful if swallowed.
Skin corrosion/irritation	:	Causes severe skin burns and eye damage.
Serious eye damage/irritation	:	Causes serious eye damage.
Respiratory or skin sensitization	:	Not classified
Germ cell mutagenicity	:	Not classified
Carcinogenicity	:	Not classified
Reproductive toxicity	:	Not classified
Specific target organ toxicity (single exposure)	:	May cause respiratory irritation.
Specific target organ toxicity (repeated exposure)	:	Not classified
Aspiration hazard	:	Not classified
Symptoms/injuries after inhalation	:	Material is destructive to tissue of the mucuous membranes and upper respiratory tract. Cough, shortness of breath, headache, nausea.

SECTION 12: Ecological information

12.1. Toxicity

No additional information available

12.2. Persistence and degradability

No additional information available

12.3. Bioaccumulative potential

No additional information available

12.4. Mobility in soil

No additional information available

12.5. Other adverse effects

No additional information available

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Waste treatment methods : Remove to an authorized incinerator equipped with an afterburner and a flue gas scrubber.

Waste disposal recommendations : Dispose of contents/container in accordance with licensed collector's sorting instructions.

Additional information : Recycle the material as far as possible.

SECTION 14: Transport information

Department of Transportation (DOT)

In accordance with DOT

Transport document description : UN3261 Corrosive solid, acidic, organic, n.o.s., 8, II

UN-No.(DOT) : UN3261

Proper Shipping Name (DOT) : Corrosive solid, acidic, organic, n.o.s.

Transport hazard class(es) (DOT) : 8 - Class 8 - Corrosive material 49 CFR 173.136

Hazard labels (DOT) : 8 - Corrosive



Packing group (DOT) : II - Medium Danger

DOT Packaging Non Bulk (49 CFR 173.xxx) : 212

DOT Packaging Bulk (49 CFR 173.xxx) : 240

DOT Symbols : G - Identifies PSN requiring a technical name

DOT Special Provisions (49 CFR 172.102) : IB8 - Authorized IBCs: Metal (11A, 11B, 11N, 21A, 21B, 21N, 31A, 31B and 31N); Rigid plastics (11H1, 11H2, 21H1, 21H2, 31H1 and 31H2); Composite (11HZ1, 11HZ2, 21HZ1, 21HZ2, 31HZ1 and 31HZ2); Fiberboard (11G); Wooden (11C, 11D and 11F); Flexible (13H1, 13H2, 13H3, 13H4, 13H5, 13L1, 13L2, 13L3, 13L4, 13M1 or 13M2).
IP2 - When IBCs other than metal or rigid plastics IBCs are used, they must be offered for transportation in a closed freight container or a closed transport vehicle.
IP4 - Flexible, fiberboard or wooden IBCs must be sift-proof and water-resistant or be fitted with a sift-proof and water-resistant liner.
T3 - 2.65 178.274(d)(2) Normal..... 178.275(d)(2)
TP33 - The portable tank instruction assigned for this substance applies for granular and powdered solids and for solids which are filled and discharged at temperatures above their melting point which are cooled and transported as a solid mass. Solid substances transported or offered for transport above their melting point are authorized for transportation in portable tanks conforming to the provisions of portable tank instruction T4 for solid substances of packing group III or T7 for solid substances of packing group II, unless a tank with more stringent requirements for minimum shell thickness, maximum allowable working pressure, pressure-relief devices or bottom outlets are assigned in which case the more stringent tank instruction and special provisions shall apply. Filling limits must be in accordance with portable tank special provision TP3. Solids meeting the definition of an elevated temperature material must be transported in accordance with the applicable requirements of this subchapter.

DOT Packaging Exceptions (49 CFR 173.xxx) : 154

DOT Quantity Limitations Passenger aircraft/rail (49 CFR 173.27) : 15 kg

DOT Quantity Limitations Cargo aircraft only (49 CFR 175.75) : 50 kg

DOT Vessel Stowage Location	:	B - (i) The material may be stowed ''on deck'' or ''under deck'' on a cargo vessel and on a passenger vessel carrying a number of passengers limited to not more than the larger of 25 passengers, or one passenger per each 3 m of overall vessel length; and (ii) ''On deck only'' on passenger vessels in which the number of passengers specified in paragraph (k)(2)(i) of this section is exceeded.
Other information	:	No supplementary information available.

TDG

No additional information available

Transport by sea

UN-No. (IMDG)	:	3261
Proper Shipping Name (IMDG)	:	CORROSIVE SOLID, ACIDIC, ORGANIC, N.O.S.
Class (IMDG)	:	8 - Corrosive substances
Packing group (IMDG)	:	II - substances presenting medium danger

Air transport

UN-No. (IATA)	:	3261
Proper Shipping Name (IATA)	:	Corrosive solid, acidic, organic, n.o.s.
Class (IATA)	:	8 - Corrosives
Packing group (IATA)	:	II - Medium Danger

SECTION 15: Regulatory information

15.1. US Federal regulations

Perfluorooctanesulfonic acid (1763-23-1)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
EPA TSCA Regulatory Flag	S - S - indicates a substance that is identified in a proposed or final Significant New Uses Rule.

All components of this product are listed, or excluded from listing, on the United States Environmental Protection Agency Toxic Substances Control Act (TSCA) inventory

This product or mixture does not contain a toxic chemical or chemicals in excess of the applicable de minimis concentration as specified in 40 CFR §372.38(a) subject to the reporting requirements of section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.

15.2. International regulations

CANADA

Perfluorooctanesulfonic acid (1763-23-1)
Listed on the Canadian NDSL (Non-Domestic Substances List)

EU-Regulations

No additional information available

National regulations

Perfluorooctanesulfonic acid (1763-23-1)
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China) Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory Japanese Pollutant Release and Transfer Register Law (PRTR Law) Listed on INSQ (Mexican national Inventory of Chemical Substances)

15.3. US State regulations

California Proposition 65 - This product does not contain any substances known to the state of California to cause cancer and/or reproductive harm

SECTION 16: Other information

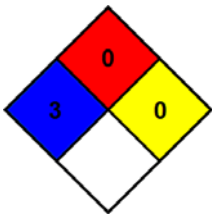
Full text of H-phrases:

Acute Tox. 4 (Oral)	Acute toxicity (oral) Category 4
Eye Dam. 1	Serious eye damage/eye irritation Category 1
Skin Corr. 1B	Skin corrosion/irritation Category 1B
STOT SE 3	Specific target organ toxicity (single exposure) Category 3
H302	Harmful if swallowed
H314	Causes severe skin burns and eye damage
H318	Causes serious eye damage
H335	May cause respiratory irritation

NFPA health hazard : 3 - Short exposure could cause serious temporary or residual injury even though prompt medical attention was given.

NFPA fire hazard : 0 - Materials that will not burn.

NFPA reactivity : 0 - Normally stable, even under fire exposure conditions, and are not reactive with water.



HMIS III Rating

Health : 3 Serious Hazard - Major injury likely unless prompt action is taken and medical treatment is given

Flammability : 0 Minimal Hazard - Materials that will not burn

Physical : 0 Minimal Hazard - Materials that are normally stable, even under fire conditions, and will NOT react with water, polymerize, decompose, condense, or self-react. Non-Explosives.

SDS US (GHS HazCom 2012)

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 offered solely for your consideration, investigation, and verification. It does not represent any guarantee of the properties of the product nor that the hazard precautions or procedures described are the only ones which exist. SynQuest shall not be held liable or any damage resulting from handling or from contact with the above product.

ATTACHMENT D-4
ACCIDENT AND INJURY REPORT FORM

SUPERVISOR'S ACCIDENT INVESTIGATION REPORT

Injured Employee _____ Job Title _____

Home Office _____ Division/Department _____

Date/Time of Accident _____

Location of Accident _____

Witnesses to the Accident _____

Injury Incurred? _____ Nature of Injury _____

_____

Engaged in What Task When Injured? _____

_____

Will Lost Time Occur? ____ How Long? _____ Date Lost Time Began _____

Were Other Persons Involved/Injured? _____

_____

How Did the Accident Occur? _____

_____

_____

_____

_____

What Could Be Done to Prevent Recurrence of the Accident? _____

_____

_____

What Actions Have You Taken Thus Far to Prevent Recurrence? _____

_____

_____

Supervisor's Signature _____ Title _____ Date _____

Reviewer's Signature _____ Title _____ Date _____

Note: If the space provided on this form is insufficient, provide additional information on a separate page and attach. The completed accident investigation report must be submitted to the Health and Safety Manager within two days of the occurrence of the accident.



GZA GeoEnvironmental of New York.

APPENDIX E

QUALITY ASSURANCE PROJECT PLAN



Known for excellence.
Built on trust.

July 30, 2025
GZA File No. 41.0162892.01

Greta Kowalski, P.G.
Project Manager, Remediation Bureau C
New York State Department of Environmental Conservation
625 Broadway
Albany, NY 12233-7014

Re: BCP Site No.: C360174
Westchester Country Airport
Quality Assurance Project Plan
Westchester Joint Water Works Water Filtration Plant

Dear Ms. Kowalski:

On behalf of Hazen and Sawyer (Hazen) and Westchester Joint Water Works' (WJWW), Goldberg-Zoino Associates of New York, PC d/b/a GZA GeoEnvironmental of New York (GZA) acknowledges that the Quality Assurance Project Plan (QAPP) dated June 2025 and prepared by Terracon Consultants-NY, Inc. will be a governing document for the work covered under the Interim Remedial Measure (IRM) Work Plan for the construction of the Rye Lake Water Filtration Plant (WFP) Construction. This letter is provided as a supplement to the QAPP to establish IRM-specific project organization and site contacts typically established in the QAPP. This Appendix to the IRM Work Plan contains a copy of the QAPP for the Westchester County Airport BCP Site C360174 prepared by Terracon.

Project Organization and Responsibility

A qualified person will coordinate and manage the Site sampling and analysis program, data reduction, Quality Assurance and Quality Control (QA/QC), data validation, analysis, and reporting. Stephen Kline, P.E. is a Professional Engineer (PE), as defined by the New York State Department of Environmental Conservation (NYSDEC) and will direct the sampling activities and coordinate laboratory and drilling activities.

A qualified person will ensure that the QA/QC plan is implemented. GZA's Senior Technical Specialist, Dr. Chunhua Liu will provide oversight and technical support for the sampling and analytical procedures followed acting as the project QA Officer. This individual has the broad authority to approve or disapprove project plans, specific analyses, and final reports. In general, the QA officer will be responsible for reviewing and advising on all QA/QC aspects of this program.

A Data Usability Summary Report (DUSR) will be prepared in accordance with the DER Technical Guidance for Site Investigation and Remediation (DER-10). DUSRs for

analytical samples collected as a part of the BCP will be included in the Construction Completion Report (CCR). The DUSR for this project is Ms. Christin Camardella. Qualifications of the personnel related to the QA/QC implemented during the IRM for the WFP construction can be found in **Attachment B**.

If you have any questions, please contact Mr. Kline at (212) 594-8140, or Stephen.kline@gza.com.

Very truly yours,

GZA GEOENVIRONMENTAL OF NEW YORK

Zachary Landis
Project Manager

Victoria Whelan, P.G.
Consultant Reviewer

Stephen M. Kline, P.E.
Vice President

Attachments: Attachment A – Quality Assurance Project Plan, Terracon Consultants-NY, Inc. (June 2025)
Attachment B - Resumes

Attachment A

Quality Assurance Project Plan, Terracon Consultants-NY, Inc. (June 2025)

Quality Assurance Project Plan

Westchester County Airport

Site No. C360174

West Harrison, New York

June 2025 | Terracon Project No. JA257006

Prepared for:

County of Westchester
148 Martine Avenue
White Plains, New York 10601

Prepared by:

Terracon Consultants-NY, Inc.
Rochester, New York

Terracon
Nationwide
Terracon.com
Facilities
Environmental
Geotechnical
Materials

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..... B-1

1.0 INTRODUCTION

This Quality Assurance Project Plan (QAPP) has been developed as part of the Interim Site Management Plan (ISMP) Plan for the Westchester County Airport (Site), located at Airport Road, West Harrison, New York, identified as BCP Site No. C360174. The scope of work associated with the various remedial investigation and remedial action activities, and specific areas of concern that will be addressed are summarized in project-specific Interim Remedial Investigation Work Plans (IRIWP), Interim Remedial Action Work Plan (IRAWP), or other work plans.

The QAPP is designed to produce data of the quality necessary to achieve the project objectives. The objective of the Quality Assurance (QA) and Quality Control (QC) protocol and procedures is to ensure the information, data, and decisions associated with the project are technically sound and properly documented. The QAPP was prepared in general accordance with the requirements of the NYSDEC DER-10, Technical Guidance for Site Investigation and Remediation, dated May 2010 (DER-10).

Procedures used in Terracon's QC program are compatible with federal, state, and local regulations, as well as appropriate industry standards. Project specific work plans may have project specific details that differ from procedures in this QAPP. In such cases, the project-specific work plan should be followed, subsequent to regulatory approval.

2.0 QUALITY CONTROL OBJECTIVES

To ensure that data generated during the various investigation and remedial action sampling events are of the highest quality, the analytical results of such sampling will be compared to appropriate data quality indicators. These indicators include precision, accuracy, representativeness, completeness, and comparability, as described below:

- Precision is the agreement or reproducibility among individual measurements on the same property, usually made under the same conditions.

- Accuracy is the degree of agreement of a measurement with the true or accepted value.

- Completeness is a measure of the amount of valid data obtained from a measurement system compared with the amount that was expected to be obtained under correct and normal conditions.

- Representativeness expresses the degree to which a measurement accurately and precisely represents a characteristic of a population, parameter, variations at a sampling point, a process condition, or an environmental condition.

- Comparability expresses the confidence with which one data set can be compared with another data set with regards to the same parameter.

2.1 Data Quality Objectives

The data quality objectives (DQO) can vary based on the specific objectives of the sampling program. The DQOs for the site sampling program are summarized below.

Levels of Quality Assurance

DQO Level	Description	Associated Activity
I	Field Screening – Portable type instruments which provide real-time data to assist in optimizing sample point locations and health and safety support. Data can be generated regarding present or absence of certain contaminants.	■ Health and Safety Monitoring (PID, FID)
II	Field Analysis – portable analytical instruments in an on-site lab or transported to the site. Depending upon types of contamination, sample matrix, and personnel skills, qualitative and quantitative data can be obtained.	■ Field analyses (pH, specific conductance, temperature, dissolved oxygen)
III	Standard Analytical Protocols – standard analytical protocols, other than the NYSDEC Analytical Services Protocol (ASP) deliverables / reportables.	■ Ongoing semi-annual groundwater sampling ■ Waste classification sampling ■ Remedial system maintenance sampling

DQO Level	Description	Associated Activity
IV	NYSDEC ASP Reportables / Deliverables – rigorous QA / QC protocols and reportables / deliverables documentation: NYSDEC ASP Category B deliverables.	■ Remedial Investigation sampling ■ Post-excavation soil sampling ■ Groundwater sampling
V	Non-Standard – Analysis which may required method modification and/or development	■ Not Applicable

Unless stated otherwise, all data will be generated in accordance with Level IV DQOs. Level III DQOs will be utilized, as necessary, for non-ASP work which may include ignitability, corrosivity, reactivity, EP toxicity, and other state approved parameters for characterization; current semi-annual groundwater sampling plan; and remedial action maintenance or performance sampling. Level I will be used throughout the RI for health and safety monitoring activities.

2.2 Sampling Procedures

The sampling program to be implemented will include each environmental medium that will be collected and analyzed in accordance with appropriate state and federal requirements. Sampling objectives, locations, and procedures have been included as the Interim Site Management Plan (ISMP) and are further described in Section 3. Details regarding specific sampling activities are provided in project specific IRIWP, IRAWP or other work plans, and the procedures for collecting samples and performing field related activities will be included in those plans.

2.3 Laboratory Certification and Coordination

The New York State Department of Health (NYSDOH) issues the Environmental Laboratory Approval Program (ELAP) certification accreditation. Accredited laboratories demonstrated consistently to ensure the accuracy and reliability of samples analyzed. All chemical analyses for samples from the site will be completed by an ELAP laboratory capable of performing project specific analyses as indicated in this QA / QC plan. The project QA / QC Officer will also be responsible for all project related laboratory coordination.

Supporting documentation related to per- and polyfluoroalkyl substances (PFAS) analysis, such as standard operating procedures (SOPs) during sampling activities, analyte lists, and method detection limits (MDLs) are provided in **Attachment A**.

2.4 Analytical Methodologies and Analytical Quality Contol

Specific analyses will be conducted according to NYSDEC ASP 2000 methodologies. The number of samples, analytical method, sample volumes, preservation techniques and holding times are provided in **Table 1**. The data will be presented in Category B reportables / deliverables format.

Analytical quality control for this Project will be consistent with the methodology and quality assurance/quality control requirements in the NYSDEC ASP 2000. **Table 1** includes detail on sample volumes, containers, preservation, and holding time for typical analytes.

2.5 Quality Control Samples

Several types of field QC samples will be collected and submitted for laboratory analysis including trip blanks, sample duplicate, matrix spike and matrix spike duplicate when conducting assessment activities under an approved IRM or other NYSDEC directed or approved assessment effort. Please note that QC samples will not be required for active treatment or remediation activities that include a sampling program for system performance evaluation. DQOs for active treatment or other remediation/mitigation measures will be defined in the IRM Work Plans for that specific remedy.

- Trip blanks – A trip blank sample monitors for potential impacts due to handling, transport, cross contamination from other samples during storage or laboratory contamination. The trip blanks, for aqueous VOCs only, will consist of analyte free reagent grade water in VOC sampling containers to be used for the project. Trip blanks will be prepared at the laboratory, sealed, transported to the Site and returned without being opened to assess contamination that may have occurred during transport.

- Blind duplicates – Blind duplicate samples are used to monitor field and laboratory precision, as well as matrix heterogeneity. The samples are separate aliquots of

the same sample, collected from the same location, at the same time, in the same manner as the first, and placed into a separate container. Each duplicate sample will be analyzed for the same parameters as the original sample collected that day.

- Matrix spike/matrix spike duplicate (MS/MSD) are used to monitor precision and accuracy of the analytical method on various matrices. The samples are spiked with known quantities of target analytes at the laboratory.

- Rinsate Blanks – Rinsate blank is used to indicate potential contamination from sample instruments used to collect and/or transfer samples. The rinsate blank will be generated by passing distilled water (or certified PFAS-free water) through and over cleaned sampling equipment. Rinsate blank samples will not be performed when dedicated disposal equipment is used.

The number of QA / QC samples generally required are shown in the following table. When there is a disagreement with QA / QC sample numbers and types, between this document and a Work Plan, the Work Plan shall prevail.

Sample Type	Analysis	Frequency
Trip blanks	VOC	One per day or 5% (1 per 20), whichever is more frequent
Blind duplicates	Same as field sample	One per day or 5% (1 per 20), whichever is more frequent
MS/MSD	Full suite	One per day or 5% (1 per 20), whichever is more frequent
Rinsate Blanks	PFAS	One per day or 5% (1 per 20), whichever is more frequent

2.6 Corrective Action

If instrument performance or data fall outside acceptable limits, then corrective actions will be taken to resolve problems and restore proper functioning of the analytical system. Actions may include recalibration or standardization of instruments, acquiring new standards, replacing equipment, repairing equipment, and reanalyzing samples or redoing sections of work. Subcontractors providing analytical services should perform their own internal laboratory audits and calibration procedures with data review conducted at a

frequency so that errors and problems are detected early, thus avoiding the prospect of redoing large segments of work.

2.7 Data Usability Summary Report

A Data Usability Summary Report (DUSR) will be prepared by a qualified third party to conduct an independent evaluation consistent with NYSDECs Guidance for the Development of Quality Assurance Plans and Data Usability Summary Reports as given in DER-10. The main objective of the DUSR is to determine whether the data presented meets the project specific needs for data quality and data use. Once data is validated, it will be submitted to the NYSDEC EQuIS database for review.

3.0 FIELD PROCEDURES

The accuracy of the data is dependent upon well-conceived and carefully implemented sampling and analysis procedures. This section presents the procedures for collecting variety of samples, which may be needed at the site.

Proposed sampling locations, and field investigation procedures will be included in project specific IRIWP, IRAWP, or other work plans. In such cases, the project-specific work plan should be followed, subsequent to regulatory approval.

3.1 Field Documentation

Daily field activities will be recorded in a bound field notebook. The field notebook will include the following daily information for Site activities:

- Date, time of arrival, time of departure, weather conditions.
- Field staff, sub-contractors or other personnel on site.
- Description of field activities and location of work area.
- Equipment used on site (such as drill rig, operator)
- Field observations and descriptions, such as soil descriptions, well/piezometer installation information, evidence of contamination, staining, odors, etc.
- Field measurements (OVM, water quality readings) and calibration
- Sampling locations, depths, identification numbers, time, etc.

- Sampling location measurements.
- Chain-of-custody information
- Modifications to scope of work or issues encountered.

Field notes may be transferred to soil boring logs, or monitoring well forms as part of the field activities. Typical forms to be utilized during the field investigation will be included in project specific IRIWP, IRAWP, or other work plans, and may include:

- Daily Field Report
- Soil Boring Log or Test Pit Log
- Monitoring Well Installation Log
- Well Development Data Sheet
- Chain-of-Custody

3.2 Sample Label and Identification

Each field and QC sample will be identified by a self-adhesive, non-removable label placed on the sample containers. The label information will include, at a minimum, client name, site location, data and time of collection, sample identification number, sampler's name, and notes, as needed recorded in waterproof ink. All sample bottles within each shipping container will be individually labeled with the laboratory provided label.

Sample identification will include, at a minimum, the following:

- Sample identification number
- Analysis required
- Sample date and time
- Initials of the individual performing the sampling

A description of the sample will be included in the field logbook.

Alphanumeric codes will be used to identify sample locations. The coding for sample identification numbers should be consistent, identify a single sample location and, unless otherwise directed, use the following naming convention:

Sample Coding and Labeling

Designation	Media Type	Sample Location	Example
SB	Soil	Soil boring number with sample depth interval (x-x')	SB1 (8-10')
MW	Groundwater	Monitoring well with well number	MW2
EX	Soil	Excavation confirmation sample with sample depth interval	EX3 (1-2')
TB	Trip blank	None – include day/month/year	TB1 – 10/25/25
RB	Rinsate blank	Any – rinsate of sampling equipment; include day/month/year	RB2 – 10/25/25
MS/MSD	Matrix spike/ matrix spike duplicate	Any – identify original sample location	SB1 MS MW2 MSD

The laboratory will provide appropriately cleaned and prepared sample containers. Reagents, preservation procedures, and analytical holding times will be in accordance with the published analytical methods.

The specific requirements for sample container preparation, sample preservation, holding times, and any special handling requirements are listed in **Table 1**. Sample containers will be kept closed until the time each set of sample containers is to be filled. After filling, the sample containers will be securely closed, residue wiped from the sides of the containers, sample identification marked on the container label, and the container immediately placed in a cooler that contains ice. Samples will be kept chilled and delivered to or picked up by the laboratory. Samples of dissimilar matrices will be shipped in separate coolers whenever possible. All reasonable effort will be used to limit the time the sample containers are on the Site to no more than two calendar days.

3.3 Field Equipment

Various field equipment will be used during the project. Calibration of the field equipment will be complete in accordance with manufacture's specifications, prior to the start of each day. Additional equipment calibration will be completed throughout the day, as necessary.

- Organic Vapor Meter (OVM) – Real-time monitoring for VOCs will be done with an OVM equipped with a PID to evaluate the nature and extent of potential petroleum or solvent impacts at the site. The OVM will be calibrated on a daily basis in accordance with manufacturer's specifications.

- Particulate Monitoring Equipment – Particulate air monitoring will be completed during soil excavation activities as part of the IRM as noted in the Community Air Monitoring Program (CAMP). Measurements will be collected along the upwind perimeter of the excavation areas to assess the amount of particulates naturally occurring in the air. The particulate meter will be regularly calibrated in accordance with the manufacturer's specifications.

- Additional Field Equipment – Additional field equipment will be used as part of the project including an electric static water level indicator and Horiba U-22 water quality meter that measures pH, specific conductivity, temperature, dissolved oxygen, oxygen reduction potential and turbidity. The meters will be calibrated in accordance with the manufacturer's specifications.

3.4 Sample Collection Procedures

Specific sampling procedures will be included in project specific IRIWP, IRAWP, or other work plans. In such cases, the project-specific work plan should be followed, subsequent to regulatory approval.

3.4.1 Surface Soil Sampling

Samples will be collected using a pre-cleaned, stainless-steel spoon or trowel. When the sample is obtained, it will be deposited into a pre-cleaned stainless-steel bowl or plastic pail for mixing prior to filling the sample containers. The soil will be mixed thoroughly until the material is homogenized. At that point, the soil will be placed into the laboratory-provided containers.

Once removed from the ground the soil will immediately be observed for soil characteristics, including general soil type (sand, silt, clay), moisture, and visual/olfactory evidence of impact such as odors or staining.

When PFAS sampling / testing is required, sampling equipment components or sample containers should not come into contact with aluminum foil, low density polyethylene (LDPE), glass, or Teflon tape. Acceptable equipment includes stainless steel spoons and bowl, high density polyethylene (HDPE) containers, and steel shovels or augers that are not coated.

3.4.2 Subsurface Soil Sampling

3.4.2.1 Soil Screening and Loging

Subsurface soil samples will be collected from direct push macro-core samplers in general accordance with American Society for Testing and Material (ASTM) D6282-98 Standard Guide for Direct Push Soil Samples for Environmental Site Characteristics. Subsurface soil sampling from split-spoon samples advanced ahead of hollow steam augers will be completed in general accordance with ASTM D1586-99. A soil boring log will be prepared for each location to include date, boring location, drill rig type, blow counts, sample identification, sample depth interval, percent recovery, OVM reading, stratigraphic boundaries, and well installation information.

Subsurface soil will be sampled by opening the split spoon sampler (borings) or slicing the core vertically down the middle with a sharp blade. Soil samples will be visually examined for evidence of suspect contamination (e.g., staining, odor) and field screened with a calibrated OVM. Portions of the soil samples may be placed in containers for future analytical testing. Different portions of the soil samples will be placed within sealable plastic bags and will be field screened the same day as collected. Prior to screening, the soil samples will be allowed to equilibrate to ambient temperature. The OVM sampling port will be placed within a corner of the bag. The peak reading will be recorded on the boring log. Portions of the soil samples may be placed in containers for future analytical testing.

3.4.2.2 Soil Sample Collection

Soil samples selected for VOC analysis will be collected using an Encore or Terracore sampling kit, limiting headspace by compacting the soil into the container. Samples for

VOC will be placed into the appropriate container immediately after opening of sampler, prior to making any field measurements or sample homogenization.

Remaining soil samples will be homogenized using a "coning and quartering" procedure. The soil will be removed from the sampling equipment and transferred to a clean surface (metal foil, steel pan, bowl, etc.) and thoroughly mixed to provide a more homogeneous sample to the lab. An aliquot of the sample will then be transferred to the required sample containers and sealed with the appropriate cap.

Due to emergent contaminant sampling requirements, at this time acceptable materials for sampling include stainless-steel, HDPE, PVC, silicone, acetate and polypropylene. Additional materials may be acceptable if pre-approved by NYSDEC. All sampling equipment components and sample containers should not come in contact with aluminum foil, LDPE, glass or polytetrafluoroethylene (PTFE, Teflon™) materials including sample bottle cap liners with a PTFE layer.

Clothing that contains PTFE material (including GORE-TEX®) or that have been waterproofed with PFC materials must be avoided. Many food and drink packaging materials and "plumbers thread seal tape" contain PFCs.

All clothing worn by sampling personnel must have been laundered multiple times. The sampler must wear nitrile gloves while filling and sealing the sample bottles. Additionally, sunscreen brands will require approval by Terracon's PFAS Subject Matter Experts prior to application or use by sampling personnel.

3.4.2.3 Soil Borings

Soil borings will be completed using either direct push subsurface investigation techniques or rotary drilling with continuous split spoon sampling and hollow stem augers. Drilling cuttings will be visually inspected and screened with an OVM and managed consistent with DER-10 requirements. Soil sampling will be conducted to define the subsurface conditions. During continuous sampling process, soil samples will be field screened for the presence of VOCs using an OVM. Soil samples for laboratory analysis will be selected in the field based on visual/olfactory observations and OVM screening results.

The drill rig/ soil probe rig, tools, augers, etc. will be decontaminated between holes at an on-site temporary decontamination pad or area. Decontamination will be accomplished using steam cleaning or high-pressure wash equipment. Direct push sampling equipment and split spoon sampling devices will be cleaned manually with non-phosphate detergent (i.e., Alconox) wash and potable water followed by a potable water rinse or a second steam cleaning followed by a distilled/deionized water rinse. All equipment will be cleaned prior to leaving the Site.

3.4.2.4 Test Pits

Test pits will be completed using a track-mounted excavator and bucket to provide a detailed visual examination of near surface soil, and fill materials present on-site. Samples will be collected from the walls and/or floor through the use of a bucket, steel trowels and bowls. The samples will be placed directly into the appropriate containers, inspected and screened for the presence of VOCs using an OVM, and managed consistent with DER-10 requirements. Soil samples for laboratory analysis will be selected in the field based on visual and olfactory observations and OVM screening results.

Sampling equipment will be cleaned manually with non-phosphate detergent (i.e., Alconox) wash and potable water, followed by a potable water rinse or a second steam cleaning, followed by a distilled/deionized water rinse. All sampling equipment will be cleaned prior to leaving the Site. During PFAS sampling activities, equipment will be triple rinsed with certified PFAS-free water provided by the laboratory or other reputable source.

3.4.3 Monitoring Well Development and Sampling

Groundwater sampling at monitoring wells will be performed no sooner than two weeks following the development of that monitoring well unless otherwise approved by the NYSDEC. Groundwater sampling at permanent wells for one sampling event will consist of determining the casing volume, purging, and sample collection, as well as field measurement parameters such as temperature, pH, Conductivity, Dissolved Oxygen (DO), and turbidity. These procedures are described below.

3.4.3.1 Monitoring Well Development

Monitoring wells will be developed by utilizing either a dedicated tubing or new dedicated disposable bailer, depending on the field conditions. Fluids will not be added during development process. New, dedicated well development equipment will be utilized prior to development of each well. The well development procedure is listed below.

- Well cover will be unlocked. OVM will be used to survey the ambient air and air directly at the top of the well.
- Take a pre-development static water level measurement.
- Sound the bottom of the well and agitate/loosen accumulated sediment.
- Calculate water volume in the well.
- Obtain initial field water quality measurements, including pH, specific conductance, turbidity, and temperature obtained using a Horiba U-22 water quality meter (or equivalent).
- Alternate water agitation methods such as moving a bailer or pump tubing up and down inside screened interval coupled with water removal methods (pumping or bailing) in order to suspend and remove solids/sediment from the wells.
- Water quality meter measurements should be recorded every one to three gallons of water removed. Record water quantities removed and water quality measurements.
- Development can cease when the following water quality criteria are met, or at least 5 well volumes have been removed.
  - Water is clear and free of sediment and turbidity is less than 50 nephelometric turbity units (NTUs)
  - pH is +/- 0.1 standard unit between readings
  - Specific conductivities is +/-3% between readings
  - Temperature is +/-10% between readings
- Record post-development water level readings. Development information will be recorded on well development logs.

After the water level has returned to its pre-purge level (or within a maximum of two hours, if the well has recharged sufficiently to allow sampling), samples will be collected from the middle of the screened portion of the well for overburden wells. If the water

level is slow to recharge and does not reach its pre-purge level within two hours, then samples can be collected after sufficient water has recharged, and the degree of recharge indicated in field notes with time and depth to water noted.

3.4.3.2 Sampling

Groundwater samples will be collected by utilizing low-flow sampling techniques with dedicated tubing or by conventional methods using a new dedicated disposable bailer. A peristaltic pump and new disposable HDPE tubing will be used at each location. Tubing and sampling equipment will be clean upon arrival at the Site. The well will be sampled after removal of three well volumes or well purging. If low-flow sampling is being performed, then samples will be collected after certain criteria identified in Section 3.4.3.1 are met. The use of screened, shorter intervals of sampling will be implemented for low-flow wells. Conventional sampling will be collected after purging three well volumes.

A Well Data Sheet should be completed during groundwater sampling. Each well to be sampled will have designated pre-labeled, certified clean, sample bottles. When water levels are being collected for groundwater modeling, any pertinent measurements will be conducted concurrently. The following steps describe the groundwater sample procedure.

- Unlock and remove well cap. Test the air at the wellhead with the OVM.
- Measure the static water level. Determine the total well volume.
- Slowly lower the dedicated bailer or tubing into the well. Purge the well, minimum of three well volumes. If the well goes dry during bailing, allow for full recovery and sample. If recovery takes longer than 20 minutes, proceed to next well but return to sample within 24 hours. Low-flow purging will be conducted at wells with historically high-levels of PFAS contamination, using dedicated sampling equipment. Purging will minimize drawdown and mixing by using a slow, controlled rate. Conventional purging will be completed at wells less likely to have a vertical gradient of PFAS contamination, and remove three well volumes.

- Fill the appropriate sample bottles. Two or three (depending on laboratory-specific requirements) 40-ml glass vials (with Teflon septa) will be used to collect samples for VOCs. Sample collection with the following sample collection order: volatile organic compounds, semi-volatile organic compounds, PCBs/pesticides/herbicides, metals and PFAS. If the well should go dry during sampling, the well should be re-sampled the next day. The second attempt to sample the well will proceed with the same sample order.
- Samples will be collected after disconnection from any water quality meters.
- Preservative for the various sampling preservatives will be added by the laboratory provided jars. The following parameters required additional special handling.
  - VOC samples must be free of air bubbles. When the container is determined to be bubble free, the sample containers should be immediately chilled.
  - Metals analysis should be preserved with nitric acid to a pH less than 2.
- Record pertinent information in the field logbook and well data sheet. Lock well, inspect well site, and note any maintenance required.
- Purge water will be containerized for future disposal.

Per- and polyfluoroalkyl substances (PFAS) Sampling Protocol

Groundwater sample collection procedure for PFAS will be completed in accordance with NYSDEC protocol identified in "Guidelines for Sampling and Analysis of PFAS, Under NYSDEC's Part 375 Remedial Programs" dated April 2023, included in the Quality Assurance/Quality Control (QAPP) found in **Appendix B**.

During PFAS sampling activities, equipment will be triple rinsed with certified PFAS-free water provided by the laboratory or other reputable source.

3.4.4 Surface Water Sampling

To obtain a surface water sample, the sample container will be slowly lowered into the water body by hand until it is submerged and slowly brought back to the surface after filling. Should it prove infeasible to collect the sample by hand due to other conditions, a sample bottle will be attached to the end of a sampling pole using zip ties or other non-

PFAS containing method and the above procedure followed. The sample pole will be decontaminated between samples. Surface water samples will be collected from downstream to upstream to have limited effect on the water column.

All sample containers will consist of laboratory-cleaned bottles (non-glass for PFAS) that, once filled with sample, are to be properly labeled and then placed into coolers and chilled to 4°C using wet ice and not blue pack ice.

3.4.5 Soil Vapor Intrusion Sampling

Soil vapor intrusion (SVI) investigation will be completed to assess the potential for soil vapor intrusion concerns within the Site in areas with VOC impact identified. The SVI work will be in done in general accordance with NYSDOH Final document entitled "Guidance for Evaluating Soil Vapor Intrusion in the State of New York", dated October 2006, and amendments.

3.4.5.1 Building Survey

An inspection of the existing on-site facility and product inventory will be conducted to assess the current conditions in proposed sampling areas and determine the likelihood of existing chemicals of concern that may be present that would influence the vapor test results. An OVM will be used to monitor indoor air and scan vapors of individual containers that may be present. Any potential sources identified inside the facility will be removed prior to conducting the vapor test.

3.4.5.2 Site Preparation

In accordance with NYSDOH recommendations, the HVAC system should be activated.

3.4.5.3 Vapor Sampling

Three types of air samples will be collected, including sub-slab, ambient indoor air and ambient outdoor air samples, as follows:

Sub-Slab: Sub-slab sampling points will be obtained through core-drilled holes into a competent portion of the concrete floor, away from cracks or drains. Clean, dedicated ¼-inch inside diameter polyethylene tubing will be placed into the hole and will not extend further than 2-inches into the sub-slab material. The core-hole annulus will be sealed at the floor surface with modeling clay. Once it is determined that the sampling system is sealed, the sample probe and tube will be purged of one to three volumes, and sampling will be initiated.

The sub-slab soil gas sample will be collected using a 1-liter capacity Summa canister fitted with a laboratory calibrated flow regulation devise to allow the collection of the soil gas sample over an 8-hour sample collection time.

Ambient Indoor Air: An ambient indoor air sample will be collected concurrent with every sub-slab sample location from approximately 3 to 4 feet above the slab floor. Samples will be collected over an 8-hour collection period.

Ambient Outdoor Air: One ambient outdoor sample will be collected at an upwind location from approximately 4 to 5 feet above the ground surface. A sample will be collected over an 8-hour collection period.

All sampling and purging flow rates will not exceed 0.2 liters per minute. Since the ambient outdoor air sample is dependent on wind flow direction, that sample location will be determined the day of the test.

3.4.5.4 Soil Vapor Sampling Leak Testing Procedures

Leak testing will be completed prior to collection of the sub-slab sample locations using a tracer gas. The tracer gas (i.e., helium) will be released at the ground surface immediately around the sub-slab sampling location prior to sample collection. The following procedure will be used:

- A helium meter will be used to monitor the presence of helium during purging and soil gas sample collection.
- A containment unit will be constructed to cover the sub-slab sampling system. In general, the containment will include a shroud set into bentonite to create a seal. The shroud will have a hole to allow for introduction of helium and a second to allow trapped air to escape.
- Prior to soil gas purging, helium will be introduced into the shroud and helium confirmed to be present.
- The helium meter will be connected in-line with the sub-slab sampling assembly to assess for presence of helium. Should the helium meter detect the presence of

helium greater than 10 percent of the source concentration (measured under the shroud), then the sample location will not be utilized or sub-slab collection.

3.5 Decontamination Procedures

In order to reduce the potential for cross-contamination of samples collected during the project, sampling equipment will be decontaminated to ensure that data is acceptable. It is anticipated that most of the materials used in sample collection will be disposable one-time use materials, such as sampling containers, bailers, tubing, gloves, etc.

Non-dedicated material such as split spoon samples, stainless steel mixing bowls, drill rig, water-level indicator, etc., will be decontaminated by the following methods:

- Steam clean the equipment within a dedicated decontamination area; or
- Decontamination typically involves scrubbing/washing with a laboratory grade detergent (e.g. alconox) to remove visible contamination, followed by potable (tap) water and analyte-free water rinses. Tap water may be used from any treated municipal water system.

The effectiveness of the equipment decontamination of non-dedicated sampling equipment will be evaluated via analytical testing of rinsate blanks. Decontamination liquids, disposable equipment, and PPE will be containerized for future disposal. During PFAS sampling activities, equipment will be triple rinsed with certified PFAS-free water provided by the laboratory or other reputable source.

4.0 MANAGEMENT OF INVESTIGATIVE-DERIVED WASTE

The sampling methods and equipment have been selected to limit the need for decontamination and the volume of waste material to be generated. Investigation-derived material (e.g., drill cuttings and purge water) will be containerized in 55-gallon drums for testing and future off-site disposal.

Personal protective equipment and disposable sampling equipment will be placed in plastic garbage bags for disposal as a non-hazardous waste.

Decontamination water used in steam cleaning and/or spoon washing, and rinse water, including detergent, may be generated during Site work. Tap and analyte-free water used for rinsing will be allowed to percolate back into the ground.
Any waste generated during investigation and remedial actions will be collected and containerized as required for disposal according to all applicable laws and regulations.

5.0 Reporting

Upon completion of sampling and receipt of analytical results, the analytical data will be provided within the monthly progress report. Additionally, investigation sampling and results will be included within the remedial investigation report.

APPENDIX A

TABLES

TABLE 1
Sample Container, Volume, Preserving and Holding Time Requirements
Westchester County Airport
NYSDEC Brownfield Cleanup Program

PARAMETER DESCRIPTION	MATRIX	METHOD NO.	Quantity/ Bottle Type	Preservation	Holding Time
Soil / SedimentSamples					
Volatiles, TCL list	Soil	5035/3035A/8260	Encore or Terracore Samplers	Freeze within 48 hours	Freeze within 48 hours 14 days
Semi-Volatiles, TCL list	Soil	8270	(1) 4oz glass jar	Cool, 4 C	14 days
Metals, TAL (no CN)	Soil	6010/7000	(1) 4oz glass jar	none	180 days, Mercury 28 days
PCBs	Soil	8082	(1) 4oz glass jar	Cool, 4 C	365 days/40 days from extraction
Pesticides	Soil	8081	(1) 4oz glass jar	Cool, 4 C	14 days/40 days from extraction
Herbicides	Soil	8151	(1) 4oz glass jar	Cool, 4 C	14 days/40 days from extraction
1,4-Dioxane	Soil	8270-SIM	(1) 8oz glass jar	Cool, 4 C	14 days
Polyfluoroalkl Substances (PFAS)	Soil	EPA 1633	(1) 8oz glass jar	Cool, 4 C	28 days
Groundwater / Surface Water					
Volatiles, TCL list	Water	8260	(3) 40ml vial	Cool, 4 C, HCL	14 days
Semi-Volatiles, TCL list	Water	8270	(2) 1 liter amber	Cool, 4 C	7 days
PCBs	Water	8082	(2) 1 liter amber	Cool, 4 C	7 days/40 days from extraction
Pesticides	Water	8081	(2) 500ml amber	Cool, 4 C	7 days/40 days from extraction
Herbicides	Water	8151	(2) 1 liter amber	Cool, 4 C	7 days/40 days from extraction
Metals, TAL	Water	6010	(1) 250ml plastic	HNO3	180 days
Mercury, Total	Water	7000	(1) 250ml plastic	HNO3	28 days
Metals, TAL (dissolved) field filtered	Water	6010	(1) 250ml plastic	HNO3	180 days
Mercury, Dissolved	Water	7000	(1) 250ml plastic	HNO3	28 days

APPENDIX B

SAMPLING, ANALYSIS, AND ASSESSMENT OF PER- AND POLYFLUOROALKYL SUBSTANCES (PFAS) – APRIL 2023

NEW YORK STATE OF OPPORTUNITY.

Department of Environmental Conservation

SAMPLING, ANALYSIS, AND ASSESSMENT OF PER- AND POLYFLUOROALKYL SUBSTANCES (PFAS)

Under NYSDEC's Part 375 Remedial Programs

April 2023



www.dec.ny.gov

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ERRATA SHEET for

SAMPLING, ANALYSIS, AND ASSESSMENT OF PER- AND POLYFLUOROALKYL SUBSTANCES (PFAS) Under NYSDEC's Part 375 Remedial Programs Issued January 17, 2020

Citation and Page Number	Current Text	Corrected Text	Date
Title of Appendix I, page 32	Appendix H	Appendix I	2/25/2020
Document Cover, page 1	Guidelines for Sampling and Analysis of PFAS	Sampling, Analysis, and Assessment of Per- and Polyfluoroalkyl Substances (PFAS) Under NYSDEC's Part 375 Remedial Programs	9/15/2020
Data Assessment and Application to Site Cleanup Page 3	Until such time as Ambient Water Quality Standards (AWQS) and Soil Cleanup Objectives (SCOs) for PFOA and PFOS are published	Until such time as Soil Cleanup Objectives (SCOs) for PFOA and PFOS are published	3/28/2023
Water Sample Results Page 3	PFOA and PFOS should be further assessed and considered as potential contaminants of concern in groundwater or surface water if PFOA or PFOS is detected in any water sample at or above 10 ng/L (ppt) and is determined to be attributable to the site, either by a comparison of upgradient and downgradient levels, or the presence of soil source areas, as defined below.	NYSDEC has adopted ambient water quality guidance values for PFOA and PFOS. Groundwater samples should be compared to the human health criteria of 6.7 ng/l (ppt) for PFOA and 2.7 ng/l (ppt) for PFOS. These guidance values also include criteria for surface water for PFOS applicable for aquatic life, which may be applicable at some sites. Drinking water sample results should be compared to the NYS maximum contaminant level (MCL) of 10 ng/l (ppt).Analysis to determine if PFOA and PFOS concentrations are attributable to the site should include a comparison between upgradient and downgradient levels, and the presence of soil source areas, as defined below.	3/28/2023
Soil Sample Results Page 3	Soil cleanup objectives for PFOA and PFOS have been proposed in an upcoming revision to 6 NYCRR Part 375-6. Until SCOs are in effect, the following are to be used as guidance values:	NYSDEC will delay adding soil cleanup objectives for PFOA and PFOS to 6 NYCRR Part 375-6 until the PFAS rural soil background study has been completed. Until SCOs are in effect, the following are to be used as guidance values:	3/28/2023
Protection of Groundwater Page 3	PFOA (ppb) 1.1 PFOS (ppb) 3.7	PFOA (ppb) 0.8 PFOS (ppb) 1.0	3/28/2023

Citation and Page Number	Current Text	Corrected Text	Date
Footnote 2 Page 3	The movement of PFAS in the environment is being aggressively researched at this time; that research will eventually result in more accurate models for the behaviors of these chemicals. In the meantime, DEC has calculated the guidance value for the protection of groundwater using the same procedure used for all other chemicals, as described in Section 7.7 of the Technical Support Document (http://www.dec.ny.gov/docs/remediation_hudson_pdf/techsuppdoc.pdf).	The Protection of Groundwater values are based on the above referenced ambient groundwater guidance values. Details on that calculation are available in the following document, prepared for the February 2022 proposed changes to Part 375 (https://www.dec.ny.gov/docs/remediation_hudson_pdf/part375techsupport.pdf). The movement of PFAS in the environment is being aggressively researched at this time; that research will eventually result in more accurate models for the behaviors of these chemicals. In the meantime, DEC has calculated the guidance value for the protection of groundwater using the same procedure used for all other chemicals, as described in Section 7.7 of the Technical Support Document (http://www.dec.ny.gov/docs/remediation_hudson_pdf/techsuppdoc.pdf).	3/28/2023
Testing for Imported Soil Page 4	If the concentrations of PFOA and PFOS in leachate are at or above 10 ppt (the Maximum Contaminant Levels established for drinking water by the New York State Department of Health), then the soil is not acceptable.	If the concentrations of PFOA and PFOS in leachate are at or above the ambient water quality guidance values for groundwater, then the soil is not acceptable.	3/28/2023
Routine Analysis, page 9	"However, laboratories analyzing environmental samples…PFOA and PFOS in drinking water by EPA Method 537, 537.1 or ISO 25101."	"However, laboratories analyzing environmental samples…PFOA and PFOS in drinking water by EPA Method 537, 537.1, ISO 25101, or Method 533."	9/15/2020
Additional Analysis, page 9, new paragraph regarding soil parameters	None	"In cases where site-specific cleanup objectives for PFOA and PFOS are to be assessed, soil parameters, such as Total Organic Carbon (EPA Method 9060), soil pH (EPA Method 9045), clay content (percent), and cation exchange capacity (EPA Method 9081), should be included in the analysis to help evaluate factors affecting the leachability of PFAS in site soils."	9/15/2020

Citation and Page Number	Current Text	Corrected Text	Date
Data Assessment and Application to Site Cleanup Page 10	Until such time as Ambient Water Quality Standards (AWQS) and Soil Cleanup Objectives (SCOs) for PFAS are published, the extent of contaminated media potentially subject to remediation should be determined on a case-by-case basis using the procedures discussed below and the criteria in DER-10. Target levels for cleanup of PFAS in other media, including biota and sediment, have not yet been established by the DEC.	Until such time as Ambient Water Quality Standards (AWQS) and Soil Cleanup Objectives (SCOs) for PFOA and PFOS are published, the extent of contaminated media potentially subject to remediation should be determined on a case-by-case basis using the procedures discussed below and the criteria in DER-10. Preliminary target levels for cleanup of PFOA and PFOS in other media, including biota and sediment, have not yet been established by the DEC.	9/15/2020
Water Sample Results Page 10	PFAS should be further assessed and considered as a potential contaminant of concern in groundwater or surface water (…) If PFAS are identified as a contaminant of concern for a site, they should be assessed as part of the remedy selection process in accordance with Part 375 and DER-10.	PFOA and PFOS should be further assessed and considered as potential contaminants of concern in groundwater or surface water (…) If PFOA and/or PFOS are identified as contaminants of concern for a site, they should be assessed as part of the remedy selection process in accordance with Part 375 and DER-10.	9/15/2020

Citation and Page Number	Current Text	Corrected Text	Date
Soil Sample Results, page 10	"The extent of soil contamination for purposes of delineation and remedy selection should be determined by having certain soil samples tested by Synthetic Precipitation Leaching Procedure (SPLP) and the leachate analyzed for PFAS. Soil exhibiting SPLP results above 70 ppt for either PFOA or PFOS (individually or combined) are to be evaluated during the cleanup phase."	"Soil cleanup objectives for PFOA and PFOS will be proposed in an upcoming revision to 6 NYCRR Part 375-6. Until SCOs are in effect, the following are to be used as guidance values. " [Interim SCO Table] "PFOA and PFOS results for soil are to be compared against the guidance values listed above. These guidance values are to be used in determining whether PFOA and PFOS are contaminants of concern for the site and for determining remedial action objectives and cleanup requirements. Site-specific remedial objectives for protection of groundwater can also be presented for evaluation by DEC. Development of site-specific remedial objectives for protection of groundwater will require analysis of additional soil parameters relating to leachability. These additional analyses can include any or all the parameters listed above (soil pH, cation exchange capacity, etc.) and/or use of SPLP. As the understanding of PFAS transport improves, DEC welcomes proposals for site-specific remedial objectives for protection of groundwater. DEC will expect that those may be dependent on additional factors including soil pH, aqueous pH, % organic carbon, % Sand/Silt/Clay, soil cations: K, Ca, Mg, Na, Fe, Al, cation exchange capacity, and anion exchange capacity. Site-specific remedial objectives should also consider the dilution attenuation factor (DAF). The NJDEP publication on DAF can be used as a reference: https://www.nj.gov/dep/srp/guidance/rs/daf.pdf. "	9/15/2020

Citation and Page Number	Current Text	Corrected Text	Date
Testing for Imported Soil Page 11	Soil imported to a site for use in a soil cap, soil cover, or as backfill is to be tested for PFAS in general conformance with DER-10, Section 5.4(e) for the PFAS Analyte List (Appendix F) using the analytical procedures discussed below and the criteria in DER-10 associated with SVOCs. If PFOA or PFOS is detected in any sample at or above 1 µg/kg, then soil should be tested by SPLP and the leachate analyzed for PFAS. If the SPLP results exceed 10 ppt for either PFOA or PFOS (individually) then the source of backfill should be rejected, unless a site-specific exemption is provided by DER. SPLP leachate criteria is based on the Maximum Contaminant Levels proposed for drinking water by New York State's Department of Health, this value may be updated based on future Federal or State promulgated regulatory standards. Remedial parties have the option of analyzing samples concurrently for both PFAS in soil and in the SPLP leachate to minimize project delays. Category B deliverables should be submitted for backfill samples, though a DUSR is not required.	Testing for PFAS should be included any time a full TAL/TCL analyte list is required. Results for PFOA and PFOS should be compared to the applicable guidance values. If PFOA or PFOS is detected in any sample at or above the guidance values then the source of backfill should be rejected, unless a site-specific exemption is provided by DER based on SPLP testing, for example. If the concentrations of PFOA and PFOS in leachate are at or above 10 ppt (the Maximum Contaminant Levels established for drinking water by the New York State Department of Health), then the soil is not acceptable. PFOA, PFOS and 1,4-dioxane are all considered semi-volatile compounds, so composite samples are appropriate for these compounds when sampling in accordance with DER-10, Table 5.4(e)10. Category B deliverables should be submitted for backfill samples, though a DUSR is not required.	9/15/2020

Citation and Page Number	Current Text	Corrected Text	Date
Footnotes	None	[1] TOP Assay analysis of highly contaminated samples, such as those from an AFFF (aqueous film-forming foam) site, can result in incomplete oxidation of the samples and an underestimation of the total perfluoroalkyl substances. [2] The movement of PFAS in the environment is being aggressively researched at this time; that research will eventually result in more accurate models for the behaviors of these chemicals. In the meantime, DEC has calculated the soil cleanup objective for the protection of groundwater using the same procedure used for all other chemicals, as described in Section 7.7 of the Technical Support Document (http://www.dec.ny.gov/docs/remediation_hudson_pdf/techsuppdoc.pdf).	9/15/2020
Additional Analysis, page 9	In cases… soil parameters, such as Total Organic Carbon (EPA Method 9060), soil…	In cases… soil parameters, such as Total Organic Carbon (Lloyd Kahn), soil…	1/8/2021
Appendix A, General Guidelines, fourth bullet	List the ELAP-approved lab(s) to be used for analysis of samples	List the ELAP- certified lab(s) to be used for analysis of samples	1/8/2021
Appendix E, Laboratory Analysis and Containers	Drinking water samples collected using this protocol are intended to be analyzed for PFAS by ISO Method 25101.	Drinking water samples collected using this protocol are intended to be analyzed for PFAS by EPA Method 537, 537.1, 533, or ISO Method 25101	1/8/2021
Water Sample Results Page 9	"In addition, further assessment of water may be warranted if either of the following screening levels are met: a. any other individual PFAS (not PFOA or PFOS) is detected in water at or above 100 ng/L; or b. total concentration of PFAS (including PFOA and PFOS) is detected in water at or above 500 ng/L"	Deleted	6/15/2021

Citation and Page Number	Current Text	Corrected Text	Date
Routine Analysis, Page XX	Currently, New York State Department of Health's Environmental Laboratory Approval Program (ELAP)… criteria set forth in the DER's laboratory guidelines for PFAS in non-potable water and solids (Appendix H - Laboratory Guidelines for Analysis of PFAS in Non-Potable Water and Solids).	Deleted	5/31/2022
Analysis and Reporting, Page XX	As of October 2020, the United States Environmental Protection Agency (EPA) does not have a validated method for analysis of PFAS for media commonly analyzed under DER remedial programs (non-potable waters, solids). DER has developed the following guidelines to ensure consistency in analysis and reporting of PFAS.	Deleted	5/31/2022
Routine Analysis, Page XX	LC-MS/MS analysis for PFAS using methodologies based on EPA Method 537.1 is the procedure to use for environmental samples. Isotope dilution techniques should be utilized for the analysis of PFAS in all media.	EPA Method 1633 is the procedure to use for environmental samples.	
Soil Sample Results, Page XX	Soil cleanup objectives for PFOA and PFOS will be proposed in an upcoming revision to 6 NYCRR Part 375-6	Soil cleanup objectives for PFOA and PFOS have been proposed in an upcoming revision to 6 NYCRR Part 375-6	
Appendix A	"Include in the text… LC-MS/MS for PFAS using methodologies based on EPA Method 537.1"	"Include in the text ….EPA Method 1633"	
Appendix A	"Laboratory should have ELAP certification for PFOA and PFOS in drinking water by EPA Method 537, 537.1, EPA Method 533, or ISO 25101"	Deleted	
Appendix B	"Samples collected using this protocol are intended to be analyzed for PFAS using methodologies based on EPA Method 537.1"	"Samples collected using this protocol are intended to be analyzed for PFAS using EPA Method 1633"	

Citation and Page Number	Current Text	Corrected Text	Date
Appendix C	"Samples collected using this protocol are intended to be analyzed for PFAS using methodologies based on EPA Method 537.1"	"Samples collected using this protocol are intended to be analyzed for PFAS using EPA Method 1633"	
Appendix D	"Samples collected using this protocol are intended to be analyzed for PFAS using methodologies based on EPA Method 537.1"	"Samples collected using this protocol are intended to be analyzed for PFAS using EPA Method 1633"	
Appendix G		Updated to include all forty PFAS analytes in EPA Method 533	
Appendix H		Deleted	
Appendix I	Appendix I	Appendix H	
Appendix H	"These guidelines are intended to be used for the validation of PFAS analytical results for projects within the Division of Environmental Remediation (DER) as well as aid in the preparation of a data usability summary report."	"These guidelines are intended to be used for the validation of PFAS using EPA Method 1633 for projects within the Division of Environmental Remediation (DER)."	
Appendix H	"The holding time is 14 days…"	"The holding time is 28 days…"	
Appendix H, Initial Calibration	"The initial calibration should contain a minimum of five standards for linear fit…"	"The initial calibration should contain a minimum of six standards for linear fit…"	
Appendix H, Initial Calibration	Linear fit calibration curves should have an R^2 value greater than 0.990.	Deleted	
Appendix H, Initial Calibration Verification	Initial Calibration Verification Section	Deleted	
Appendix H	secondary Ion Monitoring Section	Deleted	
Appendix H	Branched and Linear Isomers Section	Deleted	

Sampling, Analysis, and Assessment of Per- and Polyfluoroalkyl Substances (PFAS) Under NYSDEC's Part 375 Remedial Programs

Objective

New York State Department of Environmental Conservation's Division of Environmental Remediation (DER) performs or oversees sampling of environmental media and subsequent analysis of PFAS as part of remedial programs implemented under 6 NYCRR Part 375. To ensure consistency in sampling, analysis, reporting, and assessment of PFAS, DER has developed this document which summarizes currently accepted procedures and updates previous DER technical guidance pertaining to PFAS.

Applicability

All work plans submitted to DEC pursuant to one of the remedial programs under Part 375 shall include PFAS sampling and analysis procedures that conform to the guidelines provided herein.

As part of a site investigation or remedial action compliance program, whenever samples of potentially affected media are collected and analyzed for the standard Target Analyte List/Target Compound List (TAL/TCL), PFAS analysis should also be performed. Potentially affected media can include soil, groundwater, surface water, and sediment. Based upon the potential for biota to be affected, biota sampling and analysis for PFAS may also be warranted as determined pursuant to a Fish and Wildlife Impact Analysis. Soil vapor sampling for PFAS is not required.

Field Sampling Procedures

DER-10 specifies technical guidance applicable to DER's remedial programs. Given the prevalence and use of PFAS, DER has developed "best management practices" specific to sampling for PFAS. As specified in DER-10 Chapter 2, quality assurance procedures are to be submitted with investigation work plans. Typically, these procedures are incorporated into a work plan, or submitted as a stand-alone document (e.g., a Quality Assurance Project Plan). Quality assurance guidelines for PFAS are listed in Appendix A - Quality Assurance Project Plan (QAPP) Guidelines for PFAS.

Field sampling for PFAS performed under DER remedial programs should follow the appropriate procedures outlined for soils, sediments, or other solids (Appendix B), non-potable groundwater (Appendix C), surface water (Appendix D), public or private water supply wells (Appendix E), and fish tissue (Appendix F).

QA/QC samples (e.g. duplicates, MS/MSD) should be collected as specified in DER-10, Section 2.3(c). For sampling equipment coming in contact with aqueous samples only, rinsate or equipment blanks should be collected. Equipment blanks should be collected at a minimum frequency of one per day per site or one per twenty samples, whichever is more frequent.

Analysis and Reporting

The investigation work plan should describe analysis and reporting procedures, including laboratory analytical procedures for the methods discussed below. As specified in DER-10 Section 2.2, laboratories should provide a full Category B deliverable. In addition, a Data Usability Summary Report (DUSR) should be prepared by an independent, third-party data validator. Electronic data submissions should meet the requirements provided at: https://www.dec.ny.gov/chemical/62440.html.

DER has developed a *PFAS Analyte List* (Appendix G) for remedial programs to understand the nature of contamination at sites. It is expected that reported results for PFAS will include, at a minimum, all the compounds listed. If lab and/or matrix specific issues are encountered for any analytes, the DER project manager, in consultation with the DER chemist, will make case-by-case decisions as to whether certain analytes may be temporarily or permanently discontinued from analysis at each site. As with other contaminants that are analyzed for at a site, the *PFAS Analyte List* may be refined for future sampling events based on investigative findings.

Routine Analysis

EPA Method 1633 is the procedure to use for environmental samples. Reporting limits for PFOA and PFOS in aqueous samples should not exceed 2 ng/L. Reporting limits for PFOA and PFOS in solid samples should not exceed 0.5 µg/kg. Reporting limits for all other PFAS in aqueous and solid media should be as close to these limits as possible. If laboratories indicate that they are not able to achieve these reporting limits for the entire *PFAS Analyte List*, site-specific decisions regarding acceptance of elevated reporting limits for specific PFAS can be made by the DER project manager in consultation with the DER chemist. Data review guidelines were developed by DER to ensure data comparability and usability (Appendix H - Data Review Guidelines for Analysis of PFAS in Non-Potable Water and Solids).

Additional Analysis

Additional laboratory methods for analysis of PFAS may be warranted at a site, such as the Synthetic Precipitation Leaching Procedure (SPLP) and Total Oxidizable Precursor Assay (TOP Assay).

In cases where site-specific cleanup objectives for PFOA and PFOS are to be assessed, soil parameters, such as Total Organic Carbon (Lloyd Kahn), soil pH (EPA Method 9045), clay content (percent), and cation exchange capacity (EPA Method 9081), should be included in the analysis to help evaluate factors affecting the leachability of PFAS in site soils.

SPLP is a technique used to determine the mobility of chemicals in liquids, soils and wastes, and may be useful in determining the need for addressing PFAS-containing material as part of the remedy. SPLP by EPA Method 1312 should be used unless otherwise specified by the DER project manager in consultation with the DER chemist.

Impacted materials can be made up of PFAS that are not analyzable by routine analytical methodology. A TOP Assay can be utilized to conceptualize the amount and type of oxidizable PFAS which could be liberated in the environment, which approximates the maximum concentration of perfluoroalkyl substances that could be generated if all polyfluoroalkyl substances were oxidized. For example, some polyfluoroalkyl substances may degrade or transform to form perfluoroalkyl substances (such as PFOA or PFOS), resulting in an increase in perfluoroalkyl substance concentrations as contaminated groundwater moves away from a source. The TOP Assay converts, through oxidation, polyfluoroalkyl substances (precursors) into perfluoroalkyl substances that can be detected by routine analytical methodology.[1]

[1] TOP Assay analysis of highly contaminated samples, such as those from an AFFF (aqueous film-forming foam) site, can result in incomplete oxidation of the samples and an underestimation of the total perfluoroalkyl substances.

Commercial laboratories have adopted methods which allow for the quantification of targeted PFAS in air and biota. The EPA's Office of Research and Development (ORD) is currently developing methods which allow for air emissions characterization of PFAS, including both targeted and non-targeted analysis of PFAS. Consult with the DER project manager and the DER chemist for assistance on analyzing biota/tissue and air samples.

Data Assessment and Application to Site Cleanup

Until such time as Soil Cleanup Objectives (SCOs) for PFOA and PFOS are published, the extent of contaminated media potentially subject to remediation should be determined on a case-by-case basis using the procedures discussed below and the criteria in DER-10. Preliminary target levels for cleanup of PFOA and PFOS in other media, including biota and sediment, have not yet been established by the DEC.

Water Sample Results

NYSDEC has adopted ambient water quality guidance values for PFOA and PFOS. Groundwater samples should be compared to the human health criteria of 6.7 ng/l (ppt) for PFOA and 2.7 ng/l (ppt) for PFOS. These human health criteria should also be applied to surface water that is used as a water supply. This guidance also includes criteria for surface water for PFOS applicable for aquatic life, which may be applicable at some sites. Drinking water sample results should be compared to the NYS maximum contaminant level (MCL) of 10 ng/l (ppt). Analysis to determine if PFOA and PFOS concentrations are attributable to the site should include a comparison between upgradient and downgradient levels, and the presence of soil source areas, as defined below.

If PFOA and/or PFOS are identified as contaminants of concern for a site, they should be assessed as part of the remedy selection process in accordance with Part 375 and DER-10.

Soil Sample Results

NYSDEC will delay adding soil cleanup objectives for PFOA and PFOS to 6 NYCRR Part 375-6 until the PFAS rural soil background study has been completed. Until SCOs are in effect, the following are to be used as guidance values:

Guidance Values for Anticipated Site Use	PFOA (ppb)	PFOS (ppb)
Unrestricted	0.66	0.88
Residential	6.6	8.8
Restricted Residential	33	44
Commercial	500	440
Industrial	600	440
Protection of Groundwater[2]	0.8	1.0

PFOA and PFOS results for soil are to be compared against the guidance values listed above. These guidance values are to be used in determining whether PFOA and PFOS are contaminants of concern for the site and for determining remedial action objectives and cleanup requirements. Site-specific remedial objectives for protection of groundwater can also be presented for evaluation by DEC. Development of site-specific remedial objectives for protection of groundwater will require analysis of additional soil parameters relating to leachability. These

[2] The Protection of Groundwater values are based on the above referenced ambient groundwater guidance values. Details on that calculation are available in the following document, prepared for the February 2022 proposed changes to Part 375 (https://www.dec.ny.gov/docs/remediation_hudson_pdf/part375techsupport.pdf). The movement of PFAS in the environment is being aggressively researched at this time; that research will eventually result in more accurate models for the behaviors of these chemicals. In the meantime, DEC has calculated the guidance value for the protection of groundwater using the same procedure used for all other chemicals, as described in Section 7.7 of the Technical Support Document (http://www.dec.ny.gov/docs/remediation_hudson_pdf/techsuppdoc.pdf).

additional analyses can include any or all the parameters listed above (soil pH, cation exchange capacity, etc.) and/or use of SPLP.

As the understanding of PFAS transport improves, DEC welcomes proposals for site-specific remedial objectives for protection of groundwater. DEC will expect that those may be dependent on additional factors including soil pH, aqueous pH, % organic carbon, % Sand/Silt/Clay, soil cations: K, Ca, Mg, Na, Fe, Al, cation exchange capacity, and anion exchange capacity. Site-specific remedial objectives should also consider the dilution attenuation factor (DAF). The NJDEP publication on DAF can be used as a reference: https://www.nj.gov/dep/srp/guidance/rs/daf.pdf.

Testing for Imported Soil

Testing for PFAS should be included any time a full TAL/TCL analyte list is required. Results for PFOA and PFOS should be compared to the applicable guidance values. If PFOA or PFOS is detected in any sample at or above the guidance values then the source of backfill should be rejected, unless a site-specific exemption is provided by DER based on SPLP testing, for example. If the concentrations of PFOA and PFOS in leachate are at or above the ambient water quality guidance values for groundwater, then the soil is not acceptable.

PFOA, PFOS and 1,4-dioxane are all considered semi-volatile compounds, so composite samples are appropriate for these compounds when sampling in accordance with DER-10, Table 5.4(e)10. Category B deliverables should be submitted for backfill samples, though a DUSR is not required.

Appendix A - Quality Assurance Project Plan (QAPP) Guidelines for PFAS

The following guidelines (general and PFAS-specific) can be used to assist with the development of a QAPP for projects within DER involving sampling and analysis of PFAS.

General Guidelines in Accordance with DER-10

- Document/work plan section title – Quality Assurance Project Plan
- Summarize project scope, goals, and objectives
- Provide project organization including names and resumes of the project manager, Quality Assurance Officer (QAO), field staff, and Data Validator
    - The QAO should not have another position on the project, such as project or task manager, that involves project productivity or profitability as a job performance criterion
- List the ELAP certified lab(s) to be used for analysis of samples
- Include a site map showing sample locations
- Provide detailed sampling procedures for each matrix
- Include Data Quality Usability Objectives
- List equipment decontamination procedures
- Include an "Analytical Methods/Quality Assurance Summary Table" specifying:
    - Matrix type
    - Number or frequency of samples to be collected per matrix
    - Number of field and trip blanks per matrix
    - Analytical parameters to be measured per matrix
    - Analytical methods to be used per matrix with minimum reporting limits
    - Number and type of matrix spike and matrix spike duplicate samples to be collected
    - Number and type of duplicate samples to be collected
    - Sample preservation to be used per analytical method and sample matrix
    - Sample container volume and type to be used per analytical method and sample matrix
    - Sample holding time to be used per analytical method and sample matrix
- Specify Category B laboratory data deliverables and preparation of a DUSR

Specific Guidelines for PFAS

- Include in the text that sampling for PFAS will take place
- Include in the text that PFAS will be analyzed by EPA Method 1633
- Include the list of PFAS compounds to be analyzed (*PFAS Analyte List*)
- Include the laboratory SOP for PFAS analysis
- List the minimum method-achievable Reporting Limits for PFAS
    - Reporting Limits should be less than or equal to:
        - Aqueous – 2 ng/L (ppt)
        - Solids – 0.5 µg/kg (ppb)
- Include the laboratory Method Detection Limits for the PFAS compounds to be analyzed
-
- Include detailed sampling procedures
    - Precautions to be taken
    - Pump and equipment types
    - Decontamination procedures
    - Approved materials only to be used
- Specify that regular ice only will be used for sample shipment
- Specify that equipment blanks should be collected at a minimum frequency of 1 per day per site for each matrix

Appendix B - Sampling Protocols for PFAS in Soils, Sediments and Solids

General

The objective of this protocol is to give general guidelines for the collection of soil, sediment and other solid samples for PFAS analysis. The sampling procedure used should be consistent with Sampling Guidelines and Protocols – Technological Background and Quality Control/Quality Assurance for NYS DEC Spill Response Program – March 1991 (http://www.dec.ny.gov/docs/remediation_hudson_pdf/sgpsect5.pdf), with the following limitations.

Laboratory Analysis and Containers

Samples collected using this protocol are intended to be analyzed for PFAS using EPA Method 1633.

The preferred material for containers is high density polyethylene (HDPE). Pre-cleaned sample containers, coolers, sample labels, and a chain of custody form will be provided by the laboratory.

Equipment

Acceptable materials for sampling include stainless steel, HDPE, PVC, silicone, acetate, and polypropylene. Additional materials may be acceptable if pre-approved by New York State Department of Environmental Conservation's Division of Environmental Remediation.

No sampling equipment components or sample containers should come in to contact with aluminum foil, low density polyethylene, glass, or polytetrafluoroethylene (PTFE, Teflon™) materials including sample bottle cap liners with a PTFE layer.

A list of acceptable equipment is provided below, but other equipment may be considered appropriate based on sampling conditions.

- stainless steel spoon
- stainless steel bowl
- steel hand auger or shovel without any coatings

Equipment Decontamination

Standard two step decontamination using detergent (Alconox is acceptable) and clean, PFAS-free water will be performed for sampling equipment. All sources of water used for equipment decontamination should be verified in advance to be PFAS-free through laboratory analysis or certification.

Sampling Techniques

Sampling is often conducted in areas where a vegetative turf has been established. In these cases, a pre-cleaned trowel or shovel should be used to carefully remove the turf so that it may be replaced at the conclusion of sampling. Surface soil samples (e.g. 0 to 6 inches below surface) should then be collected using a pre-cleaned, stainless steel spoon. Shallow subsurface soil samples (e.g. 6 to ~36 inches below surface) may be collected by digging a hole using a pre-cleaned hand auger or shovel. When the desired subsurface depth is reached, a pre-cleaned hand auger or spoon shall be used to obtain the sample.

When the sample is obtained, it should be deposited into a stainless steel bowl for mixing prior to filling the sample containers. The soil should be placed directly into the bowl and mixed thoroughly by rolling the material into the middle until the material is homogenized. At this point the material within the bowl can be placed into the laboratory provided container.

Sample Identification and Logging

A label shall be attached to each sample container with a unique identification. Each sample shall be included on the chain of custody (COC).

Quality Assurance/Quality Control

- Immediately place samples in a cooler maintained at 4 ± 2º Celsius using ice
- Collect one field duplicate for every sample batch, minimum 1 duplicate per 20 samples. The duplicate shall consist of an additional sample at a given location
- Collect one matrix spike / matrix spike duplicate (MS/MSD) for every sample batch, minimum 1 MS/MSD per 20 samples. The MS/MSD shall consist of an additional two samples at a given location and identified on the COC
- Request appropriate data deliverable (Category B) and an electronic data deliverable

Documentation

A soil log or sample log shall document the location of the sample/borehole, depth of the sample, sampling equipment, duplicate sample, visual description of the material, and any other observations or notes determined to be appropriate. Additionally, care should be performed to limit contact with PFAS containing materials (e.g. waterproof field books, food packaging) during the sampling process.

Personal Protection Equipment (PPE)

For most sampling Level D PPE is anticipated to be appropriate. The sampler should wear nitrile gloves while conducting field work and handling sample containers.

Field staff shall consider the clothing to be worn during sampling activities. Clothing that contains PTFE material (including GORE-TEX®) or that have been waterproofed with PFAS materials should be avoided. All clothing worn by sampling personnel should have been laundered multiple times.

Appropriate rain gear (PVC, polyurethane, or rubber rain gear are acceptable), bug spray, and sunscreen should be used that does not contain PFAS. Well washed cotton coveralls may be used as an alternative to bug spray and/or sunscreen.

PPE that contains PFAS is acceptable when site conditions warrant additional protection for the samplers and no other materials can be used to be protective. Documentation of such use should be provided in the field notes.

Appendix C - Sampling Protocols for PFAS in Monitoring Wells

General

The objective of this protocol is to give general guidelines for the collection of groundwater samples for PFAS analysis. The sampling procedure used should be consistent with Sampling Guidelines and Protocols – Technological Background and Quality Control/Quality Assurance for NYS DEC Spill Response Program – March 1991 (http://www.dec.ny.gov/docs/remediation_hudson_pdf/sgpsect5.pdf), with the following limitations.

Laboratory Analysis and Container

Samples collected using this protocol are intended to be analyzed for PFAS using EPA Method 1633.

The preferred material for containers is high density polyethylene (HDPE). Pre-cleaned sample containers, coolers, sample labels, and a chain of custody form will be provided by the laboratory.

Equipment

Acceptable materials for sampling include: stainless steel, HDPE, PVC, silicone, acetate, and polypropylene. Additional materials may be acceptable if pre-approved by New York State Department of Environmental Conservation's Division of Environmental Remediation.

No sampling equipment components or sample containers should come in contact with aluminum foil, low density polyethylene, glass, or polytetrafluoroethylene (PTFE, Teflon™) materials including plumbers tape and sample bottle cap liners with a PTFE layer.

A list of acceptable equipment is provided below, but other equipment may be considered appropriate based on sampling conditions.

- stainless steel inertia pump with HDPE tubing
- peristaltic pump equipped with HDPE tubing and silicone tubing
- stainless steel bailer with stainless steel ball
- bladder pump (identified as PFAS-free) with HDPE tubing

Equipment Decontamination

Standard two step decontamination using detergent (Alconox is acceptable) and clean, PFAS-free water will be performed for sampling equipment. All sources of water used for equipment decontamination should be verified in advance to be PFAS-free through laboratory analysis or certification.

Sampling Techniques

Monitoring wells should be purged in accordance with the sampling procedure (standard/volume purge or low flow purge) identified in the site work plan, which will determine the appropriate time to collect the sample. If sampling using standard purge techniques, additional purging may be needed to reduce turbidity levels, so samples contain a limited amount of sediment within the sample containers. Sample containers that contain sediment may cause issues at the laboratory, which may result in elevated reporting limits and other issues during the sample preparation that can compromise data usability. Sampling personnel should don new nitrile gloves prior to sample collection due to the potential to contact PFAS containing items (not related to the sampling equipment) during the purging activities.

Sample Identification and Logging

A label shall be attached to each sample container with a unique identification. Each sample shall be included on the chain of custody (COC).

Quality Assurance/Quality Control

- Immediately place samples in a cooler maintained at 4 ± 2º Celsius using ice
- Collect one field duplicate for every sample batch, minimum 1 duplicate per 20 samples. The duplicate shall consist of an additional sample at a given location
- Collect one matrix spike / matrix spike duplicate (MS/MSD) for every sample batch, minimum 1 MS/MSD per 20 samples. The MS/MSD shall consist of an additional two samples at a given location and identified on the COC
- Collect one equipment blank per day per site and minimum 1 equipment blank per 20 samples. The equipment blank shall test the new and decontaminated sampling equipment utilized to obtain a sample for residual PFAS contamination. This sample is obtained by using laboratory provided PFAS-free water and passing the water over or through the sampling device and into laboratory provided sample containers
- Additional equipment blank samples may be collected to assess other equipment that is utilized at the monitoring well
- Request appropriate data deliverable (Category B) and an electronic data deliverable

Documentation

A purge log shall document the location of the sample, sampling equipment, groundwater parameters, duplicate sample, visual description of the material, and any other observations or notes determined to be appropriate. Additionally, care should be performed to limit contact with PFAS containing materials (e.g. waterproof field books, food packaging) during the sampling process.

Personal Protection Equipment (PPE)

For most sampling Level D PPE is anticipated to be appropriate. The sampler should wear nitrile gloves while conducting field work and handling sample containers.

Field staff shall consider the clothing to be worn during sampling activities. Clothing that contains PTFE material (including GORE-TEX®) or that have been waterproofed with PFAS materials should be avoided. All clothing worn by sampling personnel should have been laundered multiple times.

Appropriate rain gear (PVC, polyurethane, or rubber rain gear are acceptable), bug spray, and sunscreen should be used that does not contain PFAS. Well washed cotton coveralls may be used as an alternative to bug spray and/or sunscreen.

PPE that contains PFAS is acceptable when site conditions warrant additional protection for the samplers and no other materials can be used to be protective. Documentation of such use should be provided in the field notes.

Appendix D - Sampling Protocols for PFAS in Surface Water

General

The objective of this protocol is to give general guidelines for the collection of surface water samples for PFAS analysis. The sampling procedure used should be consistent with Sampling Guidelines and Protocols – Technological Background and Quality Control/Quality Assurance for NYS DEC Spill Response Program – March 1991 (http://www.dec.ny.gov/docs/remediation_hudson_pdf/sgpsect5.pdf), with the following limitations.

Laboratory Analysis and Container

Samples collected using this protocol are intended to be analyzed for PFAS using EPA Method 1633.

The preferred material for containers is high density polyethylene (HDPE). Pre-cleaned sample containers, coolers, sample labels, and a chain of custody form will be provided by the laboratory.

Equipment

Acceptable materials for sampling include: stainless steel, HDPE, PVC, silicone, acetate, and polypropylene. Additional materials may be acceptable if pre-approved by New York State Department of Environmental Conservation's Division of Environmental Remediation.

No sampling equipment components or sample containers should come in contact with aluminum foil, low density polyethylene, glass, or polytetrafluoroethylene (PTFE, Teflon™) materials including sample bottle cap liners with a PTFE layer.

A list of acceptable equipment is provided below, but other equipment may be considered appropriate based on sampling conditions.

- stainless steel cup

Equipment Decontamination

Standard two step decontamination using detergent (Alconox is acceptable) and clean, PFAS-free water will be performed for sampling equipment. All sources of water used for equipment decontamination should be verified in advance to be PFAS-free through laboratory analysis or certification.

Sampling Techniques

Where conditions permit, (e.g. creek or pond) sampling devices (e.g. stainless steel cup) should be rinsed with site medium to be sampled prior to collection of the sample. At this point the sample can be collected and poured into the sample container.

If site conditions permit, samples can be collected directly into the laboratory container.

Sample Identification and Logging

A label shall be attached to each sample container with a unique identification. Each sample shall be included on the chain of custody (COC).

Quality Assurance/Quality Control

- Immediately place samples in a cooler maintained at 4 ± 2º Celsius using ice
- Collect one field duplicate for every sample batch, minimum 1 duplicate per 20 samples. The duplicate shall consist of an additional sample at a given location
- Collect one matrix spike / matrix spike duplicate (MS/MSD) for every sample batch, minimum 1 MS/MSD per 20 samples. The MS/MSD shall consist of an additional two samples at a given location and identified on the COC
- Collect one equipment blank per day per site and minimum 1 equipment blank per 20 samples. The equipment blank shall test the new and decontaminated sampling equipment utilized to obtain a sample for residual PFAS contamination. This sample is obtained by using laboratory provided PFAS-free water and passing the water over or through the sampling device and into laboratory provided sample containers
- Request appropriate data deliverable (Category B) and an electronic data deliverable

Documentation

A sample log shall document the location of the sample, sampling equipment, duplicate sample, visual description of the material, and any other observations or notes determined to be appropriate. Additionally, care should be performed to limit contact with PFAS containing materials (e.g. waterproof field books, food packaging) during the sampling process.

Personal Protection Equipment (PPE)

For most sampling Level D PPE is anticipated to be appropriate. The sampler should wear nitrile gloves while conducting field work and handling sample containers.

Field staff shall consider the clothing to be worn during sampling activities. Clothing that contains PTFE material (including GORE-TEX®) or that have been waterproofed with PFAS materials should be avoided. All clothing worn by sampling personnel should have been laundered multiple times.

Appropriate rain gear (PVC, polyurethane, or rubber rain gear are acceptable), bug spray, and sunscreen should be used that does not contain PFAS. Well washed cotton coveralls may be used as an alternative to bug spray and/or sunscreen.

PPE that contains PFAS is acceptable when site conditions warrant additional protection for the samplers and no other materials can be used to be protective. Documentation of such use should be provided in the field notes.

Appendix E - Sampling Protocols for PFAS in Private Water Supply Wells

General

The objective of this protocol is to give general guidelines for the collection of water samples from private water supply wells (with a functioning pump) for PFAS analysis. The sampling procedure used should be consistent with Sampling Guidelines and Protocols – Technological Background and Quality Control/Quality Assurance for NYS DEC Spill Response Program – March 1991 (http://www.dec.ny.gov/docs/remediation_hudson_pdf/sgpsect5.pdf), with the following limitations.

Laboratory Analysis and Container

Drinking water samples collected using this protocol are intended to be analyzed for PFAS by EPA Method 537, 537.1, 533, or ISO Method 25101. The preferred material for containers is high density polyethylene (HDPE). Pre-cleaned sample containers, coolers, sample labels, and a chain of custody form will be provided by the laboratory.

Equipment

Acceptable materials for sampling include stainless steel, HDPE, PVC, silicone, acetate, and polypropylene. Additional materials may be acceptable if pre-approved by New York State Department of Environmental Conservation's Division of Environmental Remediation.

No sampling equipment components or sample containers should come in contact with aluminum foil, low density polyethylene, glass, or polytetrafluoroethylene (PTFE, Teflon™) materials (e.g. plumbers tape), including sample bottle cap liners with a PTFE layer.

Equipment Decontamination

Standard two step decontamination using detergent (Alconox is acceptable) and clean, PFAS-free water will be performed for sampling equipment. All sources of water used for equipment decontamination should be verified in advance to be PFAS-free through laboratory analysis or certification.

Sampling Techniques

Locate and assess the pressure tank and determine if any filter units are present within the building. Establish the sample location as close to the well pump as possible, which is typically the spigot at the pressure tank. Ensure sampling equipment is kept clean during sampling as access to the pressure tank spigot, which is likely located close to the ground, may be obstructed and may hinder sample collection.

Prior to sampling, a faucet downstream of the pressure tank (e.g., washroom sink) should be run until the well pump comes on and a decrease in water temperature is noted which indicates that the water is coming from the well. If the homeowner is amenable, staff should run the water longer to purge the well (15+ minutes) to provide a sample representative of the water in the formation rather than standing water in the well and piping system including the pressure tank. At this point a new pair of nitrile gloves should be donned and the sample can be collected from the sample point at the pressure tank.

Sample Identification and Logging

A label shall be attached to each sample container with a unique identification. Each sample shall be included on the chain of custody (COC).

Quality Assurance/Quality Control

- Immediately place samples in a cooler maintained at 4 ± 2º Celsius using ice
- Collect one field duplicate for every sample batch, minimum 1 duplicate per 20 samples. The duplicate shall consist of an additional sample at a given location
- Collect one matrix spike / matrix spike duplicate (MS/MSD) for every sample batch, minimum 1 MS/MSD per 20 samples. The MS/MSD shall consist of an additional two samples at a given location and identified on the COC
- If equipment was used, collect one equipment blank per day per site and a minimum 1 equipment blank per 20 samples. The equipment blank shall test the new and decontaminated sampling equipment utilized to obtain a sample for residual PFAS contamination. This sample is obtained by using laboratory provided PFAS-free water and passing the water over or through the sampling device and into laboratory provided sample containers.
- A field reagent blank (FRB) should be collected at a rate of one per 20 samples. The lab will provide a FRB bottle containing PFAS free water and one empty FRB bottle. In the field, pour the water from the one bottle into the empty FRB bottle and label appropriately.
- Request appropriate data deliverable (Category B) and an electronic data deliverable
- For sampling events where multiple private wells (homes or sites) are to be sampled per day, it is acceptable to collect QC samples at a rate of one per 20 across multiple sites or days.

Documentation

A sample log shall document the location of the private well, sample point location, owner contact information, sampling equipment, purge duration, duplicate sample, visual description of the material, and any other observations or notes determined to be appropriate and available (e.g. well construction, pump type and location, yield, installation date). Additionally, care should be performed to limit contact with PFAS containing materials (e.g. waterproof field books, food packaging) during the sampling process.

Personal Protection Equipment (PPE)

For most sampling Level D PPE is anticipated to be appropriate. The sampler should wear nitrile gloves while conducting field work and handling sample containers.

Field staff shall consider the clothing to be worn during sampling activities. Clothing that contains PTFE material (including GORE-TEX®) or that have been waterproofed with PFAS materials should be avoided. All clothing worn by sampling personnel should have been laundered multiple times.

Appendix F - Sampling Protocols for PFAS in Fish

This appendix contains a copy of the current SOP developed by the Division of Fish and Wildlife (DFW) entitled "General Fish Handling Procedures for Contaminant Analysis" (Ver. 8). This SOP should be followed when collecting fish for contaminant analysis. Note, however, that the Bureau of Ecosystem Health will not be supplying bags or tags. All supplies are the responsibility of the collector

Procedure Name: General Fish Handling Procedures for Contaminant Analysis

Number: FW-005

Purpose: This procedure describes data collection, fish processing and delivery of fish collected for contaminant monitoring. It contains the chain of custody and collection record forms that should be used for the collections.

Organization: Environmental Monitoring Section
Bureau of Ecosystem Health
Division of Fish and Wildlife (DFW)
New York State Department of Environmental Conservation (NYSDEC)
625 Broadway
Albany, New York 12233-4756

Version: 8

Previous Version Date: 21 March 2018

Summary of Changes to this Version: Updated bureau name to Bureau of Ecosystem Health. Added direction to list the names of all field crew on the collection record. Minor formatting changes on chain of custody and collection records.

Originator or Revised by: Wayne Richter, Jesse Becker

Date: 26 April 2019

Quality Assurance Officer and Approval Date: Jesse Becker, 26 April 2019

NEW YORK STATE
DEPARTMENT OF ENVIRONMENTAL CONSERVATION

GENERAL FISH HANDLING PROCEDURES FOR CONTAMINANT ANALYSES

A. Original copies of all continuity of evidence (i.e., Chain of Custody) and collection record forms must accompany delivery of fish to the lab. A copy shall be directed to the Project Leader or as appropriate, Wayne Richter. All necessary forms will be supplied by the Bureau of Ecosystem Health. Because some samples may be used in legal cases, it is critical that each section is filled out completely. Each Chain of Custody form has three main sections:

   1. The top box is to be filled out **and signed** by the person responsible for the fish collection (e.g., crew leader, field biologist, researcher). This person is responsible for delivery of the samples to DEC facilities or personnel (e.g., regional office or biologist).

   2. The second section is to be filled out **and signed** by the person responsible for the collections while being stored at DEC, before delivery to the analytical lab. This may be the same person as in (1), but it is still required that they complete the section. Also important is the **range of identification numbers** (i.e., tag numbers) included in the sample batch.

   3. Finally, the bottom box is to record any transfers between DEC personnel and facilities. Each subsequent transfer should be **identified, signed, and dated**, until laboratory personnel take possession of the fish.

B. The following data are required on each **Fish Collection Record** form:

   1. Project and Site Name.

   2. DEC Region.

   3. All personnel (and affiliation) involved in the collection.

   4. Method of collection (gill net, hook and line, etc.)

   5. Preservation Method.

C. The following data are to be taken on each fish collected and recorded on the **Fish Collection Record** form:

   1. Tag number - Each specimen is to be individually jaw tagged at time of collection with a unique number. Make sure the tag is turned out so that the number can be read without opening the bag. Use tags in sequential order. For small fish or composite samples place the tag inside the bag with the samples. The Bureau of Ecosystem Health can supply the tags.

   2. Species identification (please be explicit enough to enable assigning genus and species). Group fish by species when processing.

   3. Date collected.

   4. Sample location (waterway and nearest prominent identifiable landmark).

   5. Total length (nearest mm or smallest sub-unit on measuring instrument) and weight (nearest g or

smallest sub-unit of weight on weighing instrument). Take all measures as soon as possible with calibrated, protected instruments (e.g. from wind and upsets) and prior to freezing.

6. Sex - fish may be cut enough to allow sexing or other internal investigation, but do not eviscerate. Make any incision on the right side of the belly flap or exactly down the midline so that a left-side fillet can be removed.

D. General data collection recommendations:

1. It is helpful to use an ID or tag number that will be unique. It is best to use metal striped bass or other uniquely numbered metal tags. If uniquely numbered tags are unavailable, values based on the region, water body and year are likely to be unique: for example, R7CAY11001 for Region 7, Cayuga Lake, 2011, fish 1. If the fish are just numbered 1 through 20, we have to give them new numbers for our database, making it more difficult to trace your fish to their analytical results and creating an additional possibility for errors.

2. Process and record fish of the same species sequentially. Recording mistakes are less likely when all fish from a species are processed together. Starting with the bigger fish species helps avoid missing an individual.

3. If using Bureau of Ecosystem Health supplied tags or other numbered tags, use tags in sequence so that fish are recorded with sequential Tag Numbers. This makes data entry and login at the lab and use of the data in the future easier and reduces keypunch errors.

4. Record length and weight as soon as possible after collection and before freezing. Other data are recorded in the field upon collection. An age determination of each fish is optional, but if done, it is recorded in the appropriate “Age” column.

5. For composite samples of small fish, record the number of fish in the composite in the Remarks column. Record the length and weight of each individual in a composite. All fish in a composite sample should be of the same species and members of a composite should be visually matched for size.

6. Please submit photocopies of topographic maps or good quality navigation charts indicating sampling locations. GPS coordinates can be entered in the Location column of the collection record form in addition to or instead for providing a map. These records are of immense help to us (and hopefully you) in providing documented location records which are not dependent on memory and/or the same collection crew. In addition, they may be helpful for contaminant source trackdown and remediation/control efforts of the Department.

7. When recording data on fish measurements, it will help to ensure correct data recording for the data recorder to call back the numbers to the person making the measurements.

E. Each fish is to be placed in its own individual plastic bag. For small fish to be analyzed as a composite, put all of the fish for one composite in the same bag but use a separate bag for each composite. It is important to individually bag the fish to avoid difficulties or cross contamination when processing the fish for chemical analysis. Be sure to include the fish’s tag number inside the bag, preferably attached to the fish with the tag number turned out so it can be read. Tie or otherwise secure the bag closed. **The Bureau of Ecosystem Health will supply the bags.** If necessary, food grade bags may be procured from a suitable vendor (e.g., grocery store). It is preferable to redundantly label each bag with a manila tag tied between the knot and the body of the bag. This tag should be labeled with the project name, collection location, tag number, collection date, and fish species. If scales are collected, the scale envelope should be labeled with

the same information.

F. Groups of fish, by species, are to be placed in one large plastic bag per sampling location. **The Bureau of Ecosystem Health will supply the larger bags.** Tie or otherwise secure the bag closed. Label the site bag with a manila tag tied between the knot and the body of the bag. The tag should contain: project, collection location, collection date, species and **tag number ranges**. Having this information on the manila tag enables lab staff to know what is in the bag without opening it.

G. Do not eviscerate, fillet or otherwise dissect the fish unless specifically asked to. If evisceration or dissection is specified, the fish must be cut along the exact midline or on the right side so that the left side fillet can be removed intact at the laboratory. If filleting is specified, the procedure for taking a standard fillet (SOP PREPLAB 4) must be followed, including removing scales.

H. Special procedures for PFAS: Unlike legacy contaminants such as PCBs, which are rarely found in day to day life, PFAS are widely used and frequently encountered. Practices that avoid sample contamination are therefore necessary. While no standard practices have been established for fish, procedures for water quality sampling can provide guidance. The following practices should be used for collections when fish are to be analyzed for PFAS:

No materials containing Teflon.
No Post-it notes.
No ice packs; only water ice or dry ice.
Any gloves worn must be powder free nitrile.
No Gore-Tex or similar materials (Gore-Tex is a PFC with PFOA used in its manufacture).
No stain repellent or waterproof treated clothing; these are likely to contain PFCs.
Avoid plastic materials, other than HDPE, including clipboards and waterproof notebooks.
Wash hands after handling any food containers or packages as these may contain PFCs.
Keep pre-wrapped food containers and wrappers isolated from fish handling.
Wear clothing washed at least six times since purchase.
Wear clothing washed without fabric softener.
Staff should avoid cosmetics, moisturizers, hand creams and similar products on the day of sampling as many of these products contain PFCs (Fujii et al. 2013). Sunscreen or insect repellent should not contain ingredients with “fluor” in their name. Apply any sunscreen or insect repellent well downwind from all materials. Hands must be washed after touching any of these products.

I. All fish must be kept at a temperature <45° F (<8° C) immediately following data processing. As soon as possible, freeze at -20° C ± 5° C. Due to occasional freezer failures, daily freezer temperature logs are required. The freezer should be locked or otherwise secured to maintain chain of custody.

J. In most cases, samples should be delivered to the Analytical Services Unit at the Hale Creek field station. Coordinate delivery with field station staff and send copies of the collection records, continuity of evidence forms and freezer temperature logs to the field station. For samples to be analyzed elsewhere, non-routine collections or other questions, contact Wayne Richter, Bureau of Ecosystem Health, NYSDEC, 625 Broadway, Albany, New York 12233-4756, 518-402-8974, or the project leader about sample transfer. Samples will then be directed to the analytical facility and personnel noted on specific project descriptions.

K. A recommended equipment list is at the end of this document.

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF FISH AND WILDLIFE
FISH COLLECTION RECORD

Project and Site Name _____ DEC Region _____

Collections made by (include all crew) _____

Sampling Method: □Electrofishing □Gill netting □Trap netting □Trawling □Seining □Angling □Other _____

Preservation Method: □Freezing □Other _____ Notes (SWFDB survey number): _____

FOR LAB USE ONLY- LAB ENTRY NO.	COLLECTION OR TAG NO.	SPECIES	DATE TAKEN	LOCATION	AGE	SEX &/OR REPROD. CONDIT	LENGTH ( )	WEIGHT ( )	REMARKS

richter: revised 2011, 5/7/15, 10/4/16, 3/20/17; becker: 3/23/17, 4/26/19

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
CHAIN OF CUSTODY

I, _____, of _____ collected the
(Print Name) (Print Business Address)

following on _____, 20____ from _____
(Date) (Water Body)

in the vicinity of _____
(Landmark, Village, Road, etc.)

Town of _____, in _____ County.

Item(s) _____

_____

Said sample(s) were in my possession and handled according to standard procedures provided to me prior to collection. The sample(s) were placed in the custody of a representative of the New York State Department of Environmental Conservation on _____, 20_____.

_____ _____
Signature Date

I, _____, received the above mentioned sample(s) on the date specified and assigned identification number(s) _____ to the sample(s). I have recorded pertinent data for the sample(s) on the attached collection records. The sample(s) remained in my custody until subsequently transferred, prepared or shipped at times and on dates as attested to below.

_____ _____
Signature Date

SECOND RECIPIENT (Print Name)	TIME & DATE	PURPOSE OF TRANSFER
SIGNATURE	UNIT	
THIRD RECIPIENT (Print Name)	TIME & DATE	PURPOSE OF TRANSFER
SIGNATURE	UNIT	
FOURTH RECIPIENT (Print Name)	TIME & DATE	PURPOSE OF TRANSFER
SIGNATURE	UNIT	
RECEIVED IN LABORATORY BY (Print Name)	TIME & DATE	REMARKS
SIGNATURE	UNIT	
LOGGED IN BY (Print Name)	TIME & DATE	ACCESSION NUMBERS
SIGNATURE	UNIT	

richter: revised 21 April 2014; becker: 23 March 2017, 26 April, 2019

NOTICE OF WARRANTY

By signature to the chain of custody (reverse), the signatory warrants that the information provided is truthful and accurate to the best of his/her ability. The signatory affirms that he/she is willing to testify to those facts provided and the circumstances surrounding the same. Nothing in this warranty or chain of custody negates responsibility nor liability of the signatories for the truthfulness and accuracy of the statements provided.

HANDLING INSTRUCTIONS

On day of collection, collector(s) name(s), address(es), date, geographic location of capture (attach a copy of topographic map or navigation chart), species, number kept of each species, and description of capture vicinity (proper noun, if possible) along with name of Town and County must be indicated on reverse.

Retain organisms in manila tagged plastic bags to avoid mixing capture locations. Note appropriate information on each bag tag.

Keep samples as cool as possible. Put on ice if fish cannot be frozen within 12 hours. If fish are held more than 24 hours without freezing, they will not be retained or analyzed.

Initial recipient (either DEC or designated agent) of samples from collector(s) is responsible for obtaining and recording information on the collection record forms which will accompany the chain of custody. This person will seal the container using packing tape and writing his signature, the time and the date across the tape onto the container with indelible marker. Any time a seal is broken, for whatever purpose, the incident must be recorded on the Chain of Custody (reason, time, and date) in the purpose of transfer block. Container then is resealed using new tape and rewriting signature, with time and date.

EQUIPMENT LIST

Scale or balance of appropriate capacity for the fish to be collected.

Fish measuring board.

Plastic bags of an appropriate size for the fish to be collected and for site bags.

Individually numbered metal tags for fish.

Manila tags to label bags.

Small envelops, approximately 2” x 3.5”, if fish scales are to be collected.

Knife for removing scales.

Chain of custody and fish collection forms.

Clipboard.

Pens or markers.

Paper towels.

Dish soap and brush.

Bucket.

Cooler.

Ice.

Duct tape.

Appendix G – PFAS Analyte List

Group	Chemical Name	Abbreviation	CAS Number
Perfluoroalkyl sulfonic acids	Perfluorobutanesulfonic acid	PFBS	375-73-5
	Perfluoropentanesulfonic acid	PFPeS	2706-91-4
	Perfluorohexanesulfonic acid	PFHxS	355-46-4
	Perfluoroheptanesulfonic acid	PFHpS	375-92-8
	Perfluorooctanesulfonic acid	PFOS	1763-23-1
	Perfluorononanesulfonic acid	PFNS	68259-12-1
	Perfluorodecanesulfonic acid	PFDS	335-77-3
	Perfluorododecanesulfonic acid	PFDoS	79780-39-5
Perfluoroalkyl carboxylic acids	Perfluorobutanoic acid	PFBA	375-22-4
	Perfluoropentanoic acid	PFPeA	2706-90-3
	Perfluorohexanoic acid	PFHxA	307-24-4
	Perfluoroheptanoic acid	PFHpA	375-85-9
	Perfluorooctanoic acid	PFOA	335-67-1
	Perfluorononanoic acid	PFNA	375-95-1
	Perfluorodecanoic acid	PFDA	335-76-2
	Perfluoroundecanoic acid	PFUnA	2058-94-8
	Perfluorododecanoic acid	PFDoA	307-55-1
	Perfluorotridecanoic acid	PFTrDA	72629-94-8
	Perfluorotetradecanoic acid	PFTeDA	376-06-7
Per- and Polyfluoroether carboxylic acids	Hexafluoropropylene oxide dimer acid	HFPO-DA	13252-13-6
	4,8-Dioxa-3H-perfluorononanoic acid	ADONA	919005-14-4
	Perfluoro-3-methoxypropanoic acid	PFMPA	377-73-1
	Perfluoro-4-methoxybutanoic acid	PFMBA	863090-89-5
	Nonafluoro-3,6-dioxaheptanoic acid	NFDHA	151772-58-6
Fluorotelomer sulfonic acids	4:2 Fluorotelomer sulfonic acid	4:2-FTS	757124-72-4
	6:2 Fluorotelomer sulfonic acid	6:2-FTS	27619-97-2
	8:2 Fluorotelomer sulfonic acid	8:2-FTS	39108-34-4
Fluorotelomer carboxylic acids	3:3 Fluorotelomer carboxylic acid	3:3 FTCA	356-02-5
	5:3 Fluorotelomer carboxylic acid	5:3 FTCA	914637-49-3
	7:3 Fluorotelomer carboxylic acid	7:3 FTCA	812-70-4
Perfluorooctane sulfonamides	Perfluorooctane sulfonamide	PFOSA	754-91-6
	N-methylperfluorooctane sulfonamide	NMeFOSA	31506-32-8
	N-ethylperfluorooctane sulfonamide	NEtFOSA	4151-50-2
Perfluorooctane sulfonamidoacetic acids	N-methylperfluorooctane sulfonamidoacetic acid	N-MeFOSAA	2355-31-9
	N-ethylperfluorooctane sulfonamidoacetic acid	N-EtFOSAA	2991-50-6
Perfluorooctane sulfonamide ethanols	N-methylperfluorooctane sulfonamidoethanol	MeFOSE	24448-09-7
	N-ethylperfluorooctane sulfonamidoethanol	EtFOSE	1691-99-2

Group	Chemical Name	Abbreviation	CAS Number
Ether sulfonic acids	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (F-53B Major)	9Cl-PF3ONS	756426-58-1
	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (F-53B Minor)	11Cl-PF3OUdS	763051-92-9
	Perfluoro(2-ethoxyethane) sulfonic acid	PFEESA	113507-82-7

Appendix H - Data Review Guidelines for Analysis of PFAS in Non-Potable Water and Solids

General

These guidelines are intended to be used for the validation of PFAS using EPA Method 1633 for projects within the Division of Environmental Remediation (DER). Data reviewers should understand the methodology and techniques utilized in the analysis. Consultation with the end user of the data may be necessary to assist in determining data usability based on the data quality objectives in the Quality Assurance Project Plan. A familiarity with the laboratory's Standard Operating Procedure may also be needed to fully evaluate the data. If you have any questions, please contact DER's Quality Assurance Officer, Dana Barbarossa, at dana.barbarossa@dec.ny.gov.

Preservation and Holding Time

Samples should be preserved with ice to a temperature of less than 6°C upon arrival at the lab. The holding time is 28 days to extraction for aqueous and solid samples. The time from extraction to analysis for aqueous samples is 28 days and 40 days for solids.

Temperature greatly exceeds 6ºC upon arrival at the lab*	Use professional judgement to qualify detects and non-detects as estimated or rejected
Holding time exceeding 28 days to extraction	Use professional judgement to qualify detects and non-detects as estimated or rejected if holding time is grossly exceeded

*Samples that are delivered to the lab immediately after sampling may not meet the thermal preservation guidelines. Samples are considered acceptable if they arrive on ice or an attempt to chill the samples is observed.

Initial Calibration

The initial calibration should contain a minimum of six standards for linear fit and six standards for a quadratic fit. The relative standard deviation (RSD) for a quadratic fit calibration should be less than 20%.

The low-level calibration standard should be within 50% - 150% of the true value, and the mid-level calibration standard within 70% - 130% of the true value.

%RSD >20%	J flag detects and UJ non detects

Continuing Calibration Verification

Continuing calibration verification (CCV) checks should be analyzed at a frequency of one per ten field samples. If CCV recovery is very low, where detection of the analyte could be in question, ensure a low level CCV was analyzed and use to determine data quality.

CCV recovery <70 or >130%	J flag results

Blanks

There should be no detections in the method blanks above the reporting limits. Equipment blanks, field blanks, rinse blanks etc. should be evaluated in the same manner as method blanks. Use the most contaminated blank to evaluate the sample results.

Blank Result	Sample Result	Qualification
Any detection	<Reporting limit	Qualify as ND at reporting limit
Any detection	>Reporting Limit and >10x the blank result	No qualification
>Reporting limit	>Reporting limit and <10x blank result	J+ biased high

Field Duplicates

A blind field duplicate should be collected at rate of one per twenty samples. The relative percent difference (RPD) should be less than 30% for analyte concentrations greater than two times the reporting limit. Use the higher result for final reporting.

RPD >30%	Apply J qualifier to parent sample

Lab Control Spike

Lab control spikes should be analyzed with each extraction batch or one for every twenty samples. In the absence of lab derived criteria, use 70% - 130% recovery criteria to evaluate the data.

Recovery <70% or >130% (lab derived criteria can also be used)	Apply J qualifier to detects and UJ qualifier to non detects

Matrix Spike/Matrix Spike Duplicate

One matrix spike and matrix spike duplicate should be collected at a rate of one per twenty samples. Use professional judgement to reject results based on out of control MS/MSD recoveries.

Recovery <70% or >130% (lab derived criteria can also be used)	Apply J qualifier to detects and UJ qualifier to non detects of parent sample only
RPD >30%	Apply J qualifier to detects and UJ qualifier to non detects of parent sample only

Extracted Internal Standards (Isotope Dilution Analytes)

Problematic analytes (e.g. PFBA, PFPeA, fluorotelomer sulfonates) can have wider recoveries without qualification. Qualify corresponding native compounds with a J flag if outside of the range.

Recovery <50% or >150%	Apply J qualifier
Recovery <25% or >150% for poor responding analytes	Apply J qualifier
Isotope Dilution Analyte (IDA) Recovery <10%	Reject results

Signal to Noise Ratio

The signal to noise ratio for the quantifier ion should be at least 3:1. If the ratio is less than 3:1, the peak is discernable from the baseline noise and symmetrical, the result can be reported. If the peak appears to be baseline noise and/or the shape is irregular, qualify the result as tentatively identified.

Reporting Limits

If project-specific reporting limits were not met, please indicate that in the report along with the reason (e.g. over dilution, dilution for non-target analytes, high sediment in aqueous samples).

Peak Integrations

Target analyte peaks should be integrated properly and consistently when compared to standards. Ensure branched isomer peaks are included for PFAS where standards are available. Inconsistencies should be brought to the attention of the laboratory or identified in the data review summary report.

Attachment B
Resumes

Christine A. Camardella, P.G., PMP
54 Prentice Road
Levittown, New York 11756
chriscamardella@hotmail.com
516-946-1121

Data Validation/Data Review/ Environmental Consultant

Providing consultation, data validation and data review services. These services include evaluation of analytical data with the objective of determining whether the data presented meets the site/project specific criteria for data quality and data use. Validation and review will be performed in accordance with the NYSDEC DER10 and USEPA 600/8-91/003, EPA 540/R/94/093 & EPA 540/R/94/097, USEPA National Functional Guidelines for Data Validation and EPA Region 2 SOPs for Data Validation.

Over 25 years of experience in both the laboratory and the environmental consulting field, with expertise in chemistry and environmental technology. Working knowledge of state and federal laws, regulations, and guidelines for the environment, water quality, and health including NYSDEC, NYCDEP, OER and NYSDOH. Additional skills are in quality control and quality assurance, data validation, expert technical review, chemical analysis, client communication and service, staff supervision and mentoring, regulatory interface, compliance management, work plan and proposal preparation, soil and groundwater investigation oversight, project scheduling and tracking, and technical editing as well as extensive financial management experience including forecasting and budget management. Manage and train junior staff.

Experience:

Lead Project Manager, Complex Project Management – Gas
National Grid – April 2018 - Present

- Prioritize, plan and coordinate project development activities according to stakeholder requirements.
- Supervise project team on daily basis to execute assigned projects within deadlines and budget.
- Prepare project proposals and develop project plan, schedule, and budget.
- Determine resource requirements and identify resources with the right skills to successfully execute projects.
- Assess potential risks and technical challenges and develop appropriate mitigation plans.
- Perform cash flow analysis and process invoices in a timely fashion.
- Develop cost reduction initiatives while maintaining quality and productivity.
- Analyze and resolve project issues in a timely and accurate manner.
- Provide technical guidance for large-scale projects.

Senior Project Manager
Advanced Site Restoration, LLC – September 2016 - February 2017

- Provided management and support for several retail petroleum clients.
- Prepared Phase I and Phase II Environmental Site Assessments.
- Knowledge in state and federal laws, regulations, and guidelines for the environment, water quality, and health including NYSDEC, NYCDEP, NYC OER and NYSDOH.
- Prepared high-level technical reports including Remedial Action Plans.
- Provided high level technical review of reports.
- Acted as a liaison between client and regulatory agencies.
- Provided data validation and data summary usability reports for clients.
- Managed and train junior staff while providing mentoring and support.
- Prepared proposals for clients.
- Managed several complex projects involving chemistry data QA/QC, asbestos removal, shoring installation, soil excavation, UST removal, and remediation system installation, in-situ bioremediation and soil and groundwater remediation.

Project Manager
Impact Environmental Consulting, Inc. - January 2011 - September 2016

- Managed retail petroleum client portfolios for projects in Nassau, Suffolk, Brooklyn, Queens, Bronx and Westchester.
- Advised clients on most cost-effective remedial strategies to obtain cleanup objectives.
- Expertise in Phase I and Phase II Environmental Site Assessments, remedial systems, in-situ bioremediation, UST removal, excavation, Site redevelopment, and soil and groundwater chemistry.
- Worked closely with regulatory agencies as well as local municipalities.
- Prepared and reviewed technical reports for client and/or regulatory submittal.

Pro Developed budgets and cost estimates.

- Managed and trained junior staff.

Senior Project Manager
Sovereign Consulting, Inc.- February 2009 - August 2010

- Provided project management and support for a multi-million-dollar project for a major retail petroleum company.
- Served as technical support on project with client and other team members, which has resulted in additional assessment work to obtain soil and groundwater characteristics in area of major plume.
- Managed quarterly sampling activities for an extensive groundwater monitoring well network including staffing, equipment, regulatory coordination and permits.
- Provided additional project management support for several retail petroleum projects in Brooklyn, Queens, and Nassau & Suffolk Counties.
- Maintained excellent client relationship and adhere to client expectations.
- Prepared and review technical reports for the client and regulatory agency.
- Documented cost savings of over $500,000 resulting in an award from the client.

Senior Project Manager
Kleinfelder, Inc. - January 2004 - February 2009

- Provided project management for a multi-million-dollar portfolio in Kings County for a major retail petroleum company.
- Supervised a staff of 5 professionals and provide mentorship and guidance.
- Communicated with regulatory agencies and maintain a working relationship with key regulators.
- Provided financial management and support.
- Assisted in providing technical guidance for large-scale projects, including reviewing and recommending new technologies.
- Provided management and support for several complex projects involving asbestos removal, shoring install, excavation, UST removal, and remediation system install and groundwater and soil remediation.
- Adhered to all company and client health and safety programs.

Project Environmental Scientist
Groundwater & Environmental Services, Inc.- December 2001 - December 2003

- Provided project management support activities including client involvement, work plan and proposal preparation, project scheduling and tracking, budget evaluation and analysis, and technical editing and report finalization.
- Developed and implemented Site work plans and proposals.
- Communicated with regulatory agencies.
- Performed oversight of soil and groundwater investigations.
- Conducted Phase I/II Site assessments for acquisitions and divestments of properties: including all associated fieldwork and reports.

Water Quality Specialist/Assistant Laboratory Director
Long Island Water Corporation - January 1992 – November 2001

- Responsible for maintaining laboratory certification for potable water via EPA and Nassau County Dept. of Health (NCDOH) approved testing methods.
- Assisted in evaluating laboratory programs, coordinated sampling/testing procedures to assure regulatory compliance.
- Established and directed quality assurance programs. Prepared reports and made recommendations as needed.

Chemist
Nassau County Department of Health, Division of Labs & Research - January 1990 - January 1992

- Analyzed potable and non-potable waters through EPA and NYSDOH requirements.
- Provided assistance with quality control systems and techniques.

Education:

New York Institute of Technology
Master Degree with Distinction, Environmental Technology, 2002

Adelphi University
Master Degree, Chemistry, 1994

St. Bonaventure University
Bachelor of Science Degree, Chemistry, 1990

Nassau Community College
Courses taken in Biology & Microbiology, 1998

Licenses:

Professional Geologist, License No. 1003

Certifications:

Project Management Professional (PMP)

Professional Memberships:
Project Management Institute (PMI)
Project Management Institute (PMI) Long Island Chapter
New York State Council of Professional Geologists (NYSCPG)
Long Island Association of Professional Geologists (LIAPG)



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Summary of Experience

Mr. Kline is a registered Professional Engineer (P.E.) with over 30 years of environmental consulting and managerial experience. Mr. Kline possesses strong management, communication, and analytical skills, which make him an asset to any environmental investigation or design team. His work has also included the installation of monitoring wells, recovery wells, dewatering wells, and remediation equipment; the design and implementation of remedial technologies; geohydrologic testing; and geophysical testing. He has managed a wide range of projects involving the construction of power plants, schools, hospitals, transit projects, residential buildings, and retail centers on urban and otherwise environmentally impacted properties in state brownfields cleanup programs and hazardous waste site programs. He is the remedial engineer and principal author of project deliverables, including work plans and reports, feasibility studies, remedial action reports, construction completion reports, final engineering reports, site management plans, annual review reports, site specific health and safety plans, quality assurance project plans, and contractor plans and specifications.

Relevant Project Experience

Program Manager, New York City School Construction Authority (NYC SCA), Environmental Consulting Term Contract, Various New York City locations. Mr. Kline was the Program Manager for the 5-year term contract between 2017 and 2023 (including a 1-year extension) totaling 68 projects and $1.8 million in consulting services, and was responsible for planning, coordination, and design of due diligence investigations at proposed New York City school sites. In addition, Mr. Kline managed several designs and installations of sub-slab depressurization systems (SSDS), underground storage tank (UST) removals, and petroleum spill closure projects. Prepared design specifications for SSDS/Vapor Barriers, UST removals, excavated material sampling, and transportation and disposal of contaminated materials. Prior to becoming the Program Manager, Mr. Kline worked on NYCSCA term contracts since 2011.

Principal-In-Charge, West Side Federation of Senior and Supportive Housing, Mill Brook Terrace Development, Bronx, New York. Managed all aspects of the environmental project from due diligence investigation services, Phase I Environmental Site Assessment, and Phase II Environmental Site Investigation services to assisting the client through the NYCOER Voluntary Cleanup Program (VCP). The investigation revealed that an area of hazardous lead levels in the subsurface soils. Managed a waste characterization study to evaluate various soil types for disposal. Submitted and received approval for a remedial investigation work plan, a remedial investigation report, remedial action work plan, and a construction health and safety plan with included a community air monitoring program. Managed the City/State Environmental Quality Review (CEQR), and National Environmental Policy Act (NEPA) environmental assessment services. The regulatory approval and development process required strict deadlines for deliverables, and close coordination with several city and state agencies.

Education

M.B.A., Executive Management,
St. John's University, Tobin College of Business, 2014
B.S., Environmental Systems Engineering, Cornell University, 1992

Licenses & Registrations

Professional Engineer:
New Jersey #24GE04468900
New York #80431
Pennsylvania #60796 (Dormant)
Rhode Island #6991 (Dormant)

Certifications & Specialized Training

- 40-Hour OSHA Hazardous Waste Operations and Emergency Response
- 8-hour OSHA Supervisor
- 10-hour OSHA Construction Safety
- Track Safety Trained for Long Island Railroad and Metropolitan Transportation Authority (MTA)
- Transportation Worker Identification Credential

Areas of Specialization

- Environmental Site Investigation and Remediation
- Environmental Construction Support and Dewatering
- Regulatory Compliance Planning and Permitting
- Hazardous Materials Assessment and Abatement
- Landfill Engineering and Monitoring

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Principal-In-Charge, Stantec Consulting Services, New York City Economic Development Corporation (NYCEDC) Lower Concourse – Exterior Street Reconstruction, Bronx, New York. As part of the Lower Concourse Planning Initiative that seeks to improve the Exterior Street Corridor to vehicular traffic and subsurface utilities including sewers, water lines and drainage structures. The Site comprises an approximately 2,200-foot length of Exterior Street, running north to south, between East 138th Street and East 150th Street. GZA performed a Phase I and Phase II Environmental Site Assessments to identify potential environmental impacts to the proposed Exterior Street Reconstruction project. GZA also developed a Remedial Action Work Plan (RAWP) and Construction Health and Safety Plan (CHASP) to be used by the redevelopment contractor and reviewed environmental specifications for the bid documents of the project.

Principal-In-Charge, BJs Wholesale Club, Inc, Brooklyn Bay Center Redevelopment, Brooklyn, New York. The remediation involved implementation Community Air Monitoring Program (CAMP), and the management, handling, and off-site disposal of impacted material above site-specific soil cleanup objectives. The site building was equipped with a Liquid Boot ™ spray applied vapor barrier and a SSDS. The interior of the building was monitored for VOCs, methane and hydrogen sulfide using a gas detection system. Mr. Kline performed contractor submittal review and vapor barrier testing and PE inspections to document the installation of the engineering controls in accordance with the New York City Office of Environmental Remediation (OER) Voluntary. Developed a Site Management Plan (SMP) and Remedial Completion Report (RCR). Performing groundwater monitoring and Annual Review Reports.

Principal-In-Charge, The Brotherhood / Sister Sol, 512 West 143rd Street West 143rd Street, New York, New York. GZA performed an Environmental Assessment Statement (EAS) in connection with the construction of the new Community Center. The project funding meant that the NYCEDC was the Lead Agency and The New York State grants were administered by the Dormitory Authority of the State of New York (DASNY). GZA completed this EAS in general conformance with the CEQR. Additional studies included Shadows, Historical and Cultural Resources, Air Quality and Hazardous Materials. The full demolition of the existing building meant that in addition to the Phase I, Phase II Work Plan, Phase II Investigation, RAWP and CHASP, GZA also performed an ACM and Lead Paint Survey of the building. The project received a Negative Declaration.

Principal-In-Charge, Tutor Perini Construction, Contract CH057 Project Harold Structures, East Side Access, Long Island City, New York. Administered a contractor-support project during the pre-construction and construction phase of East Side Access for the Metropolitan Transit Authority's Capital Construction (MTACC) Project. Performed drilling within the Sunny Side Yard railroad yard including night drilling. Directed the subsurface investigation to characterize the 12,800 cubic yard cut and cover tunnel, and inspections for suspect asbestos-containing materials, lead-based paint, polychlorinated biphenyls, for demolition of several structures and a bridge crossing. Developed a conceptual understanding of materials that might need special handling and management. Developed a dewatering design and performed permitting to remove the tunnel boring machine removal pit.

Principal-In-Charge, Kiewit Power Engineers, Bergen-Linden Overhead Corridor (BLC-OH), East Rutherford, New Jersey. Supported the development pf project for the upgrade of 120 high power electrical transmission towers around Bergen and Linden County, New Jersey. Implemented Site Erosion Sediment Control procedures and performed regular weekly inspections for compliance. Managed the pre-disposal soil and groundwater waste characterization sampling and coordinated sequence efforts of project deliverables, such as waste transporter and dewatering permits. Updated health and safety plan, managed CAMP and waste handling services as the transmission line upgrades across the Erie Street Former Manufactured Gas Plant (MGP) in Elizabeth, NJ.

Principal-In-Charge, 910 East 192nd Street, LLC, Spill Investigation and Remediation Services, Bronx, New York. Performed a Phase I Environmental Site Assessment (ESA) that identified a gas station on the Site from 1940 through 1962, until redevelopment in the 1970's as a current community center building. A subsequent Phase II Environmental Site Investigation (ESI) identified petroleum impacted soils, groundwater, and the presence of light non-aqueous phase liquids (LNAPL). A NYSDEC Spill Case was opened, and a Spill Investigation Work Plan was approved. Managed the spill investigation activities and certified as a PE the Spill Investigation Report which included a work plan for an Interim Remedial Measure (IRM). The IRM consisted of Vacuum Enhanced

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Fluid Recovery (VEFR) events to evaluate the feasibility of collecting residual petroleum contamination from beneath the Site building using VEFR. Based on favorable IRM results, GZA negotiated conditional approved of a RAWP to continue the VEFR events for eight quarters along with quarterly soil vapor and groundwater monitoring. As part of our remedial strategy, GZA collects Monitored Natural Attenuation (MNA) and biodegradation to assess MNA is a viable remedial strategy for the Site after the remediation of the LNAPL.

Lead Remedial Engineer, 233 Landing Road Housing Development, Bronx, New York. Assisted Client on the redevelopment of a vacant site into a 13-story apartment building for affordable housing. Historic site uses included MGP-related structures and an engineering research facility. GZA conducted a Phase I ESA, a vapor encroachment assessment (VEA), and a Phase II environmental Site investigation (ESI). Upon discovery of contamination, the project was enrolled in the NYC OER VCP and is an E-Designated Site. GZA completed a remedial investigation (RI), a RAWP, and provided CAMP monitoring during contaminated soil removal. GZA designed a vapor barrier and a SSDS and provided engineering services during their installations. The discovery of previously unidentified subsurface structures and a 5,000-gallon UST during construction added complexity to the project.

Lead Remedial Engineer, Loring Place North Housing Development, Bronx, New York. Provided environmental services as client purchased, investigated, and remediated site that included three vacant multi-family residences and was to be redeveloped into an eight-story supporting housing unit. The project is enrolled in the NYC OER's VCP. GZA completed a Phase I ESA, VEA, Phase II ESI, ACM survey, and a RAWP. GZA performed perimeter air monitoring as per the CAMP and designed and oversaw the removal of contaminated soil, and installation of a chemical vapor barrier during redevelopment.

Lead Remedial Engineer, Silver Star Mercedes Brownfield Redevelopment, Long Island City, New York. Member of design team for the redevelopment of a former automobile services station/car dealership. Six-story building will house a Mercedes dealership, parking, and affordable housing. GZA assisted in the New York State Brownfield Cleanup Program (NYS BCP). Prepared the RAWP, CAMP, CHASP, a Soils and Materials Management Plan, environmental contract specifications for construction and redevelopment the Site Management Plan and the Final Engineering Report. GZA also provided remediation oversight of underground storage tanks and petroleum impacted soils. Engineering controls included the installation of a chemical vapor barrier. Also designed and permitted a groundwater dewatering system that included chemical pretreatment prior to sewer discharge.

Project Manager, Public Utility Regenerating Station (PURS), Columbia University, New York, New York. Managed the due diligence Site Investigation inform a property transaction between Columbia University and Con Edison. Plans for this Site include relocating the existing Con Edison PURS facility and redevelopment of the Site as part of a new campus construction, including complete excavation for subgrade basement levels up to 60 feet bgs. A comprehensive subsurface investigation included installation of installation of groundwater monitoring wells, collection and analysis soil samples, groundwater samples and soil vapor sample. Additionally, a utility clearance was conducted, Community Air Monitoring was completed; and hydraulic conductivity aquifer testing was completed. Vibration monitoring of sensitive Con Edison structures conducted during Sonic drilling. GZA's report documented the former Manufactured Gas Plant (MGP) Structures and subsurface soil and groundwater impacts requiring special handling during redevelopment of the Site.

Project Manager, Enercon Inc., Indian Point Energy Center, Buchanan, New York. Supervised a field team during the implementation of a comprehensive site investigation to delineate and determine the source of tritium, strontium and cesium detected in groundwater at the Indian Point Nuclear Plant. The investigation consisted of a thorough review of construction drawings, historic hydrogeologic data and historic groundwater chemistry data to prepare a Conceptual Site Model (CSM) for the release. GZA advanced bedrock and overburden borings at the Site to supplement the existing groundwater monitoring wells at the Site. Rock cores were characterized for the presence of water bearing fractures as well as lithology. All bedrock borings were subject to downhole geophysical borehole logging consisting of acoustic televiewer, optical televiewer, temperature, conductivity, and heat pulse flow meter. Hydraulic conductivity was evaluated using a combination of extraction packer testing and sustain yield pump tests. Wells were completed using multilevel sampling systems. GZA then completed an organic dye tracer test to confirm contaminant flow paths and groundwater velocities. GZA was able to delineate the extent of horizontal and vertical groundwater contamination,

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determine the sources of the contamination and the post release flow paths. GZA then designed a pilot remediation system in order to allow for hydraulically contain contaminated groundwater.

Project Manager, TransCanada, Ravenswood Power Generating Station, Long Island City, New York. Managed the spill response investigation following the discovery of a 25,000-gallon kerosene release from an underground fuel oil line connecting a gas turbine generator with the 2-million-gallon aboveground storage tank (AST). GZA conducted a subsurface investigation to delineate the vertical and horizontal extent of kerosene associated with the release. Developed a CSM that accounted for Site features (old foundation elements and utility conduits) and shallow bedrock which complicated kerosene migration patterns. Recommended IRM to begin collecting recoverable kerosene. The spill investigation (including off-site delineation and IRM was completed within 3 months of mobilization to the Site. The spill investigation included: a vapor intrusion study, an inspection of the East River bulkhead, a tidal influence study, the installation of over 30 soil borings, installation of 14 monitoring wells, installation of 4 recovery sumps, and design of an IRM product recovery system. Within the first 4 months of the release over 4,000 gallons of kerosene were recovered, and a report was submitted to the NYSDEC.

Project Manager, Dormitory Authority State of New York (DASNY), Environmental Term Contract, Various Locations, New York. Managed environmental sampling and analytical testing for DASNY-controlled building projects for the 6 years. Provided subcontractor selection and UST testing, repair and closure services for Manhattan Family Court building, Brooklyn College Heating Plant, and the Bronx Community College water supply system. In support of the Bellevue Hospital Office of the Chief Medical Examiner building construction, performed soil and groundwater investigation of an existing petroleum spill and reported on the impacts of observed contamination on soil excavation, disposal, and construction dewatering. Brooklyn College Heating Plant remedial design included 48-hour constant rate pumping test, development of contract plans and specifications, NYCDEP sewer discharge and NYSDEC Long Island Well Permits. Principle author of all deliverables including NYSDEC-approved: Site Investigation/Spill Investigation Work Plans; Remedial Action Work Plans; Spill Closure Reports; and Remedial Action/Corrective Action Reports. Performed extensive project administration, including coordination between subcontractors, DASNY, construction managers, on-site engineering staff, and the appropriate New York City and State regulatory agencies.

Project Manager, Stantec, Fort Washington Park Reconstruction, New York, New York. Managed the hazardous materials assessment portion of the EAS for the 160-acre Fort Washington Park (FWP) as part of the New York CEQR. The New York City Department of Parks and Recreation (DPR) parkland is located adjacent to the east bank of the Hudson River on the far Upper West Side of Manhattan from 135th Street in the south to Spuyten Duyvil in the north. GZA evaluated the potential for contaminated materials in the soil, groundwater or building materials of FWP to be disturbed during reconstruction and excavation activities. The preliminary contaminated materials assessment identified 73 potential sources of contamination and recommended additional investigations at 14 of these areas. Additional phases of work included: development and approval of Sampling and Analysis Plans; Preliminary Environmental Site Assessments; Construction Soil Management Plans; CHASPs; and coordination with the NYSDEC and NYCDEP.

Project Manager, Triangle Equities Development Company, The Junction Site Redevelopment, Brooklyn, New York. Under the CEQR procedures for redevelopment of New York City-owned properties, GZA performed a multi-phase site assessment of soil, groundwater and building conditions of three contiguous properties and an active Long Island Rail Road (LIRR) easement with a petroleum pipeline that bisects the planned development. Assessment techniques included surficial geophysical surveys, soil borings, monitoring well installations, test pits and soil vapor surveys of two former gasoline filling stations and auto repair facilities. Six abandoned USTs were located, registered, and closed by removal. All project deliverables were reviewed and approved by the NYCDEP. Performed all project administration, including coordination between subcontractors, MTA/LIRR, and New York City and State regulatory agencies.

Field Manager, NYSDEC Superfund Standby Contract (Contract No. D003060), Various Locations. For four years, Mr. Kline conducted project management, field oversight, historical review, and report preparation. This multi-year, multi-million-dollar term environmental contract covered the following work items related to sites within the New York State superfund program, included: Preliminary Site Assessments; Remedial Investigations; Feasibility Studies; Remedial Design; and Remedial Construction.



Chunhua Liu, PhD

Senior Technical Specialist

Summary of Experience

Dr. Liu is a senior chemist with more than 10 years of experience in analytical chemistry, data validation and management, and quality control and quality assurance for remedial investigations and remedial actions. Her experience includes laboratory chemical analysis, EPA Region I and Region II data validation and data usability evaluation, data usability evaluation for Massachusetts Contingency Plan (MCP), sampling and analysis plan development in accordance with the NYSDEC Analytical Service Protocol and Massachusetts Compendium of Quality Assurance and Quality Control Requirements (QA/QC) and Performance Standards for Selected Analytical Methods, and quality control and quality assurance for Superfund and MCP projects.

Dr. Liu majored in environmental chemistry and during her doctoral study at Harvard School of Public Health, she researched analytical methods for sediment and evaluated metal fate and transport in sediment. Dr. Liu worked at Parsons for over seven years and at Gradient for one year before joining GZA. At Parsons, Dr. Liu led the quality control and assurance and data management efforts from developing Quality Assurance Project Plan (QAPP) to assuring implementation of QA/QC requirements and from field sampling preparation and arrangement to chemical data management. Dr. Liu was responsible for the QA/QC and data validation and data usability evaluation for a 10,000-acre BRAC and Superfund NPL site in New York and assisted in the successful transfer of over 8,000 acres of land. Dr. Liu performed data usability evaluation for various Massachusetts Contingency Plan sites at Gradient and GZA.

Education

B.E., 1992, Environmental Engineering, Tsinghua University, Beijing, China
M.E., 1995, Environmental Engineering, Tsinghua University, Beijing, China
M.S., 1998, Environmental Health, Harvard School of Public Health
D.S., 2000, Environmental Chemistry, Harvard School of Public Health

Areas of Specialization

- Human Health Risk Assessment
- Ecological Risk Assessment
- Data Usability Evaluation
- Project Quality Control and Assurance
- Fate and Transport Modeling

Relevant Project Experience

Senior Technical Specialist. Leads GZA human health risk assessment efforts for federal and state level superfund and MCP projects. Dr. Liu is also responsible for data usability evaluation for various projects.

Technical Director. Directed preparation and submittal of the Site-Wide Sampling and Analysis Plan (SAP) and the Site-Wide Quality Assurance Project Plan (QAPP) for a 10,000-acre Superfund site in New York in accordance with the Department of Defense (DOD), NYSDEC ASP, EPA Region II and EPA guidance. Directed project field sampling and data management. Supervised data validation in accordance with EPA Region II SOPs and NYSDEC ASP based on the NYSDEC ASP Category B deliverables. Identified laboratories qualified for project chemical analyses and interfaced with various analytical laboratories to address analytical deficiencies. Submitted data summary report to EPA Region II on a quarterly basis.

Lead Chemist and Risk Assessor. Led data usability evaluation and supported the successful closure of a 125-acre Hingham Annex Guaranteed Fixed Price Remediation Project. Dr. Liu also led the risk assessment effort and the effort of evaluating pesticide fate and transport at the site and successfully demonstrated that the pesticide conditions at the site were related to the past normal use of pesticides and therefore were not associated with the release at the Site.

Technical Director. Directed preparation and submittal of the SAP and the QAPP for various Formerly Used Defense (FUD) Sites. Supervised field sampling and data

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validation in accordance with guidance from various EPA regions. Reviewed data validation and data usability report.

Technical Director. Directed data validation for various Superfund sites in EPA Region I and Region II in accordance with the EPA regional and state SOPs and the EPA Functional Guidelines. Led data validation for numerous MCP sites for various analytical analyses including metal, VOC, SVOC, pesticide, PCB, EPH, VPH, and TPH analyses.

Project Chemist. Evaluated different analytical methods for hexavalent chromium analysis. Compared analytical methods developed by NJDEP and EPA and identified the appropriate method for a CERCLA site in New Jersey.

Project Chemist. Evaluated quantitatively potential impacts to metal data usability by interference caused by common metals in environmental samples for a CERCLA site in New York.

Project Chemist. Performed data validation for indoor air samples for various CERCLA and MCP Sites to assist evaluation of potential vapor intrusion pathway.

Project Chemist. Performed Level IV data validation for a Superfund site in New York for various analytical analyses including metal, VOC, SVOC, pesticide, and PCB analyses. Reviewed TIC identification and quantitation and assessed chromatograms and mass spectrums for VOCs and SVOCs.

Project Chemist. Provided technical support, prepared QAPPs, established proper data quality objectives (DQOs) for various projects, maintained project quality control, trained junior scientists, coordinated project field sampling and laboratory analyses, addressed non-conformance issues associated with the data produced by the laboratory, conducted statistical analysis, and prepared data validation reports on numerous RCRA/CERCLA and MCP projects.

ENVIRONMENTAL ASSESSMENT AND REMEDIATION PROJECTS

(Former Malden MGP) Senior Scientist - Lead Risk Assessor, Chemist, Site Assessment, Malden, Massachusetts. Leading ongoing risk assessment work at large, complex former MGP that encompasses more than 16 acres of land and more than 10 different properties. Work has included vapor intrusion pathway evaluation, imminent hazard evaluation, substantial hazard evaluation, data usability evaluation, and risk characterizations for evaluation of effectiveness of sub-slab depressurization systems and remediation, direction of Site remediation and investigations, and verification of the need for AULs. GZA was able to demonstrate that indoor air impacts in a residential area were not related to MGP residuals, allowing for closure of that portion of the Site. Risk characterizations also demonstrated that Site conditions did not pose substantial hazards, confirming the effectiveness of the Temporary Solution.

(Commercial Point LNG Facility) Senior Scientist - Lead Risk Assessor, Site Assessment and Closure, Dorchester Massachusetts. Directed risk characterization to support MCP closure of former MGP facility that was currently being used as a Liquefied Natural Gas (LNG) storage and distribution facility. Performed risk characterization to support supplemental Phase II – IV MCP investigations and Permanent Solution status while allowing for beneficial reuse of the facility for LNG operations and a solar power generating facility. Also performed focused risk characterizations in support of an AUL filing and potential reuse options for portions of the Site.

(Former Haverhill Holder Site) Senior Scientist - Lead Risk Assessor, Site Closure, Haverhill Massachusetts. Directed risk characterization to support MCP closure of former MGP gas holder facility where wastes had been disposed. Conducted risk characterization to facilitate development of cost-effective cleanup plan involving focused soil excavation and use restrictions that allowed for achievement of a Permanent Solution. Performed a Method 3 risk characterization to support the complex supplemental Phase II investigation. This complex site encompassed properties owned by seven different parties, including residential land and portions of a river/tributary system.

(Gloucester Former MGP) Senior Scientist - Lead Risk Assessor, Human Health Risk Assessment, North Shore, Massachusetts. Performed Method 3 Risk Characterization for multiple parcels to support the Supplemental Phase II Comprehensive Site Assessment initiated by other consultants under the Massachusetts Contingency Plan. This Site included MGP impacts to

Chunhua Liu, PhD
Senior Technical Specialist

approximately 45 acres of Gloucester Harbor sediment. GZA evaluated potential human health risks via exposure to soil, groundwater, sediment, surface water, homegrown produce, and consumption of fish. In addition, Risk Characterization was used in the early stages of the project to assist identification of data gaps and Site investigation.

(Salem Power Plant) Project Manager, Cost Recovery Negotiations, Salem, Massachusetts. Working through counsel, provided advice to a prior owner with respect to remedial obligations under the Massachusetts Contingency Plan (MCP) associated with impacts to soil at this power generating facility. Work included review of hot spot evaluation, risk characterization, and remediation performed at the Site. Given the Site use, we concluded that most of the claimed costs that had been incurred by the current owner were not necessary under the MCP and thus should not be subject to recovery from our client.

(Sawyer Passway) Senior Scientist - Lead Risk Assessor, Chemist, MGP Site Closure, Fitchburg, Massachusetts. Performed a Substantial Hazard Evaluation and a Method 3 Risk Characterization to support fast-track Massachusetts Contingency Plan (MCP) Phase II/III study of large, complex former MGP facility on the banks of a major New England river. The work had to be completed within two months to meet a key regulatory deadline. Work included a risk evaluation to support a streamlined supplemental field exploration program, a risk evaluation to direct the focused soil excavation, and a substantial hazard evaluation for the cost-effective temporary solution within the required regulatory deadlines. GZA's continuing work on this project has included technical support for an insurance cost-recovery claim, periodic evaluations of the temporary solution, completion of soil stabilization/solidification pilot studies, implementation of focused remedial programs during site building demolition work and development of remedial, plans directed at achieving a Permanent Solution (PS). Based on updated evaluations, a cost-effective approach to a PS was developed in 2014 and a Method 3 Risk Characterization was performed to support a PSS in 2015.

(Former Army Depot Activity Site), Technical Director, Syracuse, New York. Directed preparation and submittal of the Site-Wide Sampling and Analysis Plan (SAP) and the Site-Wide QAPP for a 10,000-acre Superfund site in New York in accordance with the Department of Defense (DOD), NYSDEC ASP, USEPA Region II and USEPA guidance. Directed project field sampling and data management. Supervised data validation in accordance with USEPA Region II SOPs and NYSDEC ASP based on the NYSDEC ASP Category B deliverables. Identified laboratories qualified for project chemical analyses and interfaced with various analytical laboratories to address analytical deficiencies. Submitted data summary report to USEPA Region II on a quarterly basis.

(Waverley Oaks Road), Senior Scientist - Lead Risk Assessor, Human Health Risk Assessment, Waltham, Massachusetts. This property has been impacted by improper storage of large quantities of waste oil that was to be used to heat on-site green houses, or to be processed and resold. This Site is regulated under the Massachusetts Contingency Plan; Massachusetts Department of Environmental Protection reviewed and approved all work plans and reports for the site investigation and risk assessment; it was downgraded from a Tier 1A to a Tier 1B Site following completion of the Phase II investigations.

Waste oil releases have impacted nearly 10-acres of an on-Site pond, stream and wetland, including 3 acres that have visible oil presented within surficial wetland soil and sediment. GZA conducted a Method 3 Risk Characterization to support the permanent solution of the Site. For the Vapor Intrusion pathway, GZA identified constituents not related to Site release and verified the conclusion based on the evaluation of Site-specific attenuation factors.

Publications and Presentations

Liu, C., J. Jay, T. Ford. Evaluation of Environmental Effects on Metal Transport from Capped Contaminated Sediment under Conditions of Submarine Groundwater Discharge. Env. Sci. Tech. 2001 35: 4549-4555.

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Blanchet, R., Liu, C., Bowers, T. Summary of Available Freshwater and Marine Sediment Quality Guidelines and Their Use in North America. Abstract accepted at SEATEC Conference, November, 2001

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Chunhua Liu, PhD

Senior Technical Specialist

Seeley, M.R., Schettler, S., Liu, C., Blanchet, R.J., Bowers, T.S. Assessing Cancer Risks Due to Use of Insecticides to Control the Mosquito-borne West Nile Virus: Use of the Margin of Exposure Approach. Abstract accepted at Society of Toxicology, 41st Annual Meeting, March 17-21, 2002.

Chunhua Liu, Jennifer Jay, Ravi Ika, Shine James, Timothy Ford. Capping Efficiency for Metal-Contaminated Marine Sediment under Conditions of Submarine Groundwater Discharge. Poster presentation at Conference on Dredged Material Management: Options and Environmental Considerations. December 3-6, 2000

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Chunhua Liu, Yongfeng Nie, Wei Lin. 1995. Application prospects of landfill gas utilization technique in China. Pollution Control Technology 1995 8(3): 143-145

Chunhua Liu. 1995. Evaluation of gas production from sanitary landfill. Master's thesis. Tsinghua University, Beijing, P.R.China

Wei Lin, Chunhua Liu. 1994. Rudimentary study on countermeasure to comprehensively control air pollution caused by motor vehicles in China. Pollution Control Technology 1994 7(4): 1-3

Xiurong Zhang, Chunhua Liu, Yanru Yang, Qingzhong Bai. 1993. Environmental impact report of wastewater treatment plant project in Xuanhua City, China.

Chunhua Liu, Yongfeng Nie. 1993. Water balance evaluation in Hongmei hazardous waste landfill. In: Environmental Impact Assessment of Hongmei Hazardous Waste Landfill: 25-33

Chunhua Liu. 1992. Modeling landfill leachate production and migration. Bachelor Thesis. Tsinghua University, Beijing, P.R.China

Chunhua Liu. 1991. A discussion with the author of "clean water extraction from ocean water". Technology of Water Purification 1991(1): 39-41

Affiliations/Memberships

- Member, LSP Association
- Member, Society for Risk Analysis
- Certified EIT in Massachusetts



Zachary Landis, P.E.

Project Manager

Summary of Experience

Mr. Landis is a Licensed Engineer with six years of environmental consulting, engineering, and research experience. His focus is on site investigations for contaminated soil, groundwater, and surface water as well as remedial design and construction. He has managed and implemented environmental activities in multiple states at residential, commercial, industrial, and publicly owned sites. Mr. Landis performs field work and supports the closure of sites utilizing source removal, in-situ and ex-situ remedial technologies, and waste removal and risk-based corrective action methods in accordance with state and federal regulations. He has managed complex multi-site projects requiring significant planning and coordination with subcontractors and vendors.

Prior to consulting, Mr. Landis worked as a researcher for the National Science Foundation and Virginia Tech. His projects were focused on water quality and erosion management in urban, rural, and suburban areas.

Education

B.S., Earth and Environmental Sciences, Virginia Wesleyan University, 2017
M.E., Environmental Engineering, Old Dominion University, 2018

Licenses & Registrations

Professional Engineer – Virginia, #0402066593

Areas of Specialization

- Environmental Site Investigation and Remediation
- Construction Management
- Permitting & Compliance
- Soil, Groundwater, Air Sampling
- Air Quality and Surface Water Modeling
- Technical Specification Preparation
- Bid Evaluation
- Remediation Oversight

Relevant Project Experience

ENVIRONMENTAL ENGINEERING

Site Supervisor, 645 Gates Avenue Redevelopment/The Astra, Brooklyn, New York. Oversaw remedial actions for construction of a six-story, mixed-income affordable housing building. The project involved excavation and removal of 11 underground storage tanks (USTs) and approximately 7,500 CY of impacted soils. During excavation and backfilling activities, completed confirmation sampling of each UST and completed excavation area. Conducted Community Air Monitoring Program (CAMP). Designed and oversaw installation of building's vapor barrier system.

Project Engineer and Technical Lead, Fried Industries Superfund Site, East Brunswick, New Jersey. Provided technical support and design for excavation of approximately 8,000 CY of VOC-impacted soils and installation and testing of a monitoring well and extraction well for the existing groundwater treatment facility. Completed the environmental permit review and execution for state wetland permits and local construction permits. Excavation within wetland area required a combination of slide rail shoring and open excavation with sloped sides. After backfilling and compaction, two wells were installed to 90 feet within the competent bedrock and tested for contaminant concentrations and yield. The more significantly impacted well was constructed as an extraction well; a below grade pipeline was installed to connect it to the existing groundwater treatment plant at the site. The other well was constructed as a monitoring well to be added to site's existing monitoring well network. After completion of well installation, wetland area was restored with native plantings and an impacted roadway was restored in kind.

Project Manager, 252 Victory Blvd, Staten Island, New York. Provided the project management and technical support for the Phase I Environmental Site Assessment (ESA), waste characterization sampling, a Part 58 Environmental Assessment (EA) under the National Environmental Policy Act (NEPA) requirements, and the New York City air quality and noise E-designation services in support of a mixed-use residential/commercial development in Tompkinsville neighborhood. The site is a steep

Zachary Landis, P.E.

Project Manager

hillside and contains serpentinite, a rock known to contain naturally occurring asbestos, in the bedrock and weather bedrock. The Phase I ESA reviewed the site and surrounding area conditions and the historical records for the area including a nearby auto repair shop and a Department of Sanitation transfer station. Waste characterization sampling completed for estimated excavation and removal of up to 10,000 cubic yards under NYSDEC CP-51 guidance. Upon discovery of limited SVOCs, additional delineation sampling was completed to provide a soil disposal and recycling facility with sufficient data to accept a majority of the material for beneficial reuse and the remaining soil for disposal. The Part 58 EA was completed to evaluate impacts of development in support of U.S. Department of Housing and Urban Development funding. The site had been given E-designation for noise and air quality requirements during a past rezoning. GZA completed a noise investigation to lower the requirements of the noise attenuation through the NYC Mayor's Office of Environmental Remediation (OER) and provided the Remedial Action Plan for OER approval to receive the Notice to Proceed with Construction.

Project Manager, Wildlife Preserves, East Hanover, New Jersey. Provided project management and engineering support for a major landfill disruption permit under NJDEP. Wildlife Preserves sought approval to place a gravel parking lot on their property which was a former landfill remediated under the USEPA's Superfund Program. Developed the permit application including design drawings and construction operating procedures to install the gravel lot and relocate a section of the entrance gate fencing. Successfully obtained the disruption permit with significant savings for the client.

Environmental Engineer, Atlantic Motion Pictures Studios, Brownfield Redevelopment, Egg Harbor Township, New Jersey. Provided engineering support for a minor landfill disruption permit under NJDEP. In support of the geotechnical investigation for production facility's design on the portion of the brownfield containing a former unregulated landfill, developed design drawings and operating procedures for the permit. Successfully obtained the disruption permit on an expedited schedule to facilitate state funding opportunity for the project.

Project Manager, Broadway Square LLC Brownfield Redevelopment, Queens, New York. Provided project management and technical support for remedial design and remedial action workplan (RAWP). The former foundry site is in the NYSDEC Brownfield Cleanup Program for heavy metals contamination; investigation was completed by others; the 11-story mixed-use residential / commercial redevelopment will encompass the entire city block. Provided remedial design for limited excavation across the site for hotspot removal in shallow soils, in-situ soil stabilization (ISS) for containment of deeper metals contamination, and a sub-slab depressurization system. Conducted treatability study for the ISS mix design.

Project Manager, 128 E. 125th Street, New York, New York. Completed Phase II investigation and remedial design for a new mixed-use residential/commercial development. The Phase I investigation completed by others identified spills at the site associated with a former AST in the basement of the property. The property is located on shallow bedrock with portions of the cellar slab directly on bedrock; the developer left the existing building's cellar foundation in place for reuse in the new development. Completed the design and execution of a Phase II Environmental Site Investigation (ESI) under NYC OER oversight for soil, groundwater, and soil vapor. The investigation was completed during the demolition of the existing building and required significant coordination with contractors and the client for safety and site access. Obtained OER approval for limited excavation below the existing cellar grade and installation of a vapor barrier beneath the building footprint.

Project Engineer and Technical Lead, Peck Iron and Metal Superfund Site, Portsmouth, Virginia. Provided technical support, investigation design, and onsite management for the supplemental investigation of a 33-acre former scrap yard in support of the remedial design overseen by the USEPA. Delineated source areas of contamination for heavy metals, PCBs, and radioactive isotopes, such as Radium-226, Lead-214 and Bismuth-214, within the upland areas and within the wetlands along the Paradise Creek. Sampled soil, sediment, groundwater, and porewater in heavily wooded and wetland conditions. The investigation included the screening and removal of unexploded ordnances from investigations areas, including the successful onsite detonation of six ordnances and safe removal of four ordnances for offsite decommissioning. Significant coordination with local fire and police departments and local navy munitions response, as well as extensive public outreach, was required for the safe execution of the investigation and maintaining site safety in a highly populated area.

Zachary Landis, P.E.

Project Manager

Project Engineer, DLA Pipeline Spill, Atlantic Undersea Test and Evaluation Center, NAVFAC Southeast, Andros Island, Bahamas. Provided technical support for design and implementation of air sparging system at the US Navy's AUTEC Facility. Analyzed the effectiveness of varying air sparging system layouts and long-term monitoring of groundwater sampling at the facility after previous soil delineation and remedial actions for a pipeline spill and a tidal influence investigation had been completed. Coordinated complex field event logistics with subcontractors, field personnel, and clients at remote military installation.

Project Engineer, Bethany Hills Wells PFAS Response Action, USACE Omaha District, Off Base from Luke AFB, Arizona. Oversaw installation of a bypass pipeline at existing municipal PFAS water treatment facility and designed and installed a treatment media evaluation study at the facility. The bypass pipeline was installed to divert an emergency source of previously treated municipal water around the PFAS treatment system to prevent chlorinated water from impacting treatment media. The treatment media evaluation study consisted of a four-column test skid that diverted untreated effluent from the PFAS treatment system to test four separate media (two ion exchange resins, granular activated carbon, and an organoclay) and reintroduce treated water into the treatment system. The study evaluated effectiveness of each medium and informed the design of a full-scale treatment at this facility and additional Air Force operated facilities. Also conducted monthly analysis of PFAS breakthrough for the treatment system and prepared engineering evaluation and cost analysis of new PFAS extraction and treatment system at David-Monthan AFB.

Project Engineer and Quality Control Manager, MSFIH Site 67, 4915, Navy Facilities Engineering Systems Command, Naval Support Facility Indian Head, Maryland. Provided quality control and health and safety oversight for project involving excavation of seven soil removal areas with contaminants including heavy metals and VOCs. One area required removal of riverbed sediment from the shoreline to approximately 45 feet into a creek. Each removal area's excavated soils were stockpiled and evaluated separately until transportation and disposal to an offsite facility. Site restoration included backfilling, replanting of wetland/river areas that were disturbed, grass seeding, and repairing the stormwater drainage system. Reviewed executed work, provided client with progress updates and changes in conditions, and prepared all required submittals.

AIR QUALITY & PERMITTING

Project Manager, Confidential Fragrance Manufacturer, Somerset, New Jersey. Provided project management and technical support for construction, commissioning and startup, and permitting for an odor mitigation system at a fragrance manufacturer's compounding facility. The system treats between 30,000 and 50,000 CFM and includes a ductwork and fan system drawing air from the facility's production, storage, and laboratory areas, a paper filter unit, a granular activated carbon unit, a rotary concentrator wheel, and regenerative thermal oxidizer (RTO) with treated emissions exiting a 50-foot stack. Reviewed installation contractor submittals and oversaw the system commissioning and startup, updated the related air permit based on operating conditions, developed a production model for facility's emissions based on specific formula production, and coordinated and oversaw the stack testing of the system for NJDEP compliance.

Project Manager, Columbia University, New York, New York. Provide project management and technical support of the University's Title V permit reporting to NYSDEC and USEPA. The University's permit covers multiple boilers and co-generation turbines at their power plant. Conduct quarterly, semi-annual, and annual reporting required under the Title V permit and evaluate the recorded system data for compliance with permit requirements. Ongoing coordination with University Facility Engineering staff and the NYSDEC.

Project Manager, Hofstra University, Hempstead, New York. Provided project management and engineering support to comply with Climate Leadership and Community Protection Act (CLCPA) for a state air facility permit through NYSDEC. Cessation of the University's co-generation operations and the related reduction in air emissions allowed them to step-down from their Title V permit to a state air facility permit. Completed air emissions analysis for the operation of the University's boilers under the new permit to meet the requirements of CLCPA. The analysis was completed on an expedited schedule to meet the state regulatory timeframe.

Zachary Landis, P.E.

Project Manager

STORMWATER MANAGEMENT

Project Manager, Realterm Logistics, Hamilton, New Jersey. Complete annual stormwater facility inspections and reporting for warehouse facility, as required by township. Conduct onsite inspection of the three stormwater basins and upland drainage structures, provide maintenance recommendations to client, and complete an annual report to document existing conditions and future actions to be taken by the facility.

Project Manager, DealerTrack, New Hyde Park, New York. Provided the project management, engineering support, and construction oversight for completion of stormwater management improvements at office building which experiences regular flooding in parking areas during minor storm events due to insufficient drainage. Identified substantial clay layer beneath the property. Provided support during engineering design of the drainage improvement including additional perforated and solid drainage pipe, manholes, silt separators, and inlet structures for tie into the municipal sewer system, as well as restoring the condition of existing manholes and drainage galley. Oversaw construction to inspect for completion in line with the design and provided design revisions based on observed field conditions.

Project Engineer, Underserved Communities Stormwater Management, Virginia Department of Emergency Management, Multiple Locations, Virginia. Provided engineering support for FEMA applications for stormwater management funds, including engineering estimates and evaluations for project feasibility for stormwater management projects including home elevations, installation of subsurface drainage systems, wet ponds, breakwaters, and culverts. For several localities, provided on-site investigations and prepared full design packages and specifications for projects including a breakwater, a wet pond and subsurface drainage system, multiple culverts along arterial and rur-al roadways, and a municipal stormwater sewer system.

Research Aid, Virginia Tech, Biological Systems Engineering Department, Virginia Beach, Virginia. Aided research on stormwater management and water quality in the Hampton Roads, Virginia area, including rural, suburban, and urban runoff assessments and modeling impacts to the Chesapeake Bay Watershed. Responsible for data collection and management, setting up sampling and monitoring equipment at various site locations, conducting particle size distribution analyses, and maintaining equipment in compliance with research targets.

International Researcher, National Science Foundation, Xilingol, China. Researched the aeolian and fluvial erosion conditions of the steppe grasslands of northern China within the Inner Mongolia Region. The research included development of a mobile air tunnel and rainfall simulator to test bare and vegetated portions of the grassland for the development of a regional erosion model. Field tested and sampled air tunnel and rainfall simulator for data collection, analyzed results, and developed model to account for both aeolian and fluvial erosion factors.

Certifications/Training

- Transportation Worker Identification Credential – Nationwide, 05860698
- First Aid and CPR
- Hazardous Materials Supervisor, Nationwide, UMD201285
- USDOT/IATA Training for the Shipping and Transportation of Hazardous Materials
- OSHA 10-hr Construction Safety & Health
- OSHA 30-hr Construction Safety & Health
- OSHA 40-hr Hazardous Waste Operations
- OSHA 8-hr Fall Protection
- OSHA 2-hour Drug & Alcohol Awareness
- US Army Corps of Engineers Construction Quality Management for Contractors
- Air Quality Permitting Training – Rutgers University
- Vanta Handheld XRF Radiation Safety Training

Publications and Presentations

Zachary Landis, P.E.

Project Manager

Zachary Landis, Xixi Wang, Nicholas Potter, Measuring and Modeling Bare Topsoil Erosion by Wind from a Steppe Grassland of China, AGU Fall Meeting, Washington D.C., 2018

Zachary Landis, International Research in Environmental Science and Engineering, Virginia Wesleyan University's Honors and Scholars Lecture Series, Virginia Beach, VA, 2018

APPENDIX F

CONSTRUCTION QUALITY ASSURANCE PLAN



Known for excellence.
Built on trust.

Construction Quality Assurance Plan
Rye Lake Water Filtration Plant

BCP Site No. C360174
Westchester County Airport

June 2025
File No. 41.0162892.01



PREPARED FOR

WESTCHESTER
JOINT WATER WORKS
Filtration

1625 Mamaroneck Avenue
Mamaroneck, NY 10543

PREPARED BY:
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LIST OF ACRONYMS

Acronym	Definition
ASTM	American Society for Testing and Materials
bgs	Below Ground Surface
CAMP	Community Air Monitoring Plan
CCR	Construction Completion Reports
COCs	Constituents Of Concern
CQA	Construction quality assurance
CQAPP	Construction Quality Assurance Project Plan
CQC	Construction quality control
DFR	Daily Field Report
EPA	United States Environmental Protection Agency
HASP	Health and Safety Plan
MMP	Materials Management Plan
NAPL	Non-Aqueous Phase Liquid
NYCDEP	New York City Department of Environmental Protection
NYCRR	New York Codes, Rules and Regulations
NYS S&S	New York State Standards and Specifications
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
NYSDOT	New York State Department of Transportation
PCBs	Polychlorinated Biphenyls
QA/QC	Quality Assurance/ Quality Control
SOE	Support of Excavation
SVOCs	Semi Volatile Organic Compounds
VOCs	Volatile Organic Compounds
WMP	Waste Management Plan

1.0 INTRODUCTION

This Construction Quality Assurance Plan (CQAP) has been prepared by GZA GeoEnvironmental of New York (GZA) on behalf Hazen and Sawyer (Hazen) for construction of Westchester Joint Water Works' (WJWW) proposed Rye Lake Water Filtration Plant (Site/WFP). The Site is located within the property boundary of the Westchester County Airport Brownfield Cleanup Program (BCP) Site No. C360174. The County of Westchester (County) owns and operates the Airport and entered into the Brownfield Cleanup Agreement (BCA) in August 2021 as a Participant. The County transferred a portion of the Airport property to WJWW in 2024 for the construction of the WFP. Details related to the Interim Remedial Measure (IRM) activities are presented in this CQAP, which is included as an Appendix to the IRM Work Plan.

1.1 PURPOSE

The purpose of this CQAP is to detail the Quality Assurance and Quality Control (QA/QC) procedures that will be used to maintain data accuracy and completeness during implementation of the selected remedy. This CQAP describes the materials, procedures, and testing necessary for proper construction, evaluation, and documentation of construction activities.

1.2 DEFINITIONS AND TERMS

The following terms and abbreviations are used throughout this CQAP. The definition of each term or abbreviation is consistent throughout this CQAP:

- The Contractor – The person, persons, or firm retained by the Responsible Parties to perform the remedial activities, including the person or persons hired by the Contractor to install the components of the remedial work and the person or persons designated by the Contractor to perform work associated with the remedial activities.

- Responsible Parties – The person, persons, or firm identified by the NYSDEC as responsible for implementing the cleanup of the Site.

- CQA – Construction Quality Assurance.

- CQC – Construction Quality Control.

- Design Engineer – The Design Engineer was responsible for preparing the design. The Design Engineer's duties include reviewing proposed modifications to the design during construction, and measurement of work for payment and final acceptance of work performed by the Contractor on behalf of Responsible Parties.

- Remedial Engineer – For the purpose of this CQAP, the Remedial Engineer is the person or persons responsible for verifying that the Contractor completes the remedial construction activities in accordance with the design. The Remedial Engineer is responsible for oversight of the CAMP and

CHASP implementation, record keeping, and communication with the Responsible Parties, Environmental Monitor, the Contractor, and/or Regulatory Agency (NYSDEC and NYSDOH) personnel. In addition, the Remedial Engineer will be responsible for documenting the environmental QA/QC aspects of the project. Duties will include sampling, testing, identification of work progress in daily and monthly field reports to the Regulatory Agencies.

- Environmental Monitor – The on-site person or persons designated by the Remedial Engineer as responsible for implementation of the CAMP and CHASP.

- Manufacturer – The person or persons designated by the Contractor to provide construction material.

2.0 QUALITY MANAGEMENT ORGANIZATION

This section identifies the general CQA roles, qualifications, and responsibilities of the Engineer and the Contractor's personnel, as well as the Responsible Parties' role in the CQA process. Subject Property Location.

2.1 OWNER/OWNER'S REPRESENTATIVE

Under the Brownfield Cleanup Program Agreement, it is the Participant who is responsible for the design of the selected remedy for the Site. The Participant for the BCP Site is the County of Westchester who owns and operates the Westchester County Airport. The parcel designated for the construction of WFP was distributed to WJWW by Westchester County after the Airport was enrolled in the BCP and is therefore subject to the requirements of the BCA. WJWW selected Hazen and Sawyer (Hazen) to oversee the design and construction of the WFP as their Owner's Representative during Construction. Hazen is identified as the Design Engineer.

The Responsible Parties will have the final authority on all aspects of the remedial construction activities for the Rye Lake WFP project. The Responsible Parties are empowered to determine the amount, quality, acceptability, and fitness of all remedial construction completed in accordance with the design.

The Responsible Parties will be knowledgeable of the project requirements and objectives and familiar with the design. The Responsible Parties will have representatives on-site, as required, during construction activities. The responsibility of the Responsible Parties is to review the quality of construction that meets or exceeds that defined by the design and identified in this CQAP.

The Responsible Parties will have the following responsibilities in the implementation of the procedures in the CQAP:

- Attend the pre-mobilization site meeting.
- Attend project coordination meetings, as required; and
- Evaluate the construction activities and the Remedial Engineer's CQA efforts.

2.2 REMEDIAL ENGINEER

GZA is the primary consultant responsible for the design of the IRM for the WFP project on behalf of Hazen. We note that GZA is not the Remedial Engineer for other areas/remedial activities on the larger BCP Site No. C360174. The GZA team organization is further described below.

The Remedial Engineer will provide on-site and office-based assistance to the Responsible Parties throughout the duration of remedial activities. The Remedial Engineer will observe construction activities and document that the materials and workmanship delivered by the Contractor comply with the requirements of the design and are of sufficient quality to permit the development of construction

completion certifications as may be required by NYSDEC. The observation, sampling, and/or documentation of construction activities and associated procedures will be performed by a person or persons familiar with construction procedures and materials, and the project requirements. The project personnel will be under the direct supervision of a Professional Engineer licensed in the State of New York. The CQA personnel will be familiar with the use of equipment and methodology needed to sample and test soil, water, and other materials.

The Remedial Engineer will have experience in a position of significant responsibility for construction projects similar in magnitude and complexity to the project being undertaken. The Remedial Engineer must be knowledgeable of the project requirements and objectives and must be familiar with the design. The Remedial Engineer's on-site personnel must demonstrate knowledge of construction, excavation, and applicable test methods through a combination of formal education, training, and experience.

The Remedial Engineer will have the following responsibilities during the implementation of the procedures in this CQAP:

- Coordinate the pre-construction site meeting.
- Schedule and coordinate CQA inspection activities.
- Coordinate periodic project meetings.
- Attend to routine daily topics related to the overall performance of the construction activities.
- Maintain responsibility for the implementation of the procedures in this CQAP.
- Provide the appropriate technical review (i.e., by qualified representatives of the Remedial Engineer) of the design so that they meet BCP requirements.
- Review, approve (in conjunction with NYSDEC and Responsible Parties), and document proposed field modifications to the design for certification in the Construction Completion Report (CCR).
- Maintain contact with NYSDEC, the Contractor, and any subcontractors regarding conformance with the requirements in this CQAP.
- Provide overall coordination of the IRM activities.
- Coordinate with authorized agents for the Responsible Parties to document the preparation of manifests for the transportation of non- hazardous waste and conditionally exempt materials (i.e., soil/sediment, water, debris).
- Provide analytical results for imported fill materials (provided by the Contractor) to NYSDEC for review and approval prior to material being brought on-site.

- Document that field and laboratory testing is conducted at the frequency established in this CQAP, review field and laboratory QA/QC testing results for conformance with the design and aid in the review and interpretation of field and laboratory testing results.

- Provide assistance in the review of shop drawings, product data, and other submittals from the Contractor.

- Review the progress of the remedial activities and prepare Daily Field Reports.

- Review the installed portion of work to allow further construction.

- Identify noted deficiencies during remedial activities (based on QA/QC testing results) so corrective actions can be taken.

- Prepare the CCR to document the completion of IRM activities.

The Remedial Engineer's on-site personnel will also have the following responsibilities in the implementation of the procedures in this CQAP:

- Oversee and coordinate the QA/QC sampling and testing.

- Record on-site activities that could result in damage to the Site and report these activities to the Contractor and NYSDEC.

- Identify areas that require rework and/or repair to complete remedial activities.

- Coordinate activities to establish proper sampling procedures.

- Perform regular Site walkthroughs to review progress and QA/QC procedures.

- Perform community air monitoring in accordance with the CAMP.

- Provide community air monitoring results to NYSDEC, the Responsible Parties, and the New York State Department of Health (NYSDOH) on a daily basis.

- Identify areas of non-conformance based upon the results of field and laboratory testing.

- Perform and document field sampling for QA/QC testing.

- Review weekly erosion and sediment control inspection reports.

- Observe construction materials, such as soils, capping materials, and geosynthetics, delivered to the Site to determine general conformance with material specifications; and

- Observe and document the procedures used for the following:

- Pre-construction activities/mobilization.
- In-situ characterization of soils to be excavated (if required).
- Groundwater treatment activities during dewatering.
- Soil excavation activities.
- Noise, vapor/odor suppression, and dust control.
- Decontamination of equipment and personnel.
- Waste handling, stabilization, treatment, and disposal.
- Backfilling/restoration of excavated and disturbed areas.
- Site restoration/demobilization.

2.3 THE CONTRACTOR

The Contractor will be trained and experienced, and demonstrate that the superintendent, field crew foreman, and subcontractors have similar experience in the construction, installation, and performance of the various components outlined in the design, including (but not limited to) SOE/permanent bulkheads, removal of soil to a presumptive depths of greater than 4 feet below grade surface (bgs), water handling/management, groundwater treatment, in-situ soil stabilization, and sub-slab depressurization system installation.

The Contractor will have the following responsibilities for implementing the procedures presented in this CQAP:

- Review and be completely familiar with the design.
- Maintain lines of communication with the Responsible Parties and the Remedial Engineer to identify and discuss field issues as they arise:
- Coordinate with all equipment and material suppliers to document compliance with CQAP requirements.
- Provide the Responsible Parties and/or the Remedial Engineer with at least five days written notice of any tests or inspections required by the design, timely notice of all other tests and inspections, and an additional 48 hours' notice prior to the actual performance of any test or inspection.
- Prepare and submit to the Remedial Engineer all shop drawings and other required submittals specified in the design, including copies of delivery ticket(s) for import material, copies of bills of lading or manifests for material transported off-site, and copies of operating records of water

treatment system performance that adequately document the required treatment (and any related discharge monitoring per permit requirements).

- Identify any potential design and/or construction issues as early as possible to allow resolution in a manner that will not impact the quality of the construction or the schedule of construction.

- Maintain a continuous record of any approved changes or modifications to the design.

- Contract with a surveyor (all surveys necessary for the implementation of the remedial activities and for the collection of as-built information will be carried out by personnel practiced in land survey techniques and under the direction of a New York State-licensed Land Surveyor).

3.0 DOCUMENTATION REQUIREMENTS

The documentation of CQA activities will support a determination of whether construction activities have been carried out in general accordance with the design.

3.1 DOCUMENTATION

The documentation process includes recognition of construction tasks that will be observed and documented; assignment of responsibilities for the observation, testing, and documentation of these tasks; and the completion of the required reports, data sheets, forms, and checklists to provide an accurate record of the work performed during the remedial activities.

3.1.1 Daily Field Reports

The Remedial Engineer will complete a Daily Field Construction Report (DFR) of each day's construction activities. The DFRs will be submitted at the end of the week in an electronic format to the NYSDEC. The DFRs will contain, at a minimum, the following information:

- Date, project name, location, and description of the phase of work being performed (e.g., support of excavation, installation bracing, vibration monitoring, community air monitoring, etc.).

- Time that work starts and ends, in addition to the time of work stoppages related to inclement weather, insufficient equipment, or personnel or other reasons.

- Data on weather conditions, including temperature, cloud cover, and precipitation.

- The Contractor's workforce, equipment, and materials (e.g., concrete, structural metals, etc.) delivered to or removed from the Site.

- A chronological description of work in progress, including notices to or requests from the Contractor and/or installer.

- A description of any health and safety or community air monitoring program issues.

- Results of testing performed by on-site personnel.

- Problem/deficiency identification and documentation describing corrective actions taken for field problems and non-conformance with this CQAP.

- A record of pertinent communications with other on-site parties, outside companies, regulatory agencies, or consultants regarding the day's construction activities.

- Erosion and sediment control inspection results, including date and time of inspection, a description of the weather and soil conditions at the time of inspection, a description of the condition of the runoff at all points of discharge from the site, and identification of all erosion and sediment control measures that need repair or maintenance and/or are not functioning as designed and need corrective action(s); and

- Documentation of problems and/or deficiencies noted during construction (e.g., when construction material or activity is observed or tested that does not meet the requirements set forth in the design), and corrective action employed by the Contractor to address the problems or deficiencies. Include approval or acceptance of the Contractor's corrective action in the subsequent DFRs.

3.1.2 Health and Safety Accident Reports

In the event of any accident occurring on-site during the remedial project by any involved party, incident and accident reports will be completed by the affected personnel in addition to the requirements of the individual's Site-specific HASP. The Remedial Engineer and the Responsible Parties will be contacted in the event of an accident. The Responsible Parties' accident report sheets will be attached to the HASP and will be in the field project trailer.

3.1.3 Import Material Log

The Remedial Engineer will prepare an import material tracking log to record all loads of material transported on-site. A copy of all associated delivery tickets will be kept in conjunction with the tracking log. The import material tracking log will remain in the field office during remedial construction activities.

3.1.4 Transportation and Disposal Log

The Remedial Engineer will prepare a transportation log to record all loads of solid or liquid waste that are transported off-site and document the final disposition location. A copy of all associated bills of lading or manifests will be kept in conjunction with the transportation log. The transportation log will remain in the field office during remedial construction activities.

3.1.5 Photographic Documentation

The Remedial Engineer will document observations, problems, deficiencies, and work in progress using a digital format camera that records date and time. Digital photographs will be filed in chronological order in a permanent protective file and computer storage system.

The following information will be documented in the DFR or a logbook for each photograph:

- Date and time.
- Location where photograph was taken; and
- Description of the subject matter and associated follow-up photographs.

3.1.2 Monthly Reports

Monthly reports will be submitted to NYSDEC and NYSDOH Project Managers by the 10th day of each month following the reporting period and will include:

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

3.1.3 Construction Completion Report

Upon completion of the IRM, a CCR will be prepared by the Remedial Engineer for submittal to the Responsible Parties and NYSDEC. The CCR will present a description of the IRM activities and will follow the format of the Remedial Action Report from the EPA Superfund Remediation and Remedial Action Guidance (EPA 1986). The CCR will contain, at a minimum, the following information:

- A summary of all activities completed and any deviations from the design.

- A summary of soil and liquid waste characterization analytical data, transportation entity permits, and disposal documentation (bills of lading and/or finalized and executed waste manifests).

- A summary of all imported material, analytical testing data, and associated material documentation that demonstrates acceptability for use on the Site.

- Air monitoring data results (community air monitoring and applicable health and safety monitoring);

- Weekly reports that summarize the significant aspects of the DFRs.

- A photo log documenting the remedial activities conducted during the remedial construction phase.

- Remediation-related permits pertinent to the phase of remedial construction activities; and

- Slope stability monitoring data, as pertinent.

3.1.4 Construction Submittals

The Contractor shall prepare and submit to the Remedial Engineer all submittals required in the design. Information contained in the Contractor's submittals that is not applicable to the specification should be clearly lined out or deleted. The Contractor's submittals must be easily legible, clean, and clearly reproduced.

All required submittals shall be reviewed by the Remedial Engineer for conformance with the requirements presented in the design. The Contractor will not be permitted to perform any activity that directly or indirectly involves the item or items covered by a submittal until approval is provided by the Remedial Engineer.

The Remedial Engineer's review shall in no way be construed as permitting departure from the % design, except where the written request by the Contractor and written acceptance by the Remedial Engineer and NYSDEC is provided. The Remedial Engineer's review does not relieve the Contractor of any responsibility to comply with applicable laws, rules, regulations, or agreements.

3.2 PROJECT MEETINGS

Daily, weekly, and/or monthly project safety inspections and/or progress and coordination meetings will be conducted for the duration of the construction activities. A brief description of the project meetings and inspections/reviews to be conducted is provided below.

3.2.1 Pre-Construction Meeting

Following award of the contract and prior to the Contractor's mobilization, a pre- construction meeting will be held at the Site to introduce project team members representing the Contractor, NYSDEC, the

Remedial Engineer, and the Responsible Parties. The meeting will be scheduled by NYSDEC shortly after the award of the contract. The meeting will be conducted to review contract requirements, establish a detailed schedule of operations, and resolve issues (if any) raised by the attending parties.

The Remedial Engineer will prepare a summary of the pre-construction meeting. A copy of this summary will be provided to each of the parties in attendance. Failure by the Contractor to inform NYSDEC, within seven days of receiving this summary, of any discrepancies or inaccuracies contained therein indicates that the Contractor concurs with the Remedial Engineer's summary of the meeting.

3.2.2 Daily Site Safety and Coordination Meetings

Daily meetings will be administered by the Contractor's representative(s) and attended by the Remedial Engineer, NYSDEC (as necessary), and other parties to be on-site during the day to discuss day-to-day operations, daily schedule, health and safety issues, Contractor coordination issues, and general project status.

3.2.3 Periodic Progress and Coordination Meetings

Periodic progress and coordination meetings, administered by the Contractor, will be held on-site weekly, or as required, for the duration of the project. Participants in these meetings will include on-site representatives of the Design Engineer, Contractor, and the Remedial Engineer. NYSDEC and the Responsible Parties may also attend some or all of the weekly progress and coordination meetings. Progress and coordination meetings will be held to discuss issues, including, but not limited to, project status, schedule, scope of work and overall project implementation.

4.0 PRECONSTRUCTION ACTIVITIES / MOBILIZATION

This section describes the construction and testing procedures for the activities that will take place prior to the start of the remedial construction activities. IRM activities will be conducted in several phases throughout the duration of the construction, as described in the design.

4.1 PRE-CONSTRUCTION SURVEYS

The Contractor's surveyor will perform Initial Site surveys to document existing (pre- construction) Site conditions. During these activities, the surveyor will also establish survey control for the proper construction, documentation, and testing of subsequent work activities (e.g., excavation support system, excavation). Additional survey work will be conducted prior to the start of each phase of upland remedial action. The Remedial Engineer will visually observe and document that survey activities. The Remedial Engineer will also obtain photographic documentation of pre-construction conditions prior to the initiation of construction activities.

Prior to initiation of removal activities, the Contractor will develop topographic data of existing (pre-construction) conditions to establish a benchmark for comparison to post-removal and post-construction conditions. Following excavation activities, restoration measures will include the backfill of substrate (as necessary), as specified in the design.

4.2 EROSION AND SEDIMENT CONTROL MEASURES

Erosion and sediment control practices will be implemented by the Contractor for all construction activities where any excavation, staging, or loading activities are conducted. Since direct loadout of soil will be implemented following the dewatering and conditioning of excavated soils, the duration of on-site staging of soils will be limited. The general sequence of actions required within the erosion and sediment control plan is runoff control, stabilization, and then sediment control.

Prior to the start of the remedial activities, the Contractor shall construct/install erosion and sediment control measures in general accordance with the Construction Drawings and the New York State Standards and Specifications (NYS S&S) for erosion and sediment control. The Remedial Engineer will document, through visual observations and inspection logs, that erosion and sediment control measures are constructed and maintained in accordance with the NYS S&S for Erosion and Sediment Control (November 2016).

4.3 TEMPORARY SITE SECURITY MEASURES

Temporary Site features and Site security measures (e.g., fencing, signage) will be installed by the Contractor. The Remedial Engineer will visually observe and document that temporary Site security measures are installed, inspected, and maintained by the Contractor in accordance with the design.

4.4 REMEDIAL SUPPORT AREAS

Prior to the start of the IRM activities, the Contractor will construct and set-up remedial support areas (e.g., equipment/personnel decontamination area, field office trailers and other support facilities). The Contractor will be responsible for submitting to the Remedial Engineer a figure indicating the proposed locations of such areas for approval prior to mobilization (if different than indicated in the design). The Remedial Engineer will also confirm that the remedial support areas are constructed in acceptable locations.

4.5 UTILITY IDENTIFICATION

Prior to IRM activities, the Remedial Engineer will document that the following has occurred:

- The Contractor has contacted Dig Safely New York, and the utility clearance is completed prior to the initiation of any intrusive activities.
- A private utility mark-out is conducted by the Contractor; and
- Utility locations/alignments are marked out on the ground.

The locations, alignments, and construction of utilities shown on the Construction Drawings are approximate and based on information available to NYSDEC and the Design /. Any differences identified by the Contractor between the utilities shown on the Construction Drawings and those encountered in the field will be brought to the immediate attention of NYSDEC and the Engineer prior to implementing any intrusive activities.

4.6 PROTECTION OF ADJACENT STRUCTURES

The Contractor must protect the adjacent properties from damage during construction in accordance with the Harrison Building Department's Building Code. A subsequent pre- condition survey of buildings and utilities within the established construction influence zone must be performed by the Contractor prior to the start of construction. Buildings and structures that are within a distance equal to or less than the maximum excavation depth must be monitored for movement during construction. The design includes requirements for movement and vibration monitoring, including threshold and limiting action levels for implementation during construction, monitoring frequency, and reporting criteria.

5.0 SOIL EXCAVATION

Excavation activities will be performed by the Contractor in accordance with the design. The Engineer will perform in-situ waste characterization prior to conducting any excavation activities. All removed soil, debris, and water will be handled by the Contractor.

5.1 IN-SITU CHARACTERIZATION OF SOILS TO BE EXCAVATED

The in-situ sampling and laboratory assessment of soil quality will be performed to pre-characterize the soil quality, allow for a review of soil quality analytical data, and the characterization of soils as hazardous or non-hazardous to determine the appropriate disposal facilities for excavated material in advance of excavation.

5.1.1 CQA Observations

In advance of excavation, the Remedial Engineer will observe the in-situ characterization activities employed by the Contractor and review the analytical testing data to and determine the appropriate disposal facilities for the excavated material.

5.1.2 Engineer CQA Submittals

The Contractor will be responsible for providing a work plan for in-situ characterization that details the gridding of the material to be excavated with respect to construction sequencing, as well as sampling frequencies and the analytical testing requirements of the potential waste disposal facilities.

5.2 EXCAVATION SHORING

The proposed depth of excavation will not require the use of excavation support. Should the Contractor need to excavate below the proposed depth, shoring in the form of sloping or benching will be utilized. The Excavation plan is shown on **Figure 6** of the project IRM Work Plan.

5.2.1 CQA Observations

During excavation shoring and excavation/backfilling activities, the Engineer will monitor the installation of the shoring used for conformance with the design specifications.

5.2.2 Contractor CQA Submittals

Prior to implementation, the Contractor will be responsible for providing a work plan for shoring and excavation.

5.3 SOIL REMOVAL AND BACKFILLING

Excavation activities will be performed in general accordance with the design.

5.3.1 CQA Observations

During excavation/backfilling activities, the Remedial Engineer will monitor the excavation of fill material for conformance with the design specifications.

The Remedial Engineer will observe excavation activities to 1) document that they are being performed in accordance with the design and 2) report non-conformances to the Contractor.

5.3.2 Contractor CQA Submittals

The Contractor will be responsible for providing the associated submittals for SOE, excavation, and backfilling, as per the Technical Specification, prior to implementation. All backfilling materials will be approved by the NYSDEC prior to importation to the Site by the Contractor.

The limits of each phase of soil excavation activities are shown on the Construction Drawings. The Remedial Engineer shall conduct community air monitoring (in accordance with the CAMP) during all intrusive activities. The Contractor shall confirm that community air monitoring (including vapor, dust, and odor) is being conducted prior to the start of any intrusive activities. Additionally, the Contractor shall have the ability to immediately implement corrective actions if necessary.

5.4 WASTE HANDLING AND DISPOSAL

The Remedial Engineer shall review the Contractor's for proper handling, treatment, and disposal of waste materials, including, but not limited to, soil, debris and miscellaneous wastes generated during the remedial activities and in accordance with all applicable Federal, State, and local regulations.

Dewatering shall be performed under and groundwater treated prior to discharge under a permit. The Contractor shall use appropriate means and methods to dewater/stabilize materials prior to excavation and transport spent treatment filter materials off-site for proper disposal.

5.4.1 CQA Observations

The Remedial Engineer will observe the implementation of the remedial activities at the Site to document that waste materials are being handled/managed in accordance with all applicable Federal, State, and local regulations. The Engineer will visually inspect the loading area to confirm that the impacted material that collects on the polyethylene sheeting is either placed in the truck or delivered back into the excavation.

The Remedial Engineer will maintain the following documentation for waste handling, treatment, and disposal activities:

- Bills of Lading/Hazardous Waste Manifests.
- Chain of Custody records.
- Trucking logs.
- Waste profiles; and

- Counter-signed waste manifests and facility disposal receipts for waste material transported off-site for treatment/disposal.

6.0 DEMOBILIZATION

6.1 DECONTAMINATION

The Contractor will decontaminate (as necessary) all personnel and equipment that comes into contact with excavated materials. All construction vehicles leaving the Site shall be decontaminated (as necessary) by the Contractor to prevent the tracking of soil off-site. The Contractor will conduct decontamination activities within the constructed decontamination area.

6.2 POST-CONSTRUCTION SURVEYS

The Contractor will retain a New York State-licensed surveyor to conduct survey control during completion of the remedial actions, as required by the Technical Specifications. The Contractor will supply the survey information (including an as-built survey, signed and sealed by the Contractor's New York State-licensed surveyor) to the Engineer for inclusion in the CCR, to be prepared upon completion of all IRM activities.

6.3 DEMOBILIZATION

The Contractor will demobilize from the Site following completion of all remedial activities. Demobilization activities will include, at a minimum, the following:

- Cleaning/decontaminating equipment and construction-related materials prior to removal from the Site.
- Dismantling of the work area(s), equipment/personnel decontamination area(s), and other remedial support areas.
- Disposing of water treatment system residuals and decontamination area construction materials.
- Removing all materials, equipment, and support structures from the Site.
- Providing final project record documentation in accordance with Technical Specification 01 78 00 – Contractor Closeout Submittals.

6.4 CQA OBSERVATIONS

The Design Engineer will observe the Contractor's demobilization activities to document that the following activities are completed in accordance with the design:

- Equipment and construction-related materials have been cleaned/decontaminated prior to demobilization from the Site.

- Work area(s), equipment/personnel decontamination area(s), and other remedial support areas have

been dismantled.

- All of the Contractor's materials, equipment, and support systems have been removed from the Site.

APPENDIX G

SOIL/MATERIAL MANAGEMENT PLAN



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SOIL/MATERIALS MANAGEMENT PLAN

Rye Lake Water Filtration Plant

BCP Site No. C360174
Westchester County Airport

July 2025
File No. 41.0162892.01



PREPARED FOR

WESTCHESTER
JOINT WATER WORKS
Filtration

1625 Mamaroneck Avenue
Mamaroneck, NY 10543

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1.0 INTRODUCTION

This Soil and Materials Management Plan (SMMP) has been developed on behalf of Hazen and Sawyer (Hazen) for the construction of the Westchester Joint Water Works (WJWW) Rye Lake Water Filtration Plant (WFP) in Westchester County, New York (Project/Site) to guide soil handling and waste management during the proposed development. The Site is located within the property boundary of the Westchester County Airport Brownfield Cleanup Program (BCP) site (No. C360174). The County of Westchester (County) owns and operates the Airport and entered into the Brownfield Cleanup Agreement (BCA) in August 2021 as a participant. The County transferred a portion of the Airport property to WJWW in 2024 for the construction of the WFP.

The objective of this SMMP is to set guidelines for the management of excess excavated soil fill and other materials generated by construction associated activities during the construction and installation of a wastewater treatment plant, storm water retention basins, and access roads. Aside from this SMMP, the Contractor will prepare and Excavated Material Disposal Plan (EMDP), which will describe the procedures for soil characterization, excavation, management, transportation, and disposal of materials in accordance with Construction Specifications Section 02 61 13 – Excavation and Handling of Contaminated Materials.

This SMMP was prepared in accordance with applicable federal, state and local laws, codes, rules, and regulations, including, but not limited to, the United State Environmental Protection Agency (USEPA), Occupational Safety and Health Administration (OSHA), New York State Department of Environmental Conservation (NYSDEC), and New York State Department of Health (NYSDOH).

The soil / fill material is anticipated to be generated by construction activities for work associated with the construction of the Wastewater Treatment Plan. The complete construction sequence and other land disturbance activities associated with the construction of the Wastewater Treatment Plan is outlined in Section 4.0 of the EM&CP. Because the construction will commence only upon the completion of the Consent Order activities, the majority of the residual soil/fill material that will be encountered is anticipated to comply with the soil standards set forth in the Consent Order. However, given immensity of the proposed construction activities, the procedures outlined here were prepared to evaluate whether the soil/ fill material encountered can be reused or whether it will need to be segregated and transported off-Site for disposal.

The procedures set forth here are informed by the historical Waste Characterization Study performed at the Site and the following laws, ordinances, codes, rules, and regulations of the federal, state, and local authorities having jurisdiction over any of the work:

- 6 NYCRR Part 360, Solid Waste Management Facilities
- 6 NYCRR Part 364, Waste Transporter Permits
- 6 NYCRR Part 371, Identification and List of Hazardous Waste
- 6 NYCRR Part 375, Environmental Remedial Programs, Subparts 375-1 to 375-4, and 375-6.
- 6 NYCRR Part 613 Petroleum Bulk Storage (PBS) Regulation.
- 29 CFR 1910.120 – Federal OSHA standards for Hazardous Waste Operations and Emergency Response (HAZWOPER).
- 29 CFR 1926 – Federal OSHA Construction Standards.
- NYSDEC, Soil Cleanup Guidance Policy–Final Commissioner's Policy (CP)-51 October, 2010.
- NIOSH Occupational Safety and Health Guidance manual for Hazardous Waste Site Activities.
- US Department of Transportation (US DOT) 49 CFR Section 172.500 et seq.

- Any groundwater will be treated to meet the NYCDEP Limitations for Effluent, NYSDEC remedial action requirements, NYSDEC Part 364 and 375 requirements, USEPA and New York State Department of Transportation (NYSDOT) regulations for shipping of regulated substances to off-site disposal facilities, and meet all regulatory requirements imposed by the Treatment, Storage and Disposal Facility.

2.0 NOTIFICATION

At least 15 days prior to the start of any activity that is anticipated to encounter remaining contamination or breach or alter the site's cover system, the site owner or their representative will notify the NYSDEC contacts listed in the table below. **Table 1** includes contact information for the above notification. The information on this table will be updated as necessary to provide accurate contact information.

Table 1: Notifications*

Greta Kowalski, PG NYSDEC Project Manager	518-402-2029 Great.kowalski@dec.ny.gov
Kiera Thompson, P.G. NYSDEC Project Manager's Supervisor	518-402-9662 Kiera.thompson@dec.ny.gov
Kelly Lewandowski, P.E. NYSDEC Site Control	518-402-9553 Kelly.lewandowski@dec.ny.gov
Kristin Kulow NYSDOH Project Manager	518-402-7860 beei@health.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, and submittals (e.g., reports) to the NYSDEC documenting the completed intrusive work;
- A summary of the applicable components of this EWP;
- A statement that the work will be performed in compliance with this EWP, 29 CFR 1910.120 and 29 CFR 1926 Subpart P;
- 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 excavation that are not listed in this EWP. The alteration, restoration and modification of engineering controls must conform with Article 145 Section 7209 of the Education Law regarding the application professional seals and alterations.

3.0 PRELIMINARY WASTE CHARACTERIZATION STUDY

As summarized in *Waste Characterization Report – Proposed Filtration Plant, dated July 9, 2021* (**Appendix J** of the IRM Workplan), the Applicant retained GZA to perform a waste characterization study to pre-characterize the soils within the Site's proposed construction area. The objective of the waste characterization was to collect and analyze soil samples to pre-characterize in situ soil that will be excavated during the project development and provide documentation to support the project waste disposal facility applications for the acceptance of the excavated materials. As a result of the waste characterization study, GZA concluded the following:

- No hazardous waste materials were reported in the analytical testing performed.
- The excavated material samples meet the New York State Solid Waste (6 NYCRR Part 360) definition of "general fill" and may be beneficially reused off site.
- The deeper soils (i.e., 5-23 feet below ground surface [bgs]) sampled in all excavation areas show no concentrations of VOCs, SVOCs, PCBs, Pesticides, Herbicides or Metals above reporting limits.

Based on these findings, the following conclusions can be drawn from the waste characterization study in GZA's opinion.

- These analytical results can be used to facilitate the acceptance of the soils for off-site disposal at suitable soil disposal facilities. Excavated material may require additional waste characterization depending on the acceptance requirements of the selected soil disposal facility permit. Excavated material must be transported by a 6 NYCRR Part 364 registered or permitted transporter.
- The analytical results indicate that the toxicity and waste characterization parameters were within the maximum allowed concentrations of contaminants, and the soils can be managed as non-hazardous materials.
- Transportation and off-Site disposal of all soil/fill material at licensed or permitted facilities in accordance with applicable laws and regulations for handling, transport, and disposal, and the approved IRMWP. Appropriate segregation of excavated media on-Site.
- For each disposal facility to be during the BCP Site redevelopment, a letter from the Owner/GZA to the receiving facility requesting approval for disposal and a letter back to the Owner/GZA providing approval for disposal will be submitted to NYSDEC prior to any transport and disposal of soil at a facility. Disposal facilities will be reported to NYSDEC when they are identified and prior to the start of the IRM and/or remedial action.

4.0 SOIL SCREENING METHODS

Visual, olfactory and PID soil screening and assessment will be performed under the supervision of a Qualified Environmental Professional (QEP) and will be reported in the Construction Completion Report (CCR). Soil screening will be performed during invasive work performed during the remedy and development phases prior to issuance of the Notice of Completion.

5.0 STOCKPILE METHODS

Excavated soil from suspected areas of contamination (e.g., hot spots, USTs, drains, etc.) will be stockpiled separately and will be segregated from clean soil and construction materials. Stockpiles will be used only when necessary and will be removed as soon as practicable. While stockpiles are in place, they will be inspected daily, and before and after every storm event. Results of inspections will be recorded in a logbook and maintained at the Site and available for inspection by NYSDEC. Excavated soils will be stockpiled on, at minimum, double layers of 8-mil minimum sheeting, will be kept covered at all times with appropriately anchored plastic tarps, and will be routinely inspected. Broken or ripped tarps will be promptly replaced. Temporary stockpiles will be allowed to remain, provided that they are properly maintained, at no more than 30 days.

All stockpile activities will be compliant with applicable laws and regulations. Soil stockpile areas will be appropriately graded to control run-off in accordance with applicable laws and regulations. Stockpiles of excavated soils and other materials shall be located at least of 50 feet from the property boundaries, where possible. Silt fence or equivalent will surround soil stockpiles except for areas where access by equipment is required. Silt fencing and hay bales will be used as needed near catch basins, surface waters and other discharge points.

6.0 CHARACTERIZATION OF EXCAVATED MATERIALS

Soil/fill or other excavated media that is transported off-Site for disposal will be sampled in a manner required by the receiving facility, and in compliance with applicable laws and regulations. Soils proposed for reuse on-Site will be managed as defined in this plan.

7.0 QUALITY ASSURANCE/QUALITY CONTROL

Soil and water characterization samples collected pursuant to this ISMP shall be analyzed using the most recent NYSDEC Analytical Services Protocol (ASP). The laboratory selected to perform the analyses shall be NYSDOH ELAP-certified to perform Contract Laboratory Program (CLP) analysis and Solid Waste and Hazardous Waste Analytical testing on all media to be sampled. The laboratory shall maintain this certification for the duration of the project.

Procedures for chain of custody, laboratory instrumentation calibration, laboratory analyses, reporting of data, internal quality control, and corrective actions shall be followed in accordance with NYSDEC ASP and the laboratory's Quality Assurance Plan. QA/QC samples (e.g., field duplicate, matrix spike, matrix spike duplicate, and/or trip blank samples) shall be collected, as needed, to assess the quality of the analytical data. The laboratory's in-house QA/QC limits shall be utilized whenever they are more stringent than those suggested by the USEPA methods.

8.0 MATERIALS EXCAVATION, LOAD-OUT, AND DEPARTURE

The PE/QEP overseeing the remedial action will:

- Oversee remedial work and the excavation and load-out of excavated material;
- Ensure that there is a party responsible for the safe execution of invasive and other work performed under this work plan;
- Ensure that Site development activities and development-related grading cuts will not interfere with, or otherwise impair or compromise the remedial activities proposed in this Interim Remedial Measure Work Plan;
- Ensure that the presence of utilities and easements on the Site has been investigated and that any identified risks from work proposed under this plan are properly addressed by appropriate parties;
- Ensure that all loaded outbound trucks are inspected and cleaned (if necessary) before leaving the Site;
- Ensure that all egress points for truck and equipment transport from the Site will be kept clean of Site-derived materials during Site remediation.

Locations where vehicles exit the Site shall be inspected daily for evidence of soil tracking off premises. Cleaning of the adjacent streets will be performed as needed to maintain a clean condition with respect to Site-derived materials.

Open and uncontrolled mechanical processing of historical fill and contaminated soil on-Site will not be performed without prior NYSDEC approval.

9.0 OFF-SITE MATERIALS TRANSPORT

Loaded vehicles leaving the Site will comply with all applicable materials transportation requirements (including appropriate covering, manifests, and placards) in accordance with applicable laws and regulations, including use of licensed haulers in accordance with 6 NYCRR Part 364. If loads contain wet material capable of causing leakage from trucks, truck liners will be used. Queuing of trucks will be performed on-Site, when possible, in order to minimize off Site disturbance. Off-Site queuing will be minimized.

Outgoing trucks will use Purchase Street to access Cross Westchester Expressway. This routing takes into account the following factors: (a) limiting transport through residential areas and past sensitive sites; (b) use of mapped truck routes; (c) minimizing 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. To the extent possible, all trucks loaded with Site materials will travel from the Site using these truck routes. Trucks will not stop or idle in the neighborhood after leaving the project Site. The proposed licensed transporters with valid 6 NYCRR 364 permits for this project are to be determined.

10.0 MATERIALS DISPOSAL OFF-SITE

The following documentation will be established and reported by the PE/QEP for each disposal destination used in this project to document that the disposal of regulated material exported from the Site conforms with applicable laws and regulations: (1) a letter from the PE/QEP or Enrollee to each disposal facility describing the material to be disposed and requesting written acceptance of the material. This letter will state that material to be disposed is regulated material generated at an environmental remediation Site in New York City under a governmental remediation program. The letter will provide the project identity and the name and phone number

of the PE/QEP or Enrollee. The letter will include as an attachment a summary of all chemical data for the material being transported; and (2) a letter from each disposal facility stating it is in receipt of the correspondence (1, above) and is approved to accept the material. These documents will be included in the CCR.

The CCR will include an itemized account of the destination of all material removed from the Site during this remedial action. Documentation associated with disposal of all material will include records and approvals for receipt of the material. This information will be presented in the CCR.

All impacted soil/fill or other waste excavated and removed from the Site will be managed as regulated material and will be disposed in accordance with applicable laws and regulations. Historic fill and contaminated soils taken off-Site will be handled as solid waste and will not be disposed at a Part 360-16 Registration Facility (also known as a Soil Recycling Facility).

Waste characterization will be performed for off-Site disposal in a manner required by the receiving facility and in conformance with its applicable permits. Waste characterization sampling and analytical methods, sampling frequency, analytical results and QA/QC will be reported in the CCR. A manifest system for off-Site transportation of exported materials will be employed. Manifest information will be reported in the final remedial report. Hazardous wastes derived from on-Site will be stored, transported, and disposed of in compliance with applicable laws and regulations.

If disposal of soil/fill from this Site is proposed for unregulated disposal (i.e., clean soil removed for development purposes), including transport to a Part 360-16 Registration Facility, a formal request will be made for approval by NYSDEC with an associated plan compliant with 6NYCRR Part 360-16. This request and plan will include the location, volume, and a description of the material to be recycled, including verification that the material is not impacted by site uses and that the material complies with receipt requirements for recycling under 6NYCRR Part 360. This material will be appropriately handled on-Site to prevent mixing with impacted material.

Based on the results of the previous Waste Characterization Study performed at the Site (see **Section 2.0**), the disposal facilities will be determined and provided to NYSDEC for approval. The disposal shall also comply with all applicable regulations in the corresponding state where the out-of-state disposal facility/s are located.

11.0 MATERIALS REUSE ON-SITE

'Reuse On-Site' means material that is excavated during the construction activities, does not leave the property, and is relocated within the same property and on land with comparable levels of contaminants in soil/fill material, compliant with applicable laws and regulations, and addressed pursuant to NYSDEC approval.

All materials proposed for reuse onto the Site will be approved by NYSDEC prior to receipt at the Site. If the material proposed to be imported to the Site, the QEP along with Applicant will submit the form below:

- "Request to Import/Reuse Fill or Soil" form, which is used for the prior notification to NYSDEC. https://dec.ny.gov/sites/default/files/2025-03/requesttoreusesoil.pdf

Soil and fill that is derived from the property that meets the Soil Cleanup Objectives (SCOs) established in this plan may be reused on-Site. Building concrete may be reused on Site as fill. Concrete will be scraped clean and tested for reuse. 'Reuse On-Site' means material that is excavated during the remedy or development, does not leave the property, and is relocated within the same property and on land with comparable levels of contaminants in

soil/fill material, compliant with applicable laws and regulations, and addressed pursuant to the NYC BCP agreement subject to Engineering and Institutional Controls. The PE/QEP will ensure that reused materials are segregated from other materials to be exported from the Site and that procedures defined for material reuse in this remedial plan are followed.

Organic matter (wood, roots, stumps, etc.) or other waste derived from clearing and grubbing of the Site will not be buried on-Site. Soil or fill excavated from the site for grading or other purposes will not be reused within a cover soil layer or within landscaping berms

12.0 DEMARCATION

If contamination remains at the Site after completion of hotspot removal and any other invasive remedial activities, and prior to backfilling, the top of the residual soil/fill will be defined by one of three methods: (1) placement of a demarcation layer. The demarcation layer will consist of geosynthetic fencing or equivalent material to be placed on the surface of residual soil/fill to provide an observable reference layer. A description or map of the approximate depth of the demarcation layer will be provided in the SMP; or (2) a land survey of the top elevation of residual soil/fill before the placement of cover soils, pavement and associated sub-soils, or other materials or structures or, (3) all materials beneath the approved cover will be considered impacted and subject to site management after the remedy is complete. Demarcation may be established by one or any combination of these three methods. As appropriate, a map showing the method of demarcation for the Site and all associated documentation will be presented in the CCR.

This demarcation layer will not signify the top of the site management horizon as the cover system overlying impacted soil will act as an engineering control and will be subject to site management as well.

13.0 IMPORT OF BACKFILL SOIL FROM OFF-SITE SOURCES

This Section presents the requirements for imported fill materials to be used below the cover layer and within the clean soil cover layer. All imported soils will meet NYSDEC-approved backfill and cover soil quality objectives for this Site. Imported soils will not exceed Protection of Groundwater and Residential standards established in Part 375.

A process will be established to evaluate sources of backfill and cover soil to be imported to the Site, and will include an examination of source location, current and historical use(s), and any applicable documentation. Material from industrial sites, spill sites, environmental remediation sites or other potentially contaminated sites will not be imported to the Site.

All materials proposed for import onto the Site will be approved by NYSDEC prior to receipt at the Site. If the material proposed to be imported to the Site, the QEP will submit the form below:

- "Request to Import / Reuse Fill" form, which is used for the prior notification to NYSDEC. https://www.dec.ny.gov/docs/remediation_hudson_pdf/requesttoreusesoil.pdf

The form will be prepared and submitted to the NYSDEC project manager by QEP allowing a minimum of 5 business days for review. The submittal will also include analytical sampling results, frequency of testing, documentation of other agency approvals of the source facility (i.e., NYSDEC facility permits, NYSDOT virgin source certification, etc.). NYSDEC approval must be received before material is imported to the Site.

The Applicant will sample and analyze the fill being imported to the site in accordance with DER-10 Table 5.4 (e) 10 below:

DER -10 Table 5.4(e)10			
Recommended Number of Soil Samples for Soil Imported To or Exported From a Site			
Contaminant	VOCs	SVOCs, Inorganics & PCBs/Pesticides	
Soil Quantity(cubic yards)	Discrete Samples	Composite	Discrete Samples/Composite
0-50	1	1	3-5 discrete samples from different locations in the fill being provided will comprise a composite sample for analysis
50-100	2	1	
100-200	3	1	
200-300	4	1	
300-400	4	2	
400-500	5	2	
500-800	6	2	
800-1000	7	2	
> 1000	Add an additional 2 VOC and 1 composite for each additional 1000 Cubic yards or consult with DER		

Samples of the fill will be collected based on the soil quantity and type of constituents identified in the table and will be a combination of discrete and composite samples.

All materials received for import to the Site will be approved by a PE/QEP and will be in compliance with provisions in this remedial plan. The CCR will report the source of the fill, evidence that an inspection was performed on the source, chemical sampling results, frequency of testing, and a Site map indicating the locations where backfill or soil cover was placed.

All material will be subject to source screening and chemical testing. Inspection of imported fill material will include visual, olfactory and PID screening for evidence of contamination. Materials imported to the Site will be subject to inspection, as follows:

- Trucks with imported fill material will be in compliance with applicable laws and regulations and will enter the Site at designated locations;
- The PE/QEP is responsible to ensure that every truck load of imported material is inspected for evidence of contamination; and
- Fill material will be free of solid waste including pavement materials, debris, stumps, roots, and other organic matter, as well as ashes, oil, perishables, or foreign matter.

Composite samples of imported material will be taken at a minimum frequency of one sample for every 500 cubic yards of material. Once it is determined that the fill material meets imported backfill or cover soil chemical requirements and is non-hazardous, and lacks petroleum contamination, the material will be loaded onto trucks for delivery to the Site.

14.0 CONSTRUCTION DEWATERING

GZA also evaluated surface topography, soil type, groundwater elevation, surface water levels, invert elevation of the waterline and PFAS soil and groundwater concentrations along the proposed water line installation pathway. It was necessary to review this information relative to the proposed depth of the waterline excavation to evaluate if construction dewatering will be necessary and, if so, will the removed water exceed the 10 ppt MCL for PFOS or PFOA concentration.

The extracted water will be collected and disposed of at an approved facility capable of accepting PFAS impacted water, or the Contractor will select a small-scale treatment system capable of treating PFAS impacted water for discharge to the surface water.

Discharge of water generated during remedial construction to surface waters (i.e., a stream or river) is prohibited without a State Pollutant Discharge Elimination System (SPDES) permit issued by NYSDEC.

15.0 STORMWATER POLLUTION PREVENTION

Applicable laws and regulations pertaining to stormwater pollution prevention will be addressed during the remedial program. Erosion and sediment control measures identified in this remedial plan (silt fences and barriers, and hay bale checks) will be installed around the entire perimeter of the remedial construction area and inspected once a week and after every storm event to ensure that they are operating appropriately. Discharge locations will be inspected to determine whether erosion control measures are effective in preventing significant impacts to receptors. Results of inspections will be recorded in a logbook and maintained at the Site and available for inspection by NYSDEC. All necessary repairs shall be made immediately. Accumulated sediments will be removed as required to keep the barrier and hay bale check functional. Undercutting or erosion of the silt fence toe anchor will be repaired immediately with appropriate backfill materials. Manufacturer's recommendations will be followed for replacing silt fencing damaged due to weathering.

16.0 CONTINGENCY PLAN FOR UNKNOWN CONTAMINATION SOURCES

This contingency plan is developed for the remedial construction to address the discovery of unknown structures or contaminated media during excavation. Identification of unknown contamination source areas during invasive Site work will be promptly communicated to NYSDEC's Case Manager. Petroleum spills will be reported to the NYSDEC Spill Hotline. These findings will be included in the daily report. If previously unidentified contaminant sources are found during on-Site remedial excavation or development-related excavation, sampling will be performed on contaminated source material and surrounding soils and reported to NYSDEC. Chemical analytical

testing will be performed for target analyte list (TAL) metals, target compound list (TCL) volatiles and semi-volatiles, TCL pesticides and polychlorinated biphenyls (PCBs), as appropriate.

17.0 COMMUNITY AIR MONITORING PROGRAM

A figure showing the location of air sampling stations based on generally prevailing wind conditions is shown in **Appendix G** of the IRM Workplan. These locations will be adjusted on a daily or more frequent basis based on actual wind directions to provide an upwind and at least two downwind monitoring stations.

Exceedances of action levels listed in the CAMP will be reported to NYSDEC and NYSDOH Project Managers.

18.0 ODOR, DUST, AND NUISANCE CONTROL

Odor Control

All necessary means will be employed to prevent on- and off-Site odor nuisances. At a minimum, procedures will include: (a) limiting the area of open excavations; (b) shrouding open excavations with tarps and other covers; and (c) use of foams to cover exposed odorous soils. If odors develop and cannot otherwise be controlled, additional means to eliminate odor nuisances will include: (d) direct load-out of soils to trucks for off-Site disposal; and (e) use of chemical odorants in spray or misting systems.

This odor control plan is capable of controlling emissions of nuisance odors. If nuisance odors are identified, work will be halted, and the source of odors will be identified and corrected. Work will not resume until all nuisance odors have been abated. NYSDEC will be notified of all odor complaint events. Implementation of all odor controls, including halt of work, will be the responsibility of the PE/QEP's certifying the IRM completion in the Construction Completion Report (CCR).

Dust Control

Dust management during invasive on-Site work will include, at a minimum:

- Use of a dedicated water spray methodology for roads, excavation areas and stockpiles.
- Use of properly anchored tarps to cover stockpiles.
- Exercise extra care during dry and high-wind periods.
- Use of gravel or recycled concrete aggregate on egress and other roadways to provide a clean and dust-free road surface.

This dust control plan is capable of controlling emissions of dust. If nuisance dust emissions are identified, work will be halted, and the source of dusts will be identified and corrected. Work will not resume until all nuisance dust emissions have been abated. NYSDEC will be notified of all dust complaint events. Implementation of all dust controls, including halt of work, will be the responsibility of the PE/QEP's responsible for certifying this CCR.

Other Nuisances

Noise control will be exercised during the remedial program. All remedial work will conform, at a minimum, to local noise control ordinances.

Rodent control will be provided during Site clearing and grubbing and during the remedial program, as necessary, to prevent nuisances. Implementation of all other controls, including halt of work, will be the responsibility of the PE/QEP's responsible for certifying this CCR.



GZA GeoEnvironmental of New York

APPENDIX H

REQUEST TO IMPORT/REUSE MATERIAL 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) and 6NYCRR Part 360.13. Use of this form is not a substitute for reading the applicable regulations and Technical Guidance document.

SECTION 1 – SITE BACKGROUND

Site Name:

Site Number:

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 passes a size 100 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:

Name and address of fill 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

APPENDIX I

COMMUNITY AIR MONITORING PLAN



Known for excellence.
Built on trust.

GEOTECHNICAL
ENVIRONMENTAL
ECOLOGICAL
WATER
CONSTRUCTION MANAGEMENT

GZA GeoEnvironmental of NY
104 West 29th Street
10th Floor
New York, NY 10001
T: 212.594.8140
F: 212.279.8180
www.gza.com

COMMUNITY AIR MONITORING PLAN

Rye Lake Water Filtration Plant

BCP Site No. C360174
Westchester County Airport

July 2025
File No. 41.0162892.01



PREPARED FOR

WESTCHESTER
JOINT WATER WORKS
Filtration

1625 Mamaroneck Avenue
Mamaroneck, NY 10543

PREPARED BY:
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1.0 INTRODUCTION 1

2.0 VOC MONITORING, RESPONSE LEVELS, AND ACTION 1

3.0 PARTICULATE MONITORING, RESPONSE LEVELS, AND ACTIONS.....2

1.0 INTRODUCTION

Real-time air monitoring for Volatile Organic Compounds (VOCs) and particulate levels at the perimeter of the exclusion zone or work area will be performed. Continuous monitoring will be performed for all ground intrusive activities and during the handling of contaminated or potentially contaminated media. Ground intrusive activities include, but are not limited to, soil/waste excavation and handling, test pit excavation or trenching, and the installation of soil borings or monitoring wells.

Periodic monitoring for VOCs will be performed 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, for instance, will consist of taking a reading upon arrival at a sample location, monitoring while opening a well cap or overturning soil, monitoring during well bailing/purging, and taking a reading prior to leaving a sample location. Depending upon the proximity of potentially exposed individuals, continuous monitoring may be performed 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. Exceedances of action levels observed during performance of the Community Air Monitoring Plan (CAMP) will be reported to the NYSDEC Project Manager and included in the Daily Report. CAMP will be implemented in accordance with DER-10 Appendix 1A – New York State Department of Health Generic Community Air Monitoring Plan and Appendix 1B – Fugitive Dust and Particulate Monitoring.

Continuous monitoring will be required for all ground intrusive activities. 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. A 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 bailing/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.

2.0 VOC MONITORING, RESPONSE LEVELS, AND ACTION

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

- If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 parts per million (ppm) above background for the15-minute average, work activities will be temporarily halted and monitoring continued. If the total organic vapor level readily

decreases (per instantaneous readings) below 5 ppm over background, work activities will resume with continued monitoring.

- If total organic vapor levels at the downwind perimeter of the work area or exclusion zone persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities 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 exclusion zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less - but in no case less than 20 feet, is below 5 ppm over background for the 15-minute average.

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

All 15-minute readings must be recorded and be available for NYSDEC personnel to review. Instantaneous readings, if any, used for decision purposes will also be recorded. CAMP readings will be provided as attachments with daily reports. Daily reports will indicate any exceedances from that day, and subsequent corrective actions.

Parameter	**Monitoring Instrument**	**Response Levels (above background levels)**	**Actions**	**Conditions for Continuing Work Activities**
Total VOCs	PID	>5ppm but <25ppm	1. temporarily halt activity 2. continue monitoring	levels readily decrease below 5ppm above background levels
		Persistent levels between 5 and 25ppm	1. temporarily halt activity 2. identify vapor source 3. vapor abatement action 4. continue monitoring	levels exist below 5ppm above background levels in areas 200 ft from exclusion zone or half the distance to the nearest receptor (but no less than 20 ft)
		>25ppm	1. shut down activity 2. vapor mitigation and control action	to be determined

3.0 PARTICULATE MONITORING, RESPONSE LEVELS, AND ACTIONS

Particulate concentrations will be monitored continuously at the upwind and downwind perimeters of the exclusion zone at temporary particulate monitoring stations. The particulate monitoring will 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 will 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.

- If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/m3) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques will be employed. Work will continue with dust suppression

techniques provided that downwind PM-10 particulate levels do not exceed 150 mcg/m3 above the upwind level and provided that no visible dust is migrating from the work area.

- If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 mcg/m3 above the upwind level, work will be stopped and are-evaluation of activities initiated. Work will resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 mcg/m3 of the upwind level and in preventing visible dust migration.

All readings will be recorded and be available for NYSDEC personnel to review. CAMP readings will be provided as attachments with daily reports. Daily reports will indicate any exceedances from that day, and subsequent corrective actions.

Parameter	**Monitoring Instrument**	**Response Levels (above background levels)**	**Actions**	**Conditions for Continuing Work Activities**
Particulates < 10 µm (PM-10)	Dust Meter	Fugitive dust migration	1. implement dust suppression techniques	dust suppression techniques are in place
		>100µg/m3 but <150µg/m3	1. implement dust suppression techniques	levels must not exceed 150 µg/m3 with dust suppression techniques in place
		>150 µg/m3	1. halt activity 2. re-evaluate activities	levels decrease below 150 µg/m3 and fugitive dust migration is prevented



GZA GeoEnvironmental of New York

APPENDIX J

CITIZEN PARTICIPATION PLAN

Citizen Participation Plan
Westchester County Airport
White Plains, New York

BCP Site No. C360174

February 2023

Prepared for: Westchester County
240 Airport Road
White Plains, New York 10601

Prepared by: First Environment, Inc.
10 Park Place
Building 1A, Suite 504
Butler, New Jersey 07405

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

Applicant: **County of Westchester ("Applicant")**
Site Name: **Westchester County Airport ("Site")**
Site Address: **240 Airport Road, West Harrison**
Site County: **Westchester County**
Site Number: **C360174**

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

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

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

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

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

2. Citizen Participation Activities

Why NYSDEC Involves the Public and Why It Is Important

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

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

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

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

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

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

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

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

Project Contacts

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

Locations of Reports and Information

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

Site Contact List

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

The Site contact list includes, at a minimum:

- chief executive officer and planning board chairperson of each county, city, town, and village in which the Site is located;
- residents, owners, and occupants of the Site and properties adjacent to the Site;
- the public water supplier which services the area in which the Site is located;
- any person who has requested to be placed on the Site contact list;
- the administrator of any school or day care facility located on or near the Site for purposes of posting and/or dissemination of information at the facility;
- location(s) of reports and information.

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

Note: The first Site fact sheet (usually related to the draft Remedial Investigation Work Plan) is distributed both by paper mailing through the postal service and through DEC Delivers, its email listserv service. The fact sheet includes instructions for signing up with the appropriate county listserv to receive future notifications about the Site. See http://www.dec.ny.gov/chemical/61092.html.

Subsequent fact sheets about the Site will be distributed exclusively through the listserv, except for households without internet access that have indicated the need to continue to receive site information in paper form. Please advise the NYSDEC site project manager identified in Appendix A if that is the case. Paper mailings may continue during the investigation and cleanup process for some sites, based on public interest and need.

CP Activities

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

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

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

Documents related to the site can be accessed online here:

https://airport.westchestergov.com/about-us/environmental-management-system.

https://www.dec.ny.gov/cfmx/extapps/derexternal/index.cfm?pageid=3

For documents related to the current clean-up efforts:

https://airport.westchestergov.com/about-us/environmental-management-system/pfas-program.

The public is encouraged to contact project staff at any time during the site's investigation and cleanup process with questions, comments, or requests for information.

This CP Plan may be revised due to changes in major issues of public concern identified in Section 3 or in the nature and scope of investigation and cleanup activities. Modifications may include additions to the Site contact list and changes in planned citizen participation activities.

Technical Assistance Grant

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

If the Site is determined to be a significant threat, a qualifying community group may apply for a Technical Assistance Grant (TAG). The purpose of a TAG is to provide funds to the qualifying group to obtain independent technical assistance. This assistance helps the TAG recipient to interpret and understand existing environmental information about the nature and extent of contamination related to the Site and the development/implementation of a remedy.

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

As of the date the declaration (page 2) was signed by the NYSDEC project manager, **the significant threat determination for the site had not yet been made.**

To verify the significant threat status of the Site, the interested public may contact the NYSDEC project manager identified in Appendix A.

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

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

Citizen Participation Activities	Timing of CP Activity(ies)
Application Process:	
• Prepare Site contact list • Establish document repository(ies)	At time of preparation of application to participate in the BCP.
• Publish notice in Environmental Notice Bulletin (ENB) announcing receipt of application and 30-day public comment period • Publish above ENB content in local newspaper • Mail above ENB content to Site contact list • Conduct 30-day public comment period	When NYSDEC determines that BCP application is complete. The 30-day public comment period begins on date of publication of notice in ENB. End date of public comment period is as stated in ENB notice. Therefore, ENB notice, newspaper notice, and notice to the Site contact list should be provided to the public at the same time.
After Execution of Brownfield Site Cleanup Agreement (BCA):	
• Prepare Citizen Participation (CP) Plan	Before start of Remedial Investigation **Note:** Applicant must submit CP Plan to NYSDEC for review and approval within 20 days of the effective date of the BCA.
Before NYSDEC Approves Remedial Investigation (RI) Work Plan:	
• Distribute fact sheet to Site contact list about proposed RI activities and announcing 30-day public comment period about draft RI Work Plan • Conduct 30-day public comment period	Before NYSDEC approves RI Work Plan. If RI Work Plan is submitted with application, public comment periods will be combined and public notice will include fact sheet. Thirty-day public comment period begins/ends as per dates identified in fact sheet.
After Applicant Completes Remedial Investigation:	
• Distribute fact sheet to Site contact list that describes RI results	Before NYSDEC approves RI Report
Before NYSDEC Approves Remedial Work Plan (RWP):	
• Distribute fact sheet to Site contact list about draft RWP and announcing 45-day public comment period • Public meeting by NYSDEC about proposed RWP (if requested by affected community or at discretion of NYSDEC project manager) • Conduct 45-day public comment period	Before NYSDEC approves RWP. Forty-five day public comment period begins/ends as per dates identified in fact sheet. Public meeting would be held within the 45-day public comment period.
Before Applicant Starts Cleanup Action:	
• Distribute fact sheet to Site contact list that describes upcoming cleanup action	Before the start of cleanup action.
After Applicant Completes Cleanup Action:	
• Distribute fact sheet to Site contact list that announces that cleanup action has been completed and that NYSDEC is reviewing the Final Engineering Report • Distribute fact sheet to Site contact list announcing NYSDEC approval of Final Engineering Report and issuance of Certificate of Completion (COC).	At the time the cleanup action has been completed. **Note:** The two fact sheets are combined when possible if there is not a delay in issuing the COC.

3. Major Issues of Public Concern

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

The Site has been impacted by the chemicals formulated in Aqueous Fire Fighting Foams (AFFF) named per- and polyfluoroalkyl substances (PFAS). PFAS are man-made chemicals found across the Site in soil, sediment, surface water, and groundwater in varying concentrations. However, the north end of the Airport where the New York Air National Guard (NYANG) performed aircraft rescue and firefighting (ARFF) operations on a regular basis from 1968 to 1983 is the area where PFAS is most heavily concentrated in soil and groundwater. These firefighting exercises and training activities were performed at a former Burn Pit across from Building 10. The NYANG, as part of its firefighting exercises, used AFFF which historically contained high concentrations of PFAS, specifically perfluorooctane sulfonate (PFOS). Even today, Title 14 Code of Federal Regulation (CFR) Part 139 under Federal Aviation Administration (FAA) requires Airport operators to use AFFF containing PFAS. In 2018, the Airport discontinued the use of foams containing PFOS and perfluorooctanoic acid (PFOA) and transitioned to a more environmentally friendly AFFF National Foam Aer-O-Water 6%. In July 2020, New York State adopted PFOS and PFOA drinking water Maximum Contaminant Levels (MCLs) of 10 part per trillion (ppt).

The Site Characterization at the Airport has been completed and the next phase of focus is refining the investigation in remedial investigation. This work is being outlined in a remedial investigation workplan, estimated to be executed in the spring/summer of 2023. In the last year, an investigation of soil, sediment, groundwater, and surface water has been conducted on the North Parcel of the Airport, which is the portion of Airport property that is north of Airport Road. Previously, as an interim remedial measure, the stormwater system at the northern portion of the Airport that was allowing PFAS impacted groundwater to leave the Airport through OF-7 located inside the Rye Lake drainage basin was replaced with a watertight system to prevent the infiltration of impacted groundwter. Other planned IRMs include pilot tests at various locations to reduce the concentrations of contaminants in surface and groundwater. Investigative workplans, reports, and monthly progress reports can be found on Westchester County website as previously cited on Page 6.

Water Supply – Rye Lake Reservoir – Rye Lake is a receptor for the surface water and groundwater from approximately 1/3 of the Airport area.

Water Supply – Some commercial buildings along New King Street have water wells that have been impacted by PFOS and PFOA.

4. Site Information

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

Site Description

The Site is located at 240 Airport Road in White Plains, Westchester County, New York and encompasses approximately 694 acres or 1.08 square miles. The Airport is located in a mixed-use area of commercial and residential parcels and has been assigned Site No. 360174 by the NYSDEC. Residential housing is located to the north of the Site across Airport Road. To the east and south of the Airport across Airport Road are residences and commercial properties, including a golf course. Interstate 684 and Rye Lake are located to the west of the Airport. As indicated, Rye Lake is part of the Kensico Reservoir.

About one-third of the Airport lies within the Rye Lake watershed while the remainder lies within the Blind Brook watershed. As used in this report, the "Site" refers to the area within the boundaries of the Airport. The Harrison Sub-residency Site is located outside of the Project Area (off-site) but is included in the discussion since PFAS were identified in surface and groundwater at this location by TRC in 2018. It should also be noted that the Harrison Sub-residency Site is located downgradient from the Airport.

In the northern portion, the Site generally slopes to the west toward Rye Lake, whereas the southern part of the Site slopes to Blind Brook. The Site is largely covered with earthen fill and vegetation with some areas covered by concrete, runways, asphalt, and/or gravel. The main structures at the Site consist of Airport and tenant buildings of a slab-on-grade construction. The buildings house offices, maintenance, Airport operations and management, lease holders of airlines, and private aircraft.

History of Site Use, Investigation, and Cleanup

Westchester County Airport (Airport code "HPN") was initially constructed by the U.S. Army Corps of Engineers in 1942 on land owned by the County of Westchester and leased to the United States government "for the duration" of WW II for use by the U.S. Army Air Force. Before the end of the war, the U.S. government surrendered its lease and in February 1945 the Westchester County Airport opened as a public Airport. However, the Army Air Force never completely vacated the Airport. In 1947, following the creation of the United States Air Force and the New York Air National Guard (NYANG), the NYANG leased the northeast section of the Airport from Westchester County. The NYANG subsequently constructed air-support facilities on the leasehold and continuously occupied its leasehold until 1983 when the unit moved to Stewart Air Force Base.

The following presents a Timeline of Development at Westchester County Airport:

- 1942 – construction began;
- 1943 – runways completed;
- Late 1943 – U.S. Army Air Force (AAF) base opened;
- 2/13/1945 – base officially became the County Airport;
- 1946 – private pilots became tenants at the Airport;
- 9/18/1947 – New York State Air National Guard (NYANG) formed;

- 1948 – Hangar A completed;
- 11/1949 – permanent airline service began with American Airlines;
- 1952 – NYANG begins operations at Airport base;
- 1953 – Hangar D completed;
- 1967 - New Air Traffic Control Tower built to replace flight operations tower in Hangar A;
- 1978 – U.S. Airline Deregulation Act resulted in more flights in and out of HPN;
- 1980 – longer-distance jet travel began via Air Florida;
- 1983 – NYANG left the Airport and transferred to Stewart Airport in Newburgh, NY;
- 1993 – new passenger terminal built;
- 2007 – JetBlue service began.

In the late 1990s, and as a result of historical firefighting and training activities using flammables such as aviation fuel as the accelerant, concerns were raised regarding the potential environmental impacts to soil and groundwater in and around the former NYANG Burn Pit area.

To address this concern, First Environment, the County's environmental consultant, conducted a detailed reconnaissance of the Airport Property that included multiple site visits in the fall of 1999 and a review of historic aerial photographs of the Airport. The reconnaissance identified the location of the former NYANG Burn Pit west of Building 10 and its boundaries. Based on information reviewed, ARFF training activities consisted of the repeated burning and extinguishing of aviation fuel at this location. It should be noted at that time there were no known environmental concerns or regulatory standards for PFAS chemicals in AFFF.

In early 2000, 39 study areas were identified as possible contaminant sources at the Airport and investigated to determine their potential impact, if any, on environmental media. The investigations included a review of available documentation; interviews with Airport personnel and NYANG personnel in Latham, New York; as well as intrusive investigations consisting of soil and/or groundwater sampling.

On January 28, 2000, First Environment identified petroleum impacts in the former Burn Pit area associated with fire training activities. In an effort to remediate this area, First Environment removed the source of contamination.

From May 16 to October 20, 2000, First Environment oversaw the removal of approximately 2,800 tons of impacted soil. The excavation encompasses an area measuring 130 feet by 60 feet and extended to a depth of 4 to 6 feet below grade. The excavated soil was transported to Soil Safe, Inc., located in Salem, New Jersey, a facility certified to accept non-hazardous petroleum impacted soil. At the completion of the remedial excavations, post-excavation samples were collected to document the success of the remedial actions.

To restore the area of the excavation to original grade, soil previously stockpiled on-site was evaluated to determine if it was suitable for reuse to backfill the former NYANG Burn Pit area excavation.

Additional Site investigation activities were completed from June to December 2000. As part of this additional investigation, First Environment collected approximately 125 soil samples, 30 post-excavation soil samples, and 130 groundwater samples from temporary and permanent monitoring wells located at the Site. All samples were submitted for laboratory analysis in order to chemically characterize the environmental media at the Site.

In 2001, following First Environment's review of the data, based on the hydrogeology, hydrology, and laboratory analytical results, First Environment concluded there was no pervasive petroleum groundwater plume emanating from the Airport that was threatening the water quality at Rye Lake. The findings of the investigation were detailed in First Environment's Site Investigation Report and Groundwater Monitoring Program dated February 2001.

From June 2001 until 2011, a voluntary site-wide groundwater monitoring program was performed by the Airport. The monitoring program included the semi-annual sampling and analysis of between 50 to 57 monitoring wells located across the Site. The analytical parameters included VOCs, SVOCs, glycols, and total and dissolved metals. The monitoring program was performed until the first quarter of 2011, at which point the program was discontinued by the prior County administration.

In June 2017, the NYSDOH sampled raw water intakes and finished water outlets corresponding to several potable wells that service a number of commercial buildings located on New King Street in North Castle, New York. The results of the sampling identified PFAS in these intake and outlet ports, some at concentrations that exceeded the combined action level of 70 ppt for PFOA and PFOS.

In November 2017, sampling conducted by WSP identified PFAS in eight monitoring wells located across the Site. This sampling event was conducted at the request of the NYSDEC to evaluate potential impacts from historic fire training activities conducted by the NYANG.

In August 2018, the County voluntarily restarted the semi-annual groundwater monitoring program and sampled 52 monitoring wells. To date, WSP has conducted six sampling events on the following dates: August 2018, March 2019, October 2019, April 2020, October 2020, March 2021. The 2018 sampling event was the first full-sampling event under the re-started monitoring program and encompassed an expanded list of analytical parameters, including a suite of 21 PFAS compounds as well as 1,4 dioxane. This event revealed concentrations of PFOA and PFOS exceeding the 70 ppt EPA lifetime contaminant health advisory level for combined PFOA and PFOS in 26 of the 52 sampled wells. The monitoring wells exhibiting the highest concentrations of PFAS in groundwater were located in the northern portion of the Site, near the former NYANG Burn Pit; although elevated levels have been identified at Hangar V Pepsi/ 37. It may be possible that the groundwater divide is

separating ICA at UW-1, FMW-31, and FMW-PFAS in two directions or a potential PFAS source exists at or near Hangar V. In addition, 1,4-dioxane was detected in five wells in proximity to Hangar D. VOCs were also identified; however, no glycols were detected. The VOCs and glycol results were generally consistent with the concentrations previously detected in the groundwater during the monitoring program from 2001 to 2011.

A second groundwater sampling event was conducted in March/April 2019. In total, 53 monitoring wells across the Site were sampled for PFAS. In addition, samples from 39 wells were analyzed for VOCs, samples from 12 wells were analyzed for 1,4-dioxane, and samples from 6 wells were analyzed for glycols. This event revealed concentrations of PFOS and PFOA exceeding the 70 ppt EPA combined PFOA and PFOS life-time contaminant health advisory level in 32 of the 53 sampled wells. The 2019 PFAS and VOCs concentrations were of similar concentrations when compared to those from 2018. The highest PFAS concentrations were detected in samples from shallow monitoring wells screened from 5.0 and 20.0 feet below ground surface (bgs).

The highest combined PFOA and PFOS concentrations have been consistently detected in wells FMW-6 and FMW-7, which are both located immediately adjacent to the former NYANG Burn Pit area which, as noted, is considered the primary source area at the Site where PFAS containing AFFF was used during fire training exercises. There has been a decrease in PFAS concentration in certain wells across the Site. First Environment believes the declining trend in some of the wells at the burn pit are the result of the removal of approximately 2,800 tons of VOC and SVOC impacted soil in 2000/2001. Based on recent investigation results, it is now apparent this former burn pit soil was also impacted with PFAS and therefore constituted a PFAS source removal event as well. As noted, WSP conducted groundwater sampling in 2018, 2019, 2020, and 2021.

In 2019-2020, First Environment performed a Site Characterization of the Airport and submitted the report to the NYSDEC in April 2021. First Environment implemented the storm sewer/groundwater IRM in 2021. In 2021 and 2022 site investigation of the north parcel of the Airport was executed. First Environment continues to dialogue with the NYSDEC monthly to the progress of the current and future remedial investigation and clean-up Site activities.

5. Investigation and Cleanup Process

Application

The Applicant has applied for and has been accepted into New York's Brownfield Cleanup Program as a Participant. This means that the Applicant was the owner of the Site at the time of the discharge of PFAS contaminants or was otherwise liable for the discharge of the contaminants. The Participant must fully characterize the nature and extent of contamination on site, as well as the nature and extent of contamination that has migrated from the Site. The Participant also must conduct a "qualitative exposure assessment," a process that characterizes the actual or potential exposures of people, fish, and wildlife to contaminants on the Site and to contamination that has migrated from the Site.

The Applicant in its Application proposes that the Site will be used for commercial purposes.

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

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

Interim Remedial Measures

An Interim Remedial Measure (IRM) is an action that can be undertaken at a site when a source of contamination or exposure pathway can be effectively addressed before the site investigation and analysis of alternatives are completed. If an IRM is likely to represent all or a significant part of the final remedy, NYSDEC will require a 30-day public comment period.

Remedy Selection

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

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

or

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

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

Cleanup Action

NYSDEC will consider public comments and revise the draft clean-up plan if necessary, before approving the proposed remedy. The New York State Department of Health (NYSDOH) must concur with the proposed remedy. After approval, the proposed remedy becomes the selected remedy. The selected remedy is formalized in the Site Decision Document.

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

Certificate of Completion

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

Site Management

The purpose of site management is to ensure the safe reuse of the property if contamination will remain in place. Site management is the last phase of the site clean-up program. This phase begins when the COC is issued. Site management incorporates any institutional and engineering controls required to ensure that the remedy implemented for the Site remains protective of public health and the environment. All significant activities are detailed in a Site Management Plan.

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

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

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

Appendix A -
Project Contacts and Locations of Reports and Information

Project Contacts

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

New York State Department of Environmental Conservation (NYSDEC):

Greta White, P.G.
Project Manager
NYSDEC Central Office
Division of Environmental Remediation
625 Broadway, Albany, NY 12233
(518) 402-2029
email: greta.white@dec.ny.gov

Stephanie Mossey Citizen Participation Specialist
NYSDEC Region 3
21 South Putt Corners Rd, New Paltz, NY
(845) 256-3154

New York State Department of Health (NYSDOH):

Kristin Kulow Public Health Specialist
New York State Department of Health
Bureau of Environmental Exposure Investigation
28 Hill Street, Suite 201
Oneonta, NY 13820
(518) 402-7860
beei@health.ny.gov

Locations of Reports and Information

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

Westchester County Airport Environmental Department
Main Terminal, Suite 202
240 Airport Rd White Plains NY 10604
Phone: (914) 995-3860 or (914) 995-4856
Hours: 8:00 am to 4:00 pm

NYSDEC Central Office
625 Broadway,
Albany, NY 12233
Attn: Matthew Hubicki Phone: (845) 256-3003
Hours: 8:30 am – 4:45 pm Monday through Friday (call for appointment)

Documents related to the site can be accessed online here:
https://airport.westchestergov.com/about-us/environmental-management-system.

https://www.dec.ny.gov/cfmx/extapps/derexternal/index.cfm?pageid=3

For documents related to the current clean-up efforts:
https://airport.westchestergov.com/about-us/environmental-management-system/pfas-program.

Appendix B - Site Contact List

1. Chief Executive Officers and Planning Board Chairpersons

George Latimer County Executive, Office of the County Executive
9th Floor, 148 Martine Ave, White Plains, NY 10601

Richard Hyman, County Planning Board Chair, Westchester County Dept of Planning
Room 432, 148 Martine Ave, White Plains, NY 10601

Ron Belmont, Town/Village of Harrison Mayor, Town/Village of Harrison
1 Heineman Place Harrison, New York, 10528

Thomas Heaslip, Harrison Planning Board Chair Town/Village of Harrison
1 Heineman Place Harrison, New York, 10528

Paul Rosenberg, Village of Rye Brook Mayor, Village of Rye Brook
938 King Street Rye Brook, NY 1057

Robert Goodman, Rye Brook Planning Board Chair, Village of Rye Brook
938 King Street Rye Brook, NY 1057

Michael Schiliro, Town of North Castle Supervisor, Town of North Castle
15 Bedford Road Armonk, NY 10504

Christopher Carthy, North Castle Planning Board Chair, Town of North Castle
15 Bedford Road Armonk, NY 10504

Fairfield County, CT – As of 1960, Counties in Connecticut do not have any associated governmental structure. All services are provided by the towns.

Fred Camillo, Greenwich Township First Selectman
101 Field Point Road, First Floor, Greenwich, CT 06830

Katie DeLuca, AICP, Greenwich Township Planning Board Director
101 Field Point Road, Second floor, Greenwich, CT 06830

2. Residents, Owners, and Occupants of the Property and Properties Adjacent to the Property

OWNER	OWNER ADDRESS	PROPERTY ADDRESS
AMMIRATO, BARBARA	4282 Purchase St Purchase, NY 10577	Same
SPREWELL, LATRELL F	4340 Purchase St Purchase, NY 10577	Same
HIRABAYASHI, KAZUKO	4300Purchase St Purchase, NY 10577	Same
HASHEM J	5 Renaissance Sq - Apt White Plains, NY 10601	4350 Purchase St Purchase, NY 10577
SOCIETY OF FRIENDS	4455 Purchase St West Harrison NY 10604	Same
PRICE II, VIRGIL M	6-10 Wolfe Ln Purchase, NY 10577	Same
CITY OF NEW YORK	465 Columbus Ave Valhalla NY 10595	4440 Purchase St Purchase, NY 10577
VALENTINO ANTHONY A	2 Palma Dr Harrison NY 10528	38 Wolfe Ln Purchase, NY 10577
GJOKAJ, TONY T	36 Hickory Ln Thornwood NY 10594	22 Wolfe Ln Purchase, NY 10577
AMMIRATO, FULVIO	4288 Purchase St Purchase, NY 10577	Same
BURTON, STEVEN	4390 Purchase St Purchase, NY 10577	Same
BILLONE, JOSEPH	4443 Purchase St West Harrison NY 10604	Same
VALENTINO ANTHONY A	2 Palma Dr Harrison, NY 10528	34 Wolfe Ln Purchase, NY 10577
WESTCHESTER JOINT WATER	1625 Mamaroneck Ave Mamaroneck, NY 10543	12 Stone Ridge Rd Purchase NY 10577
SUMMERHILL REALTY LLC	4330 Purchase St Purchase, NY 10577	Same
AMMIRATO, FULVIO	4290 Purchase St Purchase, NY 10577	Same
KANTER, MALCOLM J	14 Wolfe Ln Purchase, NY 10577	Same
SOCIETY OF FRIENDS	Purchase Meeting Purchase, NY 10577	Purchase St Purchase, NY 10577
REHMAN ABAID	251 Bedford Pk Blvd Bronx, NY 10453	4 Kempner Ln Purchase, NY 10577
STATE OF NEW YORK	A E Smith Office Bldg Albany, NY 12236	55 New King St West Harrison NY 10604
KERN, HAL	18 Wolfe Ln Purchase, NY 10577	Same
NYS HOUSING FINANCE AGENCY	Lincoln Ave Purchase, NY 10577	Same
UNITED CEREBRAL PALSY	PO Box 555 Purchase, NY 10577	1186 King St Rye Brook NY 10573
SAFE FLIGHT INST CORP	20 New King St West Harrison NY 10604	Same
1194 KING STREET LLC		1194 King Street, Greenwich, CT, 06831
PAUL ANTONIK		1151 King Street, Greenwich, CT 06831
KATHLEEN AUGUSTIN		1332 King St (Rear) Greenwich, CT 06831
BRUNSWICK SCHOOL, INC		100 Maher Avenue, Greenwich, CT 06830
OLGA VALERIE COLLINS		1358 King St Greenwich, CT 06831
SUSAN V AND ANDRE DEDEKAM		1147 King St. Greenwich, CT 06831
FAIRVIEW COUNTRY CLUB		1241 King Street, Greenwich, CT 06831
GREENWICH KING ST. ASSOC.		280 Park Ave, 24th Fl. New York, NY 10017
GREENWICH WOODS LIMITED		25250 Rockside Rd, Bedford Hts, OH 44146
GREENWICH WOODS REALTY		1621 59th Street Brooklyn, NY 11204

HARVEST TIME ASSEMBLY OF	1338 King Street Greenwich, CT 06831
KIM GIL SEUNG & KIM YEAR	1368 King Street Greenwich, CT 06831
LAURELTON NURSING HOME	1188 King Street, Greenwich, CT 06831
MICHAEL J & VICTORIA MACK	1364 King Street, Greenwich, CT 06831
NEW KING STREET	205 Main St. PO Box 807 Chatham, NJ 07928
TRUSTEES OF CONVENT OF	1177 King Street, Greenwich, CT 06831
ALLENT T & WILLIAMS	1400 King Street, Greenwich, CT 06831
JOHN & LORMA W/S ZICCA	1356 King Street, Greenwich, CT 06831

3. Local News Media

LoHUD, 1133 Westchester Avenue, Suite N110, White Plains, NY 10604

4. Public Water Supplier

Westchester Joint Water Works, 1625 Mamaroneck Avenue, Mamaroneck, NY 10543

5. Other Persons

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Purchase NY 10577
Johanna_santarelli@yahoo.com

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Mitchel Benerofe
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New King Holding LLC (10 New King Street)
10 New King Street, Suite 209
North Castle (White Plains), NY 10604
mib@benefores.com

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Swiss Re America (US) Holding Corporation
C/O Thomas Wolfe, Esq
1200 Main Street, Suite 800
Kansas City, MO 64105
Thomas_Wolfe@swissre.com

Swiss Re America
175 King Street
Armonk, NY 10504

Cynthia Garcia, NYCDEP Supervisor
SEQRA Coordination Section
465 Columbus Avenue
Valhalla, NY 10595
cgarcia@dep.nyc.gov

6. School Administrators

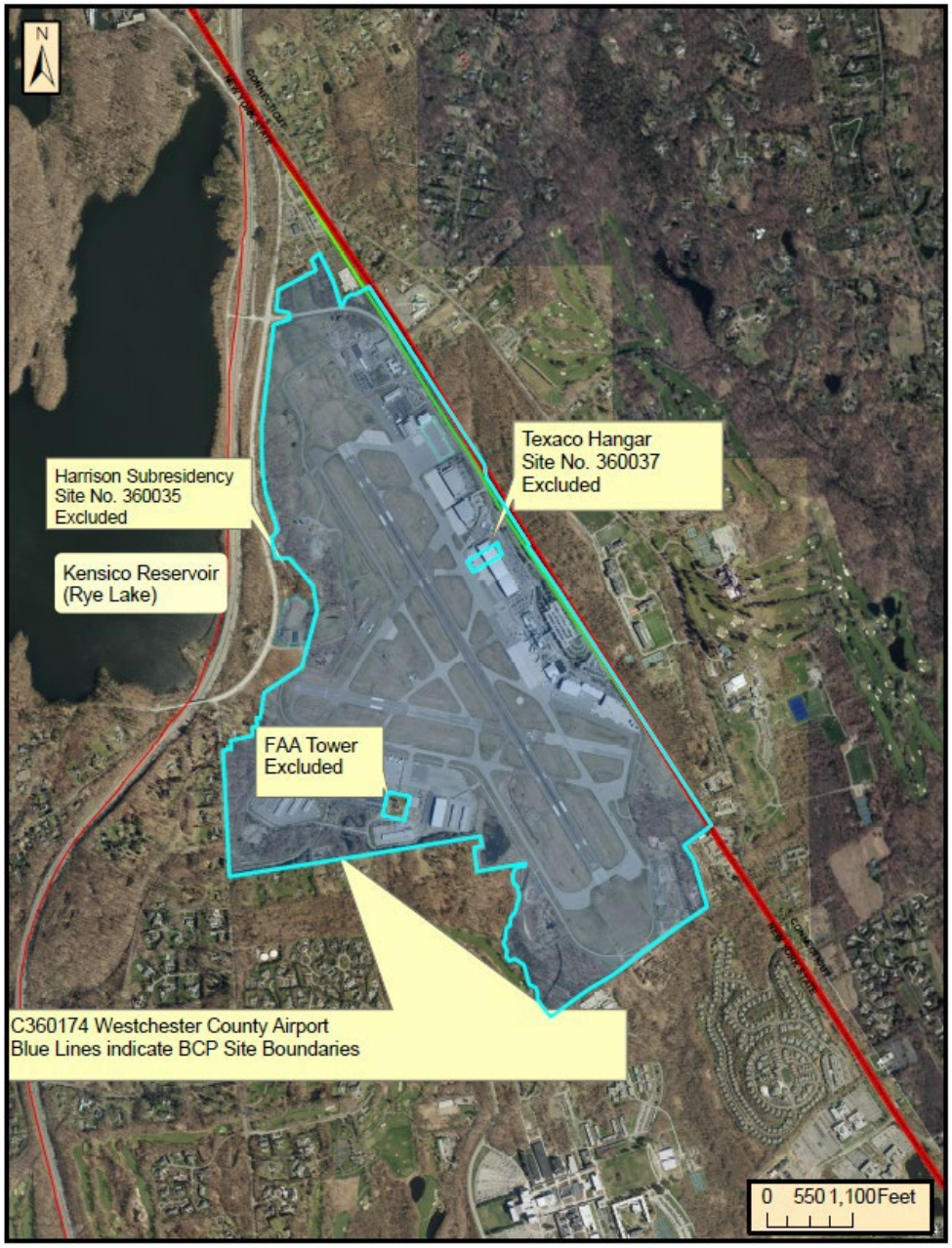
Thomas Phillip, Headmaster, The Brunswick School
1275 King Street, Greenwich, CT 06831.

Linda Kuck, Executive Director, Cerebral Palsy of Westchester
1186 King Street, Rye Brook, NY 10573.

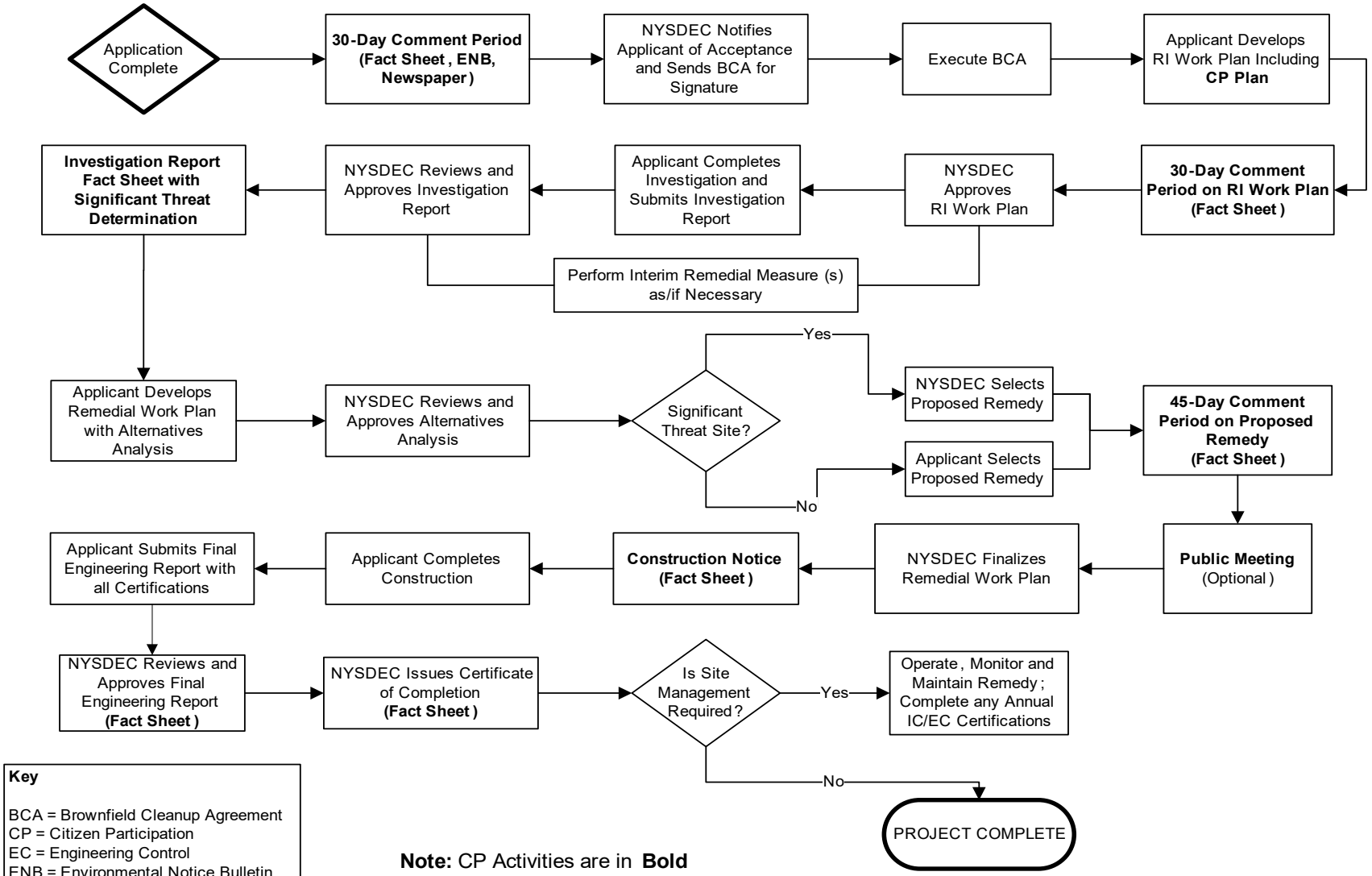
7. Document Repository

Westchester County Airport Environmental Department
Main Terminal, Suite 202
240 Airport Rd White Plains, NY 10604

Appendix C - Site Location Map



Appendix D– Brownfield Cleanup Program Process



Key

BCA = Brownfield Cleanup Agreement
CP = Citizen Participation
EC = Engineering Control
ENB = Environmental Notice Bulletin
IC = Institutional Control
RI = Remedial Investigation

Note: CP Activities are in **Bold**

Division of Environmental Remediation

Remedial Programs
Scoping Sheet for Major Issues of Public Concern

Instructions

This Scoping Sheet assesses major issues of public concern; impacts of the site and its remedial program on the community; community interest in the site; information the public needs; and information needed from the public.

The information generated helps to plan and conduct required citizen participation (CP) activities, and to choose and conduct additional CP activities, if appropriate. The scoping sheet can be revisited and updated as appropriate during the site's remedial process to more effectively implement the site's CP program.

Note: Use the information as an aid to prepare and update the Major Issues of Public Concern section of the site CP Plan.

General Instructions

- When to prepare: During preparation of the CP Plan for the site. It can be revisited and updated anytime during the site remedial process.
- Fill in site name and other information as appropriate.
- The Scoping Sheet may be prepared by DEC or a remedial party, but must be reviewed and approved by the DER site project manager or his/her designee.

Instructions for Numbered Parts

Consider the bulleted issues and questions below and any others that may be unique or appropriate to the site and the community to help complete the five Parts of this Scoping Sheet. Identify the issue stakeholders in Parts 1 through 3 and adjust the site's contact list accordingly.

Part 1. List Major Issues of Public Concern and Information the Community Wants.

- Is our health being impacted? (e.g., Are there problems with our drinking water or air? Are you going to test our water, yards, sumps, basements? Have health studies been done?)
- There are odors in the neighborhood. Do they come from the site and are they hazardous?
- Are there restrictions on what we may do (e.g., Can our children play outside? Can we garden? Must we avoid certain areas? Can we recreate (fish, hunt, hike, etc. on/around the site?)
- How and when were the site's contamination problems created?
- What contaminants are of concern and why? How will you look for contamination and find out where it is going? What is the schedule for doing that?
- The site is affecting our property values!
- How can we get more information (e.g., who are the project contacts?)
- How will we be kept informed and involved during the site remedial process?
- Who has been contacted in the community about site remedial activities?
- What has been done to this point? What happens next and when?

- The site is going to be cleaned up for restricted use. What does that mean? We don't want redevelopment on a "dirty" site.

Part 2. List Important Information Needed From the Community, if Applicable.

- Can the community supplement knowledge about past/current uses of the site?
- Does the community have knowledge that the site may be significantly impacting nearby people, properties, natural resources, etc.?
- Are activities currently taking place at the site or at nearby properties that may need to be restricted?
- Who may be interested or affected by the site that has not yet been identified?
- Are there unique community characteristics that could affect how information is exchanged?
- Does the community and/or individuals have any concerns they want monitored?
- Does the community have information about other sources in the area for the contamination?

Part 3. List Major Issues and Information That Need to be Communicated to the Community.

- Specific site investigation or remediation activities currently underway, or that will begin in the near future.
- The process and general schedule to investigate, remediate and, if applicable, redevelop the site.
- Current understanding about the site contamination and effects, if any, on public health and the environment.
- Site impacts on the community and any restrictions on the public's use of the site and/or nearby properties.
- Planned CP activities, their schedule, and how they relate to the site's remedial process.
- Ways for the community to obtain/provide information (document repositories, contacts, etc.).

Part 4. Community Characteristics

a. - e. Obtain information from local officials, property owners and residents, site reports, site visits, "windshield surveys," other staff, etc.

f. Has the affected community experienced other **significant** present or past environmental problems unrelated to this site? Such experiences could significantly affect public concerns and perspectives about the site; how the community will relate to project staff; the image and credibility of project staff within the community; and the ways in which project staff communicate with the community.

g. In its remedial programs, DER seeks to integrate, and be consistent with, environmental justice principles set forth in *DEC Commissioner Policy 29 on Environmental Justice* and *DER 23 – Citizen Participation Handbook for Remedial Programs*. Is the site and/or affected community wholly or partly in an Environmental Justice (EJ) Area? Use the Search feature on DEC's public web site for "environmental justice". DEC's EJ pages define an EJ area, and link to county maps to help determine if the site and/or community are in an EJ area.

h. Consider factors such as:

- Is English the primary language of the affected community? If not, provisions should be considered regarding public outreach activities such as fact sheets, meetings, door-to-door visits and other activities to ensure their effectiveness.
- The age demographics of the community. For example, is there a significant number of senior citizens in the community? It may be difficult for some to attend public meetings and use document repositories. This may suggest adopting more direct interaction with the community

with activities such as door-to-door visits, additional fact sheets, visits to community and church centers, nursing homes, etc.
- How do people travel about the community? Would most people drive to a public meeting or document repository? Is there adequate public transportation?

Part 5. Affected/Interested Public.

Individuals and organizations who need or want information and input can change during the site's remedial process. This need is influenced by real, potential, or perceived impacts of the site or the remedial process. Some people may want information and input throughout the remedial process. Others may participate only during specific remedial stages, or may only be interested in particular issues.

It is important to revisit this question when reviewing this scoping sheet. Knowing who is interested in the site – and the issues that are important to them – will help to select and conduct appropriate outreach activities, and to identify their timing and the information to be exchanged.

Check all affected/interested parties that apply to the site. **Note: Adjust the site's contact list appropriately.** The following are some ways to identify affected/interested parties:

- Tax maps of adjacent property owners
- Attendees at public meetings
- Telephone discussions
- Letters and e-mails to DER, the remedial party, and other agencies
- Political jurisdictions and boundaries
- Media coverage
- Current/proposed uses of site and/or nearby properties (recreational, commercial, industrial)
- Discussions with community organizations: grass roots organizations, local environmental groups, environmental justice groups, churches, and neighborhood advisory groups

Division of Environmental Remediation

Remedial Programs
Scoping Sheet for Major Issues of Public Concern (see instructions)

Site Name: Westchester County Airport

Site Number: C360174

Site Address and County: 240 Airport Road, West Harrison Westchester County, New York

Remedial Party(ies): Westchester County

Note: For Parts 1. – 3. the individuals, groups, organizations, businesses, and units of government identified should be added to the site contact list as appropriate.

Part 1. List major issues of public concern and information the community wants. Identify individuals, groups, organizations, businesses and/or units of government related to the issue(s) and information needs. **Use this information as an aid to prepare or update the Major Issues of Public Concern section of the site Citizen Participation Plan.**

- *The on-site PFAS contamination identified at the Airport and its impact to groundwater and how impacted groundwater and surface water could impact Rye Lake. Although not detectable levels of PFAS have been identified in Rye lake, nor is it expected such will be encountered in the future. The Airport is performing IRMs to mitigate PFAS impacts on and offsite. The Site was used for fire training that historically AFFF containing PFAS inside the Rye Lake Drainage Basin. PFAS chemical have entered the groundwater and moved into surface water that have migrated offsite. IRM activities are underway to reduce PFAS at the source where fire training activities that used AFFF were performed in an effort to reduce PFAS concentrations. No other contaminants appear to be present of concern to the environment.*

- *For more information about the Site or BCP program, contact the NYSDEC or NYSDOH Project Manager. Contact information is provided in Appendix A.*

- *Adjacent property occupants and owners will be kept informed about the progress of the Site cleanup activities. Periodic fact sheets will be sent by mail and/or electronically and published on Westchester County's Website.*

- *Local, state, and federal officials will be contacted about the Site remediation activities.*

Findings Site Characterization will used to prepare Remedial Investigation Workplan, and from there it will be determined what if any addition remediation activities are necessary, in addition to the IRM currently being initiated at the Airport.

How were these issues and/or information needs identified?

These issues were identified based on a review of historic records of the Site, WSP semi-annual reports from 2017 to 2020, findings identified from Site Characterization activities conducted by First Environment in 2019 to 2021. A description of the proposed project was also presented in the BCP Application. The Site Characterization information was recently submitted and not all that information could have been provided in the Application.

Part 2. List important information needed **from** the community, if applicable. Identify individuals, groups, organizations, businesses and/or units of government related to the information needed.

- *Adjacent property owners and occupants will be informed of the Site remediation through fact sheet updates activities and can reach out to the Site's NYSDEC and/or NYSDOH Project Manager to obtain additional information.*

- *Nearby uses do not need to be restricted, since measures will be implemented during all investigation and remediation activities to protect the health safety of the public and local community. These measures include, monitoring for dust that may be emanating from the Site and implementing controls such as spraying water or minimizing subsurface disturbance. Odors are not expected during but if encountered will be mitigated by the use of protective foams and/or covering any contaminated areas of disturbance or stockpiles with tarps.*

How were these information needs identified?

Research was completed to identify the names and contact information of adjacent property owners and local government officials. These individuals are included in the Site Contact List under Appendix B.

Part 3. List major issues and information that need to be communicated **to** the community. Identify individuals, groups, organizations, businesses and/or units of government related to the issue(s) and/or information.

- A Site Characterization report was completed in April 2021 and groundwater, soil, sediment and surface water sampling conducted in 2019-2020. The findings of the 2019 and some of the 2020 investigation and groundwater monitoring was utilized to support the BCP Application. Currently IRM are under way and will continue in 2021 to remediate the area of greatest concern. It is expected Remedial Investigation Workplan will be prepared and submitted to the NYSDEC under the BCP and once approved implemented in 2021-2022.

- Document repositories, where copies of all documents regarding the investigation and remediation of the Site are available to the public, have been established at on Westchester County's website as shown below:

Documents related to the site can be accessed online here:
https://airport.westchestergov.com/about-us/environmental-management-system

For documents related to the current clean-up efforts - https://airport.westchestergov.com/about-us/environmental-management-system/pfas-program.

How were these issues and/or information needs identified?

These needs were identified by summarizing the project timeline and a review of the information included in the BCP Application. Any contact information or details pertaining to the Site that have changed since issuance of the BCP Application, have been updated in this CP Plan or described in greater detail in the Site Characterization report submitted in March 2021 to the NYSDEC. In addition, First Environment submitted April 2021 OF-7 Storm Sewer Workplan.

Part 4. Identify the following characteristics of the affected/interested community. This knowledge will help to identify and understand issues and information important to the community, and ways to effectively develop and implement the site citizen participation plan (mark all that apply):

a. Land use/zoning at and around site:

☒ **Residential** ☐ **Agricultural** ☐ **Recreational**
☒ **Commercial** ☐ **Industrial**

b. Residential type around site:
☐ **Urban** ☒ **Suburban** ☒ **Rural**

c. Population density around site:
☐ **High** ☐ **Medium** ☒ **Low**

d. Water supply of nearby residences:
☒ **Public** ☒ **Private Wells** ☐ **Mixed**

e. Is part or all of the water supply of the affected/interested community currently impacted by the site?
☐ **Yes** ☒ **No**

Provide details if appropriate:
Click here to enter text.

f. Other environmental issues significantly impacted/impacting the affected community?
☐ **Yes** ☒ **No**

Provide details if appropriate:
Click here to enter text.

g. Is the site and/or the affected/interested community wholly or partly in an Environmental Justice Area?
☐ **Yes** ☒ **No**

h. Special considerations:
☐ **Language** ☐ **Age** ☐ **Transportation** ☐ **Other**

Explain any marked categories in **h:**
Click here to enter text.

Part 5. The site contact list must include, at a minimum, the individuals, groups, and organizations identified in Part 2. of the Citizen Participation Plan under 'Site Contact List'. Are *other* individuals, groups, organizations, and units of government affected by, or interested in, the site, or its remedial program? (Mark and identify all that apply, then adjust the site contact list as appropriate.)

☐ **Non-Adjacent Residents/Property Owners:** Click here to enter text.

☒ **Local Officials:** Click here to enter text.

☒ **Media:** Click here to enter text.

☐ **Business/Commercial Interests:** Click here to enter text.

☐ **Labor Group(s)/Employees:** Click here to enter text.

☐ **Indian Nation:** Click here to enter text.

☒ **Citizens/Community Group(s):** (need a list from Robert F. John N.)

☐ **Environmental Justice Group(s):** Click here to enter text.

☒ **Environmental Group(s):** (need a list from Robert F. John N.)

☐ **Civic Group(s):** Click here to enter text.

☐ **Recreational Group(s):** Click here to enter text.

☐ **Other(s):** Click here to enter text.

Prepared/Updated By: First Environment, Inc. **Date:** 5/7/2021

ReviewedApproved By: Click here to enter text. **Date:** Click here to enter text.

APPENDIX K

GREEN AND SUSTAINABLE REMEDIATION EVALUATION



Known for excellence.
Built on trust.

GEOTECHNICAL
ENVIRONMENTAL
ECOLOGICAL
WATER
CONSTRUCTION MANAGEMENT

GZA GeoEnvironmental of New York
104 West 29th Street
10th Floor
New York, NY 10001
T: 212.594.8140
F: 212.279.8180
www.gza.com

July 16, 2025
41.0162892.01

Westchester Joint Water Works
1625 Mamaroneck Avenue
Mamaroneck, NY 10543

Green and Sustainable Remediation Evaluation
Rye Lake Water Filtration Plant
Westchester County, NY
NYSDEC BCP Site Number – C360174

Sites remediated under the oversight of the New York State Department of Environmental Conservation (NYSDEC) are required to incorporate the concepts of green remediation into all phases of the cleanup process in accordance with DER-31. Green remediation is defined as "*the practice of considering all environmental effects of remedy implementation and incorporating options to minimize the environmental footprint of cleanup actions*." GZA GeoEnvironmental of New York (GZA) has completed the following evaluation of the remedial activities associated with the *Interim Remedial Measures Work Plan* (IRMWP) for the site located at 240 Airport Road in West Harrison, New York utilizing the SiteWise™ tool for green and sustainable remediation tracking and information provided by the site owner, Westchester Joint Water Works, and its subcontractors.

BACKGROUND

The Site is located on a 13.48-acre parcel in the southwest corner of the 693-acre Westchester County Airport property. The Site consists of wooded and undeveloped areas and is bounded by Tower Road to the south, Westchester County Airport to the east, Purchase Street to the west, and wooded area to the north. The Site is located within 1,000 feet of Rye Lake to the west. A stream that drains north into Rye Lake is located east of the Site along a fence that separates the Site from Westchester County (White Plains) Airport.

WJWW is planning to construct a new 30- to 40-million gallons per day (MGD) water treatment plant (WFP). Water is currently pumped from Rye Lake (north of the Site) through a water main along Purchase Street (west of the Site) to water tanks about 800 feet south of Tower Road (south of the Site). The construction would redirect the water from Rye Lake to the new filtration plant through a new water main that will enter the Site from Purchase Street.

The IRMs under the *IRMWP* include a Supplemental Remedial Investigation (SRI) to assess the site contamination, excavation for the WFP construction, and dewatering during construction. The full scope of the dewatering system to be used during construction is in the planning phase and will be provided under a separate cover for its evaluation. Descriptions of the general activities performed under these actions as well as the parameters used for the SiteWise™ evaluation are presented in the following sections.

FOOTPRINT ANALYSIS

SUPPLEMENTAL REMEDIAL INVESTIGATION

An SRI will be conducted at the site to better assess the contaminant condition in soil, groundwater, and soil vapor. During the SRI, 6 soil borings will be installed to between 5 and 15 feet with two borings being converted into permanent monitoring wells. Additionally, 3 soil vapor points will be installed to 4 feet for soil vapor sampling. Soil sampling will include 6 samples being collected for PFAS analysis. Groundwater monitoring will include purging and sampling 5 wells for VOC, SVOC, 1,4-Dioxane, and PFAS analysis. Soil vapor sampling will include 3 samples analyzed for VOCs.

The assumptions utilized in the analysis of the SRI include the following:

- A direct-push technology drill rig utilized for 1 hour per boring.
- 2 permanent monitoring wells with 2-inch PVC construction, 10-foot screen interval, and sand filter pack.
- A crew of 2 drillers and 2 environmental samplers will complete the investigation survey in 2 working days.
- Drill cuttings and purged groundwater will be drummed and disposed of offsite.
- One blower for ventilation and two community air monitoring stations (CAMP) will operate during all working hours for demolition.
- 100 gallons of water per day will be utilized for dust suppression measures during demolition.
- Drilling and vacuum extraction subcontractors will commute utilizing trucks from a maximum distance of 50 miles.
- All groundwater and soil disposal will be to offsite facilities within 50 miles.
- All labor for the SRI activities will be traveling from within 25 miles of the Site.

Excavation

The footprint for the WFP and supporting infrastructure excavations will result in approximately 38,000 CY of soil excavated for offsite disposal. Excavation depths will range from less than 5 feet to 35 feet below grade. Endpoint samples are not anticipated to be collected during this excavation.

The assumptions utilized in the analysis of the excavation include the following:

- 38,000 cubic yards of soil excavated for offsite disposal
- End-point samples will not be collected.
- Up to 1,000 cubic yards of stone and 500 cubic yards of topsoil will be imported.
- The excavation will be completed by a crew of 5 laborers, 2 equipment operators, 1 construction manager, and 1 GZA engineer over 60 working days.
- All soil will be excavated and loaded out with an excavator and wheeled loader.
- DNAPL recovery wells will be installed over two days with GZA oversight.

- Soil will be recycled or reused offsite.

EVALUATION RESULTS SUMMARY

SiteWise™ breaks down the impacts of project into the following categories:

- Greenhouse gas emissions (metric tons)
- Total energy used (million british thermal units)
- Water consumption (gallons)
- Electricity Usage (megawatt hours)
- Onsite nitrous oxide emissions (metric tons)
- Onsite sulfur oxide emissions (metric tons)
- Onsite particulate matter less than 10 microns (PM10) emissions (metric tons)
- Total nitrous oxide emissions (metric tons)
- Total sulfur oxide emissions (metric tons)
- Total PM10 emissions (metric tons)
- Accident fatality risk
- Accident injury risk

The project impacts for these categories are provided for project wide evaluation as well as individual components of the project. The detailed summary of the evaluation, including the breakdown of overall project and individual component environmental footprints, is provided in **Attachment 1**. A climate screening checklist of the remedy is also provided as **Attachment 2**.

Overall, the project related impacts included a total of 3117.33 metric tons of greenhouse gas emissions, 7,633.49 million British thermal units of energy consumed, 110.07 gallons of water consumed, and 0.00013 megawatt hours of electricity used. An estimated 6.1 percent of the electricity consumed onsite was from a renewable source, such as solar or wind.

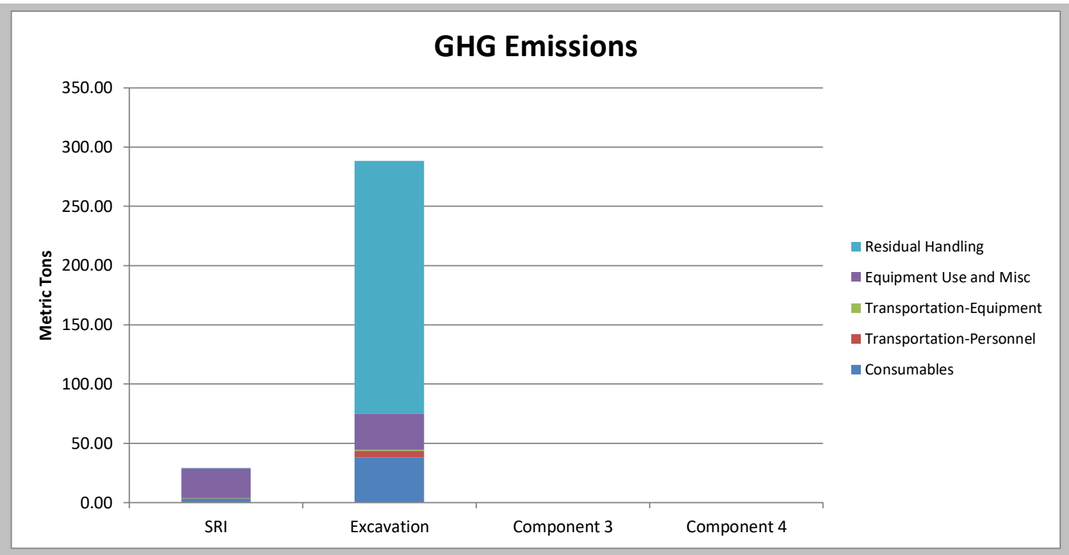
Attachment 1 – SiteWise™ Footprint Analysis

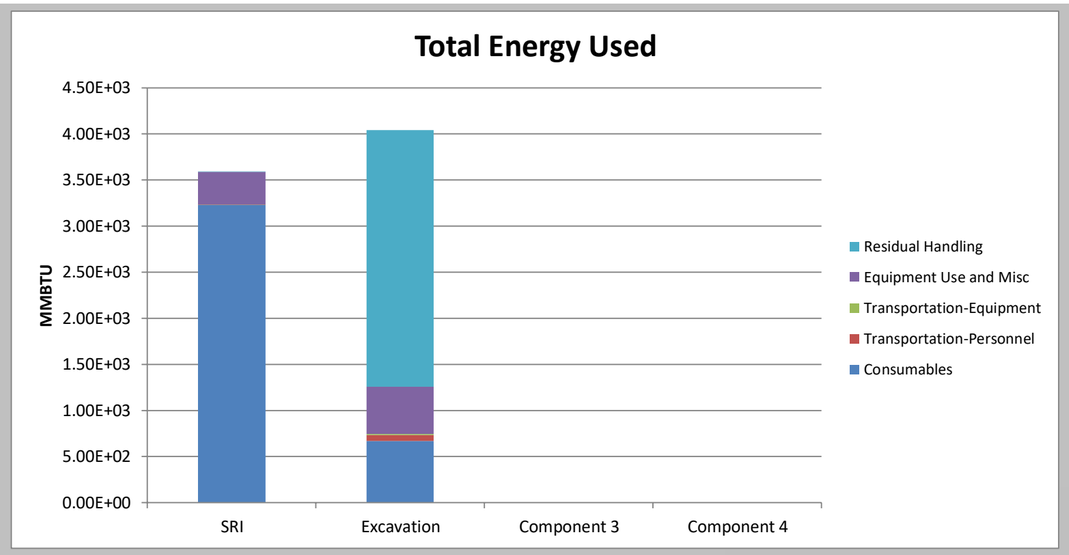
Overall Project Summary

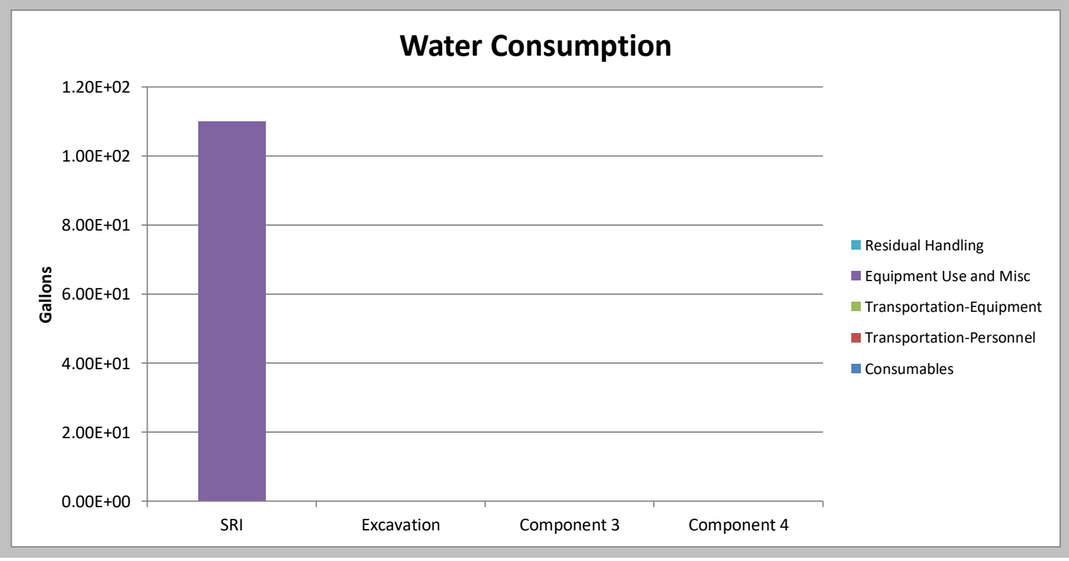
Sustainable Remediation - Environmental Footprint Summary
Rye Lake WFP

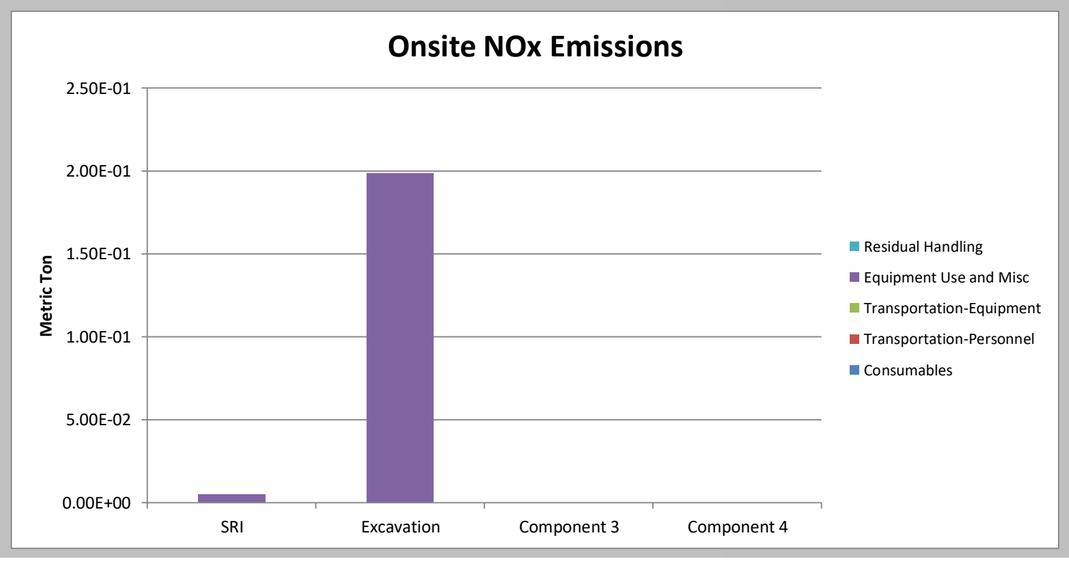
Phase	Activities	GHG Emissions	Total Energy Used	Water Consumption	Electricity Usage	Onsite NOx Emissions	Onsite SOx Emissions	Onsite PM10 Emissions	Total NOx Emissions	Total SOx Emissions	Total PM10 Emissions	Accident Risk Fatality	Accident Risk Injury
		metric ton	MMBTU	gallons	MWH	metric ton	metric ton	metric ton	metric ton	metric ton	metric ton		
SRI	Consumables	3.63	3.2E+03	NA	NA	NA	NA	NA	6.3E-03	8.6E-03	1.1E-03	NA	NA
	Transportation-Personnel	0.06	7.4E-01	NA	NA	NA	NA	NA	1.8E-05	7.6E-07	3.7E-06	2.0E-06	1.6E-04
	Transportation-Equipment	0.07	1.0E+00	NA	NA	NA	NA	NA	2.4E-05	9.7E-07	1.9E-06	3.6E-07	2.9E-05
	Equipment Use and Misc	25.07	3.6E+02	1.1E+02	1.3E-04	5.3E-03	5.4E-04	4.8E-04	1.2E-01	8.9E-02	1.0E-02	3.4E-06	1.4E-03
	Residual Handling	0.13	1.8E+00	NA	NA	0.0E+00	0.0E+00	0.0E+00	5.3E-05	8.4E-06	4.0E-05	7.1E-07	5.7E-05
	Sub-Total	28.96	3.59E+03	1.10E+02	1.33E-04	5.29E-03	5.40E-04	4.76E-04	1.30E-01	9.76E-02	1.15E-02	6.50E-06	1.62E-03
Excavation	Consumables	38.13	6.7E+02	NA	NA	NA	NA	NA	1.5E-01	1.9E-01	7.6E-02	NA	NA
	Transportation-Personnel	5.32	6.7E+01	NA	NA	NA	NA	NA	2.0E-03	6.9E-05	3.6E-04	1.9E-04	1.5E-02
	Transportation-Equipment	0.87	1.1E+01	NA	NA	NA	NA	NA	2.7E-04	4.8E-06	7.3E-06	1.6E-06	1.3E-04
	Equipment Use and Misc	30.82	5.1E+02	0.0E+00	0.0E+00	2.0E-01	4.7E-02	4.4E-03	2.2E-01	6.0E-02	7.8E-03	2.9E-04	8.5E-02
	Residual Handling	213.23	2.8E+03	NA	NA	0.0E+00	0.0E+00	0.0E+00	6.7E-02	1.2E-03	1.8E-03	6.9E-04	5.6E-02
	Sub-Total	288.37	4.04E+03	0.00E+00	0.00E+00	1.99E-01	4.75E-02	4.35E-03	4.44E-01	2.52E-01	8.62E-02	1.17E-03	1.56E-01
Component 3	Consumables	0.00	0.0E+00	NA	NA	NA	NA	NA	0.0E+00	0.0E+00	0.0E+00	NA	NA
	Transportation-Personnel	0.00	0.0E+00	NA	NA	NA	NA	NA	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
	Transportation-Equipment	0.00	0.0E+00	NA	NA	NA	NA	NA	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
	Equipment Use and Misc	0.00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
	Residual Handling	0.00	0.0E+00	NA	NA	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
	Sub-Total	0.00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Component 4	Consumables	0.00	0.0E+00	NA	NA	NA	NA	NA	0.0E+00	0.0E+00	0.0E+00	NA	NA
	Transportation-Personnel	0.00	0.0E+00	NA	NA	NA	NA	NA	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
	Transportation-Equipment	0.00	0.0E+00	NA	NA	NA	NA	NA	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
	Equipment Use and Misc	0.00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
	Residual Handling	0.00	0.0E+00	NA	NA	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
	Sub-Total	0.00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total		**3.2E+02**	**7.6E+03**	**1.1E+02**	**1.3E-04**	**2.0E-01**	**4.8E-02**	**4.8E-03**	**5.7E-01**	**3.5E-01**	**9.8E-02**	**1.2E-03**	**1.6E-01**
		317.33	7633.49	110.07	0.00	0.20	0.05	0.00	0.57	0.35	0.10	0.00	0.16

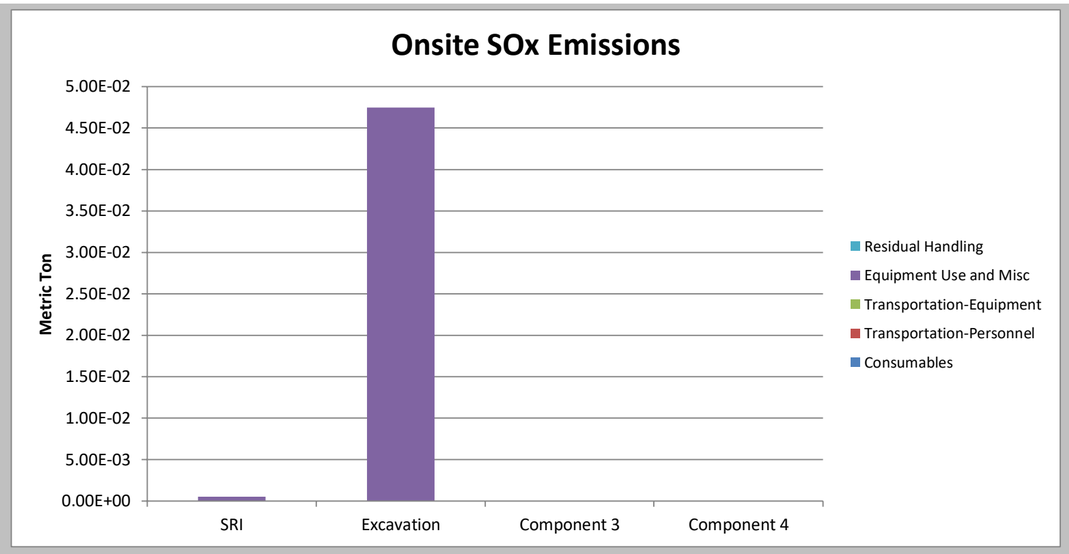
Remedial Alternative Phase	Non-Hazardous Waste Landfill Space	Hazardous Waste Landfill Space	Topsoil Consumption	Costing	Lost Hours - Injury	Percent electricity from renewable sources	Total Cost with Footprint Reduction
	tons	tons	cubic yards	$		%	
SRI	2.0E-01	0.0E+00	0.0E+00	0	1.3E-02	24.2%	**$0**
Excavation	0.0E+00	0.0E+00	5.0E+02	0	1.2E+00	0.0%	
Component 3	0.0E+00	0.0E+00	0.0E+00	0	0.0E+00	0.0%	
Component 4	0.0E+00	0.0E+00	0.0E+00	0	0.0E+00	0.0%	
Total	**2.0E-01**	**0.0E+00**	**5.0E+02**	**$0**	**1.3E+00**	**6.1%**	

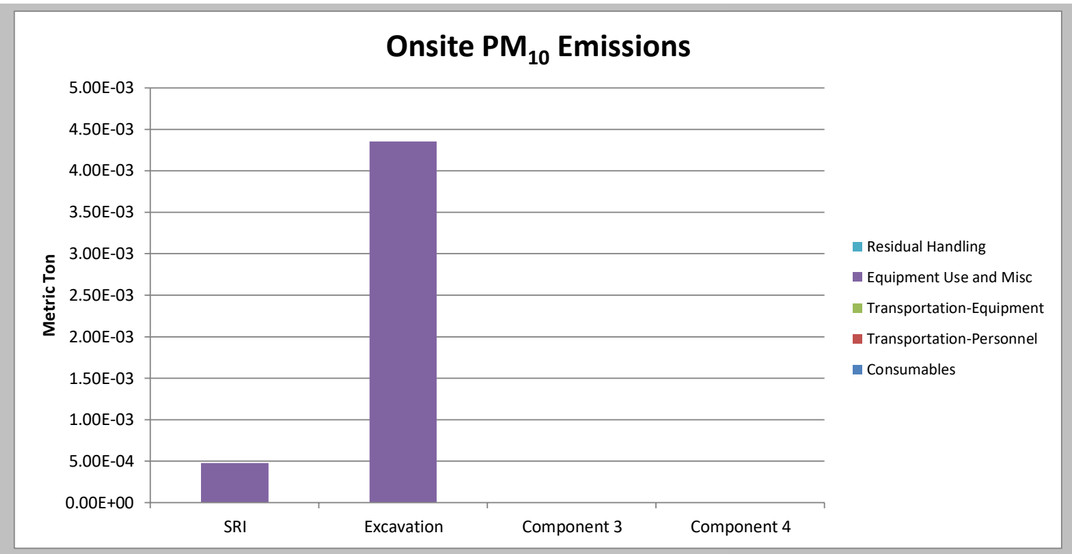

GHG Emissions
Metric Tons
350.00
300.00
250.00
200.00
150.00
100.00
50.00
0.00
SRI
Excavation
Component 3
Component 4
Residual Handling
Equipment Use and Misc
Transportation-Equipment
Transportation-Personnel
Consumables

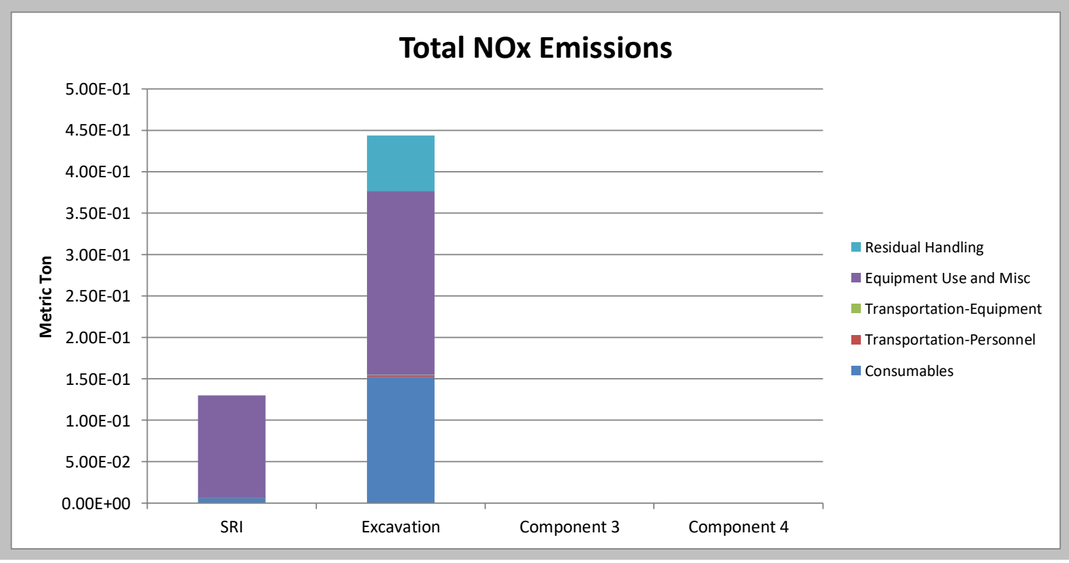

Total Energy Used
MMBTU
4.50E+03
4.00E+03
3.50E+03
3.00E+03
2.50E+03
2.00E+03
1.50E+03
1.00E+03
5.00E+02
0.00E+00
SRI
Excavation
Component 3
Component 4
Residual Handling
Equipment Use and Misc
Transportation-Equipment
Transportation-Personnel
Consumables

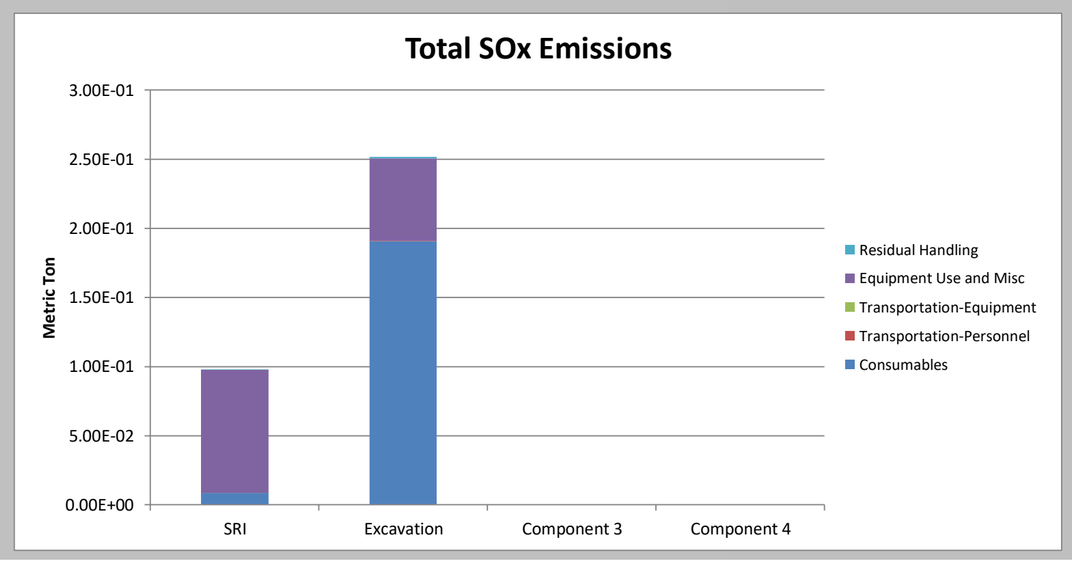

Water Consumption
Gallons
1.20E+02
1.00E+02
8.00E+01
6.00E+01
4.00E+01
2.00E+01
0.00E+00
SRI
Excavation
Component 3
Component 4
Residual Handling
Equipment Use and Misc
Transportation-Equipment
Transportation-Personnel
Consumables

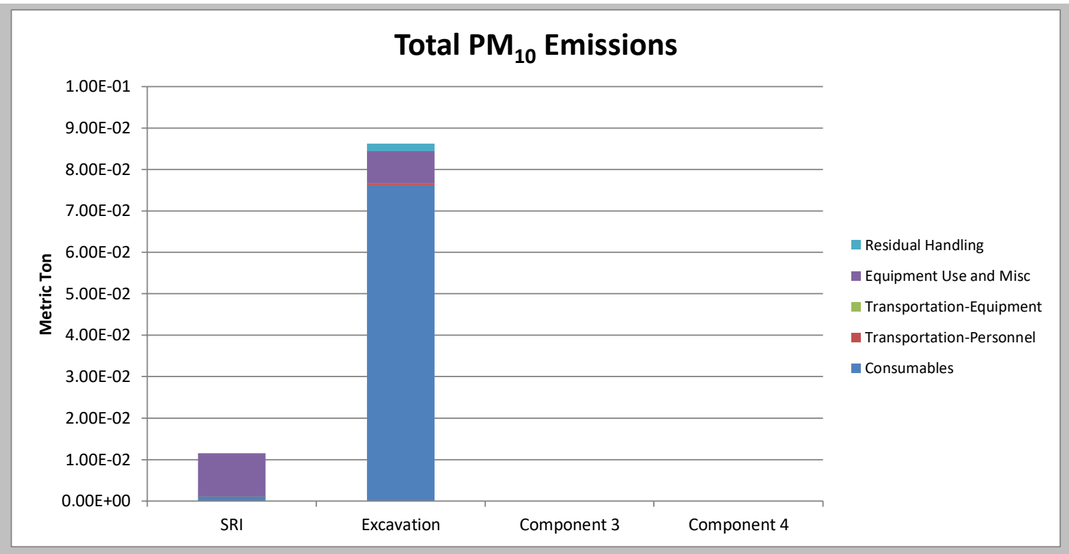

Onsite NOx Emissions
Metric Ton
2.50E-01
2.00E-01
1.50E-01
1.00E-01
5.00E-02
0.00E+00
SRI
Excavation
Component 3
Component 4
Residual Handling
Equipment Use and Misc
Transportation-Equipment
Transportation-Personnel
Consumables

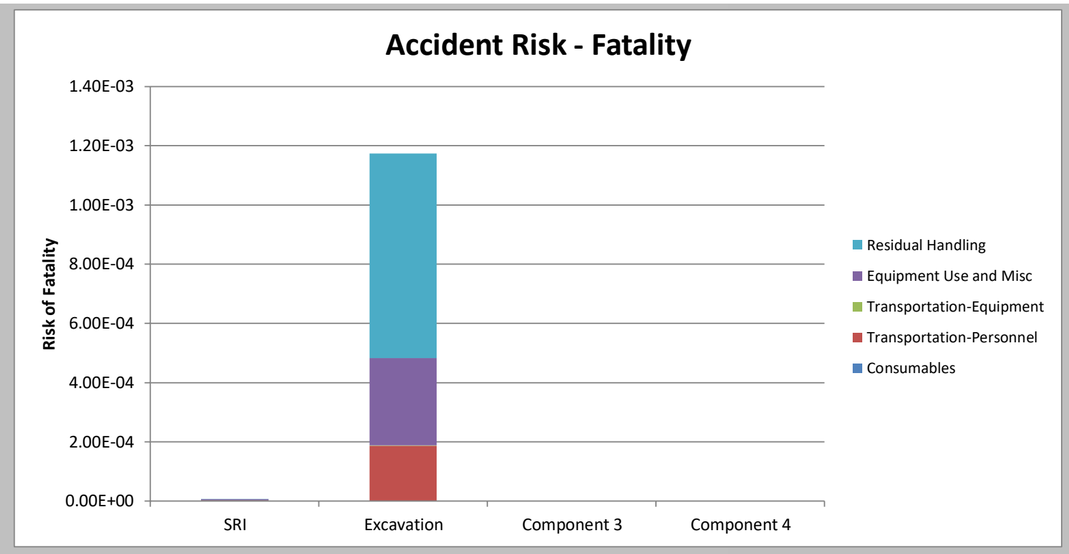

Onsite SOx Emissions
Metric Ton
5.00E-02
4.50E-02
4.00E-02
3.50E-02
3.00E-02
2.50E-02
2.00E-02
1.50E-02
1.00E-02
5.00E-03
0.00E+00
SRI
Excavation
Component 3
Component 4
Residual Handling
Equipment Use and Misc
Transportation-Equipment
Transportation-Personnel
Consumables

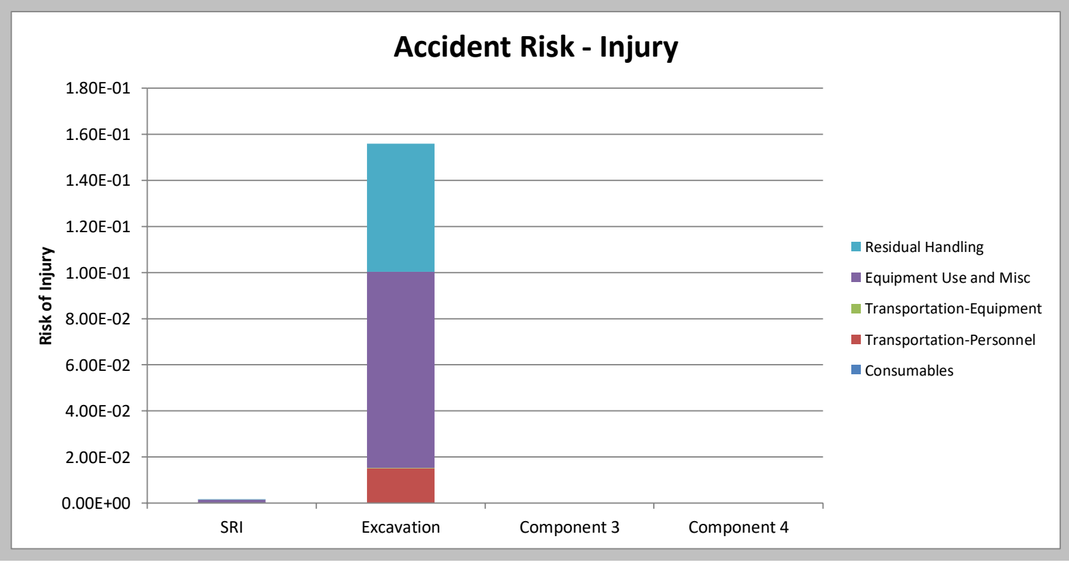

Onsite PM10 Emissions
Metric Ton
5.00E-03
4.50E-03
4.00E-03
3.50E-03
3.00E-03
2.50E-03
2.00E-03
1.50E-03
1.00E-03
5.00E-04
0.00E+00
SRI
Excavation
Component 3
Component 4
Residual Handling
Equipment Use and Misc
Transportation-Equipment
Transportation-Personnel
Consumables

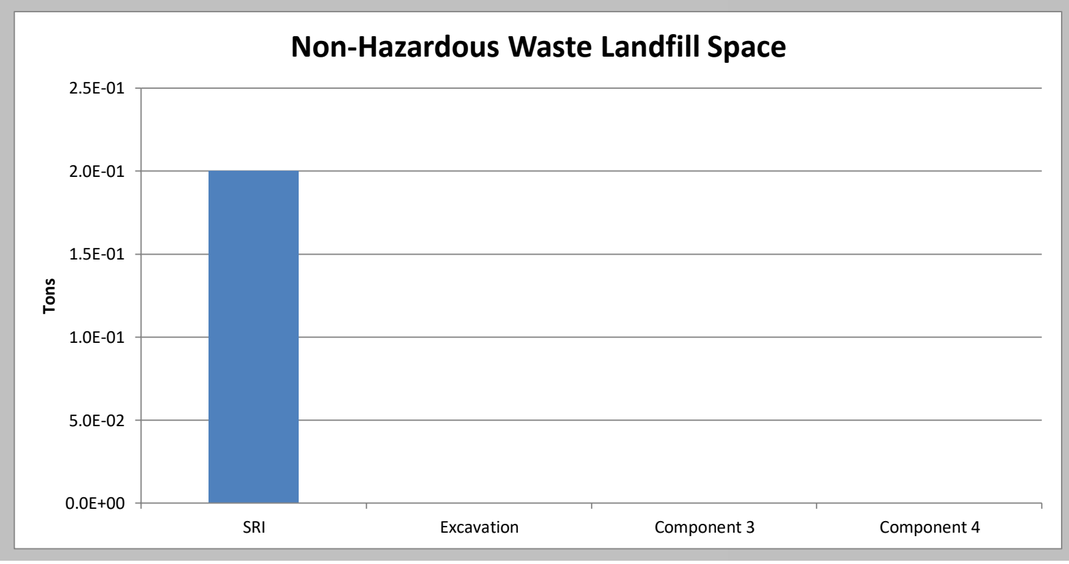

Total NOx Emissions
Metric Ton
5.00E-01
4.50E-01
4.00E-01
3.50E-01
3.00E-01
2.50E-01
2.00E-01
1.50E-01
1.00E-01
5.00E-02
0.00E+00
SRI
Excavation
Component 3
Component 4
Residual Handling
Equipment Use and Misc
Transportation-Equipment
Transportation-Personnel
Consumables

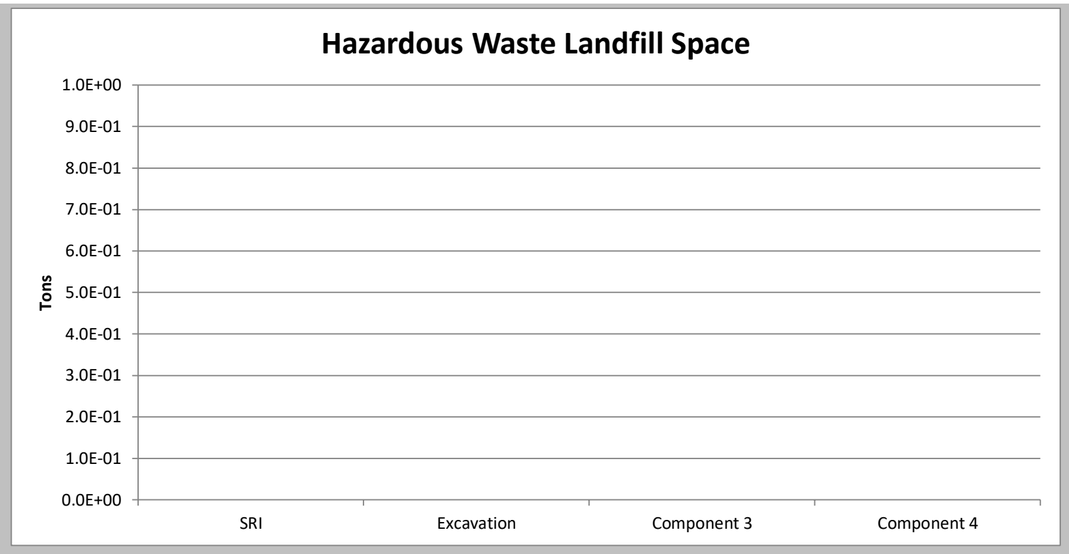

Total SOx Emissions
Metric Ton
3.00E-01
2.50E-01
2.00E-01
1.50E-01
1.00E-01
5.00E-02
0.00E+00
SRI
Excavation
Component 3
Component 4
Residual Handling
Equipment Use and Misc
Transportation-Equipment
Transportation-Personnel
Consumables

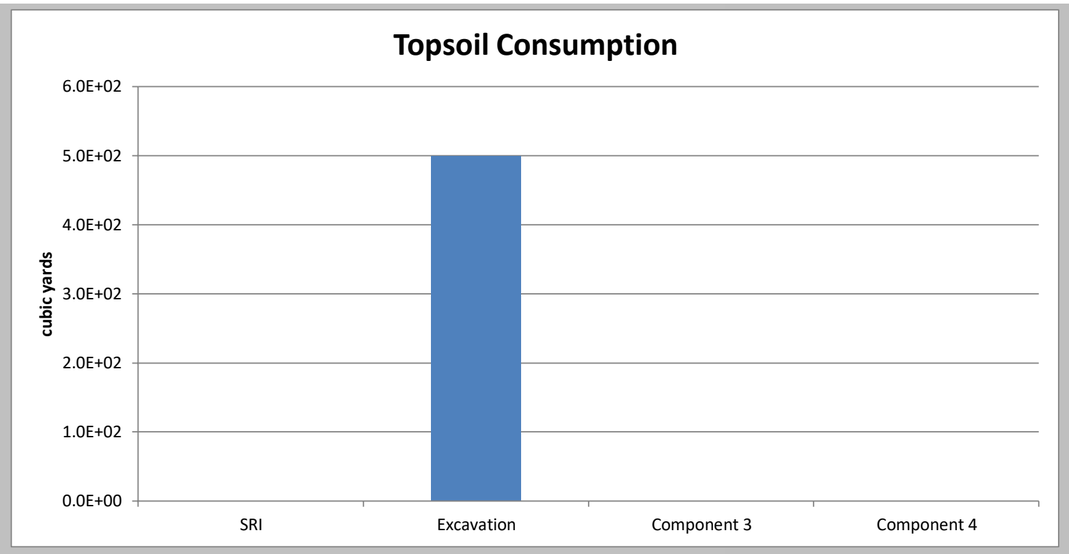

Total PM10 Emissions
Metric Ton
1.00E-01
9.00E-02
8.00E-02
7.00E-02
6.00E-02
5.00E-02
4.00E-02
3.00E-02
2.00E-02
1.00E-02
0.00E+00
SRI
Excavation
Component 3
Component 4
Residual Handling
Equipment Use and Misc
Transportation-Equipment
Transportation-Personnel
Consumables

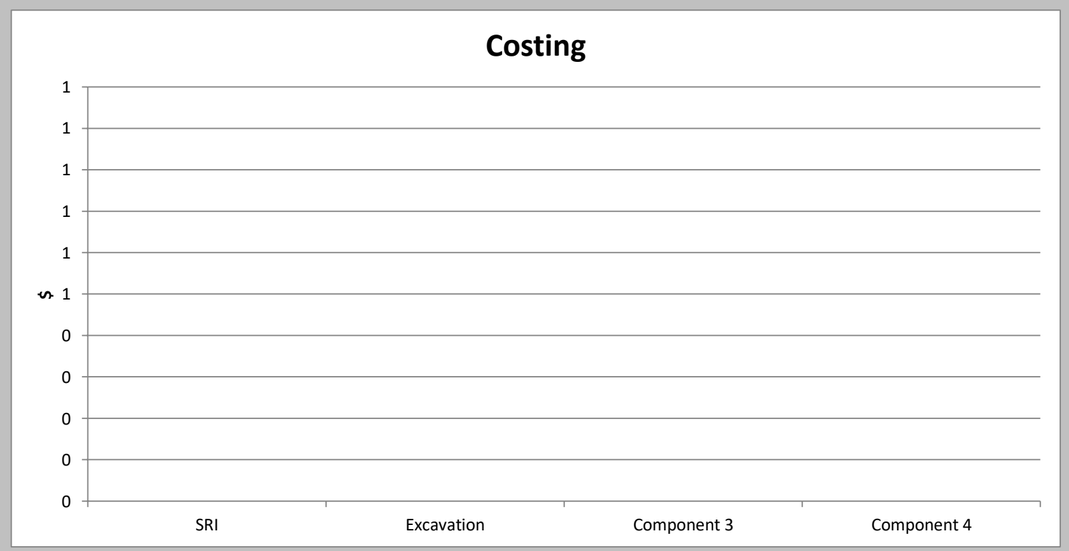

Accident Risk - Fatality
Risk of Fatality
1.40E-03
1.20E-03
1.00E-03
8.00E-04
6.00E-04
4.00E-04
2.00E-04
0.00E+00
SRI
Excavation
Component 3
Component 4
Residual Handling
Equipment Use and Misc
Transportation-Equipment
Transportation-Personnel
Consumables

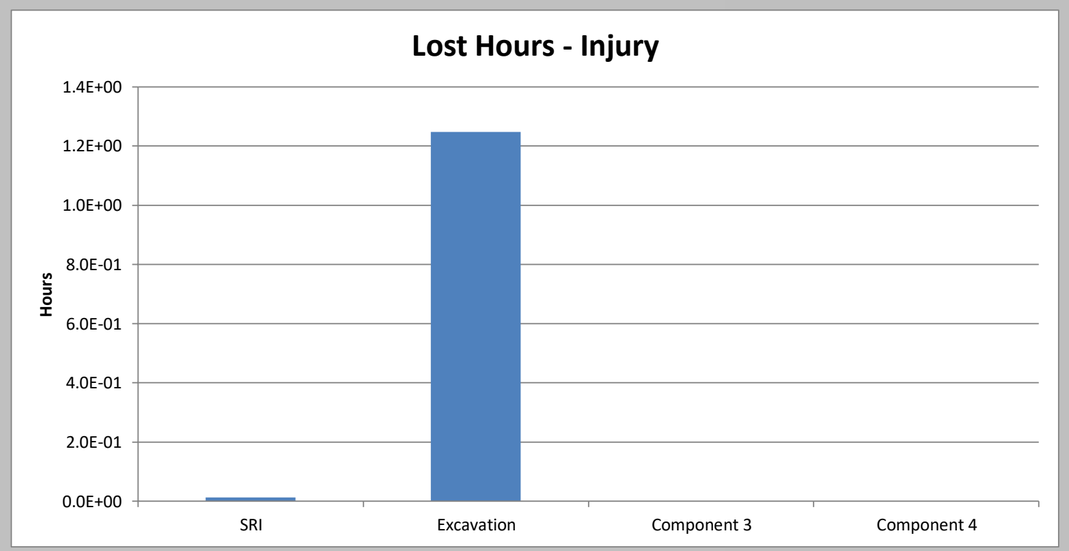

Accident Risk - Injury
Risk of Injury
1.80E-01
1.60E-01
1.40E-01
1.20E-01
1.00E-01
8.00E-02
6.00E-02
4.00E-02
2.00E-02
0.00E+00
SRI
Excavation
Component 3
Component 4
Residual Handling
Equipment Use and Misc
Transportation-Equipment
Transportation-Personnel
Consumables


Non-Hazardous Waste Landfill Space
Tons
2.5E-01
2.0E-01
1.5E-01
1.0E-01
5.0E-02
0.0E+00
SRI
Excavation
Component 3
Component 4


Hazardous Waste Landfill Space
Tons
1.0E+00
9.0E-01
8.0E-01
7.0E-01
6.0E-01
5.0E-01
4.0E-01
3.0E-01
2.0E-01
1.0E-01
0.0E+00
SRI
Excavation
Component 3
Component 4


Topsoil Consumption
cubic yards
6.0E+02
5.0E+02
4.0E+02
3.0E+02
2.0E+02
1.0E+02
0.0E+00
SRI
Excavation
Component 3
Component 4


Costing
$
1
1
1
1
1
1
0
0
0
0
0
SRI
Excavation
Component 3
Component 4


Lost Hours - Injury
Hours
1.4E+00
1.2E+00
1.0E+00
8.0E-01
6.0E-01
4.0E-01
2.0E-01
0.0E+00
SRI
Excavation
Component 3
Component 4

Component 1 – Supplemental Remedial Investigation

Sustainable Remediation Summary - SRI

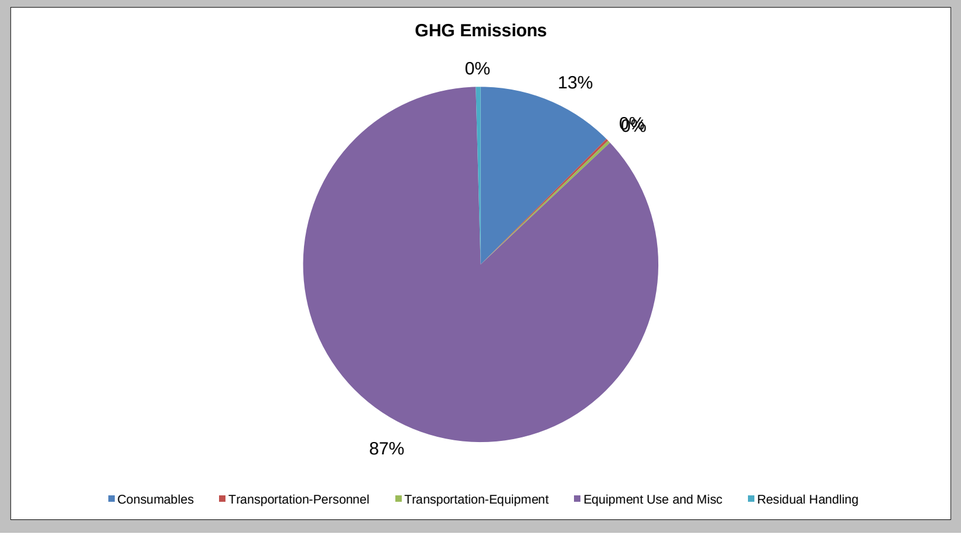
Activities	GHG Emissions	Percent Total	Total Energy Used	Percent Total	Water Consumption	Percent Total	Electricity Usage	Percent Total	Onsite NOx Emissions	Percent Total	Onsite SOx Emissions	Percent Total	Onsite PM10 Emissions	Percent Total	Total NOx Emissions	Percent Total	Total SOx Emissions	Percent Total	Total PM10 Emissions	Percent Total	Accident Risk Fatality	Percent Total	Accident Risk Injury	Percent Total
	metric ton	%	MMBTU	%	gallons	%	MWH	%	metric ton	%	metric ton	%	metric ton	%	metric ton	%	metric ton	%	metric ton	%		%		%
Consumables	3.63	12.5	3.2E+03	89.9	NA	NA	NA	NA	NA	-	NA	-	NA	-	6.3E-03	4.9	8.6E-03	8.8	1.1E-03	9.6	NA	NA	NA	NA
Transportation-Personnel	0.06	0.2	7.4E-01	0.0	NA	NA	NA	NA	NA	-	NA	-	NA	-	1.8E-05	0.0	7.6E-07	0.0	3.7E-06	0.0	2.0E-06	31.4	1.6E-04	10.2
Transportation-Equipment	0.07	0.3	1.0E+00	0.0	NA	NA	NA	NA	NA	-	NA	-	NA	-	2.4E-05	0.0	9.7E-07	0.0	1.9E-06	0.0	3.6E-07	5.5	2.9E-05	1.8
Equipment Use and Misc	25.07	86.6	3.6E+02	10.0	1.1E+02	100.0	1.3E-04	100.0	5.3E-03	100.0	5.4E-04	100.0	4.8E-04	100.0	1.2E-01	95.0	8.9E-02	91.2	1.0E-02	90.0	3.4E-06	52.2	1.4E-03	84.5
Residual Handling	0.13	0.4	1.8E+00	0.0	NA	NA	NA	NA	0.0E+00	-	0.0E+00	-	0.0E+00	-	5.3E-05	0.0	8.4E-06	0.0	4.0E-05	0.3	7.1E-07	10.9	5.7E-05	3.5
Total	28.96	100.0	3.59E+03	100.0	1.10E+02	100.0	1.33E-04	100.0	5.29E-03	100.0	5.40E-04	100.0	4.76E-04	100.0	1.30E-01	100.0	9.76E-02	100.0	1.15E-02	100.0	6.50E-06	100.0	1.62E-03	100.0

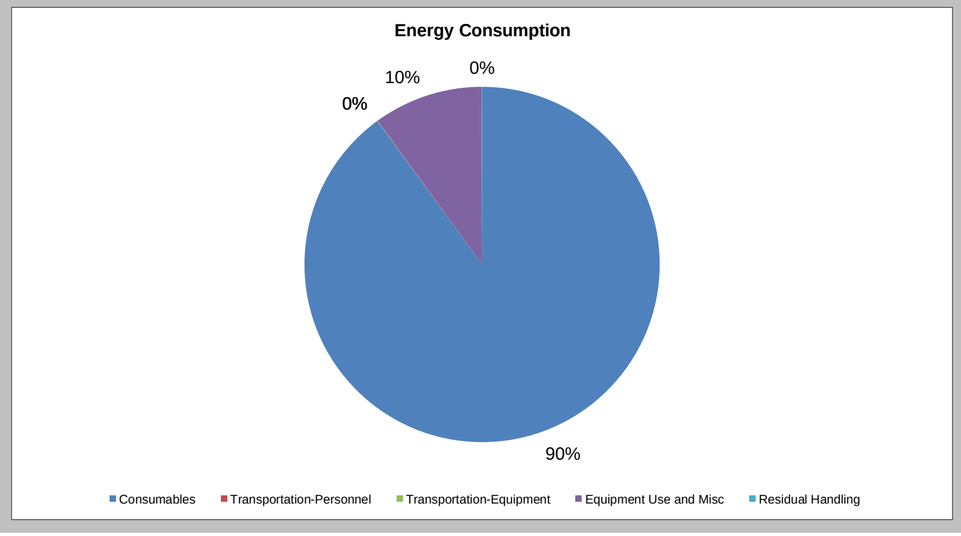
Additional Sustainability Metrics

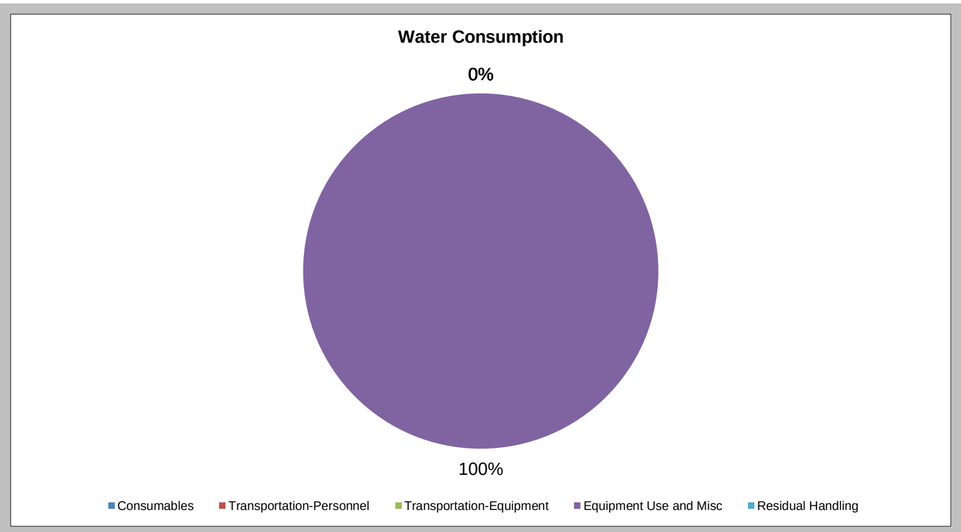
Non-Hazardous Waste Landfill Space (tons)	0.2
Hazardous Waste Landfill Space (tons)	0.0
Topsoil Consumption (yd^3)	0.0
Cost of Phase ($)	0.0
Lost Hours - Injury	0.0

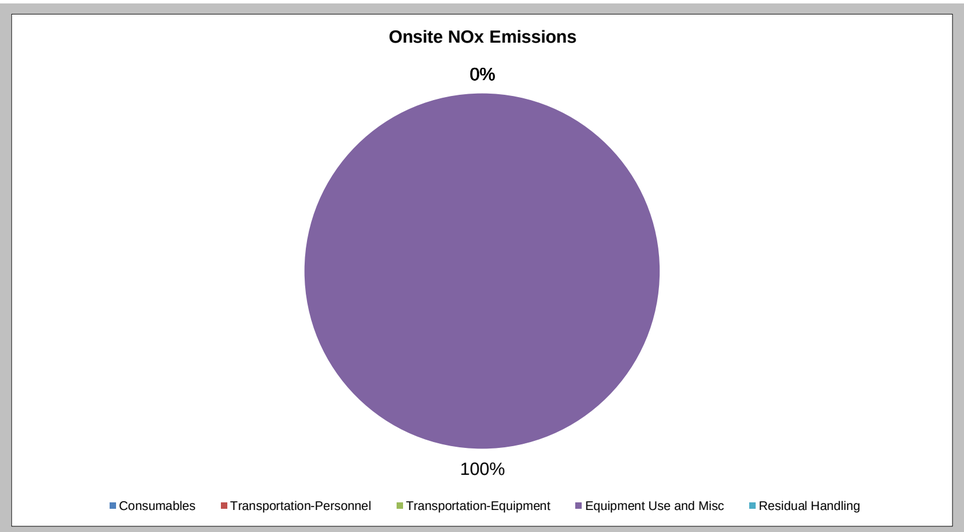
Footprint Reduction

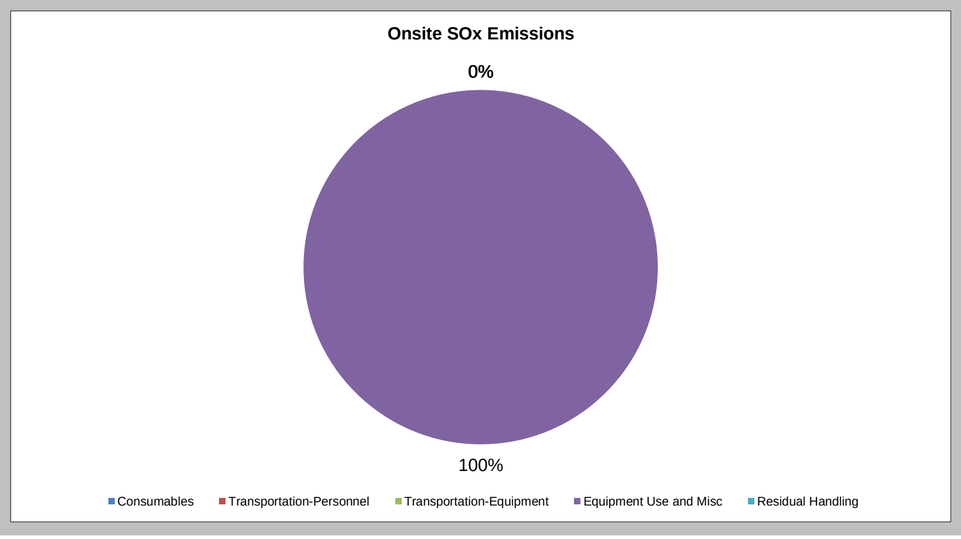
Total electricity replacement (MWh)	0.00E+00
Total electricity replacement (mmBtu)	0.00E+00
Percent electricity from renewable sources (%)	24.2%
Landfill gas reduction (metric ton CO_2 e)	0.00E+00
GHG emissions (metric ton CO2 e)	0.00E+00
NOx emissions (metric ton)	0.00E+00
SOx emissions (metric ton)	0.00E+00
PM10 emissions (metric ton)	0.00E+00

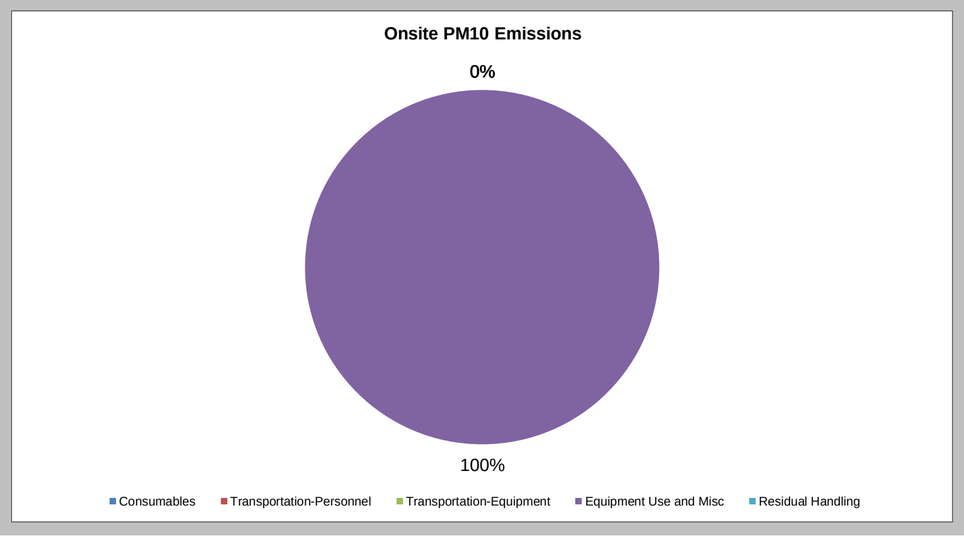


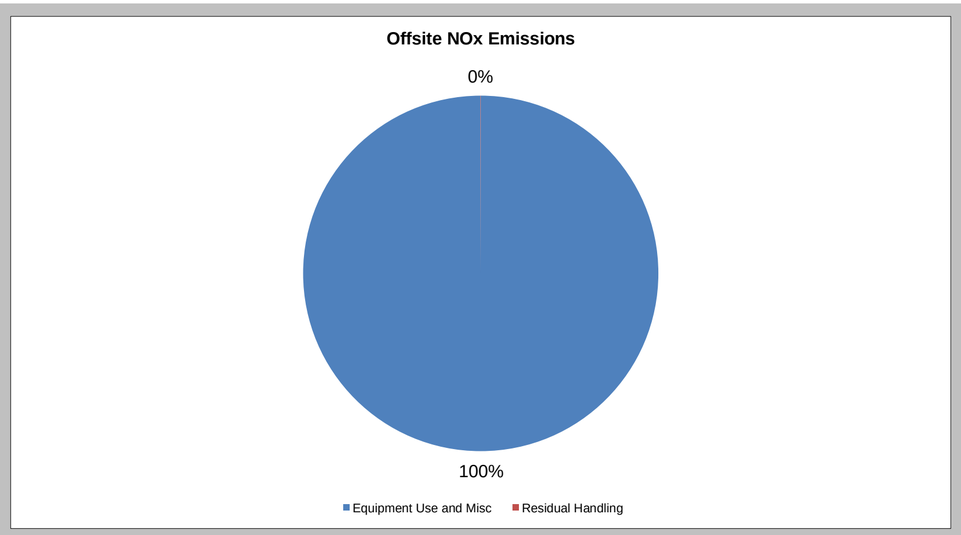


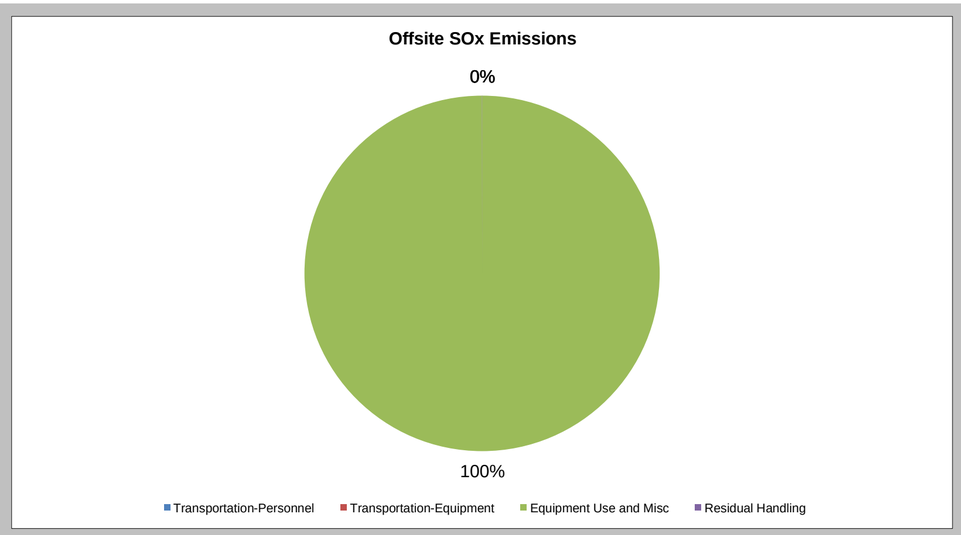

Water Consumption
0%
100%
Consumables
Transportation-Personnel
Transportation-Equipment
Equipment Use and Misc
Residual Handling

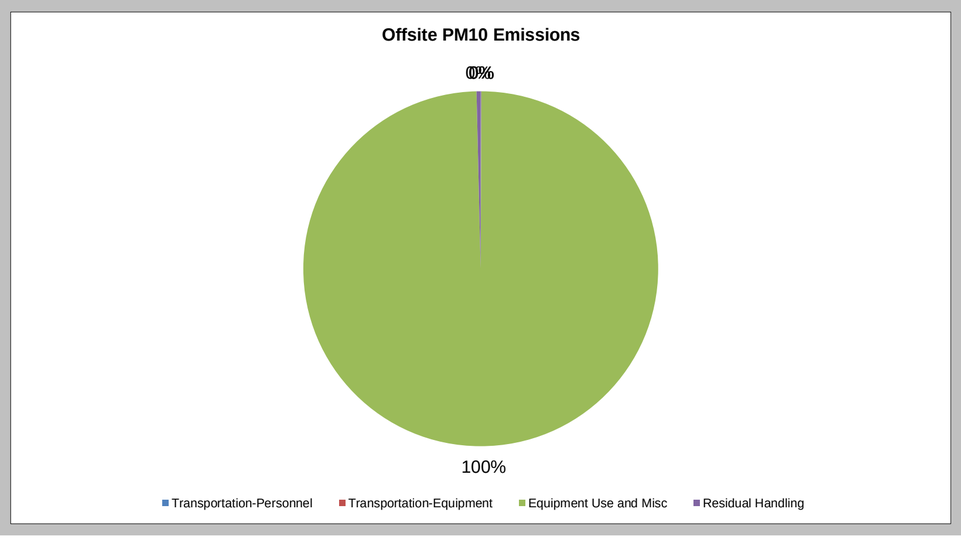

Onsite NOx Emissions
0%
100%
Consumables
Transportation-Personnel
Transportation-Equipment
Equipment Use and Misc
Residual Handling

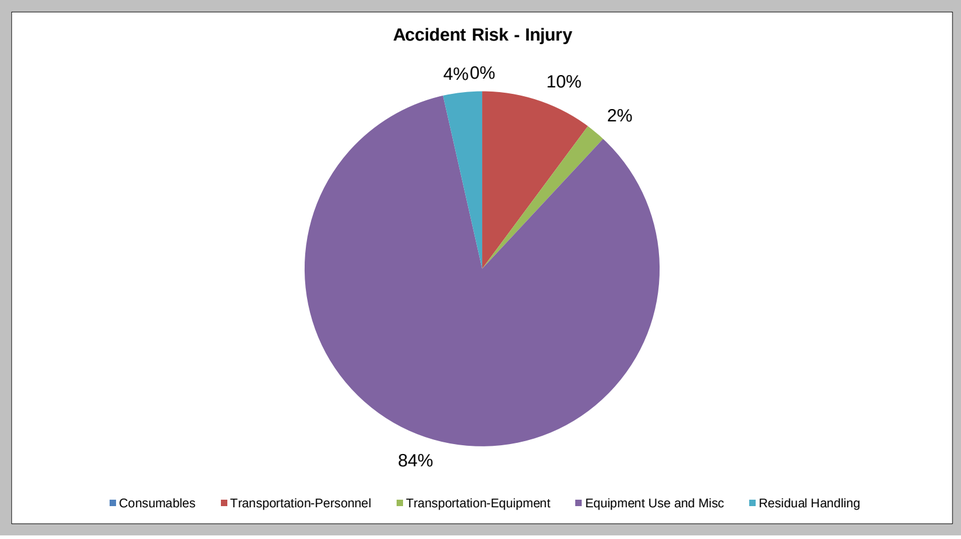

Onsite SOx Emissions
0%
100%
Consumables
Transportation-Personnel
Transportation-Equipment
Equipment Use and Misc
Residual Handling

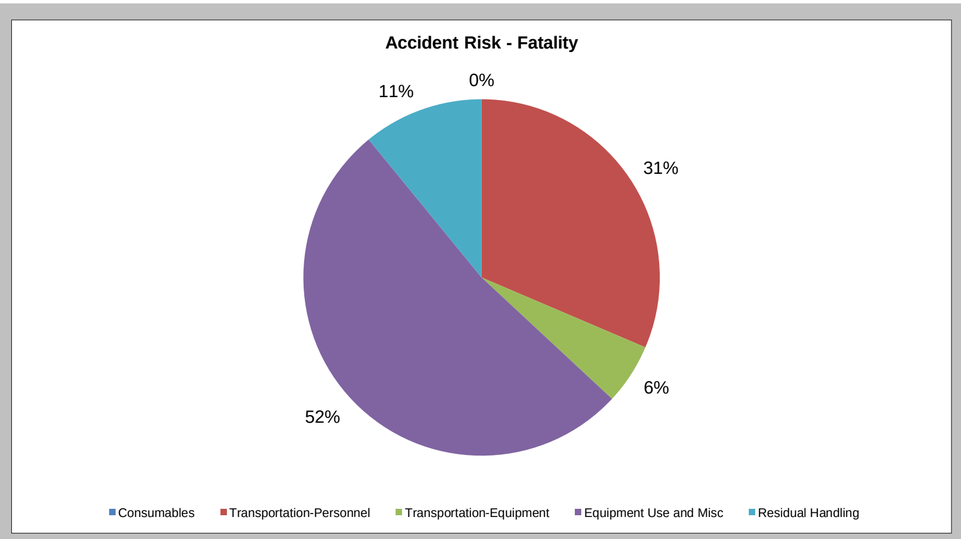

Onsite PM10 Emissions
0%
100%
Consumables
Transportation-Personnel
Transportation-Equipment
Equipment Use and Misc
Residual Handling


Offsite NOx Emissions
0%
100%
Equipment Use and Misc
Residual Handling


Offsite SOx Emissions
0%
100%
Transportation-Personnel
Transportation-Equipment
Equipment Use and Misc
Residual Handling


Offsite PM10 Emissions
100%
Transportation-Personnel
Transportation-Equipment
Equipment Use and Misc
Residual Handling


Accident Risk - Injury
4%
0%
10%
2%
84%
Consumables
Transportation-Personnel
Transportation-Equipment
Equipment Use and Misc
Residual Handling


Accident Risk - Fatality
0%
11%
31%
6%
52%
Consumables
Transportation-Personnel
Transportation-Equipment
Equipment Use and Misc
Residual Handling

Component 2 – Excavation

Sustainable Remediation Summary - Excavation

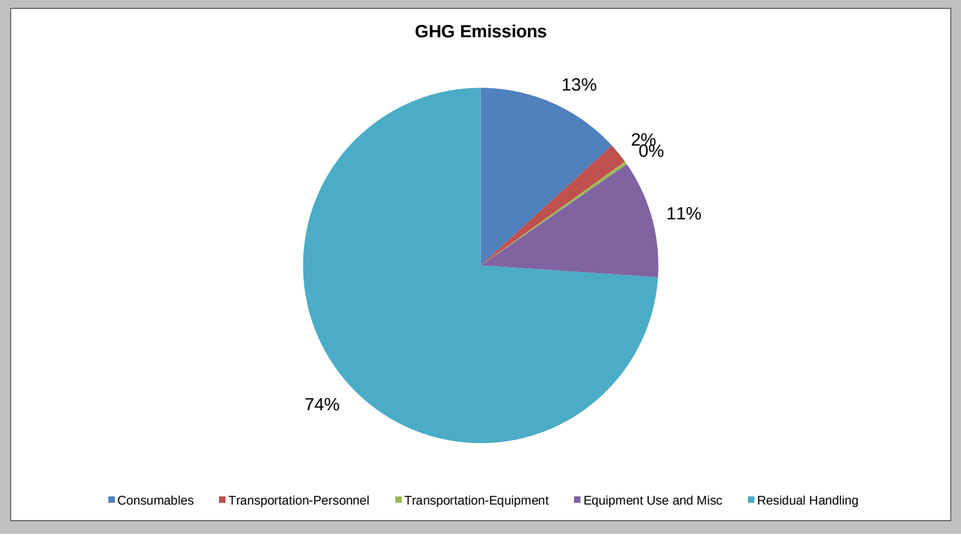
Activities	GHG Emissions	Percent Total	Total Energy Used	Percent Total	Water Consumption	Percent Total	Electricity Usage	Percent Total	Onsite NOx Emissions	Percent Total	Onsite SOx Emissions	Percent Total	Onsite PM10 Emissions	Percent Total	Total NOx Emissions	Percent Total	Total SOx Emissions	Percent Total	Total PM10 Emissions	Percent Total	Accident Risk Fatality	Percent Total	Accident Risk Injury	Percent Total
	metric ton	%	MMBTU	%	gallons	%	MWH	%	metric ton	%	metric ton	%	metric ton	%	metric ton	%	metric ton	%	metric ton	%		%		%
Consumables	38.13	13.2	6.7E+02	16.5	NA	NA	NA	NA	NA	-	NA	-	NA	-	1.5E-01	34.4	1.9E-01	75.8	7.6E-02	88.4	NA	NA	NA	NA
Transportation-Personnel	5.32	1.8	6.7E+01	1.7	NA	NA	NA	NA	NA	-	NA	-	NA	-	2.0E-03	0.4	6.9E-05	0.0	3.6E-04	0.4	1.9E-04	15.9	1.5E-02	9.7
Transportation-Equipment	0.87	0.3	1.1E+01	0.3	NA	NA	NA	NA	NA	-	NA	-	NA	-	2.7E-04	0.1	4.8E-06	0.0	7.3E-06	0.0	1.6E-06	0.1	1.3E-04	0.1
Equipment Use and Misc	30.82	10.7	5.1E+02	12.7	0.0E+00	-	0.0E+00	0.0	2.0E-01	100.0	4.7E-02	100.0	4.4E-03	100.0	2.2E-01	50.0	6.0E-02	23.7	7.8E-03	9.1	2.9E-04	25.0	8.5E-02	54.6
Residual Handling	213.23	73.9	2.8E+03	68.8	NA	NA	NA	NA	0.0E+00	-	0.0E+00	-	0.0E+00	-	6.7E-02	15.1	1.2E-03	0.5	1.8E-03	2.1	6.9E-04	58.9	5.6E-02	35.7
Total	288.37	100.0	4.04E+03	100.0	0.00E+00	100.0	0.00E+00	0.0	1.99E-01	100.0	4.75E-02	100.0	4.35E-03	100.0	4.44E-01	100.0	2.52E-01	100.0	8.62E-02	100.0	1.17E-03	100.0	1.56E-01	100.0

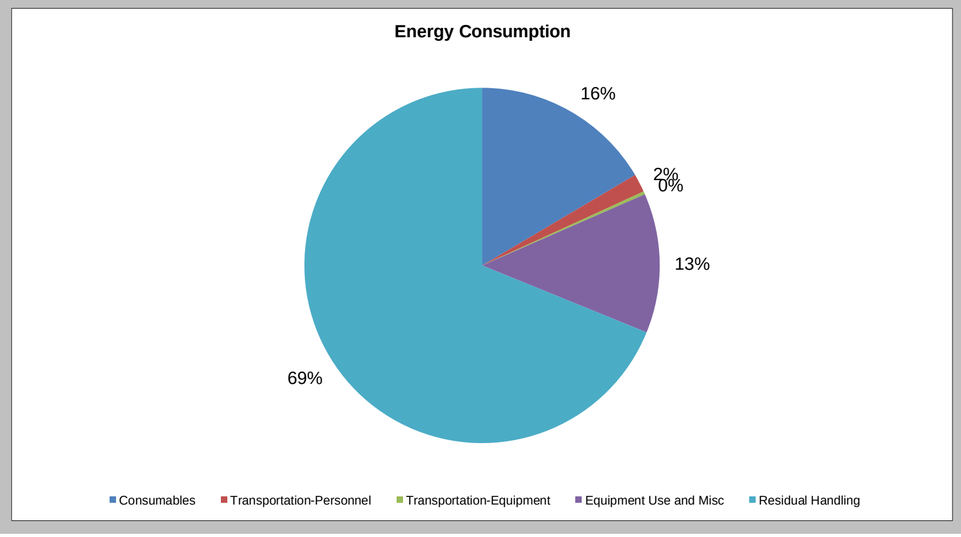
Additional Sustainability Metrics

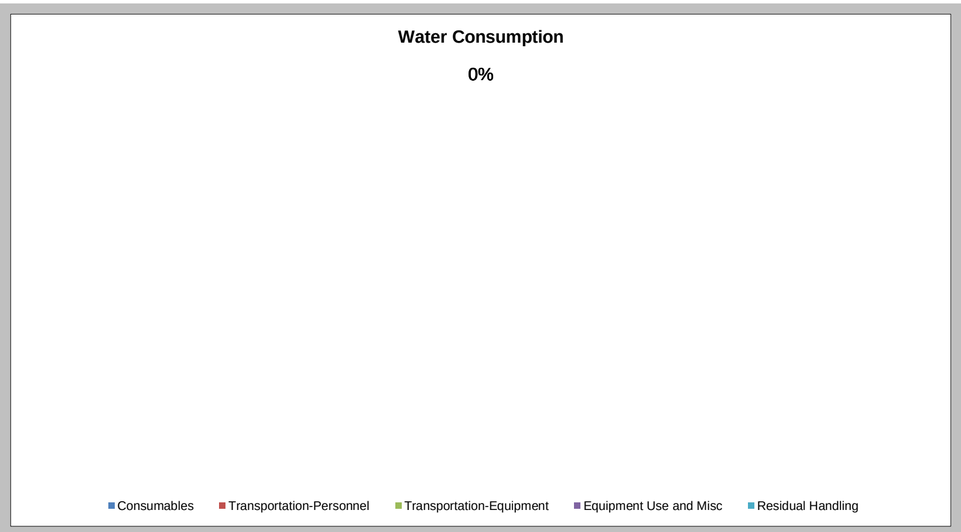
Non-Hazardous Waste Landfill Space (tons)	0.0
Hazardous Waste Landfill Space (tons)	0.0
Topsoil Consumption (yd^3)	500.0
Cost of Phase ($)	0.0
Lost Hours - Injury	1.2

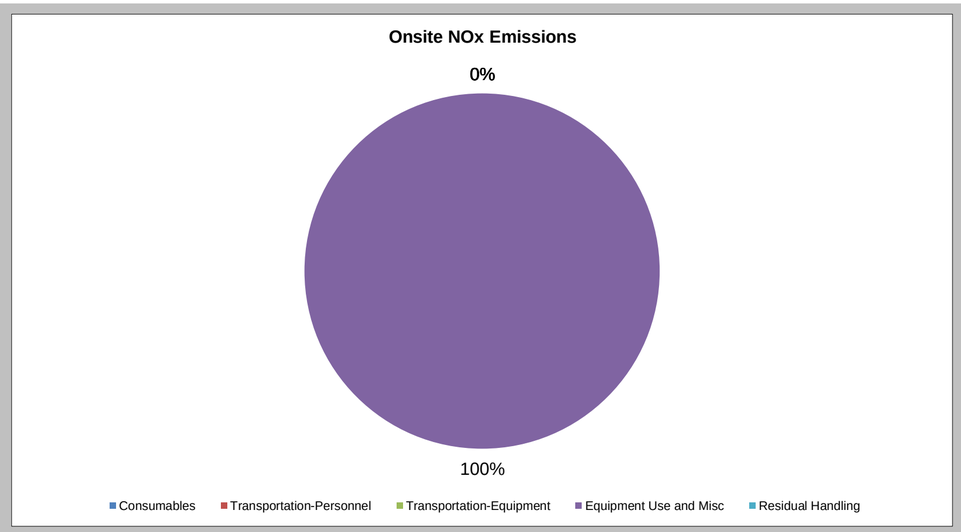
Footprint Reduction

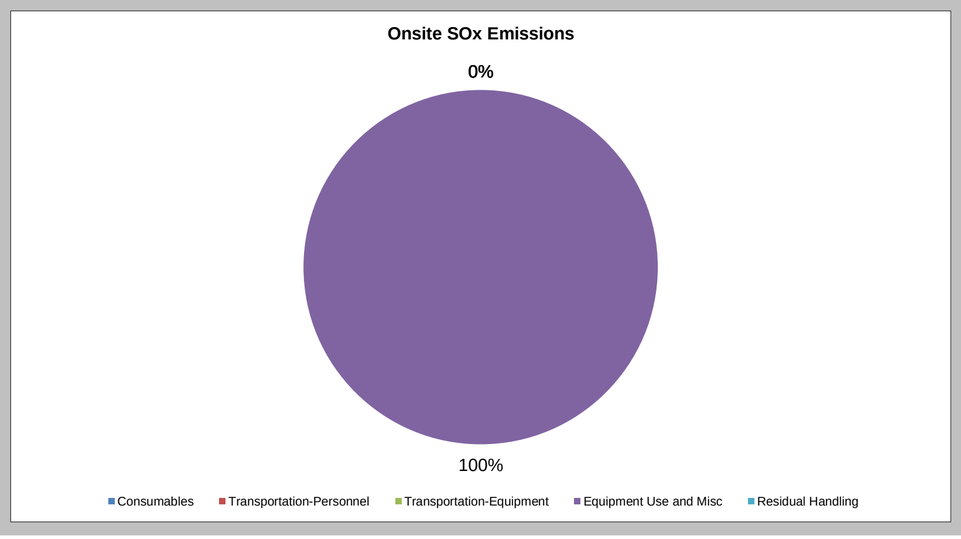
Total electricity replacement (MWh)	0.00E+00
Total electricity replacement (mmBtu)	0.00E+00
Percent electricity from renewable sources (%)	0.0%
Landfill gas reduction (metric ton CO_2 e)	0.00E+00
GHG emissions (metric ton CO2 e)	0.00E+00
NOx emissions (metric ton)	0.00E+00
SOx emissions (metric ton)	0.00E+00
PM10 emissions (metric ton)	0.00E+00

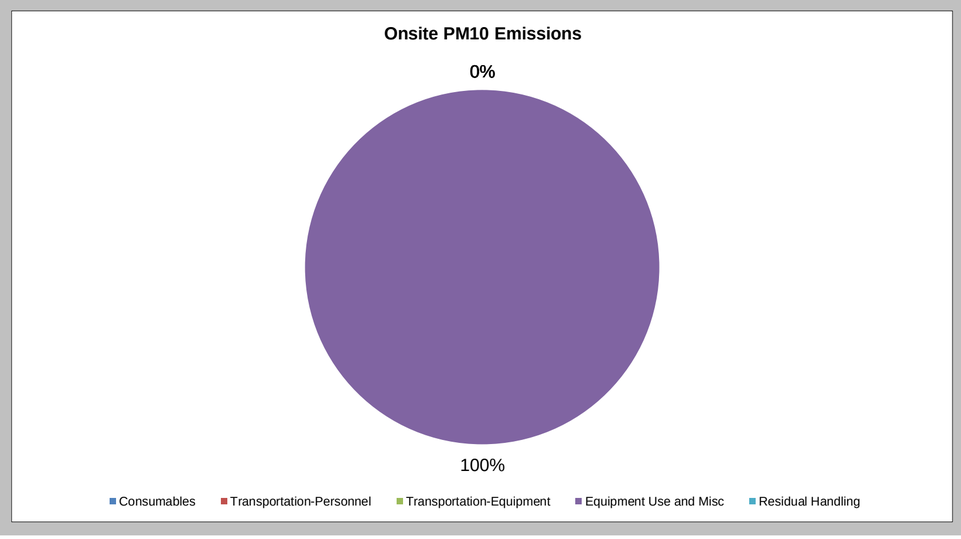


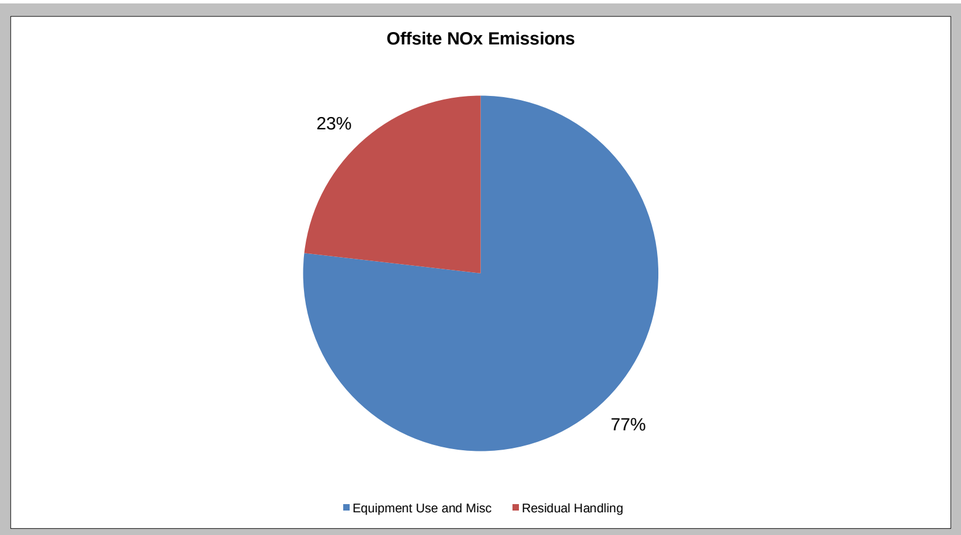


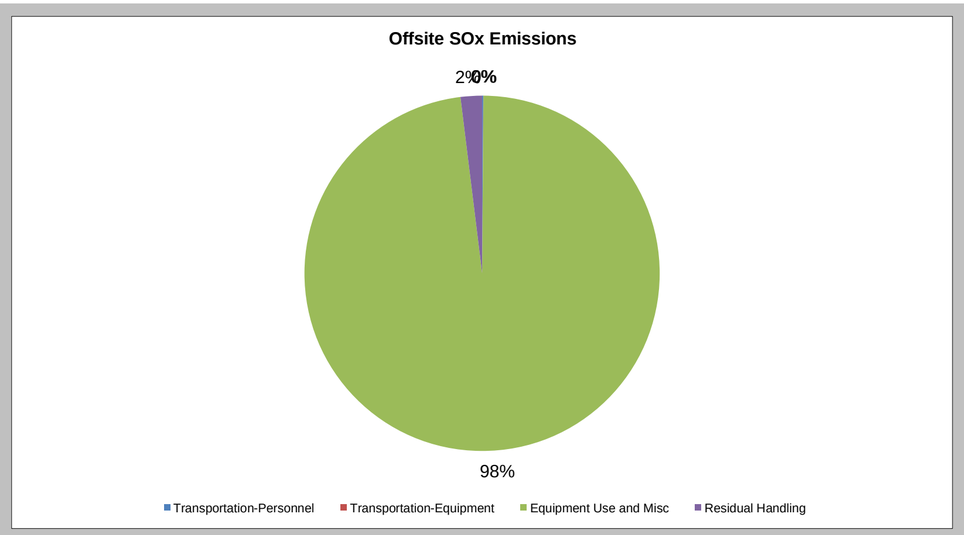

Water Consumption
0%
Consumables
Transportation-Personnel
Transportation-Equipment
Equipment Use and Misc
Residual Handling

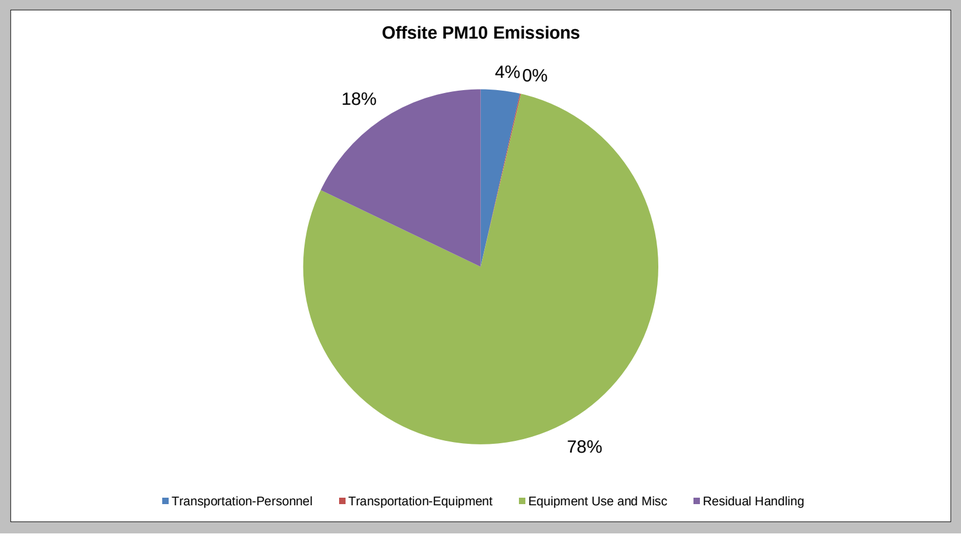

Onsite NOx Emissions
0%
100%
Consumables
Transportation-Personnel
Transportation-Equipment
Equipment Use and Misc
Residual Handling

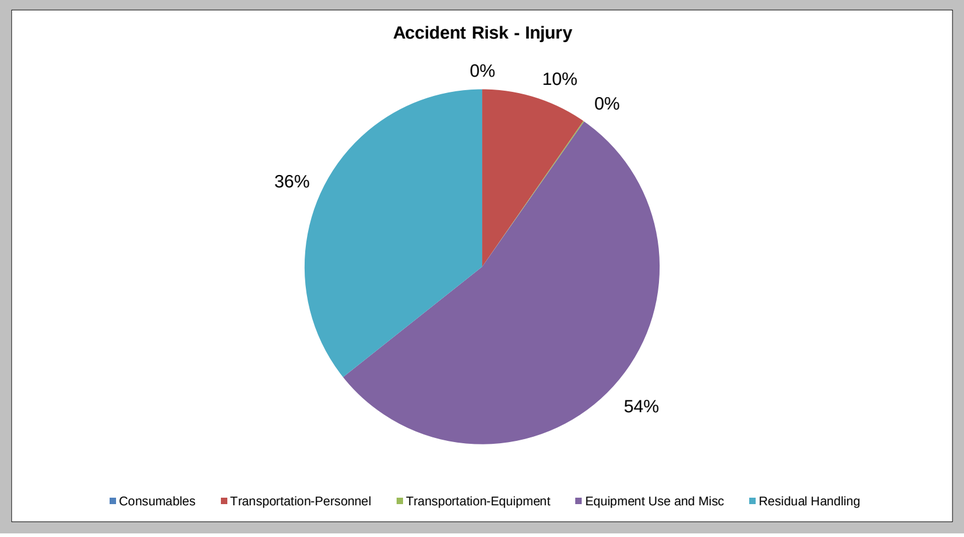

Onsite SOx Emissions
0%
100%
Consumables
Transportation-Personnel
Transportation-Equipment
Equipment Use and Misc
Residual Handling

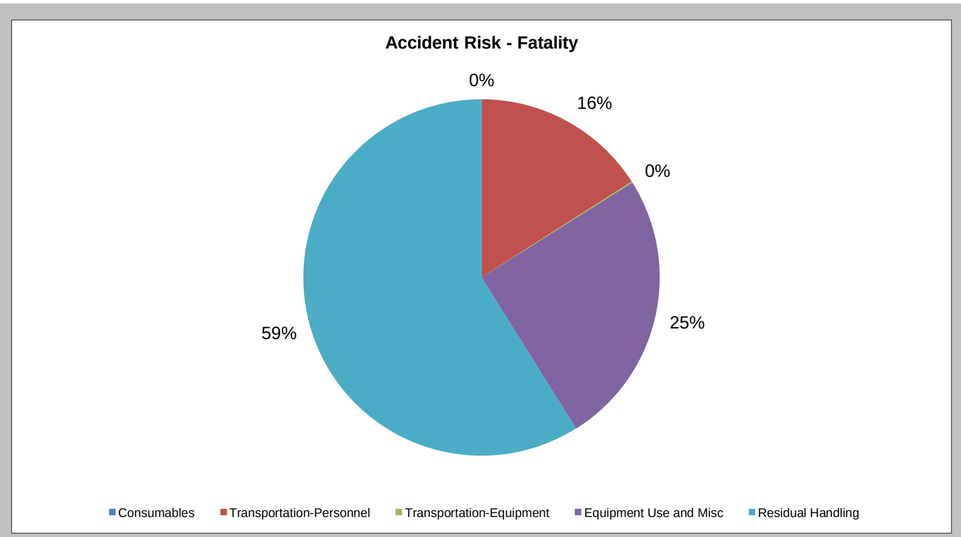

Onsite PM10 Emissions
0%
100%
Consumables
Transportation-Personnel
Transportation-Equipment
Equipment Use and Misc
Residual Handling


Offsite NOx Emissions
23%
77%
Equipment Use and Misc
Residual Handling


Offsite SOx Emissions
2%
98%
Transportation-Personnel
Transportation-Equipment
Equipment Use and Misc
Residual Handling


Offsite PM10 Emissions
4%
0%
18%
78%
Transportation-Personnel
Transportation-Equipment
Equipment Use and Misc
Residual Handling


Accident Risk - Injury
0%
10%
0%
36%
54%
Consumables
Transportation-Personnel
Transportation-Equipment
Equipment Use and Misc
Residual Handling

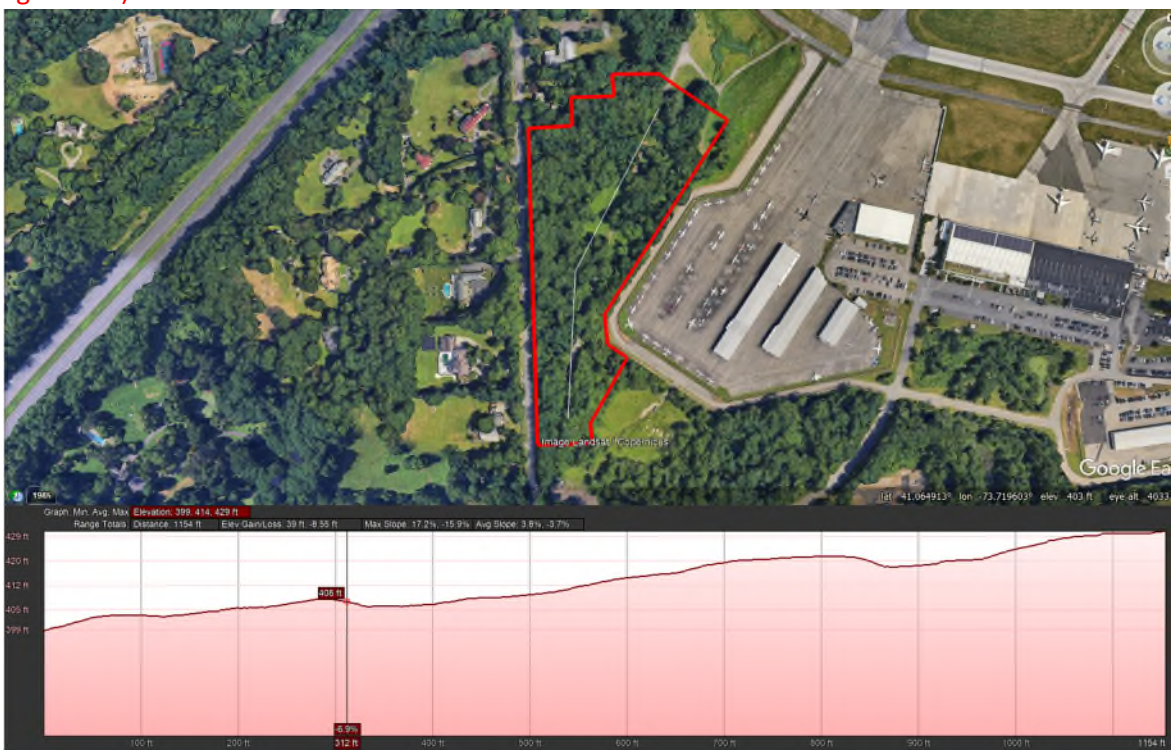

Accident Risk - Fatality
0%
16%
0%
25%
59%
Consumables
Transportation-Personnel
Transportation-Equipment
Equipment Use and Misc
Residual Handling

Attachment 2 – Climate Screening Checklist

Climate Screening Checklist

Background

- Project Manager: Greta Kowalski
- Site Name: Rye Lake Water Filtration Treatment Plant
- Site Number: C360174
- Site Location: Purchase Street, West Harrison, New York
- Site Elevation (average above sea level): Approximately 414 feet above sea level (from google earth).



- ClimAID region: Region 5—East Hudson and Mohawk River Valleys



- Remedial Stage/Site Classification: Site Classification A

- Contamination -- Media Impacted/Contaminants of Concern:

- Soil – PFOA and PFOS
- Groundwater/surface water – PFOA and PFOS
- Sediment – PFOA and PFOS

- Proposed/Current Remedy: The proposed interim remedial measures (IRMs) include a supplemental remedial investigation, excavation, and dewatering.

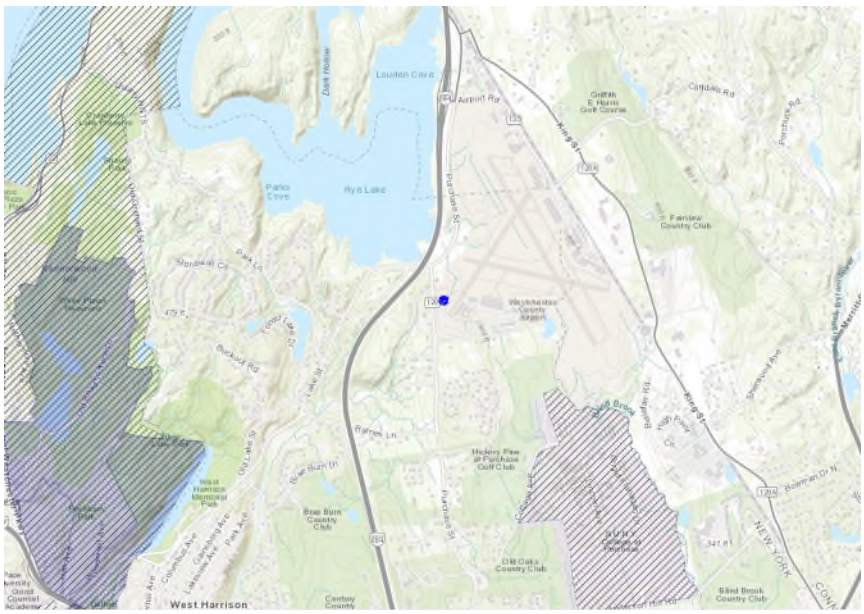
- What is the predicted timeframe of the remedy? Will components of the remedy still be in place in 10+ years?
  The proposed IRMs are intended to be in place indefinitely as they support the construction of a new water filtration plant.

Is the site in a disadvantaged community (DAC) or potential environmental justice area (PEJA) (Use DECinfolocator: DECinfo Locator (ny.gov))?

☐Yes ☒ No

If the site is in a DAC or PEJA, will climate impacts be magnified? If yes, list how and why.

☐Yes ☒ No



Should thresholds of concern be lowered to account for magnification of impacts? If yes, indicate how lower thresholds will be used in the screening.

☐Yes ☒ No

Climate Screening Table*

Potential Climate Hazards	**Relevant to the Site Location (Y/N/NA)** [1]	**Projected Change (**Put the reference document/model used here) [3]	**Potential to Impact Remedy (Y/N)**	**Is remedy/site already resilient? (Y/N)** [4]
Precipitation	Y	Based upon the Climate Mapping for Resilience and Adaptation (CMRA) tool, annual rain fall is projected to increase between 3.8 and 5.3 inches by the end of the century	N	N/A
Temperature (Extreme Heat or Cold Weather Impacts) [2]	Y	Based upon the CMRA Tool, by the end of the century there will be an estimated increase of between 632.2 and 1,236.5 cooling degree days.	N	N/A
Sea Level Rise	N	N - Based upon the NOAA's Sea Level Rise Viewer the site is not impacted at 10 feet of SLR.	N	N/A

Flooding[5]	N	Based upon FEMA's Resiliency Analysis Planning Tool, a portion of the site falls within the 0.2% annual chance flood hazard area.	N	N/A
Storm Surge	N	Y – NOAA's Storm Surge Risk Maps tool indicates that the site could be impacted by storm surge from category 4 or lower hurricanes.	N	N/A
Wildfire	N	N/A	N/A	N/A
Drought	Y	Y – Based on the CMRA tool, days per year with no precipitation is estimated to increase between 1.9 and 5.2 days by the end of the century.	N	N/A
Storm Severity (could include high winds, lightening, etc.)	Y	N - Based upon FEMA's Resiliency Analysis Planning Tool, there is no increase in storm severity outlook.	N	N/A

Landslides	N	N/A	N/A	N/A
Other Hazards:	Seismic Activity – N/A	N/A	N/A	N/A

*Links to potential data sources can be found on the following page

[1] If the first column is N --> The rest of the columns will be N/A, the hazard is not applicable to the site.

[2] Extreme Heat: periods of three or more days above 90°F- Extreme Cold: Individual days with minimum temperatures at or below 30 degrees F (NYSERDA ClimAID report), Note: this is important for sites with active remedial systems/sites where the remedy relies on the electrical grid

[3] List the projected change in specific terms or units e.g. inches of rain fall, feet of sea level rise, etc.

[4] If final column is Y, provide reasoning, if the final column is N --> Climate Vulnerability Assessment (CVA) required.

[5] For system sites- components (e.g. electrical wiring and panels) should be evaluated to determine if they would need to be raised to avoid flooding.

Required Next Steps (If no further action, provide justification):

The main vulnerability identified for the IRM is field implementation of the SRI, excavation, and dewatering tasks due to severe weather. Execution/construction related delays may occur due to severe weather; however, the there are no long term climate related impacts to the IRM activities.